

Border Environment Cooperation Commission

Water and Wastewater Improvements Project in La Feria, Texas

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General Criteria

Type of Project.

The City of La Feria, Texas is proposing a water and wastewater improvement project that will include building an upgraded water treatment plant, a new wastewater treatment facility, new water distribution lines, new wastewater collection systems and purchase of water rights for the entire City's service area. The work will include providing services to eight colonias, six of the colonias have City water but no wastewater service, and two have neither City water nor wastewater services. The eight colonias are located towards the north and west side of the City. The Colonias are La Feria Gardens, Nancy & Soliseno Subdivision, North La Feria Village, Sierra Alto Subdivision, Palmera Heights, Valle Verde Subdivision, Windsong Village, and BR Subdivision.

The estimated cost of the design and construction of the water and wastewater system improvements is \$13,239,359, the purchase of water rights is estimated at \$1,650,000, and the Capital Improvements Plan considers \$ 3,750, 000, giving a total project cost of \$18,639,359. The project facilities and water rights purchase will accommodate the City's growth, as projected by the TWDB, to 2023.

Location of Project

The City of La Feria is located in western Cameron County approximately 8 miles north of the U.S./Mexico international border close to Expressway 83 between Harlingen and Weslaco. The existing water and wastewater treatment plants are on Dodds Lane one mile south of the City. The project is located within the 100-kilometer border region as defined by the La Paz agreement. The City's 2000 population was 6,115 (2000 census) and 1,172 for the "colonias". It is projected to increase to 9,283 for the city and 1,623 for the "colonias", for a total population of 10,906 within the next 23 years. The population growth rate is 1.83%. The average water consumption is 137 gpcd (gallons per capita per day).

Description of Project and Tasks

The water distribution system improvements include 4.86 miles of water mains, 2.13 miles of water distribution lines, and expansion of the existing 2.0 MGD (million of gallons per day) water treatment plant by 1.45 MGD. The additions to the wastewater collection system will include 4.9 miles of collection lines, 119 manholes, 3.4 miles of force main and a new 1.25 MGD wastewater treatment plant. The plant is located on a 10-acre parcel of land on the east side of Rabb Road and approximately one-half mile west of the existing facility. The old treatment plant will be decommissioned and the proposal is to use the 26 acres of wastewater lagoons for wildlife refuge and/or storm water storage.

The construction of the work will be let under several contracts. The design and construction work will be phased to ensure the water and wastewater plants are completed and commissioned before connecting to the new water distribution and wastewater collection system.

Compliance with International Treaties and Agreements.

The project complies with the agreements that the United States and Mexico have signed, such as the La Paz Agreement, Border XXI Program and North America Trade Agreement.

Human Health and the Environment**Human Health/Environmental Needs.**

The project will address the human health needs by eliminating potential risks to public health and safety caused by the unsatisfactory water and wastewater problems in the eight Colonias. The Texas Department of Health performed an Environmental Health Survey and Evaluation of the eight Colonias in August 2001. The reports for all the Colonias stated, "The following conditions were observed and appear to be in violation of Chapter 341 of the Texas Health and Safety Code and could be considered dangerous to the health and safety of the people that live in the community." In reference to the Texas Department of Health's guidance for nuisance findings for Economically Distressed Area Program (EDAP), the report noted one or more of the following situations were present in the Colonias:

- Sewage, human excreta, wastewater, garbage, or other organic wastes deposited, stored, discharges, or exposed in such a way as to be a potential instrument or medium in disease transmission to a person or between persons, in five of the Colonias;*
- The maintenance of an open surface privy or an overflowing septic tank so that the contents may be accessible to flies, in two of the Colonias; and*
- An object, place, or condition that is possible and probable medium of disease transmission to or between humans, in seven of the Colonias.*

Water quality samples were taken in April 2001 in the Nancy/Soliseno Subdivision where the residents use well water and have on-site septic systems. The results indicated the water was unsuitable for drinking and should be treated, coliform organisms were present and there was heavy confluent growth. The same results can be expected in the remaining Colonias as all have on-site septic systems.

The Texas Department of Health keeps records of countywide health statistics, but no information is available for the La Feria area. The following tables indicate the number of new cases of waterborne diseases for Cameron County and waterborne diseases per 100,000 population.

**Reported Waterborne Disease Cases
Cameron County**

Disease Cases	1997	1998	1999
<i>Amebiasis</i>	24	20	0
<i>Campylobacteriosis</i>	13	12	28
<i>Salmonellosis</i>	41	51	48
<i>Shigelosis</i>	59	134	77
<i>Hepatitis A</i>	273	217	184
<i>Hepatitis B</i>	26	25	17
<i>Hepatitis C</i>	4	13	0

**Reported Waterborne Disease Rates (cases per 100,000 population)
Cameron County**

Disease Rate		1997	1998	1999
<i>Amebiasis</i>	<i>County</i>	7.7	6.2	0.0
	<i>Statewide</i>	0.8	0.4	0.2
<i>Campylobacteriosis</i>	<i>County</i>	4.2	3.7	8.5
	<i>Statewide</i>	5.1	4.5	5.8
<i>Salmonellosis</i>	<i>County</i>	13.1	15.9	14.6
	<i>Statewide</i>	14.5	17.3	11.0
<i>Shigelosis</i>	<i>County</i>	18.9	41.9	23.5
	<i>Statewide</i>	18.1	20.3	11.4
<i>Hepatitis A</i>	<i>County</i>	87.4	67.8	56.1
	<i>Statewide</i>	23.4	18.0	12.6
<i>Hepatitis B</i>	<i>County</i>	8.3	7.8	5.2
	<i>Statewide</i>	6.4	10.0	4.3
<i>Hepatitis C</i>	<i>County</i>	1.3	4.1	0.0
	<i>Statewide</i>	1.9	2.4	1.8

The project will rectify the operational concerns at the wastewater treatment plant. The plant does not meet the Texas Commission on Environmental Quality's (TCEQ) BOD (Biochemical Oxygen Demand) and TSS (Total Suspended Solids) standards when releasing the treated water. However the plant is presently operated so the facility is not in violation with the TCEQ regulations. The addition of the wastewater discharge from the eight colonias and the growth in the City's population will result in the plant not being able to be operated without violating the TCEQ discharge regulations for BOD, TSS and coliform. This would result in degrading the receiving body of water, which is the Arroyo Colorado, which will discharge into the Gulf of Mexico.

Environmental Assessment

The Environmental Information Document has (EID) been prepared for the City of La Feria for the project. The EID and the Engineering Facility Plan has been reviewed by the EPA which issued the Finding of No Significant Impact on November 26, 2002.

Compliance with Applicable Environmental and Cultural Resource Laws and Regulations.

The proposed project has complied, or will comply, with all necessary environmental and cultural resource laws. The following agencies and governmental entities were contacted and input obtained during the preparation of the EID: Texas Parks and Wildlife Department, United States Department of the Interior, Fish and Wildlife Service, Texas Historical Commission, Texas Water Development Board, Texas Commission on Environmental Quality (formerly the Texas Natural Resource Conservation Commission), Texas Department of Transportation, Texas Natural Resource Information System, Texas Department of Health, United States Army Corps of Engineers, United States Environmental Protection Agency, Federal Emergency Management Association, Cameron County Irrigation District No. 3 (La Feria), Cameron County Engineering Department, North Alamo Water Supply Corporation, and The City of La Feria.

Technical Feasibility

Appropriate Technology.

The City obtains its water from the La Feria Irrigation District, which takes the water from the Rio Grande. The City's point of withdrawal is the City's water treatment plant located on the West side of the Intersection of FM 506 on Dodd Lane. The City is entitled to a water allocation of 1,800 acre-feet per year (1.61 MGD) from the Irrigation District. The City has proceeded to install a water well that has a capacity of 1.5 MGD. The intent of the water well is as a drought contingency measure. Surface water is the preferred option for water supply. When the projected water usage was assessed for the period 2002 to 2015, assuming only surface water, the worst-case scenario indicated additional water rights would be needed in 2003.

The City operates and maintains a 2.0 MGD water treatment plant. The treatment plant will be expanded by 1.45 MGD to accommodate the projected demand and the new units will be built parallel to the existing treatment train. The units in the new treatment train will be: a clarifier of diameter at least 72 ft. (outside diameter) and 12 ft. side water depth; two filters of dimensions

16 ft x 9 ft each; raw water pumps (2 pumps of 505 GPM (gallons per minute) capacity); high service pumps (3 pumps, 3,350 GPM, 2,235 GPM, and 1,120 GPM capacity) with pump building (the minimum pump capacity is 3,348 GPM, the smaller pumps will be required when the largest pump is out of service); chemical building; and backwash settling basins and backwash pumps. The existing two clearwells have a combined capacity of 600,000 gallons, and the clearwell capacity required for the new treatment train is 72,317 gallons. These clearwells will be used to store the treated water from the new train.

The water distribution system will be sized to meet TCEQ design criteria and City of La Feria's subdivision ordinance regulations. The proposed improvements, based on the results of a computer model analysis and best engineering judgment, are: an elevated tank of 500,000 gallons capacity was required just East of Rabb Rd. on the North side of Expressway 83 (note: this tank was completed in February 2002); a 12-inch PVC water main from the water treatment plant to the proposed tank site; a 10-inch PVC main from the tank site to serve La Feria Gardens, Nancy/Soliseno, and Sierra Alto Subdivisions; a 10-inch line from the tank site to serve the Valle Verde and Windsong Subdivisions; 6-inch and 8-inch service laterals within the Colonias. In addition to the above lines, fire hydrants, gate valves, and fittings will be included where required.

The wastewater treatment plant will be designed for an incoming pollutant loading of 200 mg/l and 200 mg/l for Biochemical Oxygen Demand (BOD) and Total Suspended Solids (TSS), respectively; and the effluent design standard will be 20 mg/l and 20 mg/l for BOD and TSS respectively. The discharge from the facility will be to an unnamed drain that flows into the Arroyo Colorado, which will discharge into the Gulf of Mexico.

The proposed size of the wastewater treatment plant is 1.25 MGD. The principal features of the new plant are:

Headworks - The headworks will be comprised of a mechanical screen and manual bypass bar screen, degritter, and metering devices. The mechanical bar screening system will prevent large debris from entering the treatment units. Debris from the headworks and screening area will be washed from the screens with the wash water being returned to the upstream portion of the headworks. The remaining screenings will be dewatered and disposed of in an on-site dumpster.

Biological Treatment - The Extended Aeration Treatment system is typically used for smaller communities because of the plant flexibility and ease of operation. The extended aeration treatment methodology is used extensively for pre-fabricated plants because of the ability to construct compact treatment plants and the simplicity of the operations. The extended aeration process limits the amount of sludge production to approximately 40 to 60 percent of that of the conventional activated sludge processes.

Disinfection - The disinfection process for wastewater treatment is the use of the chemical, chlorine, either by injecting or mixing the chlorine into the wastewater. Chlorine is the simplest and most cost effective disinfection process for smaller treatment plants.

Sludge Drying and Disposal - Sludge drying beds are very cost effective where land is readily available. This alternative has low capital and operational cost which requires minimal amount of operator's attention and skill level. This process is climate dependent, however, the climate in the Rio Grande Valley is classified as a semi-arid and is well suited for this drying method.

Preliminary calculations show that approximately 1.3 to 1.9 cubic yards of sludge will be produced daily at the plant capacity of 1.25 MGD (permitted capacity). The City transports the sludge to the BFI Rio Grande Valley Landfill for the present plant where it is disposed of in accordance with TCEQ requirements. The City will adopt the same procedure for the new facility.

The City will decommission the existing treatment plant. This will require the existing influent piping force mains to be relocated to the proposed treatment plant. A new lift station will be located at the northwest corner of the existing treatment plant site (corner of Willow Dr. and Dodd Lane).

The wastewater collection system will be by gravity, except where lift stations are needed to overcome terrain or system location constraints. The proposed collection system for the Colonias will be independent of the City's existing collection system. The new system will connect to the present system at a lift station (a duplex grinder pump station to reduce the construction costs) and then piped directly to the wastewater treatment plant. This approach of keeping the new system separate from the City's existing network was preferred as this system sometimes overflows in time of heavy rains. The lift stations design are based on the average and the 2-hour peak flows. The wet well size will be designed for a two-hour electrical power outage and to accommodate the peak flow with one pump out of service.

Operation and Maintenance Plan

The Operations and Maintenance (O&M) manual which will be prepared by the City's engineer as one of the projects activities and describe the actions and corrective measures to be taken should a contingency or emergency occur during start-up and the operational phases of the project. The O&M manual will be completed prior to the completion of the water and wastewater plants. The City's staff will receive training prior to, and assist in the startup and commissioning of the facilities.

Compliance with Applicable Design Standards and Regulations

The project will comply with the applicable design standards and regulations for water and wastewater projects issued by the TCEQ and TWDB, and other applicable local, state, and federal governmental entities. The design drawings and contract documents will be reviewed and approved by the TCEQ and TWDB prior to being issued for bidding for construction and procurement of the equipment. The TWDB and NADB (North American Development Bank) will review and approve the negotiated contracts before making the award.

Financial Feasibility and Project Management

Financial Feasibility. *The financial analysis determined the following funding structure of the project and the user rates to guarantee the financial sustainability of the operating agency.*

200-2001 Water and Sewer Expenses

Concept	Amount (US\$)
Operating Revenue (Water and Sewer)	1,091,057
Operating Expenses (Water and Sewer)	943,102
Non-operating Expenses (Water and Sewer)	(6,639)
Net Income	\$ 141,316

Estimated Cost

Concept	Amount (US\$)
Water System	4,465,684
Wastewater System	8,773,675
Water Rights	1,650,000
Capital Improvement Plan	3,750,000
Total	\$18,639,359

Rate Model: The rate model was developed by NADB, and the results are presented in the following table.

SINGLE FAMILY RATES (US\$)			
	2003	2004	2005
Average Monthly Water Bill	\$ 22.80	\$ 23.94	\$ 25.13
Average Monthly Sewer Bill	\$ 16.35	\$ 17.15	\$ 18.01
Total Bill	\$ 39.15	\$ 41.09	\$ 43.14
	2006	2007	2009
Average Monthly Water Bill	\$ 26.38	\$ 27.69	\$ 30.52
Average Monthly Sewer Bill	\$ 18.91	\$ 19.85	\$ 21.88
Total Bill	\$ 45.29	\$ 47.54	\$ 52.39

Financial Structure

Source	Amount (US\$)	%
TWDB- EDAP (grant)	5,144,359	28
TWDB - CWSRF (loan)	385,000	2
BECC-PDAP	440,000	2
LOAN (Potential NADB-LIRF)	7,710,376	41
NADB-BEIF Construction Assistance (grant)	4,959,624	27
Total	\$18,639,359	100%

In addition, the NADB is proposing Transitional Assistance in the amount of \$1,993,022 to reduce the overall impact increased debt service payments on the city of La Feria ratepayers caused by the construction of the project.

Project Management. *The City has adequate personnel to handle the proposed infrastructure and to respond to any potential emergency that might arise during operation and maintenance of the project. Also, currently the city operates similar infrastructure.*

Public Participation

Comprehensive Public Participation Plan.

The Comprehensive Community Participation Plan was submitted by the City to BECC on June 5, 2002 and approved June 12, 2002. The main components of the Plan are the followings:

Local Steering Committee

The City Council formally appointed the steering committee in a resolution on May 23, 2002. On May 28, 2002 the steering committee and project sponsor were informed by the of the BECC public participation requirements by the BECC Public Participation Officer. A technical presentation of the project was also provided to the steering committee at this meeting. The committee is made up of group of diverse citizens from the La Feria. The members are: Rev. Ronaldo Ortiz, who works in the non-profit sector and is the committee Chairman; Stephen Brewer, businessman; Mary Garcia, an elementary school teacher and former colonia resident; George E. Lazaro, who works in the governmental sector; Santos Guzman of the Knights of Columbus; Betty Jo Dunlap business woman active in local environmental issues; Victor Gonzalez, Jr., an elected official; and Sandra Ruiz a resident of a nearby colonia.

The technical group, which assisted the steering committee in preparing minutes for the meetings and presentations, assisted in presentations to local organizations, and provided advise the committee was made up of City officials, the City's consulting engineers, the local Secretary of State colonias coordinator and BECC staff.

The committee met on at least a monthly basis with the technical group who presented updates on the status of the project and responded to concerns and questions of the committee members.

Meetings with Local Organizations

The sponsor and / or steering committee members made presentations on the proposed project to the following local organizations; La Feria Independent School District, Knights of Columbus, La Feria Businesses, La Feria Lions Club, Pony Baseball League Coaches, The La Feria Supper

Club, and The Masonic Lodge. Letters of support have been received and others are pending. Local meetings were held in Solis Ranch, La Feria Gardens, Sierra Alto, BR Subdivision, North La Feria Village, Palmera Heights, Windsong Subdivision and Valle Verde colonias in August and September 2002. A joint meeting with the City Council, the Utility, Planning and Zoning Commission, and La Feria Industrial Development Corporation was held on May 16, 2002 where the technical group presented a comprehensive plan for improvements to the La Feria's water and wastewater system. The improvements discussed not only covered this proposed project but also the City's desire to implement future projects that will address the water and wastewater needs of the community.

Public Access to Project Information

The City of La Feria's Engineering Facility Plan and the Environmental Information Document prepared for the TWDB, have been available for the public to review at the City of La Feria City Hall, and library during normal business hours. The documents are available for review after business hours at the La Feria Police Department.

Mass mail outs to over 2200 water accounts were carried out on three occasions, and were twice hand delivered to over 600 colonia homes. These mail outs included a letter from the City Mayor, information of the public meetings, a fact sheet, a map of the colonias, and a map showing the location of the proposed new sewer plant. A mail out prior to the February 4 public meeting included a proposed rate structure fact sheet. The notices for the meetings were advertised in the La Feria News and the Valley Morning Star. Reporters from the La Feria News and Valley Morning Star have been present at several of the public meetings and full coverage of the discussion at these meetings were contained in subsequent newspaper articles.

In addition, letters were mailed to 231 La Feria business managers / owners inviting them to a lunch meeting to present information about the water and wastewater project. The meeting was held on July 16, 2002 with over 20 businesses attending the meeting.

Public Meetings

There have been four public meetings on the project. The first was a presentation on the proposed project at a regular meeting of the City Council on May 9, 2002.

The second meeting was held on June 11, 2002, where 18 people attended in addition to the six commissioners and members of the technical group. This meeting summarized the work in the TWDB's Engineering Facility Plan and the Environmental Assessment Document. The first BECC required public meeting (and third for the project) was on held on August 6, 2002 and conformed to the Comprehensive Public Participation Plan where 30 people attended, plus seven members of the steering committee and members of the technical group.

The second BECC public meeting (and final for the project) was held on February 4, 2003. Over 200 people attended the meeting. Project supporters and non-supporters were present. The majority opposed to the project were winter residents on fixed incomes. The president of the steering committee mentioned that the committee is working on a hardship contingency plan for these cases. Nearly 50 surveys collected at the end of the meeting demonstrate that 62% support the proposed project, that public health and sanitation are considered priorities, and the majority

prefer to use the abandoned wastewater lagoons for a wild life refuge. A survey is in the process of being carried out in La Feria to determine the extent of overall public support for the project.

Sustainable Development

Definition and Principles.

The proposed City of La Feria Water and Wastewater Project adheres to the principles of sustainable development which is defined as “conservation oriented social and economic development that emphasizes the protection and sustainable use of resources while addressing both current and future needs, and present and future impacts of human actions” as defined in the Border XXI environmental program developed by the U.S. and Mexican authorities. This definition is based on the internationally accepted sustainable development definition from the Rio Declaration on Environment and Development; “development that meets the needs of the present without compromising the ability of future generations to meet their own needs”. Specifically the project planning ensures human beings are at the center of concern; the project meets the development and environmental needs of present and future generations, environmental protection is an integral part of the development, and the stakeholders have an active participation in the project.

Institutional Human Capacity Building

The City of La Feria operates all the municipal services, streets, drainage, water distribution, wastewater collection, water and wastewater treatment plants, police, fire, and planning and zoning. The City currently has 42 full-time and 7 part-time employees. There are seven full-time equivalent employees assigned to City’s water utility operations. Four of the employees are at the water and wastewater plants, and the other three for the water distribution and wastewater collection activities.

The City has licensed operators for the water and wastewater plants. The present number of operation and maintenance will be increased when the expanded water treatment facility and new wastewater plant become operational. Additional personnel will be hired for the maintenance of the water and wastewater distribution systems. The City will ensure the new personnel are qualified and undergo training if necessary so they may perform their respective duties.

The City plans to fully involve the operators in the start-up and commissioning phase of the project, in the latter half of 2005, so that they are intimately familiar with the new plant and equipment.

The City has a functioning water utility department for over 50 years and the institutional framework is in place. The proposed project will increase the scope and responsibilities of this

entity. There are presently 2,055 water and 1,654 sewer accounts and this will increase to approximately 2,400 for each service when the connections are made to the eight colonias.

Conformance with applicable Local and Regional Conservation and Development Plans

The local and regional plans, which are applicable to this proposed project, have been reviewed. The project conforms to the following plans: City of La Feria - Comprehensive Plan, Governmental Service Agency and Sigler Winston Greenwood & Associates, Inc., 2000; TWDB - Water for Texas: A Consensus-Based Update to the State Water Plan, Vol. II, 1997; Integrated Water Resource Plan, Lower Rio Grande Valley Development Council, February 1999; and TWDB State Water Plan, Water for Texas - 2002, Region M (Rio Grande Regional Water Planning Area).

All these plans indicted a growth in the City of La Feria's population with the subsequent need to provide water and wastewater services to satisfy the projected demand. The proposed project will meet the estimated demand for these services for the next twenty years.

The pertinent City Ordinances that are applicable for this project are: City of La Feria Subdivision Ordinances, June 14, 2001; Ordinance - Customer Hook Up within 90 days, November 12, 1998; Zoning Ordinance, April 13, 2000; Drought Contingency Plan, May 1998; and Rate Structure Ordinance Encouraging Water Conservation, January 25, 2001.

The project has been reviewed by the Pre-Application Review Panel of the Lower Rio Grande Development Council in accordance with the State of Texas requirement under Executive Order 12372.

Natural Resource Conservation

The proposed project will eliminate inadequate on-site septic systems presently in use in the eight colonias, which are potential sources of ground and surface water contamination. The new wastewater treatment plant will enable the City to meet the current and future TCEQ discharge requirements, without having to subject the existing plant to major and costly modifications and improving the quality of discharge to the Arroyo Colorado. There are possibilities for wastewater reuse for irrigation of public areas, and using the decommissioned wastewater ponds for a wildlife refuge and/or a storm water retention basin.

Community Development

The proposed project will support the City's projected growth for the next 20 years. The project will demonstrate to the residents and businesses that the City can accommodate their needs by providing affordable water and wastewater supply to its customers that will foster the development of the community.

List of relevant documents:

- *Environmental Information Document*
- *Engineering Facility Plan*

- *Certification Document*