



**PROJECT PROPOSAL
THROUGH THE WATER INVESTMENT PROGRAM
WATER AND WASTEWATER INFRASTRUCTURE
PROJECT FOR LA LADRILLERA IN MEXICALI,
BAJA CALIFORNIA**

*Submitted to Funding Committee:
February 4, 2026*



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EXECUTIVE SUMMARY

WATER AND WASTEWATER INFRASTRUCTURE FOR LA LADRILLERA, MEXICALI, BAJA CALIFORNIA

Access to potable water remains an issue in many marginalized communities in Mexico; one such community is La Comunidad Rural la Ladrillera (La Ladrillera) in Mexicali, Mexico. Although water is already available in nearby communities, La Ladrillera still does not have access to a water distribution system. Residents rely on hauled water provided by the Municipality, which is stored on-site for use between deliveries. Deliveries are scheduled to occur twice a week, but are not always reliable and sometimes occur only once every ten days. When deliveries are delayed, residents report using water from a nearby irrigation canal, which is unfit for human consumption. Water is a basic need, and not having access to potable water is associated with many threats to human health.

La Ladrillera lacks other basic services such as wastewater collection, solid waste collection, and electricity. Outhouses and cesspools are used by many Ladrillera residents, resulting in discharges of untreated wastewater, which create risks to human health and to the environment. Untreated wastewater can contaminate ground and surface waters, and threaten human health with waterborne diseases including hepatitis, cholera, amebiasis, and giardiasis.

The proposed Project will provide first-time access to drinking water services and on-site wastewater disposal systems to La Ladrillera, both are critical basic services. Water services will be provided by constructing a distribution system connected to existing water infrastructure in the nearby *Colonia* of El Choropo, and biodigester units will be installed at each residence to treat wastewater discharges. The Project will provide 33 water connections and biodigesters and will benefit approximately 105 residents.

The Project sponsor is the local water utility, Comisión Estatal de Servicios Públicos de Mexicali (CESPM). The utility now supplies water to more than 344,000 hookups and wastewater services to 322,500 connections. The utility's water coverage is approaching 100%, but outlying communities like La Ladrillera still lack services, and these communities have become a priority for CESPM.

As a project to provide potable water and wastewater services to a previously unserved community, and it is eligible for grant funds through the Community Assistance Program (CAP). Without the grant, residents in the area cannot afford to finance the Project, the existing conditions in the community will not be resolved, residents will not have access to potable water, and wastewater will continue to be discharged without treatment. The lack of access to these two basic services creates risks to human health and the environment. CAP funds are necessary because there are no other funding sources available to complete this Project.

Table 1 provides an outline of the proposed Project's eligibility and key highlights of the Project and proposed financing

Table 1
PROJECT PROFILE

Project Eligibility

Type (Sector):	Water and Wastewater
Location:	La Comunidad Rural la Ladrillera Mexicali, Baja California, Mexico, located approximately nine miles south of the U.S.-Mexico border.
Sponsor:	Comisión Estatal de Servicios Públicos de Mexicali (CESPM) -- established by the State of Baja California in 1967 for the purpose of providing water and wastewater services in the Municipality of Mexicali.

Project Summary

Objective:	Reduce the risks to human health associated with waterborne diseases, resulting from consuming contaminated drinking water and from contact with untreated wastewater, by providing first-time access to safe drinking water and wastewater management in the community of La Ladrillera.
Expected Outcomes:	▪ New access to a safe and reliable drinking water source for 33 existing households, eliminating the health risk associated with hauled water and on-site storage tanks, and ▪ Provide on-site wastewater management service to 33 existing households, and ▪ Treat approximately 6,300 gallons per day of wastewater from the community.
Population to Benefit:	105 residents of La Ladrillera
NADBank Additionality:	Through the NADBank's participation, the Project has expanded from a water supply Project to also include wastewater management in the community. The CAP program is unique in its ability to provide funds to highly marginalized communities and to work on projects where conditions require innovative solutions.
Project Cost:	\$725,600

Financing Summary

Grant Amount:	\$653,400 from the Community Assistance Program (CAP)
Grant Recipient:	Comisión Estatal de Servicios Públicos de Mexicali (CESPM)
Percentage of Project Financed by NADBank:	90.0%

PROJECT PROPOSAL THROUGH THE WATER INVESTMENT PROGRAM

WATER AND WASTEWATER INFRASTRUCTURE PROJECT FOR LA LADRILLERA IN MEXICALI, BAJA CALIFORNIA

1. CERTIFICATION CRITERIA

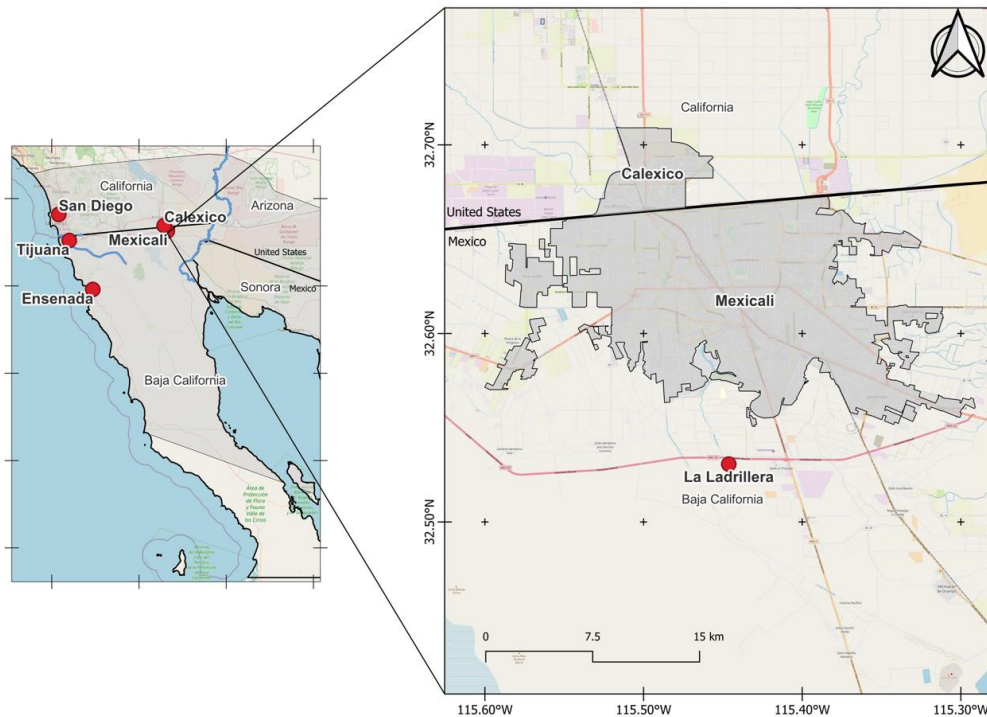
1.1. Technical Criteria

1.1.1. Project Description

Project Location

La Comunidad Rural La Ladrillera (La Ladrillera) is a small community located approximately 1.8 miles south of the Mexicali urban area and 9 miles from the U.S.-Mexico border. Figure 1 shows the location of La Ladrillera in relationship to the Mexicali urban area and the international border.

**Figure 1
PROJECT LOCATION MAP**



According to 2020 census data from Mexican National Institute of Statistics and Geography (INEGI), the population of La Ladrillera is 105.¹ The community includes 73 lots, and 45 dwellings, but currently only 33 are occupied. INEGI has identified La Ladrillera as a highly marginalized community characterized by substandard housing, lack of basic services and the high poverty level of its residents.

The community lacks basic services, including water, sanitary sewer, solid waste collection and electricity. The proposed Project will provide first-time access to potable water and wastewater management by extending the water distribution system from the nearby Colonia El Choropo to La Ladrillera, and by installing onsite biodigesters to provide wastewater treatment.

Project Scope

The drinking water component of the Project will connect La Ladrillera to existing water infrastructure owned and operated by CESPM. The system will be constructed entirely of 100 mm (4-inch) polyvinyl chloride (PVC) pipelines and will provide service to the 33 occupied residences and stub-outs at the remaining 12 dwellings. Services will include water meters and three-quarter-inch yard lines. A total of 4,635 m (15,200 LF) of waterlines will be installed, including a transmission line of 3,045 m (9,990 LF) from existing CESPM water infrastructure in the neighboring community of El Choropo to La Ladrillera. The system will branch into three main distribution water lines in La Ladrillera with a total length of 1,590 m (5,210 LF). The general layout of the Project water piping is depicted in Figure 2.

Figure 2
LA COMUNIDAD RURAL LA LADRILLERA



The wastewater component of the Project will consist of furnishing and installing 33 biodigesters, prefabricated bathrooms and associated plumbing to make the systems fully

¹ Source: INEGI,
https://www.inegi.org.mx/contenidos/productos/prod_serv/contenidos/espanol/bvinegi/productos/nueva_es_truc/702825197926.pdf

operational. The prefabricated bathrooms will be placed outside each home, and water service lines will connect to the prefabricated bathrooms.

Project Milestones

As indicated in Table 2, all project development activities have been completed, including the respective reviews and authorizations from the Mexican National Commission of Water (CONAGUA) and the Baja California Ministry of Environment. An Environmental Impact Statement (MIA) was not required. CESPM has also obtained all necessary easements and right of ways for project implementation and has provided planning documents that support the Project design requirements and anticipated costs. Construction is expected to be completed within seven months of the start date.

Table 2
PROJECT MILESTONES

Key Milestone	Timetable
Planning documents	Completed (January 2024)
Environmental clearance	Completed (March 2024)
Final design	Completed (January 2024)
Construction procurement	3 months
Project construction	7 months

1.1.2. Technical Feasibility

CESPM completed planning and design documents for the water system extension in January 2024. The planning information included the number of service connections to be provided, a description of existing conditions and the feasibility of providing service to La Ladrillera. The planning and design documents were reviewed by CONAGUA to verify that the Project will meet Mexican design standards for water systems. A letter validating the planning documents was issued by CONAGUA on March 26, 2024. The design is based on providing 45 connections got an estimated 162 residents. The new system needs to have the capacity to provide 48,600 liters per day (L/day) or 12,839 gallons per day (gpd), maintain an average flowrate of 0.56 liters per second (lps) or 8.87 gallons per minute (gpm) and peak flows of 1.688 lps (26.75 gpm). Hydraulic modeling using WaterCAD verified that the proposed system will be able to meet existing and future demand, and residents will have adequate water pressure ranging between 18 and 20 m (25 and 30 psi).

CESPM, the Project sponsor, supplies potable water to the entire municipality of Mexicali, which has a population of approximately 1.2 million residents. The majority of its customers live within the Mexicali urban area; however, CESPM is also responsible for providing service to several small outlying communities, such as La Ladrillera and El Choropo. The utility uses a mix of well water and surface water from the Colorado River as its water supply. Surface water is stored at the Morelos Reservoir prior to treatment.² To meet demand in its service area, CESPM operates three treatment facilities capable of producing 480 million liters per day (5,550 lps) or 127 million gallons per day (mgd) of potable water. CONAGUA requires

² Source: CESPM, <http://www.cespm.gob.mx/tf-infraestructura.html#gsc.tab=0>

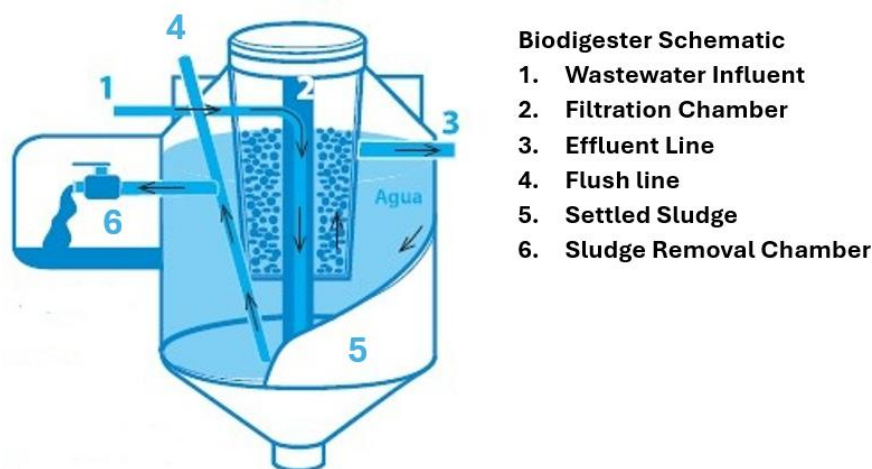
water systems to have sufficient capacity to provide 300 L/day per person (80 gallons per capita per day). Based on the population served by CESPM, it needs to have a minimum capacity of 300 million L/day, which it exceeds.

The Project will take advantage of existing CESPM infrastructure with the construction of a transmission line from El Choropo, which is approximately 3.1 km (1.9 miles) from La Ladrillera. There is no other water infrastructure nearby to use as a potential connection point, making the connection in El Choropo the best option in terms of construction, costs and future operations. The Project is required since no action will mean that the community will continue to depend on unreliable municipal water deliveries stored on-site under conditions that leave the water vulnerable to contamination and unsuitable for human consumption.

To manage wastewater, individual on-site biodigesters were identified as the preferred option, because they are designed to simplify maintenance and do not require frequent draining. The alternative of connecting La Ladrillera to the CESPM wastewater system is not feasible due to the distance between the community and existing infrastructure. Wastewater disposal must be addressed to eliminate human health risks and potential contamination of surface water from discharges of raw wastewater to the environment.

The proposed biodigester is illustrated in Figure 3 below. Wastewater enters the system through a yard line (1) and filtered through an active media, which contains microorganisms to digest organic matter in the wastewater (2). After passing through the media, the treated water is discharged from the tank to an absorption field (3). Sludge, a byproduct of the digestion process, settles to the bottom of the tank and needs to be removed annually. To remove the settled sludge (5), water is fed into the tank through a flush line (4) to drive the sludge into a removal chamber (6).

Figure 3
BIODIGESTER SCHEMATIC



CESPM has committed to providing semi-annual maintenance of the biodigesters, even though only annual maintenance is typically required. Typical septic tanks require periodic

pumping with a Vactor truck to remove accumulated sludge; however, as described above, these systems are designed to facilitate flushing with water. They are in use throughout Mexico and have proven to provide adequate treatment in compliance with Mexican regulatory specifications for on-site systems. The systems have also been approved for use in the United States. No shallow groundwater has been found in the area, so the drain field for discharges are deemed adequate. The Project will have an open procurement process, so similar systems will be considered if any are identified.

Prefabricated standalone restrooms have also been included in the Project due to the condition of most homes in La Ladrillera. The houses are poorly constructed and do not have indoor plumbing. Adding plumbing would be very difficult in most cases and is beyond the scope of this Project. Using prefabricated bathrooms will ensure homes are able to connect to the water system and provide a location to complete water hookups and wastewater lines.

1.1.4. Land Acquisition and Right-of-Way Requirements

The Project will be constructed along an existing service road for an agricultural drain from Choropo to La Ladrillera. The road is owned by the *Asociación del Usuarios Modulo 18 Derecha Rio Colorado A.C.* In La Ladrillera the waterlines will be constructed in roadways that parallel agricultural canals. On April 24, 2024, CESPM sent a letter requesting access to construct the waterline along the Association's roadways, and access was granted on May 2, 2024. No additional easements or permits are needed for the construction of the water distribution lines.

CESPM will be responsible for working with the community to complete agreements for access to individual properties for the construction of yard lines and the installation of prefabricated bathrooms and biodigesters. The agreements will include giving the utility access to the biodigesters for maintenance in perpetuity.

1.1.5. Project Operations

The new water infrastructure will be owned and operated by CESPM. The utility has extensive operational experience with both water and wastewater systems. Currently, it provides services to approximately 1.2 million residents. Its service area includes Mexicali, Mexicali Valley, and San Felipe.

CESPM was created in 1967 by the State of Baja California for the purpose of planning, construction, maintenance, and operations of water and sanitary systems in the Municipality of Mexicali. Since its creation, CESPM has grown into a large utility with over 320,000 water hookups and over 300,000 wastewater connections. Potable water from the treatment facilities is distributed to the City of Mexicali, San Felipe and 26 communities in the valley. The distribution system has more than 4,430 km (2,700 miles) of pipeline. The wastewater collection system has approximately 2,900 km (1,800 miles) of sewer lines, five wastewater treatment plants with a total capacity of nearly 2,164 lps (50 mgd) and 14 lift stations.

To manage such extensive operations, the utility is organized into several departments, including Water Treatment, Wastewater Treatment, Operations and Maintenance (O&M), Construction and Administrative Services. The utility has O&M manuals, established

procedures and training programs in place to ensure that its staff is qualified to maintain its infrastructure and provide high quality services. The operational activities created by this Project are likely to be limited to fixing waterline breaks, replacing meters and maintaining the on-site wastewater systems. As previously mentioned, the biodigesters are designed to require minimal maintenance and should not create any significant challenges for CESPM operators. However, the biodigesters will generate sludge, which CESPM will remove and manage with the sludge from its WWTPs. CESPM has all the technical and administrative tools necessary to maintain the La Ladrillera infrastructure.

Mexicali has a track record of developing and completing new projects in its Capital Investment Plan, including five projects funded through the NADBank to make improvements to wastewater infrastructure. The most recent project was certified in 2023. Due to the long-standing working relationship between CESPM and NADBank, no issues related to compliance with NADBank requirements are anticipated.

The La Ladrillera water system extension and the wastewater management system will not represent a significant challenge. The system will be metered, and residents will be responsible for paying for their monthly service. The cost of service should be comparable to their current payments for hauled water.

1.2. Environmental Criteria

1.2.1. Environmental and Health Effects/Impacts

A. Existing Conditions

This Project is a priority for CESPM because area residents do not have access to potable water and rely on hauled water, which is stored on-site. Ideally, the Municipality delivers water twice a week, but when its equipment malfunctions, water deliveries are delayed until the equipment is fixed. This situation has given rise to extended periods between water deliveries. Residents have run out of water and resorted to using untreated water from a nearby agricultural canal. The Municipality limits each delivery to 1,000 liters per lot. When multiple dwellings share a lot, requests for a larger allotment have been denied.

Current conditions provide multiple pathways for pathogens to enter the water supply. Most residents store their water in 200-liter (52-gallon) barrels, tanks or other containers, which are vulnerable to contamination. It is unlikely that residents are consistently maintaining their stored water adequately to keep it free from contamination, especially since they often resort to using water from the canal when water deliveries are delayed.

In addition, La Ladrillera does not have access to wastewater services. Most residents use cesspools or pit privies. Untreated wastewater is a vector for many diseases, creates risks to human health, and can contaminate both ground and surface water. Providing access to drinking water will increase wastewater discharges, leading NADBank to determine that wastewater treatment systems have to be included as part of the Project. The proposed biodigesters are recommended due to ease of maintenance and proven performance.

The community is classified as highly marginalized based on its economic status and lack of basic services. Routine tasks such as bathing, cooking and cleaning are very difficult due to the lack of water, plumbing and electricity. The Project is required to address the lack of basic water services in the community; without the Project, residents will continue to use hauled water and discharge untreated wastewater to the environment. As a small community outside of the main service area of CESPM, the Project does not fit well with the capital improvement priorities of CESPM, which has many much larger projects that can be funded through a variety of mechanisms. By using a CAP grant to fund water and wastewater services, the Project will significantly improve the daily lives of community residents.

B. Expected Environmental/Human Health Outcomes

The Project will address the lack of water and wastewater services in a previously unserved community by generating the following anticipated outcomes:

- Provide first-time access to a safe and reliable drinking water source for 33 existing households, eliminating the health risk associated with hauled water and on-site storage tanks,
- Provide on-site wastewater management systems for 33 existing households; and
- Treat approximately 6,300 gallons per day of wastewater from the community.

This Project will have a significant impact on the daily lives of La Ladrillera residents by allowing them to address their drinking water and basic hygiene needs more easily.

C. Other Project Benefits

The Municipality has assumed the responsibility of providing water to La Ladrillera, but this creates significant demands for labor and financial costs associated with delivering water to the community. Additionally, hauled water has negative impacts on air quality from emissions and dust raised on unpaved roads. This Project will end the need to haul water and allow the Municipality to reallocate resources currently used for that purpose to cover other needs.

D. Transboundary Impacts

No transboundary impacts are anticipated as a result of Project implementation. Any project component that could have a negative transboundary impact will not be eligible for financing.

1.2.2. Compliance with Applicable Environmental Laws and Regulations

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

- Official Mexican Standard NOM-001-CONAGUA-2011, which establishes the specifications for hermeticity in water distribution systems, residential water connections and wastewater collection systems, as well as testing methods.
- Official Mexican Standard NOM-012-SCFI-1994, which establishes the specifications for measuring water flows in closed conduits of drinking water systems.

- Official Mexican Standard NOM-006-CONAGUA-1997, which establishes the specifications for wastewater management using on-site sanitary systems, including septic tanks and biodigesters.

A. Environmental Studies or Consultations

CESPM submitted Project documents to the Mexican Ministry of Environment and Natural Resources (SEMARNAT) on February 19, 2024, to determine whether an Environmental Impact Statement, known as a MIA was required for this Project. On June 19, 2024, SEMARNAT responded that a MIA was not required for this Project. The Project will be constructed within previously disturbed areas, including existing rights of way, and will not impact undisturbed areas.

B. Environmental Clearance and Permitting

No adverse environmental impacts are anticipated, and no environmental clearances or permits are required.

C. Mitigation Measures

Project implementation will have no significant adverse impacts on the environment. However, during the construction phase, site disturbances due to earthwork and the operation of heavy machinery may temporarily result in air and water quality impairment and potential stormwater runoff. To mitigate environmental impacts during the construction phase, the Project is required to follow best management practices (BMP), such as:

- Fugitive dust will be minimized by wetting disturbed soils and stockpiles and suspending work during periods of high winds.
- Construction equipment shall be well-maintained, use emission control devices and shut off when not in use to reduce vehicle emissions.
- Stormwater controls will be implemented to prevent runoff of from carrying excessive quantities of debris into arroyos, irrigation canals and/or local stormwater systems.

D. Pending Environmental Tasks and Authorizations

No environmental authorizations or tasks are pending.

1.2.3. Environmental and Social (E&S) Due-diligence Process

A. Project E&S Category

Based on the NADBank Environmental, Social and Governance (ESG) Policy, which established the Environmental and Social Risk Management System and its corresponding risk categorization, NADBank determined that the proposed Project falls within the C Category, which is assigned when a grant-financed project has minimal or negligible exposure to adverse environmental and social impacts.

B. E&S Due Diligence Conclusions

NADBank reviewed the Project documentation to determine the environmental and social risks associated with project implementation and concluded that CESPM has the necessary tools and resources to comply with the environmental and social obligations related to the Project, including adherence to applicable regulations and submission of annual compliance reports.

C. Summary of Proposed Mitigation Measures

No additional mitigation measures are needed since the Sponsor provided the documentation to support compliance with its E&S obligations.

1.3. Financial Criteria

The total cost of the Project, including construction, contingencies and applicable taxes, is estimated at US\$725,600. Table 5 presents a breakdown of the estimated Project costs and proposed sources of funding.

Table 3
PROJECT FINANCING PLAN
(US\$ Millions)

Uses		Amount	%
Water system construction		\$ 377,170	52.0
On-site wastewater biodigesters		104,510	14.4
Prefabricated bathrooms		177,910	24.5
Contingencies		66,010	9.1
Total		\$ 725,600	100.0
Sources	Instrument	Amount	%
NADBank CAP	Grant	\$ 653,400	90.0
Sponsor	Equity	72,200	10.0
Total		\$ 725,600	100.0

The proposed Project complies with all CAP criteria. It is located within the U.S.-Mexico border region served by NADBank and is in an environmental sector eligible for CAP financing. Moreover, the Project will provide access to drinking water and wastewater services in an unserved area, which are considered priorities under the CAP and Water Infrastructure Program (WIP). As shown in the above table, the Sponsor will cover at least 10% of the cost with its own funds, in compliance with the minimum requirement established under the program. CAP funds will be used for construction only; construction management services will be handled in-house by CESPM.

2. PUBLIC ACCESS TO INFORMATION

2.1. Public Consultation

On January 14, 2025, the Board of Directors of the North American Development Bank approved Resolution 2025-1 establishing the WIP, which provides programmatic certification of projects that meet the eligibility criteria and requirements defined under the program. Since this Project complies with the provisions of the WIP, a separate public consultation process was not required. .

2.2. Outreach Activities

During the second week of June 2025, CESPM conducted outreach activities in La Ladrillera to survey residents and verify their interest in connecting to a centralized waster system, identify occupied residences and document existing conditions. During these outreach activities CESPM reported receiving very positive feedback from residents for the Project.

NADBank's review of publicly available information about the Sponsor did not detect any relevant concerns related to a potential investment in the proposed Project.