



CERTIFICATION AND FINANCING PROPOSAL

WASTEWATER COLLECTION SYSTEM IMPROVEMENTS IN CIUDAD JUAREZ, CHIHUAHUA

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EXECUTIVE SUMMARY

WASTEWATER COLLECTION SYSTEM IMPROVEMENTS FOR CIUDAD JUAREZ, CHIHUAHUA

Project: The proposed project consists of replacing deteriorated sewer mains in the north service area of the wastewater collection system in Ciudad Juarez, Chihuahua (the “Project”). The improvements include the replacement of approximately 18,540 meters (60,827 feet) of wastewater collection lines and construction of new sedimentation boxes.

Objective: The purpose of the Project is to reduce the human health risks associated with waterborne diseases caused by exposure to untreated wastewater and eliminate potential surface and groundwater contamination by replacing deteriorated wastewater infrastructure prone to leaks and failure.

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

- Improve wastewater collection services for approximately 73,690 existing residential wastewater connections located in the northwest area of the city, benefitting about 246,860 residents.¹
- Reduce the risk of pipeline failures resulting in untreated or inadequately treated wastewater discharges to the Rio Grande River, which would prevent:
 - Approximately 1,000 liters per second (lps) or 22.8 million gallons per day (mgd) of wastewater discharges.²
 - Transboundary wastewater flows to the U.S.

Population to Benefit: 246,860 residents of Ciudad Juarez, Chihuahua.

Project Sponsor: Local water utility, *Junta Municipal de Agua y Saneamiento de Ciudad Juárez (JMAS)*.

¹ Source: JCAS, Final Design of the Wastewater Collection System Improvements for Juarez, Chihuahua by JCAS (2021). Estimated based on a population density of 3.35 persons per household, the generation of 280 liters per capita per day (74 gpd) of wastewater and a total of 73,690 connections.

² Source: NADB, Technical Memorandum compliant with the Border Environment Infrastructure Fund Requirements for a Categorical Exclusion Application, 2021.

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Estimated Construction Cost: US\$26,448,300.³

NADB Grant: US\$11,462,100 from the Border Environment Infrastructure Fund (BEIF) funded by the U.S. Environmental Protection Agency (EPA).

NADB Loan: Up to US\$15,000,000.⁴

Uses and Sources of Funds:
(US\$)

| Uses | Amount | % |
|-----------------------|----------------------|--------------|
| Construction* | \$ 26,448,300 | 100.0 |
| TOTAL | \$ 26,448,300 | 100.0 |
| Sources | Amount | % |
| Mexican funds ** | \$ 14,986,200 | 56.7 |
| NADB-BEIF (EPA grant) | 11,462,100 | 43.3 |
| TOTAL | \$ 26,448,300 | 100.0 |

* Estimate includes 16% value-added tax, supervision, and contingencies.

**Federal, state, and local participation will conform to the operational guidelines of the funding programs to be used. Sponsor may contract debt to provide a portion of these funds.

Project Status:

| Key Milestones | Status |
|----------------------------------|----------------------------------------|
| Environmental clearance – U.S. | Completed |
| Environmental clearance - Mexico | Completed |
| Final design | Completed |
| Procurement–Mexican funds | To begin in the first quarter of 2022 |
| Procurement-BEIF | To begin in the second quarter of 2022 |
| Construction period | Estimated period of 60 months |

³ Considers an exchange rate of US\$18.50.

⁴ The proposed NADB loan is not considered an allocated funding source for the current financial structure; however, it is included as a contingency source for funding the Project, in the event that the funding anticipated from Mexican federal, state or local sources may not be available.

CERTIFICATION AND FINANCING PROPOSAL

WASTEWATER COLLECTION SYSTEM EXTENSION AND IMPROVEMENTS FOR CIUDAD JUAREZ, CHIHUAHUA

1. PROJECT OBJECTIVE AND EXPECTED OUTCOMES

The proposed project consists of replacing approximately 18,540 meters (60,827 feet) of deteriorated sewer mains within the north service area of the wastewater collection system (WWCS) in Ciudad Juarez, Chihuahua (the "Project"), which will improve service for approximately 73,690 existing residential wastewater connections. The purpose of the Project is to reduce the human health risks associated with waterborne diseases caused by exposure to untreated wastewater and to eliminate potential surface and groundwater contamination by reducing the risk of pipe failure and thus prevent discharges of approximately 1,000 lps or 22.8 gallons per day (gpd) of untreated wastewater.

2. ELIGIBILITY

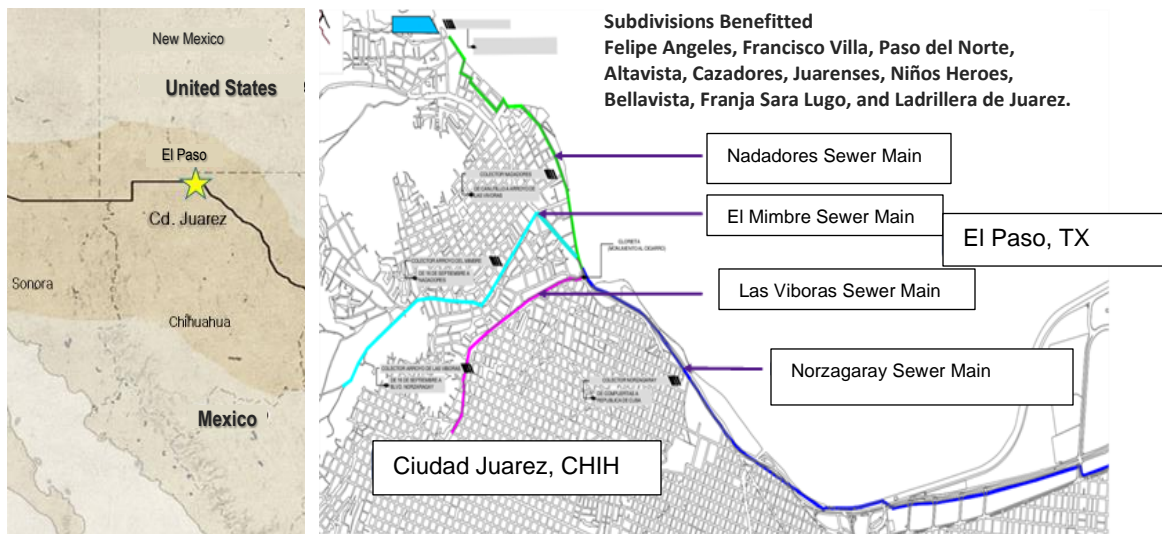
2.1. Project Type

The Project falls within the eligible category of wastewater collection and treatment.

2.2. Project Location

Ciudad Juarez is located in the northern region of the state of Chihuahua, adjacent to the Rio Grande and directly across the border from El Paso, Texas. The Project will be carried out in the northwestern area of the city at the following geographical coordinates: latitude 31°44'47.275" N and longitude 106°29'06.067" W, at an approximate mean elevation of 3,705 ft above sea level. Figure 1 shows the location of the community and the Project.

**Figure 1
 PROJECT LOCATION MAP**



2.3. Project Sponsor and Legal Authority

The public-sector sponsor is the local water utility, *Junta Municipal de Agua y Saneamiento de Ciudad Juárez* (JMAS or the “Sponsor”). JMAS was established by a decree issued by the State Congress of Chihuahua and published in the Official Gazette on December 30, 2017. In accordance with Article 64, section XLI, of the Political Constitution of the State of Chihuahua, JMAS is a decentralized agency of the state water agency, *Junta Central de Agua y Saneamiento* (JCAS), and has legal personality and its own assets for providing water and wastewater services to the communities located within the municipality. Pursuant to the provisions of the Chihuahua State Water Law, the main objective of JMAS is to provide, conserve and manage water and wastewater services in the municipality, as well as promote the construction of related infrastructure.

3. CERTIFICATION CRITERIA

3.1. Technical Criteria

3.1.1. General Community Profile

The Project is expected to benefit the estimated 246,860 residents within the north wastewater service area of Ciudad Juarez. As reported by the Mexican national statistical institute, INEGI, the population of the municipality of Juarez was 1,501,551 in 2020, which represented approximately 40% of the state population, making it the largest population in the state of Chihuahua. According to INEGI, the municipality of Juarez grew at an average annual rate of 1.2% from 2010 to 2020. INEGI reported that in 2020 52% of the population in Juarez was economically active.

According to data in the Annual Report on Poverty Conditions and Social Needs, issued by the National Council for Evaluation of Social Development Policy (CONEVAL), in 2015, 26.4% of the residents of the municipality of Juarez live below the poverty level; in comparison, 26.3% of the state population lives below the poverty level.⁵

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

Table 1
BASIC PUBLIC SERVICES AND INFRASTRUCTURE*

| Water | |
|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Coverage: | 99% |
| Water supply source: | Groundwater wells |
| Number of hookups: | 474,203 |
| Wastewater Collection | |
| Coverage: | 98% |
| Number of connections: | 472,203 |
| Wastewater Treatment | |
| Coverage: | 91.5% ⁶ |
| Treatment facilities: | 5 activated sludge treatment plants (Anapra, North, South, Valle de Juarez (South-South) and Laguna de Patos) with a combined capacity of 4,232 lps (96.6 mgd). Current flows total 3,264 lps (74.5 mgd). |

* Source: JMAS, September 2021

Local Water and Wastewater System

JMAS operates the water and wastewater systems serving Ciudad Juarez. The water supply for the system is extracted through 172 groundwater wells and provides drinking water service to approximately 99% of the homes or 474,203 residential connections. The installed capacity of the drinking water supply is 7,600 lps (173.4 mgd). JMAS has two sources of water supply: the Hueco and Mesilla aquifers. The drinking water system provides adequate disinfection, and the distributed water meets the quality requirements established in the Mexican Standard NOM-127-SSA-1994.

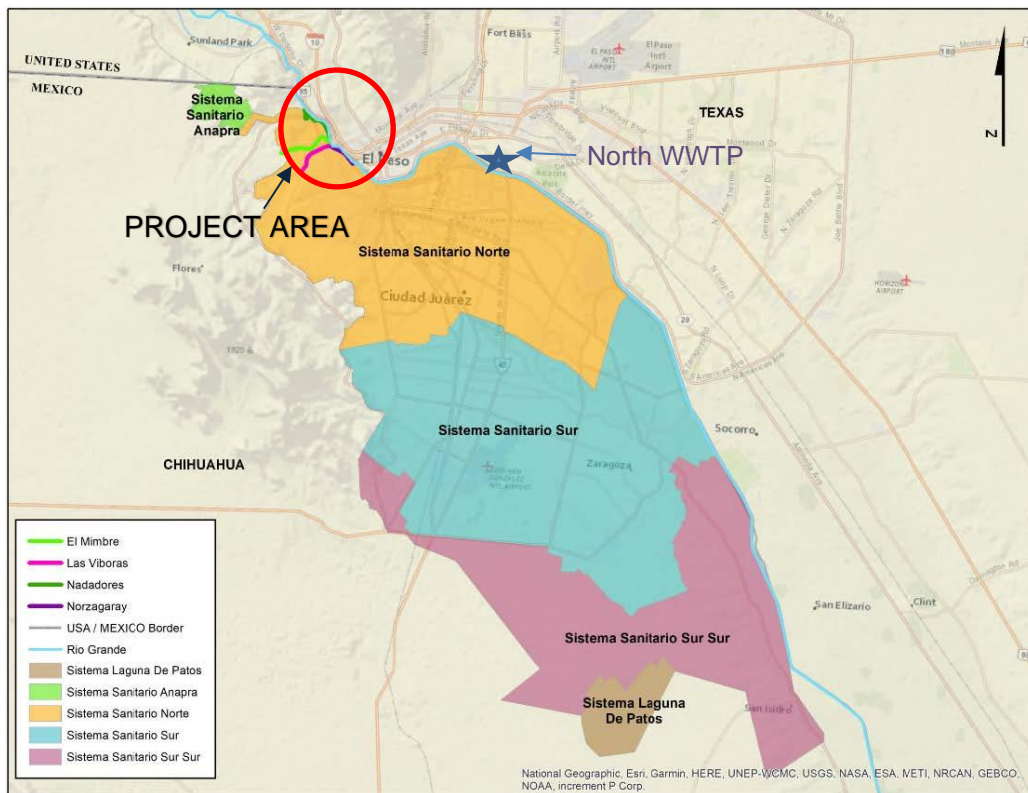
JMAS reports that approximately 98% of homes in its service area are connected to the wastewater collection system, which is segmented into five main wastewater service areas: Anapra, North, South, Valle de Juarez (South-South) and Laguna de Patos.

⁵ Source: CONEVAL, 2018. A person is in a situation of poverty when he has at least one social deprivation and does not have enough income to meet his needs.

⁶ The total Wastewater Treatment Plants (WWTP) capacity available exceeds the total current flow; however, in specific terms the Valle de Juarez (South-South) WWTP is undersized for the volume of flows received by the plant and is bypassing 276 lps (6.3 mgd).

Most of the local wastewater collection system operates by gravity; however, to provide the necessary hydraulic load for wastewater treatment, the city relies on approximately 26 lift stations to convey wastewater flows to the five available treatment facilities. The lift stations are working properly and will not require improvements during the Project. The Valle de Juarez (South-South) WWTP is currently receiving flow volumes that exceed its hydraulic capacity, and untreated flows are being bypassed. Although not a component of this Project, to be eligible for funding for the proposed Project, the Sponsor must present a plan and timeline for addressing the issues at the Valle de Juarez (South-South) treatment facility. Figure 2 shows the WWCS service areas and the location of the Project.

Figure 2
PROJECT AREA MAP AND WASTEWATER SERVICE AREAS



Source: NADB, Technical Memorandum compliant with the Border Environment Infrastructure Fund Requirements for a Categorical Exclusion Application, 2021.

The wastewater collection system in the Project area is insufficient to support wastewater collection and conveyance needs; therefore, a rehabilitation project has been proposed in order to upgrade the system. The Project proposes the rehabilitation of four sewer mains: Las Viboras, El Mimbres, Nadadores and Norzagaray. These sewer mains were constructed of reinforced concrete pipe (RCP) and have been in service for approximately 40 years, which is beyond the expected useful life of this type of infrastructure.

The four sewer mains are part of the wastewater system within the North Wastewater Service Area and discharge into the North WWTP. Due to topographic conditions in the service area, the sewer system accepts a significant amount of sediment, trash and debris. Additionally, infiltration and inflow from rain events at rapid velocities often clog and break the pipelines within the system. These conditions have resulted in sewage overflows onto the streets of the Project area, which form streams that flow into the Rio Grande. The sedimentation problem is even worse where manhole covers have been stolen and sold as scrap metal, allowing sand and particulate matter from erosion to fill the pipelines. Debris and trash are also caught in the open manholes, becoming a hazard for vehicular traffic within the Project area.

Additionally, the WWCS within the Project area does not have a grit collection or screening system, which allows sediment to be deposited in the pipelines, reducing capacity and clogging the system. Wastewater spills and exposure have been a documented occurrence throughout the Project area for years. In 2017 and 2018, the Mexican Section of the International Boundary and Water Commission (CILA) compiled reports on incidences in which raw wastewater was spilled or discharged due to pipeline failure. The recurring wastewater spills and runoff pose an immediate and dangerous environmental and public health risk, establishing a clear need for the proposed Project in order to prevent untreated wastewater discharges from flowing directly into the Rio Grande, a shared binational water body and source of drinking water.

Because of these conditions, coupled with the risk to residents of direct contact with raw sewage resulting from sewer system failures, the Project was selected to receive grant funding from the Project Development Assistance Program (PDAP) and Border Environmental Infrastructure Fund (BEIF), which are both funded by the U.S. Environmental Protection Agency (EPA) and managed by NADB.

All components of this Project will be owned and operated by JMAS as part of its WWCS. The wastewater generated and collected is conveyed to the North WWTP for treatment through an activated sludge process. This facility has an installed capacity of 2,500 lps (57 mgd), which is sufficient to treat current wastewater flows, as well as any additional flows that may result from the planned improvements. According to JMAS, the North WWTP complies with the quality standards required for the final disposal of its treated effluent in accordance with the discharge permit issued by the Mexican National Water Commission (CONAGUA).⁷

3.1.2. Project Scope

The Project consists of improvements to the existing wastewater collection infrastructure in the northwest area, including the total replacement of approximately 18,540 meters (60,827 feet) of wastewater collection lines and the installation of new sedimentation boxes. The main components are:

- Norzaqaray Sewer Main: Replacement of 5,420 meters (17,782 feet) of polyvinyl chloride (PVC) and high-density polyethylene (HDPE) pipeline with diameters ranging from 18 to

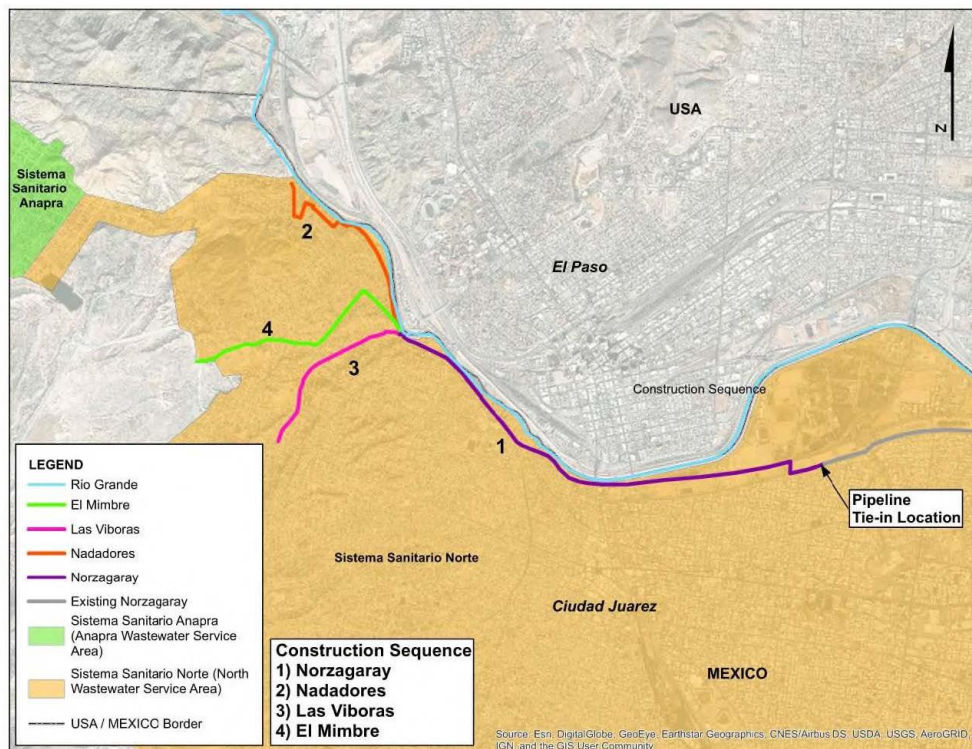
⁷ Permit #06CH1100312/24HMG07, issued on by CONAGUA

60 inches and the construction of two sedimentation boxes for an estimated cost of US\$15,574,100.⁸

- ***Las Viboras Sewer Main:*** Replacement of 3,840 meters (12,598 feet) of PVC and HDPE pipeline with diameters ranging from 8” to 48” and the construction of two sedimentation boxes for an estimated cost of US\$4,435,500.
- ***El Mimbres Sewer Main:*** Replacement of 4,800 meters (15,748 feet) of HDPE pipeline with diameters ranging from 8” to 42” and the construction of two sedimentation boxes for an estimated cost of US\$4,303,100.
- ***Nadadores Sewer Main:*** Replacement of 4,480 meters (14,698 feet) of PVC and HDPE pipeline with diameters ranging from 8” to 30” and construction of PVC manholes and two sedimentation boxes for an estimated cost of US\$2,135,600.

Figure 3 provides a schematic layout of the Project.

Figure 3
WASTEWATER COLLECTION SYSTEM IMPROVEMENTS LAYOUT



Source: Technical Memorandum Compliant with the Border Environment Infrastructure Fund Requirements of a Categorical Exclusion Application. NADB. (2021)

⁸ All estimated construction costs include 16% value-added tax, supervision, and contingencies.

BEIF funds will be used for rehabilitation of the Norzagaray sewer main and related supervision services. Mexican funds will be used for similar works related to the Norzagaray sewer main, as well as for the three remaining sewer mains under the Project.

JMAS plans to begin construction of the first phase of the Norzagaray sewer main in the first quarter of 2022 and has already obtained funding for the rehabilitation of approximately 800 meters (2,625 feet) of pipeline. Construction of the second phase is expected to be funded with the BEIF grant, and the subsequent phases will be funded with federal, state, and local resources.

The overall construction of the Project will be segmented into five bid packages, four of which will be covered with Mexican funds allocated over four fiscal years and one package will be supported by the BEIF grant. Shall Mexican funding fall short in any given year, the NADB loan herein proposed could bridge or provide long term financing for the Project, as needed. This loan will comply with all requirements under Federal Fiscal Discipline Law.

3.1.3. Technical Feasibility

As part of the development of the Project, planning documents were completed, which included an analysis of alternatives to select the appropriate materials for the Project components and determine the feasibility of the wastewater system improvements. The analysis considered the No Action alternative, and two alternatives with different pipes and diameters. The alternatives reviewed considered using the current layout of the existing lines and installing connections to the wastewater system at existing connection points.

The no-action alternative was rejected since it fails to address the contamination and health risks created by aging and failing wastewater collection infrastructure.

Once the No Action alternative was eliminated, collection system alternatives were evaluated taking into consideration the following factors:

- Constructability;
- Capital cost;
- Operation and maintenance (O&M) cost;
- Material and equipment reliability;
- Environmental impact;
- Social/community acceptance;
- Topography;
- System reliability;
- Right-of-way and easement requirements;
- Pavement removal and replacement; and
- Technology and sustainable practices

Since the Project consists of rehabilitating the existing wastewater collection system and the current layout of the lines will be maintained, sewer pipe diameters were calculated using slopes and velocities aimed at preventing silting, septic conditions and over-excavation, to ensure that the wastewater collection system in the Project area remains a gravity-based system. Additionally, current flows and estimated growth in the area were taken into consideration. Pipe material options reviewed included HDPE and PVC. Both materials were selected as suitable materials to replace the wastewater lines.

The final designs for replacing the sewer mains were developed by JMAS in accordance with the technical specifications established in the Water and Wastewater Manuals developed by CONAGUA and include consideration of green building practices as part of the construction specifications. The final designs were reviewed by CONAGUA, JCAS and NADB. JCAS, as the state regulatory agency for water in Chihuahua, issued its technical validation of the Project designs through official letter No. DT312/2021 dated March 9, 2021. The Regional Office of CONAGUA in Monterrey, Nuevo Leon, validated the technical documents through official letters No. BOO.811.06-470(21), BOO.811.06-471(21), BOO.811.06-472(21) and BOO.811.06-473(21) issued on November 5, 2021.

3.1.4. Land Acquisition and Right-of-Way Requirements

All the sewer mains included in the Project scope will be replaced within public easements and rights-of-way. No additional land or rights-of-way need to be acquired for the Project.

3.1.5. Project Milestones

Based on the nature of the Project, where all works are expected to be implemented within existing rights of way for the replacement of existing pipe, a consultation with the Ministry of Urban Development and Ecology of the State of Chihuahua resulted in a decision whereby additional environmental studies or clearance activities were not required.⁹ The evaluation of alternatives to resolve the deteriorated pipe conditions was presented in a Technical Memorandum. Based on this report, EPA issued a Categorical Exclusion on May 25, 2021. The final designs were completed by the Project Sponsor in September 2021.

Bidding for construction of the first segment of the Norzagaray sewer main funded by JMAS is expected to begin in the first quarter of 2022. A second segment of the Norzagaray sewer main to be implemented with the BEIF grant is expected to be procured in the second quarter of 2022. The construction of the entire Project is expected to take approximately 60 months from the first procurement process. Issues that could affect the construction schedule are related to procurement, weather and delivery of construction materials, as well as the timing of the availability of Mexican funding.

Table 2 provides a summary of the Project milestones and their respective status.

⁹ Official Letter No DOEIA.IA.1577 / 2019 from the Ministry of Urban Development and Ecology of the State of Chihuahua, dated June 14, 2019.

**Table 2
 PROJECT MILESTONES**

| Key Milestones | Status |
|----------------------------------|----------------------------------------|
| Environmental clearance – U.S. | Completed on May 25, 2021 |
| Environmental clearance – Mexico | Completed on June 14, 2019 |
| Final designs | Completed on September 2021 |
| Procurement – JMAS | To begin in the first quarter of 2022 |
| Procurement - BEIF | To begin in the second quarter of 2022 |
| Construction period | Estimated period of 60 months |

3.1.6. Management and Operation

The management and operation of the proposed Project will be the responsibility of JMAS, which currently serves a total of 474,203 water hookups and 472,203 wastewater connections within the city. The Utility is organized in various departments, including Operation, Maintenance and Management, providing consistency to operations and overall performance.

As part of the Project evaluation process for BEIF resources, NADB performed an analysis of the Sponsor’s financial statements to determine its general financial health. Over the period analyzed, the Sponsor managed to generate annual revenue sufficient to provide adequate cash flows for the proper operation and maintenance of its infrastructure. Over the past five years, the Sponsor has increased user rates by a total of 8.7%, while operating expenses increased by 4.4%. As a result, JMAS has seen an improvement in its liquidity ratios.

The impact of the proposed Project on the operations and maintenance budget and procedures was also reviewed. Based on the results, the current budget appears to be financially viable, and the Project should result in a decrease in expenses related to the continuous maintenance currently required for the deteriorated infrastructure to be replaced by the Project. To ensure that the proposed Project does not weaken JMAS’ current financial position, the Sponsor will have to fund two reserve accounts, one for operation and maintenance and the other for repair and replacement of the Project components.

JMAS has an Operation and Maintenance Manual that includes routine tasks, as well as procedures to address unexpected conditions and ensure the proper operation of the system. Its staff has the necessary experience to operate the wastewater collection system and receives training on an annual basis. The utility operates in a four-crew structure and owns maintenance equipment, such as a backhoe, vacuum truck and a truck mounted with a probing rod for sewer inspections. The North, South, and Valle de Juárez (South-South) treatment plants are operated through concessional contracts.

The North WWTP has sufficient capacity to handle all existing and potential flows collected with the implementation of the Project. Additionally, JMAS has been successful in maintaining the quality of non-residential wastewater discharges to the collection system that comply with the

parameters established in Official Mexican Standard NOM-002-SEMARNAT-1996. This situation allows for the regular and consistent operation of the WWTP.

3.2. Environmental Criteria

3.2.1. Environmental and Health Effects/Impacts

A. Existing Conditions

In the northwest area of the city, a large part of the wastewater sewer mains has exceeded their useful life and shows signs of deterioration. Current conditions result in continuous leaks or seepage, and the utility frequently needs to address more significant pipe breaks and perform significant maintenance tasks. The poor condition of the existing wastewater sewer mains in the Project area could result in significant health and safety hazard for the public.

Surface pooling and overflows of untreated wastewater create a transmission pathway for pathogenic microorganisms associated with fecal matter that causes waterborne diseases in humans. An individual may become ill after contact with the contaminated water containing pathogens; eating uncooked foods that have had 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 disease statistics for the Ciudad Juarez Municipality.

Table 3
WATERBORNE DISEASE STATISTICS FOR CIUDAD JUAREZ, CHIHUAHUA

| Disease | Number of Cases per Year | | | | |
|--------------------------------------------------------------|--------------------------|--------|--------|--------|--------|
| | 2016 | 2017 | 2018 | 2019 | 2020 |
| Intestinal infections by other organisms and the ill-defined | 42,761 | 46,917 | 45,136 | 40,033 | 10,378 |
| Helminthiasis | 522 | 726 | 618 | 405 | 117 |
| Intestinal amebiasis | 224 | 257 | 205 | 201 | 132 |
| Other salmonellosis | 202 | 210 | 222 | 191 | 59 |
| Other infections due to protozoan parasites | 59 | 72 | 65 | 35 | 15 |
| Hepatitis | 42 | 48 | 15 | 55 | - |
| Giardiasis | 21 | 10 | 16 | 24 | 19 |
| Paratyphoid | 16 | 4 | 5 | 42 | 15 |
| Amebic liver abscess | 3 | 2 | 6 | 8 | 6 |
| Ascariasis | 2 | 2 | 13 | 5 | 4 |
| Shigellosis | 1 | 2 | 6 | 3 | 4 |
| Enterobiasis | 1 | 1 | 6 | - | 2 |
| Taeniasis | 1 | 1 | - | - | - |
| Enteritis | 1 | - | 18 | 8 | 6 |
| Typhoid fever | 33 | 44 | 77 | 45 | 18 |

Source: Local Epidemiologist.

B. Project Impacts

The Project will improve the wastewater collection system and help prevent any contamination to the ground and surface water by replacing wastewater sewer main lines that have exceeded their useful lives. Wastewater will be collected and conveyed to North WWTP for treatment, a facility that complies with all regulatory requirements. Specifically, the Project is expected to generate environmental and human health benefits related to the following outcomes:

- Improve wastewater collection services for 73,690 existing residential connections located in the northwest area of the city, benefitting approximately 246,860 residents.¹⁰
- Reduce the risk of pipeline failures resulting in untreated or inadequately treated wastewater discharges to the Rio Grande, which would prevent:
 - Approximately 1,000 liters per second (lps) or 22.8 million gallons per day (mgd) of wastewater discharges.¹¹
 - Transboundary wastewater flows to the U.S.

To enhance the benefits of the Project, all reasonable applications of green building practices, as defined by the EPA Border Water Infrastructure Program, were taken into consideration during the planning and final design phases. The wastewater sewer mains have been designed for gravity flow, which eliminates the need for external energy inputs.

C. Transboundary Impacts

Implementation of the proposed Project will reduce the potential for contamination of shared waterbodies, including the Rio Grande. Moreover, due to the proximity of El Paso, Texas, there are frequent border crossings between these two communities. The rehabilitation of wastewater collection infrastructure will have a positive impact on the health of residents in this neighboring city and surrounding communities, since these actions will help reduce the risk for waterborne diseases deriving from exposure to untreated wastewater. Additionally, the Project will protect the Hueco and Mesilla Bolsons, thus contributing to regional efforts to protect and maintain groundwater sources.

According to the Texas Surface Water Quality Standards for the Rio Grande Basin, the segment 2308 RG extends from the Riverside Diversion Dam in El Paso County to the International Dam in El Paso County. This segment is the channelized portion of the river that runs for 12 miles through downtown El Paso. The Texas Clean Rivers Program (CRP) of the U.S. Section of the International Boundary and Water Commission (USIBWC) is studying a reclassification of the waterbody as intermittent rather than perennial. According to the 2020 Basin Summary Report for the Rio Grande Basin in Texas, Segment 2308 is impaired for bacteria.¹² There are also water quality concerns for ammonia, chlorophyll, and total phosphorus, as shown in Figure 4.

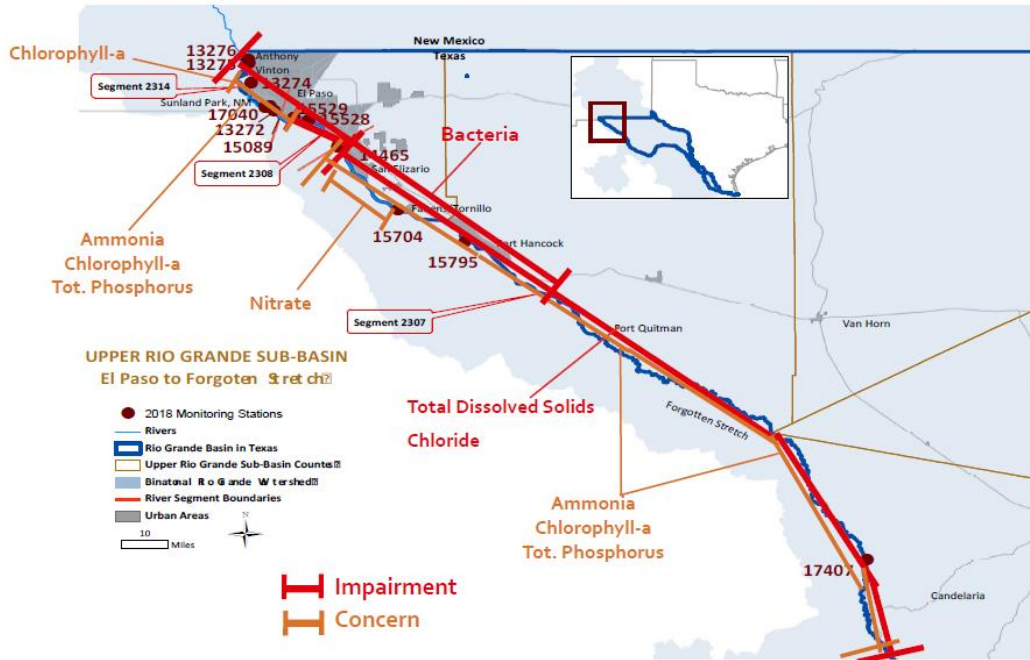
¹⁰ Source: JCAS, Final Design of the Wastewater Collection System Improvements for Juarez, Chihuahua, 2021.

Estimate based on a population density of 3.35 persons per household, the generation of 280 liters per capita per day (74 gpd) of wastewater and a total of 73,690 connections.

¹¹ Source: NADB, Technical Memorandum compliant with the Border Environment Infrastructure Fund Requirements for a Categorical Exclusion Application, 2021.

¹² Source: USIBWC, 2020 Basin Summary Report for the Rio Grande Basin in Texas.

Figure 4
 RIO GRANDE WATER QUALITY IN SEGMENT 2308 RG



3.2.2. Compliance with Applicable Environmental Laws and Regulations

The National Water Law is the primary law regulating water usage and public utilities. Wastewater systems are regulated by official Mexican standards. The Project will comply with the following official Mexican standards and regulations:

- *Official Mexican Standard NOM-002-SEMARNAT-1996*, which establishes the maximum permissible levels of contaminants for wastewater discharges into urban or municipal wastewater collection systems.
- *Official Mexican Standard NOM-001-CONAGUA-2011*, which establishes 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 for wastewater discharges to national waters and resources.

Regular monitoring and inspections should be performed at all point discharges to verify compliance with the requirements established in the utility’s permit.

A. Environmental Clearance

Pursuant to the provisions of the General Law of Ecological Balance and Environmental Protection of the State of Chihuahua, the wastewater system rehabilitation project to be implemented in the

northwest area of Ciudad Juarez, Chihuahua, does not require the development of an Environmental Assessment, as the tasks will be carried out in an urban area. The foregoing was determined by the Ministry of Urban Development and Ecology of the State of Chihuahua, which issued Memorandum No. DOEIA.IA.1577/2019 on June 14, 2019, stating that the Project does not require any environmental authorization.

To be eligible for a BEIF grant supported by federal appropriations to EPA's U.S.-Mexico Border Water Infrastructure Program, the transboundary impacts of the Project must be examined in compliance with the U.S. National Environmental Policy Act (NEPA). To meet this requirement, a Technical Memorandum Compliant with the Border Environment Infrastructure Fund for the Requirements of a Categorical Exclusion Application was developed and submitted to EPA for its review and ruling. The Technical Memorandum addresses the environment impacts resulting from the implementation of the Project, including:

- Air quality;
- Biological resources;
- Socioeconomics, environmental justice, and health and safety risks;
- Hazardous materials, solid waste and pollution prevention;
- Historical, architectural, archeological and cultural resources
- Land use;
- Noise and noise-compatible land use;
- Rio Grande water quality information; and
- Cumulative impacts.

Based on the findings and conclusions of the Technical Memorandum and planning documents, EPA Region 6 prepared a Categorical Exclusion notice. After a 14-day public comment period, EPA issued the Categorical Exclusion on May 25, 2021, establishing that the Project will not result in any significant negative impacts to the environment in the U.S.-Mexico border area.

B. Mitigation Measures

The agencies that evaluated the Project determined that its implementation would not result in any significant negative impacts to the environment; therefore, no mitigation measures were established to address the negative environmental impacts that could be generated during the construction and operation of the Project. However, the Project design documents address potential temporary and minor environmental impacts that may arise, including the following:

- The local air basin may be temporarily impacted by carbon monoxide, nitrogen oxides and sulfur dioxide emissions released by vehicles and equipment used during construction.
- A temporary increase in dust emissions may be experienced due to the construction.
- Hazardous waste—such as used oil—may be generated during the construction phase.
- Surface water resources could be temporarily impacted by storm water runoff during the construction phase.

- Noise 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:

- Application of water to reduce the emission of dust particles and soil erosion;
- Construction to be scheduled between 8 a.m. and 5 p.m. to prevent extended disturbances from noise;
- Vehicle tune-ups to reduce emissions;
- Placement of warning signs to prevent potentially hazardous situations; and
- Hay bales or silt fences may be placed along rights of way to avoid contaminants to surface water resources.

By following these Best Management Practices, the temporary impacts due to construction will be minimized. Consequently, the long-term results from the implementation of the proposed Project will be positive overall. Moreover, JMAS 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 these agencies may issue throughout the life of the Project.

C. Pending Environmental Tasks and Authorizations

There are no environmental authorizations pending.

3.3. Financial Criteria

The total estimated cost of the Project is \$26,448,300, which includes construction and value-added taxes (VAT), as well as supervision and contingencies. The Sponsor requested a BEIF grant to support the implementation of the Project and improve the affordability of the investment. BEIF program criteria require that the proposed Project:

- address priority human health and environmental issues with community water infrastructure;
- provide a U.S.-side benefit;
- consider maximum funding from other sources;
- consider adequate operation and maintenance provisions;
- target improvements to water quality; and
- be implemented only in jurisdictions that aim to prevent developments that lack access to water and wastewater infrastructure.

Based on a thorough analysis of both the Project and the Sponsor, NADB has determined that the Project meets all BEIF program criteria and is recommending that the EPA approve a BEIF grant for up to \$11,462,100 for its construction. Table 4 presents a breakdown of total Project costs, as well as the sources of funding.

**Table 4
 USES AND SOURCES OF FUNDS
 (USD)**

| Uses | Amount | % |
|-----------------------|----------------------|--------------|
| Construction* | \$ 26,448,300 | 100.0 |
| TOTAL | \$ 26,448,300 | 100.0 |
| Sources | Amount | % |
| Mexican funds** | \$ 14,986,200 | 56.7 |
| NADB-BEIF (EPA grant) | 11,462,100 | 43.3 |
| TOTAL | \$ 26,448,300 | 100.0 |

* Estimated construction costs include 16% value-added tax (VAT), supervision and contingencies.
 **Federal, State, and local participation will conform with the latest version of the operational guidelines of the programs to be used. Sponsor may contract debt to provide a portion of these funds.

The EPA requires that every grant dollar awarded to projects in Mexico through BEIF, be matched with funding from Mexican sources. As indicated in the above table, total funding from Mexican sources for this Project is estimated to cover approximately 56.7% of the Project cost.

In addition to the funding structure presented above, NADB is seeking approval of a loan of up to US\$15,000,000 or an amount equivalent in Mexican pesos. The proposed NADB loan is included as a contingency source for funding the Project, in the event that the funding anticipated from Mexican federal, state or local sources is not available. This loan, if needed, will comply with all requirements under Federal Discipline Law.

4. PUBLIC ACCESS TO INFORMATION

4.1. Public Consultation

NADB published the draft certification proposal for a 30-day public comment period beginning December 17, 2021. The following Project documentation was available upon request:

- Final Design of the Wastewater Collection System Improvements for Juarez, Chihuahua by JMAS (2021);
- Technical Memorandum Compliant with the Border Environment Infrastructure Fund Requirements of a Categorical Exclusion Application, 2021;
- Categorical Exclusion for the Rehabilitation of the Wastewater Sewer Mains in the Northwest Area of Ciudad Juarez, Chihuahua, Mexico, issued by EPA on May 25, 2021;

- Official Letter No. DOEIA.IA.1577/2019, dated June 14, 2019, issued by the Secretary of Urban Development and Ecology of the State of Chihuahua; and,
- Analysis of alternatives for the Final Design of the Wastewater Collection System Improvements for Juarez, Chihuahua by JCAS (2021).

4.2. Outreach Activities

JMAS conducted outreach activities to obtain the support of residents in the area of the Project, by providing information regarding its scope, construction costs and resulting benefits. The activities to provide access to Project information were conducted as described in the Public Outreach Plan and in accordance with the public outreach requirements of the BEIF program.

Public meetings were not held due to the COVID 19 pandemic. A Project pamphlet was inserted with the customers' water bills. In addition, JMAS posted descriptive and technical information of the Project on its website. The online information includes information about the Project's service area, construction costs, funding sources, potential disruptions, and connection information. Information about the Project was also posted in the offices of the utility.

NADB also conducted a media search to identify potential public opinion about the Project. Below are links to the articles found, along with a brief description:

- [*Netnoticias.com*](#), (September 22, 2021) "*Rehabilitarán colectores del Arroyo de las Víboras para evitar inundaciones*" [Arroyo de las Víboras sewer main to be rehabilitated to prevent flooding] The article reports that to prevent flooding JMAS plans to rehabilitate the sewer mains in the following streets: Arroyo de las Víboras, Arroyo del Mimbres, Nadadores and Norzagaray.
[Rehabilitarán colectores del Arroyo de las Víboras para evitar inundaciones - Juárez \(netnoticias.mx\)](#)
- [*El diario Cd. Juárez*](#) (April 12, 2017) "*Colector Norzagaray, 'taponeado' desde el año pasado*" [Norzagaray Sewer Main clogged since last year]. The article reports that the Norzagaray Sewer Main has been so clogged since last year that the possibility of building a new one that runs parallel to the current one is being analyzed.
[Colector Norzagaray, 'taponeado' desde el año pasado - El Diario](#)
- [*Tiempo Digital*](#) (November 5, 2016) "*Tapado, colector Norzagaray tras tormenta y granizo*" [Norzagaray Sewer Main clogged after hail storm]. The article reports that the drainage was not working due to the runoff that occurred after the rains and hail, so JMAS joined the efforts undertaken after the storm. [Tapado, colector Norzagaray tras tormenta y granizo | Tiempo](#)

The activities carried out by the Project Sponsor and the media coverage described above demonstrate that the public received updates related to the Project, including its technical aspects, environmental effects, disruptions from construction, funding structure and financial impacts. The Project Sponsor informed NADB that no comments expressing concern about the

Project have been received during the public outreach process. To date, no opposition to the Project has been identified.