Border Environment Cooperation Commission
Water and Wastewater Regional System Improvements for the City of Eagle Pass, Texas

General Criteria
Human Health
Technical Feasibility
Financial Feasibility
Public Participation
Sustainable Development

# I. General Criteria

1. Type of Project.

The project proposes a regional approach to the treatment and supply of potable water and the collection and treatment of wastewater, it consists of rehabilitation and expansion of the existing water treatment plant, rehabilitation and expansion of the water distribution system, the expansion of the collection system and a new wastewater treatment plant.

2. Location of Project.

The project is located in and around the city of Eagle Pass, Texas. The regional project encompasses the City of Eagle Pass and adjacent surrounding areas. The proposed service area in the regional plan includes El Indio Water Supply Corporation (EIWSC), the Kickapoo Indian Nation and existing colonias surrounding the city of Eagle Pass. The city of Eagle Pass is located in Maverick County, Texas. Eagle Pass is the border city with the city of Piedras Negras in the state of Coahuila, Mexico. The 2000 population for the regional area was approximately 45,500 people, and is expected to reach 77,600 people by the year 2020. This regional plan will provide services for 97% of Maverick County's population. The population projected growth rate is approximately 3.5%. This projection was evaluated by the Lower Rio Grande Regional Water Plan and accepted by the Texas Water Development Board.

3. Description of Project and Tasks.

The Eagle Pass Water Works System (EPWWS) currently provides potable drinking water to approximately 10,200 metered customers in the city of Eagle Pass and Maverick County. EPWWS also provides wastewater collection and treatment for nearly 100% of their existing water customers, as well as wastewater treatment for portions of the EIWSC service area and the Kickapoo Nation. EIWSC provides service to 2000 metered customers and it is obligated to provide service to 4000 additional platted lots within its CCN service area. EIWSC currently provides water to the Kickapoo Nation. EIWSC facilities are inadequate to reliably meet current system demands, it violates both quality and quantity TNRCC's regulations. The existing amount of water rights owned by both EPWWS and EIWSC, are not sufficient to provide adequate water to the regional area.

EIWSC and EPWWS have decided to consolidate their water treatment and distribution systems, the Kickapoo Nation will become a customer of the new Eagle Pass system. The present demand for drinking water from the EPWWS is approximately 5mgd, with peak demands of 9 mgd. EPWWS water treatment plant was constructed in 1949, and has been modified and expanded through the years. However, the majority of the facilities and equipment is beyond their useful service life (50 for structures and 15 years for equipment), some facilities do not meet current TNRCC regulations.

The Regional Facility Plan recommends that the water treatment plant be modified and expanded from 10.0 mgd to 19.0 mgd and a series of distribution lines and storage tanks be constructed to meet year 2020 demands. The existing wastewater treatment plant was constructed in 1993 with capacity of 6 mgd and is currently permitted to discharge and will continue to discharge by the land application method. This wastewater treatment plant will meet the treatment needs for a portion of the new areas being incorporated to the collection system, the remaining areas will be served by a new 2 mgd treatment plant.

A summary of the components are addressed below:

New 2 MGD Wastewater Treatment Plant

- Rosita Valley Wastewater Treatment Plant
  - Headworks: mechanical bar screen and grit snail tank
  - Aeration Process
  - Secondary Clarifier
  - Disinfection
  - Land Application
  - Sludge Beds

Wastewater Collection:

- East Central Interceptor
- El Indio-Rosita Interceptor
- El Indio-Rosita Collectors (South)
- Deer Run Area Collectors (North)
- Elm Creek Interceptor
- Seco Mines Interceptor
- Service Hook ups (to property)
- Service Connections (to house)

Water Treatment Plant:

- 19 mgd water treatment plant
- El Indio Distribution System
- Service Taps (to property)
- Service Connections (to house)

Reclaimed Water System

- Eagle Pass System

Water Distribution System:

- North Water Transmission Main
- East Water Transmission Main
- South Water Transmission Main
- Seco Mines-Deer Run Transmission Main
- Industrial-Callejon Teran-Chula Vista Transmission Main

Storage Capacity:

- Deer Run Elevated Tank
- Chula Vista-El Indio Elevated Tank
- Vista Hermosa Elevated Tank

Water Pumping Capacity

- North Pumping Station
- East Pumping Station
- South Pumping Station

4. Compliance with international Treaties and Agreements.
The implementation of this project will comply with all the current International Treaties and Agreements between the United States of America and Mexico that are related to environmental problems along the international border.

## II. Human Health and the Environment

1. Human Health and Environment.

   The City of Eagle Pass and the El Indio Water Supply Corporation's only source of water is the Rio Grande. There is no ground water source available of sufficient quality and quantity to provide an economic supplemental water source for use in developing a sustainable regional water supply, and the only source of surface water is the Rio Grande. The only current water purveyor in the region that has secured adequate water rights to the Rio Grande is the EPWWS. However, these water rights are not sufficient to serve the regional demand, part of the regional development is to secure additional water rights.

   The present demand for drinking water from the EPWWS averages 5 mgd, with peak demands of approximately 9 mgd. Demand has exceeded 85% of the current water treatment plant, thus necessitating expansion planning as mandatory by the Texas Natural Resource Conservation Commission (TNRCC) water quality standards. In order to provide a dependable potable water supply system for the rapidly growing area, a new facility is required, capable of meeting increasingly more stringent drinking water standards. With the deterioration of water quality in the Rio Grande (concentrations of Aluminum, Arsenic, Cadmium, Chromium, Lead, Nickel and Zinc in the river bottom near the Eagle Pass intake structure have increased over the past four years) and the impending requirements of the Stage 2 DBPR and Long Term 2 Enhanced Surface Water Treatment Rule (LT2ESWTR), the plant should be constructed using the best available technology.

   The EIWSC water distribution system is not adequate to meet residential peak demands nor fire protection demands posing a direct threat to the health and safety of residents in the El Indio area. Many of the water distribution lines are two inches in diameter. A minimum size of 6 inches in diameter is needed for the installation of fire hydrants and as required by EPWWS requirements as part of regionalization. The TNRCC requires a maximum spacing of 500 feet between hydrants. Although the EIWSC's administration has been adding fire hydrants to the system, the community does not have the appropriate number of fire hydrants required to ensure adequate fire protection according to TNRCC guidelines. Furthermore, system modeling revealed that the system could not maintain the TNRCC minimum 35 psi pressure requirement during residential peak demand nor 20 psi pressure in the event of a fire.

2. Environmental Assessment:

   An Environmental Information Document was prepared in August 2001 and submitted to the US EPA for review and finding. On the basis of the environmental review and assessment (EA) of the Environmental Information Document and other available information, the Regional Administrator has made a determination that the 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. The project individually, cumulatively, or in conjunction with any other action will not have a significant adverse effect on the quality of the environment.

   The EPA issued its Finding of No Significant Impact (FONSI) on October 13, and after the public comment period, signed the final FONSI on November 13.

3. Compliance with Environmental and Cultural Resources Law and Regulations

   The project is in compliance with all applicable environmental and cultural resource laws and regulations, including among others, Significant, Unique or Important Farmlands, National Natural Landmarks, Wilderness Protection, Wild and Scenic Rivers, Wetlands Protection, Floodplain Management, Fish and Wildlife Protection, Endangered Species Protection, Historical, Architectural, Archeological, and Cultural Sites, Air Quality, and Environmental Justice. The project is in conformance with the State Implementation Plan (SIP) for Maverick County, and with Lower Rio Grande Regional Planning Plan developed by the State Water Plan and adopted by the Texas Water Development Board.

## III. Technical Feasibility

1. Appropriate Technology.

   A water and wastewater regional facility plan for Eagle Pass and El Indio area was completed in December 2001 for the project through funds provided by TWDB and BECC. The regional facility plan included a planning horizon of 20 years and included modeling of both the existing water system and wastewater system for average demands and peak demands to determine the appropriate phasing of the proposed infrastructure for the immediate needs, 2010 needs, 2020 needs, and build-out. The average per capita residential consumption used was 138 gpcd and for wastewater flow was approximately 96 gpcd average daily demand with a 2% per decade reduction from water conservation measures. The regional facility plan also contained various alternative analyses whereby the selected alternative was the most cost effective and provided ease of operation. The following summarizes the alternative analyses:

   Water treatment Plant

   - Alternative treatment processes evaluated included the do-nothing; expansion and modernization of the existing Eagle Pass Water Treatment Plant (WTP); construction of a new WTP with coagulation, sedimentation, filtration; and, construction of a new regional plant employing micro-filtration, ultra-filtration, nano-filtration, or reverse osmosis.
     Skid Mounted Membrane treatment and Immersed Membrane Treatment were given primary consideration because of design capacity of proposed regional WTP, cost-effectiveness, ability to meet anticipated drinking water standards, and reliability of the ultra-filtration and micro-filtration treatment process types. Immersed Membrane was considered to have the lowest total present worth cost.

   Water Distribution System

   - The deficiencies in both the EPWWS and EIWSC water distribution systems were considered in the analysis of alternatives. Essentially all proposed water project components were evaluated for alternative locations and routes based on cost-effectiveness, protection of natural and cultural resources, land uses and values, and anticipated patterns of development. Where possible, the construction of water mains will follow existing easements and other previously disturbed routes.

   Wastewater Collection System

   - The alternatives routes considered for location and routes were based on cost-effectiveness, protection of natural and cultural resources. Many of the collectors and interceptors are gravity flow to the proposed Rosita Valley Wastewater Treatment Plant (WWTP).

   Wastewater Treatment System

   - Improvements are required to connect new areas to the existing wastewater treatment plant and to provide treatment to an un-served area located in a separate watershed in the Rosita Valley / El Indio area. The proposed 2 mgd Rosita Valley WWTP will be of the same process/type as the existing Eagle Pass WWTP.

2. Operation and Maintenance Plan. The EPWWS will be updating its comprehensive Operation and Maintenance Plan. The contractor for the water treatment component of the project will be required to provide an operations manual and training associated with the equipment.
3. Compliance with applicable design norms and regulations. This project complies with applicable design standards and regulations that are required by the TNRCC and USEPA.

## IV. Financial Feasibility and Project Management

1. Financial Feasibility.

The project has an estimated total project cost of $103,116,000. Construction funds come from funds administered by the TWDB in form of loans and grants. The following table illustrates the estimated project cost.

Project Costs and Components

| | | DFUND II | DWSRF | EDAP | TDHCA | Totals |
|---|---|---|---|---|---|---|
| **WATER IMPROVEMENTS** | | | | | | |
| **Water Treatment and Pump Station** | | | 18,732,000 | 3,568,000 | | 22,300,000 |
| **North Water Trns. Main & Pump Sta.** | | | 1,520,000 | 480,000 | | 2,000,000 |
| **East Water Trns. Main & Pump Sta.** | | | 364,000 | | | 364,000 |
| **South Water Trns.Main & Pump Sta.** | | | 825,000 | 675,000 | | 1,500,000 |
| **Seco Mines to Deer Run Water Main** | | | 880,640 | 495,360 | | 1,376,000 |
| **Industrial to Callejon Teran Water Main** | | | 189,000 | 231,000 | | 420,000 |
| **Callejon Teran to Chula Vista Wtr.Main** | | | 828,000 | 1,012,000 | | 1,840,000 |
| **Deer Run elevated Storage Tank** | | | 1,305,000 | 195,000 | | 1,500,000 |
| **Chula Vista Elevated Storage Tank** | | | 1,005,000 | 495,000 | | 1,500,000 |
| **Vista Hermosa Elevated Storage Tank** | | 750,000 | 750,000 | | | 1,500,000 |
| **El Indio Distribution System** | | 2,516,464 | | 6,802,127 | | 9,318,591 |
| **Hookups** | | 373,550 | | 1,364,775 | 1,099,070 | |
| **WASTEWATER IMPROVEMENTS** | | | | | | |
| **East Central Interceptor** | | 6,000,000 | | | | 6,000,000 |
| **Rosita Valley WWTP** | | 1,200,000 | | 1,300,000 | | 2,500,000 |
| **El Indio-Rosita Valley Interceptor** | | 195,000 | | 1,010,000 | | 1,205,000 |
| **Deer Run Area Collectors** | | 271,500 | | 2,805,250 | | 3,076,750 |
| **El Indio-Rosita Valley Collectors** | | 840,000 | | 7,185,000 | | 8,025,000 |
| **Elm Creek Interceptor** | | 425,000 | | 1,025,000 | | 1,450,000 |
| **Seco Mines Interceptor** | | 1,420,000 | | 970,000 | | 2,390,000 |
| **Eagle Pass Reclaimed Water System** | | 3,300,000 | | | | 3,300,000 |
| **Hookups** | | 137,400 | | 2,308,600 | 576,033 | |
| **Eng.; Admn;Water Right; Land; etc.** | 6,647,086 | | 7,121,360 | 11,922,292 | | 25,690,738 |
| **Totals** | | 24,076,000 | 33,520,000 | 43,845,404 | 1,675,103 | 103,115,507 |

The following table summarizes the financial structure of the project.

| Source | Amount | % |
|---|---|---|
| EDAP | 43,844,404 | 42.5 |
| DFUND II | 24,076,000 | 23.4 |
| DWSRF | 33,520,000 | 32.5 |
| TDHCA | 1,657,103 | 1.6 |
| TOTAL | 103,115,507 | 100 |

Additionally, Transition Assistance from the BEIF program is included to allow for the gradual increase in the rates and to subsidize household hookups. The Transition Assistance is not a project cost and therefore is not listed in the above financial structure. This assistance may be utilized as pay assistance for loans secured from the above funding source programs. Eagle Pass is seeking additional funding sources for the construction components.

| Source | Amount |
|---|---|
| Transition Assistance (BEIF Grant) | $13,994,000 |
| Hook ups Assistance | $4,000,000 |

2. Rate Model:

The average monthly combined rate for water and sewer for the 'worst case scenario' will be a potential increase to $52, from the current $34, over a seven year period. In order to increase the rate in a gradual manner, transition assistance from the BEIF program is needed in the amount of $13,994,000.

3. Project Management. The existing organizational structure of a General Manager, an Operations Department and operations personnel, and an Administrative Department office will be sufficient to continue operating the proposed infrastructure.

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## V. Public Participation

1. Comprehensive Public Participation Plan: The Public Participation Plan of the Eagle Pass Regional Wastewater and Water project sponsored by the Eagle Pass Water Works Corporation was submitted and approved in March 2001.

2. Steering Committee: The committee was developed on December 5, 2000. A number of individuals representing local organizations became part of the steering committee: Nina Polendo, Border Organization; Benny Rodriguez, Jr., of Tires Unlimited (businessman); Leandro Contreras Jr., El Indio Water Supply Board member; Enrique Jimenez, Chair person, Maverick County Water Control Board; Teresa Sanchez, Avance Evenstart; Peggy Cerna, Rosita Valley School Principal; Mayor José ''Pepe'' Aranda, City of Eagle Pass; Commissioner Eduardo Sandoval, Maverick County; Isidro Garza Jr., Kickapoo Tribe; Malena Parra Herrera, Eagle Pass City Council; Nena Castillón, business person; Juan Estrada, El Indio Water Supply; Mary Jane Hernández, Texas A&M University - Colonia Program; Arthur Pine, Kickapoo Tribe; and Romelia Cardona, Vice chair, Maverick County Human Services.

A technical work group developed to support and advice the steering committee was made up of: Roberto Gonzalez, Eagle Pass Water Works Director; Domingo Davalos, Texas Secretary of State; Francisco Martinez, Technical Secretary of EP Water Works; Groves Engineers, Metcalf & Eddy-consultants; Steven R. Kennedy, engineer for Kickapoo Tribe; Joel Wilkinson, El Indio Engineers; Roy Cooley, Maverick County Water Control District #1; Mary Jane Salgado and Tammy Carpinteyro of FUTURO, a community based organization.

3. Local Organizations: Local organizations and entities contacted include: the Kickapoo Traditional Tribe of Texas; St. Vincent De Paul; the Border Organization; local schools; the Police Association; the Eagle Pass Rotary Club and Lions Club; Knights Of Columbus; Maverick County 4-H Club; and the Eagle Pass Fireman's Auxiliary. Letters of support for the project have been provided by several organizations.

4. Public Information: Radio, TV and newspapers were used to disseminate information about the project and the public meetings in Eagle Pass and Piedras Negras, Coahuila. The Facilities Plan document was available for public review throughout the project.. Customers of the Eagle Pass Water Works and residents of the colonias, were informed of the project through the water bills or door-to-door notification. A project fact sheet was distributed in community centers and was posted in the Internet site of the project consultant. A meeting was held with the authorities of Piedras Negras to inform them of the project and a resolution in support of the project was passed by the city council.

5. Public Meetings:The first BECC required public meeting was held on September 12, 2001 and the second public meeting was held on January 31, 2002. The community supports the rate ranges proposed for the project.

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## VI. Sustainable Development

1. Definition and Principles

Principle 1: The project will improve the quality of life for residents of both City of Eagle Pass, El Indio, Kickapoo Nation and Colonias in the region by providing safe, desirable drinking water and ensuring adequate fire protection and wastewater collection and treatment for current and future residents.

Principle 2: The proposed project includes changes to the system that would insure the protection of human health and the environment with population changes projected through the year 2020. Development in the region be hindered without implementation of the proposed changes and improvements to the systems, putting the socioeconomic well-being of the community, already poor, at further risk. The existing water and wastewater infrastructure can not sustain the projected population increase or any new educational, recreational or community services.

Principle 3: An Environmental Information Document was prepared documenting the development of alternatives and which included the consideration and analysis of environmental issues. Environmental protection is integral to the project.

Principle 4: Stakeholders have been involved and have had the opportunity to participate in the decision-making process. This not only includes the local residents, but also local, regional, state, and federal agencies with statutory interest and standing in the issues at hand. Additionally, a binational effort was made to inform and request support from the border City of Piedras Negras, Coahuila, Mexico.

2. Institutional and Human Capacity Building.

The EPWWS currently has the basic institutional and human capacity to operate and maintain the existing system and the proposed improvements. Improvements to these capacities have recently been implemented and include:

- The EPWWS has plans to upgrade improve its existing operation and maintenance plan, and safety and contingency plan
- The EPWWS has certified operators for both water and wastewater treatment. However, they are currently being trained in the technology that will be used in the new water treatment plant.

The EPWWS is looking for assistance from the Institutional Development Program (NADBANK program), in order to improve their administrative systems.

3. Conformance with Applicable Local/Regional Conservation and Development Plans.

The project is in conformance with the State Water Plan, with Section 208 of the Clean Water Act of 1977, and with the Water Quality Management Plan developed by the Texas Department of Water Resources and Lower Rio Grande Regional Water Plan.

4. Conservation of Natural Resources.

The proposed water and wastewater system improvements will result in natural resource protection and conservation through the conservation of energy and water resources.

Energy will be conserved by:

- Currently the EIWSC water system has many small lines and water leakage throughout the distribution system utilizing additional pumping energy to provide water. Line replacement will result in energy conservation.
- Minimizing the energy necessary to pump water lost due to leakage by replacing the leaking pipes.

The average water consumption rate for the regional plan is 138 gpcd (gallons per capita per day). The water plan sets the goal to reduce 2% every ten years the water demand. The implementation of the proposed upgrades and conservation plan will further conserve water resources by:

- Minimizing system leakage
- Minimizing water consumed to purge poor water quality.
- Public awareness programs.
- Reuse of treated wastewater.

Additionally, the sludge produced in the wastewater treatment plant will be used as a soil enhancer to produce Coastal Bermuda grass for horse and cattle feeding, avoiding the use of fertilizers that potentially pollute surface and ground waters.

5. Community Development.

The implementation of this project is crucial for community development. The water distribution and wastewater collection and treatment systems are not adequate for the needs of the existing population. Therefore, the region is unable to expand service to any additional customers, residential or commercial. A moratorium on residential construction is already in place in the EIWSC due to lack of sufficient water availability.