CERTIFICATION AND FINANCING PROPOSAL

WASTEWATER COLLECTION SYSTEM IMPROVEMENTS IN ÍMURIS, SONORA

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EXECUTIVE SUMMARY

WASTEWATER COLLECTION SYSTEM IMPROVEMENTS IN ÍMURIS, SONORA

Project Summary

Project Name:	Wastewater Collection System Improvements in Ímuris, Sonora.
Project Type (Sector):	Wastewater.
Objective:	To reduce the human health risks associated with waterborne diseases caused by exposure to untreated wastewater and to eliminate potential surface water and groundwater contamination, by rehabilitating the existing wastewater collection system.
Expected Outcomes:	▪ Improve wastewater collection infrastructure and services for all wastewater existing connections and provide access for up to 50 new residential connections. ▪ Eliminate the risk of discharging up to 14.5 liters per second (lps) or 0.33 million gallons per day (mgd) of untreated wastewater to the Babasac River. ▪ Improve the capacity of the utility to operate and maintain the wastewater collection system.
Population to Benefit:	8,750 residents.[1]
Sponsor:	Local water utility, *Organismo Operador Municipal de Agua Potable, Alcantarillado y Saneamiento de Ímuris* (OOMAPAS).
Project Cost:	US$952,000.

Financial Summary

Program:	Community Assistance Program (CAP).
Grant Amount:	US$500,000.
Other Funding Sources:	US$383,000 from the State of Sonora through its state water commission (CEA) and US$69,000 from the Municipality of Imuris.

[1] Source: Mexican national institute of statistics, Instituto Nacional de Estadísticas y Geografía (INEGI), 2020.

CERTIFICATION AND FINANCING PROPOSAL

WASTEWATER COLLECTION SYSTEM IMPROVEMENTS IN ÍMURIS, SONORA

1. PROJECT OBJECTIVE AND EXPECTED OUTCOMES

The proposed project consists of replacing a wastewater main, installing a new force main, improving a lift station and rehabilitating obsolete wastewater collection infrastructure within the urban center, as well as providing equipment for wastewater system operations (the "Project"). The Project sponsor is the local water utility, Organismo Operador Municipal de Agua Potable, Alcantarillado y Saneamiento de Ímuris (OOMAPAS). The purpose of the Project is to improve the wastewater collection and conveyance infrastructure, which will eliminate the risk of discharging 14.5 liter per second (lps) or 0.33 million gallons per day (mgd) of untreated wastewater to the Babasac River.[2] The Project will also provide first-time service to 50 homes and improve the ability of the utility to operate and maintain the wastewater system with the acquisition of a backhoe.

Approximately 8,750 residents in Ímuris are expected to benefit from this Project.

2. ELIGIBILITY

2.1. Project Type

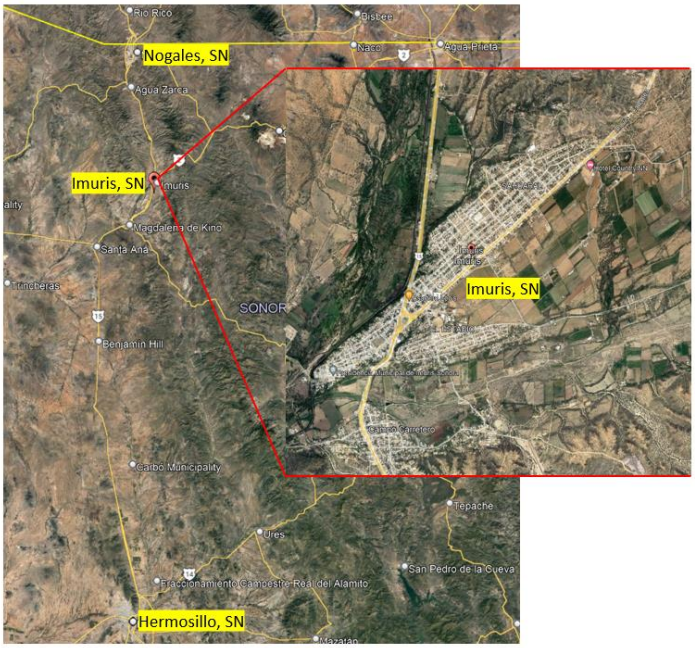
The Project falls within the eligible category of wastewater.

2.2. Project Location

The city of Ímuris is the seat of the municipality of Ímuris and is located in the northern region of the state of Sonora, approximately 42 miles south of Nogales and 122 miles south of Hermosillo. The Project is located 38 miles from the U.S.-Mexico border at the following coordinates: Latitude 30°46'44.84" North and Longitude 110°51'25.83" West. Figure 1 shows the location of Ímuris.

[2] The new wastewater treatment plant receives an average flow of 14.5 lps, which is at risk of being spilled or leaked because of the deteriorated condition of the existing collection system.

Figure 1
PROJECT LOCATION MAP



2.3. Project Sponsor and Legal Authority

The Project sponsor is the local water utility, Organismo Operador Municipal de Agua Potable, Alcantarillado y Saneamiento de Ímuris, Sonora (OOMAPAS or the "Sponsor"). The State Congress of Sonora authorized the creation of OOMAPAS by decree published on July 7, 1994. OOMAPAS is a decentralized entity of the municipality, with legal personality and its own assets, established for the purpose of providing water and wastewater services to the communities located within the municipality of Ímuris, Sonora. OOMAPAS is overseen by a Board of Governors, which is presided over by the mayor of Ímuris and includes representatives from the Mexican National Water Commission (CONAGUA), the Sonora State Water Commission (CEA) and OOMAPAS, among others.

3. CERTIFICATION CRITERIA

3.1. Technical Criteria

3.1.1. General Community Profile

The Project is expected to benefit the residents of the community of Ímuris, Sonora. As reported by the Mexican National Institute of Statistics (INEGI), the population of Ímuris was 8,750 in 2020, which represented approximately 0.2% of the state population. According to data from the 2015 Annual Report on the Status of Poverty and Unmet Social Needs issued

by the National Council for the Evaluation of Social Development Policy (CONEVAL), 42.2% of the population in Ímuris was living below the poverty level, which is higher than the state average of 39%.

The following table summarizes the status of basic public services and infrastructure in Ímuris.

Table 1
BASIC PUBLIC SERVICES AND INFRASTRUCTURE IN ÍMURIS

Water System	
Coverage	98%
Supply source	Local aquifer
Number of connections	2,680
Wastewater Collection	
Coverage	64%
Number of connections	1,742
Wastewater Treatment	
Coverage	100% of wastewater collected
Treatment Plant	Oxidation lagoon with a design capacity of 29.4 lps (0.67 mgd)

Source: OOMAPAS

Local Wastewater Collection and Wastewater Treatment System

OOMAPAS provides water and wastewater services in Ímuris. The existing wastewater collection system reaches approximately 64% of the city's population. The network of pipes operates by gravity and collects approximately 14.5 lps (0.33 mgd) of wastewater, which is treated at the Ímuris Wastewater Treatment Plant (WWTP) constructed by CEA in 2021 with a capacity to treat up to 29.4lps (0.67 mgd).[3]

The Project is designed to address deficiencies in the wastewater collection system and expand coverage to some unserved areas. As part of this effort, OOMAPAS and CEA constructed a force main and made improvements to the only lift station. Additional works to be completed as part of the Project include replacing the El Centro Collector, which is the primary source of untreated discharges reaching the Babasac River, rehabilitating some sewer lines and installing 50 new residential connections. In addition, although not part of this Project, OOMAPAS is working with CEA on final designs to address other system improvement needs, as well as to extend infrastructure to the additional unserved areas once the core infrastructure has been fixed.

[3] The Ímuris WWTP does not have a discharge permit. OOMAPAS has requested a permit from CONAGUA. CONAGUA has sent a letter indicating that it will process the permit once it is able to access the information provided by OOMAPAS in its data systems. The WWTP complies with the previous Mexican standard NOM-001-SEMARNAT-1996 but will have to be upgraded to meet the requirements under the new standard NOM-001-SEMARNAT-2021. Per SEMARNAT guidelines, compliance needs to be achieved by March 11, 2027.

Furthermore, OOMAPAS currently has a roto-rooter and has to rent other equipment as necessary for operational purposes. A backhoe is needed to carry out certain maintenance activities and to make repairs to the wastewater collection system, which would improve the performance and sustainability of the utility.

3.1.2. Project Scope

The Project consists of the following improvements to the wastewater collection system:

- *Force main and lift station*. Installation of 14,406 ft of 12-inch polyvinyl chloride (PVC) pipe and 502 ft of carbon steel pipe for the conveyance line and improvements to the lift station, which include the installation of a sand/grit chamber, three 20-HP pumps, a 46-kilovolt-amp (kVA) electrical substation, an engine control station, valves and fittings, and electrical equipment.
- *El Centro Collector*. Replacement of 4,514 ft of concrete pipe with 10- to 18-inch PVC pipe, along with 680 ft of 10 to 12-inch carbon steel pipe.
- Sewer lines. Replacement of approximately 1,345 ft of concrete pipe with 8-inch PVC pipe, including the installation of 50 new residential connections.
- *Acquisition of equipment*. Purchase of a backhoe for operation and maintenance.

The lift station improvements and force main construction were completed by the State in 2021, after the application for the Project was submitted to NADBank. The Sponsor proposed to finance the rehabilitation of the El Centro Collector and sewer lines, as well as the acquisition of equipment, with a grant from NADBank and its own funds, as required.

Figure 2 shows the location of the El Centro Collector and the lift station, the latter of which was rehabilitated with funds from the state of Sonora.

Figure 2
LOCATION OF El CENTRO COLLECTOR & LIFT STATION

Figure 3 shows the location of the new wastewater force main, also built by the state of Sonora and Figure 4 shows the location of the sewer lines that will be rehabilitated with the Project.

Figure 3
LOCATION OF WASTEWATER FORCEMAIN

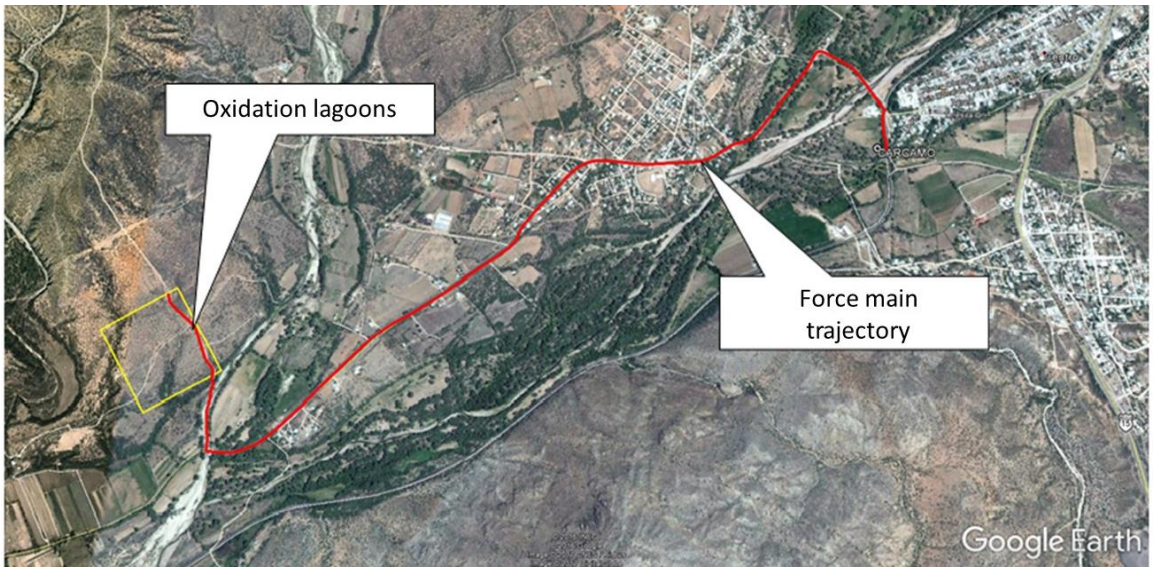


Figure 4
LOCATION OF WASTEWATER LATERALS

3.1.3. Technical Feasibility

The final designs of the proposed infrastructure works were completed in accordance with the recommendations provided in the Water and Wastewater Manuals developed by CONAGUA. The final design documents were reviewed by CONAGUA and NADBank. The CONAGUA regional office in the State of Sonora validated the technical specifications of the Project through official correspondence BOO.803.06.01.-33 dated April 14, 2023.

Pipe diameters were selected using appropriate slopes and velocities to prevent silting, clogging and septic conditions in the pipes, as well as over-excavation or the need for pumping facilities that could increase both capital and operation and maintenance (O&M) costs. Peak and maximum instantaneous flow rates were also taken into consideration to determine the necessary capacity and pipe diameter.

The analysis also considered using various pipe materials in compliance with applicable standards and regulations. High-density polyethylene, PVC, carbon steel and asbestos-cement pipes were evaluated, taking into consideration their characteristics and suitability for the soil type in the Project area. While asbestos-cement pipes may have a longer life cycle, PVC is typically more cost-effective and offers more flexibility for septic conditions. For the proposed Project, PVC pipes were selected, which have proven to be reliable and are frequently used in Sonora wastewater collection systems. Carbon steel pipe was selected for river crossings.

An open-trench method was selected for pipe installation. To prevent untreated wastewater discharges during construction, wastewater flows will be bypassed to an existing manhole downstream when necessary.

With respect to the acquisition of equipment, OOMAPAS obtained three quotes for a new backhoe from dealers in Hermosillo, Sonora. The lowest bid was selected for a New Holland Model B90B (2WD) backhoe, at a cost of US$96,520, plus value added tax. Figure 5 shows the equipment selected.

Figure 5
Equipment Acquisition

3.1.4. Land Acquisition and Right-of-Way Requirements

Rehabilitation of the sewer lines will be carried out within existing municipal easements and rights of way. Replacement of the El Centro Collector required a right of way from the Sonora State Road and Highway Infrastructure Board, which was obtained by OOMAPAS on September 4, 2020, through official letter JCES-0810-2020.

The force main starts at the lift station, runs along the road Camino La Mesa to the intersection with Camino Yerbabuena, where it turns to run along that street until it reaches the site of the oxidation lagoons, all of which is within public rights of way.

No additional land or rights of way need to be acquired for the Project.

3.1.5. Project Milestones

In February 2020, OOMAPAS, in coordination with the State of Sonora, submitted a request for CAP funding to NADBank, which included wastewater treatment, conveyance and collection system improvements. However, essential technical and environmental activities were pending for some components and needed to be addressed for further consideration in the funding process. Therefore, in parallel with the completion of those tasks, the utility, with funding from the State, was able to move forward with the construction of the treatment plant and, soon afterward, with construction of the force main and rehabilitation of the lift station. All three components were completed in January 2021 but only the latter two components are being included as part of the Project.

Once the notice to proceed is issued for the remaining Project components, construction will take approximately six months to complete. Potential factors that could affect the Project completion timeline, such as issues with traffic control, weather or the delivery of materials and accessories, were considered in estimating the construction period.

Table 2 summarizes the Project milestones and their respective status.

Table 2
PROJECT MILESTONES

Key Milestone	Status
Final designs	Completed December 2017
Force main construction	Completed January 2021
Lift station rehabilitation	Completed January 2021
Procurement of remaining components	Anticipated in the 4th quarter of 2023
CAP Construction period	Estimated period of six months

3.1.6. Management and Operation

Management and operation of the proposed Project will be the responsibility of OOMAPAS, which currently serves 2,680 water hookups and 1,742 wastewater connections in Ímuris. In 2021, the utility collected and treated an average of 14.5 lps (0.33 mgd) of wastewater from the urban area. OOMAPAS has several departments including Technical Operations, Administration, and Billing and Collections.

OOMAPAS has an Operation and Maintenance (O&M) Manual that includes the primary tasks needed to ensure proper operation of the new WWTP, the lift station and planned infrastructure improvements. It has a technical team of eleven employees with experience in managing and operating the local wastewater system. The impact of the proposed Project on OOMAPAS' O&M budget and procedures has been reviewed and is considered sustainable.

OOMAPAS has implemented a pretreatment program primarily targeting the disposal of fats, oils and grease to control the quality of wastewater discharges into its wastewater collection system from small business customers and restaurants. Wastewater quality must comply with Official Mexican Standard NOM-002-SEMARNAT-1996, which regulates the quality of wastewater discharged into municipal wastewater collection systems. The pretreatment program also complies with CAP program requirements and the proposed covenants established in the CAP grant agreement for Ímuris.

3.2. Environmental Criteria

3.2.1. Environmental and Health Effects/Impacts

A. Existing conditions

The Ímuris wastewater collection system, built more than 30 years ago, has deteriorated conditions vulnerable to collapse and leaks. In particular, the El Centro Collector experiences overflows during rain events causing discharges of untreated wastewater to the Babasac River, which flows into the Magdalena River. Moreover, according to CONAGUA, residents in unserved areas of the city dispose of their wastewater in rivers or substandard septic tanks, latrines and cesspools**.**

These conditions increase the risk of water contamination, exposure to raw sewage and the vulnerability of the residents to waterborne diseases. Waterborne diseases may be caused by protozoan, viruses, bacteria and intestinal parasites. 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 through pour hygiene habits that contribute to the proliferation of diseases by direct or indirect human contact.

B. Project Impacts

The availability of treatment capacity and rehabilitated infrastructure will improve system reliability by preventing direct discharges and overflows and thus significantly reduce the risk of exposure to untreated wastewater and the potential contamination of surface and groundwater. Additionally, the completion of the force main and improvements to the core wastewater infrastructure will increase opportunities to extend service to unserved areas, beginning with the 50 new connections planned under the current investment.

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

- Improve wastewater collection infrastructure and services for all wastewater connections and provide access to up to 50 new residential connections.
- Eliminate the risk of discharging up to 14.5 lps (0.33 mgd) of untreated wastewater to the Babasac River.
- Improve the capacity of the utility to operate and maintain the wastewater collection system.

C. Transboundary Impacts

No negative transboundary impacts are anticipated due to Project implementation.

3.2.2. Compliance with Applicable Environmental Laws and Regulations

The Project will comply with the following official Mexican standards and regulations:

- *Official Mexican Standard NOM-001-CONAGUA-2011*, which establishes the specifications for hermeticity in water distribution systems, residential water connections and wastewater collection systems, as well as methods for testing hermeticity.
- *Official Mexican Standard NOM-001-SEMARNAT-1996*, which establishes the maximum permissible levels of contaminants in wastewater discharges to national waters and resources.[4]
- *Official Mexican Standard NOM-002-SEMARNAT-1996*, which establishes the maximum permissible levels of contaminants in wastewater discharges to urban or municipal wastewater collection systems.

A. Environmental Clearance

The Project will be built in previously disturbed areas; therefore, SEMARNAT concluded that no environmental clearance is needed for Project implementation, as stated in official letter No. DS-SG-UGA-IA-0596-17 issued on September 1, 2017.

B. Mitigation Measures

Although Project implementation will have no significant adverse effect on the environment, mitigation measures have been established to address temporary and minor adverse impacts during construction and operation of the Project, including:

- The environment and water resources in the Project area may be temporarily impacted by untreated wastewater discharges during construction.
- The local air basin may be temporarily impacted by carbon monoxide, nitrogen oxides and sulfur dioxide emissions due to vehicles and equipment used during construction.
- A temporary increase in soil erosion and particulate matter emissions may be experienced due to construction.
- Surface water resources could be temporarily impacted by stormwater runoff during the construction phase.
- Hazardous waste-such as construction debris, used oil, etc.- may be generated during the construction and operation phases.

[4] The WWTP will have to be upgraded to comply with the new NOM-001-SEMARNAT-2021.

- Noises levels may be elevated during construction activities; however, this impact is short term and will be concentrated in the work area. Potential impacts also include temporary roadway blockages, as well as the presence of workers in the area.

Typical mitigation measures to be implemented include:

- To prevent untreated wastewater discharges during construction, wastewater flows will be bypassed to an existing manhole downstream when necessary.
- Application of water to reduce the emission of dust particles and soil erosion;
- Hay bales or silt fences to be placed along rights of way to prevent erosion and contamination of surface water resources;
- Vehicle tune-ups to reduce emissions and noise effects;
- Construction to be scheduled between 8 a.m. and 5 p.m. to prevent extended disturbance from noise;
- Placement of warning signs to prevent potentially hazardous situations;
- All construction personnel will attend a briefing to familiarize workers with potential construction impacts and mitigation measures.

By following best management practices, the temporary impacts due to construction will be minimized. In addition, OOMAPAS will be responsible for maintaining continuous coordination with the applicable environmental protection agencies and must comply with any water quality requirements, authorization procedures or recommendations that such agencies may issue throughout the life of the Project. Moreover, the long-term results deriving from the implementation of the proposed Project will be positive overall.

C. Pending Environmental Tasks and Authorizations

There are no environmental authorizations pending.

3.3. Financial Criteria

The total estimated cost of the Project is US$952,000, including construction, equipment, supervision and contingencies. The Municipality of Ímuris requested a US$500,000 grant from NADBank through its Community Assistance Program (CAP) to help finance the Project. Funding from CEA was used for the construction of the force main and lift station improvements. Based on the bid results for the remaining components, funds from the Municipality will be available, as necessary, to supplement available grant funds to achieve the full scope of the Project. Table 3 presents a breakdown of total Project costs and the proposed sources of funding.

Table 3
PROJECT INVESTMENT & FINANCING PLAN
(USD)

Uses		Amount	%
Construction		$ 771,000	81.0
Equipment		112,000	11.8
Supervision & contingencies		69,000	7.2
TOTAL		**$ 952,000**	**100.0**
Sources	**Instrument**	**Amount**	**%**
NADBank CAP	Grant	$ 500,000	52.5
CEA	Grant	383,000	40.2
Municipality of Imuris	Equity	69,000	7.2
TOTAL		**$ 952,000**	**100.0**

The proposed Project complies with all CAP criteria.[5] It is located within the U.S.-Mexico border region served by NADBank, is being sponsored by a public-sector entity and is in an environmental sector eligible for NADBank financing. Additionally, as a wastewater collection project, it is considered a priority under the CAP program.

Based on the financial analysis conducted by NADBank, the Sponsor and the Municipality of Imuris lack the administrative and financial capacity to comply with all legal and regulatory requirements to access debt in a timely manner.

4. PUBLIC ACCESS TO INFORMATION

4.1. Public Consultation

NADBank published the draft certification and financing proposal for a 14-day public comment period beginning on August 22, 2023. The following Project documentation is available upon request:

- Technical validation issued by CONAGUA for the El Centro Collector and the downtown sewer lines through official letter No. BOO.803.06.01.-33 dated April 14, 2023.
- Environmental clearance decision issued by SEMARNAT through official letter No. DS-SG-UGA-IA-0596-17 on September 1, 2017.
- Request for Discharge Permit and compliance with NOM-001-SEMARNAT-2021 from Sponsor through official letter DG-00M-IMSON0045-2023 dated March 22, 2023.
- Response from CONAGUA regarding discharge permit request through official letter No. BOO.803.-216 dated May 22, 2023.

[5] The Sponsor applied for CAP funding and the project was developed under the previous program guidelines dated April 2020.

4.2. Outreach Activities

The Sponsor reported on Project progress at several monthly meetings of its Board. Those meetings were open to the public, and their agendas were published in advance.

NADBank conducted a media search to identify potential public opinion about the Project. No reference to the Project was found.

The activities carried out by the Project Sponsor demonstrate that the public has received periodic information regarding Project implementation. The Project Sponsor informed NADBank that no comments expressing concern about the Project have been received, and there has been no public opposition to the Project.