Border Environment Cooperation Commission

Replacement of the River Pump Station for Cameron County Irrigation District No. 6 in Texas

1. General Criteria

1.a Project Type

The purpose of the project is to provide the Cameron County Irrigation District No. 6 with improvements to its pumping system that will minimize water loss as well as improve efficiency of the system, thereby contributing to the beneficial water use and conservation of energy.

The project belongs to *Water Conservation* Sector, a BECC priority sector.

The project sponsor is the Cameron County Irrigation District No. 6.

1.b Project Category

The project belongs to the category of *Community Environmental Infrastructure Projects – Community-wide Impact*. The project will contribute to minimize water loss and improve energy efficiency use in the Irrigation District.

1.c Project Location and Community Profile

Project Location

The project is located adjacent to the US-Mexico Border. The district is located in Cameron County, Texas, about 2 miles northwest of Los Fresnos, Texas.

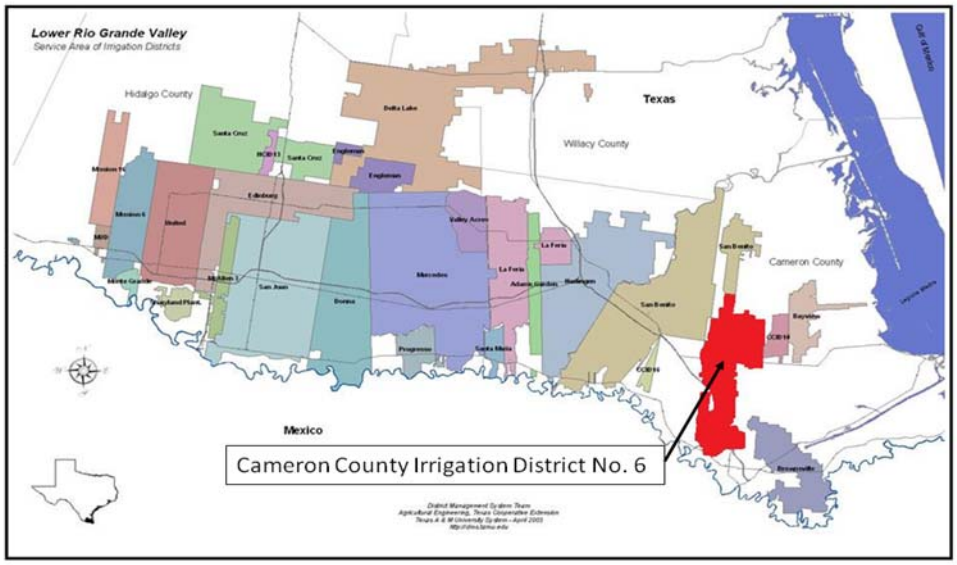

Figure 1. Location of the Cameron County Irrigation District No. 6 in Los Fresnos, TX

District Profile

The District consists of 22,432 acres, of which 19,268 are subject to irrigation. Water is diverted from the District's pumping plant facilities located on the United States side of the Rio Grande, 51/2 miles northwest of Brownsville, Texas. The pumping plant was built in the early 1900's and is considered to be one of the oldest pumping plants on the Rio Grande. After pumping from the river, the water is transported to a main canal, which transports the raw water to a reservoir with a surface area of 670 acres and a storage capacity of 3000 acre-ft.

The District conveyance system consists of a main delivery earthen canal that extends about 20 miles northward from the river, approximately 100 miles of laterals consisting of concrete lined and earthen canals, 25 miles of delivery pipeline, approximately 25 miles of drain ditches, a main re-lift pumping plant which furnishes water to the northern part of the district, a Resaca in the northern part of the district with a surface area of approximately 460 acres used for storage and delivery.

The main canal is an earthen canal that averages about 30-40 feet in width and about 4-5 feet in depth. Many of the laterals are either earthen or were lined with concrete many years ago. Many of the concrete lined canals are so deteriorated that they lose much water through seepage and the maintenance is difficult. Additionally, many need to be either lined or replaced with pipelines. The District's total storage reservoir capacity is 7924.6 ac-ft.

The District's water rights are of 52,142 acre-feet per year. The District has 1,292 flat rate water accounts of an acre or more, and 1,186 flat rate accounts of properties with less than 1 acre. In addition to its irrigation water rights, the District diverts municipal water for the City of Los Fresnos, Texas and the Olmito Water Supply Corporation. The District also diverts irrigation water for Bayview Irrigation District No. 11, Brownsville Public Utilities Board, and Cameron County Water Improvement District No. 10 under a water delivery contract.

The main crops grown in this District are cotton, grain, sorghum, corn, sugarcane, orchards and pastures. The most common method of irrigation is furrow irrigation. Most of the irrigation is done by gravity flow.

1.d Legal Authority

This District was created under applicable articles of the Texas Constitution of 1922, when it issued bonds and purchased the then existing irrigation district known as Rio Grande Canal Company. In 1922, this district was created as Cameron County Water Improvements District No. 6. In 1927, this District was converted to a Conservation and Reclamation District to be known as Cameron County Water Control and Improvement District No. 6. Effective December 29, 1987, this District underwent a voluntary conversion to an irrigation district operating under Chapter 58 of the Water Code. The official representative of the District is Mr. Frank Ruiz, General Manager.

The project falls within the scope of agreements targeted at improving the environment and the quality of life of border residents, which have been signed by Mexico and the United States. The United States and Mexico have signed six major bilateral agreements related to air, water, land protection and pollution control issues. These include:

- 1889 International Boundary Convention
- 1944 Water Treaty
- 1983 La Paz Agreement, or Border Environment Agreement

- 1990 Integrated Border Environmental Plan (IBEP)
- 1994 North American Free Trade Agreement (NAFTA)
- Border 2012 Program

The project complies with the spirit of all these agreements and all of them have been considered since the onset of the project.

1.e Project Summary

Project Description

The project proposed by the Cameron County Irrigation District No. 6 (CCID) includes improvements to the pumping system. The project entails the installation of two supplemental pumps and motors to be located at the river pumping plant. These pump and motor combinations will utilize vertical turbine technology with natural gas powered engines.

The District's primary goals for improvements to the pumping system are as follows:

- Minimize water loss.
- Increase water availability for the District use.
- Improve the conveyance efficiency of the pumping system by improving the efficiency and reliability of the system.
- Reduce the cost and resources required to operate and maintain the pumping system.

The estimated project cost is **$1,979,663.**

Project Map

The District's pumping plant facility is located on the United States side of the Rio Grande, 5.5 miles northwest of Brownsville, Texas.

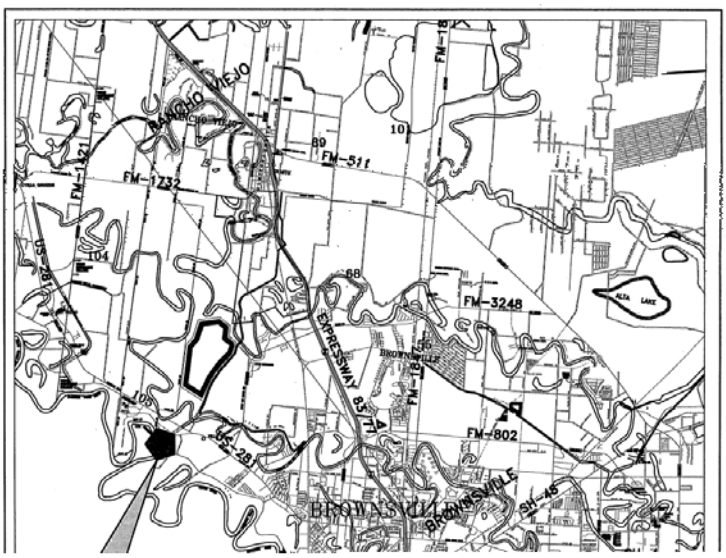

Figure 2. Location of District's Pumping Plant

Project Justification

Most of the water users in the area depend on the Rio Grande for raw water. Any additional water collected and better managed will benefit all water users in the area by potentially increasing water availability for municipal and agricultural use. The installation of two supplemental vertical turbine pumps would offer greater flexibility in operations while also increasing the efficiency of the system. Based on data available from 1997 to 2006, the average overall efficiency of the pumping plant is 57.9%. The installation of two supplemental pumps with natural gas powered engines will allow the District to diversify their energy supply. The project will potentially see a yearly KWH reduction of 832,030 KWH

Typically, the District makes water orders by a number of days in advance of pumping. This is due to the time it takes for water to be released from Falcon Reservoir and make its way to the District's pumping station. Should there be excess water in the Rio Grande, which nobody owns the right to it, the Texas Commission on Environmental Quality (TCEQ) may allow the District to use a portion of this water. This excess water is called no-charge water and the use does not go against the District's allocation. It is estimated that no-charge water is available for twenty-one 24 hour periods throughout a year. The average no-charge flow rate during each period is estimated at 214 acre-feet per day (108 cfs). Due to the nature of the project, the addition of supplemental pumps and motors will increase the reliability of the Districts pumping system and increase potential water deliveries in instances when the current pumping system would be unable to do so. Due to the improved reliability and expanded pumping flow rates of the new pumps, it is anticipated that a 50% increase in the amount of no-charge water will be realized by the District, water previously unavailable for use by the District. Therefore, it can be assumed that the water supply for the District can be increased by approximately 2,250 acre-feet per year of no-charge water with the addition of supplemental pumps and motors.

In addition, the increase of the pumping flow rate would potentially improve the delivery time. Therefore, the water would hypothetically spend less time in the canal resulting in a decrease of water loss due to seepage and evaporation throughout the distribution system. It is estimated that the District has over 81 miles on unlined, earthen canals of which 41 miles are in the main irrigation network. For the purpose of this project, an average seepage rate of 1.05 gal / ft2 / day is used. It was determined that the District can save up to 12,731 acre-feet of water per year due to the improved pumps preventing seepage in the main irrigation network.

In addition to seepage, water losses can also be attributed to evaporation. An annual canal evaporation rate of 67.2 inches was estimated based on 80 percent of the 84 inch annual evaporation rate reported for several local reservoirs. Annual precipitation was assumed to be 27.5 inches per year. Therefore, the net water loss due to evaporation is estimated at 39.6 inches per year. Since the average top width of unlined, earthen canals is 40 feet, the net evaporation savings are 654 acre-feet of water per year.

The amount of water allowed by TCEQ's Watermaster is 2.5 acre-feet per acre per year. Assuming that the total water available due to the implementation of the proposed project is 15,635 acre-feet, this will be enough water to allow 6,254 acres per year to remain in agricultural production.

Water has economic, environmental, and social impacts; therefore, water management must be emphasized in the community's development. Many cities in the Valley rely on irrigation districts to bring water from the Rio Grande to their treatment and distribution systems. McAllen for

instance, would be forced to provide its own infrastructure from the river to the city, were it not for its relationship with the United Irrigation District and the Hidalgo County Irrigation Districts One, Two and Three. In addition, farmers contribute much to the economy in the Valley. If the crops fail, jobs are lost. Without the farming sector, city budgets would be affected.

Important issues for Certification:

The Project falls within the BECC's priority sectors and complies with the General Criteria.

Pending issues:

None.

2. Human Health and Environment

2.a Compliance with Applicable Environmental Laws and Regulations

In accordance with the National Environmental Policy Act (NEPA) and other statutes, and based on the type of project, an evaluation of the impacts on the affected environment of the proposed project was conducted. State and federal agencies were consulted based on the minor impacts of the project.

On February 26, 2008, the Texas Parks and Wildlife provided concurrence to the proposed project recommending precautions to be taken to avoid, minimize and/or compensate for impacts to vegetation and wildlife. The Texas Historical Commission (THC) provided the first comment letter on January 8, 2008 requesting additional information about the existing infrastructure in the pumping station, considered of potentially historic value. On March, 2008, the THC provided their concurrence letter determining that the project would have no adverse effect on the historic resource. The Army Corps of Engineers provided concurrence letter on March 13, 2008 including Nationwide Permit (NWP) 7 authorizing the construction of the project. The TCEQ provided comments on May 14, 2008 finding no objections to the proposed project. On January 18, 2008, the U.S Department of the Interior Fish and Wildlife Service determined that the proposed project would have little to no effect on federally listed species and no further action is required.

In addition, the International Boundary and Water Commission (IBWC) United States Section was consulted to obtain their environmental clearance. On July 9, 2008, the IBWC Engineering Services Division (ESD) expressed concern regarding specific aspects of the final design drawings and requested further information on the design. On September 3, 2008, a response was provided by Cameron County Irrigation No. 6. Additional information was reviewed and basic engineering issues were settled to the satisfaction of the IBWC, who submitted a letter to its Mexican counterpart, the Comision Internacional de Limites y Aguas (CILA) for concurrence. On October 29, 2008, CILA submitted a letter to the IBWC agreeing to the proposed project. The final diplomatic approval from the IBWC to the CILA is in process.

2.b Human Health and Environmental Impacts

Human Health Impacts

The proposed project will provide more efficient water delivery by the District increasing the availability for agricultural and municipal use. The purpose of this project is to provide improvements to the pumping system to curtail water loss and improve conveyance efficiency.

The human health impacts from this project are all positive due to additional water available for crops for human consumption and municipal use thus offsetting water shortages.

Through the availability of additional water and more efficient use of the allocated waters for irrigation and municipal use, a growing population of the region can be sustained over a longer period of time without creating health risks due to lack of water.

Environmental Impacts

Construction of the proposed project will have a direct positive impact through improving the efficient use of water and energy, thus making more water available for irrigation and municipal

use. The implementation of the project will allow the availability of approximately 15,635 acre-feet/year of water on an average annual basis. The energy savings estimated with the implementation of the project are 832,030 KWH, on an average annual basis.

The project will not pose any environmental hardships or have any long-term negative effects on the project area. There would be a temporary decrease in air and noise quality due to construction activities associated with trenching the new pipeline alignment and the additional platform structure. There would be no adverse effect to any endangered or threatened species, any migratory bird, or any historic or cultural property.

Following is a summary of the short-term and long-term effects of the project on the environment:

Resource	Expected Environmental Impact
Wildlife Resources:	Temporary disturbance of up to 0.03 acres of open, grassy habitat. The value of this habitat to wildlife is minimal due to frequent maintenance (mowing) by the District.
Aquatic Resources (Rio Grande):	Short-term, localized increase in turbidity during construction. Increase of the total pumping capacity of the District due to the installation of a supplemental pump.
Endangered Species:	No effect.
Migratory Birds:	No effect.
Air and Noise Quality:	Short-term, localized decrease in air and noise quality during construction.
Social and Economic Conditions:	Small, localized increase in local employment during construction. No disruption of public services.
Cultural Resources:	No adverse affect.
Indian Trust Assets:	No effect.

Transboundary Impacts

Negative transboundary impacts are not anticipated by the implementation of the water conservation project.

Formal Environmental Clearance

The impacts on the affected environment of the proposed project were evaluated and consultation with state and federal environmental agencies was carried out based on the minor impacts of the project. Concurrence letters from environmental agencies were received.

Important issues for Certification:

The project meets all environmental regulations.

Pending issues:

None.

3. Technical Feasibility

3.a Technical Aspects

Project Development Requirements

The proposed improvements have been described in the Project Plan prepared by the consultant for the District and submitted to BECC. Design and construction requirements would adhere to all State regulations associated with Professional Engineering Practices. The BECC reviewed and approved the Project Plan on November 26, 2007. All technology used in the proposed improvements is appropriate and manageable by local expertise and based on the technology for irrigation projects with similar operations and infrastructure.

The project will entail the installation of two vertical turbine pumps and two natural gas powered engines to be located adjacent to the existing river pumping plant. The installation of two supplemental vertical turbine pumps would offer greater flexibility in operations while also increasing the efficiency of the system. Based on data available from 1997 to 2006, the average overall efficiency of the pumping plant is 57.9%. The installation of the vertical turbine pumps and the natural gas engines will allow the District to diversify their energy supply while potentially significantly minimizing their cost of delivering water to the end users.

The entry point into the Districts conveyance system is 12.5 feet above the nominal level of the Rio Grande, which is the sole source of water for the District. The proposed vertical turbine pumps will raise the dynamic head level of the water to the point where it can enter the conveyance system. A thorough analysis of the Districts pumping requirements was undertaken during the preliminary engineering phase of the project. This analysis was used to determine the optimum pumping capacity of the proposed vertical turbine pumps.

In order to power the proposed vertical turbine pumps, two natural gas engines will be utilized. After thoroughly analyzing the pumping requirements of the District, the vertical turbine pumps were selected based on flow and pressure requirements. This information was then used to select the appropriate natural gas engines to operate the proposed pumps. Specific requirements such as horsepower, gas usage, and efficiency were incorporated into the final design. It was the goal to determine the most cost effective and efficient system. Due to the cost associated with retrofitting the pump plant to incorporate this system, this system will be installed as a standalone unit and will not be tied into the existing pump plant. This standalone unit is proposed to be installed at the location shown in Figure 3.

Figure 3. District's Pumping Plant proposed unit

In order to transfer water from the pumps to the conveyance system, a new pipeline will be installed. It is proposed to utilize a 36" pipeline to connect each of the pumps to a 48" pipeline, which will take irrigation water to the supply canal. A series of general design standards will be utilized during the design of the proposed system.

After analyzing the historical pumping of the District, it was determined that the energy usage was 0.109 kilowatts per hour (KWH) per 1000 gallons of water pumped. Over the past 10 years, the District has pumped an average of 9,560 million gallons per year with an average electrical consumption of 1,485,769 KWH. The project will potentially see a yearly KWH reduction of 832,030 KWH. The estimated lifecycle of the project is 50 years. Therefore, the net KWH reduction is estimated at 41,600,000 KWH. Keep in mind that this number is just a decrease in KWH and does not take into consideration an increase in natural gas usage. The average electricity cost to operate the pumps is $139,662 per year. Should the natural gas engine/supplemental pump be operated 56% of all pumping days, a total of 5,560 million gallons can be pumped using the supplemental pump. The yearly reduction is estimated at $29,000.

Table 1. Annual Water and Energy Improvements

Project	Description	Annual Water Gained * (Acre-feet)	Annual Energy Savings (KWH)
Pumping System	Installation of two supplemental pumps and motors	15,635	832,030

***This amount reflects water recovered from seepage, evaporation, plus no-charge water.**

Appropriate Technology

The final design of the proposed project was developed pursuant to technical specifications that adhere to all State regulations associated with Professional Engineering practices.

For the purpose of determining the most efficient design, several options were considered for the improvements of the pumping system. The project alternatives reviewed consisted of the following scenarios:

Alternative No. 1

- Installation of a supplemental pump and motor

Alternative No. 2

- Installation of a supplemental pump and a natural gas engine

Alternative No. 3

- Rehabilitate existing pumping plant

Alternative #1: **Installation of a supplemental pump and motor.** The installation of a supplemental vertical turbine pump would offer greater flexibility in operations while also increasing the efficiency of the system. The use of a Variable Frequency Drive (VFD) would further increase flexibility and efficiency. Based on data available from 1997 to 2006, the average overall efficiency of the pumping plant is 57.9%. The installation of a vertical turbine pump and a premium efficiency class F motor will allow water to be lifted from the river to the low line canal with an overall efficiency and 96% motor efficiency. The inclusion of a VFD on the pump will further increase efficiency and allow the District to pump variable quantities of water with the same pump.

Alternative #2: **Installation of a supplemental pump and a natural gas engine.** This alternative would allow the District to diversify their power source and offer flexibility when re-negotiating a contract with the electrical provider. The proposed natural gas engine would be implemented with a new vertical turbine pump.

Alternative #3: **Rehabilitate existing pumping plant**.

a. Replace existing pumps and motors with high efficiency models
   Replacing the existing pumps and motors could accomplish two goals: 1) Increase the efficiency of the system, and 2) Increase the lifespan of the units. The pumps could be replaced with like models (centrifugal) or with axial flow pumps. Axial flow pumps exhibit higher efficiencies when compared to centrifugal. This alternative will involve minimal structural modifications to the existing plant. Replacement motors would be of the induction type. In addition, the installation of VFDs could increase the flexibility of the plant. There are inherent problems with this approach. First of all, the capital cost necessary to replace all the pumps and motors has the potential to be very high. Significant structural and electrical modifications would need to be made. Second, the potential increase in efficiencies, and subsequent energy savings, would not be enough to offset the high capital costs.

b. Replace existing motors and keep existing pumps
   This alternative would have a lower capital cost when compared to total pump/motor replacement while at the same time increasing system efficiency. Attempting to sync new

motors to old pumps poses a significant problem. Regarding this alternative, the risks significantly outweigh the rewards.

Land Acquisition and Right-of-Way Requirements

The proposed project is located within the District boundaries, consequently no land or right-of-way acquisition is required. Documents validating land acquisition and ownership were provided to BECC.

Work Tasks and Schedule

Table 2. Construction Schedule

Task Name	Duration (days)	Start Date	Finish Date
Final Design	212	12/27/07	10/17/08
Bid Advertisement	30	11/03/08	12/03/08
Bid Evaluation	15	12/03/08	12/18/08
Award	0	12/18/08	12/18/08
Finalize Contracts	15	12/18/08	01/02/09
Submittal Review	90	01/02/09	04/02/09
Equipment Procurement	105	01/02/09	04/17/09
Site Construction	300	01/02/09	10/29/09

3.b Management and Operations

Project Management

The administration of the project will be responsibility of Cameron County Irrigation District No. 6. The average experience of District personnel is 13 years.

Operation and Maintenance

a. Organization

The organization of the Cameron County Irrigation District No. 6 is shown in the following chart.

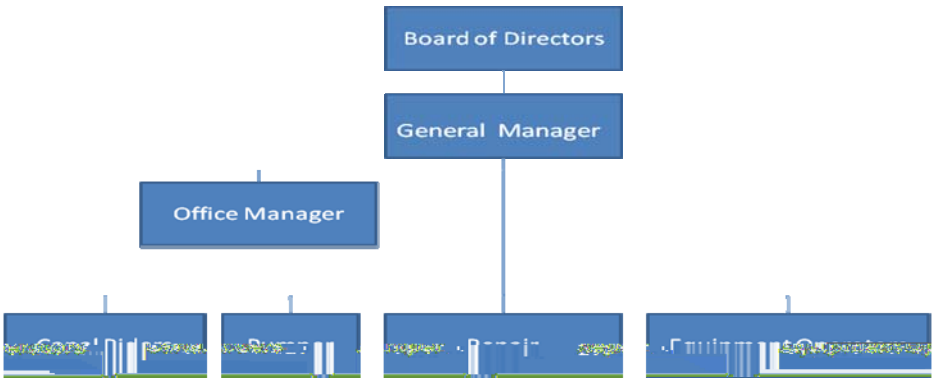

Figure 4. Organization Chart

b. Operations and Maintenance

The operation and maintenance requirements for the improvements to the facility are similar to the ones required for the existing pumping system. However, the existing staff will obtain the appropriate training required to operate the new equipment. The existing staff is considered sufficiently capable and experienced to undertake required maintenance of the improved pumping system. During the first year of operation, the construction company will be responsible for any repairs to the improvements, after which the District will be completely responsible for the system.

c. Permits, licenses, and other regulatory requirements

The District operates under the provisions of Chapter 58, Title 4, of the Texas Water Code and under Article XVI, Section 59 of the Texas Constitution.

The design and construction requirements adhere to all State regulations associated with Professional Engineering practices. Construction procurement will adhere to all State requirements associated with bidding, contract award, and general construction procedures. The final design will include detailed specifications to which the procured contractor(s) must adhere.

Important issues for Certification:

Final Design was reviewed by the IBWC, CILA, BECC and NADB.

Pending issues:

None.

4. Financial Feasibility

1. Financial Conditions

The North American Development Bank (NADB) has reviewed the financial information presented by the *Cameron County Irrigation District No 6.* Based on this information it has been determined that the proposed financial structure for the Project is adequate. The financial information and analysis which has been presented include, among other factors:

1. Economic and demographic information of the Project's area of influence;
2. Estimated costs of the Project

Based on historical information and the cost of the project, estimated projections have been completed to determine its financial feasibility. The result of the analysis indicates that the District will be capable of generating the cash flow necessary to meet the costs of the Project.

2. Project Costs and, Funding Structure

The analysis of the financial information includes a financial structure of the project according to the following: total construction cost of the project, which is currently estimated at $1,979,663.00

The financing sources being considered for the whole project are presented in the table below.

PROJECT SOURCES OF FUNDS
(Dollars)

SOURCES	AMOUNT	%
Cameron County Irrigation District No 6	$989,831	50.0
NADB grant WCIF	$989,832	50.0
TOTAL	**$1,979,663**	**100**

Important issues for Certification:
The project is financially viable.

Pending issues:
None.

5. Public Participation

5.a Local Steering Committee

The Public Participation Plan developed by the Local Steering Committee was approved by the BECC on June 5, 2008, and the Local Steering Committee was formally installed on May 20, 2008. Frank Ruiz, Committee Chairman, District General Manager was head of the committee. Other members include Frank Russell, Committee Vice-Chairman, Joe Collinsworth, Landowner and Producer; Dahlia Garcia, Committee Secretary, and Adan C. Lopez, Committee Member and Landowner.

5.b Public Access to Information

Public Notice

The 30-day public meeting notice was published in the Valley Morning Star on August 20, 2008 for the public meeting. Project information such as the Project Plan and Project Report were made available at the District offices for public review.

Additional Outreach Activities

Information meetings were held with several local organizations to inform them of the project and request their support. The local organizations contacted were Lower Rio Grande Water District Managers' Association, Lower Rio Grande Regional Water Authority, Bayview Irrigation District No. 11, Cameron County Water District No. 10, Olmito Water Supply Corporation, City of Los Fresnos and Brownsville Public Utility Board. A support letter was received from all organizations.

Public Meetings

The public meeting was held at the District office on September 18, 2008. A total of 11 people attended the meeting and 8 exit surveys were completed demonstrating 100% support for the project.

5.c Final Public Participation Report

The sponsor delivered a Final Public Participation Report per BECC requirements.

Important issues for Certification:

The project is supported by the community.

Pending issues:

None.

6. Sustainable Development

6.a Institutional and Human Capacity Building

Actions within the scope of the project that contribute to institutional and human capacity building at the Cameron County Irrigation District No. 6 include the following:

- Improve the necessary irrigation infrastructure (pumping system)
- Reduction in water and energy losses
- Modernization of the irrigation facilities
- Impact on agricultural production with a possible increase of income
- Improved quality of life for the end users
- Additional availability of water for agricultural and municipal use

The NADB Water Conservation Infrastructure Fund (WCIF) will complement, with grant funds, the capital investments required by the District for construction of the project. The use of WCIF grant funds allows the District to fully finance and improve its infrastructure in order to reduce water conveyance losses and increase water available for the District.

6.b Conformance with Applicable Local, State, and Regional Laws and Regulations and Conservation and Development Plans

The proposed project complies with all local and regional conservation and development plans. In particular, the project complies with the Rio Grande Regional Water Plan, which recommends water conservation in agricultural activities and water use efficiency, in order to reduce irrigation shortages. In this case, the project particularly addresses agricultural water conservation by means of *off-farm* water use efficiency and increasing water availability for a beneficial use. In addition, the project complies with the Cameron Water Conservation and Drought Contingency Plan, and Water Allocation Policy, of November 10, 2005.

The project adheres to the U.S.-Mexico Border 2012 Environmental Program by meeting Objective 4 (promoting improved water utility efficiency). One of the program's guiding principles is reducing major risks to public health and conserving and restoring the natural environment.

6.c Natural Resource Conservation

The proposed project was developed with the intent of conserving water. The District irrigation water rights are 52,142 acre-feet per year; however, this water right is “as-available” and the actual water available to the District may vary from year to year. The implementation of the project will allow an estimated increase of water availability of 15,635 acre-feet/year, and an energy savings of 832,030 KWH/year, on an average annual basis.

The construction of the proposed project will satisfy existing needs of the District while providing water to producers, city users, as well as other small rural communities, which depend on the Rio Grande for their water supply.

6.d Community Development

The benefit obtained by the modernization of the irrigation facilities may directly impact agricultural production and may result in increased income, an improved quality of life for the end users. The proposed project would enhance economic activity for the development of the District and surrounding communities. An improved quality of life for the residents may also have a favorable impact on the development of health and education of the area.

Important issues for Certification:

The project complies with all sustainable development principles.

Pending issues:

None.

List of Available Documents

- Cameron County Irrigation District No. 6 Baseline Conditions. April 10, 2008.
- *Cameron County Irrigation District No. 6 Improvements Project Final Design 60%*. July 30, 2008.
- *Cameron County Irrigation District No. 6 Pumping Plant Project Plan.* NRS Consulting Engineers. November 28, 2007.
- CILA Comment Letter. October 29, 2008. (Spanish)
- Corps of Engineers Concurrence Letter and Permit No. SWG-20071986, Nationwide Permit Verification. March 13, 2008.
- *Final Public Participation Report.* Cameron County Irrigation District No. 6. September 29, 2008.
- International Boundary and Water Commission Concurrence. September 15, 2008.
- Preliminary Alternative Analysis. NRS Consulting Engineers. March 14, 2008.
- Texas Commission on Environmental Quality Concurrence Letter. May 14, 2008.
- Texas Historical Commission Concurrence Letter 1. January 8, 2008.
- Texas Historical Commission Concurrence Letter 2. March 18, 2008.
- Texas Parks and Wildlife Concurrence Letter. February 26, 2008.
- US Fish and Wildlife Service Concurrence Letter. January 18, 2008.
- *Water Allocation Rules and Regulations of the Cameron County Irrigation District No. 6*. November 10, 2005.