REGION 6

DALLAS, TX 75270

October 26, 2026

FINDING OF NO SIGNIFICANT IMPACT

To: All Interested Persons

In accordance with the environmental review procedures of the United States Environmental Protection Agency (EPA) found at 40 CFR Part 6 entitled "Procedures for Implementing the National Environmental Policy Act and Assessing the Environmental Effects Abroad of EPA Actions" as guidance, EPA has performed an environmental review of the following proposed action:

Project Name:	Construction of a Wastewater Treatment Plant in Valadeces, Tamaulipas, Mexico
Name and Address of Applicant:	Municipality of Gustavo Díaz Ordaz, Tamaulipas Avenida Hidalgo No. 120, Cd. Gustavo Diaz Ordaz, Tamaulipas
Project Location:	Valadeces, Tamaulipas , México
Estimated EPA Share:	$ 750,000
Estimated Local Share:	$ 750,000

Background

Valadeces, Tamaulipas is experiencing ongoing sanitation challenges resulting from inadequate wastewater treatment facilities and deteriorated infrastructure. Existing system deficiencies and insufficient treatment capacity have allowed portions of wastewater to bypass treatment and discharge directly into the Rio Grande. These system deficiencies pose environmental and public health risks to communities that rely on this shared water body as a source of water supply and agricultural irrigation.

The Rio Grande is the primary source of drinking water for both Valadeces, Tamaulipas and La Grulla, Cuevitas, and Los Ebanos, Texas. The Rio Grande is an important regional water resource that supports aquatic habitat, recreation, water supply uses, and agricultural irrigation. Existing deficiencies in the wastewater collection and treatment systems in Valadeces have contributed to untreated wastewater discharges to Segment 2302 of the Rio Grande, resulting in degraded water quality and documented impairments associated with elevated bacteria concentrations. These impacts undermine the goals of the 1944 Water Treaty and International Boundary and Water Commission (IBWC) agreements, which commit both countries to cooperative efforts to resolve sanitation problems in the border region.

The project aligns with EPA priorities to protect shared water resources, prevent transboundary pollution, and improve environmental conditions for underserved border communities.

Environmental Review

EPA Region 6 has performed an environmental review and assessment on the Environmental Information Document, and other supporting data, prepared for the proposed project. The environmental review and assessment process did not identify any potentially significant adverse environmental impacts associated with the proposed action. The project individually, cumulatively over time, or in conjunction with other actions is not expected to have a significant adverse effect on the quality of the environment. Accordingly, EPA Region 6 has made a preliminary determination that the proposed project is not a major federal action significantly affecting the quality of the human environment, and that preparation of an Environmental Impact Statement (EIS) is not warranted.

Comments regarding this preliminary decision not to prepare an EIS and issue a Finding of No Significant Impact (FONSI) may be submitted to Salvador Gandara, Drinking Water Infrastructure Supervisor, at gandara.salvador@epa.gov. All comments will be taken into consideration. No administrative action will be taken on this decision during the 30-day comment period. This preliminary decision, and the FONSI, will become final after the 30-day comment period expires if no new information is provided to alter this finding.

_____ 10/26/2026

For Claudia V. Hosch Date
Manager
Assistance Programs Branch

Enclosure: Environmental Assessment Construction of a Wastewater Treatment Plant in Valadeces, Tamaulipas, Mexico

Environmental Assessment

CONSTRUCTION OF A WASTEWATER TREATMENT PLANT
Valadeces, Tamaulipas, Mexico

Water Division
U.S. Environmental Protection Agency, Region 6
1201 Elm Street, Suite 500
Dallas, Texas 75270

October 26, 2026

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1 Introduction

The United States Environmental Protection Agency (EPA) administers the Border Environment Infrastructure Fund (BEIF), which provides grant funding for water and wastewater infrastructure projects located along the international boundary between the United States (U.S.) and Mexico. EPA policy for use of border funds requires evaluation and certification of projects by the North American Development Bank (NADB) as a condition for grant award. As part of the NADB certification process, the proposed project must comply with (1) Mexican environmental regulations and (2) the National Environmental Policy Act (NEPA). The EPA requires compliance with NEPA before BEIF funds can be authorized. Projects within 62 miles (mi) of the U.S./Mexico border are eligible for BEIF assistance.

In accordance with EPA regulations (40 CFR Part 6), this Environmental Assessment (EA) documents the environmental consequences in the U.S. of the proposed federal action. The purpose of this document is to comply with NEPA documentation requirements for the proposed federal action under consideration, which consists of rehabilitating and upgrading the main lift station, the installation of a new force main, and the construction of a new wastewater treatment plant. The proposed facility incorporates a multi-stage treatment process, including anaerobic treatment, biological treatment, natural polishing, and final disinfection, to achieve effluent quality requirements for municipal wastewater treatment.

1.1 Study Location

Congregación Valadeces is a community in the Municipality of Gustavo Díaz Ordaz, Tamaulipas. Located approximately 5 miles west of the municipal seat, it is the most populous locality in the municipality after the municipal seat, according to the 2020 INEGI Census. Valadeces is situated near the U.S.–Mexico border within the Rio Grande basin. The approximate geographic coordinates of the community are 26°10'18" north latitude and 98°40'28" west longitude. To the north, across the Rio Grande in Texas, nearby communities include La Grulla, Cuevitas, and Los Ebanos.

This community is situated within the Rio Grande watershed, the principal surface water feature in the region, which flows west to east and forms part of the Rio Grande–Conchos Hydrologic Region. According to the 2020 INEGI Population and Housing Census, the community had a total population of 1,895 residents.

The community is served by basic public infrastructure, including electricity, street lighting, potable water, sanitary sewer service, paved roads, public safety, and solid waste collection. Residential development consists primarily of single-family homes, generally with access to water, electricity, and wastewater collection services.

The local economy is primarily based on agriculture, with corn and sorghum serving as the dominant crops. Agricultural production is supported by existing irrigation infrastructure and represents an important economic activity within the area and a significant source of grain production in the region.

The study area for this EA is focused on the urbanized area of Valadeces, where the proposed wastewater treatment system improvements are located. **Figure 1** illustrates the study area.

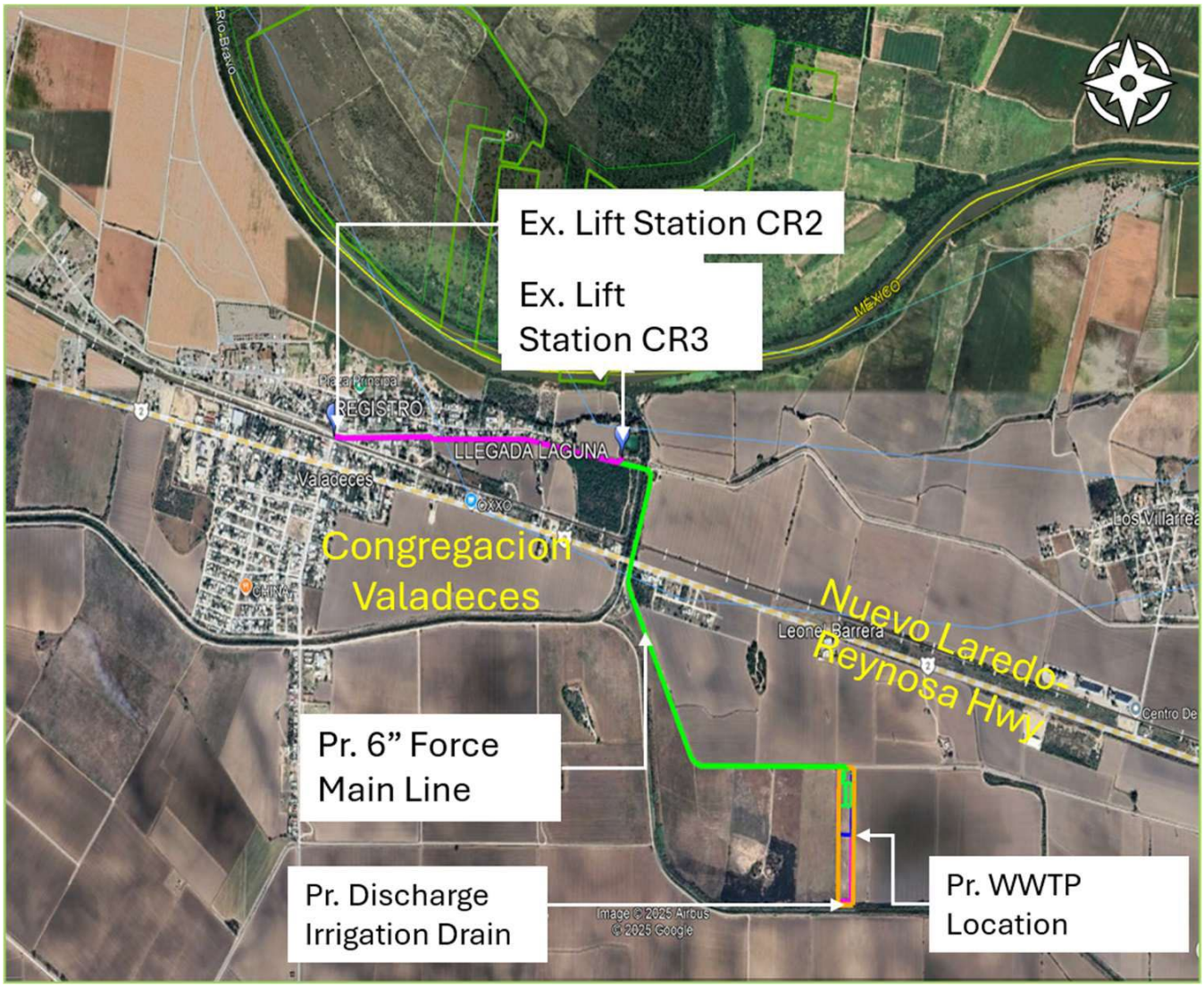


Figure 1 – Proposed Action Alternative 2 Location

1.2 Purpose and Need

The purpose of the proposed project is to provide Valadeces with a reliable, efficient, and sustainable wastewater treatment system capable of meeting current service demands and projected wastewater treatment needs through the year 2044. The Municipality of Gustavo Díaz Ordaz and the utility operator, COMAPA, have identified the need to improve wastewater treatment infrastructure to eliminate untreated wastewater discharges, protect public health, and support a clean and healthy environment for other communities along the Rio Grande.

The need for the project is driven by the deficiencies of the existing wastewater treatment system, which no longer provides adequate or reliable service. Recent studies have documented significant deterioration, operational limitations, and insufficient treatment capacity within the existing facilities. The current lagoon system is undersized for the population it serves and remains vulnerable to failure due to poor embankment conditions. These deficiencies have resulted in untreated wastewater discharges to the Rio Grande, creating ongoing environmental concerns and potential risks to public health.

To address these conditions, the proposed project consists of rehabilitating and upgrading the existing lift station CR3 (main lift station), the construction of a new force main line, and the construction of a new wastewater treatment plant (WWTP). Together, these improvements aim at providing sufficient treatment capacity for both current and projected future flows through 2044. The new WWTP would replace the existing deteriorated treatment system, including the package treatment plant that has been out of service for several years. The proposed facility will utilize a multi-stage treatment process incorporating pre-treatment processes, followed by an Upflow Anaerobic Sludge Blanket (UASB) reactor, a facultative lagoon, a subsurface-flow constructed wetland, and a chlorine disinfection contact tank, to achieve effluent quality requirements for municipal wastewater treatment.

The project is intended to bring the wastewater system into compliance with applicable Mexican environmental laws and regulations, the requirements of the Comisión Nacional del Agua (CONAGUA), and relevant binational commitments associated with protecting shared water resources along the Southern Border. By improving treatment performance and system reliability, the project will reduce environmental and public health risks, prevent untreated wastewater discharges, and provide long-term, sustainable wastewater management for Congregación Valadeces.

1.3 Scope of Analysis

To identify key issues related to the implementation of the Proposed Action and/or the No-Action Alternatives, the following scope has been developed:

- Evaluate the impacts on biological resources resulting from the anticipated changes in water quality and quantity.
- Provide a detailed explanation of any criteria or reference points used to determine the significance of environmental impacts.
- Recommend and describe mitigation measures for the projects, or, where applicable, propose natural resource conservation measures.
- Advise on the need for a biological assessment or evaluation to fully assess the environmental resource impacts.
- Assess whether the proposed projects could have adverse effects on human health and environmental conditions.
- Identify the expected direct and indirect environmental and human health benefits.
- Document any transboundary environmental effects, specifically within a 6-mile radius from the border into U.S. territory.

The following section describes the geographic and environmental study area within which the proposed project and associated environmental effects are evaluated.

2 Project Description and Alternatives

This section of the EA: 1) presents and objectively evaluates the alternatives, including the No Action alternative; 2) devotes substantial treatment to each alternative considered in detail so the reviewers may evaluate comparative merits; and 3) includes appropriate mitigation measures. Based on the information and analysis presented in Section 3, Affected Environment, this section also presents the potential environmental impacts of the alternatives in comparative form, which defines the issues and provides a clear basis for choice among options by decision makers and the public.

2.1 Proposed Action

Since 2022, NADBank and COMAPA have worked closely to identify design options for a new WWTP to serve Valadeces. Four wastewater treatment options were evaluated for the project: (1) Pretreatment (grit chamber and grease trap) + Upflow Anaerobic Sludge Blanket (UASB) Reactor + Facultative Lagoon (2 Baffles) + Subsurface Flow Constructed Wetland + Flow Measurement Station + Chlorine Contact Tank + Sludge Drying Beds + Leachate Infiltration Trenches + Discharge/Reuse; (2) Pretreatment + Anaerobic Lagoon + Facultative Lagoon + 1 Maturation Lagoon; (3) Pretreatment + Facultative Lagoon (2 Baffles) + Maturation Lagoon (2 Baffles); and (4) a force main line conveying wastewater to the existing WWTP in Gustavo Díaz Ordaz.

A detailed description is provided for the first option which was determined to be the most cost-effective solution and, therefore, was selected as the proposed action for the following reasons:

- It meets the required effluent quality in accordance with NOM-001-SEMARNAT-2021.
- It has the lowest operating cost per cubic meter of treated water.
- It requires the smallest land area for construction.
- It does not require highly specialized operators.
- It operates without reliance on electromechanical equipment.
- It can accommodate fluctuations in flow and wastewater quality.
- It does not require chemical addition for the biological treatment process; chemical use is limited to final disinfection.
- It has very low energy requirements because the treatment process relies primarily on gravity flow and natural biological processes.

The improvements proposed under the Proposed Action are intended to provide a long-term solution to existing wastewater infrastructure challenges in Valadeces. The following section provides a detailed description of the two alternatives evaluated in this EA, including important planning considerations, major system components, and the design period. Subsequent sections identify pertinent environmental resources and evaluate the potential environmental impacts associated with implementation of the No Action or Proposed Action alternatives.

2.2 Existing Infrastructure

Available record information indicates that in 2020, Congregación Valadeces had a total of 596 households, of which approximately 98% were served by potable water and 96% by sanitary sewer service. The community's sanitary sewer system is divided into northern and southern service areas, as depicted in **Figure 2**, separated by the Nuevo Laredo–Reynosa federal highway.

The southern collection system consists primarily of 8- and 10-inch diameter PVC Series 25 pipes, manholes, and service connections. Approximately 90% of flows are conveyed to Lift Station CR1, which pumps wastewater through a 3-inch PVC force main using a 3 HP pump. The discharge is conveyed to a manhole located near the federal highway, where flows are transferred to the northern system.

The northern collection system consists of 8- and 10-inch diameter PVC sewer lines and receives flows from both service areas. Within this zone, two lift stations are in operation. Lift Station CR2, equipped with a 3-inch force main and a 3 HP pump, collects limited local flows from a small portion of the northern area and discharges them into the system.

A main interceptor sewer, constructed of 18-inch corrugated HDPE pipe and approximately 4,000 linear feet in length, extends along Calle Hidalgo from Melchor Ocampo to the main lift station CR3. This interceptor conveys wastewater to the primary regional pumping facility. Lift station CR3 serves as the main pumping station for the entire community, receiving combined flows from both service areas. It conveys all wastewater to the existing oxidation lagoons via a 3-inch PVC force main (LP3) using a 5 HP pumping system for final treatment.

Figures 3 and 4 provide a visual of the main features of the wastewater collection system, including lift station locations, main interceptor, force main alignments, and existing treatment facility.

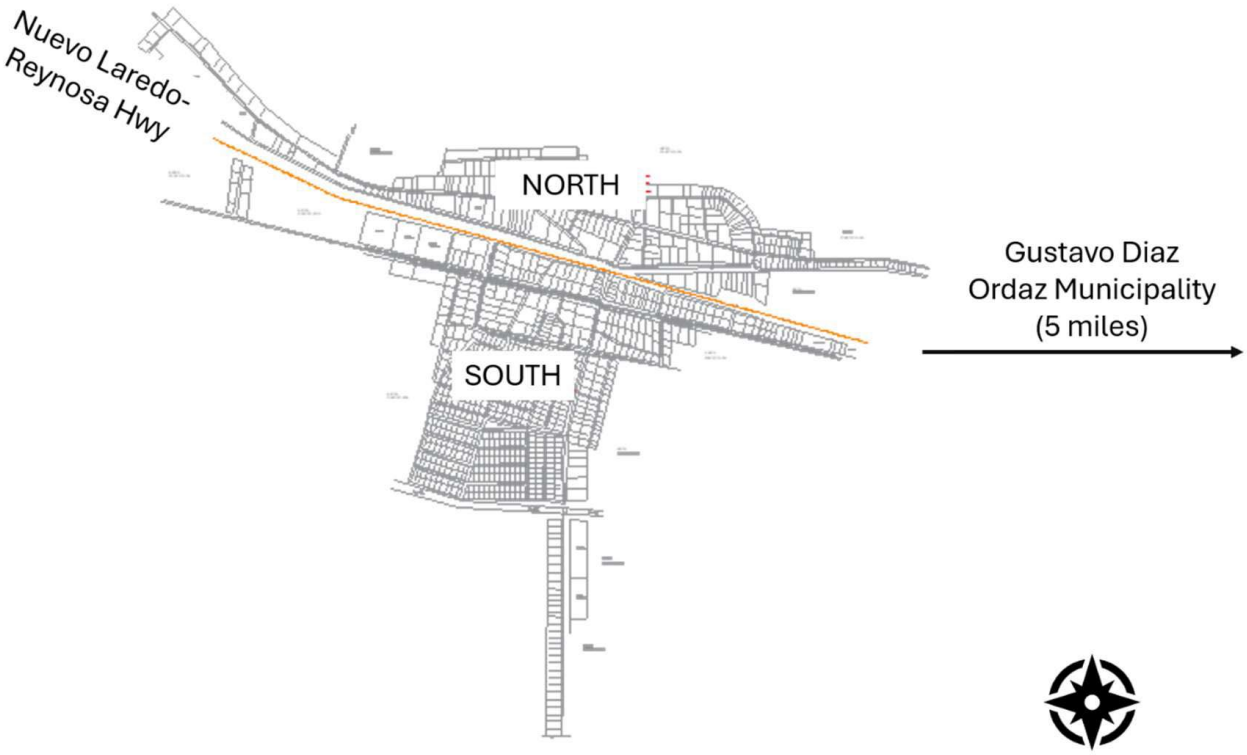


Figure 2 - Congregación Valadeces Service Areas

The following section describes the regulatory framework applicable to the environmental review of the Proposed Action, which includes substantial improvements to the existing wastewater treatment infrastructure.

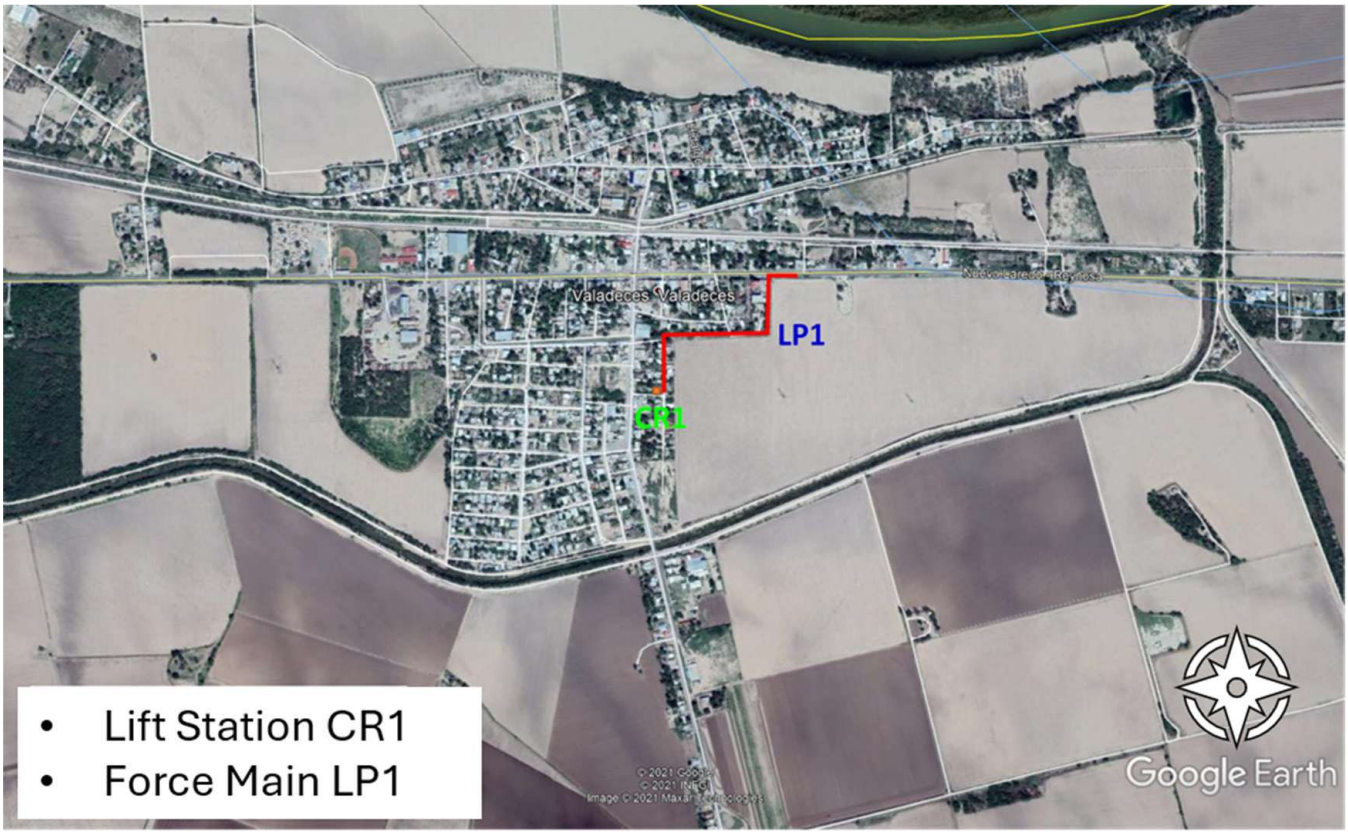


Figure 3 – South Service Area Pumping System

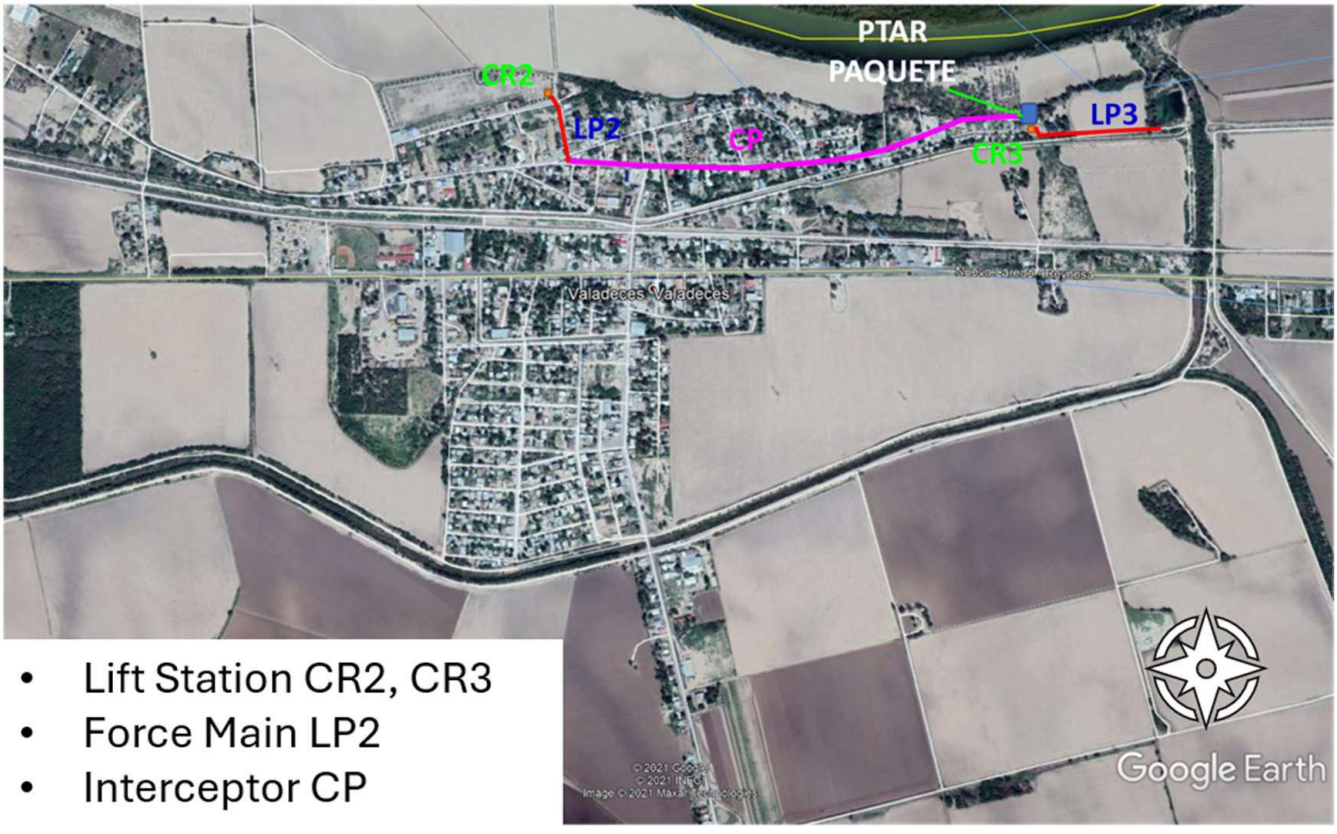


Figure 4 – North Service Area Pumping System

2.3 Alternative Analysis

The two alternatives described in this section were evaluated for comparative purposes, including the No Action Alternative as a baseline condition and the Proposed Action as an alternative intended to address the project purpose and need. The evaluation of these alternatives provides a framework for assessing potential environmental impacts, implementation considerations, and anticipated benefits associated with each option. The alternatives evaluated include the following:

- Alternative 1 – No-Action: Assumes existing conditions remain unchanged, with no improvements made to the wastewater treatment system. Under this scenario, the existing oxidation lagoons remain in service, and the risk of collapse persists.

- Alternative 2 – Proposed Action: Assumes the rehabilitation and upgrade of the main lift station; the construction of a new force main line; and the construction of a new wastewater treatment plant (WWTP) consisting of a pretreatment process, followed by an Upflow Anaerobic Sludge Blanket (UASB) reactor, a facultative lagoon, a subsurface flow constructed wetland, a flow measurement station, a chlorine disinfection contact tank, sludge drying beds, leachate infiltration trenches, and a discharge/reuse system.

  The treatment train combines anaerobic treatment with natural polishing processes and disinfection to improve effluent quality while maintaining relatively low operation and maintenance requirements. The rehabilitation and upgrade of the main lift station, and the installation of a new 6-inch force main to convey wastewater to the proposed WWTP are also included in this alternative. Water quality of effluents will comply with the contaminant removal levels required by the current regulation in Mexico, NOM-001- SEMARNAT-2021.

2.4 Alternative 1

The No Action Alternative, while not the preferred option, is included to establish a baseline for comparison with Alternative 2. Under this scenario, no improvements would be made to the existing wastewater treatment infrastructure, and current conditions would remain unchanged despite the documented deficiencies of the system.

The existing treatment facilities include an abandoned modular package treatment plant that is no longer in operation, as well as two wastewater lagoons currently serving the community. These lagoons have irregular geometry and insufficient treatment capacity to adequately serve the current population of Valadeces. In addition, one of the lagoons has been reported to be out of service due to a breach in the embankment, allowing untreated wastewater to escape and discharge directly into the Rio Grande.

The existing facilities also lack essential treatment infrastructure, including inlet and outlet control structures, flow measurement devices, interconnection structures, and geomembrane lining. As a result, the system operates with limited hydraulic control and reduced treatment efficiency, and it does not provide reliable or adequate wastewater treatment. Continued operation under the No Action Alternative would likely result in ongoing environmental impacts, operational deficiencies, and continued risks to health and water quality in the receiving environment.

2.5 Alternative 2

The Proposed Action alternative consists of a multi-stage wastewater treatment system combining anaerobic, biological, natural polishing, and final disinfection processes to achieve the required effluent quality for municipal wastewater treatment. Figure 1 presents the process flow diagram. The pretreatment facilities were designed based on an average flow rate of 0.11 MGD and checked under the peak instantaneous flow rate of 0.41 MGD, which is sufficient to accommodate projected wastewater flows through 2044. Based on the established design criteria and the anticipated contaminant removal performance, the proposed treatment process is expected to comply with the effluent quality requirements of NOM-001-SEMARNAT-2021.

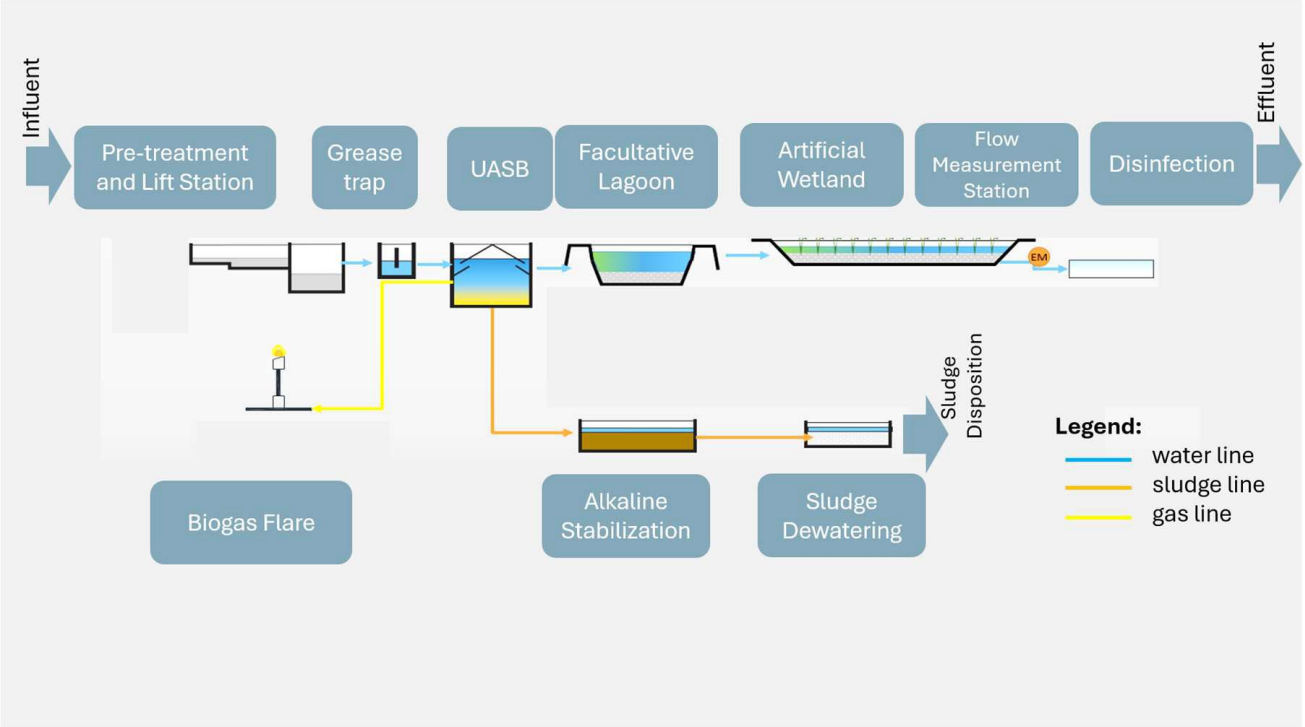


***Figure 5 – WWTP Process Diagram: Pretreatment (grit chamber and grease trap) + Upflow Anaerobic Sludge Blanket (UASB) Reactor + Facultative Lagoon (2 Baffles) + Subsurface Flow Constructed Wetland + Flow Measurement Station + Chlorine Contact Tank +* Sludge Drying Beds + Leachate Infiltration Trenches + Discharge/Reuse**

The treatment train begins with a UASB reactor, where wastewater enters from the bottom and flows upward through a suspended sludge blanket composed of anaerobic microbial granules. As the wastewater passes through the sludge blanket, organic matter is biologically degraded under anaerobic conditions, generating biogas primarily composed of methane and carbon dioxide. The UASB provides primary treatment with significant removal of organic matter and suspended solids while producing relatively low sludge volumes. Typical theoretical removal efficiencies range from 65–80% for BOD, 60–80% for COD, and 60–70% for total suspended solids. Nitrogen removal in this unit is minimal.

The effluent from the UASB is then conveyed to a facultative lagoon, which provides secondary treatment through a combination of aerobic and anaerobic biological activity. This process further reduces biodegradable organic matter and suspended solids while stabilizing the wastewater.

Following lagoon treatment, the wastewater passes through a constructed wetland, which serves as a polishing step to further improve effluent quality by promoting additional removal of suspended solids, residual organics, nutrients, and pathogens through filtration, sedimentation, plant uptake, and microbial activity. Typical theoretical removal efficiencies in wetlands are approximately 86% for BOD, 80% for COD, 40% for total suspended solids, 60% for Phosphorus, and 70% for Nitrogen.

The final stage is disinfection, intended to reduce pathogen concentrations and ensure compliance with applicable discharge or reuse requirements. Overall, this alternative integrates compact anaerobic treatment with natural treatment processes, offering a robust and efficient approach with moderate operational requirements, reduced sludge production, and improved effluent quality through multiple treatment barriers. The project also includes the construction of approximately 7,045 linear feet of a proposed 6-inch HDPE SDR 13.5 force main line to direct wastewater from the existing main lift station CR3 to the new WWTP facility, as well as the necessary upgrades and rehabilitation to accommodate the new force main.

Sludge generated from the treatment process will be stabilized and managed through drying beds, with the dried biosolids intended for beneficial reuse as a soil amendment in agricultural applications, subject to applicable regulatory requirements.

Upon completion of the project, untreated wastewater discharges to the river at the existing outfall will be eliminated. Treated effluent will be reused for agricultural irrigation during the irrigation season. During non-irrigation periods, effluent will be conveyed through El Morrillo Drain into an agricultural drainage system that ultimately discharges to the Rio Grande river. **Figure 6** illustrates key features of this alternative in relation to the project area.

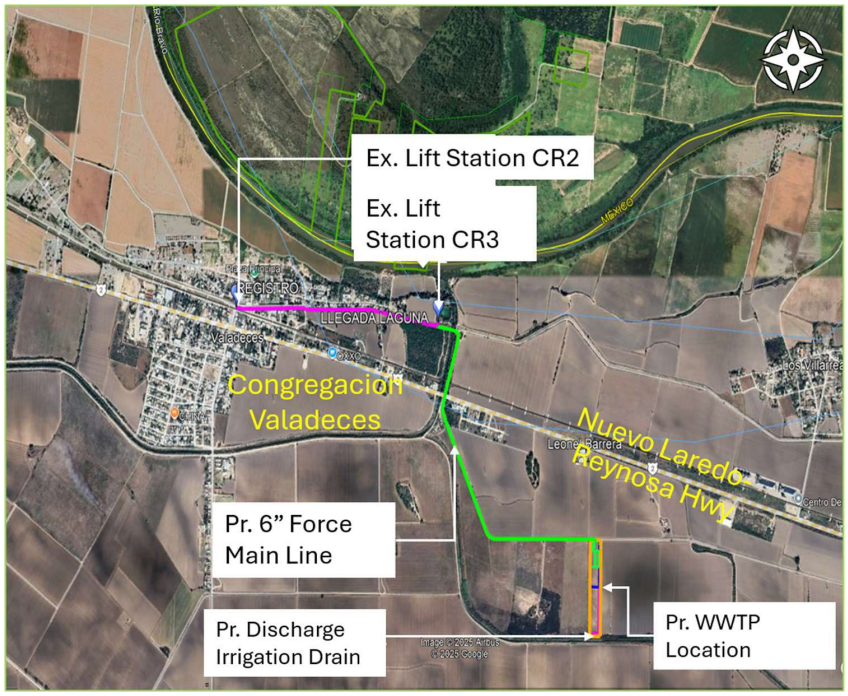


Figure 6 – Proposed Action Alternative 2 Location

3 Affected Environments

This section outlines the environmental, social, and cultural resources present within the project area in Mexico and extending six miles into the United States that could be affected by the proposed projects detailed in this report. Additionally, it provides an overview of the laws and regulations establishing the minimum Environmental and Safety Requirements. These include all legally binding regulations related to public health, safety, pollution control, and environmental protection.

3.1 Land Use

Land use in the Project Area can be generally categorized as natural or human modified. Natural land uses include topography, vegetation, and wildlife habitat, while human-modified land uses include residential, commercial, industrial, transportation, utility, agricultural, institutional, recreational, and other developed areas. Land use is influenced by local plans, policies, regulations, and ordinances that guide development and protect sensitive areas. For the purposes of this EA, environmental information from nearby areas in the United States may be used to help characterize conditions in Mexico due to the proximity of the Project Area to the U.S. border.

Valadeces is a small, primarily urban community, while the surrounding area in Texas is mostly rural borderland. In Valadeces itself, the study area is the urbanized part of the community, where residential development is concentrated, the local economy is primarily agricultural, and much of the surrounding land supports corn and sorghum production with irrigation infrastructure. The community also has basic public infrastructure and single-family housing, indicating a built-up village center embedded within an agricultural landscape

On the U.S. side, across the Rio Grande in Starr County, the nearby communities such as La Grulla, Cuevitas, and Los Ebanos, is characterized by floodplain and wetland features associated with the river corridor rather than dense urban development. There are mapped wetlands and riverine systems in the region, including portions of Starr County, but no wetlands were identified within the project footprint itself.

3.2 Topography

Topography is the change in elevation over the surface of a land area. An area's topography is influenced by many factors, including human activity, underlying geologic material, seismic activity, climatic conditions, and erosion. A discussion of topography typically encompasses a description of surface elevations, slope and distinct physiographic features (e.g., mountains) and their influence on human activities.

Valadeces is in a generally low-lying, flat riverine setting within the Rio Grande basin. The community lies near the Southern Border along the Rio Grande, and the proposed WWTP site is adjacent to areas identified on the flood-risk atlas but still appears to be outside the mapped floodplain itself. The topography is typical of the lower Rio Grande region: mostly level terrain with gentle relief, influenced by the river corridor and nearby flood-prone areas rather than steep slopes or rugged landforms. Because of that, the project area is suited to gravity-based wastewater treatment features, and the selected alternative has very low energy requirements and relies primarily on gravity flow and natural biological processes

3.3 Water Resources

In the United States, water quality and surface water discharges are regulated under the Clean Water Act (CWA) (33 U.S.C. §1251 et seq.), which establishes the national framework for protecting the chemical, physical, and biological integrity of surface waters. The CWA is implemented through several regulatory programs that collectively govern pollutant discharges, water quality standards, and aquatic resource protection.

Section 303 of the CWA requires states to establish Water Quality Standards (WQS), which define designated uses for water bodies and the criteria necessary to protect those uses. Section 402 establishes the National Pollutant Discharge Elimination System (NPDES) permitting program, which regulates point source discharges of pollutants into waters of the United States. Section 404 regulates the discharge of dredged or fill material into waters of the United States, including wetlands, and is administered by the U.S. Army Corps of Engineers.

Groundwater resources that serve as drinking water sources are protected under the Safe Drinking Water Act (SDWA) (42 U.S.C. §300f et seq.), which establishes requirements for protecting underground sources of drinking water and regulating public water systems. In Texas, implementation of groundwater protection requirements includes oversight of major aquifer systems such as the Gulf Coast Aquifer System, one of the principal regional groundwater resources supporting municipal, agricultural, and industrial uses.

At the state level, the Texas Commission on Environmental Quality (TCEQ) implements the federal CWA requirements through the Texas Water Code §26.023 and the Texas Surface Water Quality Standards (TSWQS), codified in Title 30 of the Texas Administrative Code (30 TAC §307). The TSWQS establish designated uses for surface waters and numerical criteria necessary to protect public health, aquatic life, and other beneficial uses.

Under the TSWQS, classified water bodies are assigned site-specific designated uses and corresponding water quality criteria that govern allowable pollutant concentrations. For the Rio Grande Segment 2302 (From a point 6.7 miles downstream of the International Bridge in Cameron County to Falcon Dam in Starr County), designated uses include Aquatic Life Use, Contact Recreation Use, General Use, Fish Consumption Use, Public Water Supply Use. These designated uses and associated criteria serve as the regulatory baseline for evaluating potential water quality impacts associated with the Proposed Action.

In Mexico, water quality and wastewater discharges are regulated under the National Waters Law (Ley de Aguas Nacionales) and applicable Mexican Official Standards (NOMs), including NOM-001-SEMARNAT-2021, which establishes permissible limits for wastewater discharges into national waters. The Secretaría de Medio Ambiente y Recursos Naturales (SEMARNAT) is responsible for enforcing these standards for surface water bodies, including the Rio Grande.

The International Boundary and Water Commission (IBWC), under the 1944 U.S.–Mexico Water Treaty, provides a binational framework for coordination of shared surface water resources along the Rio Grande, including water allocation, flood control, and water quality issues.

The project area is primarily characterized by surface water resources, with the Rio Grande being the most prominent hydrologic feature. North of Valadeces, the Rio Grande forms the international boundary between Mexico and the United States. The river serves as the primary surface water body in the region and supports multiple beneficial uses, including municipal water supply, agricultural irrigation, and ecological functions.

According to COMAPA, the community's water supply is derived from the Rio Grande, with supplemental reliance on groundwater sources. Regionally, the area overlies or is hydraulically connected to groundwater resources associated with the Gulf Coast Aquifer System, one of the major aquifer systems in Texas. This aquifer system extends across a broad geographic area and supports municipal, agricultural, and industrial water demands.

The Gulf Coast Aquifer is composed of interbedded sand, silt, and clay units that influence groundwater movement and recharge conditions. In general, groundwater-surface water interactions in the region are influenced by local geology, soil permeability, and hydraulic gradients between surface water bodies and subsurface formations.

Available information indicates that existing untreated wastewater discharges from the project area are conveyed primarily through surface drainage pathways that ultimately discharge into the Rio Grande. Based on available hydrologic and hydrogeologic information, no evidence has been identified indicating significant infiltration of these discharges into the underlying Gulf Coast Aquifer system prior to reaching the river.

Figure 7 illustrates the regional groundwater context and the spatial relationship between the Rio Grande and the underlying Gulf Coast Aquifer system in the project area.

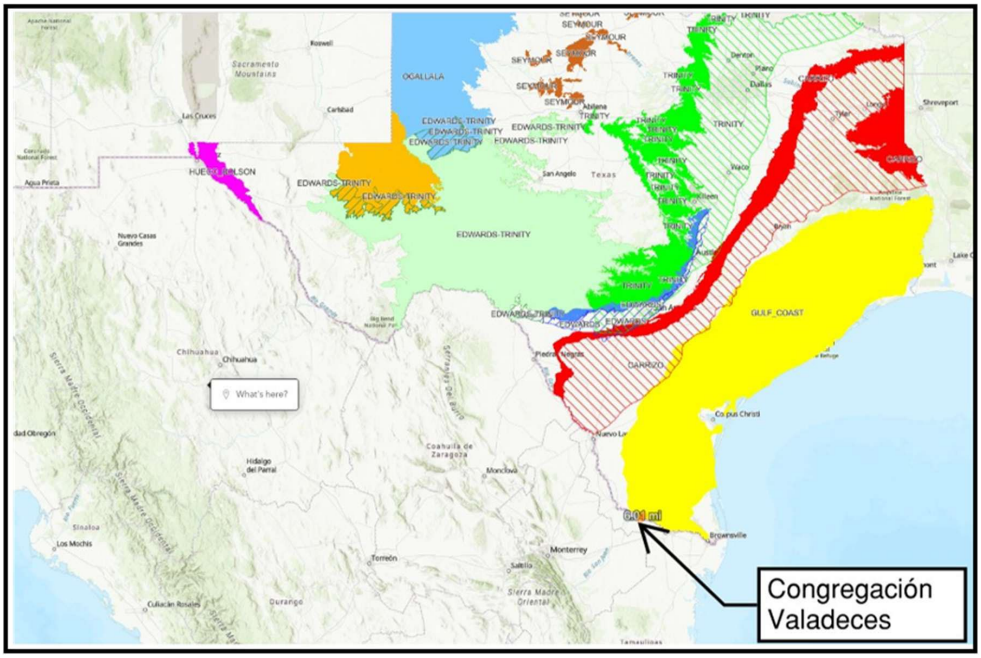


Figure 7 - Regional Groundwater and Surface Water Features Near the Project Area

3.4 Floodplains

The Federal Emergency Management Agency (FEMA) is an agency of the U.S. Department of Homeland Security (DHS), established in 1979 to coordinate federal disaster response, recovery, and mitigation activities. FEMA also administers the National Flood Insurance Program (NFIP), which was established in 1968 to reduce the financial impact of flooding through insurance coverage and floodplain management requirements. Key NFIP responsibilities include flood insurance administration, flood hazard mapping, risk assessment, community outreach, regulatory compliance, and support for local floodplain management programs.

Flood Insurance Rate Maps (FIRMs) prepared by FEMA identify areas subject to flood hazards and are used to support floodplain management and regulatory compliance. Projects located within Special Flood Hazard Areas (SFHAs) are subject to NFIP requirements and local floodplain ordinances. The proposed project is located in Congregación Valadeces a community of Gustavo Diaz Ordaz, Tamaulipas, Mexico, and is therefore outside any FEMA-designated SFHA jurisdiction.

FEMA Flood Insurance Rate Map (FIRM) Panel 48427C0775C (effective April 19, 2010) for Starr County, Texas, identifies nearby Special Flood Hazard Areas associated with Flood Zones A along tributaries to the Rio Grande. These zones represent areas with a 1 percent annual chance of flooding (100-year floodplain). Zone A areas are mapped using approximate methods without established Base Flood Elevations (BFEs). **Figure 8** illustrates the mapped SFHAs in FIRM Panel 48427C0775C.

In Mexico, floodplain management is administered through multiple levels of government. The Secretaría de Medio Ambiente y Recursos Naturales (SEMARNAT) provides environmental policy guidance, while technical aspects of flood risk management are primarily supported by the Comisión Nacional del Agua (CONAGUA) and the Centro Nacional de Prevención de Desastres (CENAPRED). These agencies develop hydraulic studies, flood hazard modeling, and national risk mapping tools such as the Atlas Nacional de Riesgos, which is used to identify floodprone areas and support land-use planning and emergency preparedness.

Floodplain regulation is implemented through federal water law, particularly the Ley de Aguas Nacionales, which defines federal zones along rivers and water bodies under CONAGUA jurisdiction. In parallel, land-use planning instruments at the state and municipal levels incorporate flood hazard information to restrict or guide development in high-risk areas. **Figure 9** shows the areas susceptible to flooding with a 100-year return period in the area between Valadeces and Gustavo Díaz Ordaz. The area where the new WWTP is proposed is adjacent to a zone identified on the map but appears to be outside the floodplain. This information represents the most accurate data available in the inventory compiled by CENAPRED.

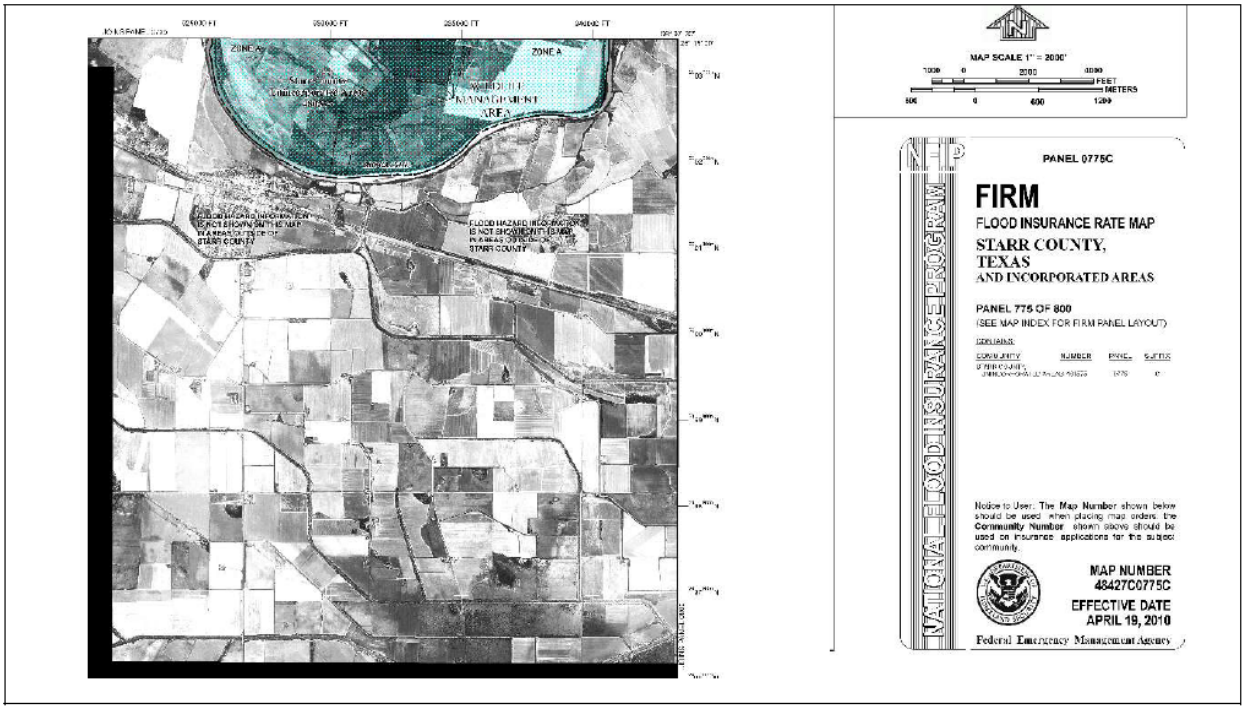


Figure 8 - FIRMette of Flood Insurance Rate Map 48427C0775C Starr County, Texas (FEMA 2010)

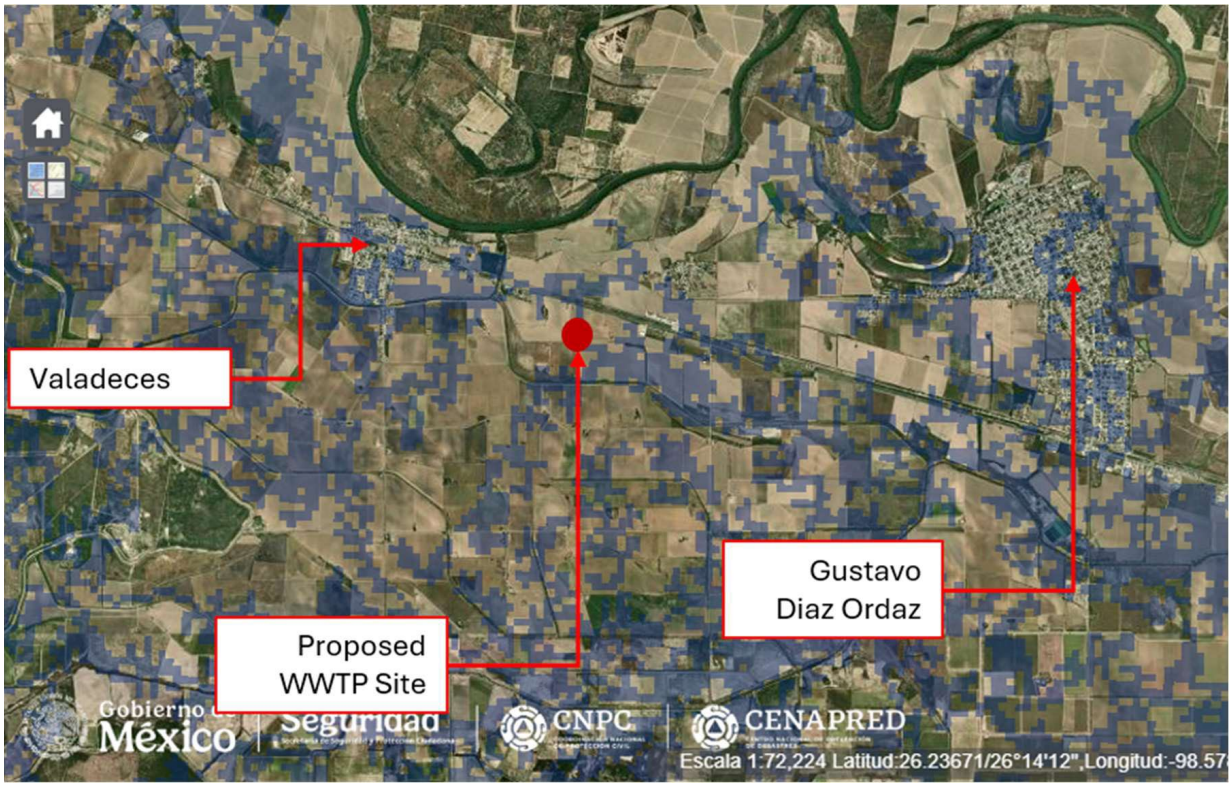


Figure 9 – Flood Risk Atlas in the Valadeces Area for a 100-Year Return Period (CENAPRED 2026)

3.5 Wetlands

Under the U.S. Clean Water Act (CWA), wetlands are generally defined as areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation adapted to life in saturated soil conditions. The U.S. Environmental Protection Agency (USEPA) further characterizes wetlands as areas where saturation with water is the primary factor influencing soil development and the composition of plant and animal communities (Cowardin, 1979). Wetlands vary significantly based on regional and local conditions, including soils, topography, climate, hydrology, water chemistry, vegetation, and anthropogenic influences.

In the United States, the U.S. Fish and Wildlife Service (USFWS) maintains the National Wetlands Inventory (NWI), which maps and classifies wetland resources. **Figure 10** presents NWI data for areas near the project location, including portions of Starr County, Texas, across the Rio Grande from Valadeces. The mapped wetland types in the broader region include estuarine and marine deepwater habitats, estuarine and marine wetlands, freshwater emergent wetlands, freshwater forested/shrub wetlands, freshwater ponds, lakes, and riverine systems.

Based on available NWI mapping and field-level review, no wetlands have been identified within the footprint of the proposed wastewater treatment plant improvements.

In Mexico, wetland conservation is guided by the Ramsar Convention on Wetlands (1971), which Mexico joined in 1986, and by national environmental and water management legislation, including the National Waters Law (Ley de Aguas Nacionales) and the General Law of Ecological Balance and Environmental Protection (LGEEPA). These frameworks support the identification and conservation of wetlands of international importance and broader wetland protection objectives.

Wetlands and other hydrologically sensitive areas in Mexico are identified through national geospatial inventories, including INEGI's wetland mapping datasets, CONAGUA's Inventario Nacional de Humedales, and ecological datasets from CONABIO. These systems support environmental assessment and help identify areas where floodplain conditions overlap with ecologically sensitive wetland environments.

Based on INEGI wetland mapping, no Ramsar sites are located in the vicinity of Valadeces, and mapped wetlands in the area are located outside the footprint of the proposed improvements, including the WWTP site, as shown in **Figure 11**.

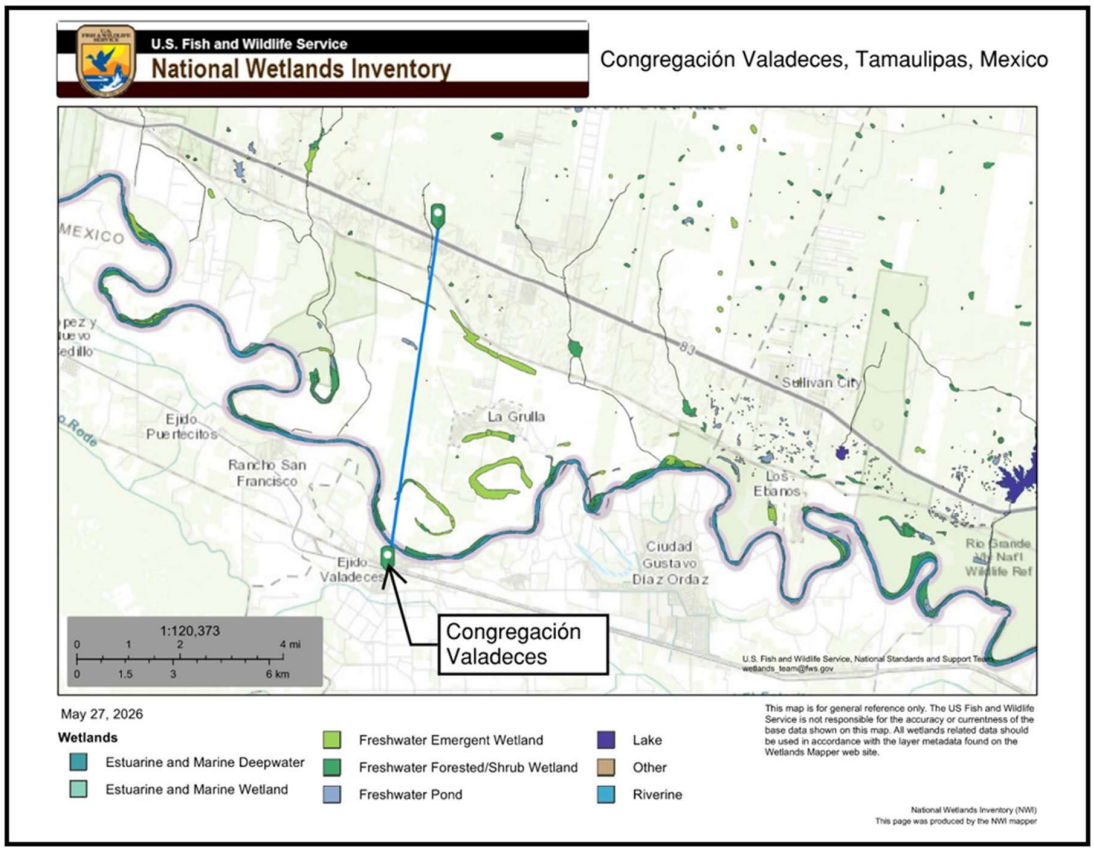


Figure 10 - Wetlands in Nearby Congregación Valadeces – Starr County, TX (USFWS 2026)

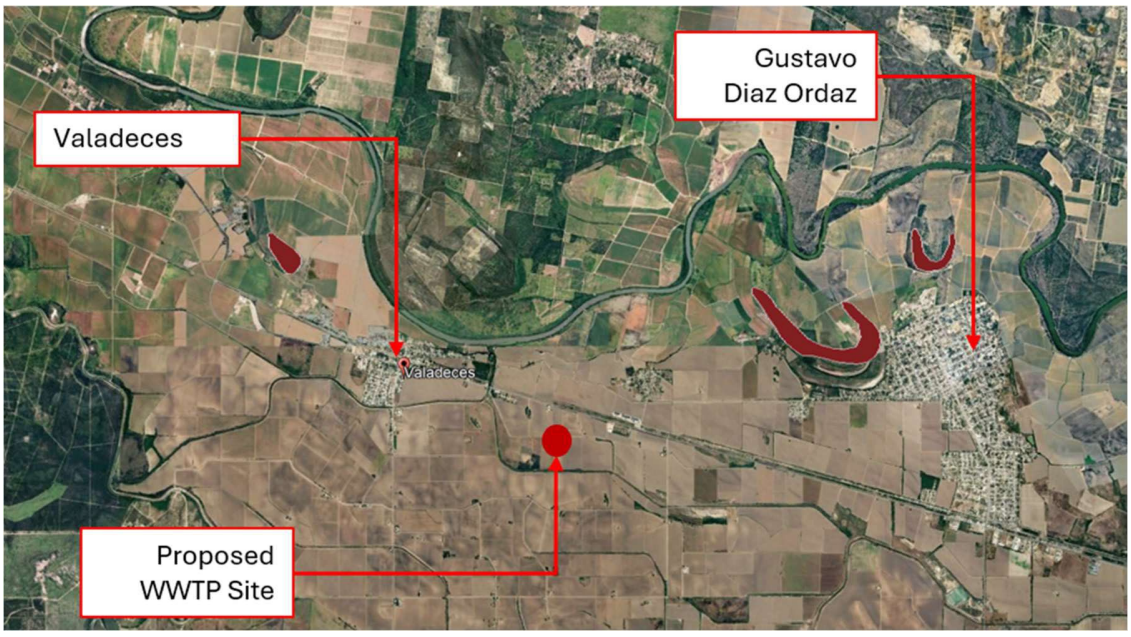


Figure 11 – Wetlands and RAMSAR Sites in Valadeces, Tamaulipas (INEGI 2026)

3.6 Air Quality

In the United States, the Clean Air Act requires the U.S. Environmental Protection Agency (EPA) to establish National Ambient Air Quality Standards (NAAQS) (40 CFR Part 50) for pollutants considered harmful to public health and the environment. NAAQS are established for two categories of protection: primary standards, which safeguard public health, including sensitive populations such as children, the elderly, and individuals with respiratory conditions; and secondary standards, which protect public welfare, including visibility, vegetation, crops, and structures.

The EPA has established NAAQS for six criteria pollutants:

1. Carbon monoxide (CO)
2. Lead (Pb)
3. Sulfur dioxide (SO_2)
4. Nitrogen dioxide (NO_2)
5. Ozone (O_3)
6. Particulate matter less than 10 microns (PM_{10}) and less than 2.5 microns ($PM_{2.5}$)

Under the Clean Air Act Amendments of 1990, federal actions must be consistent with applicable State Implementation Plans (SIPs) to ensure maintenance of the NAAQS. Areas are classified as either attainment or nonattainment depending on whether they meet the established air quality standards. Table 1 presents the applicable NAAQS ambient air quality standards, including averaging periods and concentration limits expressed in ppm, ppb, and $\mu g/m^3$.

The Federal Conformity Rule (40 CFR Parts 51 and 93) requires federal actions to demonstrate that they will not cause or contribute to violations of the NAAQS, worsen existing violations, or delay attainment of air quality standards. Conformity determinations may be exempt when emissions are below established de minimis thresholds; otherwise, appropriate mitigation measures such as Best Management Practices (BMPs) may be required.

In Texas, air quality is regulated by the Texas Commission on Environmental Quality (TCEQ), which implements the State Implementation Plan (SIP) to achieve compliance with federal standards. The SIP addresses all six criteria pollutants regulated under the NAAQS framework.

A screening-level evaluation of air quality conditions within the study area was conducted using the TCEQ GEOTAM (Geospatial and Temporal Analysis Module). The study area is characterized by a predominantly rural–urban interface with limited industrial activity, and regional air quality is primarily influenced by vehicular emissions and cross-border atmospheric transport. Consultation with the Texas Commission on Environmental Quality (TCEQ) confirmed that Starr and Hidalgo Counties are classified as attainment/unclassifiable for all six criteria air pollutants under the National Ambient Air Quality Standards (NAAQS). Accordingly, the project area is not located within or adjacent to a designated nonattainment area. **Figure 12** presents the results of the air quality screening.

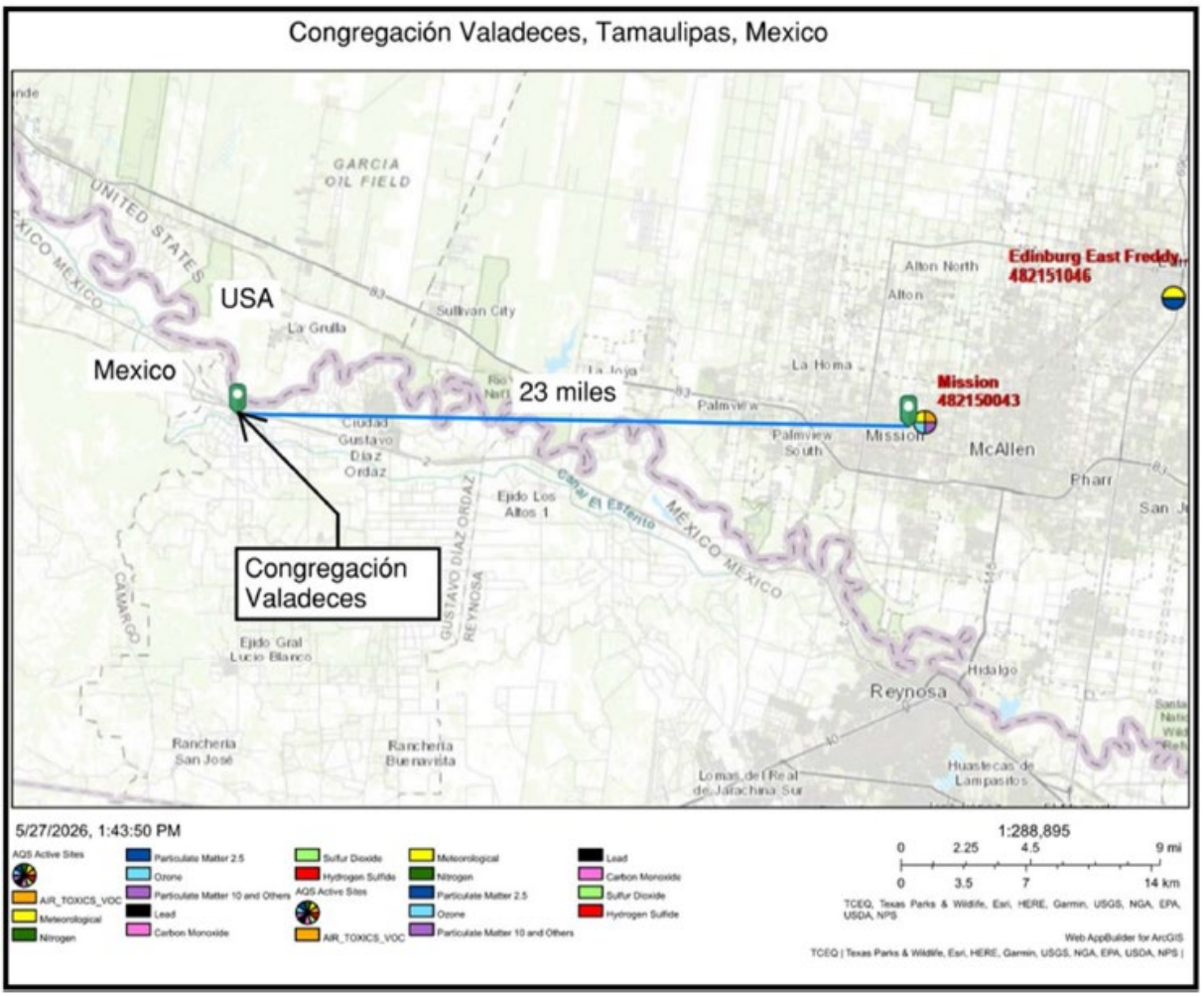


Figure 12 – Air Quality Screening Results within the Study Area (2026)

Consistent with the U.S. regulatory framework described above, Mexico has established its own air quality standards and institutional structure to regulate ambient air quality and protect public health and the environment.

In Mexico, air quality standards, known as Normas Oficiales Mexicanas (NOMs) and related environmental standards, are established by three primary regulatory agencies. The Secretaría de Salud is responsible for setting ambient air quality standards, while the Instituto Nacional de Ecología y Cambio Climático (INECC) provides monitoring, technical analysis, and air quality data. The Secretaría de Medio Ambiente y Recursos Naturales (SEMARNAT) establishes the overall regulatory and policy framework for air quality management. These agencies define standards for the same six criteria pollutants regulated in the United States:

- Carbon monoxide (CO)
- Lead (Pb)
- Sulfur dioxide (SO_2)
- Nitrogen dioxide (NO_2)
- Ozone (O_3)
- Particulate matter less than 10 microns (PM_{10}) and particulate matter less than 2.5 microns ($PM_{2.5}$)

Table 1 - National Ambient Air Quality Standards (NAAQS) for the U.S

Pollutant [final rule cite]		Primary/ Secondary	Averaging Time	Level	Form
Carbon Monoxide [76 FR 54294, Aug 31, 2011]		Primary	8-hour	9 ppm	Not to be exceeded more than once per year
			1-hour	35 ppm	
Lead [73 FR 66964, Nov 12, 2008]		Primary and Secondary	Rolling 3-month average	0.15 µg/m³ (1)	Not to be exceeded
Nitrogen Dioxide [75 FR 6474, Feb 9, 2010] [61 FR 52852, Oct 8, 1996]		Primary	1-hour	100 ppb	98th percentile, averaged over 3 years
		Primary and Secondary	Annual	53 ppb (2)	Annual Mean
Ozone [73 FR 16436, Mar 27, 2008		Primary and secondary	8-hour	0.070 ppm (3)	Annual fourth-highest daily maximum 8-hr concentration, averaged over 3 years
Particle Pollution [71 FR 61144, Oct 17, 2006]	$PM_{2.5}$	Primary	Annual	12 µg/m³	Annual mean, averaged over 3 years
		Secondary	Annual	15 µg/m³	Annual mean, averaged over 3 years
		Primary and Secondary	24-hour	35 µg/m³	98th percentile, averaged over 3 years
	PM_{10}		24-hour	150 µg/m³	Not to be exceeded more than once per year on average over 3 years
Sulfur Dioxide [75 FR 35520, Jun 22, 2010] [38 FR 25678, Sept 14, 1973]		Primary	1-hour	75 ppb(4)	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		Secondary	3-hour	0.5 ppm	Not to be exceeded more than once per year

Overall, Mexican ambient air quality standards are broadly consistent with U.S. National Ambient Air Quality Standards (NAAQS), reflecting a shared approach to protecting public health and environmental quality through comparable pollutant thresholds and averaging periods.

The USEPA and Mexican regulatory agencies have established comparable health-based exposure limits for the six criteria air pollutants and maintain coordinated air quality monitoring programs along the U.S.–Mexico border under the Clean Air Act framework and binational cooperation agreements. A substantial network of monitoring stations on both sides of the border provides air quality data, including real-time ozone monitoring and forecasting. These data are subject to quality assurance and control procedures before being incorporated into the USEPA Air Quality System (AQS) database.

Under the United States–Mexico–Canada Agreement (USMCA) and the Environmental Cooperation Agreement (ECA), the USEPA continues to collaborate with the Commission for Environmental Cooperation (CEC) to address regional air quality issues, strengthen enforcement of environmental laws, and support coordinated monitoring of transboundary environmental impacts.

Table 2 - Ambient Air Quality Standards for Mexico

Pollutant [final rule cite]		Primary/ Secondary	Averaging Time	Level	Form
Carbon Monoxide [NOM-021-SSA1-1993]		Primary	8-hour	11 ppm	Not to be exceeded more than once per year
Lead [NOM-026-SSA1-1993]		Primary and Secondary	3 months	1.5 µg/m³	Not to be exceeded
Nitrogen Dioxide [NOM-023-SSA1-1993]		primary	1-hour	0.21 ppm	Not to be exceeded more than once per year
Ozone [NOM-020-SSA1-2014]		primary	1-hour	0.095 ppm	Not to be exceeded over a period of one year.
		Secondary	8-hour	0.070 ppm	75th Percentile over a period of one year
Particle Pollution [NOM-025-SSA1-2014]	$PM_{2.5}$	primary and secondary	24-hour	65 µg/m³	75th percentile of each 24-hour concentration per day averaged over a period of one year
			Annual	15 µg/m³	75th percentile of each 24-hour concentration per trimester averaged over one year (at least 3 trimesters)
	PM_{10}	primary and secondary	24-hour	120 µg/m³	75th percentile of each hour concentration per day averaged over a period of one year
			Annual	50 µg/m³	75th percentile of each 24-hour concentration per trimester averaged over one year (at least 3 trimesters)
Sulfur Dioxide [NOM-022-SSA1-1993]		primary	24-hour	0.110 ppm	Not to be exceeded more than once per year
		secondary	Annual	0.025 ppm	Not to be exceeded

3.7 Noise

Under the Clean Air Act, the U.S. Environmental Protection Agency (USEPA) previously established the Office of Noise Abatement and Control (ONAC) to conduct research, investigations, and studies on noise and its effects on public health and welfare. The USEPA initially coordinated federal noise control activities; however, in 1981, responsibility for routine noise regulation was largely delegated to state and local governments, and ONAC was subsequently discontinued.

Despite this shift, the USEPA retains authority to conduct noise-related research, provide public information on noise impacts, respond to noise inquiries, and evaluate the effectiveness of existing regulatory programs in accordance with the Noise Control Act of 1972 and the Quiet Communities Act of 1978.

The Noise Control Act of 1972 established a national policy to "promote an environment for all Americans free from noise that jeopardizes their public health and welfare." In support of this policy, the USEPA published recommended noise exposure levels in 1974 to protect public health and welfare with an adequate margin of safety. These levels, expressed in decibels (dB), are summarized in Table 3.

Table 3 - USEPA Noise Standards for the U.S. (USEPA, 1974)

Effect	Level	Area
Hearing Loss	Leq(24) ≤ 70 dB	All areas
Outdoor activity interference and annoyance	Ldn(24) ≤ 55 dB	Outdoors in residential areas and farms and other outdoor areas where people spend widely varying amounts of time and other places in which quiet is a basis for use.
	Leq(24) ≤ 55 dB	Outdoor areas where people spend limited amounts of time, such as school yards, playgrounds, etc.
Indoor activity interference and annoyance	Ldn(24) ≤ 45 dB	Indoor residential areas
	Leq(24) ≤ 45 dB	Other indoor areas with human activities such as schools, etc.

The U.S. Department of Housing and Urban Development (HUD) provides guidance levels for assessing construction-related noise in residential areas. These levels are generally interpreted as follows:

- **Acceptable (≤ 65 dB):** Noise may be noticeable but is generally compatible with residential use.
- **Normally Unacceptable (> 65 dB to ≤ 75 dB):** Noise may require mitigation to reduce impacts to indoor and outdoor uses.
- **Unacceptable (> 75 dB):** Noise is generally considered incompatible with residential use without substantial mitigation.

As a general acoustical principle, noise from a stationary point source decreases with distance due to geometric spreading. Under ideal conditions, sound levels typically decrease by approximately 6 dB for each doubling of distance over hard surfaces. Over soft ground conditions, attenuation may increase by approximately 7.5 dB per doubling of distance due to additional ground absorption. This effect is commonly referred to as "spreading loss." For example, a noise level of 85 dBA measured at 50 feet would be reduced to approximately 79 dBA at 100 feet and 73 dBA at 200 feet under hard-ground conditions.

In Mexico, environmental noise standards are established by the Secretaría de Medio Ambiente y Recursos Naturales (SEMARNAT). Applicable limits include 55 dB during daytime hours (06:00–22:00) and 50 dB during nighttime hours (22:00–06:00) for residential areas. Higher thresholds apply to industrial and commercial zones (68 dB daytime and 65 dB nighttime), while school environments are subject to a 55 dB limit during recess periods (SEMARNAT, 2013).

3.8 Biological – Vegetative Resources

Flora and Fauna

The vegetation within the project area is characteristic of arid and semi-arid environments typical of the northern Tamaulipas and lower Rio Grande basin region. The area is primarily composed of two vegetation types, with tall thorny scrub (matorral alto espinoso) being dominant, and a smaller portion in the southern part of the municipality consisting of semi-dense scrub (matorral mediano subinerme).

Wildlife species associated with the region include deer (venado), coyote, rabbit and hare species (conejo and liebre), armadillo, and quail (codorniz). The project area is largely influenced by surrounding anthropogenic land uses and does not contain known habitats of significant ecological or economic value beyond the typical ecological functions of the regional Rio Grande–borderland ecosystem.

Endangered Species

The U.S. Endangered Species Act (ESA) of 1973 (16 U.S.C. §1531 et seq.) establishes a framework for the conservation of threatened and endangered species and the ecosystems upon which they depend. The Act requires federal agencies to evaluate potential effects of proposed actions on listed species and designated critical habitats under Section 7 consultation requirements (50 CFR Part 402).

The U.S. Fish and Wildlife Service (USFWS) is the lead federal agency responsible for implementing the ESA for terrestrial and freshwater species, including the identification of listed, proposed, candidate species, and critical habitats. In accordance with Section 7(c) of the ESA, an official species list was obtained through the Information for Planning and Consultation (IPaC) system (Project Code: 2026-0095505; May 28, 2026), identifying species that may occur within or near the proposed project area spanning southern Texas and adjacent northern Mexico.

The IPaC results identify 15 federally listed, proposed, or candidate species, including mammals, birds, clams, insects, and plants. Notable species include the endangered Gulf Coast jaguarundi (Puma yagouaroundi cacomitli) and ocelot (Leopardus pardalis), as well as the threatened Cactus ferruginous pygmy-owl (Glaucidium brasilianum cactorum) and other listed species such as the northern aplomado falcon (Falco femoralis septentrionalis).

Several aquatic and riparian species are also identified, including the endangered Texas hornshell (Popenaias popeii) and proposed listed freshwater mussels such as the Salina mucket (Potamilus metnecktayi). Plant species of concern include the star cactus (Astrophytum asterias), Walker's manioc (Manihot walkerae), and other federally listed flora endemic to South Texas and northern Tamaulipas.

Migratory birds protected under the Migratory Bird Treaty Act (MBTA) and Bald and Golden Eagle Protection Act were also identified, including species such as the painted bunting (Passerina ciris), chimney swift (Chaetura pelagica), orchard oriole (Icterus spurius), and eastern meadowlark (Sturnella magna). Seasonal presence of these species should be considered during construction scheduling to avoid nesting periods.

Based on the IPaC determination, no designated critical habitat overlaps the project footprint; however, several species within the broader region have designated or proposed critical habitat outside the immediate project area. Under ESA regulations, a "no effect," "may affect, not likely to adversely affect," or "may affect, likely to adversely affect" determination must be made for each listed species during project review, and consultation with USFWS may be required depending on the proposed action and potential impacts.

3.9 Critical Habitats

The ESA defines critical habitat as specific geographic areas containing physical or biological features essential to the conservation of listed species and which may require special management or protection (50 CFR §424.02). Critical habitat designations are published in the Federal Register following formal rulemaking.

According to the IPaC official species list (Project Code: 2026-0095505, May 28, 2026), no designated critical habitats occur within the proposed project area under USFWS jurisdiction. Although certain species listed for the region have designated or proposed critical habitat (including Texas Hornshell and several migratory bird species), spatial analysis confirms that these areas do not overlap the project footprint.

3.10 Cultural Resources

The National Historic Preservation Act (NHPA) of 1966 establishes federal policy for the identification, evaluation, and protection of historic properties. Section 106 of the NHPA, implemented through regulations promulgated by the Advisory Council on Historic Preservation (ACHP) at 36 CFR Part 800, requires federal agencies to take into account the effects of their undertakings on properties listed in or eligible for listing in the National Register of Historic Places (NRHP).

The State Historic Preservation Officer (SHPO) serves as the principal state-level authority for historic preservation review and consultation under Section 106. In Texas, SHPO responsibilities are administered by the Texas Historical Commission (THC). These responsibilities include maintaining the state's inventory of historic properties, reviewing federal undertakings for potential effects on cultural resources, and coordinating compliance with Section 106 and related state preservation requirements.

A cultural resources screening was conducted using the Texas Historical Commission's Texas Archaeological Sites Atlas (https://atlas.thc.texas.gov/Map), which provides access to recorded archaeological sites, historic markers, and NRHP-listed or eligible properties within Texas. The screening was performed to identify any known cultural resources within or in proximity to the project area, particularly on the U.S. side of the international boundary in Starr and Hidalgo Counties, Texas. The results indicate that two cemeteries are located within a six-mile radius of the project area as illustrated in **Figure 13**.

Based on the Atlas screening results and available geographic information, the proposed project footprint is located entirely within Mexico (Congregación Valadeces, Municipality of Gustavo Díaz Ordaz, Tamaulipas), and no ground disturbing activities are proposed within the United States. Accordingly, no known NRHP-listed or eligible properties, recorded archaeological sites, or designated historic resources within Texas are anticipated to be directly or indirectly affected by the proposed undertaking.

Additionally, consultation with the Texas Historical Commission (THC) indicated that no historic properties are present or affected by the project as proposed. THC noted that archaeological resources are known within the broader regional area and

recommended that appropriate measures be taken if archaeological materials, human remains, funerary objects, or other cultural resources are encountered during construction.

Similarly, the Lipan Apache Tribe of Texas confirmed that the project area does not fall within lands historically occupied by the Tribe and indicated that adverse effects to cultural resources are not anticipated. The THC and the Lipan Apache Tribe of Texas requested that, in the event cultural resources are encountered during construction, work in the immediate vicinity of the discovery cease and the appropriate authorities be notified for evaluation and appropriate action.

Because the proposed projects are located in Mexico and no construction activities or ground disturbance are proposed within Texas, no impacts to U.S. cultural resources are anticipated. The recommendations provided through the consultation will be considered during project implementation. In the event that previously unrecorded archaeological or cultural resources are encountered during construction, applicable Mexican cultural heritage protocols will be followed, including coordination with the Instituto Nacional de Antropología e Historia (INAH), as required under Mexican federal law.

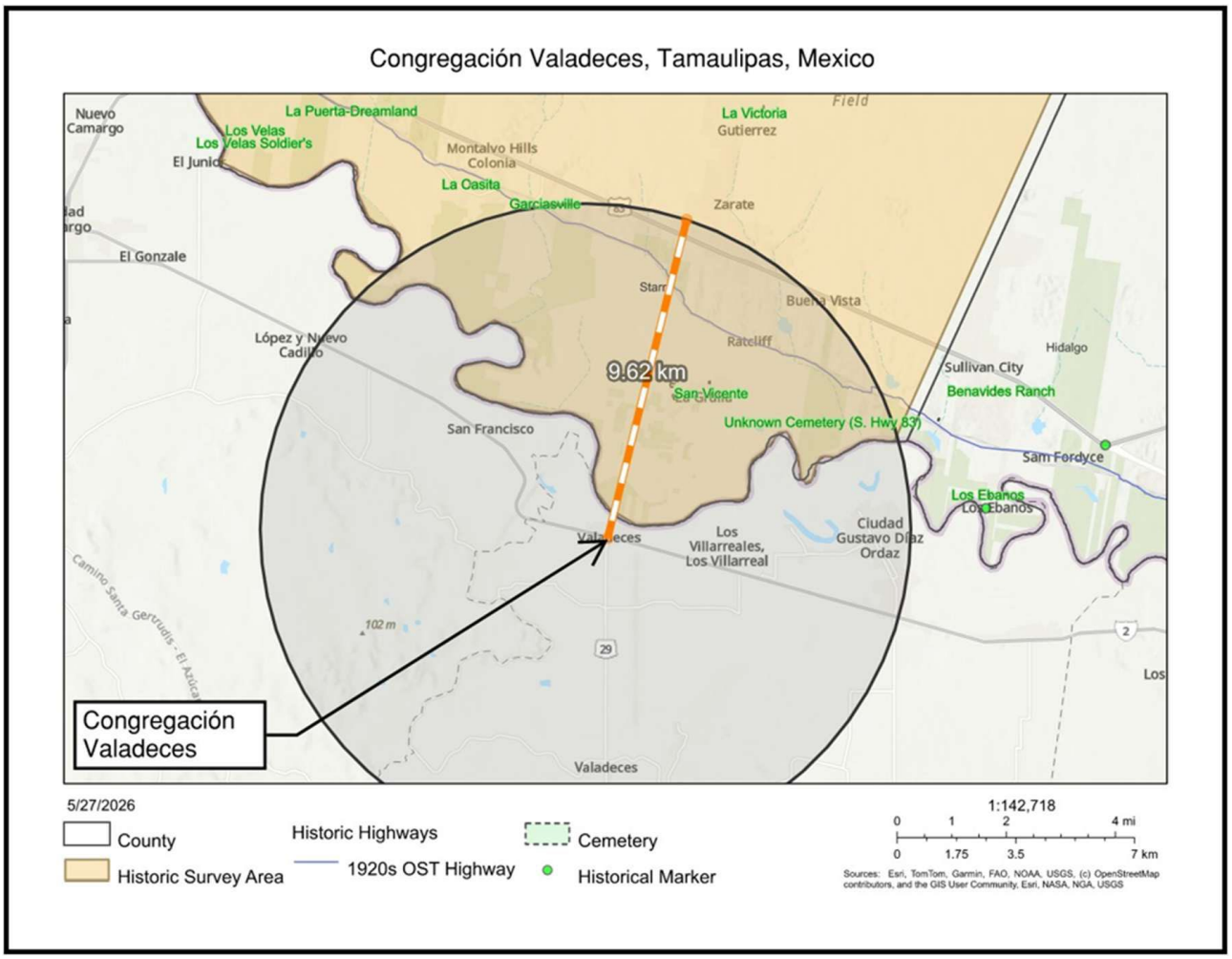


Figure 13 - Cultural Resources Screening Results

3.11 Socioeconomics

According to INEGI census data, Congregación Valadeces had a population of 1,895 in 2020. Historical population trends indicate that the locality has experienced gradual fluctuations over time, with a general long-term decline from earlier decades. Overall, population levels have remained relatively stable in recent years, with minor variations reflected in historical census records.

The population is predominantly of working age, with a reported economically active population (PEA) of 819 persons in 2020. Economic activity in the locality is primarily based on commerce, with approximately 128 establishments, mainly focused on retail trade such as grocery stores, pharmacies, stationery shops, tortilla shops, and restaurants.

In terms of housing, the locality contains 580 occupied private dwellings, with an average occupancy of 3.18 persons per household. Approximately 18 percent of housing units are unoccupied, and 11 percent are used seasonally. Housing conditions generally indicate moderate access to basic services, including water, electricity, and drainage infrastructure in most households.

3.12 Municipal Services – Waste Management, Transportation & Energy

In the project area, waste management is focused on wastewater collection and treatment. Valadeces currently has sanitary sewer service for most households, but the existing system is deteriorated and has allowed untreated wastewater to bypass treatment and reach the Rio Grande. The community has basic public infrastructure, including solid waste collection, potable water, and sewer service, but the wastewater system needs major rehabilitation and replacement to provide reliable service through 2044.

Transportation in Valadeces is primarily local and rural-urban in character. The community is served by paved roads, and the sanitary sewer system is divided by the Nuevo Laredo–Reynosa federal highway, showing that a major regional roadway crosses the area. The project itself is centered on existing utility corridors and the urbanized part of the community, so transportation impacts are mainly tied to local access and construction activity rather than major highway development.

The energy situation in the project area appears favorable for the proposed wastewater treatment approach. The selected treatment alternative has very low energy requirements because it relies primarily on gravity flow and natural biological processes, does not depend on electromechanical equipment, and does not require specialized operators. In other words, the project is designed to minimize power demand while still providing reliable wastewater treatment.

3.13 Public Health and Safety

The current public health and safety conditions in Valadeces are tied to the community's aging and inadequate wastewater system. The existing infrastructure deficiencies have allowed untreated wastewater to bypass treatment and discharge into the Rio Grande, creating ongoing environmental concerns and potential risks to public health for both Valadeces and downstream communities that rely on the river for water supply and agricultural irrigation. The current lagoon system is undersized and vulnerable to failure due to poor embankment conditions, while an abandoned package treatment plant has been out of service for several years, which further increases the risk of sanitation problems.

4 Environmental Consequences

This section of the EA outlines and evaluates the potential direct, indirect, and cumulative impacts on environmental resources that may result from implementing or not implementing the proposed alternatives. It also identifies recommended mitigation measures, if necessary, to avoid or minimize significant adverse effects on natural resources in Congregación Valadeces and within a six-mile radius of the United States.

Environmental resources will be evaluated and compared across the following alternatives:

- Alternative 1 – No-Action: Assumes existing conditions remain unchanged, with no improvements made to the wastewater treatment system. Under this scenario, the existing oxidation lagoons remain in service and the risk of collapse persists.

- Alternative 2 – Proposed Action: Assumes the rehabilitation and upgrade of the main lift station; the construction of a new force main line; and the construction of a new wastewater treatment plant (WWTP) consisting of a pretreatment process, followed by an Upflow Anaerobic Sludge Blanket (UASB) reactor, a facultative lagoon, a subsurface flow constructed wetland, a flow measurement station, a chlorine disinfection contact tank, sludge drying beds, leachate infiltration trenches, and a discharge/reuse system.

  The treatment train combines anaerobic treatment with natural polishing processes and disinfection to improve effluent quality while maintaining relatively low operation and maintenance requirements. The rehabilitation and upgrade of the main lift station, and the installation of a new 6-inch force main to convey wastewater to the proposed WWTP are also included in this alternative. Water quality of effluents will comply with the contaminant removal levels required by the current regulation in Mexico, NOM-001- SEMARNAT-2021.

Regulatory agencies in the United States have been notified of the proposed projects in Congregación Valadeces through an informational letter. This correspondence was used to request agency input regarding any potential direct, indirect, or cumulative impacts—both adverse and beneficial—that may result from implementation of the proposed projects. In addition, federally recognized tribes with potential cultural or historical affiliation to the area were notified. Based on the responses received during the coordination and consultation process, no adverse environmental impacts have been identified or anticipated by the responding agencies and tribes. Because the proposed projects are located entirely within Mexico, no additional consultation is anticipated.

The proposed projects will primarily occur within developed urban areas, where significant environmental impacts are not anticipated. However, appropriate construction-phase management measures should be implemented to protect environmental resources. If potential impacts to protected species are identified, a qualified biologist should be retained to evaluate and monitor project activities, ensure compliance with applicable regulations, and recommend mitigation measures as necessary. The biologist may also assist with the relocation of protected species, if required. Construction personnel should be informed of the presence of any threatened or protected species, and if such species are encountered, all construction activities shall cease immediately until a biologist is notified and appropriate actions are taken.

4.1 Land Use

The project area in Valadeces is already an urbanized community with existing wastewater infrastructure, so the alternatives would not change the overall land use pattern in a permanent way. Under the No-Action Alternative, land use would remain unchanged, but continued wastewater failures would persist within the community and could further affect nearby areas through sanitation problems and environmental degradation. Under the Proposed Action, the new wastewater treatment plant, force main, and lift station improvements would be built within developed or previously disturbed areas. This option requires the smallest land area for construction

Because the Proposed Action would be located in the urbanized area of Valadeces and would not extend into U.S. floodplains, major land use conversions are not expected. The project is intended to replace failing wastewater infrastructure rather than introduce new development, and the proposed facilities are not anticipated to adversely affect floodplain functions or induce floodplain development The Project Area is located within existing COMAPA wastewater system infrastructure routes. This land is developed and primarily covered in asphalt. As a result, construction activities will not require the acquisition of land or the development of undisturbed sites. Existing land uses would not be impacted due to the Proposed Action or Alternative 1.

4.2 Topography

The project area in Valadeces is already an urbanized community with existing wastewater infrastructure, so the alternatives would not change the overall land use pattern in a permanent way. Under the No-Action Alternative, land use would remain unchanged, but continued wastewater failures would persist within the community and could further affect nearby areas through sanitation problems and environmental degradation. Under the Proposed Action, the new wastewater treatment plant, force main, and lift station improvements would be built within developed or previously disturbed areas, this option requires the smallest land area for construction.

Because the Proposed Action would be located in the urbanized area of Valadeces and would not extend into U.S. floodplains, major land use conversions are not expected. The project is intended to replace failing wastewater infrastructure rather than introduce new development, and the proposed facilities are not anticipated to adversely affect floodplain functions or induce floodplain development.

4.3 Water Resources

Existing Conditions

The Rio Grande is an important regional water resource that supports aquatic habitat, recreation, water supply uses, and agricultural irrigation. Existing deficiencies in the wastewater collection and treatment systems in Valadeces have contributed to untreated wastewater discharges to Segment 2302 of the Rio Grande, resulting in degraded water quality and documented impairments associated with elevated bacteria concentrations. Water quality concerns include total phosphorus, chloride, sulfate, and total dissolved solids, constituents that may affect aquatic life and human health.

4.4 Floodplains

Existing Conditions

The proposed project area is located within the urbanized area Valadeces, outside any mapped FEMA Special Flood Hazard Area (SFHA) in the United States. The Federal Emergency Management Agency designates SFHAs in the U.S.; however, no portion of the proposed improvements extends into U.S. floodplains. The Rio Grande serves as the primary receiving water for regional drainage and as a shared international waterway between Mexico and the United States.

In Mexico, floodplain management is administered through multiple levels of government. According to the CENAPRED flood hazard mapping for the area between Valadeces and Gustavo Díaz Ordaz, the proposed WWTP site is adjacent to, but appears to be outside, the mapped 100-year floodplain.

Direct Effects

Under the No-Action Alternative, no construction would occur and no direct impacts to floodplains would be expected. However, existing wastewater infrastructure deficiencies would remain, allowing continued wastewater discharges to the Rio Grande.

Under the Proposed Action, construction of the new wastewater treatment plant, force main, and associated infrastructure would occur within previously developed or disturbed areas of Valadeces. Based on the available flood hazard mapping, the proposed facilities are not expected to be located within the mapped 100-year floodplain and therefore are not anticipated to adversely affect floodplain functions, floodwater conveyance, flood storage capacity, or flood elevations. The proposed improvements would also reduce untreated wastewater discharges to the Rio Grande, resulting in beneficial effects on surface water quality.

Indirect Effects

Under the No-Action Alternative, continued infrastructure deficiencies may contribute to ongoing degradation of water quality in the Rio Grande, resulting in continued environmental and public health concerns for communities on both sides of the border.

Under the Proposed Action, improved wastewater collection and treatment infrastructure would reduce the potential for untreated wastewater reaching the Rio Grande and provide long-term indirect benefits to regional water resources. Because the proposed facilities are located outside the mapped floodplain, the project is not expected to induce floodplain development or alter existing floodplain functions.

Cumulative Effects

Under the No-Action Alternative, continued wastewater discharges would contribute to the cumulative degradation of water quality within the Rio Grande watershed.

The Proposed Action is not expected to result in significant cumulative impacts to floodplains or floodplain functions. Instead, the project would provide cumulative environmental benefits by reducing pollutant loading to the Rio Grande, improving regional water quality, and supporting long-term protection of this shared international watershed.

Mitigation Measures

The following measures are recommended to minimize potential impacts to drainage features and nearby water resources during construction:

- Implement a Stormwater Pollution Prevention Plan (SWPPP) to manage and treat construction runoff.
- Establish buffer zones adjacent to tributaries and drainage channels connected to the Rio Grande.
- Control construction access and staging areas to minimize disturbance near waterways.
- Prevent disposal of waste, fill, or construction materials within drainage channels or adjacent water bodies.
- Maintain existing drainage patterns and avoid activities that could obstruct flow or increase downstream water levels.
- Use erosion and sediment control measures during construction to prevent sediment transport to nearby tributaries.

4.5 Wetlands

Existing Conditions
The Rio Grande is a shared international water resource that supports aquatic habitat, water quality functions, and associated wetland resources. Regulatory authority for wetlands is established under Executive Order 11990 and the Clean Water Act. Existing conditions in the project area include ongoing wastewater infrastructure deficiencies that contribute to untreated discharges to the Rio Grande, affecting water quality and associated ecological resources.

Review of available mapping in Mexico indicates that no Ramsar sites or mapped wetlands occur within the proposed project footprint. Although wetlands are present within the broader Rio Grande watershed, the proposed improvements would be constructed outside identified wetland areas.

Direct Effects
Under the No-Action Alternative, no construction would occur and no direct impacts to wetlands would result. However, existing deficiencies in the wastewater collection and treatment system would remain, allowing continued untreated wastewater discharges to the Rio Grande, with continued adverse effects on downstream aquatic habitats and wetland-dependent ecosystems.

Under the Proposed Action, construction of the wastewater treatment plant, force main, and associated infrastructure would occur outside mapped wetland areas. Consequently, no direct impacts to jurisdictional wetlands, Ramsar wetlands, or other identified wetland resources are anticipated. The proposed improvements would substantially reduce untreated wastewater discharges to the Rio Grande, resulting in improved water quality and beneficial effects on downstream aquatic and wetland ecosystems.

Indirect Effects
Under the No-Action Alternative, continued wastewater discharges may contribute to ongoing degradation of water quality and associated impacts to aquatic habitat and wetland functions within the Rio Grande corridor.

Under the Proposed Action, improved wastewater collection and treatment infrastructure would reduce bacteria, nutrient, and organic pollutant loading to the Rio Grande, providing long-term indirect benefits to downstream aquatic habitats, riparian areas, and associated wetland resources. Because no wetlands occur within the project footprint, indirect adverse effects to wetlands are not anticipated.

Cumulative Effects
Under the No-Action Alternative, continued untreated wastewater discharges would contribute to the

cumulative degradation of water quality and ecological resources within the Rio Grande watershed.

The Proposed Action is not expected to result in significant cumulative adverse impacts to wetlands. Instead, the project would provide cumulative environmental benefits by reducing pollutant loading to the Rio Grande, improving water quality, and supporting the long-term ecological integrity of aquatic and wetland resources within this shared international watershed.

Mitigation Measures
The following measures are recommended to avoid or minimize impacts to nearby water resources and associated wetland functions during construction:

- Implement erosion and sediment control measures to prevent sediment transport to adjacent waterways.
- Establish protective buffers near drainage channels and tributaries connected to the Rio Grande where feasible.
- Properly manage fuels, chemicals, and construction materials to prevent spills or releases to surface waters.
- Minimize disturbance outside designated construction limits and restore temporarily disturbed areas after construction.
- Implement stormwater best management practices during construction to reduce runoff and protect water quality.
- Dispose of construction waste in accordance with applicable regulations to prevent impacts to nearby aquatic resources.

4.6 Air Quality

Existing Conditions
Air quality in the project area is influenced by vehicle emissions, dust, and localized emissions associated with wastewater infrastructure. Existing deficiencies in the sanitary sewer system may result in odors and the release of gases such as hydrogen sulfide (H_2S), ammonia (NH_3), volatile organic compounds (VOCs), carbon dioxide (CO_2), and methane (CH_4), particularly where untreated wastewater is exposed or discharged.

Direct Effects
The Proposed Action would result in temporary and localized air emissions during construction from equipment exhaust, vehicle traffic, trenching, excavation, earthwork, and backfilling activities. Anticipated emissions include fugitive dust, particulate matter (PM_{10} and $PM_{2.5}$), nitrogen dioxide (NO_2), and minor chemical emissions. These effects would be short-term and limited to the construction period.

Under the No-Action Alternative, no construction-related air emissions would occur; however, existing air quality concerns associated with wastewater system deficiencies would remain.

Indirect Effects
Fine particulate matter generated during construction may disperse beyond the immediate work area and could contribute to short-term transboundary air quality effects. Following construction, improvements to the wastewater collection and treatment system are expected to reduce ongoing odor emissions and improve local air quality conditions by decreasing exposure to untreated wastewater and associated gases.

Cumulative Effects
When combined with other localized sources such as traffic and urban development, construction emissions may contribute incrementally to regional air pollutant levels. However, because impacts would be temporary and limited in scale, cumulative effects on air quality are not expected to be significant. Long-term operation of the proposed improvements would likely provide a beneficial cumulative effect through reduced wastewater-related emissions and odors.

Mitigation Measures
The following measures are recommended to minimize air quality impacts during construction:

- Apply water or approved dust suppressants on exposed soils and unpaved areas to control fugitive dust.
- Cover or stabilize stockpiled materials to reduce windblown dust.
- Install temporary wind barriers where feasible.
- Use properly maintained low-emission equipment where practicable.
- Minimize idling of construction vehicles and equipment.
- Conduct worker training on dust control and air quality protection measures.
- Comply with applicable air quality regulations and permit requirements.
- Perform periodic monitoring as needed to identify and address localized air quality concerns.

To minimize odor impacts during operation, installation of odor control systems at the lift stations is recommended. A two-stage biological treatment system followed by activated carbon filtration can effectively reduce H_2S and related odors, substantially minimizing nuisance odors to nearby receptors.

4.7 Noise

Existing Conditions
Existing noise levels in the project area are typical of urban and residential environments and are primarily influenced by local traffic, community activity, and existing infrastructure operations. Sensitive receptors include nearby residences and public open spaces.

Direct Effects
Under the No-Action Alternative, no construction would occur and no additional noise impacts would be expected.

The Proposed Action would result in temporary increases in noise during construction from heavy equipment, power tools, generators, compressors, and construction vehicle traffic. Typical construction equipment noise levels generally range from approximately 70 to 83 dBA at 50 feet. Noise levels would decrease with distance and would be temporary, occurring only during active construction.

Indirect Effects
Construction-related noise may temporarily affect nearby residents and other sensitive receptors adjacent to the work areas. Potential indirect effects may include short-term disturbance to daily activities, outdoor use, and general comfort in nearby residential areas.

Cumulative Effects
When combined with existing urban noise sources such as roadway traffic and neighborhood activity, construction noise may contribute incrementally to ambient noise levels. However, because construction activities would be temporary and localized, cumulative noise impacts are not expected to be significant.

Mitigation Measures
The following measures are recommended to minimize construction-related noise impacts:

- Restrict construction activities to daytime weekday hours, such as 7:00 a.m. to 5:00 p.m., Monday through Friday.
- Use equipment that meets applicable noise emission standards and low-noise equipment where practicable.
- Install temporary noise barriers where feasible near sensitive receptors.
- Equip machinery, generators, and compressors with mufflers or other noise-reducing devices.
- Maintain construction equipment in good working condition to minimize excessive noise.
- Use silencers on pneumatic tools and implement vibration control measures as appropriate.
- Coordinate with nearby residents and provide advance notice regarding construction schedules and temporary disruptions.

4.8 Biological & Vegetation Resources

Existing Conditions
Biological resources within the project area include aquatic and riparian habitats associated with the Rio Grande and its tributaries. These habitats support fish, migratory birds, and other wildlife species, including federally listed threatened or endangered species that may occur within or near the Rio Grande corridor. Existing deficiencies in the wastewater collection and treatment systems in Valadeces have contributed to untreated wastewater discharges to the Rio Grande, which can adversely affect aquatic habitat quality through increased bacteria, nutrient loading, reduced dissolved oxygen, and degraded overall ecosystem conditions.

Direct Effects
Under the No-Action Alternative, no improvements would be made to the wastewater collection or treatment systems, and existing conditions would continue. Untreated wastewater discharges to the Rio Grande would persist, resulting in continued degradation of aquatic habitat and water quality. These conditions could adversely affect fish and wildlife species dependent on the river and associated riparian habitats, including species sensitive to changes in water quality. Continued infrastructure deterioration and projected increases in wastewater volume may further increase stress on biological resources over time.

Alternatives 2 would upgrade the wastewater treatment system in Valadeces to reduce or eliminate untreated wastewater discharges to the Rio Grande. These improvements are expected to result in direct beneficial effects to biological resources through improved water quality and reduced pollutant loading, which would support healthier aquatic and riparian habitat conditions. Temporary construction-related impacts may occur in localized work areas and could include vegetation disturbance, noise, dust, and increased human activity.

Indirect Effects

Under the No-Action Alternative, continued wastewater discharges may indirectly contribute to long-term degradation of aquatic and riparian ecosystems, reducing habitat quality and increasing stress on species that depend on the Rio Grande corridor for feeding, nesting, migration, or shelter. Continued impacts to water quality may also affect critical habitat functions necessary to support threatened and endangered species.

Under Alternatives 2, improved wastewater management is expected to provide long-term indirect benefits to biological resources by improving receiving water conditions in the Rio Grande. Reduced bacteria and pollutant inputs would improve habitat quality, support aquatic life, and enhance ecological function within the river corridor and downstream habitats.

Cumulative Effects

Under the No-Action Alternative, continued wastewater discharges would contribute to cumulative degradation of habitat quality and ecosystem health within the Rio Grande watershed. These impacts could compound existing environmental stressors affecting aquatic and riparian species.

Alternatives 2 is expected to provide beneficial cumulative effects by reducing pollutant discharges to the Rio Grande and improving habitat conditions for aquatic organisms, migratory birds, and other wildlife associated with the watershed.

Mitigation Measures

The following measures are recommended to minimize temporary construction-related impacts to biological resources:

- Minimize vegetation clearing and limit ground disturbance to the smallest area necessary for construction activities.
- Restore temporarily disturbed areas following construction using native riparian and herbaceous vegetation, where feasible.
- Conduct pre-construction surveys in areas requiring vegetation clearing to identify active bird nests or other sensitive biological resources.
- Avoid disturbance to nesting birds during the breeding season, where practicable, consistent with the Migratory Bird Treaty Act.
- Implement erosion and sediment control measures to prevent sedimentation and protect nearby waterways and habitat.
- Manage waste, fuels, and hazardous materials in accordance with applicable regulations to avoid contamination of soil and surface waters.
- Implement measures to protect water quality during construction to avoid impacts to aquatic habitat and species.
- Provide environmental awareness training for construction personnel regarding protection of biological resources and required avoidance measures.

4.9 Critical Habitats

Under the No-Action Alternative, no direct impacts to critical habitat are anticipated because no construction would occur; however, the continued untreated wastewater discharges could contribute to long-term degradation of aquatic habitat conditions and indirectly stress species associated with critical habitat in the Rio Grande corridor.

Under the Proposed Action, no designated critical habitat overlaps the project footprint, and the project would occur entirely within Mexico and mostly in previously disturbed urban areas. As a result, direct impacts to critical habitat are not expected. Any effects would be minor, temporary, and construction-related, and the project is expected to provide long-term beneficial effects by reducing pollutant loading and improving water quality in the Rio Grande watershed

4.10 Cultural Resources

Existing Conditions

Cultural resources found at this stage include archaeological site properties that may be eligible for inclusion in the National Register of Historic Places. These sites are located within the six-mile radius into the U.S. The proposed improvements will take place within developed urban areas of Valadeces.

Direct Effects

Under the No-Action Alternative, no construction activities would occur and no direct effects to cultural resources are anticipated. Because no ground disturbance would take place, no impacts to archaeological sites, historic structures, or other cultural resources would result from project implementation. Existing wastewater infrastructure deficiencies would remain, and associated sanitary conditions could continue to affect aesthetics and broader community conditions; however, no physical impacts to historic properties are anticipated.

Alternatives 2, which involves the construction of a new force main line and WWTP in Valadeces, will generally occur within previously disturbed areas. Because all project activities are located in Mexico and no ground disturbance is proposed within the United States, no direct impacts to cultural resources in the United States are anticipated. A cultural resources review will be requested through the eTRAC system to support this determination.

Indirect Effects

Under the No-Action Alternative, no indirect effects to historic properties are anticipated.

Under Alternatives 2, temporary indirect effects associated with construction could include localized noise, visual disturbance, dust, and increased vehicle activity. These effects would be short-term and limited to active construction areas. Because the proposed work occurs primarily within existing urbanized and previously disturbed areas, indirect effects to historic properties or archaeological resources are expected to be minimal.

Cumulative Effects

Under the No-Action Alternative, no cumulative effects to cultural resources are anticipated because no construction or land disturbance would occur.

Alternatives 2 is not expected to contribute to cumulative impacts on cultural resources because project activities are confined to previously disturbed urban areas in Mexico and do not involve new rights-of-way, easements, or construction within the United States.

Mitigation Measures

Although impacts to cultural resources are not anticipated, the following measures are recommended during project implementation:

- Limit construction activities to previously disturbed areas and existing utility corridors to avoid unnecessary ground disturbance.
- If previously unknown archaeological materials, human remains, or cultural deposits are encountered during construction, cease work in the immediate area and notify the appropriate authorities for evaluation before
- activities resume. Follow applicable Mexican cultural heritage protocols, including coordination with the Instituto Nacional de Antropología e Historia (INAH), as required under Mexican federal law.
- Ensure construction personnel are informed of procedures for inadvertent discoveries of cultural materials.
- Avoid staging equipment or storing materials outside designated work areas to minimize disturbance to adjacent properties.
- Coordinate with applicable agencies or Tribal representatives, as appropriate, if project scope changes or previously unidentified cultural resources are discovered during implementation.

4.11 Socioeconomics

Existing Conditions

Socioeconomic conditions in the project area are closely tied to public health, environmental quality, utility reliability, and access to basic infrastructure. Wastewater collection and treatment services in Valadeces support residential neighborhoods, commercial activity, and regional economic development. Existing deficiencies in the wastewater treatment system have contributed to untreated wastewater discharges, creating sanitation concerns that may affect quality of life, public health, nearby property values, and the condition of shared natural resources such as the Rio Grande. Because the river serves communities on both sides of the international border, water quality conditions also influence recreational use, ecological health, and downstream economic activities.

Direct Effects

Under the No-Action Alternative, no improvements would be made to the wastewater collection or treatment systems, and existing conditions would continue. Continued infrastructure deficiencies could increase the likelihood of sewer overflows, untreated wastewater discharges, and associated public health

concerns. Exposure to untreated sewage during system failures may adversely affect residents, reduce quality of life, and place additional strain on local services. These conditions could also negatively affect property values and limit economic growth by reducing the reliability of essential public infrastructure.

Under Alternative 2, construction activities are expected to generate short-term economic benefits through employment of contractors, construction labor, equipment operators, and material suppliers. Procurement of goods and services from local businesses may provide temporary economic activity during implementation. Long-term benefits are expected from improved wastewater service reliability, reduced sanitary risks, and improved environmental conditions.

Indirect Effects

Under the No-Action Alternative, continued wastewater infrastructure deficiencies may indirectly affect community well-being by contributing to environmental degradation, poor sanitary conditions, and reduced confidence in public infrastructure. Ongoing water quality impacts to the Rio Grande may also affect activities such as recreation, agriculture, and other economic uses associated with regional water resources.

Under Alternative 2, indirect beneficial effects are expected from improved wastewater management and reduced untreated discharges. Improved sanitation and environmental quality may enhance quality of life for residents, reduce potential public health risks, and support long-term economic stability. Improved water quality may also benefit activities connected to the Rio Grande, including recreation, agriculture, and ecosystem services shared by communities in Mexico and the United States.

Cumulative Effects

Under the No-Action Alternative, continued deterioration of wastewater infrastructure may contribute to cumulative adverse socioeconomic effects associated with environmental degradation, recurring sanitary concerns, and reduced infrastructure performance over time.

Alternatives 2 is expected to result in beneficial cumulative socioeconomic effects by improving essential public infrastructure, supporting long-term public health and environmental quality, and contributing to local and regional economic resilience. Benefits may extend to both Valadeces and nearby U.S. communities through improved shared water quality and reduced transboundary environmental impacts.

Mitigation Measures

The following measures are recommended to minimize temporary disruptions during construction and maximize socioeconomic benefits:

- Maintain communication with affected residents, businesses, and community stakeholders regarding project schedules, construction activities, and anticipated service interruptions.
- Promote local hiring where feasible to provide employment opportunities during construction.
- Encourage procurement of materials and services from local businesses and suppliers when practicable.
- Coordinate construction scheduling to minimize disruption to traffic circulation, business access, and neighborhood activities.

- Implement public health and safety measures during construction to reduce temporary nuisances such as dust, noise, and restricted access.
- Support long-term infrastructure planning and maintenance to sustain wastewater system performance and associated community benefits after project completion.

4.12 Municipal Services – Waste Management, Transportation & Energy

Under the No-Action Alternative, waste management conditions would continue to deteriorate because the existing wastewater system would remain deficient, allowing untreated wastewater discharges and overflows to persist and likely worsen over time. This would continue to affect water quality, public health, and nearby environmental conditions. Transportation would see no construction-related disturbance under this alternative, but existing sanitation problems would remain unresolved. Energy demand would also remain unchanged in the short term, although the current system would continue operating inefficiently because of its outdated infrastructure

Under the Proposed Action, waste management impacts would be beneficial overall because the project would rehabilitate the main lift station, construct a new force main, and build a new WWTP designed to eliminate untreated wastewater discharges and comply with NOM-001-SEMARNAT-2021. The selected treatment option has very low energy requirements because it relies primarily on gravity flow and natural biological processes, does not depend on electromechanical equipment, and does not require highly specialized operators. Transportation impacts would be minor, temporary, and localized during construction, with short-term traffic and access disruptions expected only within the urban project area. Overall, these effects would be reversible and limited to previously disturbed urban corridors

4.13 Public Health and Safety

Under the No-Action Alternative, public health and safety would continue to be adversely affected because the existing wastewater system would remain deficient and untreated wastewater discharges would likely persist or worsen over time. Ongoing sewer failures, lagoon deficiencies, and direct discharges to the Rio Grande create continuing environmental and public health concerns for Valadeces and downstream users of the river.

Under the Proposed Action, public health and safety would improve substantially over the long term because the project would rehabilitate the lift station, install a new force main, and construct a new wastewater treatment plant designed to eliminate untreated discharges and meet Mexican effluent requirements. The project would reduce environmental and public health risks and provide a reliable wastewater treatment system through 2044.

During construction, any public health and safety effects would be minor, temporary, and localized to the urban project area. Utilize standard mitigation such as communication with residents, traffic coordination, and health and safety measures to reduce dust, noise, and restricted access during construction

4.14 Cumulative Effects

The cumulative effects analysis indicates that the No-Action Alternative would contribute to ongoing cumulative degradation of water quality and ecological resources in the Rio Grande watershed because untreated wastewater discharges would continue and likely increase as the system deteriorates. The continued discharges could also lead to cumulative adverse socioeconomic effects, including recurring

sanitary concerns, reduced infrastructure performance, and continuing public health concerns through 2044.

By contrast, the Proposed Action is expected to produce beneficial cumulative effects overall. The project would reduce pollutant loading to the Rio Grande, improve water quality, and support the long-term ecological integrity of aquatic and wetland resources within this shared international watershed. It would also provide cumulative socioeconomic benefits by improving essential public infrastructure, supporting public health and environmental quality, and increasing community resilience

4.15 Conclusion

This EA provides an evaluation of the environmental impacts associated with alternatives developed to address untreated wastewater discharges into the Rio Grande and deficiencies in the wastewater treatment system serving Congregación Valadeces, a community within Gustavo Diaz Ordaz, Tamaulipas, Mexico.

The No-Action Alternative assumes that no improvements are implemented to the existing wastewater treatment system, allowing current infrastructure deficiencies to continue. Under this alternative, untreated wastewater discharges to the Rio Grande would likely persist in response to projected population growth through 2044. Existing conditions, including an abandoned modular package treatment plant that is no longer operational, as well as two wastewater lagoons with irregular geometry and limited treatment capacity serving the community, would continue to constrain wastewater treatment and contribute to ongoing discharges to the Rio Grande. These conditions would contribute to continued public health concerns and degradation of environmental resources.

The Proposed Action consists of comprehensive improvements to the wastewater treatment system in Valadeces to address existing deficiencies and provide adequate wastewater treatment capacity. The Proposed Action is designed to accommodate projected wastewater demands through 2044, improve system reliability, and reduce environmental and public health risks. Treated effluent would also be beneficially reused for agricultural irrigation during the irrigation season, with excess flows discharged in accordance with applicable permit requirements. The Proposed Action is eligible for potential funding under the Border Environment Infrastructure Fund (BEIF), administered by the North American Development Bank (NADB) and supported by the U.S. Environmental Protection Agency (USEPA).

The No-Action Alternative would perpetuate existing conditions and may contribute to continued or increased impacts to environmental and public health resources, including water quality, biological resources, air quality, wetlands, and socioeconomic conditions. In contrast, the Proposed Action would address existing wastewater treatment deficiencies, reduce untreated wastewater discharges, and improve the reliability and capacity of the wastewater treatment system.

Based on the environmental analysis presented in this EA, the Proposed Action is identified as the preferred alternative because it would address the existing wastewater treatment deficiencies, support projected wastewater demands through 2044, reduce untreated discharges to the Rio Grande, and improve water quality conditions. The beneficial reuse of treated effluent for agricultural irrigation during the irrigation season would provide an additional benefit by reducing reliance on freshwater supplies in the region. Overall, the Proposed Action represents a substantial improvement over the No-Action Alternative and is expected to provide long-term environmental and public health benefits while supporting the wastewater treatment needs of Congregación Valadeces through 2044.

5 Environmental Letters of Concurence

On June 9, 2026, the North American Development Bank (NADBank) sent emails to relevant agencies requesting acknowledgement, in writing, that they are in concurrence with the determination that the proposed rehabilitation efforts as described previously are eligible for the categorical exclusion as under 40 CFR §602.4(a)(l)(ii).

Letters of concurrence were sent to the following agencies:

- International Boundary and Water Commission
- United States Fish and Wildlife Service, Texas Coastal & Central Plains
- Texas Commission on Environmental Quality
- United States National Park Service
- Texas Historical Commission (State Historical Preservation Office)
- Lipan Apache Tribe
- Carrizo Comecrudo Nation