

September 12, 2007

## Border Environment Cooperation Commission

# Water Conservation Project for the Engelman Irrigation District No. 6 in Elsa, Texas

## 1. General Criteria

### 1.a Project Type

The project proposed sponsored by the Engelman Irrigation District (ID) No. 6, in Hidalgo County Texas includes improvements to the irrigation system. The project consists of rehabilitation of the District Reservoir, replacement of a water conveyance pipeline, and construction of Transfer Pump Station.

This project belongs to *Water Conservation* Sector, which is within BECC's priorities.

The project sponsor is the Engelman Irrigation District No. 6.

### 1.b Project Category

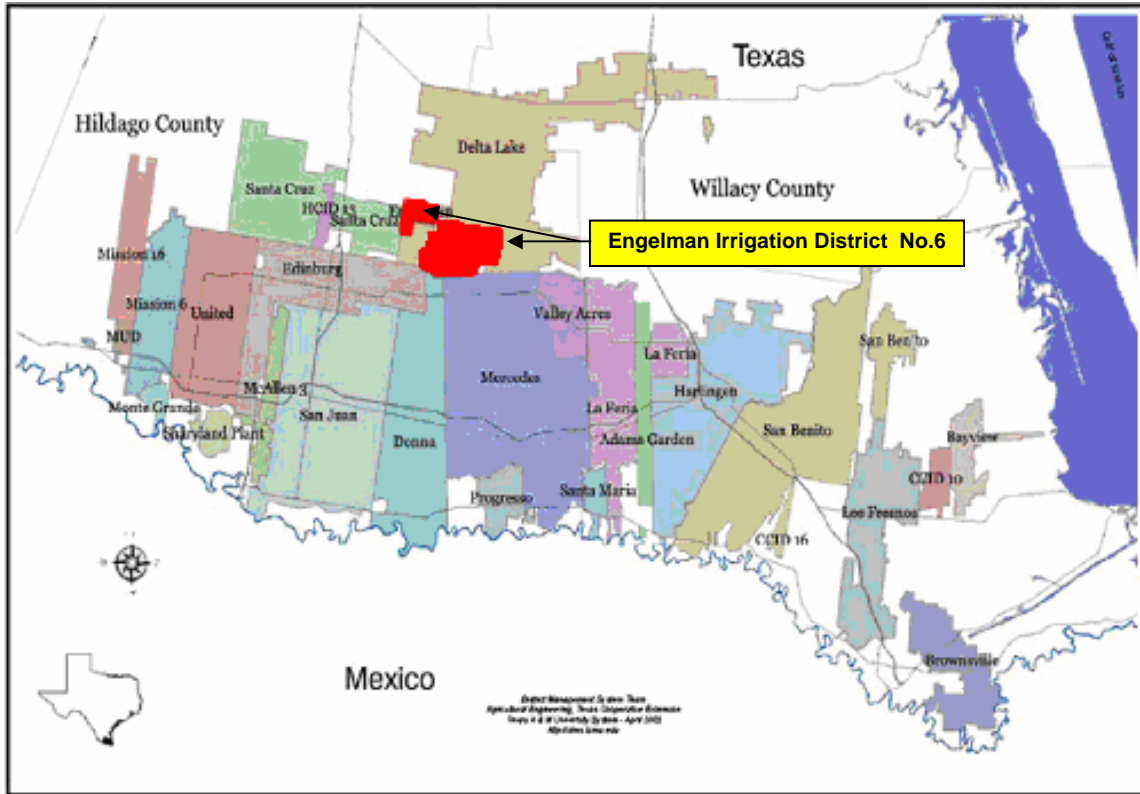
The project belongs to the category of *Community Environmental Infrastructure Projects – Community-wide Impact*. The project will contribute to reduce water losses and improve water supply to the Engelman Irrigation District No. 6.

### 1.c Project Location and District Profile

#### Project Location

The project is located within the boundaries of the Irrigation District which is located north and west of the City of Elsa, Texas. The project area is located approximately 18.8 miles north of the Rio Grande. Approximate center of the project area is located at N 26° 20' 18" Latitude, and W 98° 00' 11" Longitude.

The following figure shows the location of the Engelman Irrigation District No. 6 relative to other districts.



**Figure 1.** Location of the Engelman Irrigation District No. 6 in Elsa, TX

### **District Profile**

An irrigation district is a limited-purpose district that delivers untreated water for irrigation. Although an irrigation district may provide drainage, it may not treat or deliver water for domestic use or operate sewage facilities. A district may also contract to deliver untreated water to political subdivisions and water supply corporations. Irrigation districts are created by petition and election, or by an act of the legislature, have the authority to issue bonds and levy taxes, and may tax all the property owners in the district to pay for part of the costs of the district with the remaining costs being charged against other water users.

The Engelman ID encompasses approximately 7,600 acres, of which approximately 7,000 acres are in effective use. The district continues to be essentially an agricultural district with an estimated 600 acres in rural-urban use. While Hidalgo County is in continued transition from agricultural to urban use, we do not predict that the nature of Engelman ID will change measurably over the next 20 years.

The topography of the Engelman ID is more varied than other irrigated areas in the Rio Grande Valley. Characterized by rolling terrain (small hills and valleys), the land is somewhat more difficult to irrigate, with typical flood irrigation, than typical river delta lands. Because of the terrain variation, the district's irrigation infrastructure includes a relatively high number of pump stations. A typical lateral system draws water from the main supply canal into a pump system. The pumps discharge water through pipelines that serve the various blocks of land surrounding the lateral system. The system includes one main pump station (five pumps), 13 ½ miles of main canals, 40 miles of lateral discharge pipelines, and 11 re-lift pump stations.

Water is delivered from the Rio Grande to the Engelman ID via the Upper East Main Canal of the Donna Irrigation District. This canal system transfers river water to the south boundary of the Engelman ID where it is divided into two main canals that transfer water to the east and west sections of the district. The Engelman ID reservoir is also located on the south boundary of the district; thus river water can also be transferred to the reservoir. Since water is received through the Donna ID system, it follows that the Engelman ID water supply is highly dependent on the capacity of the Donna ID canal delivery system.

The District does not supply raw water to a municipality. However, it has a contract with the North Alamo Water Supply Corporation to provide them annually with 518.475 acre-feet of Class “A” municipal water rights.

### **Relationship of the Engelman Irrigation District with the Donna Irrigation District**

The District is a relatively small irrigation district and does not have a river pumping station to divert its allotted water from the Rio Grande. As a consequence, the District has contracted with Donna Irrigation District to divert water from the Rio Grande to the District’s delivery system. Contract with Donna ID was provided to BECC. Currently, Engelman ID pays the Donna District a flat rate of \$8,200 per year, the actual cost plus 10% per acre-foot water delivered and 25% of the Donna’s administrative expenses.

### **1.d Legal Authority**

Hidalgo County Water Improvement District Number 6 was organized as a water control and improvement district in 1928 under the provisions of Chapter 51, Texas Water Code. On November 21, 1977, the District was converted into an irrigation district under the provisions of Chapter 58, Texas Water Code, and under Article XVI, Section 59 Texas Constitution. On November 12, 1981 the District was renamed Engelman Irrigation District.

The Engelman ID received from the Texas Commission on Environmental Quality (TCEQ) the Certificate of Adjudication No. 809-002 that authorizes the District to divert from the Rio Grande a maximum quantity (if allocated to the district) of 18,994.35 acre-feet of “Class A” irrigation water (water right acreage recognized is 7,597.74 acres). In addition, the district holds from the TCEQ a Certificate of Adjudication No. 0809-006 to divert from the Rio Grande a maximum quantity of 518.475 acre-feet for Class “A” municipal water rights.

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 proposed water conservation project includes improvements to the irrigation system. It consists of rehabilitation of the district reservoir, replacement of aged mortar joint concrete pipe and construction of a transfer pump station. The focus of the proposed project is to increase the water supply to the district. Energy savings will result from an increased water supply as a result of utilization of previously lost water.

### Transfer Pump Station

This project involves the construction of a transfer pump station and instrumentation to monitor the total dissolved solids (TDS) levels in the south main drainage channel. By pumping stormwater from a Hidalgo County South Main Drainage Channel to district system, the overall water supply will be increased.

### Pipeline

This project will replace the existing mortar joint concrete pipes with rubber-gasket PVC pipes, rated 80- to 100-psi. Replacement of older leaking pipelines will recover lost water and energy savings will be derived from a reduced need to pump lost water due to seepage. Table 1 presents the project, flow capacity, and the acreage served.

**Table 1**  
**Engelman ID Irrigation System Improvements**  
**Lateral Pipeline Replacement Project**  
**TWDB, USBR, BECC, and NADBank**

Project	Description (linear feet)	Diameter (inches)	Diameter Replaced (inches)	Flow Rate (cfs)	Area Served (acres)
A	1,310	15	12	3.0	200
	2,125	15	12	3.0	
B	1,360	15	12	3.0	160
C (optional)	2,640	21	21	6.0	440
	1,320	21		6.0	
D	4,100	21	18	6.0	480
	1,455	21	18	6.0	
E	730	36	new*	18.0	1420
Total	13,720 15,040	with option			2700

\*new line from reservoir

### Reservoir

The project consists of the installation an impervious barrier core trench on the bottom at the inside of the embankments. The impervious barrier will be constructed of a geo-membrane liner which will be extended upward on the inside of the embankment to provide a barrier to water

migration. This approach will stop migration of water through and under the reservoir embankment. Reducing the district's reservoir seepage will increase district water supply and will increase its capability to store stormwater for future use additionally to the lost water from the county drainage system.

The estimated project cost totals \$1 ,206,266.

### Project Map

The project is located within the district boundaries. Figure 2 below shows the location of the Engelman Irrigation District relative to Elsa, Texas and the Donna Irrigation District.

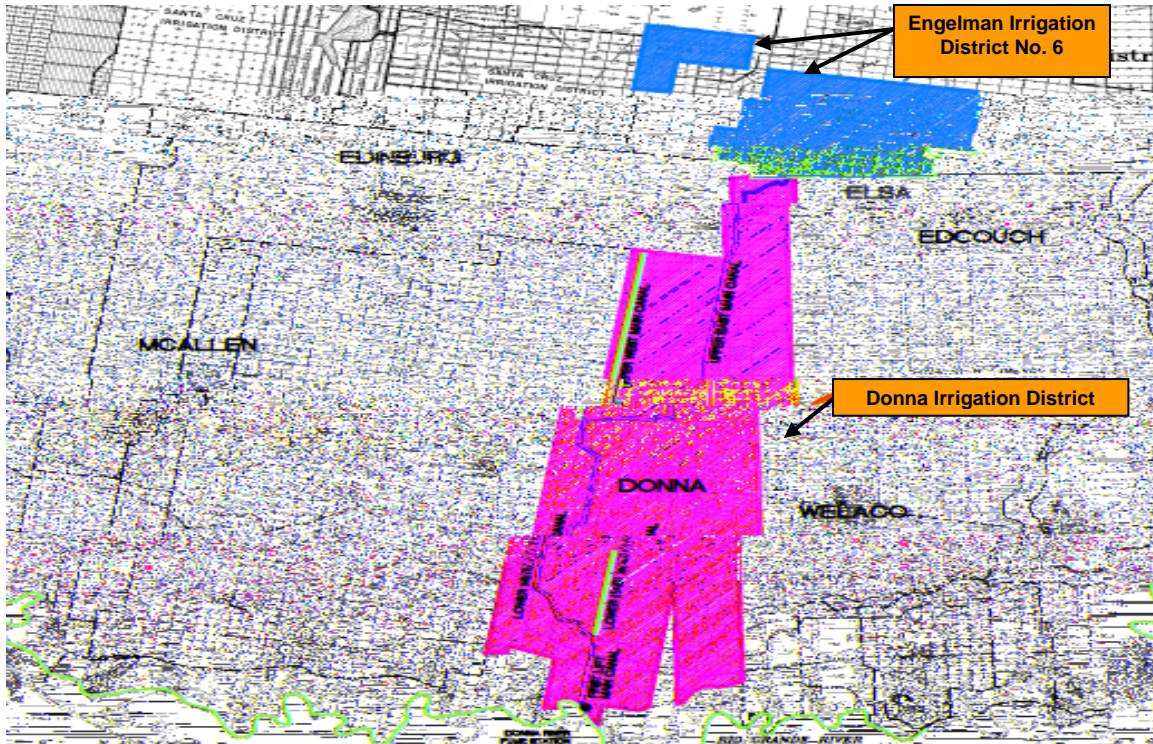


Figure 2. District Location

### Project Justification

The Rio Grande Valley has experienced several years of extended drought and the population in the region is expected to more than double in the next 50 years. The surface water rights are fully appropriated and during drought periods water demands cannot be met. Groundwater is too saline for drinking water purposes and other prospects are expensive. The cities in the region will need to locate additional water supplies or purchase agricultural rights.

The Engelman ID does not meet water supply demands. The Upper East Main Canal of the Donna ID is somewhat restrictive for water supply to Engelman ID. Currently, the Engelman ID experiences problems with its infrastructure. The Engelman ID conveyance pipelines were constructed in the 1920's, which now these experience decay accompanied by water losses. Contributing to the problem is an inefficient district reservoir operation for which the Engelman ID has difficulty operating under the lower flow rate provided by the Donna ID system, which does not allow a higher rate of land application.

As will be demonstrated in later sections, the reservoir improvement project will improve the operation of the reservoir and allow district personnel to increase the rate of flow to meet an increased irrigation demand. Additionally, the water supply will be increased as a result of the implementation of a transfer pump station to reuse stormwater from the Hidalgo County South Main Drainage Channel that is located near the district's south boundary. The stormwater will be lift to the Engelman Irrigation District Canal Flume to ultimately be dropped into the reservoir while increasing water flow to the Engelman ID. The replacement of existing pipelines will bring additional water and energy savings to the district, contributing to the improvement of the conveyance and distribution systems, and efficiently meet water demands. All components of this project present an opportunity to increase the district's water supply and reduce energy required to provide the supply of water. Saving lost water from reservoir seepage and leaking pipelines will increase the water supply.

The expected water savings from the project over its expected productive live of 49 years are 40,719 acre-feet. In addition, project improvements will reduce the water losses that are amenable to project improvements by 67% and overall, the project will reduce all water losses by 24%. The transfer pump will add water supply to the District. The estimated energy savings with the implementation of the project are 54,034 KWH, on an average annual basis. The expected energy savings from the project over its expected productive live of 49 years are 2,647,666KWH.

In conclusion, the implementation of the project is imperative in order to reduce water losses through the Engelman ID including the optimization of the system to obtain a higher rate of water use. Overall, the project will benefit the Valley environmentally and economically given the close relationship between the district and cities.

**Important issues for Certification:**

The Project falls within the BECC's priority sectors and complies with 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 rehabilitation of portions of the Engelman Irrigation District No. 6 pipeline, reservoir and construction of transfer pump station was conducted. State and federal agencies were consulted based on the minor impacts of the project. Resolution letters from these agencies are still pending and are expected to be received no later than September 30, 2007.

### **2.b Human Health and Environmental Impacts**

#### **Human Health Impacts**

The proposed projects address one of the most pressing problems facing the Lower Rio Grande Valley of Texas, i.e., water shortages due to drought over the past several years and an increasing demand due to population growth. The District does not use groundwater for its operations since the groundwater is inadequate because its high total dissolved solids in excess of 1500 mg/l in dissolved salts and does not meet the Primary Drinking Water Standards. This water shortage has created an economic hardship in the region through reduction of crops and subsequent reduced revenue. Water conservation reduces the impact of drought conditions and makes available additional water resources that would otherwise be lost to meet both domestic, industrial and agriculture demands. The future health, social and economic well being of the population in the Rio Grande Valley will be dependent on conservation and maximizing beneficial use of available water to meet domestic, industrial and agricultural needs. A growing population in the region that can be sustained over a longer period without creating health risks through diseases due to unsanitary conditions because of lack of water. The project addresses water shortages by reducing water losses and providing for more efficient delivery of water, thus enhancing availability of water both domestic and agriculture use.

By the implementation of the proposed improvements, the District will conserve 831 ac-ft of water annually. The annual water conservation realized through implementation of this project would provide sufficient water to sustain a population of 4,034. Water conservation has economic, environmental, and social impacts; therefore, water management must be emphasized in the community's development.

#### **Environmental Impacts**

Construction of the proposed water conservation projects will have a direct positive impact through conservation of water, thus making more water available for irrigation and municipal use. The overall cumulative effect will be positive. The projects will not pose any environmental hardships or have any long-terms negative effects on the project area. No environmental risks or associated costs are anticipated in the project area due to the proposed project improvements. There would be a temporary decrease in air and noise quality due to construction activities associated with trenching the new pipeline alignment, rehabilitation of reservoir, and construction of transfer pump station. It is anticipated that there would be no adverse effect to any endangered or threatened species, any migratory bird, or any historic or cultural property.

### **Transboundary Impacts**

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

### **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. Resolution letters are expected to be received no later than September 30, 2007; however, no objections are expected based on previous experiences.

#### **Important issues for Certification:**

The project contributes to mitigate the environmental problem related to scarce water resources.

#### **Pendent issues:**

Provide Final Environmental Document and Resolution Letters from environmental agencies no later than October 5, 2007.



## 3. Technical Feasibility

### 3.a Technical Aspects

#### Project Development Requirements

The proposed water conservation improvements have been described in the Project Plan prepared by the design consultant for the District and submitted to BECC. The project's Final Design is currently in the final phase and will be completed on October 5, 2007 in accordance to the "Design Criteria and Basic Controls Rehabilitation of Irrigation Facilities" developed by the Bureau of Reclamation. The Project Report was prepared based on the "Guidelines for Preparing and Reviewing Proposals for Water Conservation and Improvement Projects under Public Law 106-576" issued by the U.S. Department of the Interior, Bureau of Reclamation, June 2001. All technology used in the proposed improvements is appropriate based on local experience and for irrigation projects with similar operations and infrastructure.

The seepage values used in the Economic Evaluation of the Project were derived from the Texas A&M Extension Service ponding tests that were conducted on the soils typical of the Engelman ID. The average seepage rate of 2.19 gal/square-foot/day/foot of canal was determined from these tests. We used an average wetted area of 8.0 square feet / foot to make the calculation for losses due to seepage. According to the analysis the implementation of the project will allow estimated water savings of 831 acre-feet/year, on an average annual basis. The expected water savings from the project over its expected productive live of 49 years are 40,719 acre-feet. In addition, project improvements will reduce the water losses that are amenable to project improvements by 67% and overall, the project will reduce all water losses by 24%. The transfer pump will add water supply to the District.

The energy analysis assumes a combined motor and pump efficiency of 65%. This value was determined from a pump efficiency of 70% and a motor & gear efficiency of 94%. Due to the energy expended to pump water from the drainage channel, the energy saved is reduced by the amount required to transfer water. The estimated energy savings with the implementation of the project are 54,034 KWH, on an average annual basis. The expected energy savings from the project over its expected productive live of 49 years are 2,647,666KWH.

#### Appropriate Technology

The final designs of the proposed projects will be developed pursuant to technical specifications contained in the "Design Criteria and Basic Controls Rehabilitation of Irrigation Facilities" developed by the USBOR.

#### Transfer Pump Station

The South Main Drainage Channel of the Hidalgo County Master Drainage System is located within the District boundaries and flows under the Engelman District canal flume that transfers water from the Donna Irrigation District to the District. The South Main Drainage Channel has a capacity of 2,400 cubic feet per second (cfs) at this location in the District. This location provides an opportunity to transfer stormwater from the Drainage Channel to the District Canal Flume. This project consists of the implementation of a transfer pump required to transfer stormwater for re-use since the channel water surface elevation is lower than the District irrigation system. When the concentration becomes acceptable, the District would transfer the water for re-use. It is

estimated that the Engelman ID main canal and flume have a maximum flow capacity of 50 cfs. For this reason, the pump station for this project will have 2 vertical pumps, rated at 25 cfs with a total pump motor efficiency of 70% each requiring 52.62 hp. Initially, one pump will be installed and provisions for the second pump will be constructed. The District will add the second pump later as a future project. The vertical pump size is the 16 inches and it will be installed at a total dynamic lift of 13 feet.

The District, by its charter, has the right to utilize stormwater from the County drainage system. This project involves the pump system and instrumentation to monitor the TDS levels in the South Main Drainage Channel.

### **Pipeline**

The Engelman Irrigation District was constructed in the 1920's. The pipe construction technology of that era was based on molded concrete and reinforced concrete manufacturing with mortar grout joints. The weakness of the mortar-joint pipe is unable to prevent leaking while the pipe is under pressure. This project proposes the replacement of the existing mortar-joint pipe with either rubber-gasket concrete pipe, or PVC pipe depending on the case. The selection of pipe material will be based on a number of variables. The cost of PVC pipe is highly influenced by the cost of energy. As a general rule, for diameters greater than 18-inches, the concrete pipe is the cost-effective choice. Obviously, if the head pressure requirement is greater than 30 feet, the extra cost for PVC may be justified. Other considerations are installation of the pipe at structures, valves, and pumps. Concrete pipe construction techniques are more flexible for these installations.

Five pipeline lateral projects have been identified for the pipeline replacement project. Projects A, B, C, D, and E, which were previously described, were prioritized by the District manager based on excessive water leaks and the need for water delivery to the zones served by the lateral.

### **Reservoir**

The 50-acre reservoir was constructed in 1996 and its capacity is 660 acre-feet. The reservoir is located near the south boundary of the District and near the supply canal from the Donna Irrigation District. In this location, water can be stored and transferred via the District's canal system for future use. The District uses the reservoir to supply water at peak demand to irrigators while receiving water at a lower rate. However, there has been persistent seepage from the reservoir since construction. Clay liners were used for the bottom surface and embankment to seal the reservoir. Apparently, the clay lining and the embankment compaction were not totally effective for sealing. The water loss from the reservoir has limited its capability.

This project proposes the installation of an impervious barrier core trench on the bottom at the inside of the embankments of the reservoir to reduce seepage. The impervious barrier will be constructed of a geomembrane liner and the liner will be extended upward on the inside of the embankment to provide a barrier to water migration.

### **Alternatives**

For most projects, there are various alternatives that the Engineer can evaluate to determine the most appropriate project definition. There are usually alternatives to location, methods, the selection of materials, and the selection of process. Obviously, the cost of the various alternatives must be closely evaluated. One process may have an advantage in effectiveness, but that process will likely have a greater initial cost and a greater life cycle cost.

The nature of the proposed Engelman ID project does not lend itself to this kind of alternative analysis. For example, leaking pipelines must be replaced with pipelines that have greater joint integrity. Pipeline materials available are concrete, and PVC. The PVC pipe has a more reliable joint but is not cost effective (or available for irrigation-rated pipe) for diameters greater than 18 inches. Therefore, PVC pipe will be selected for diameters with 18 inches and less. Moreover, while the reservoir can be re-lined by various methods, the funding limits of the overall project dictate a more limited approach. In addition, the entire reservoir (embankments and bottom) could be re-lined with a geomembrane material liner. Most new reservoirs are constructed in this manner. However, it is estimated that the full geomembrane liner must cover 2,300,000 square feet giving a total of \$2,900,000 for only the reservoir project. Because of limits in the District's funding capability, a more limited goal must be used for the reservoir project. Finally, a pump station will be required to transfer stormwater to the District's irrigation infrastructure. The cost of pump station project varies little as a result of location or selection of material.

In effect, a detailed cost analysis of various alternatives is not warranted for this project.

### **Action versus No Action**

The alternatives of Action versus No Action should be considered.

#### Action

- Because of the NAD Bank grant, the project can be scaled to fall within the District's funding capability;
- Approximately 831 acre-feet (Section 8.0) of water rights will be made available to the District;
- The water rights represent a direct economic benefit to the District, either in increased water delivery for higher valued crops, or in direct economic benefit from the sale of water rights;
- The management of water delivery is directly enhanced by the project with a more effective use of the reservoir. Improvements in management efficiency again increases the water supply to all sections of the District in a timely manner to support higher valued crops.

#### No Action

- None of the benefits described will pass to the District.
- The District will not have enough water to support higher valued crops;
- Economically, the District will continue to decline. Higher valued crops yield greater tax revenues that allow the District to make further improvements in the system;
- Engelman ID growth is less connected to urban growth as other areas within the Rio Grande Valley. However, even the urban growth within the District will be benefited by the project.

### **Land Acquisition and Right-of-Way Requirements**

The proposed project is located within the Engelman ID No. 6 boundaries, consequently no land or right-of-way acquisition is required for these projects. Documents validating land acquisition and ownership were provided to BECC.

### **Work Tasks and Schedule**

The Engelman Irrigation District management and staff will use its own (or leased) equipment and labor to install pipelines that replace the existing, deteriorated pipelines planned for this project. The District owns the required equipment and personnel to perform the work. The

Engelman staff has extensive construction and management experience with the type of construction activity required for the project.

The District will procure pipe and other material for the project with regular open bidding. The entire project will be conducted over a period of eighteen (18) months and the material will be procured at various phases of the project. Pipe will be installed adjacent to the existing pipeline that is being replaced, and within the existing ROW. New gates and control structures will be constructed in the project and the work crews will make new field outlet connections. When each lateral project is completed, the site will be graded to a final grade. Below is a project schedule.

**Table 6. Task Schedule**

Engelman Irrigation District Transfer Pump Station, Reservoir Lining & Pipe Installation Project		
Scope of Service Items	Begin	Finish
NADB Financial Approval	05/07	09/07
Approved Plans & Specifications	04/07	10/07
BECC/NADB Certification	10/07	10/07
Bid Advertisement & Notice to Proceed	12/07	01/08
Construction	02/08	06/08
Final Acceptance	07/08	07/08
Warranty	08/08	*

### 3.b Management and Operations

#### Project Management

The administration of the project will be responsibility of Engelman Irrigation District No. 6.

Name of Field Superintendent: Jose Cortina  
Experience: 15 years

Project Manager: Larry L. Smith, P.E.  
Occupation, experience: Engineer, 37 years

Board Member in charge: Barry Garrett  
Occupation: Farmer

District labor and equipment will be used for this project and will serve as an “in-kind” contribution. The District personnel are highly experienced with this type of construction.

#### Operation and Maintenance

##### Organization

The organization of the Engelman Irrigation District No. 6 is the following.

##### Board of Directors

Jesus Flores, President  
Urbano Anzaldua III, Vice-President  
Bennard Rowland II, Secretary  
Barry Garrett, Member

Nelda Lee Shields, Member

General Manager

Jose L. Cortina

Secretary, Bookkeeper & Tax Collector

Hermina Hinojosa

Canal Rider

Felipe Alcala

Maintenance/Backhoe Operator

Elizandro Castillo

**Operations and Maintenance**

An advantage of the buried pipeline system is its low maintenance requirements. Once a system is installed, the District will mow the ROW with tractors. Manual labor is practically eliminated. Although gate maintenance will be reduced compared to a canal system, there will be continued maintenance with gates and control structures. Corrosion is a problem that affects gate operation and adds to their maintenance. The problem can be mitigated with the use of stainless steel attachments. Operation is improved when the staff follows an inspection and “exercising” program for each gate. Monthly, the staff will inspect each gate and actuate the gate through a full range of operation. An operation and maintenance manual will be provided for the Transfer Pump Station Project. An operation and maintenance manual will be provided for the Transfer Pump Station Project.

**Permits, Licenses, and Other Regulatory Licenses**

The Engelman ID holds, from the Texas Commission on Environmental Quality (TCEQ), the Certificate of Adjudication No. 809-002 that authorizes the District to divert from the Rio Grande a maximum quantity (if allocated to the District) of 18,994.35 acre-feet of “Class A” irrigation water (water right acreage recognized is 7,597.74 acres). In addition, the District holds from the TCEQ a Certificate of Adjudication No. 0809-006 to divert from the Rio Grande a maximum quantity of 518.475 acre-feet for Class “A” municipal water rights.

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

This project will be designed and constructed according to Bureau of Reclamation standards the for small irrigation systems. Preliminary design was developed for each lateral and the construction budgets were derived from the preliminary designs. The technical construction specifications will follow the Construction Specification Institute standard, which is composed of 17 divisions.

**Important issues for Certification:**

Final Design will be reviewed by the BECC.

**Pendent issues:**

Complete Final Design

## 4. Financial Feasibility and Project Management

### 4.a Demonstrating Financial Feasibility

#### Financial Conditions

The North American Development Bank reviewed the financial information presented by the Project Sponsor and determined that the financial structure proposed in the certification report is adequate.

#### Project Costs, Funding Structure and Other Capital Investment Plan (CIP)

The project will be funded by the Water Conservation Infrastructure Fund and District cash and in-kind contributions. The total cost of the project is estimated at \$1.206 million dollars, including the costs for planning, design and construction.

Item	Amount (Dollars)
Planning	26,000
Design	39,500
Construction	1,140,766
TOTAL	1,206,266

The District proposes a financial structure that will allow the implementation of the project, as further indicated:

Financial Source	Amount (Dollars)	%
Engelman Irrigation District Cash	542,360	45
District In-Kind	188,906	16
NADB-WCIF Construction Assistance	475,000	39
TOTAL	1,206,266	100

#### Dedicated Revenue Source

The District will not need to modify the current rate model to pay for this project. District funds will come from an existing trust fund identified as “Reservoir Trust Fund”; from sale of water rights; and from operations.

### 4.b Legal Considerations

The District operates under the provisions of Chapter 58, Texas Water Code, and under Article XVI, Section 59 Texas Constitution. The project will be managed by the District personnel who have experience inspecting and administering similar projects.

#### **Important issues for Certification:**

The project financial structure was reviewed by NADB and determined project financial feasibility.

#### **Pending issues:**

None.

## 5. Public Participation

### 5.a Community Environmental Infrastructure Community-wide Impact Local Steering Committee

The steering committee was formally installed on March 13, 2007 with the following members: Chairman of the Steering Committee: Andy Scott, District Member; Secretary of the Steering Committee: Members: Ida Montalvo, District Member; Maria Zuniga, District Member; Nina Garret, District Member and Garret, District Member.

The Comprehensive Public Participation Plan developed by the Steering Committee was approved by the BECC on April 3, 2007. The Steering Committee set to the task of preparing an outreach program, including the benefits resulting from the project, as well as the associated costs and economic impacts for the community.

#### Public Access to Information

Consultant Engineer prepared written information about the project and designed flyers and brochures that were distributed at public meetings. Project information was made available through the steering committee to the public at large for review.

#### Public Notice

An invitation to the public meeting, scheduled to be held on August 8, 2007, was published on July 4, in the Delta News, fulfilling the 30-day public notice requirement.

#### Additional Outreach Activities

Information meetings were held with local organizations in anticipation of BECC public meetings. The local organizations contacted were the North Alamo Water Supply Corporation; the Donna Irrigation District; the Delta Irrigation District; the Hidalgo County Irrigation District No. 9 and the Hidalgo County Drainage District No. 1. Resolution letters will be considered during the month for September for its approval for each of the organizations.

#### Public Meeting

A public meeting was held on August 8, 2007 to present the technical and financial portion of the project to the District and people impacted. About 10 people were present at the meeting. At the end of the meeting, surveys were completed demonstrating 100% support for the project.

#### Final Public Participation Report

The consultant engineer will prepare the Final Public Participation Report to demonstrate that the proposed objectives were fully met to BECC's satisfaction. This document will be submitted no later than September 14, 2007.

#### Important issues for Certification:

The project is supported by the community.

#### Pendent issues:

Complete final public participation report.

Resolution Letters from local organization.

## 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 Engelman Irrigation District No. 6 in Elsa include the following:

- Improve the necessary irrigation infrastructure (pipeline, reservoir, and pump station)
- Operating an Irrigation District that reduces 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

The project will be managed by the District and will be constructed and operated in conformance with federal, state and local requirements. The process for the development of the projects has followed a planning and public participation process that developed alternatives and associated costs, solicited public input, established priorities based on input of the stakeholders and proceeded according to the priorities established in the planning process.

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

### 6.b Conformance to 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. In addition, the project complies with the Drought Contingency and Water Allocation Plan and with local conservation efforts already developed by the District and served communities. The conservation of water is stressed and penalties are assessed for the overuse of water. The Project Report has been prepared in accordance with the US Bureau of Reclamation Standards.

Design and construction requirements will be developed in accordance to the “Design Criteria and Basic Controls Rehabilitation of Irrigation Facilities” developed by the Bureau of Reclamation. The Project Report was prepared based on the “Guidelines for Preparing and Reviewing Proposals for Water Conservation and Improvement Projects under Public Law 106-576” issued by the U.S. Department of the Interior, Bureau of Reclamation, June 2001.

The project adheres to the U.S.-Mexico Border 2012 Environmental Program by meeting Goal 1 (Reducing water contamination) and Objective 4 (promoting improve 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 7,350 ac-ft per year; however, these water rights are “as-available” and the actual water available to the District may vary from year to year.

According to the Economic Evaluation of the Project for the District, the implementation of the project will allow an estimated water savings of 831 acre-feet/year, and an energy savings of 54,034 KWH/year, on an average annual basis.

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

The project will not only have an impact on water resources, but it will also contribute to saving of natural resources required to generate the energy that will be saved with the implementation of the improvement project.

### 6.d Community Development

The benefit obtained by the modernization of the irrigation facilities may directly impact agricultural production and may result in an increased income and an improved quality of life for the end users. With this, economic activity may be enhanced by making residents active participants in development of their community. An improved quality of life for the residents may also have a favorable impact on the development of health, and education of the area.

<p><b>Important issues for Certification:</b></p>
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<p>The project complies with all sustainable development principles.</p>
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<p><b>Pendent issues:</b></p>
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<p>None.</p>
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## List of Available Documents

- *Design Criteria and Basic Controls, Rehabilitation of Irrigation Facilities.* U.S. Bureau of Reclamation.
- *Drought Contingency Plan.* Engelman Irrigation District No. 6.
- Engelman Irrigation District No. 6 Deeds and Easements.
- *Final Fact Sheet.* Melden and Hunt, Inc. June 26, 2007.
- *Project Report: Engelman Irrigation District No.6 Transfer Pump Station, Reservoir and Pipe Installation Project.* Melden and Hunt, Inc. August 17, 2007.
- *Project Plan: Engelman Irrigation District No.6 Transfer Pump Station, Reservoir and Pipe Installation Project.* Melden and Hunt, Inc. March 19, 2007.
- *Water Allocation Rules and Regulations.* Engelman Irrigation District No. 6.