CERTIFICATION PROPOSAL

EXPANSION OF THE WASTEWATER COLLECTION SYSTEM IN AVENIDAS "B" SAN LUIS RIO COLORADO, SONORA

Submitted: April 17, 2014

BOARD DOCUMENT BD 2014-9
CERTIFICATION PROPOSAL

EXECUTIVE SUMMARY

EXPANSION OF THE WASTEWATER COLLECTION SYSTEM IN AVENIDAS "B" SAN LUIS RIO COLORADO, SONORA

The project consists of the expansion of sewer lines in Avenidas "B" in San Luis Rio Colorado, Sonora (the "Project").

The purpose of the Project is to eliminate exposure to inadequately treated wastewater discharges, thus contributing to the reduction of pollution and the risk of waterborne diseases.

The Project is expected to generate environmental and human health benefits related to the following Project outcomes:

- Provide first-time access to and/or improve wastewater collection and treatment services for up to 4,369 residential connections.
- Eliminate untreated wastewater of up to 1.07 million gallons per day (MGD)[1]

16,122 residents of San Luis Rio Colorado, Sonora.[2]

San Luis Rio Colorado municipal utility, *Organismo Operador Municipal de Agua Potable, Alcantarillado y Saneamiento de San Luis Rio Colorado* (OOMAPAS)

US$6,909,378

US$3,454,689 from EPA's Border Environmental Infrastructure Program (BEIF)

[1] Estimated at 46.65 liters per second (1.07 MGD) based on 250 liters per capita per day with 3.69 persons per household.
[2] Based on the final design.

Construction, contingencies, supervision and others	$6,909,378	100.0
Mexico (grant)	$3,454,689	50.0
NADB-BEIF (Grant)	3,454,689	50.0

CERTIFICATION PROPOSAL

EXPANSION OF THE WASTEWATER COLLECTION SYSTEM IN "B" AVENUES SAN LUIS RIO COLORADO, SONORA

Project Type

The project falls within the eligible sector of domestic water and wastewater hookups.

Project Location

The project is located in the city of San Luis Rio Colorado in the state of Sonora, which is adjacent to San Luis, Arizona.

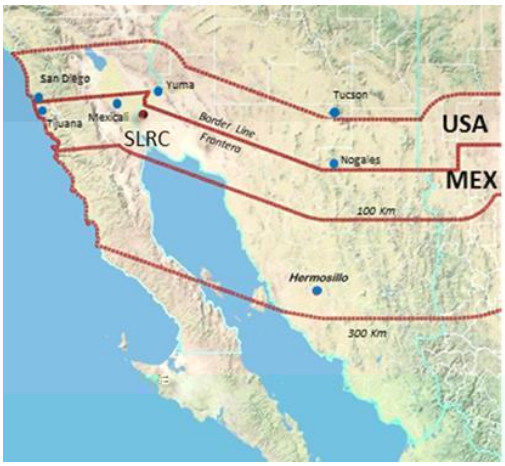
Project Sponsor and Local Authority

The public-sector Project sponsor is the San Luis Rio Colorado Local Water Utility, *Organismo Operador Municipal de Agua Potable, Alcantarillado y Saneamiento de San Luis Rio Colorado* (OOMAPAS or the "Sponsor"). Pursuant to Decree No. 1, III Legislature of the State of Sonora, the local water utility, OOMAPAS has the legal authority to operate and maintain water treatment, storage, and distribution systems, as well as wastewater collection and treatment systems.

2.1.1. Project Description

Geographic Location

The city of San Luis Rio Colorado is located in the northwestern part of the state of Sonora, which is adjacent to San Luis, Arizona and 20 miles south of Yuma, Arizona. Figure 1 shows the location of San Luis Rio Colorado.



General Community Profile

According to the population projections of the Mexican census bureau (INEGI 2010), the municipality of San Luis Rio Colorado had 178,380 residents in 2010, having grown at an average annual rate of 2.3 % over the last ten years from a population of 145,006 in 2000.[3] Current estimates have the municipality's population at 190,973 residents.

The municipality's economic activities are based primarily on agriculture, industry and commerce. The economically active population is estimated to be 72,983 inhabitants. The average household income is estimated at US$6,654 which is 17% higher than the state average of US$5,682.[4]

The status of public services in the community of San Luis Rio Colorado is described below.

[3] Source: *Instituto Nacional de Estadísticas y Geografía* (INEGI), Mexican censuses 2010 and 2000, respectively.
[4] Source: INEGI, Mexican Census 2000.

Coverage	96%
Supply source	21 water supply wells (Mesa Arenosa Aquifer), 17 of which are used for the drinking water supply
Number of hookups	56,492
Coverage	62.7% connected
Number of connections:	36,897
Coverage*	100%
Treatment facilities	Stabilization Ponds, 600 liters per second (13.7 MGD)
Collection coverage	100%
Final disposal	Landfill
Coverage	25% Source: Municipality of SLRC – Presidencia Municipal

Source: OOMAPAS, October 2013.
* In accordance with CONAGUA's definition, this is calculated based on the percentage of collected wastewater discharges treated at the existing treatment facility.

Local Wastewater System

Approximately 37% of the city of San Luis Rio Colorado population is not connected to the sewer system. These residences are along side streets named B Avenues and utilize cesspools and latrines for wastewater disposal. This represents a risk to human health and is a potential source of groundwater contamination.

In response to this need, in 2009, OOMAPAS completed an alignment study and final design for a wastewater collection system project to collect and convey wastewater flows from the Avenidas B area to the existing treatment plant. The design capacity of the wastewater treatment plant is 13.7 million gallons a day (MGD) or 600 liters per second (lps), with current inflows of 8.68 MGD (380 lps). The new sewer lines will collect and convey an estimated 1.07 MGD (46.65 lps) of wastewater flows to the plant. Therefore, the plant has sufficient capacity to treat the additional wastewater flows.

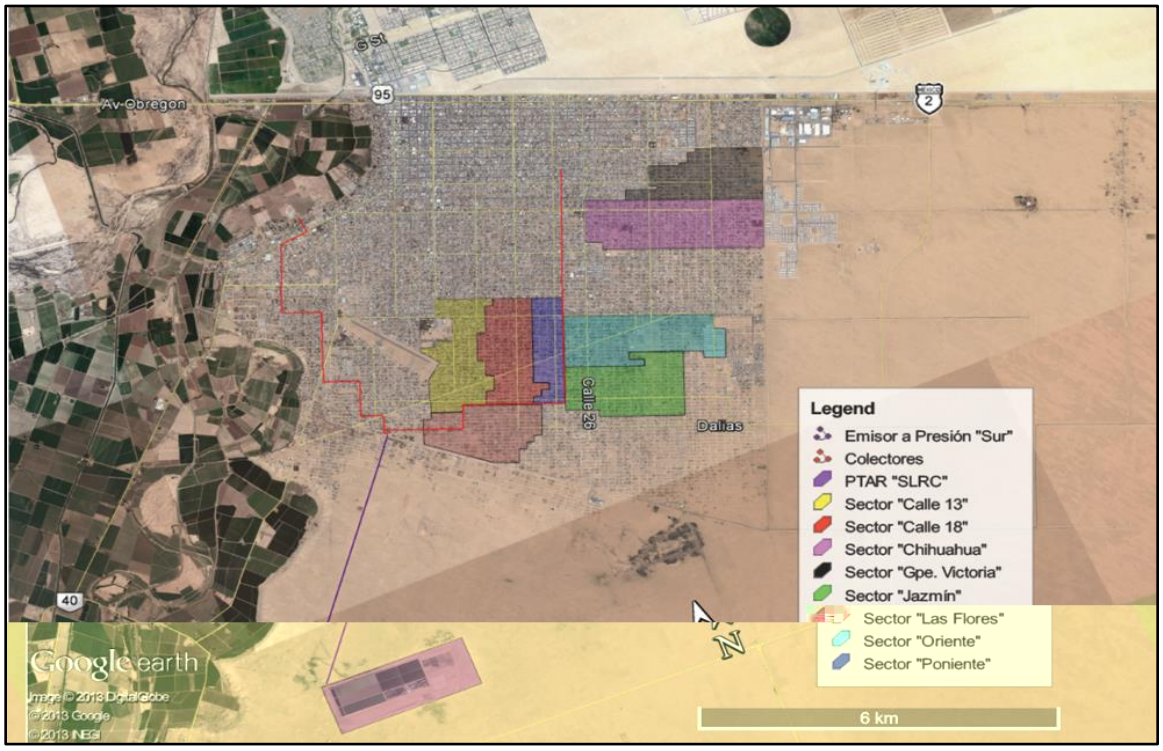
This Project has been included in OOMAPAS's annual action plan since 2011, but has not been implemented due to insufficient matching funds. Implementation of the proposed Project will improve wastewater treatment coverage and reduce the risk of water pollution and waterborne diseases, directly benefitting an estimated 16,122 residents.

Project Scope and Design

The Project consists of the expansion of sewer lines in B Avenues along with the installation of residential connections for the following sectors:

- *Chihuahua sector*:
  - 17,795 linear meters (58,383 ft.) of 8-inch PVC pipe.
  - 630 residential connections
- *Ejido Oriente sector*:
  - 10,549 linear meters (34,610 ft.) of 8-inch PVC pipe.
  - 854 residential connections
- *Ejido Poniente sector*:
  - 3,705 linear meters (12,156 ft.) of 8-inch PVC pipe
  - 290 residential connections
- *Jazmin sector:*
  - 12,135 linear meters (39,813 ft.) of 8-inch PVC pipe
  - 683 residential connections
- *Calle 13 sector*:
  - 5,783 linear meters (18,973 ft.) of 8-inch PVC pipe.
  - 539 residential connections
- *Calle 18 sector*:
  - 5,620 linear meters (18,458 ft.) of 8-inch PVC pipe.
  - 481 residential connections
- *Las Flores sector*:
  - 11,724 linear meters (38,465 ft.) of 8-inch PVC pipe
  - 595 residential connections
- *Guadalupe Victoria sector:*
  - 9,858 linear meters (32,343 ft.) of 8-inch PVC pipe
  - 297 residential connections

Figure 2 shows the areas where the Project components will be installed within the city of San Luis Rio Colorado, Sonora.



Construction permits will be the responsibility of the contractor and are considered a construction task. Table 2 shows the proposed schedule for project implementation milestones.

Initiation of procurement	Anticipated: 3rd quarter 2014
Construction period	Eighteen (18) months from Notice to Proceed

2.1.2. Technical Feasibility

Design Criteria

The final design of the proposed works was completed in accordance with the technical specifications of the Water, Wastewater Collection, and Treatment Manual developed by the Mexican federal water agency, CONAGUA. CONAGUA issued a technical validation for the project through official correspondence on May 22, 2013 (BOO.OO.R03.05/099).

Selected Technology

During the hydraulic modeling and final design process, technical options for pipe diameter, material and alignment were evaluated. To identify the most appropriate technology, technical options were evaluated pursuant to the following factors:

- Proposed layout of the sewer lines
- Required connection points for the system components
- Investment cost
- Operation and maintenance cost
- Materials and equipment reliability
- Sustainable practices

The pipe diameter was selected using appropriate slopes and velocities to prevent pipe silting and clogging, septic conditions, over-excavation or the need for pumping facilities that could increase project costs. Peak flow rates and maximum instantaneous flow rates were taken into consideration in order to avoid overflows. The analysis also considered using various pipe materials in compliance with applicable standards and regulations. High-density polyethylene, PVC, and asbestos-cement pipes were evaluated, and their characteristics and suitability for the soil type were reviewed. For the proposed Project, PVC was the selected material, which has proven to be reliable.

2.1.3. Land Acquisition and Right-of-way Requirements

All the construction tasks of the proposed Project will take place within existing municipal rights-of-way. No additional land or rights-of-way acquisition will be required.

2.1.4. Management and Operations

Management and operation of the proposed Project will be the responsibility of the municipal water utility, OOMAPAS, which has sufficient resources and staff available for these purposes including procurement and construction supervision during Project implementation.

OOMAPAS has an O&M manual that includes the primary tasks necessary to ensure proper operation of the new infrastructure. The utility serves 56,492 water hookups and 36,897 wastewater connections, and provides treatment to approximately 8.68 MGD of wastewater.

The project sponsor has a pretreatment program to control industry and small businesses discharges in coordination with Sonora's Ecology and Sustainable Development Commission (CEDES). The pretreatment program complies with the BEIF program requirements.

2.2.1. Compliance with Applicable Environmental Laws and Regulations

Applicable Laws and Regulations

The Project is subject to an environmental clearance authorization in accordance with the Regulations of the state of Sonora and the General Law on Ecological Balance and Environmental Protection regarding Environmental Impact Assessment, as determined through the Sonora Ministry of Urban Infrastructure and Ecology. Additionally, to be able to receive grant funds from the Border Environment Infrastructure Fund (BEIF), supported by federal appropriations to the U.S.-Mexico Border Water Infrastructure Program of the U.S. Environmental Protection Agency (EPA), the Project requires a transboundary impact study in compliance with the U.S. National Environmental Policy Act (NEPA).

In addition the Project complies with the Official Mexican Norm NOM-002-SEMARNAT-1996, which establishes the maximum permissible levels of contaminants for wastewater discharges into urban or municipal wastewater collection systems.

Environmental Studies and Compliance Actions

Pursuant to the regulations of the Sonora State Ministry of Urban Infrastructure and Ecology (SIUE), through official letter No. 10-1164-05, September 9, 2005, it was determined that the environmental impact assessment (MIA) for the Project meets current environmental regulations and subsequently authorizes its implementation.

Pursuant to the U.S. National Environmental Policy Act (NEPA), EPA finalized a *Supplemental Environmental Assessment (SEA) of the Effect on San Luis, Arizona by the Proposed Construction of a Wastewater Treatment Plant and Improvements to the Wastewater collection System for San Luis Rio Colorado* and the associated Finding of No Significant Impact (FNSI) on October 22, 2008. This SEA and FONSI included Avenidas B for expansion of the wastewater collection system. Avenidas B, however, was never constructed. Since no changes have occurred on the project's design to affect applicability of the SEA and FNSI initially authorized in 2008, EPA issued a public notice reaffirming that no significant impacts to the environment would result from the implementation of expansion of the wastewater collection service to the Avenidas B area. The comment period for the public notice closed without comments on December 12, 2013 and the reaffirmed FONSI was issued on December 19, 2013.

Since the Project will be implemented in already disturbed areas, the consultation with the National Anthropology and History Institute (INAH) is not required. No cultural or historical resources are expected to be disturbed

Pending Environmental Tasks and Clearances

All applicable environmental tasks and authorizations have been completed.

Compliance Documents

The following formal authorizations have been obtained for the Project:

- Official letter No. 10-1164-05 issued by SIUE on September 9, 2005, which indicates the Project does not require an environmental impact assessment or authorization (MIA).
- A reaffirmation of the Finding of No Significant Impact (FNSI) issued by EPA on December 19, 2013.

2.2.2. Environmental Effects / Impacts

Existing Conditions and Project Impact – Environment

Approximately 37% of the city of San Luis Rio Colorado population is not connected to the sewer system. These residences are along side streets named B Avenues and utilize cesspools and latrines for wastewater disposal. This represented a risk to human health and is a potential source of groundwater contamination. The Project will provide adequate infrastructure to collect and convey the wastewater flows to the treatment plant.

The Project is expected to generate the following environmental and human health benefits:

- Provide first-time access to and/or improve wastewater collection and treatment services for up to 4,369 residential connections which represent approximately 16,122 residents.
- Eliminate the risk of untreated wastewater discharges, which could be as much as 1.07 mgd.

The environmental impact resulting from Project implementation will be positive overall, given that it will prevent possible groundwater contamination and increase wastewater collection coverage.

Mitigation of Risks

Only minor environmental impacts are anticipated during construction of the Project, provided that the tasks are implemented in accordance with best management practices. Potential impacts may be present during the construction phase and include the following:

- Emission of dust particles;
- Combustion gas emissions from construction machinery; and
- Temporary roadway blockages and the presence of workers in the area.

Typical mitigation measures to be practiced include:

- Application of water to reduce the emission of dust particles;
- Vehicle tune-ups to reduce emissions; and
- Placement of warning signs to prevent potentially hazardous situations.

Natural Resource Conservation

The Final Design includes the implementation of green building practices as part of the technical construction specifications, with a special focus in energy efficiency and optimal operational performance. The Project contributes to reduce environmental deterioration by installing wastewater collection lines and providing the necessary means to collect and convey these flows to the existing WWTP. The Project helps reduce human health hazards by preventing the potential risk of exposure to raw wastewater.

Also, the Project contributes to the protection of natural resources by reducing the risks of soil and water contamination.

No Action Alternative

The no-action alternative was not considered viable since failing to expand the collection system would result in possible groundwater contamination and a significant health risks for residents.

Existing Conditions and Project Impact – Human Health

Waterborne diseases are caused by pathogenic microorganisms that are directly transmitted as a result of inadequate wastewater collection and disposal practices and unsafe water supplies. An individual can become ill after drinking water that has been contaminated with these organisms, eating uncooked foods that have been in contact with contaminated water, or through poor hygiene habits that contribute to the dissemination of diseases by direct or indirect human contact. Table 3 shows waterborne statistics diseases for the state of Sonora for the period 2009-2012.

HEALTH SERVICES OF SONORA
GENERAL HOSPITAL SAN LUIS RIO COLORADO
EPIDEMIOLOGY DEPARTMENT
GASTROINTESTINAL DISEASES PER TYPE AND YEAR IN SAN LUIS RIO COLORADO, SON.

Disease	2009	2010	2011	2012
INTESTINAL ILLNESESS	2753	2301	2687	2771
PARATYPHOID AND OTHER SALMONELLOSIS	179	187	207	213
AMEBIASIS	25	31	45	39
GIARDIASIS	10	5	4	6
HEPATITIS-A	6	8	11	9
OTHER HELMITIASIS	1	2	1	1
SHIGELLOSIS	0	1	0	0
ASCARIASIS	2	1	1	1
TYPHOID FEVER	1	0	0	0

Source: WEEKLY REPORT OF D SEASES \ EW CASES

There is a risk of exposure to untreated wastewater, which increases the vulnerability of area residents to waterborne diseases. The infrastructure improvements to be implemented under

this Project will reduce this risk and thus prevent potential health threats. According to the World Health Organization (WHO), access to safe water and sanitation facilities, as well as better hygiene practices, can reduce ascariasis-related morbidity by 29% and diarrhea-related morbidity by 32%.[5]

Transboundary Effects

Due to the proximity of this community to the city of San Luis, Arizona, there are frequent border crossings between cities. The proposed Project will have a positive impact on the health of residents of cities such as Yuma, Somerton, Gadsden and the entire region, since the Project will help to reduce the risk of waterborne diseases caused by the lack of wastewater collection and coverage along the Avenidas B. The Project will convey the wastewater to an existing WWTP, which has sufficient capacity to treat the increased flows. The treated effluent will be discharged to a system of infiltration ponds and eventually flow south through the Mesa Arenosa acquifer.

Additionally, the implementation of the proposed Project will reduce the potential for contamination of local and shared water bodies, such as the Colorado River. According to the transboundary environmental assessment, significant impacts are not expected as a result of the Project implementation.

The total estimated cost of the Project is US$6,909,378 which includes the funding for construction, supervision, contingencies and other. The Project meets all BEIF program criteria and has been approved by EPA for a BEIF grant of up to US$3,454,689 for the Expansion of the Wastewater Collection System in Avenidas B to complete the financing of the Project. Table 5 presents a breakdown of total Project costs, as well as the source of funds.

Construction, contingencies, supervision and other	$6,909,378	100.0

Mexico (grant)	$3,454,689	50.0
NADB-BEIF grant	3,454,689	50.0

[5] Source: WHO, Water, Sanitation and Hygiene Links to Health; Facts and figures updated November 2004 (http://www.who.int/water_sanitation_health/publications/facts2004/en/).

BECC published the draft certification proposal for a 30-day public comment period beginning April 4, 2014. The following Project documents were made available for public access:

- Final Design, Wastewater Collection System for Avenidas B in San Luis Rio Colorado, 2013.
- Official letter No. 10-1164-05 issued by SIUE on September 9, 2005 indicates the Project does not require an environmental impact assessment or authorization (MIA).
- A reaffirmed Finding of No Significant Impact (FNSI) issued by EPA on December 19, 2013
- CONAGUA's wastewater collection technical validation (BOO.OO.R03.05/099, May 22nd, 2013)

The public comment period ended on May 4, 2014, with no comments received.

In accordance with the standard operating procedures for the PDAP/BEIF grant program, a broad public outreach effort was conducted for the Project, including activities such as the use of a local steering committee, meetings with local organizations, surveys, and public meetings. Below is a summary of the outreach activities carried out for the Project.

The Local Steering Committee was formally created on October 2, 2013, at a meeting held at OOMAPAS's facilities. At this meeting the Board of Directors for the committee was selected.

The steering committee convenes periodically to help the Project sponsor disseminate information regarding water and wastewater infrastructure works. The committee includes members of civil engineering and economic development associations, as well as city council members. In addition, residents from the benefited areas participate directly with this group as the Project gets closer to being implemented in their specific communities. The Comprehensive Community Participation Plan developed by the Local Steering Committee was approved by the BECC on October 4, 2013.

The Project's technical and financial information was made available to the public for review. The Steering Committee, with assistance from the Project sponsor, prepared a fact sheet and a power point presentation for the Project. Additionally, a survey was disseminated to document the community's concerns or support for the Project. Project information was presented to the community at two public meetings:

- *First Public Meeting*. The first Public Meeting notice was published in the local newspaper "Tribuna de San Luis" on September 9, 2013, and was held on October 17,

2013 at the DIF Municipal facilities. Present at the meeting were City Mayor Leonardo Guillen Medina and General Director from OOMAPAS Erick Merino Payan, as well as members of the Steering Committee. The meeting was attended by more than 140 residents who answered a Project survey. Of these, 100 % said they were able to fully understand the Project and explicitly expressed their support.

- *Second Public Meeting*. A second public meeting was held on February 26, 2014. During the meeting the community was informed of the Project's financial components. The meeting was attended by 106 residents. The Project survey received responses from 100 % of the attendees with full support for the Project.

The steering committee carried out several meeting with social and professional organization to provide project information. Activities conducted by the Project sponsor and Steering Committee demonstrate that the public outreach requirements for the funding programs have been met.

BECC conducted a media search to identify potential public opinion about the Project. The article referenced below describes the results of the public meeting held on February 26th. No other articles related to the project were identified and no opposition to the Project was detected in the media search.

References to the Project were found on the website: http://sanluisrc.gob.mx/?=10445