CERTIFICATION AND FINANCING PROPOSAL

EXPANSION OF WATER AND WASTEWATER SERVICES TO UNSERVED AREAS OF THE PIEDRA ANGULAR COLONIA TECATE, BAJA CALIFORNIA

Revised: November 21, 2014
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TECATE, BAJA CALIFORNIA

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EXECUTIVE SUMMARY

EXPANSION OF WATER AND WASTEWATER SERVICES TO UNSERVED AREAS OF THE PIEDRA ANGULAR COLONIA
TECATE, BAJA CALIFORNIA

Project: The project consists of constructing a wastewater collection system, including the installation of residential sewer connections, as well as providing access to water services to any households currently without service, in the Piedra Angular subdivision in Tecate, Baja California (the “Project”).

Project Objective: The purpose of the Project is to provide access to drinking water and wastewater services to 100% of the subdivision, which will ensure safe and reliable water service and eliminate contamination from untreated wastewater discharges, thus reducing the risk of waterborne diseases.

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

- Provide first-time wastewater collection service through 174 residential sewer connections.
- Eliminate an estimated 34,000 gallons a day of untreated or inadequately treated wastewater discharges.¹
- Increase access and use of safe and reliable drinking water services to 51 households.

Population Benefitted: 644 residents of Tecate, B.C.²

Project Sponsor: The local water utility, Comisión Estatal de Servicios Públicos de Tecate (CESPTE)

Project Cost: US$447,802³

NADB Grant: Up to US$450,000 from NADB’s Community Assistance Program (CAP), to cover up to 90% of the project cost in pesos.⁴

¹ Source: CESPT, calculation based on 174 connections and 3.7 persons per household.
² Calculation based on 174 benefited service connections and 3.7 persons per household.
³ Unless otherwise noted, all U.S. dollar figures are quoted at an exchange rate of $13.00 pesos per dollar.
⁴ Since the project costs are in pesos, the Bank is requesting a dollar amount that will allow for possible fluctuations in the exchange rate.
**Uses & Sources of Funds:**
(Thousands of dollars)

<table>
<thead>
<tr>
<th>Uses</th>
<th>Amount</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction*</td>
<td>$ 447,802</td>
<td>100.0</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>$ 447,802</td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sources</th>
<th>Amount</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>CESPTE</td>
<td>$ 44,780</td>
<td>10.0</td>
</tr>
<tr>
<td>NADB CAP Grant</td>
<td>403,022</td>
<td>90.0</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>$ 447,802</td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

*Includes costs related to construction and value-added taxes.*
CERTIFICATION AND FINANCING PROPOSAL

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TECATE, BAJA CALIFORNIA

1. ELIGIBILITY

Project Type
The Project falls within the eligible sectors of water and wastewater.

Project Location
The Project is located in the city of Tecate, Baja California, Mexico, located directly adjacent to the U.S.-Mexico border.

Project Sponsor and Local Authority
The public-sector Project sponsor is Tecate’s water utility, Comisión Estatal de Servicios Públicos de Tecate (CESPTE or the “Sponsor”), a public entity legally constituted by decree No. 134 of the State of Baja California. The decree, published on May 20, 1992, created a public entity (CESPTE) independent of the state, with legal authority and assets, whose purpose is to provide water and wastewater services to the city of Tecate.

2. CERTIFICATION CRITERIA

2.1. TECHNICAL CRITERIA

2.1.1. Project Description

Geographic Location
The city of Tecate is located in the northwest region of the state of Baja California, directly across the border from Tecate, California. It is approximately 23 miles east of Tijuana and 69 miles west of Mexicali. Figure 1 shows the location of the City of Tecate.
**General Community Profile**

According to the most recent Mexican census, the municipality of Tecate had a population of 101,079 in 2010, which represents 3.2% of the state population and an average annual growth rate of 2.65% between 2000 and 2010.² Current population estimates for Tecate are about 109,575 residents.³

The main work force activities are: manufacturing industries (51%); commerce (18%); and temporary lodging, food and beverage services (9%). The unemployment rate in Tecate is 7.4%, higher than the national average of 4.99%. The median household income (MHI) reported in 2009 for Tecate was approximately US$7,600.⁴

The status of public services in Tecate is described in the following table.

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³ Source: 2010-2030 projections of the national population council, *Consejo Nacional de Población* (CONAPO)
⁴ Source: INEGI, 2009 Mexican Economic Census.
### Table 1
**BASIC PUBLIC SERVICES AND INFRASTRUCTURE**

<table>
<thead>
<tr>
<th>Service</th>
<th>Coverage</th>
<th>Supplier or Source</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Water System</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coverage</td>
<td>99.5%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supply source</td>
<td></td>
<td>Well water, Colorado River Basin</td>
<td></td>
</tr>
<tr>
<td>Number of hookups</td>
<td></td>
<td>28,368</td>
<td></td>
</tr>
<tr>
<td><strong>Wastewater Collection</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coverage</td>
<td>96%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of connections</td>
<td></td>
<td>27,710</td>
<td></td>
</tr>
<tr>
<td><strong>Wastewater Treatment</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coverage</td>
<td>100%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Treatment facilities</td>
<td></td>
<td>Plant Type Capacity</td>
<td></td>
</tr>
<tr>
<td>Tecate</td>
<td></td>
<td>Trickling filters</td>
<td>4.6 mgd</td>
</tr>
<tr>
<td><strong>Solid Waste</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Collection coverage</td>
<td>98%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Final disposal</td>
<td></td>
<td>Landfill</td>
<td></td>
</tr>
<tr>
<td><strong>Street Paving</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Street paving coverage</td>
<td>62%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Mgd = million gallons a day
Source: CESPTE, July 2014.

### Local Water and Wastewater Systems

As indicated in the table above, water and sewer service coverage in Tecate is estimated at 99.5% and 96%, respectively. The main source of drinking water is the Colorado River Aqueduct. CESPTE operates two water treatment plants with a combined capacity of 6.9 million gallons a day (mgd): Nopalera (4.6 mgd) and Cuchumá (2.3 mgd) that treat and disinfect the water supply. The municipality’s average daily water consumption is 5.7 mgd.

The wastewater collected is conveyed to the Tecate Wastewater Treatment Plant (WWTP), which has a design capacity of 4.6 million gallons a day (mgd). Current flows to the WWTP average 3.2 mgd. The facility was upgraded in 2001 with improvements to the trickling filter treatment system and secondary clarification. Additional flows of only 0.34 MGD will be generated by the 174 connections installed in Piedra Angular; therefore, the WWTP has sufficient treatment capacity to treat the flows generated in the Project area.

Approximately two-thirds of the 174 households in the Piedra Angular subdivision have drinking water service, but there is no wastewater collection system. Some residents use substandard on-site wastewater disposal systems, while many simply discharge their wastewater directly to the street. CESPTE proposes extending access to drinking water service to the remaining households in the subdivision, as well as providing first-time wastewater collection services to all of the residents. The Project will ensure all residents have access to a safe drinking water
supply, as well as eliminate exposure to untreated or inadequately treated sewage, thus reducing the risk for surface and groundwater pollution.

**Project Scope and Design**

The Project consists of constructing a wastewater collection system, including residential sewer connections and decommissioning of any existing septic tanks and latrines, as well as providing access to the existing water distribution system for 51 households, in the Piedra Angular subdivision. The main project components include:

- **Water components:** Installation of 408 m (1,339 ft.) of 3/4” polyethylene pipeline, providing access to water hookups for 51 households.
- **Wastewater components:**
  - Construction of a sewer system, using 2,395 m (7,858 ft.) of 8” PVC pipeline;
  - Installation of 174 residential sewer connections; and
  - Decommissioning of 48 septic tanks and latrines.

Figure 2 shows the general location of the Piedra Angular area within the municipality of Tecate.

![Figure 2: LOCATION OF PROJECT](image-url)
Construction permits will be the responsibility of the contractor and are considered a construction task. Table 2 shows the proposed schedule for project implementation milestones.

<table>
<thead>
<tr>
<th>Key Milestones</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Procurement</td>
<td>Anticipated: 1st quarter 2015</td>
</tr>
<tr>
<td>Construction period</td>
<td>Six months from initiation</td>
</tr>
</tbody>
</table>

### 2.1.2. Technical Feasibility

**Design Criteria**

The final design of the proposed works was completed in accordance with the technical specifications of the Water and Wastewater Manual developed by the Mexican federal water agency, CONAGUA. Through Official Letter No. BOO.00R02.05 issued on July 28, 2014, CONAGUA verified the technical aspects of the wastewater component of the Project. The water hookups do not require validation.

**Selected Technology**

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

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

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

The wastewater collection system and manhole construction will be completed within existing rights-of-way. No additional easements are required to implement the Project.

2.1.4. Management and Operations

Management and operation of the proposed Project will be the responsibility of CESPTE, which has sufficient resources and staff available for these purposes, including procurement and construction supervision during Project implementation. CESPTE has successfully completed several projects in coordination with BECC and NADB, as well as with funding program sources such as CONAGUA and the U.S. Environmental Protection Agency (EPA).

CESPTE has an Operation and Maintenance Manual that includes the primary tasks necessary to ensure proper operation of the new infrastructure. The utility serves 28,368 water hookups and 27,710 wastewater connections, and treats approximately 3.2 mgd of wastewater. The utility is organized in various departments, including: Planning, Wastewater Treatment, Operation and Maintenance, Construction and Administration.

The sponsor describes that the new water and wastewater infrastructure investments will require specific annual maintenance tasks and will cost approximately MX$123,114 (US$9,470) and MX$128,899 (US$9,915), respectively. The 2015 annual operations budget includes an increase of approximately 4% as compared with the 2013 budget, which will accommodate operation and maintenance of the new infrastructure investment. An adjustment in user rates is not required as a result of the Project.

CESPTE has consistently managed an annual operating budget sufficient to cover normal operation and maintenance activities for its wastewater collection infrastructure, including funds to support the grant match requirement for construction of the Project. The Sponsor will be required to demonstrate that it has sufficient funds and an adequate accounting structure as a condition for receiving the CAP grant.

2.2. ENVIRONMENTAL CRITERIA

2.2.1. Compliance with Applicable Environmental Laws and Regulations

Applicable Laws and Regulations

The wastewater collection component of the Project is subject to municipal environmental authorization in accordance with the state regulations of Baja California, as well as to the Federal Law of Environmental Protection with respect to the Environmental Impact Assessment. The construction of water hookups does not require environmental authorization.
In addition the Project complies with the Official Mexican Norm NOM-002-SEMARNAT-1996, which establishes the maximum permissible levels of contaminants for wastewater discharges into urban or municipal wastewater collection systems.

**Environmental Studies and Compliance Actions**

Pursuant to the regulations of the Tecate Municipal Department of Environmental Protection, an Environmental Impact Assessment (MIA) for the wastewater collection infrastructure was presented to the Department on January 22, 2014. After determining that the wastewater collection component complies with all the requirements of the Mexican environmental clearance process, the Project was authorized by Official Document No. 01/IMP-AMP/2014 issued on January 24, 2014.

**Pending Environmental Tasks and Clearances**

There are no pending environmental tasks or clearances for this Project.

**Compliance Documents**

The only formal authorization required for the Project was a local MIA for the wastewater collection component, which was obtained through Official Document No. 01/IMP-AMP/2014 issued on January 24, 2014.

**2.2.2. Environmental Effects / Impacts**

**Existing Conditions and Project Impact – Environmental**

The purpose of the Project is to construct a wastewater collection system to provide service to all 174 households in the Piedra Angular subdivision in order to eliminate untreated sewage discharges, as well as the risk of contamination of existing groundwater resources from substandard on-site disposal systems. In addition, the Project will provide access to drinking water service for 51 households in the subdivision, which are currently not connected to the existing distribution system.

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

- Provide adequate wastewater collection and treatment services to the entire subdivision through the installation to 174 residential connections to a new sewer system.
- Eliminate an estimated 34,000 gallons a day of untreated or inadequately treated wastewater discharges.
- Provide access to safe and reliable drinking water service for 51 households.

The environmental impact resulting from Project implementation will be positive overall, given that it will provide first-time access to adequate wastewater collection and treatment services.
Mitigation of Risks

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

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

Typical mitigation measures to be practiced:

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

If the use of explosives is necessary to excavate hard materials during construction, the user shall request necessary authorization and apply the mitigation measures indicated under the Tijuana-Tecate-Rosarito-corridor Land Ordinance Plan.

Natural Resource Conservation

The Project reduces environmental deterioration and risks of contamination to groundwater and surface waters by providing the necessary means to collect and convey wastewater flows for adequate treatment. Additionally, the extended gravity collection system will not require the use of electricity for pumping wastewater to the treatment plant.

No Action Alternative

The no-action alternative was not considered viable, since failing to implement actions to extend drinking water distribution and wastewater collection infrastructure will not address the environmental and human health risks related to the lack of adequate basic services.

Existing Conditions and Project Impact – Human Health

Waterborne diseases are caused by pathogenic microorganisms that are transmitted as a result of inadequate wastewater disposal practices and unsafe water supplies. An individual can become ill after drinking water that has been contaminated with these organisms, eating uncooked foods that have been in contact with contaminated water, or through poor hygiene habits that contribute to the dissemination of diseases by direct or indirect human contact. Table 3 shows waterborne statistics for the city of Tecate.
Discharges of untreated wastewater in the streets of the Piedra Angular subdivision increase the risk of contamination of existing groundwater resources and the vulnerability of area residents to waterborne diseases. The lack of drinking water service for some households further increases this risk. The Project will eliminate untreated wastewater discharges and properly close any existing septic tanks and latrines, which will help reduce pollution and the risk of waterborne diseases of the residents.

**Transboundary Effects**

Since Tecate is located on the border with California, environmental and health conditions in Tecate may also affect U.S. residents. By eliminating untreated and inadequately treated wastewater discharges, the Project will reduce the risk of contamination of shared water bodies, including the Tecate and Tijuana Rivers. Additionally, access to drinking water services creates better public health conditions, further reducing the risk of proliferation of waterborne diseases. No negative transboundary impacts are anticipated as a result of the Project.

### 2.3. FINANCIAL CRITERIA

#### 2.3.1. Uses and Sources of Funds

The total estimated cost for construction of the Project is US$447,802. The Project Sponsor requested a US$403,022 grant from NADB through its Community Assistance Program (CAP) to complete the financing of the Project. Table 4 presents a summary of total Project costs and sources of funds.

#### Table 4

**USES AND SOURCES OF FUNDS**

<table>
<thead>
<tr>
<th>Uses</th>
<th>Amount</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction</td>
<td>$447,802</td>
<td>100.0</td>
</tr>
<tr>
<td>TOTAL</td>
<td>$447,802</td>
<td>100.0</td>
</tr>
<tr>
<td>Sources</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Municipality of Tecate</td>
<td>$44,780</td>
<td>10.0</td>
</tr>
<tr>
<td>NADB CAP grant</td>
<td>403,022</td>
<td>90.0</td>
</tr>
<tr>
<td>TOTAL</td>
<td>$447,802</td>
<td>100.0</td>
</tr>
</tbody>
</table>
Since the Project costs will be paid in pesos, the Bank is proposing that the Board approve a CAP grant for up to US$450,000 to cover any possible variation in the dollar amount based on fluctuations in the exchange rate. At no time will the CAP grant exceed 90% of the total project cost in pesos.

2.3.2. Program Criteria Compliance

The Project complies with all CAP criteria. It is located within the U.S.-Mexico border region served by BECC and NADB, is being sponsored by a public sector entity and is in an environmental sector eligible for NADB financing. Additionally, as a water and wastewater project, it is considered a priority under the CAP program. As shown in the above table, the Project Sponsor has agreed to cover the 10% minimum required under the program.

All necessary permits and authorizations have been obtained, and the Project Sponsor is ready to initiate bidding for construction once funding has been approved. Upon completion, an estimated 644 residents will directly benefit from improved drinking water and wastewater services.

2.3.3. Conclusion

For the above reasons, NADB proposes providing a CAP grant of up to US$450,000 to CESPTE for construction of the Project.

3. PUBLIC ACCESS TO INFORMATION

3.1 PUBLIC CONSULTATION

BECC released the draft certification and financing proposal for a 14-day public comment period beginning November 7, 2014. The following Project documentation is available, upon request:

- Final designs for construction of water and wastewater collection infrastructure in the Piedra Angular area of Tecate, Baja California, developed by CESPTE in 2010 and 2013, respectively.
- Environmental Impact Assessment prepared by CESPTE and presented to the Tecate Municipal Department of Environmental Protection on January 22, 2014.
- Construction Permit 019/14 issued by the Municipality of Tecate, authorizing the construction of the wastewater collection system in Piedra Angular subdivision.
The 14-day public comment period ended on November 21, 2014, with no comments received.

3.2. OUTREACH ACTIVITIES

As part of the utility’s normal business practices, upcoming projects are announced on the CESPTE website. In the case of this Project, utility representatives, along with BECC and NADB staff, visited many homes in the area to confirm existing service and property conditions, such as existing on-site wastewater disposal methods. Community residents expressed their gratitude for the upcoming infrastructure and new services.

BECC conducted a media search to identify potential public opinion about the Project. No articles related to the Project were identified and no opposition to the Project was detected in the media search.