

Border Environment Cooperation Commission Expansion of the Water Distribution System in Colonia Esperanza, Chihuahua

1. General Criteria

1.a Project Type

Project Name: Expansion of the Water Distribution System in Colonia Esperanza, Chih.

Project Sector: Domestic Water and Wastewater Hookups.

1.b Project Category

Category: Community Environmental Infrastructure Project – Community-wide Impact.

1.c Project Location and Community Profile

Community: Colonia Esperanza, Municipality of Praxedis G. Guerrero.

Location: The State of Chihuahua is located in the northern part of the Republic of Mexico. Colonia Esperanza is located in the northeastern end of the State of Chihuahua, within the Municipality of Praxedis G. Guerrero. Colonia Esperanza is one of the 23 communities found in the area known as the Juarez Valley, and it is a traditionally agricultural community.

Location within the border: Within the 62.5 mi (100 km) area and adjacent to the U.S.-Mexico border.

Figure: Figure No. 1 shows the location of Colonia Esperanza, Municipality of Praxedis G. Guerrero, in northeast Chihuahua.



Figure 1. Location of Colonia Esperanza within the Municipality of Praxedis G. Guerrero.

Demographics	
Current population:	1,546 inhabitants
Growth rate:	1.00 %
Reference:	INEGI Year 2005
Median per capita income:	\$ 3,288 Mexican Pesos
Reference:	NADB estimates based on statistics by INEGI and the National Commission on Minimum Wages.
Primary economic activity:	Agriculture and cattle-raising
Marginalization rate:	-1.31841, Very Low
Reference:	CONAPO 2008
Services	
Community:	Colonia Esperanza, Municipality of Praxedis G. Guerrero.
Water System	
Water Coverage:	49 %
Domestic Hookups:	95 %
Commercial Hookups:	5 %
Industrial Hookups:	0 %
Water Supply Source:	Esperanza Water Well
Number of Water Hookups:	175
Wastewater Collection System	
Wastewater Coverage:	0 %
Number of Sewer Connections:	0
Domestic Connections:	0 %
Commercial Connections:	0 %
Industrial Connections:	0 %
Wastewater Treatment	
Wastewater Treatment Coverage:	0 %
Solid Waste	
Solid Waste Collection Coverage:	100%
Street Paving	
Street Paving Coverage	10%
1.d Legal Authority	
Project Sponsor:	Junta Central de Agua y Saneamiento de Chihuahua (JCAS, for its initials in Spanish) in coordination with the Junta Rural de Agua y Saneamiento de Colonia Esperanza (JRAS, for its initials in spanish).

Legal representative:	Gabriel Márquez-Holguín
Legal instrument to demonstrate legal authority:	The legal authority of JCAS and JRAS is established in Article 1564 of the Administrative Code for the State of Chihuahua. JRAS is authorized to provide water and wastewater collection services to the community, whereas, JCAS is the regulatory agency and the entity responsible for developing infrastructure improvement projects in Colonia Esperanza.
Date of instrument:	May 1, 1950.
Compliance with agreements:	<ul style="list-style-type: none">• 1889 International Boundary Convention• 1944 Water Treaty• 1983 La Paz Agreement, or Border Environment Agreement• 1990 Integrated Border Environmental Plan (IBEP)• 1994 North American Free Trade Agreement (NAFTA)• Border 2012 Program

1.e Project Summary

Project description and scope:	Expansion of the water system to unserved areas in Colonia Esperanza, Chihuahua, including the construction of new domestic hookups and the rehabilitation of existing hookups, a new disinfection unit, and a telemetry system.
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Components:

Potable Water

Water system expansion in Colonia Esperanza:

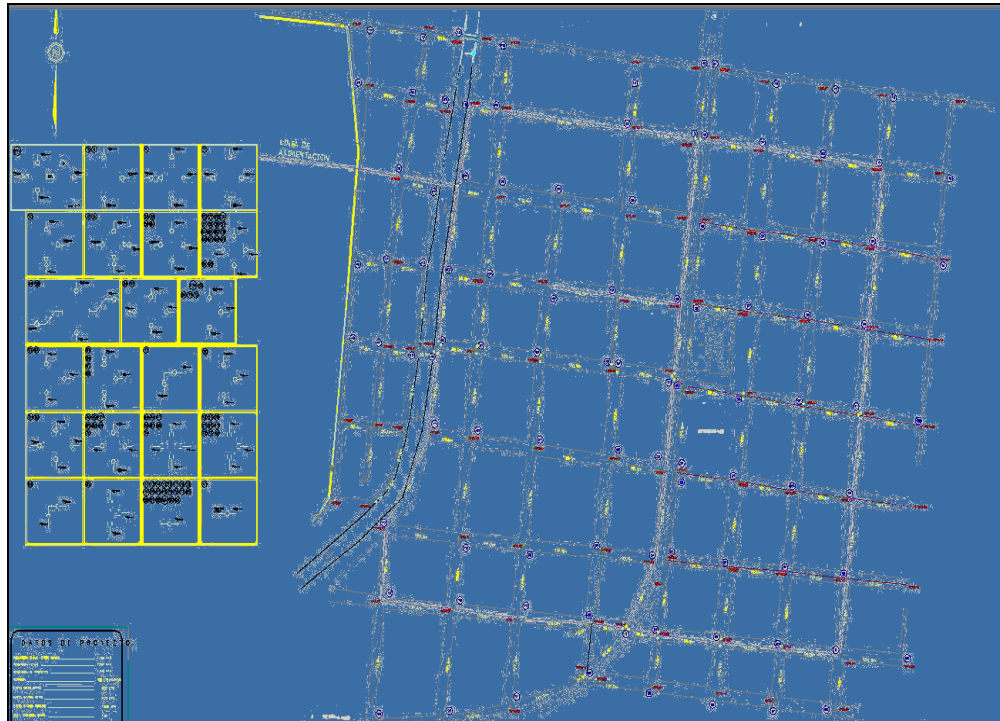
- Supply and installation of 31,440 linear feet (9,583 m) of 3" diameter PVC piping.
- Supply and installation of 13,865 linear feet (4,226 m) of 4" diameter PVC piping.
- Supply and installation of special parts for water distribution system looping.
- 290 hookups 3" diameter.
- 70 hookups 4" diameter.
- Supply and installation of a chlorine gas-based disinfection unit.
- Telemetry system to automate well-storage tank.

Population Served: 1,546 inhabitants

Project Cost: \$ 333,443.88 USD

Project Map: Figure 3 shows the proposed drinking water system.

Figure 2. Map of the proposed water distribution system



1.f Project Justification

Project Justification:

- The proposed project will provide potable water to the population that currently lacks service in the project area.
- Residents of the project area currently lack potable water service and rely on hauled water to obtain their water supply. The implementation of the proposed project will help provide adequate water service to approximately 1,546 residents. This action will help reduce the risk of infections associated to poor water quality.
- The project will help increase water service coverage up to 100% by installing approximately 360 hookups (new and rehabilitated).

Urgency of the project or consequences of no action:

The lack of these services jeopardizes the health of area residents, as it exposes them to an increased rate of gastrointestinal diseases due to non potable water consumption.

Prioritization process category:

Category 1

Pending Issues:

None.

Criterion Summary:

The project falls within BECC's Priority Sectors and meets the basic general criteria. Currently the wastewater collection system and the wastewater treatment plant are under construction, these projects were certified in 2007 and the construction is estimated to conclude in October 2009, beginning operations immediately.

2. Human Health and Environment

2.a Compliance with Applicable Environmental Laws and Regulations.

Environmental and Public Health needs addressed by the proposed project:

Half of the local residents lack potable water service and obtain water for personal consumption from hauled water.

The lack of potable water service results in a number of health issues related to the unavailability of good water quality for human consumption increasing the risk of incidence of water borne gastrointestinal diseases.

The project meets the following applicable environmental laws and regulations:

Official Mexican Standard NOM-127-SSA1-1994, which establishes treatment processes and quality standards for drinking water for environmental health and human use and consumption.

The project will follow the guidelines established by the Water National Commission (CONAGUA, for its initials in Spanish) for the construction of this type of infrastructure. Additionally, the tasks are not expected to impact protected areas or ecological reserves since they will be developed within previously impacted urban and rural areas. During the implementation of the project, the JCAS and CONAGUA will oversee the tasks to meet compliance according to the aforesaid guidelines.

2.b Human Health and Environmental Impacts.

Human Health Impacts

Direct and indirect benefits to human health:

The project will supply potable water with adequate quality to prevent health hazards.

The quality of life of project area residents will improve by providing them access to public potable water services.

Health statistics:

Water borne diseases are caused by pathogenic microorganisms that are directly transmitted as a result of inadequate wastewater disposal practices and unhealthy water supplies. An individual may become ill after drinking water that has been contaminated with these organisms, eating uncooked foods that have been in contact with contaminated water, or having bad hygiene habits that contribute to the dissemination of diseases by direct or indirect human contact. Water borne diseases may be caused by protozoans, viruses, bacteria, and intestinal parasites.

Supporting figures:

Table 1. Gastrointestinal diseases in Juarez, Chihuahua area

HEALTH SERVICES OF CHIHUAHUA SANITARY JURISDICTION, JUAREZ EPIDEMIOLOGY DEPARTMENT					
GASTROINTESTINAL DISEASES PER TYPE AND YEAR					
IN THE RESORT AREA YEARS 2003 TO 2007					
DISEASE	YEAR				
	2003	2004	2005	2006	2007
AMEBIASIS	1012	914	863	934	863
INTESTINAL ILLNESESS	48721	49666	41123	42806	41526
PARATYPHOID AND OTHER	488	656	1075	1367	1087
OTHER HELMITIASIS	3259	3087	1407	1247	1555
TYPHOID FEVER	38	54	11	42	60
SHIGELLOSIS	6	30	17	14	29
VIPERIN PATITIS-A	112	181	76	54	
96	GIARDIASIS	202	225	100	83
27	ASCARIASIS	69	10	9	6
18	OXIUROS	78	34	18	31
SOURCE: WEEKLY REPORT OF DISEASES NEW CASES					

Environmental Impacts

Direct and indirect benefits:
Environmental impacts:

Minor environmental impacts are anticipated from the development of the different project phases, provided the project tasks are implemented in accordance with the specifications of the Environmental Impact Assessment and taking into account the mitigation measures established therein.

Potential impacts include the following:

Construction Phase

- Fugitive dust emissions
- Air pollutant emissions from construction machinery
- Temporary roadway blockages; presence of workers in the area

Operation Phase

No impacts are anticipated during the operation of the Drinking Water System.

Mitigation measures:

Mitigation measures will include the following:

- Application of water to reduce fugitive dust emissions
- Tune up vehicles to reduce emissions
- Placement of warning signs to prevent potentially hazardous situations

Impacts:

The environmental impact resulting from the project's implementation will be positive overall, inasmuch as: The project will help provide potable water to the community, and improve the quality of life of local residents by reducing risks associated to inadequate water management.

Transboundary Impacts

Due to the proximity of Colonia Esperanza with various communities in the Hudspeth County in the United States, there are frequent border crossings between cities. The expansion of the drinking water system in currently unserved areas will have a direct positive impact on the health of residents of cities such as Fort Hancock and Acala, Texas and the entire region. These actions will reduce the risk of waterborne diseases caused by the lack of drinking water.

The wastewater generated from this project will not adversely impact surface waters because this wastewater will be treated at the existing WWTP which has sufficient capacity.

The wastewater from Colonia Esperanza is discharged to the rio Grande near Fort Quitman, Texas within the Segment 2307 (Rio Grande below Riverside Diversion Dam).

Formal Environmental Clearance

Environmental Clearance:

Pursuant to the provisions of the General Law on Ecological Equilibrium and Environmental Protection regarding Environmental Impact Statements, Mexico's Secretariat of the Environment and Natural Resources (SEMARNAT) issued Official Communication DOEIA.IA.969/2008 on March 6, 2008, in which the agency determined that the project does not require an

Environmental Impact Assessment, inasmuch as the proposed activities will be developed in an area already impacted by human activities.

Pursuant to the U.S. National Environmental Policy Act (NEPA), a transboundary impact study was developed and submitted for consideration to the United States Environmental Protection Agency (EPA). A 30-day public review period was opened on May 22, 2009 to receive questions or requests for clarifications. Finally, a Finding of No Significant Impact (FONSI) was issued by the EPA on June 23, 2009, establishing that the project will not result in significant environmental impacts that may affect the U.S. border area.

Pending Issues

None.

Criterion Summary:

While Official Communication No. E/117-D/2006 of September 26, 2006 pursuant to a No-Objection determination by Mexico's National Institute of Anthropology and History (INAH, for its initials in Spanish) was originally issued for a wastewater collection project component certified in 2007 for the same community; it is also applicable to the proposed water component, since the proposed tasks will be developed in an area previously impacted by human activities.

3. Technical Feasibility

3.a Technical Aspects

Project Development Requirements

Design Criteria:

The project was developed in accordance with technical specifications contained in the Water, Wastewater Collection, and Treatment Manual prepared by CONAGUA's Technical Directorate.

The project includes the following components:

- Approximately 31,440 linear feet (9,583 m) of 3" diameter PVC piping, and 13,865 linear feet (4,226 m) of 4" diameter PVC piping
- Supply and installation of 360 domestic hookups.
- Installation of a new Disinfection Unit.
- Looping.
- Telemetry system to automate well-storage tank

The final design includes the implementation of Green Building practices as part of the technical construction specifications.

Appropriate Technology

Assessment of alternatives:

Potable water.

- Alternative 1. No Action. The no action alternative involves continuing to operate under the current water supply conditions, which fail to meet acceptable regulations established for the water system as to quality, quantity, or appropriate operation.
- Alternative 2. Expanding the water system to achieve 100% coverage. This alternative also proposes the implementation of a new disinfection unit, looping of the water distribution system, and automation of well-storage tank.

Property and Right-of-Way Requirements

Requirements:

Inasmuch as water distribution lines will be laid on existing municipal rights of way and easements, no additional land needs to be purchased for the project.

Project Tasks and Timelines

Project Timeline

The construction of the different project components is estimated to be completed in approximately 6 months. Construction tasks are expected to begin in October 2009.

Figure 3 Construction schedule



3.b Management and Operations

Project Management

Resources:

The management and operation of the project rely on the responsibility of the sponsor, who has the adequate resources and personnel for this purpose.

Junta Central de Agua y Saneamiento del Estado de Chihuahua will provide technical assistance and oversight to the Junta Rural de Agua y Saneamiento de Colonia Esperanza (JRAS) for the operation of the proposed system.

Operation and Maintenance

Organization:

JRAS has a President, a Secretary, a Treasurer, three alternates and also the personnel required to operate and maintain the water system. Additionally, the utility will receive assistance from JCAS, the state utility, which has available personnel specialized in water system operation and maintenance.

Operation Plan:

The Final Design incorporates an Operation and Maintenance Manual that includes the primary tasks needed to ensure a proper operation of the system and to prevent breakdowns in the proposed infrastructure.

Permits, licenses, and other regulatory requirements:

The project sponsor has the following documentation available:

- Water rights (CONAGUA)
- Finding of No Impact to historical or cultural properties (INAH)
- Technical File validated by CONAGUA
- State Environmental Clearance

Reviewing agencies:

- EPA
- BECC
- NADB
- CONAGUA
- Junta Central de Agua y Saneamiento de Chihuahua (JCAS)

Pending Issues:

None.

Criterion Summary:

The Final Design has been reviewed by BECC, NADB and validated by CONAGUA.

4. Financial Feasibility

4.a Proof of Financial Feasibility

Financial Conditions

Information submitted: JRAS' financial statements, project costs, and socioeconomic information.

Results of the analysis: JRAS will be able to generate the necessary cash flow to meet the operation and maintenance costs of the additional system components as well as enable the funding of the reserves; however, they do not have the capacity to contract debt.

Project Cost, Financial Structure, and Other Capital Funding Plans

Concept: Expansion of the drinking water distribution system to un-served areas.

Construction Cost: \$ 333,443.88 USD

Financial Structure:

Source	Type	Amount (USD\$)	%
Mexico (JCAS/ Federal)	Grant	\$166,721.94	50.0
BEIF-NADB	Grant	\$166,721.94	50.0
Total:		\$333,443.88	100.0%

Primary Source of Income

Source of payments for project: This does not apply because none of the funding sources being considered for this project include loans or other reimbursable components.

An analysis by NADBank concluded that the Project sponsor generated sufficient revenues to cover operation and maintenance costs of its water and wastewater systems. However, it does not have any debt capacity. Therefore, a loan waiver request for this Project was made to EPA and approved on May 1, 2009.

4.b Legal Considerations

Project management: The project will be managed by the JCAS, which has adequate staff to manage the proposed infrastructure, as well as the capacity to address any potential emergency related to the project's operation and maintenance.

Pending Issues:

None

Criterion Summary:

The analysis of the information available indicates that the Project has an adequate financial structure, and the JRAS, with support from the JCAS, has the required resources and capacity to manage and operate the system.

5. Public Participation

5.a Community Environmental Infrastructure Projects – Community-wide impact

Local Steering Committee

Date of Establishment: The Steering Committee was formally installed on January 28, 2009 at a meeting held in the Salon Ejidal of Colonia Esperanza. At this meeting, a Board of Directors was elected.

Local Steering Committee Members: The Local Steering Committee consist of the following members:

Chair: Manuela Hernández González
Secretary: Aurelia Pacheco Ayala
Alternates: Saúl Rodríguez Barraza
Rodolfo Tarín Quiñonez
Verulo García García

Date of approval of Public Participation Plan: The Comprehensive Community Participation Plan developed by the Local Steering Committee was approved by the BECC on March 3, 2009.

Public access to project information

Public access to project information: The project's technical and financial information was made available to the public for review.

The Local Steering Committee, with assistance from the project sponsor, prepared the following documents:

- Flyers
- Brochures
- Megaphone advertising
- Radio announcements

The above media outlets were used to inform the community about the project.

Additional outreach activities: Development and dissemination of a project fact sheet.

First Public Meeting: A 30-day advance notice was published for the First Public Meeting on the "Diario de Juarez" on February 28, 2009.

The first public meeting was held on April 3, 2009 to inform the community about the project's technical aspects. The meeting was held at 18:00 hrs. On the

scheduled day at the Salon Ejidal in Colonia Esperanza. The meeting was attended by 38 residents who answered project surveys. 100% of those surveyed said they were able to fully understand the project and explicitly expressed their support.

Second Public Meeting:

The second public meeting will be announced on July 7, 2009 and will be scheduled for July 19, 2009 at the Salon Ejidal in Colonia Esperanza. The purpose of this meeting is to inform the community about the project's financial aspects.

Final Public Participation Report

Final Report:

The Local Steering Committee and the sponsor will prepare the Final Public Participation Report to demonstrate that the proposed objectives were fully met to BECC's satisfaction.

Post-Certification Public Participation Activities

Post-Certification Activities:

The project sponsor, in coordination with the Local Steering Committee, will provide a general description of public participation activities that may be carried out after the project's certification to support its implementation and long-term feasibility.

Pending Issues:

Second public meeting and Final Public Participation Report.

Criterion Summary:

The project's Local Steering Committee is the same one that was established for the wastewater collection component certified in 2007.

6. Sustainable Development

6.a Human and Institutional Capacity Building

Project Operation and Maintenance:

The project sponsor will be the agency responsible for operating and maintaining the water distribution system. The sponsor has the basic institutional and human capacity needed to operate and maintain the proposed water distribution system.

Human and Institutional Capacity Building:

Actions within the scope of the project that contribute to strengthen the institutional and human capacity of the Junta Central de Agua y Saneamiento de Chihuahua include:

- Provide and improve water services in a continuous, efficient, and cost-effective manner.
- Training and education for the utility's operating staff throughout its different areas, to provide essential services that meet the needs of the community.
- Optimize the use of water and make the community aware of the importance of water resources for the development of the local community.
- Basic technical training to the operations and maintenance staff responsible for the new infrastructure that will be built as a result of the project's implementation.

6.b Conformance to applicable Local, State, and Regional Regulations and Conservation and Development Plans.

Local and Regional Plans addressed by the project:

The proposed project conforms to applicable plans and actions described in the following documents:

- Master Plan for Improvements to Water, Wastewater and Collection Services in Riparian Communities in the Upper Rio Grande, Juarez Valley.
- The project adheres to the U.S.-Mexico Border 2012 Environmental Program by meeting Goals 1 (promoting the increase of water connections) and 4 (promoting improvements to water utility efficiency).

6.c Natural Resource Conservation

The proposed improvements to the local water distribution system will help increase its physical efficiency and consequently will reduce withdrawal rates in the local aquifer, which supplies water to this community and the Juarez Valley in general.

The final design includes the implementation of Green Building practices as part of the technical construction specifications.

6.d Community Development

The completion of this project is crucial for the development of the community. The tasks proposed by the project will contribute to reduce the incidence of water-borne and arboviral diseases resulting from the use of non-potable water.

The implementation of a new drinking water system will promote the development of the local community, since it will help reduce the incidence of water-borne diseases and improve the quality of life of Colonia Esperanza residents.

Pending Issues:

None.

Criterion Summary:

The project complies with the Sustainable Development Criteria.

Available Project Information:

- Final Design for the Colonia Esperanza Potable Water System. Junta Central de Agua y Saneamiento de Chihuahua. 2008
- Official Communication No. E/117-D/2006, in which INAH finds no objection for the development of this project in the Colonia Esperanza area, inasmuch as no historical monuments of archeological settlements exist in the area.
- EPA's "Finding of no significant impact" (FONSI) regarding the Colonia Esperanza project, dated June 22, 2009.
- "Consultation with the State Directorate of Ecology to determine jurisdiction and environmental assessment modality." Official Communication S-004/2008, Junta Central de Agua y Saneamiento Del Estado de Chihuahua, February 19, 2008.
- "Response from the State Directorate of Ecology pursuant to the Environmental Impact Assessment modality." Official Communication No. DOEIA.IA. 969/2008. Dirección de Ecología del Estado de Chihuahua. June 3, 2008.
- Master Plan for Improvements to Water, Wastewater and Collection Services in Riparian Communities in the Upper Rio Grande, Juarez Valley (*Plan Maestro para el Mejoramiento de los Servicios de Agua Potable, Alcantarillado y Saneamiento en Poblaciones Ribereñas del Alto Bravo, Valle de Juárez*), developed by ICISA (BECC, December 2000).
- Draft of the Final Public Participation Report for the Project for Expansion of the Potable Water System in Colonia Esperanza. Junta Central de Agua y Saneamiento and Steering Committee. 2009.