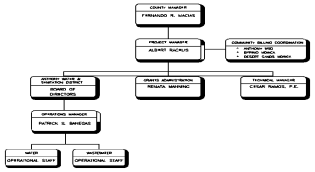

Construction, Expansion and Rehabilitation of the Water Treatment, Water Supply, and Wastewater Collection and Treatment Systems for Donna, Texas

May 8, 1998

PDF Format

TABLE OF CONTENTS

Section

Applicant:

City of Donna, Texas

Mr. Carlos R. Yerena

City Manager

307 S. 12th Street

Donna, TX, 78537

Phone (956) 464-3314

Fax (956) 464-9923

EXECUTIVE SUMMARY

The City of Donna, Texas has proposed to construct various infrastructure improvements to allow it to better serve area residents and to improve and preserve environmental and human health conditions. The existing water and wastewater systems do not have the capacities to allow the City to expand its services to areas that are not currently served or are under-served. As part of the overall water infrastructure improvement projects planned for the Donna area, the Donna residents and colonia residents will benefit from the construction of a new surface water treatment facility, construction of a new elevated storage tank, expansion of the water distribution system to the colonias, and improvements to the existing water distribution system by replacing existing deteriorated and inadequate water piping. As part of the overall wastewater infrastructure improvements planned for the Donna area, Donna residents and colonia residents will benefit from the expansion of the existing wastewater treatment plant, improvements to the existing wastewater treatment plant, expansion of the existing wastewater collection system to provide service to the surrounding colonias, construction of three new wastewater lift stations, and the elimination of up to ten existing lift stations. The overall effect of the proposed water and wastewater infrastructure improvement projects will be to allow the City of Donna to supply potable water and collect and treat wastewater from residents in the City and surrounding colonias. Some colonia residents completely lack access to healthy water and wastewater services; other water and wastewater services are substandard and in need of significant improvements. Improving and regulating potable water sources as well as wastewater disposal within Donna and the surrounding colonias will result in preserving, protecting, and enhancing the environment and the health of Donna area residents. The City is seeking funding, in the form of grants and loans, to assist it in designing and constructing these improvements.

An alternatives analysis of several improvement options for both the water and wastewater systems were explored prior to developing preferred improvement alternatives. Water treatment system alternatives investigated during this preliminary planning process included:

- *No project alternative (or no-action alternative)*
- *Alternative 1 - Construction of a new surface water treatment plant*
- *Alternative 2 - Expansion and rehabilitation of the City's existing water treatment facility*
- *Alternative 3 - Use of groundwater to supplement surface water supplies*

Wastewater treatment system alternatives investigated during this preliminary planning process included:

- *No project alternative (or no-action alternative)*
- *Alternative 1 - Expansion and rehabilitation of existing conventional plant*

- *Alternative 2 - Construction of a new wastewater treatment plant*
- *Alternative 3 - Individual septic systems*
- *Alternative 4 - Cluster septic systems*
- *Alternative 5 - Evapotranspiration effluent disposal system*
- *Alternative 6 - Land treatment systems*

Following the analysis of these alternatives, the currently proposed water and wastewater system improvements were designated. The proposed water system improvements include the following:

- *Construction of a new 4.5 MGD surface water treatment facility on a new site.*
- *Construction of a new elevated water storage tank with a minimum capacity of 200,000 gallons.*
- *Expansion of the water distribution system to provide service to surrounding colonias.*
- *Improvements to the existing water distribution system by replacing existing deteriorated and inadequate water piping.*

The proposed wastewater system improvements include the following:

- *Expansion of the existing wastewater treatment plant from 2.3 MGD to 2.7 MGD.*
- *Improvements to the existing wastewater treatment plant including preliminary treatment facilities and a sludge handling system.*
- *Expansion of the existing wastewater collection system to provide service to surrounding colonias.*
- *The construction of three wastewater lift stations and elimination of up to ten existing lift stations.*

Failure to construct the proposed facilities would restrict the City of Donna from providing services to areas which would otherwise remain unserved or under-served. A no-action alternative does not satisfy the requirement of improving the environmental conditions in the City through improved water treatment and distribution, and wastewater collection, which are the goals of this proposed project. With a no-action alternative, the City would continue its existing facilities without any additional capital investments. If no action is taken by the City to improve its water treatment capacity and performance, the City will continue to be cited for violations and fined by the Texas Natural Resource Conservation Commission (TNRCC). The people connected to the water system will receive water which does not meet State and Environmental Protection Agency (EPA) standards which is a health hazard. Additionally, since the TNRCC has issued an Agreed Order with the City of Donna requiring the City to build a new water treatment facility, then the no-action alternative is not realistically feasible.

The overall effect of the proposed water and wastewater infrastructure improvement projects will be to allow the City of Donna to supply potable water and collect and treat wastewater from residents in the City and surrounding colonias. Several colonias in Donna completely lack access to healthy water and wastewater services; other water and wastewater services are substandard and in need of significant improvements. Improving and regulating potable water sources as well as wastewater disposal within Donna and the surrounding colonias will result in preserving, protecting, and enhancing the environment and the health of Donna area residents.

Numerous environmental issues were reviewed as part of this investigation. Environmental issues were assessed to determine whether or not impacts would occur as a result of these proposed projects. Environmental impacts were considered during the preliminary planning phase of this project so that any identified impacts, or potential impacts, could be minimized or avoided in later design phases using best management practices.

The land, air quality, water quality, natural/biological resources, and floodplains of the Donna area were evaluated during this project to ensure that a high level of environmental protection would be maintained prior to and during this implementation of the proposed water and wastewater infrastructure improvements. The following paragraphs summarize potential impacts to these environmentally-sensitive areas as well as the steps taken to minimize impacts and protect the environment.

Regarding land and land use, improvements to the Study Area are expected to attract an increased population in this area, especially among the 20 colonias surrounding the Donna area. Increased infrastructure services will most likely increase the appraised value of the property in this area. Land use benefits will include a decreased level of degradation since supplied water and sanitary services will eliminate the need for individual septic systems, open pit privies, and individual water wells. Any new development in this area will consist of higher standards than those currently established in many colonias due to the adoption of the Model Subdivision Regulations by Hidalgo County and the City of Donna. Numerous positive impacts to the social and economic aspects of the Donna area are expected as a result of the implementation of the water and wastewater improvements in this area.

Regarding air quality, dispersion of air pollutants readily occurs in the Donna area. Increased population/residences and increased businesses within the Study Area will likely occur with the improved water and wastewater services; these impacts are not expected to degrade the air quality of this area. Increased vehicular traffic, machine or process emissions, or increased business activities resulting from developments within the Study Area will not significantly impact the overall air quality of the area.

Regarding water quality, the purpose of this proposed project is to provide a higher quality of water and sanitary services to the residents of the Donna area and the 20 surrounding colonias. Population increases in the area of the proposed project as well as new residences or businesses in this area will not significantly degrade the water quality within the Study Area since water services, more tightly regulated and of a higher quality, will be supplied to the individuals in this area. The elimination of individual septic tanks and associated leach fields and numerous privies in the area will also serve to increase the overall water quality of the area by decreasing potential impacts to shallow localized groundwaters and/or aquifers. Substandard water wells, which allow for the potential of aquifer contamination, may be plugged and abandoned therefore further decreasing the chances for subsurface contamination.

Construction of the proposed water and wastewater facilities will help to improve the environmental conditions within the City of Donna and surrounding colonias. Wastewater mismanagement occurs frequently throughout the Donna area due to a lack of sanitary waste disposal systems as well as substandard septic systems. Wastewater infrastructure improvements will reduce the volume of untreated or under-treated wastewater reaching local surface water sources. Effectively treating wastewater (which would otherwise remain untreated or under-treated) will improve transboundary water resources such as the Rio Grande River which is utilized as a surface water source by both Texas and Mexico. Downstream users on both sides of the U.S.-Mexico border will greatly benefit from wastewater improvements which will serve to reduce the volume of pollutants which enter shared surface water courses. The implementation of infrastructure systems which will improve water quality and long-term sustainable development in the Donna area will significantly contribute to enhancing the environment in not only the U.S. but also in Mexico. Positive transboundary water impacts will be the result of the water and wastewater infrastructure improvements within the greater Donna area.

Regarding natural resources (i.e., plants, animals, and related ecosystems), although growth in the Donna area is expected as a result of the improved water and sanitary services in the area, environmentally-sensitive plants, animals, and ecosystems are not expected to be directly impacted by the proposed project. Since the Donna area has been impacted almost entirely by urbanization and agricultural activities, few areas of native vegetation and few indigenous, non-urbanized animal species are expected to exist within the Study Area.

The City of Donna participates in the National Flood Insurance Program. The majority of the Study Area lies in Zone B, areas between the limits of the 100-year and 500-year flood or areas of 100-year shallow flooding where depths are less than one foot. Much of the City of Donna lies within Zone C, areas outside the 500-year flood. Three Zone A areas, areas of the 100-year flood, are located within the Study Area. Aside from excavation and trenching for the placement of water and wastewater lines, no other impacts to Zone A floodplains are expected by this project. Additionally, one Zone AH area was identified adjacent to the southern-most boundary of the Study Area. Zone AH areas include areas of 100-year shallow flooding where depths are between one and three feet. No impacts from the project are expected in this area.

Overall, no significant adverse environmental impacts will result from the construction or operation of the proposed projects.

The project costs associated with the currently proposed water and wastewater infrastructure improvements for the Donna area are detailed in **Table ES-1**. *Funding sources for these improvements include the North American Development Bank (NADBank) and the Texas Water Development Board Economically Distressed Areas Program (EDAP).*

TABLE ES-1

PROJECT COSTS

Task	Funding Source	Project Cost (Millions)
Water Treatment Plant	*EDAP*	*$7.039*

Elevated Water Storage Tank	*EDAP*	*$0.695*
Water Distribution Lines - Phase I	*EDAP*	*$2.918*
Water Distribution Lines - Phase II	*NADBank*	*$2.000*
Wastewater Treatment Plant	*EDAP*	*$3.400*
Wastewater Collection System	*EDAP*	*$3.948*
Interest Payment on EDAP Loan (estimated)	*NADBank*	*$2.200*
Issuance Costs and Capitalized Interest	*EDAP*	*$1.637*
TOTAL		*$23.8*

Costs will be incurred by the residents and businesses that will receive the improved water and wastewater services which will be provided by the City of Donna. The approximate average monthly fee for the average Donna residential water and sewer customer is $28.62 and $13.57, respectively.

The Texas Municipal League has prepared a table, 1997 Water and Wastewater Survey Results, that illustrates that the average charges for water and wastewater services in Donna are moderately priced when compared to similar charges for the same services in other Texas cities, which are roughly the same population size as Donna. This table, was prepared from information published in the June, 1997, issue of The Texas Municipal League. Water and Wastewater rates were compiled for cities in Texas with populations between 10, 000 and 15,000, which include Donna. The latest Donna rates were used in this table. The combined water and sewer bill for usage of 10,000 gallons per month, shows Donna's being less expensive than two-thirds of other similar sized cities. However, the table does not include other Texas Valley towns. Following the implementation of the water and wastewater improvements in the Donna area, the City will monitor the operational and maintenance costs associated with these improvements. As a cost history is developed, the City will review the water and wastewater rate structure and user fees in place at that time. Adjustments to user fees will be made on a routine basis as deemed appropriate by the City.

The City of Donna has shown support for community growth and the development of businesses which generate local jobs; growth within and surrounding the City of Donna is both anticipated and encouraged. The proposed water and wastewater infrastructure improvements are designed to accommodate a substantial growth within the Donna area over the next 20 years. Business and population increases will be appropriately supplied with water and wastewater services under the proposed design.

A local steering committee, made up of individuals from a variety of organizations within the Donna area will assist the City with the development and implementation of the Comprehensive Community Participation Plan for this project. To the extent possible, steering committee representatives will be responsible for developing outreach activities, disseminating information about the project, engaging public participation in the project, developing public education and media campaigns, and soliciting continued public support for this project. Educating the public on water conservation methods throughout the project design, development, construction, and implementation phases will also be an integral part of this project. Such water conservation efforts will aid in establishing sustainable development in the Donna area.

Sustainable development is typically defined as development that meets the needs of the present without compromising the ability of future generations to meet their own needs. The City of Donna has developed a comprehensive approach for this infrastructure improvement project with respect

to sustainability. The City understands that implementation of the proposed water and wastewater infrastructure improvements will not only improve the quality of life of Donna area residents but will also be designed to meet the water and wastewater needs of future generations living within the area.

The proposed expansion of the City's infrastructure will enable it to prevent, control, and reduce environmental pollutants and improve drinking water supply and treatment. Providing adequate collection and treatment of sewage will improve the overall health of the Donna area residents, promote sustainable development, and enhance the general quality of life for the residents.

Construction of these projects will improve the community's public health, both now and in the future, by providing a permanent and safe drinking water source to area residents. Additionally, construction of these projects will reduce the volume of pollutants that reach area water resources (e.g., the Rio Grande River) by eliminating ineffective and outdated wastewater treatment methods. As a result of these water and wastewater infrastructure improvements, positive transboundary water quality impacts will be realized.

The water and wastewater system alternatives chosen provide for the infrastructure improvements which best satisfy the project goal of improved water treatment, water distribution, wastewater collection and treatment. In addition, this project will improve the existing infrastructure and provide facilities which will allow better service to existing users and provide service to areas which remain unserved or whose current facilities are below standard. Ultimately, this project will allow the City to preserve, protect, and enhance the environment and human health conditions in the community while increasing the quality of life for Donna area residents.

1. GENERAL

a. Project Type

1. Water Supply

2. Wastewater Treatment

b. Project Location

The project is located in the City of Donna, Hidalgo County, Texas, U.S.A. The City of Donna is located approximately 8 miles from the U.S./Mexico border.

The planning area generally includes the City of Donna, a large area to the south of the City, and areas just to the west and east of the City.

c. Project Description and Work Tasks

1) Project Description

I. Water Supply

Descripition of Existing Planning Area Water Supply System

The City of Donna, North Alamo Water Supply Corporation, and Colonia Nueva Water Supply Corporation are the three water providers in the planning area. **Table 1-1** *lists the water service providers for the colonias in the planning area.*

TABLE 1-1

CURRENT AND FUTURE WATER SERVICE PROVIDERS FOR COLONIAS

Colonia	Water Service Provider	
	Current	Future

I. B. Avila	*Colonia Nueva WSC*	*City of Donna*
Balli No. 2	*North Alamo WSC*	*North Alamo WSC*
Benita Addition	*North Alamo WSC*	*North Alamo WSC*
Clark	*North Alamo WSC*	*North Alamo WSC*
E. Salinas	*North Alamo WSC*	*City of Donna*
La Donna	*City of Donna*	*City of Donna*
No Name	*City of Donna*	*City of Donna*
Panfilo Martinez	*City of Donna*	*City of Donna*
River Road	*Colonia Nueva WSC*	*City of Donna*
Schroeder	*Colonia Nueva WSC*	*City of Donna*
South Donna	*Colonia Nueva WSC*	*City of Donna*
Southpoint	*City of Donna*	*City of Donna*
Sun Grove	*North Alamo WSC*	*North Alamo WSC*
Tierra Bella	*North Alamo WSC*	*North Alamo WSC*
Tierra Del Sol Est.	*North Alamo WSC*	*North Alamo WSC*
Tierra Prieta	*Colonia Nueva WSC*	*City of Donna*
Valley Grove	*North Alamo WSC*	*North Alamo WSC*
Valley View Estates	*North Alamo WSC*	*North Alamo WSC*
Val Verde Grove	*North Alamo WSC*	*North Alamo WSC*
Villa Donna No. 2	*North Alamo WSC*	*North Alamo WSC*

The City of Donna's existing 3.42 mgd water treatment facility and distribution system serves all City residents and provides wholesale water by master meter to Colonia Nueva Water Distribution System (CNWDS) and Quiet Village. The North Alamo Water Supply Corporation (NAWSC) provides water to the colonias in the northwest part of the planning area and to a significant area surrounding the City of Donna. Colonia Nueva Water Distribution System purchases treated water from the City of Donna and distributes it to five colonias in the southern part of the planning area.

The City of Donna receives their water supply from the Donna Irrigation District, Hidalgo County No. 1. The current Rio Grande River allotment is 4,670 acre-feet with a 33 percent water loss charge, which yields 3,129 acre-feet of delivered water. Additional water rights are not readily available from the Irrigation District or the open market. The City of Donna does operate its water system from an allotment from the Donna Irrigation District who have expressed their desire to provide all future water allotment requirements. The Irrigation District, through their ownership of water rights, cannot exceed previously established withdrawals from the Rio Grande. Because of this, and the relatively minor amount of additional water usage by the City of Donna, no significant impacts or reductions in Rio Grande quantity or quality will occur.

The City of Donna's existing 3.42 mgd surface water treatment plant cannot keep up with system demands. The original plant was constructed in 1918 with process improvements made in 1947 and 1987. The existing water plant has been cited for numerous violations and is in such poor condition that replacement is required. The TNRCC has an Agreed Order, Docket No. 96-1246-PWS-E, dated April 2, 1997, with the City of Donna, requiring the City to build a new water treatment facility.

The water distribution system in the City of Donna has approximately 10 miles of 2" galvanized piping which is severely corroded and experiences numerous leaks. This piping is currently being replaced as breaks occur. System pressures fall below 35 psi in many parts of the system on a continual basis.

Scope of the Project & Description of Proposed Infrastructure Improvements

The water projects are proposed for completion in two phases. The Phase I water projects consist of the following:

- *Construction of a 4.5 mgd water treatment plant on a new site and abandon existing water plant.*
- *Construction of an elevated storage tank with a minimum capacity of 200,000 gallons.*
- *Expansion of the water distribution system to serve surrounding colonias, tie the new water treatment plant into the distribution system, and improve water pressure in the service area.*

The Phase II water projects consist of the following:

- *Replacement of existing deteriorated and inadequate water piping. This will also require some wastewater line relocation to achieve adequate water and sewer separation distances.*

The new water treatment facility is to be located southwest of the City of Donna and just north of the Donna Reservoir. The new elevated water storage tank will be located to the south of the City of Donna roughly in the middle of the southern colonias. The additional water mains will be installed basically south of the City of Donna. The proposed Phase II water improvements include water piping replacement within the Donna city limits.

Proposed Technology

The proposed water system improvements will incorporate conventional technologies. The technologies selected for final design and construction will be selected based on their relative ranking when evaluated using the following criteria:

- *Protection of public health*
- *Regulatory compliance*
- *Their effect on the urban and natural environments*
- *Cost effectiveness*

- *Ease of operation*
- *Ease of maintenance*

Specific information concerning the proposed water and wastewater system technologies based on preliminary design evaluation is presented in Section 3 of this application.

Human Health and Environmental Issues to be Resolved

Construction of the proposed water and wastewater facilities will help to improve the environmental conditions within the City of Donna and surrounding colonias. Effectively treating wastewater (which would otherwise remain untreated or under-treated) will improve transboundary water resources such as the Rio Grande River which is utilized as a surface water source by both Texas and Mexico. Downstream users on both sides of the U.S.-Mexico border will greatly benefit from the wastewater improvements which will serve to reduce the volume of pollutants which enter shared surface water courses. The implementation of infrastructure systems which will improve water quality and long-term sustainable development in the Donna area will significantly contribute to enhancing the environment in not only the U.S. but also in Mexico. Positive transboundary water impacts will be the result of the water and wastewater infrastructure improvements within the Donna area.

II. Wastewater Treatment

Description of Existing Planning Area Wastewater Treatment System

The City of Donna's 2.3 mgd wastewater treatment plant and collection systems serves all City residents. The City of Donna is the only wastewater treatment service provider in the planning area. The North Alamo Water Supply Corporation, and Colonia Nueva Water Distribution System do not provide these services.

Colonias in the planning area use septic systems or yard privies. Due to the small lot sizes and lack of construction control in the colonias, septic systems have been a failure, and do not comply with current state law and Hidalgo County's adopted model subdivision rules. There are no centralized wastewater collection and treatment facilities outside of the Donna city limits within the planning area.

The City of Donna's existing 2.3 mgd wastewater treatment plant has been meeting its discharge permit requirements. However, a capacity expansion to 2.7 mgd is needed to accommodate the additional wastewater flows from the colonias to be served. Some rehabilitation of the wastewater treatment facility is also necessary to accommodate future flows and improve the area's long term sustainable development. These include an influent lift station, and replacement of the headwork and sludge handling system.

The existing wastewater collection system in the City of Donna contains thirteen lift stations which are in very poor condition. It has been common practice in the area for developers to install stand-alone type collection facilities for their developments and then construct a lift station to pump the sewage to the City's main system. This has produced a collection system that is high in operation and maintenance costs and not conducive to the City's long term sustainable development. The thirteen lift stations are currently in poor condition and should all be replaced or rehabilitated. Capacity and back-up capabilities are the major deficiencies.

Scope of the Project & Description of Infrastructure Improvements

The proposed wastewater projects consist of the following:

- *Expansion of the existing WWTP from 2.3 mgd to 2.7 mgd, and rehabilitation of selected unit processes.*
- *Expansion of the wastewater collection system to serve surrounding colonias.*
- *Improvements to the existing WWTP including an influent lift station, headwork, and a sludge handling system.*

The proposed wastewater facilities include rehabilitation of the existing wastewater treatment plant and a 0.4 mgd increase in existing plant capacity. The collection system will be extended to presently unserved areas, and the existing collection system revised to accommodate the additional flows. Ten of the thirteen existing lift stations will be eliminated and two of these lift stations will be replaced with new lift stations on the existing sites. Three existing lift stations will remain in service in the north part of the City. A new lift station will be added at the south end of the south colonia area. This results in an expanded wastewater system with a total of only six lift stations.

Proposed Technology

The proposed wastewater system improvements will incorporate conventional technologies. The technologies selected for final design and construction will be selected based on their relative ranking when evaluated using the following criteria:

- *Protection of public health*
- *Regulatory compliance*
- *Their effect on the urban and natural environments*
- *Cost effectiveness*
- *Ease of operation*
- *Ease of maintenance*

Specific information concerning the proposed wastewater system technologies based on the preliminary design evaluation is presented in Section 3 of this document.

Human Health and Environmental Issues to be Resolved

Construction of the proposed water and wastewater facilities will help to improve the environmental conditions within the City of Donna and surrounding colonias. Wastewater mismanagement occurs frequently throughout the Donna area due to a lack of sanitary waste disposal systems as well as substandard septic systems. Wastewater infrastructure improvements will reduce the volume of untreated or under-treated wastewater reaching local surface water sources. Effectively treating wastewater (which would otherwise remain untreated or under-treated) will also improve transboundary water resources such as the Rio Grande River.

2) Program of Project Work Tasks

Table 1-2 *provides a summary of the work tasks for the project, and the next 4 figures shows a schedule for completion of the project.*

The agreement between the TNRCC, Colonia Nueva Water Distribution System and the City of Donna, requires that the City of Donna have all water facilities to serve CNWDS in place and operating by December 31, 1999.

TABLE 1-2

PROGRAM OF PROJECT WORK TASKS

Task [1]	Description	Project Cost (Millions)	Time [2] (Months)	Task Phase
Water Treatment Plant	*Construction of a 4.5 mgd water treatment plant on a new site.*	*$7.039*[3]	*6*	*Design*
			2	*Bidding and Award*

			11	*Construction*
Elevated Water Storage Tank	*Construction of an elevated storage tank with a minimum capacity of 200,000 gallons.*	*$0.695*	*5*	*Design*
			3	*Bidding and Award*
			13	*Construction*
Water Distribution Lines Phase I	*Expansion of the water distribution system to serve surrounding colonias.*	*$2.918*	*5*	*Design*
			3	*Bidding and Award*
			13	*Construction*
Water Distribution Lines Phase II	*Replacement of existing deteriorated and inadequate water piping.*	*$2.000*	*6*	*Design*
			3	*Bidding and Award*
			13	*Construction*
Wastewater Treatment Plant	*Expansion from 2.3 mgd to 2.69 mgd; rehabilitation of selected unit proceses.*	*$3,400*	*8*	*Design*
			3	*Bidding and Award*
			13	*Construction*
Wastewater Collection System	*Expansion of the wastewater collection system to serve surrounding colonias.*	*$3.948*	*5*	*Design*
			3	*Bidding and Award*
			13	*Construction*
	Total (4)	*$20.0*		

Notes:

1. The executor of all project work tasks in the City of Donna.

2. Some time overlaps may occur between tasks.

3. Includes water rights.

4. Does not include Cost of Debt Issuance and Capitalized Interest.

Water Distribution System and Elevated Storage

Wastewater Collection System

Wastewater Treatment Plant

3) Description of the Community

Demographic Information

Table 1-3 *presents population estimates through the project planning period.*

TABLE 1-3

POPULATION PROJECTIONS

Area	Population		
	1995	2000	2015
City of Donna	*14,426*	*16,449*	*22,805*
Colonias (Build-Out Limited)	*4,344*	*4,796*	*5,493*
Total Population to be Affected by the Proposed Project	*18,770*	*21,245*	*28,298*

Table 1-4 *presents the basis for establishing the eligible colonia population of the area to be served. For this project, the colonia population is identified as the economically distressed area (EDA) population as developed from census tract data.*

TABLE 1-4

ECONOMICALLY DISTRESSED AREA POPULATION

Colonia	1995 Population	Population Projections (Build-Out Limited)	
		2000	2015
I. B. Avila	*79*	*79*	*79*
Balli No. 2	*216*	*234*	*234*
Benita Addition	*38*	*44*	*65*
Clark	*142*	*165*	*185*
E. Salinas	*3*	*4*	*6*
La Donna	*177*	*205*	*304*
No Name	*90*	*90*	*90*

Panfilo Martinez	*347*	*347*	*347*
River Road	*316*	*316*	*316*
Schroeder	*789*	*915*	*1013*
South Donna	*465*	*527*	*527*
Southpoint	*316*	*366*	*543*
Sun Grove	*117*	*136*	*201*
Tierra Bella	*190*	*190*	*190*
Tierra Del Sol Est.	*16*	*19*	*27*
Tierra Prieta	*358*	*365*	*365*
Valley Grove	*342*	*397*	*423*
Valley View Estates	*38*	*44*	*65*
Val Verde Grove	*183*	*212*	*314*
Villa Donna No. 2	*122*	*141*	*199*
TOTAL	*4,344*	*4,796*	*5,493*

The planning area is covered by three census tracts. From the data contained in the 1990 Census, 95.8% of the population in census tracts 221.01, 221.02, and 222.00, have annual incomes under $13,156 per capita. The census data is given by household. Household size averages 3.83 persons per house in the north part of the planning area and 4.5 persons per house in the south part of the planning area.

Local Environmental Services

A summary of the current availability of water supply and wastewater collection and treatment services is provided in **Table 1-5.**

TABLE 1-5

CURRENT AVAILABILITY OF ENVIRONMENTAL SERVICES

WITHIN PLANNING AREA

Environmental Service	Approximate % of Planning Area Population Receiving Service	# Hours per Day Service Provided
Water Supply	*99%*	*24*
Wastewater Collection & Treatment	*50%*	*24*

4) Project Alternatives

I. Water Supply

Water Treatment System Alternatives

The following alternatives for improving the reliability and long term sustainability of the City's water treatment and distribution system were evaluated:

- *No project alternative*
- *Alternative 1 - Construction of a new surface water treatment plant*
- *Alternative 2 - Expansion and rehabilitation of the City's existing water treatment facility*
- *Alternative 3 - Use of groundwater to supplement surface water supplies*

No Project Alternative

This alternative is for the City to continue operating its existing treatment facility without any additional capital investment in the treatment plant.

The City of Donna's existing 3.42 mgd surface water treatment plant was constructed in 1918 with process improvements made in 1947 and 1987. The plant has reached its design capacity and cannot keep up with growing water demand. The existing water plant has been cited for numerous violations and is in such poor condition that replacement is required.

If no action is taken by the City to improve it's water treatment capacity and performance, the City will continue to be cited for violations and fined by the TNRCC. The people connected to the water system will receive water not meeting state and EPA requirements, which is a health hazard. If additional plant capacity is not constructed, colonia residents could not be provided water by the City of Donna. Also, the no project alternative is not a feasible option because the TNRCC has an Agreed Order with the City of Donna, requiring the City to build a new water treatment facility.

Alternative 1 - New Surface Water Treatment Facility

This alternative consists of constructing a new 4.5 mgd surface water treatment facility. To limit the amount of project loan indebtedness, which is a cost burden on the users of the water system, an interconnect with NAWSC for 1.5 mgd has been secured. The interconnect will assure an adequate amount of water will be available for 20 years. The City of Donna may elect to construct additional water plant capacity in the future and not require the NAWSC interconnect.

The new water treatment facility will produce safe water, using the latest technology, which meets TNRCC and EPA regulations.

Alternative 2 - Expansion and Rehabilitation of Existing Water Treatment Facility

This alternative includes adding additional rapid mixing, flocculation, sedimentation, filtration, chemical feed, and treatment residuals processing components at the existing water treatment facility site.

The area of the current water plant site is completely built out dedicated to 3.42 mgd plant components. Expansion of the plant to 4.5 mgd would require additional land area. Therefore, there is insufficient land available for capacity expansion at the existing plant site. Also, the existing plant structures would require costly rehabilitation to correct structural deficiencies. The filter building pipe gallery also would require replacement at high cost. The existing water treatment facility does not have a means to dedicate filters to separate sedimentation basins; this results in filter overloads and poor quality finished water. Therefore, this option is not feasible.

Alternative 3 - Use of Groundwater to Supplement Surface Water Supplies

Available information on groundwater in the study area (Texas Water Development Board, 1990) was reviewed to evaluate the feasibility of using groundwater to supplement the City of Donna's raw water needs. In Cameron, Hidalgo, and Willacy Counties the Evangeline and Chicot aquifers yield moderate to large quantities of fresh to moderately saline water. Dissolved solids in the water from the Evangeline and Chicot aquifers generally exceed 1,000 mg/L and can be as high as 3,000 mg/L. By comparison water from the Rio Grande typically has total dissolved solids (TDS) between 400 and 750 mg/L. Drinking water is limited to 1000 mg/l TDS. Concentrations of chloride, sulfate, sodium, and sometimes boron are also high. Therefore, demineralization of water would be necessary prior to use as drinking water. The groundwater is also difficult to obtain in large enough quantities. The City would need over 4,000 gallons per minute on a continual basis to provide the water requirement of the service area.

II. Wastewater Treatment

Wastewater Treatment System Alternatives

The following alternatives for improving the reliability and long term sustainability of the City's wastewater collection and treatment system were evaluated:

- *No project alternative*
- *Alternative 1 - Expansion and rehabilitation of existing conventional plant*
- *Alternative 2 - Construction of a new wastewater treatment plant*
- *Alternative 3 - Individual septic systems*
- *Alternative 4 - Cluster septic systems*
- *Alternative 5 - Evapotranspiration effluent disposal system*
- *Alternative 6 - Land treatment systems*

No Project Alternative

To add the colonias to the wastewater collection system would require additional treatment capacity at the existing wastewater treatment plant (WWTP). The WWTP will have to be expanded to accommodate the increase in flow. If the colonias are not connected to the wastewater collection system, then the existing situation would continue and get worse. The colonia residents are situated on small lots and either have no septic tank system or poorly operating systems. Sewage on the ground surface is common in the colonias. This is a health hazard, and the no project alternative would continue this situation.

Alternative 1 - Expansion and Rehabilitation Existing Conventional Plant

While the alternatives for non-conventional wastewater treatment methods presented in this section will reduce wastewater treatment plant operational costs due to the pre-treatment of the effluent, the disadvantages of each system out-weigh the advantages. Therefore, expansion and rehabilitation of the existing conventional wastewater treatment is the recommended alternative.

Alternative 2 - Construction of a New Wastewater Treatment Plant

The existing wastewater treatment plant is generally in very good condition. The expansion required to include the colonias flow is approximately 17% (i.e., from 2.3 mgd to 2.7 mgd capacity). It is not feasible to abandon the existing WWTP and build a new one with such a small required increase in capacity. A new WWTP would have a construction cost of approximately $8.0M, while the upgrade and the various other improvements (e.g., headwork, influent lift station, and sludge handling facilities) will have a construction cost of approximately $3.0M. The upgrade and improvements to the existing WWTP is a better alternative than building a new plant.

Alternative 3 - Individual Septic Systems

The individual septic tank system is the most common non-conventional alternative to regional wastewater treatment. Many colonia sites have existing septic tanks or pits in place. However, the poor soil conditions, small lot sizes, and flat terrain that dominate the project area put limitations on this type of system. Many individual lots do not have adequate area for the absorptive beds to function properly.

Since Hidalgo County has established a policy not to allow septic tank systems in residential areas with nominally sized lots, further consideration of this alternative is not recommended.

Alternative 4 - Cluster Septic Systems

The cluster septic system also uses a septic tank. However, instead of individual field line networks, the individual septic tanks are combined or "clustered" to share a common off-site community septic tank. This alternative answers the problem of required area for an adequate absorptive field, but still does not eliminate the problems associated with the operation of the absorptive field due to poor soil and low relief terrain conditions. The location of the clustered tanks is also a problem since additional land must be required and the tank placement location is typically an unwanted neighbor.

To consider this type system as a possible solution alternative, the "clustered" septic tank system must be enhanced by an Evapotranspiration System of Effluent Disposal (ET Effluent Disposal). Further consideration of cluster septic systems alone is not recommended.

Alternative 5 - Evapotranspiration Effluent Disposal System

The ET Disposal System is a method used to dispose of wastewater effluent where site soil conditions preclude soil absorption. Disposal is achieved by evaporation of moisture from the soil surface or transpiration by plants. In lieu of individual septic tank absorptive field lines, the effluent can be piped to an ET Effluent Disposal site. This system can be considered for areas where the evaporation rate exceeds the rainfall rate, and where the application of wastewater effluent does not pose a threat to surface water or groundwater contamination. Vegetation on the disposal field surface can remove significant volumes of effluent in spring, summer and fall.

Three conditions must be met if evaporation is to be continuous:

- *A continuous supply of heat must be available to meet the latent heat requirements.*
- *Vapor must be able to rise from the soil surface.*
- *Effluent must be continually supplied to the evaporative surface.*

The advantages of the system are:

- *Capital cost for the construction of ET systems is relatively low compared to a conventional gravity sewer.*

- *Minimal maintenance is required and system life expectancy is high.*

The disadvantages of the system are:

- *Large areas of fenced property are required to facilitate the ET bed system.*
- *The operation of the system is limited by climate and its effect on local evaporation rate.*
- *Salt accumulations on the surface of beds will eventually lead to the elimination of all vegetation, and subsequently loss of transpiration.*
- *Proper construction methods must be followed to assure no groundwater contamination from the beds.*

Because there are not enough large areas available for this type of system, further consideration of ET systems is not recommended.

Alternative 6 - Land Treatment Systems

Land treatment systems use pumps and small diameter piping to apply the clear effluent from septic and other pre-treatment systems to land surfaces.

The advantage of the system is:

- *Capital cost for the construction of land treatment systems is relatively low compared to the cost of a conventional gravity sewer.*

The disadvantages to this system are:

- *Potential for contamination of land and adjoining tracts.*
- *Land treatment systems require large areas of fenced property to facilitate the pumping and piping systems.*
- *Maintenance and capital cost are higher due to the pumping and piping systems.*

Large areas of land are not readily available for the colonias in the planning area. Because of the lack of land, the fact that agriculture is a major industry in the area and the potential of contamination exists, further consideration of land treatment systems is not recommended.

Wastewater Collection System Alternatives

Three alternative wastewater collection systems were evaluated in addition to the conventional gravity collection system. Based on the anticipated costs, and the area needs, the most feasible and cost-effective alternatives available to the City of Donna are.

- *No project alternative*
- *Alternative 1 - Standard Gravity Collection System*
- *Alternative 2 - Pressure Sewer Collection System*
- *Alternative 3 - Septic Tank Effluent Pumping*
- *Alternative 4 - Small Diameter Gravity Sewer Systems*

No Project Alternative

If the colonias are not provided with a wastewater collection system, then the existing situation would remain. The health hazard would remain due to the absence of proper on-site septic tank systems and methods of sewage disposal. Sewage on the ground surface is common in the colonias. Rainfall runoff transports the untreated sewage to the water courses of the state.

Alternative 1 - Standard Gravity Collection System

These alternatives are compared with construction of a standard gravity collection system. Because the standard gravity collection system has the lowest long-term cost, this method of wastewater collection is recommended.

The estimated construction cost for the proposed gravity collection system to serve the off-site Colonias is $3,422,690 including 15 percent for contingencies. The itemized cost estimate is provided in **Table 1-6.**

TABLE 1-6

GRAVITY COLLECTION SYSTEM CONSTRUCTION COST ESTIMATE

(On-site Components Only)

Description	Unit	Quantity	Estimated Unit Cost	Total Estimated Cost
Single Service Connection	*EA*	*1274*	*$350*	*$445,900*
8" SDR-26 PVC Pipe (0' - 8' Depth)	*LF*	*39870*	*$12*	*$478,440*
8" SDR-26 PVC Pipe (8' - 10' Depth)	*LF*	*4650*	*$16*	*$74,400*
8" SDR-26 PVC Pipe (10' - 12' Depth)	*LF*	*16250*	*$18*	*$292,500*
Standard Manhole	*EA*	*193*	*$2,000*	*$386,000*
Clean-outs	*EA*	*230*	*$300*	*$69,000*
Trench Safety and Dewatering	*LF*	*41000*	*$30*	*$1,230,000*
SUBTOTAL				*$2,976,240*

CONTINGENCY - 15%				*$446,450*
TOTAL ESTIMATED COST				**$3,422,690**

Alternative 2 - Pressure Sewer Collection System

A pressure sewer collection system uses a grinder pump and small diameter pipe to transport sanitary sewer flows to an area lift station. The area lift station then pumps to a gravity trunk sewer or directly to the wastewater treatment plant. This on-site system can be installed for each resident or can be shared between residents.

The advantage of the system is:

- *Capital costs are low compared to conventional gravity sewers due to reduced excavation cost, pipe cost, elimination of manholes, and reduced lift station sizes.*

The disadvantages of the system are:

- *Maintenance is high due to the mechanical aspects of the system.*
- *These systems depend on electrical service which requires emergency overflows and containment areas during power outages.*
- *Equipment is usually replaced every 4 to 5 years due to the conditions and environment in which the system operates.*
- *Odors are typically greater.*

The projected construction cost of the pressure sewer collection system to serve the Colonias, consisting of the grinder pump unit, isolation valves and piping, is $3,656,440, including 15 percent for contingencies. The itemized cost estimate is shown in **Table 1-7**.

TABLE 1-7

PRESSURE SEWER COLLECTION SYSTEM CONSTRUCTION COST ESTIMATE

(On-site components only)

Description	Unit	Quantity	Estimated Unit Cost	Total Estimated Cost
Grinder Pump Unit (Complete in Place)	*EA*	*634*	*$1,700*	*$1,077,800*
Isolation Valves	*EA*	*1274*	*$320*	*$407,680*
3" Piping	*LF*	*51700*	*$6*	*$310,200*
4" Piping	*LF*	*9115*	*$7*	*$63,805*
On-Site Lift Station (Pump to Gravity Line)	*EA*	*11*	*$120,000*	*$1,320,000*
SUBTOTAL				*$3,179,485*
CONTINGENCY - 15%				*$476,955*
TOTAL ESTIMATED COST				**$3,656,440**

Alternative 3 - Septic Tank Effluent Pumping

Septic tank effluent pumping systems are similar to pressure sewer collection systems. The only exception is the septic tank provides pre-treatment of the effluent prior to being pumped to a centralized collection point. As with the pressure sewer collection system, an effluent septic tank can be shared between residents.

The advantages of the system are:

- *Capital costs are low compared to conventional gravity sewers due to reduced excavation cost, pipe cost, elimination of manholes, and reduced lift station sizes.*
- *Pre-treatment occurs in the septic tank, thereby reducing the wastewater treatment plant operational cost.*

The disadvantages of the system are:

- *Cleaning and possible replacement of existing septic tanks is required.*
- *The same concerns for reliability of the electrical service, emergency overflows and containment areas as the pressure sewer collection system need to be addressed.*
- *Household users must be actively involved in maintenance due to the mechanical aspects of the system.*
- *Equipment is usually replaced every 4 to 5 years due to the conditions and environment in which the system operates.*

The projected construction cost of a septic tank effluent pumping system to serve the colonias is $4,503,915, including 15 percent for contingencies. The system consists of a septic tank, pump tank, pump, isolation valves and piping. The itemized cost estimate is provided in **Table 1-8.**

TABLE 1-8

SEPTIC TANK EFFLUENT PUMPING COLLECTION SYSTEM

CONSTRUCTION COST ESTIMATE

(On-site Components Only)

Description	Unit	Quantity	Estimated Unit Cost	Total Estimated Cost
Septic Tank, Pump Tank, and Pump	*EA*	*743*	*$3,000*	*$2,229,000*
Pump Tank and Pump, only	*EA*	*531*	*$1,700*	*$902,700*
Isolation Valves	*EA*	*1274*	*$320*	*$407,680*
3″ Piping	*LF*	*51700*	*$6*	*$310,200*
4″ Piping	*LF*	*9115*	*$7*	*$63,805*
SUBTOTAL				*$3,913,385*
CONTINGENCY - 15%				*$590,530*
TOTAL ESTIMATED COST				**$4,503,915**

Alternative 4 - Small Diameter Gravity Sewer Systems

Small diameter gravity sewer systems use an on site septic tank for collection and pre-treatment. The septic tank removes large solids and grease, thereby allowing the sewer lines to be sized much smaller than conventional gravity sewers. The advantages of the system are:

- *Capital costs are low compared to conventional gravity sewers due to reduced excavation cost, pipe cost, elimination of manholes, and reduced lift station sizes.*
- *Capital costs are less intensive compared to pressure sewer and septic tank effluent pumping collection systems because pumping systems are eliminated.*
- *Pre-treatment occurs in the septic tank, thereby reducing the wastewater treatment plant operational cost.*

The disadvantages of the system are:

- *There are few guidelines available for design of this type of system.*
- *The existing septic tanks need to be cleaned or replaced.*

The projected construction cost of a small diameter gravity system to serve the Colonias is $3,779,710, including 15 percent for contingencies. The itemized cost estimate of this system is provided in **Table 1-9.**

TABLE 1-9

SMALL DIAMETER GRAVITY COLLECTION SYSTEM

CONSTRUCTION COST ESTIMATE

(On-Site Components Only)

Description	Unit	Quantity	Estimated Unit Cost	Total Estimated Cost
Install or Replace Septic Tank	*EA*	*601*	*$1,500*	*$901,500*
Single Service Connection	*EA*	*1274*	*$350*	*$445,900*
3″ SDR-26 PVC Pipe (0′ - 8′ Depth)	*LF*	*43150*	*$7*	*$302,050*
3″ SDR-26 PVC Pipe (8′ - 10′ Depth)	*LF*	*9720*	*$8*	*$77,760*
3″ SDR-26 PVC Pipe (10′ - 12′ Depth)	*LF*	*3040*	*$9*	*$27,360*
4″ SDR-26 PVC Pipe (0′ - 8′ Depth)	*LF*	*3650*	*$8*	*$29,200*
4″ SDR-26 PVC Pipe (8′ - 10′ Depth)	*LF*	*1215*	*$9*	*$10,935*
Standard Manholes	*EA*	*193*	*$1,000*	*$193,000*
Clean-outs	*EA*	*230*	*$300*	*$69,000*
Trench Safety and Dewatering	*LF*	*41000*	*$30*	*$1,230,000*
SUBTOTAL				*$3,286,705*
CONTINGENCY - 15%				*$494,572*
TOTAL ESTIMATED COST				**$3,779,710**

5) Project Justification

Proposed expansion of the City's infrastructure will enable it to prevent, control, and reduce environmental pollutants and improve drinking water supply and treatment. Fire protection will be increased by improvements to water supply lines and fire hydrants, and by providing adequate pressure to areas which are not currently served, or under served. Providing adequate collection and treatment of sewage will improve human health, promote sustainable development, and enhance the general quality of life for residents in the area. It will also allow the City to better serve it's existing users and provide services to potential users whose current facilities are substandard. By increasing the number of users of the system, lower individual costs are realized and therefore, lower monthly bills.

Failure to construct the proposed facilities would restrict the City of Donna from providing services to areas which would otherwise remain unserved or significantly under-served. The no-action alternative does not satisfy the requirement of improving environmental conditions in the City through improved water treatment and distribution and wastewater collection which is the goal of this proposed project. The preferred water and wastewater system alternatives provide the infrastructure improvements which best satisfy this goal. In addition, this project will improve the existing infrastructure and provide facilities which will allow better service to existing users and provide service to areas which remain unserved or whose current facilities are below standard. This project will allow the City to enhance the environment and human health conditions in the community while increasing the quality of life for area residents.

d. Conformance With International Treaties and Agreements

Construction of the proposed facilities will help to improve the environmental conditions within the City of Donna and the surrounding area by reducing the volume of untreated wastewater reaching area water sources. Treating wastewater that would otherwise remain untreated or under-treated will improve the water resources shared by Texas and Mexico. Improved wastewater collection reduces the volume of pollutants which enter area water resources shared by both countries. Improved water quality and long term sustainable development will contribute to enhancing the environment for the cross-border and downstream residents.

I, Robert Diaz de Leon, City Manager of the City of Donna, certify that the Water and Wastewater Facility Improvement Project will conform with rights and obligations under applicable international treaties and agreements in force, to which either the United States, Mexico, or both are parties.

Signature Date

2. HUMAN HEALTH AND ENVIRONMENT

a. Human Health and Environmental Need.

1a) Describe in detail the human health and environmental issues addressed by this project.

Human Health

The purpose of the proposed water and wastewater improvements, for the City of Donna and 20 colonias (rural communities) surrounding the Donna city limits (e.g., Study Area), is to provide the residents of this area with safe and sanitary water and wastewater services. Current wastewater/sanitary sewer facilities within the colonias primarily consists of individual septic tanks with leach fields, or pit privies. Colonias utilize these pit privies or substandard septic systems since no water or wastewater facilities, or limited facilities, are available in this area. Contamination of water well sources from mismanaged wastewater disposal is a continuous problem within the Study Area. Colonia Nueva Water Distribution System does however currently provide water services to five colonias within the Study Area. Additionally, eleven colonias receive water from the North Alamo Water Supply Corporation (NAWSC). All twenty colonias are not being provided sewer service. Although the City of Donna provides water and wastewater services to residents within the city limits, several colonias completely lack access to healthy water and wastewater services. Improving and regulating potable water sources as well as wastewater disposal within Donna and the surrounding colonias will serve to:

- *increase water quality, and*
- *decrease mismanaged and rural wastewater disposal methods.*

Ultimately, construction of new or enhanced water and wastewater infrastructure facilities will improve the overall public health of the residents within the Study Area.

The TWDB has a program in which low or no interest loans are provided to cities, who participate in the EDAP program, for distribution to colonia residents needing financing to install yard laterals, piping, and plumbing facilities. The City of Donna will include this loan service as part of the overall project. The City of Donna, as a requirement of the TWDB, also has a mandatory hook-up policy that states when facilities are available, residents must connect to the system. The City of Donna is also certified to serve these residents water and sewer by a TNRCC approved Certificate of Convience and Necessity (CCN).

The currently used household septic systems and shallow wells will not be addressed by this project. First, these are located on private property and there is no legal means to include work within individual property lines. Second, septic tank systems are already under the authority of Hidalgo County and not the City of Donna. Also, the TNRCC has control of all groundwater wells.

Existing pollution problems are common within the 20 colonias as well as the City of Donna. Within the Donna city limits, raw sewage overflows at several lift stations as a result of inadequate pumping equipment at these facilities. Violations of the Wastewater Treatment Plant (WWTP) permit have previously occurred with both enforcement actions and fines being levied on the WWTP facility. Additionally, noxious gas (H_2S), is produced at the lift stations. These environmental problems are expected to be resolved with the construction of new collection lines and lift stations and the upgrade and improvements to the existing WWTP.

Environmental Need

The Environmental Information Document (EID) prepared for the City of Donna and surrounding colonias evaluated a wide variety of physical, biological, and socioeconomic issues. The following paragraphs summarize the environmental issues which were deemed to be the most significant with respect to the implementation of the water and wastewater infrastructure improvements within and surrounding the City of Donna.

The adverse environmental impacts which cannot be avoided during the implementation of the water and wastewater infrastructure improvement projects would be minimal within and surrounding the Donna area. Considering the miles of pipe (linework activities) that will be installed within the Study Area, the residents of this area will likely suffer only short-term impacts from this project. Residents will contend with brief periods of traffic interruptions or detours. Other utility services may also experience brief periods of interruption. As a pipeline is being installed, heavy machinery will be utilized in the immediate area. Noise levels will be elevated above "normal" levels in areas where installation work is being conducted. Roads and/or utility right-of-ways may be disturbed prior to or during the construction phase of this project. Similar impacts from the construction of a new water treatment facility (WTF), decommissioning of the existing WTF, rehabilitation of the existing wastewater treatment plant as well as construction of an elevated storage tank and construction of three new lift stations will be experienced by individuals located immediately adjacent to these project areas.

Soil erosion due to excavation, removal of existing pavement, and/or land grading may generate a dust nuisance during the linework phase of this project or the construction, decommissioning, or rehabilitation of the other proposed infrastructure projects. Best management practices will be utilized to minimize soil erosion, dust, and other construction related disturbances. Erosion due to construction activities will be minimized by limiting the duration of time that disturbed ground surfaces are exposed to the energy of rainfall and runoff water. Runoff will be diverted from areas subject to erosion, and exposed ground surfaces will be protected by appropriate methods. Generation of fugitive dust will be minimized by suppression methods such as sprinkling water on disturbed surfaces, as necessary. Care will be exercised to minimize overwatering that could lead to the transport of mud onto adjoining roadways, which would increase the dust problem.

Impacts to the surface geology of the Study Area will occur since trenching will be necessary for placement of the water distribution lines, wastewater collection lines, or other related linework activities. Hydrological impacts may include contact with perched or shallow groundwater areas. Appropriate dewatering techniques will be employed to handle this problem should the need arise. These geological and hydrogeological impacts will be minimal, if any.

Biological impacts within the Study Area will be minimal since most linework will be installed within existing right-of-ways. Although several areas will be impacted in which no right-of-way previously existed, these areas will have only short-term impacts until such a time as the natural grade along the linework can be restored. Any vegetative impacts are expected to recover. Animal impacts are not expected once the construction areas have been restored to pre-construction conditions. Although construction will occur on undeveloped land for the new WTF, elevated storage tank, and three separate lift stations, no biological or ecological impacts are expected on this land which currently consists of cultivated crop land and/or urban land.

Aside from minimal trenching for the placement of water distribution and wastewater collection lines in Zone A designated floodplain areas (areas of the 100-year flood), no additional floodplain impacts are expected by the project.

No other environmental impacts are expected as a result of the implementation of this project. Additionally, there are no resources such as land resources, water resources, natural resources, or recreational and/or open space areas that will be irretrievably committed or whose options will be irreversibly constrained as a result of this project.

1b) Discuss how the project will provide a high level of environmental protection.

The land, air quality, water quality, natural/biological resources, and floodplains of the Donna area were evaluated during this project to ensure that a high level of environmental protection would be maintained prior to and during this implementation of the proposed water and wastewater infrastructure improvements. The following paragraphs summarize potential impacts to these environmentally-sensitive areas as well as the steps taken to minimize impacts and protect the environment.

Regarding land and land use, improvements to the Study Area are expected to attract an increased population in this area, especially among the 20 colonias surrounding the Donna area. Increased infrastructure services will most likely increase the appraised value of the property in this area. Land use benefits will include a decreased level of degradation since supplied water and sanitary services will eliminate the need for individual septic systems, open pit privies, and individual water wells. Any new development in this area will consist of higher standards than those currently established in many colonias due to the adoption of the Model Subdivision Regulations by Hidalgo County and the City of Donna. Numerous positive impacts to the social and economic aspects of the Donna area are expected as a result of the implementation of the water and wastewater improvements in this area.

Regarding air quality, dispersion of air pollutants readily occurs in the Donna area. Increased population/residences and increased businesses within the Study Area will likely occur with the improved water/wastewater services; these impacts are not expected to degrade the air quality of this area. Increased vehicular traffic, machine or process emissions, or increased business activities resulting from developments within the Study Area will not significantly impact the overall air quality of the area.

Regarding water quality, the purpose of this proposed project is to provide a higher quality of water and sanitary services to the residents of the Donna area and the 20 surrounding colonias. Population increases in the area of the proposed project as well as new residences or businesses in this area will not significantly degrade the water quality within the Study Area since water services, more tightly regulated and of a higher quality, will be supplied to the individuals in this area. The elimination of individual septic tanks and associated leach fields and numerous privies in the area will also serve to increase the overall water quality of the area by decreasing potential impacts to shallow localized groundwaters and/or aquifers. Substandard water wells, which allow for the potential of aquifer contamination, may be plugged and abandoned therefore further decreasing the chances for subsurface contamination.

Construction of the proposed water and wastewater facilities will help to improve the environmental conditions within the City of Donna and surrounding colonias. Wastewater mismanagement occurs frequently throughout the Donna area due to a lack of sanitary waste disposal systems as well as substandard septic systems. Wastewater infrastructure improvements will reduce the volume of untreated or under-treated wastewater reaching local surface water sources. Effectively treating wastewater (which would otherwise remain untreated or under-treated) will improve transboundary water resources such as the Rio Grande River which is utilized as a surface water source by both Texas and Mexico. Downstream users on both sides of the U.S.-Mexico border will greatly benefit from wastewater improvements which will serve to reduce the volume of pollutants which enter shared surface water courses. The implementation of infrastructure systems which will improve water quality and long-term sustainable development in the Donna area will significantly contribute to enhancing the environment in not only the U.S. but also in Mexico. Positive transboundary water impacts will be the result of the water (and wastewater) infrastructure improvements within the greater Donna area.

Regarding natural resources (i.e., plants, animals, and related ecosystems), although growth in the Donna area is expected as a result of the improved water and sanitary services in the area, environmentally-sensitive plants, animals, and/or ecosystems are not expected to be impacted by the proposed project. Since the Donna area has been impacted almost entirely by urbanization and agricultural activities, few areas of native vegetation and few indigenous, non-urbanized animal species are expected to exist within the Study Area.

Most sensitive communities or wildlife management areas are located in close proximity to the Rio Grande River, south of the Study Area. The Las Palomas Wildlife Management Area, Taormina Unit, is the closest such area to the proposed project. The northern boundary of this area is located approximately 2,000 feet to the southeast of the southern-most boundary of the Study Area. This wildlife area is not expected to be impacted by the localized trenching and linework activities associated with the proposed project. Additionally, no threatened or endangered species of plants or animals are expected to be impacted by the proposed infrastructure improvement projects.

The City of Donna participates in the National Flood Insurance Program. The majority of the Study Area lies in Zone B, areas between the limits of the 100-year and 500-year flood or areas of 100-year shallow flooding where depths are less than one foot. Much of the City of Donna lies within Zone C, areas outside the 500-year flood. Three Zone A areas, areas of the 100-year flood, are located within the Study Area. Aside from excavation and trenching for the placement of water and wastewater lines, no other impacts to Zone A floodplains are expected by this project. Additionally, one Zone AH area was identified adjacent to the southern-most boundary of the Study Area. Zone AH areas include areas of 100-year shallow flooding where depths are between one and three feet. No impacts from the project are expected in this area.

2) Provide any health statistics, baseline data, or information compiled on human health or environmental issues in the affected area.

Water quality is the main health concern in the Donna area. Within the City of Donna, the current water treatment facility and wastewater treatment plant do not function optimally to provide adequate services. Many water distribution lines are partially filled with rust or dirt and are in need of replacement. Colonias utilize pit privies or substandard septic systems since no water or wastewater facilities, or limited facilities, are available in this area. Due to poor water quality practices, as well as other factors, the population is at a higher risk for many health-related problems.

According to the Hidalgo County Health Department, "there are existing nuisance and safety hazards associated with poor sanitation procedures that pose conditions dangerous to the public health and safety." The Hidalgo County Health Department adds that "the area colonias have no organized disposal systems and the homes have either pit privies, cesspools, or septic tanks" which may be substandard in installation and may not function properly, if at all. "Practically all streets within the colonias are not paved with no storm sewers to drain off excess water. Raw sewage on the ground has been noted due to malfunctioning or non-existing septic tank systems. This lends greatly to rodent, mosquitoes, and fly breeding in addition to the potential in disease transmission to or between persons." Such diseases and problems in the Donna area include tuberculosis, infectious hepatitis, shigellosis, salmonellosis, measles, and amoeba disorders, according to the Hidalgo County Health Department. Heart disease is also a problem in the Donna area. These problems are however not unique to Donna, Texas, but are also widespread throughout Hidalgo County as well as south Texas.

Hidalgo County has an estimated population of 476,235 individuals (based on 1995 Texas Department of Health information). The County consists of 50.5% females and 49.5% males. Tuberculosis is the leading reported communicable disease in the County; County wide the tuberculosis rate is 23.1 incidents per 100,000 individuals. This tuberculosis rate is almost twice the State rate at 12.7 incidents per 100,000 individuals.

In Hidalgo County, cardiovascular disease (including heart disease and strokes) is the leading mortality disease. County wide, heart disease deaths occur in 142.4 out of every 100,000 individuals based on Texas Department of Health information for 1995. This rate is slightly below the State annual average for that year with 189.1 deaths per 100,000 individuals.

According to the Texas Department of Health (TDH), subcounty areas and/or populations in Hidalgo County are designated as Health Professional Shortage Areas. Hidalgo County is also designated as a Medically Underserved Area. Regarding natality, 39.2% of expectant mothers receive late or no prenatal health care. Late prenatal care is defined by the TDH as receiving no health care during the first trimester of pregnancy. This rate is significantly higher than the statewide average of 22.7%.

b. Environmental Assessment.

Positive transboundary impacts in the area of water quality are expected as a result of the implementation of the water and wastewater improvements within the Donna area.

Environmental Information Document was prepared for the Texas Water Development Board which, for the purposes of this project, would served the same function as an Environmental Assessment. Regulatory agency coordination and public involvement were integral parts of this EID.

1) Environmental Information Document.

The City of Donna completed an Environmental Information Document (EID) in May, 1997 for water and wastewater improvement projects which include the essential elements of this proposed project. The City of Donna prepared this EID for funding of water and wastewater improvements under the Texas Water Development Board's (TWDB) State Water Pollution Control Revolving Fund (SRF), 31 TAC §375.35, in conjunction with the Economically Distressed Areas Program (EDAP). This EID was prepared as part of the Phase I Facility Engineering Plan which is consistent with the requirements of the TWDB's EDAP as promulgated in 31 TAC §355.76.

The EID served to outline the Facility Engineering Plan and alternatives as well as detail the existing environmental conditions within the Study Area. Impacts to the environment as a result of the project implementation are evaluated in this document. Also, the projected environmental condition without the implementation of this project, or the "no build" alternative, was additionally analyzed in this document. This investigation explored short-term and long-term impacts resulting from the various proposed infrastructure improvements; such potential impacts were evaluated on the physical, biological, and socio-economic environments.

Based on the environmental evaluation of the EID by the Texas Water Development Board, the TWDB indicated that "no significant adverse environmental impacts will result from the proposed project." The Finding of No Significant Impact (FONSI) for the proposed water and wastewater infrastructure improvements in the Donna area was issued by the TWDB in correspondence dated July 10, 1997. The EID contains copies of correspondence from the following agencies which provided comments on this project: Texas Parks and Wildlife Department, U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers, and the Federal Emergency Management Agency.

2) Transboundary Environmental Effects.

The EID does not directly discuss transboundary environmental effects; however, a discussion of the regional environmental quality of the physical, biological, and socio-economic environments are extensively detailed in the EID. Perhaps the most significant transboundary environmental effect will be the improved quality of life for residents within and surrounding the City of Donna with the implementation of proposed water and wastewater infrastructure improvements. Primary and secondary positive transboundary impacts to the Rio Grande River and cross border areas such as Rio Bravo, Tamaulipas, Mexico, will also be accomplished by the implementation of the Donna water and wastewater infrastructure improvement projects.

In conversation with the International Boundary and Water Commission in January, 1998, there are no transboundary impacts to the waters of the Rio Grande. The increased withdrawal of raw water from the Rio Grande and the increased discharge of treated wastewater to the Arroyo Colorado is too insignificant to consider. In a generalized analysis, only 10% of water withdrawals from the U.S. side of the Rio Grande are for municipal use. The City of Donna's current population is approximately 10,000 of the over 1,000,000 population of the immediate Texas Valley area. Also, the proposed water plant for Donna is only being increased from 3.42 MGD to 4.5 MGD. Putting these figures together demonstrates a very minor impact.

A transboundary study was however prepared by the City of Donna in October, 1996. This study, known as an Environmental Improvement Plan (EIP), was prepared in cooperation with the U.S. Environmental Protection Agency Border XXI Community Grant Program. The purpose of the EIP was to assess existing environmental conditions and potential impacts to the environment as a result of increased commerce and trade activities expected in the Study Area. Increases in potential environmental impacts resulting from industrial growth are anticipated on both sides of the U.S.-Mexico border as a result of the North American Free Trade Agreement (NAFTA).

The population within the EIP Study Area is expected to increase by approximately 130% by the year 2015, and local communities will be challenged with meeting the changing needs of their respective areas.

The EIP was compiled with the goal of assisting border communities, such as the City of Donna and surrounding colonias and, to a limited extent, Rio Bravo, Tamaulipas, Mexico, in identifying and responding to environmental and health-related needs specific to this particular border area. This EIP document will therefore be utilized to promote awareness and protection of the environment as well as potential sustainable development in this border area.

The EIP identifies many general sources of potential environmental impacts to air, water, and land resources within the Study Area. This document also provides a brief discussion of the identified impact, the source of the impact, the extent of the impact on the nearby population or ecosystem, potential mitigation methods of the impact, and the overall effect of the environmental impact on the Study Area.

This document also provided a list and brief discussion of specific sources of potential environmental conflicts, or impacts, within the Study Area, and used a "Hazard Ranking System" to rank and prioritize these impacts. The "Hazard Ranking System" used in the EIP calculated a total score, or rating, based on the following criteria:

- *severity of the impact (i.e., hazardous vs. non-hazardous);*
- *type of release resulting from the impact source (i.e., acute or chronic release to air, water, or land); and*
- *type of receptor (i.e., human or ecosystem) which would receive the result of an impact.*

This total score, or rating, was used to identify and prioritize the potential conflicts as well as to minimize impacts to people, and the air, water, and land environments, including plant and animal habitats and communities.

From this rating list, specific sources of conflict (which are considered significant to the Study Area) are discussed in greater detail and prioritized, or ranked, according to their rating. Such conflicts were divided into the following categories:

- *Impacts to the Rio Grande River within or upstream of the Study Area. Significant potential sources of impact to the Rio Grande River include herbicide/pesticide run-off, industrial waste streams, chemical waste streams, and raw sewage disposal.*
- *Impacts to colonias. Significant potential sources of impact to the colonias within the Study Area include hazardous and chemical waste transport spills.*
- *Impacts to streams, floodplains, and wetlands. Hazardous and chemical waste transport spills, as well as chemical waste disposal, hazardous toxicant disposal, pesticide/herbicide run-off, and raw sewage disposal are significant potential sources of impact to streams, floodplains, and wetlands.*
- *Impacts of existing sites/operations to the Study Area. Significant potential sources of impact from existing sites and operations within the Study Area include impacts from aerial pesticide/herbicide applications, non-regulated/illegal landfills and dump sites, solid waste landfill sites, regulated landfills, leaking petroleum storage tanks, spills, an abandoned petroleum refinery located in Donna, and an electrical generating plant which is located in Rio Bravo, Tamaulipas, Mexico.*
- *Railroad operations. The significant source of potential environmental impact from railroad operations involves the release of hazardous substances into the environment as a result of spills.*
- *Impacts to the water quality within the Study Area. A significant source of potential impact to the Donna Reservoirs in Donna, Texas, involves the illegal dumping of municipal solid waste in the vicinity of these reservoirs. Another significant source of water quality impact within the Study Area includes the disposal of raw sewage and poorly treated sewage to canals/resacas in the Rio Bravo, Tamaulipas, Mexico area. Such disposals are however not known to outfall to the Rio Grande River within the Study Area.*

Additionally, significant potential sources of impact to the Study Area from proposed developments include impacts from proposed transportation routes, the proposed international bridge and associated facilities, and a proposed business park which is planned near Donna.

Again, the EIP focused on the identification of environmental problems or potential problems and was followed by recommendations to minimize these concerns. Such implementation plans may be incorporated into the long-term planning and management strategies developed by the City of Donna for not only the Donna area and surrounding colonias, but also for the transboundary region surrounding Donna.

Overall, based on both the EID and EIP projects, positive primary and secondary impacts were identified for the implementation of the water and wastewater infrastructure improvements in the Donna area.

3) Environmental Assessment for the BECC.

The following paragraphs discuss the short-term and long-term primary and secondary (positive and negative) impacts associated with the proposed water and wastewater infrastructure improvements which are currently slated for design, development, and implementation within the Donna area and surrounding colonias. Improvements associated with this project include the construction of a new WTF, decommissioning of the existing WTF, rehabilitation of the existing WWTP, reconstruction of two lift stations, construction of a new lift station, and construction of an elevated storage tank plus the installation of water distribution and wastewater collection lines throughout the project area.

Short-term Primary Impacts

1. Alterations to Land Forms

The linework aspect of this project would temporarily alter the terrain in the Study Area. This disturbance would be only temporary until the trench area containing the pipeline could be backfilled and re-leveled to grade. Land areas where construction of the Water Treatment Facility (WTF), elevated storage tank, or new lift stations will be located will, however, sustain land alterations.

Streams and natural drainage patterns would not be altered by the rehabilitated Wastewater Treatment Plant (WWTP) effluent since the volume of water released is only designed to increase from the existing level of 2.3 MGD to the proposed level of 2.69 MGD.

2. Siltation and Sedimentation

An increase in siltation and/or sedimentation into any area watercourses is not expected from any project construction work conducted in the Study Area. Currently operating lift stations (#5 and #8) will be reconstructed and the new WTF will contain the best available control standards; therefore, any existing sources of siltation or sedimentation are likely to decrease with the implementation of this project. Siltation and/or sedimentation of watercourses is not expected from the linework activities associated with the implementation of the water distribution and wastewater collection lines. The new elevated storage tank and new lift station will also be constructed to minimize sediment run-off. Overall, best management practices will be utilized to minimize siltation and sedimentation associated with the construction phase of the proposed project.

3. Impacts to Watercourses

Impacts to watercourses are not expected during the implementation phase of the proposed project except for areas in which irrigation canals will be traversed. Any impacts to such facilities would be temporary and the area would be restored to the conditions prior to the impact. Most irrigation canals within the Study Area consist of concrete-lined channels which would be restored to the pre-impact condition following the implementation of the necessary infrastructure improvements in the area.

4. Vegetation Precautions

Trenching activities associated with the linework would up-root vegetation within the linework right-of-way. Once the necessary water and wastewater pipes have been installed and the surface regraded, as necessary, herbaceous vegetation should recover within a growing season. Shrub-like vegetation, if impacted, may take longer to recover. Vegetation impacts will be minimized by returning the area to grade immediately after the localized project activity is completed. Vegetation on the 18.0 acre parcel on which the new WTF will be located will be eliminated. Likewise, any existing vegetation on the parcels of land designated for the construction of the new elevated storage tank, or the new lift station, will be disturbed or eliminated during the construction phase of the project. Following construction, these areas will be revegetated with grass or landscaping (i.e., xeriscaping using native vegetation) where appropriate. The new parcel of land for the WTF consists of agricultural land as does the new lift station located near the southern boundary of the Study Area. Undeveloped/agricultural land occupies the site of the proposed elevated storage tank. The remaining two lift stations and the WWTP will be reconstructed on the same sites currently occupied by these facilities.

5. Precautions Associated with Clearing Land

At this time, the use of herbicides, defoliants, or cutting or burning activities are not measures expected to be necessary to clear the new Water Treatment Facility (WTF) property, any of the areas slated for construction activities, or for the installation of water and/or wastewater lines.

6. Spoil Disposal

Spoil from trenching activities or the clearing of the site of the new WTF, elevated storage tank, or lift station areas will be disposed to an approved location if this material cannot be re-graded or re-used on site.

7. Acquired Land

No individuals will be relocated as a result of the implementation of this project. The project's effect on adjacent land values will be to raise the value. Increased services would lead to increased property values within the Study Area. The City has acquired or is in the process of acquiring all land necessary for the implementation of the proposed water and wastewater infrastructure improvement projects.

8. Abandonment of Structures

The existing WTF will be abandoned and will be removed at a later date. The new water treatment plant will be constructed at a new location. The City will decommission, demolish, and remove the existing WTF but retain the property. This site will be utilized for the general storage of City equipment.

9. Construction Across a Waterway

The U.S. Army Corps of Engineers was contacted for a jurisdictional determination of the Study Area. No jurisdictional waters of the United States, including wetland areas, were determined to be impacted by the proposed infrastructure improvement projects within the Study Area. Aside from man-made irrigation canals and drainage ditches, no waterways will be traversed by this project.

10. Dust Control

Soil erosion due to excavation, removal of existing pavement, and/or land grading may generate a dust nuisance during the linework phase or the construction of the new Water Treatment Facility, elevated storage tank, or lift stations. Best management practices will be utilized to minimize soil erosion, dust, and other construction related disturbances. Erosion due to construction activities will be minimized by limiting the duration of time that disturbed ground surfaces are exposed to the energy of rainfall and run-off water. Run-off will be diverted from areas subject to erosion, and exposed ground surfaces will be protected by appropriate methods. Generation of fugitive dust will be minimized by suppression methods such as sprinkling water on disturbed surfaces, as necessary. Care will be exercised to minimize over-watering. Over-watering could lead to the transport of mud onto adjoining roadways which would increase the dust problem. The decommissioning and demolition of the existing WTF may also contribute dust to the environment; such emissions will be controlled primarily through watering.

11. Noise During Construction

As construction activities occur or as a pipeline is being installed, heavy machinery will be utilized in the immediate area. Noise levels will be elevated above "normal" levels in areas where installation work is being conducted. Given the rural nature of most of the areas that will be impacted by this proposed project, elevated noise levels will be minimal. Any nuisance noise will be temporary and of short duration. Residents and wildlife may be exposed to brief periods of noise; however, these levels are not expected to disrupt normal household activities or stress the already rather urbanized wildlife that exists within the Study Area.

12. Blasting

Blasting will not be necessary during any phase of the proposed project.

13. Traffic Disruption

Construction activities will affect vehicular and pedestrian traffic. As part of the construction requirements, the construction contractor will maintain detours, barricades, signs, flags, and traffic cones, as necessary, in order to direct vehicular and pedestrian traffic away from construction areas. Access will be maintained to all businesses and residences during the construction phase of the project. Since through-traffic will be maintained in most cases, emergency services (i.e., police, fire, or ambulance services) will not be delayed, impaired, or restricted by the construction activities within the Study Area.

14. Night Work

Night work is not expected during the construction phase of this proposed project.

<u>Long-Term Primary Impacts</u>

1. Type of Land Impacted by the Project

Linework will be installed in existing right-of-way areas as well as some undeveloped areas not previously disturbed by utility activities. These undeveloped areas will include urbanized areas, pasture areas, and will also impact the fringe of some residential colonia areas. No beneficial uses of the land will be eliminated by the proposed linework activities. The development of a new Water Treatment Facility on currently cultivated land will reduce the cropland in this immediate area by 18.0 acres. Two of the three new lift stations will be developed on urbanized land located within the Donna city limits. One lift station located near the southern boundary of the Study Area will be constructed on agricultural/ undeveloped land as will the new elevated storage tank.

2. Impacts of Proposed Structures on Scenic Views

The proposed Water Treatment Facility, elevated storage tank, and lift stations will not obscure or obstruct any scenic areas. Additionally, the proposed subsurface water and wastewater linework will not obscure or alter any scenic views.

3. Wind Impacts

Although odors may occasionally arise from the wastewater treatment plant and/or lift stations, these odors are expected to be easily and rapidly dispersed within the Study Area. The rehabilitated water facilities (i.e., WWTP and lift stations) will serve to decrease existing noxious odors in this area which will be a benefit of this project. Incineration will not be used at the WTF or WWTP; therefore, incinerator emissions will not impact the Study Area.

4. Sludge Impacts

Sludge disposal for the WWTP will consist of sludge drying beds or belt filter presses; one of these options will be selected during the facility design phase of this project. Sludge drying beds will be designed and/or rehabilitated so that no impacts to the local shallow aquifer will occur. Adequate design parameters will be utilized to prevent any subsurface contamination.

5. Impacts on Aquatic Life

The WWTP discharges to a neighboring stream which flows into the Arroyo Colorado, which is adjacent to the Rio Grande River. The Arroyo Colorado is not a tributary of the Rio Grande River. The Arroyo Colorado discharges in the Laguna Madre at the Gulf of Mexico. Improvements to the wastewater treatment process will improve the water quality in the receiving stream and also the waters of the State of Texas in general. This proposed project will therefore positively improve the quality of water which currently exists in the receiving stream. Residual chlorine levels are not expected to exceed 1.0 milligram/liter (mg/l) standards and therefore are not expected to be detrimental to aquatic life in the receiving stream.

6. Impacts on Municipal or Industrial Water Supplies

The proposed WTF is a surface water facility which treats water received from the Rio Grande River via irrigation canals. The proposed project will utilize more water than is currently utilized by the City of Donna. Impacts to irrigation or other water rights are not expected by this project. Impacts of this project on recreational areas are also not a concern with respect to this project.

7. Impacts to Basin Flows

The proposed project is not expected to divert water from the Rio Grande basin or watershed. The natural flow of water in this area is not expected to be altered by this project.

8. Impacts on Cultural Resources

Based on a preliminary review of the National Register of Historic Places, there are no listed properties that would be affected by the proposed project. The following abstract serves as a preface to the archeological report entitled "An Archeological Survey of Proposed Water and Wastewater Systems in the City of Donna, Hidalgo County, Texas" which was prepared by the Texas Water Development Board in January, 1996

Abstract: An archeological survey of proposed water and wastewater system improvements to serve colonias largely located in southern Donna in Hidalgo County was conducted in January, 1995 by Texas Water Development Board staff archeologist Hayden Whitsett. The water supply project includes the construction of 176,000 feet of pipeline ranging between six and 16 inches in diameter, an elevated storage tank occupying roughly an acre, and two alternative water treatment plant locations of 15 to 18 acres in size. The wastewater collection system construction will consist of 82,000 feet of pipeline varying between eight and 30 inches in diameter and three lift stations, each of which will occupy less than one-quarter of an acre. The bulk of construction will be within existing street and road easements. Between 75 and 125 acres were examined in all. No cultural resources were encountered.

In correspondence dated February 26, 1996, the Department of Antiquities Protection of the Texas Historical Commission, Texas State Historic Preservation Office, concurred that no archaeological impacts were expected to be encountered during the course of the proposed infrastructure improvement projects.

9. Impacts to Recreational Areas or Natural Preserves

The proposed project is not expected to impact any recreational areas (neighborhood parks) or natural/ecological preserve areas (i.e., Wildlife Management Areas).

10. Noise Impacts

The Federal Highway Administration has established noise abatement criteria for federal transportation projects. An Activity Category A of 57 Leq (dBA) is assigned to lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities are essential if the area is to continue to serve its intended purpose. No such areas are expected to be impacted by the proposed project. Activity Category B is assigned to picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals. Acceptable exterior noise levels in Category B areas should not exceed 67 Leq (dBA). A level of 72 Leq (dBA) is the designated noise level for exterior noise levels on developed land and properties not included in Categories A or B.

Heavy machinery working in the Study Area may exceed the 67-72 Leq (dBA) levels for short periods of time. No long-term noise impact is expected by the linework, WTF construction, elevated storage tank construction, lift station construction, or plant operations (i.e., lift stations, WWTP, WTF, etc.) associated with this project. No residences or other potential sensitive receptors will be impacted by the daily levels of noise associated with the new Water Treatment Facility.

11. Access Control to Facilities

All facilities such as the WTF, WWTP, and lift stations will be surrounded, as necessary, by "man-proof" fencing to control public access to these facilities. "No trespassing" signs will also be installed at these facilities, as necessary.

12. Control of Insects and Pests

Most facilities within the Study Area will be rehabilitated or constructed anew. The need to control insects or pests by chemical applications, if any, will be conducted in accordance with appropriate local, state, and federal regulations by individuals licensed to conduct such services.

13. Floodplain Impacts

The City of Donna participates in the National Flood Insurance Program. The majority of the Study Area lies in Zone B, areas between the limits of the 100-year and 500-year flood or areas of 100-year shallow flooding where depths are less than one foot. Much of the City of Donna lies within Zone C, areas outside the 500-year flood. Three Zone A areas, areas of the 100-year flood, are located within the Study Area. Aside from trenching for the placement of water and/or wastewater lines, no other impacts to Zone A floodplains are expected by this project.

14. Air Quality Impacts

Direct air quality impacts concerning climatic elements should be limited to the project construction phase and be very minimal. The movement and operation of heavy equipment and wind erosion will cause some particulate matter (PM_{10}) emissions. However, normal erosion control measures, including wetting of dirt surfaces, should reduce emissions to levels that will not adversely affect the ambient air quality. The operation and maintenance of equipment will result in emissions of nitrogen oxides, carbon monoxide, and some trace amounts of volatile organic compounds. None of these pollutants will be emitted in quantities sufficient to adversely affect the ambient air quality.

Ineffective on-site WTF operations will be replaced and/or rehabilitated. Improved facilities will serve to decrease emissions and improve localized air quality above the levels which now persist with the use of the older equipment and facilities.

15. Expected Energy Consumption of Facilities

The energy consumption during facility operations will be determined during the final design phase when the power requirements for individual pieces of equipment are assessed. Similarly, the specific chemicals used in the water and wastewater treatment processes will also be determined later in the design process.

16. Coastal Zone Impacts

The Study Area is located roughly 50 miles from the Texas Gulf Coast. Hidalgo County is not in the Coastal Management Program (CMP); therefore, coastal zone impacts are not an issue associated with this project.

Secondary Impacts

1. Impacts on Project Land Use

Improvements to the Study Area are expected to attract an increased population in this area, especially among the 20 colonias surrounding the Donna area. Increased services will most likely increase the appraised value of the property in this area. Land use benefits will include a decreased level of degradation since supplied water and sanitary services will eliminate the need for individual septic systems, open pit privies, and individual water wells. Any new development in this area will consist of higher standards than those currently established in many colonias due to the adoption of the Model Subdivision Regulations by Hidalgo County and the City of Donna.

2. Population and Land Use Changes on Air Quality

Since dispersion of air pollutants readily occurs in this area, increased population/residences and increased businesses within the Study Area will likely occur with improved water services; these impacts are not however expected to measurably degrade the air quality of the Donna area. Increased vehicular traffic, machine or process emissions, or increased business activities resulting from developments within the Study Area will not significantly impact the overall air quality of the area.

3. Population and Land Use Changes on Water Quality

The purpose of this proposed project is to provide a higher quality of water and sanitary services to the residents of the Donna area and the 20 surrounding colonias. An increase in the population in the area of the proposed project as well as new residences or businesses will not significantly degrade the water quality in this area since water services, more tightly regulated and of a higher quality, will be supplied to individuals in this area. The elimination of individual septic tanks and associated leach fields and numerous privies will also serve to increase the overall water quality of the area by decreasing potential impacts to shallow localized groundwater and/or aquifers. Substandard water wells, which allow for the potential of aquifer contamination, may be plugged and abandoned therefore further decreasing the chances for subsurface contamination.

4. Impacts of Projected Growth on Public Services

The proposed water and sanitary improvements are designed to accommodate a substantial growth within the Study Area over the next 20 years. Business and population increases will be easily supplied with water and wastewater services under the proposed project design. The City of Donna has shown support for community growth and development of businesses which generate local jobs.

5. Economic Impacts

Costs will be incurred by the residents and businesses that will receive the improved water and wastewater services which will be provided by the City of Donna. The approximate average monthly fee for the typical residential water and sewer user will be $28.62 and $13.57, respectively. This represents an increase in monthly service fees.

6. Growth Desired by Area Residents

The public has shown support for the proposed project. Growth within the City of Donna is both anticipated and encouraged. The City of Donna is part of the "Valley Proud" communities of South Texas where higher living standards for residents of this area are also implemented and encouraged.

7. Growth Impacts on Environmentally-Sensitive Areas

Although growth in the Donna area is expected as a result of the improved water and sanitary services in the area, environmentally-sensitive plants, animals, and/or ecosystems are not expected to be impacted by the proposed project. Since the Donna area has been impacted almost entirely by urbanization and agricultural activities, few areas of native vegetation and few indigenous, non-urbanized animal species are expected to exist within the Study Area.

Most sensitive communities or wildlife management areas are located in close proximity to the Rio Grande River, south of the Study Area. The Las Palomas (Baird) Wildlife Management Area, Taormina Unit, is the closest such area to the proposed project. The northern boundary of this area is located approximately 2,000 feet to the southeast of the southern-most boundary of the Study Area. This wildlife area is not expected to be impacted by the localized trenching and linework activities associated with the proposed project. Additionally, no threatened or endangered species of plants or animals are expected to be impacted by this proposed infrastructure improvement project.

The City of Donna participates in the National Flood Insurance Program. The majority of the Study Area lies in Zone B, areas between the limits of the 100-year and 500-year flood or areas of 100-year shallow flooding where depths are less than one foot. Much of the City of Donna lies within Zone C, areas outside the 500-year flood. Three Zone A areas, areas of the 100-year flood, are located within the Study Area. Aside from excavation and trenching for the placement of water and wastewater lines, no other impacts to Zone A floodplains are expected by this project. Additionally, one Zone AH area was identified adjacent to the southern-most boundary of the Study Area. Zone AH areas include areas of 100-year shallow flooding where depths are between one and three feet. No impacts from the project are expected in this area.

In correspondence dated January 8, 1996, the Federal Emergency Management Agency (FEMA) stated that they have no objection to the proposed project and believe that the project will result in an improved living environment for the residents of the City of Donna.

No wetland impacts will occur as a result of the water and wastewater excavation and trenching work, or construction activities, necessary for the implementation of the infrastructure improvements associated with this project. In correspondence dated August 15, 1995, the U.S. Army Corps of Engineers determined that no waters of the United States (including wetlands) would be impacted by the proposed (infrastructure) improvements.

4) Discussion of environmental benefits, risks, and costs of the proposed project as well as the environmental standards and objectives of the affected area.

1. Environmental Benefits

Future uses of land or water resources will not be significantly impacted by the linework or the construction of the new Water Treatment Facility (WTF). Similarly, land or water resources will not be impacted by the decommissioning of the existing WTF, rehabilitation of the existing WWTP, construction of the elevated storage tank, or work on the three lift stations. The proposed water and wastewater infrastructure improvement project poses no risks to the health and safety of those individuals living within the Study Area; the primary purpose of this project is to improve the health and safety of those residents of the Donna area and surrounding colonias by providing affordable, high-quality water and sanitary services. Short-term impacts to the environment will be greatly out-weighed and out-numbered by the long-term benefits of providing quality water and sanitary sewer services to the people of this area, many of which now live on a daily basis with unsanitary conditions and drinking water which does not meet state or federal drinking water standards.

2. Environmental Risks

Given the continued decline in the water quality within the Donna area, a "no action" or "no build" alternative is not a pro-active solution to the water and wastewater problems in this area. Significant environmental risks and health problems would occur in the Donna area if no water and wastewater infrastructure improvements were implemented at all.

3. Environmental Costs

Few environmental-related costs will be incurred as a result of this water and wastewater improvement project. During the construction phase of this project, trenches for linework will be backfilled and returned to natural grade; vegetation should naturally return to the trenched area within a growing season. Since no areas of the proposed project will require the replacement of trees or other vegetation, few environmental costs, if any, will be associated with this project. Landscaping around the new WTF will utilize native/indigenous plants to the extent possible.

4. Environmental Standards and Objectives of the Affected Area

Implementation of the water and wastewater infrastructure improvement projects in the Donna area will be conducted as reflected in the EID and Facility Engineering Plan. Any environmental conditions of approval from regulatory authorities will be followed during the implementation phase of these improvement projects.

c. Compliance with Applicable Environmental and Cultural Resource Laws and Regulations.

1) List each authorization.

Please refer to Table 2-1 Compliance with Applicable Environmental and Cultural Resource Laws and Regulations.

There will be no local requirement to obtain construction or building permits for the improvements to built for this project. Typical permitting required by these types of construction projects are usually obtained by the construction contractor who is awarded the contract. These include Federal Aviation Administration (FAA) licensing, as appropriate, for tall structures, like elevated water storage tanks, Federal Communications Commission (FCC) for licensing of telemetry signals to control and monitor the various remote installations, and highway (TxDOT) and county (Hidalgo) road crossing permits needed for the pipeline routing. The major authorizations for the project are as follows:

- *The Texas Water Development Board (TWDB) requires a Finding of No Significant Impact (FONSI) for water and wastewater infrastructure improvement projects such as this one. Correspondence from the TWDB, dated July 10, 1997, indicates that a FONSI has been issued for this project.*
- *The Texas Historical Commission, Department of Antiquities Protection, requires an archeological survey to be conducted for projects such as this one. The Texas Water Development Board conducted a survey of the proposed infrastructure improvement areas in the City of Donna and encountered no cultural resources. In correspondence dated February 27, 1996, the Department of Antiquities Protection concurred with the TWDB's archeological survey and that the proposed infrastructure improvement project could proceed as planned.*
- *The Federal Emergency Management Agency (FEMA) requires that a Floodplain Management Notice be prepared for projects such as this one. Such a notice was prepared pursuant to Executive Order 11988, Floodplain Management. Correspondence from FEMA, dated January 8, 1996, indicates that this agency has "no objections to the proposed project and believes that the project will result in an improved living environment for the residents of the City of Donna".*
- *The U.S. Army Corps of Engineers (USACE) requires an evaluation of waters of the United States (including wetlands) for projects such as this one. Correspondence from the USACE, dated August 15, 1995, indicates that "no Department of the Army permit will be required to proceed with the project".*
- *The U.S. EPA requires a National Pollution Discharge Elimination System (NPDES) permit for the WWTP. The State of Texas also requires that TNRCC issue a discharge permit. A TNRCC and a NPDES permit have been issued for the WWTP. The proposed WWTP will have an increase in capacity from 2.3 MGD to 2.7 MGD. Therefor, both the TNRCC and NPDES discharge permits will require an amendment to reflect the discharge increase. However, no new permits will be required. It is expected that the amended permits will have similar discharge standards to the current permits. Amendments to the existing discharge permits will take place during the engineering final design phase of the WWTP*

1. Briefly describe the potential impact to environmental and cultural resources.

Potential impacts to the environment have been previously discussed in Section 1a) Environmental Need. This section details the adverse impacts which cannot be avoided should the project be implemented. Potential impacts to cultural resources have been previously discussed in Section 3) Long-term Primary Impacts, #8 - Cultural Resources.

2. Briefly describe the required authorizations.

As previously mentioned:

- *The TWDB requires a FONSI.*
- *The THC requires an archeological clearance.*
- *The FEMA requires a Floodplain Management Notice.*

- *The USACE requires an evaluation of Waters of the United States (including wetlands).*
- *The EPA requires an NPDES permit for the WWTP.*

TABLE 2-1

COMPLIANCE WITH APPLICABLE ENVIRONMENTAL AND CULTURAL RESOURCE LAWS AND REGULATIONS					
Regulatory Agency	**Contact Person**	**Address, Phone, and Fax Numbers**	**Authorizations and Date Authorizations Approved**	**Proof of Authorization**	**Condition of Approval**
Texas Water Development Board, Engineering Division	*George E. Green, P.E.* *Director of Engineering*	*P.O. Box 13231* *Austin, Texas 78711-3231* *(512) 463-7847 phone* *(512) 475-2053 fax*	*FONSI* *July 10, 1997*	*StepII Application, Appendix A*	*Follow the water and wastewater implementation plans as outlined in the Facility Engineering Plan and the EID.*
Texas Historical Commission, Department of Antiquities Protection	*James E. Bruseth, Ph.D.* *Deputy State Historic Preservation Officer*	*P.O. Box 12276* *Austin, Texas 78711-2276* *(512) 463-6096* *(512) 463-8927*	*Arecheological Clearance* *February 27, 1996*	*Step II Application, Appendix B*	*The City will be required to stop work if archeological sites are encountered during construction and contact the TWDB and the State Historic Preservation Officer before taking any action which would affect the cultural resources.*
Federal Emergency Management Agency, Region IV	*David Passey* *Floodplain Management Specialist*	*Federal Regional Center* *800 North Loop 288* *Denton, Texas 76201-3698* *(940) 898-5362*	*Floodplain Management Notice* *January 8, 1996*	*Step II* *Application* *Appendix A*	*None aside from following the water and wastewater implementation plans as outlined in the Facility Engineering Plan and the EID.*
Department of the Army, Corps of Engineers, Corpus Christi Regulatory Field Office	*James E. Gilmore* *Project Manager*	*5151 Flynn Parkway,* *Suite 624* *Corpus Christi, Texas 78411* *(512) 851-9134* *(512) 853-6357*	*Evaluation of Waters of the United States (including wetlands)* *August 15, 1995*	*Step II* *Application* *Appendix A*	*None aside from following the water and wastewater implementation plans as outlined in the Facility Engineering Plan and the EID. The USACE's determination is valid for 5 years.*
U.S. Environmental Protection Agency	*Myron O. Knudson, P.E.* *Director Water Management Division*	*Region 6* *1445 Ross Avenue,* *Suite 1200* *Dallas, Texas 75202-2733* *(214) 655-6641*	*NPDES* *December 1, 1993* *TNRCC* *December 4, 1995*	*Step II* *Application* *Appendix A*	*Adherence to Permit Requirements.*

3. TECHNICAL FEASIBILITY

a. Appropriate Technology.

I. Water Supply Project Component

1) Project Specifications.

The water and wastewater master planning document is the Facility Engineering Plan prepared for the TWDB in November 1995. The City of Donna has adopted this plan and the TWDB has given their approval. The plan covers a twenty year projection of water and sewer needs. While final design will be performed at a later date, the completed preliminary design actually starts final design as 5% - 10% complete.

Historical and Projected Water Demand

Historical and projected water demands for the proposed 20 year planning period are presented in **Table 3-1.** *Please note that the 1.38 Peaking Factor for the year 2000 is actually lower than the reported values for 1991 and 1993 which were 1.48 each. However, the Peaking Factor for the year 2015 will be 1.63. The year 2015 Peaking Factor does not represent an unreasonable increase over the 1.38 Peaking Factor of 2000 considering the 15 year time frame associated with this increase, the increase in the population of the Donna area, and the associated increase in the total annual usage (in gallons) of water by the population. In addition, The City of Donna should develop additional commercial and industrial growth in the future and depart from a basic residential only area. This will naturally include fluctuating demands for services, including seasonal differences.*

TABLE 3-1

HISTORICAL AND PROJECTED WATER DEMANDS

Year	Population	Total Annual Usage (gallons)	Average Daily Demand		Peak Daily Demand		Peaking Factor = Peak/Average Daily Demand
			(mgd)	(gpcd)	(mgd)	(gpcd)	
1989	*11,990*	*926,357,000*	*2.538*	*212*	*3.328*	*278*	*1.31*
1990	*12,233*	*878,941,000*	*2.408*	*197*	*3.120*	*255*	*1.30*

1991	*12,308*	*813,950,000*	*2.230*	*181*	*3.290*	*267*	*1.48*
1992	*12,483*	*780,879,000*	*2.139*	*171*	*3.070*	*246*	*1.43*
1993	*12,940*	*877,045,000*	*2.403*	*186*	*3.560*	*275*	*1.48*
1996	*13,279*	*790,311,000*	*2.195*	*165*	*2.570*	*193*	*1.17*
1997	*13,700*	*480,362,000*	*2.002*	*146*	*2.576*	*188*	*1.29*
2000	*23,214*	*1,101,500,000*	*3.018*	*130*	*4.178*	*180*	*1.38*
2015	*28,296*	*1,342,600,000*	*3.678*	*130*	*6.000*	*212*	*1.63*

Characteristics of the Production Source

The source of raw water for the proposed water treatment plant is the Rio Grande River. It is pumped from the river by the Donna Irrigation District and stored in the Donna Reservoirs adjacent to the proposed plant. Since no new water rights are available from the Rio Grande River, the City of Donna relies on an allotment from the water rights owned by the Donna Irrigation District, Hidalgo County No. 1. The current allotment is 4,670 acre-feet. After reducing this to allow for evaporation, the delivered total is 3,129 acre-feet. This City also sells potable water to Colonia Nueva Water Distribution System, Inc. and has a 1.5 mgd interconnect with North Alamo Water Supply Corporation.

Water Quality Analyses

Information regarding raw water quality from the Rio Grande River are summarized in **Table 3-2.** *High turbidity is typical of the raw water from the Rio Grande River. The City of Donna receives their raw water from the Rio Grande by way of either a canal or the Donna Reservoir. The raw water turbidity from the reservoir and the canal are generally 100 NTU and 60 NTU, respectively.*

Water Conservation Program

The Water Conservation and Emergency Water Demand Management Plan has been completed and adopted by the City of Donna in August 1995. The objective of this water conservation program is to reduce the quantity of water required within the service area by implementing efficient water use procedures. The water conservation portion of the plan involves implementing permanent water-use efficiency, while the emergency water demand management part of the plan establishes temporary methods or techniques designed to be used only as long as an emergency exists. Such water conservation plans and emergency water demand management plans are required for municipalities seeking funding under the EDAP; however, all south Texas cities are encouraged by State and County officials to develop long-term and short-term water plans like the plans prepared by the City of Donna.

Pollution Prevention Program

Since the TNRCC and the local Irrigation Districts have control of the area watershed, the City of Donna can only provide indirect pollution prevention methods. The City is responsible for controlling pollution from their water and wastewater treatment facilities and from their wastewater collection system. The treatment facilities are or will be constructed in units not allowing direct contact of the waste with the ground. The discharge from the WWTP is regulated by an EPA/TNRCC discharge permit. The City of Donna is also removing ten existing lift stations to minimize the possibility of sewage overflows in their wastewater collection system. During construction of the improvements, the contractor will be required to exercise and adhere to all required pollution prevention regulations.

TABLE 3-2

City of Donna Water Sample Results (Substitute)

Analysis Parameter	**Maximum Contaminant Level (mg/l); State**	**Maximum Contaminant Level (mg/l); Federal**	**Laboratory Detection Limit**	**Surface Water Donna 1 (D1); Reservoir**	**Surface Water Donna 2 (D2); Canal**	**Raw Water Samples (mg/l)[1]**
Inorganic Chemicals						
Antimony	*0.006*	*0.006*	*0.01*	*<0.01*	*<0.01*	*<0.0020*
Arsenic	*0.05*	*0.05*	*0.005*	*0.006*	*<0.005*	*<0.0020*
Asbestos (million fibers/liter)[2]	*7*	*7*	*NA*	*NA*	*NA*	*NA*
Barium	*2.0*	*2.0*	*0.03*	*0.12*	*0.10*	*0.1200*
Beryllium	*0.004*	*0.004*	*0.0008*	*<0.0008*	*<0.0008*	*<0.0008*
Cadmium	*0.005*	*0.005*	*0.002*	*<0.002*	*<0.002*	*<0.0001*
Chromium	*0.1*	*0.1*	*0.008*	*<0.008*	*<0.008*	*0.0049*
Cyanide (as free Cyanide)	*0.2*	*0.2*	*NA*	*NA*	*NA*	*NA*
Fluoride	*4.0*	*4.0*	*0.1*	*0.84*	*0.62*	*NA*
Mercury	*0.002*	*0.002*	*0.0002*	*0.0009*	*0.0005*	*<0.00013*
Nickel	*0.1*	*0.1*	*0.010*	*0.016*	*<0.010*	*<0.0200*
Nitrate (as Nitrogen)	*10.0*	*10.0*	*0.05*	*<0.05*	*0.63*	*NA*
Nitrite (as Nitrogen)	*1.0*	*1.0*	*0.05*	*0.08*	*0.14*	*NA*
Total Nitrate & Nitrate (as Nitrogen)	*10.0*	*10.0*	*NA*	*NA*	*NA*	*NA*

Selenium	*0.05*	*0.05*	*0.005*	*<0.005*	*<0.005*	*<0.0040*
Thallium	*0.002*	*0.002*	*0.010*	*<0.010*	*<0.010*	*NA*
Synthetic Organic Chemicals						
Alachlor	*0.002*	*0.002*	*NA*	*NA*	*NA*	*NA*
Aldicarb	*0.003*	*0.003*	*NA*	*NA*	*NA*	*NA*
Aldicarb Sulfoxide	*0.004*	*0.004*	*NA*	*NA*	*NA*	*NA*
Aldicarb Sulfone	*0.002*	*0.002*	*NA*	*NA*	*NA*	*NA*
Atrazine	*0.003*	*0.003*	*NA*	*NA*	*NA*	*NA*
Benzo (a) pyrene	*0.0002*	*0.0002*	*NA*	*NA*	*NA*	*NA*
Carbofuran	*0.04*	*0.04*	*NA*	*NA*	*NA*	*NA*
Chlordane	*0.002*	*0.002*	*NA*	*NA*	*NA*	*NA*
Dalapon	*0.2*	*0.2*	*NA*	*NA*	*NA*	*NA*
Dibromochloropropane	*0.0002*	*0.0002*	*NA*	*NA*	*NA*	*NA*
Di (2-ethylhexyl) adipate	*0.4*	*0.4*	*NA*	*NA*	*NA*	*NA*
Di (2-ethylhexyl) phthalate	*0.006*	*0.006*	*NA*	*NA*	*NA*	*NA*
Dinoseb	*0.007*	*0.007*	*NA*	*NA*	*NA*	*NA*
Diquat	*0.02*	*0.02*	*NA*	*NA*	*NA*	*NA*
Endothall	*0.1*	*0.1*	*NA*	*NA*	*NA*	*NA*
Endrin	*0.002*	*0.002*	*NA*	*NA*	*NA*	*NA*
Ethylene dibromide	*0.00005*	*0.00005*	*NA*	*NA*	*NA*	*NA*
Glyphosate	*0.7*	*0.7*	*NA*	*NA*	*NA*	*NA*
Heptachlor	*0.0004*	*0.0004*	*NA*	*NA*	*NA*	*NA*
Heptachlor epoxide	*0.0002*	*0.0002*	*NA*	*NA*	*NA*	*NA*
Hexachlorobenzene	*0.001*	*0.001*	*NA*	*NA*	*NA*	*NA*
Hexachlorocyclopentadiene	*0.05*	*0.05*	*NA*	*NA*	*NA*	*NA*
Lindane	*0.0002*	*0.0002*	*NA*	*NA*	*NA*	*NA*
Methoxychlor	*0.04*	*0.04*	*NA*	*NA*	*NA*	*NA*
Oxamyl (Vydate)	*0.2*	*0.2*	*NA*	*NA*	*NA*	*NA*
Pentachlorophenol	*0.001*	*0.001*	*NA*	*NA*	*NA*	*NA*
Picloram	*0.5*	*0.5*	*NA*	*NA*	*NA*	*NA*
Polychlorinated Biphenyls (PCB)	*0.0005*	*0.0005*	*NA*	*NA*	*NA*	*NA*
Simazine	*0.004*	*0.004*	*NA*	*NA*	*NA*	*NA*
Toxaphene	*0.003*	*0.003*	*NA*	*NA*	*NA*	*NA*
2,3,7,8 - TCDD (Dioxin)	*$3 X 10^{-8}$*	*$3 X 10^{-8}$*	*NA*	*NA*	*NA*	*NA*
2,4,5 - TP (Silvex)	*0.05*	*0.05*	*NA*	*NA*	*NA*	*NA*
2,4 - D	*0.07*	*0.07*	*NA*	*NA*	*NA*	*NA*
Volatile Organic Chemicals						
1,1 - Dichloroethylene	*0.007*	*0.007*	*NA*	*NA*	*NA*	*NA*
1,1,1 - Trichloroethane	*0.2*	*0.2*	*1.00*	*U*	*U*	*NA*
1,1,2 - Trichloroethane	*0.005*	*0.005*	*1.00*	*U*	*U*	*NA*
1,2 - Dichloroethane	*0.005*	*0.005*	*1.00*	*U*	*U*	*NA*

1,2 - Dichloropropane	*0.005*	*0.005*	*1.00*	*U*	*U*	*NA*
1,2,4 - Trichlorobenzene	*0.07*	*0.07*	*1.00*	*U*	*U*	*NA*
Benzene	*0.005*	*0.005*	*1.00*	*U*	*U*	*NA*
Carbon tetrachloride	*0.005*	*0.005*	*1.00*	*U*	*U*	*NA*
cis - 1,2 - Dichloroethylene	*0.07*	*0.07*	*NA*	*NA*	*NA*	*NA*
cis - 1,2 - Dichloroethene	*NA*	*NA*	*1.00*	*U*	*U*	*NA*
Dichloromethane (Methylene chloride)	*0.005*	*0.005*	*1.00*	*U*	*U*	*NA*
Ethylbenzene	*0.7*	*0.7*	*1.00*	*U*	*U*	*NA*
(Mono)chlorobenzene	*0.1*	*0.1*	*1.00*	*U*	*U*	*NA*
o-Dichlorobenzene	*0.6*	*0.6*	*NA*	*NA*	*NA*	*NA*
para-Dichlorobenzene	*0.075*	*0.075*	*NA*	*NA*	*NA*	*NA*
Styrene	*0.1*	*0.1*	*1.00*	*U*	*U*	*NA*
Tetrachloroethylene	*0.005*	*0.005*	*NA*	*NA*	*NA*	*NA*
Tetrachloroethene	*NA*	*NA*	*1.00*	*U*	*U*	*NA*
Toluene	*1.0*	*1.0*	*1.00*	*U*	*U*	*NA*
trans - 1,2 - Dichloroethylene	*0.1*	*0.1*	*NA*	*NA*	*NA*	*NA*
trans - 1,2 - Dichloroethene	*NA*	*NA*	*1.00*	*U*	*U*	*NA*
Trichloroethylene	*0.005*	*0.005*	*NA*	*NA*	*NA*	*NA*
Trichloroethene	*NA*	*NA*	*1.00*	*U*	*U*	*NA*
Vinyl chloride	*0.002*	*0.002*	*1.00*	*U*	*U*	*NA*
Xylenes (Total)	*10.0*	*10.0*	*1.00*	*U*	*U*	*NA*
1,1 - Dichloroethene	*NA*	*NA*	*1.00*	*U*	*U*	*NA*
Chloroform	*NA*	*NA*	*1.00*	*2.10*	*U*	*NA*
Bromodichloromethane	*NA*	*NA*	*1.00*	*U*	*U*	*NA*
Dibromochloromethane	*NA*	*NA*	*1.00*	*U*	*U*	*NA*
Bromoform	*NA*	*NA*	*1.00*	*U*	*U*	*NA*
1,4 - Dichlorobenzene	*NA*	*NA*	*1.00*	*U*	*U*	*NA*
1,2 - Dichlorobenzene	*NA*	*NA*	*1.00*	*U*	*U*	*NA*
Secondary Constituent Levels						
Aluminum	*0.05 to 0.2*	*NA*	*0.008*	*9.28*	*3.03*	*0.174*
Chloride	*300*	*NA*	*2.5*	*219*	*177*	*NA*
Color Units	*15*	*NA*	*NA*	*NA*	*NA*	*NA*
Copper	*1.0*	*NA*	*0.010*	*<0.010*	*<0.010*	*0.0026*
Corrosivity	*Non-corrosive*	*NA*	*NA*	*NA*	*NA*	*NA*
Fluoride	*2.0*	*NA*	*0.1*	*0.84*	*0.62*	*NA*
Foaming Agents	*0.5*	*NA*	*NA*	*NA*	*NA*	*NA*
Hydrogen Sulfide	*0.05*	*NA*	*NA*	*NA*	*NA*	*NA*
Iron	*0.3*	*NA*	*0.003*	*6.15*	*1.85*	*0.0639*
Manganese	*0.05*	*NA*	*0.007*	*0.091*	*0.041*	*0.0040*
Odor (Threshold Odor Number)	*3*	*NA*	*NA*	*NA*	*NA*	*NA*

pH	*>7.0*	*NA*	*NA*	*7.80*	*8.17*	*NA*
Sulfate	*300*	*NA*	*10*	*275*	*226*	*NA*
Total Dissolved Solids	*1,000*	*NA*	*5*	*838*	*780*	*NA*
Zinc	*5.0*	*NA*	*0.003*	*0.024*	*0.010*	*0.0089*
Other Parameters						
Alpha (pci/l)	*NA*	*15*	*14.7*	*7.3 ± 10*	*74 ± 18*	*NA*
Phenolphthalein Alkalinity	*NA*	*NA*	*NA*	*0*	*0*	*NA*
Radium (Total; 226 + 228)	*NA*	*5*	*1.4*	*1.9 ± 0.9*	*0.6 ± 0.6*	*NA*
Sodium	*NA*	*NA*	*0.05*	*187*	*154*	*NA*
Specific Conductance (µmhos/cm)	*NA*	*NA*	*1.0*	*1,430*	*1,260*	*NA*
Silver	*NA*	*NA*	*0.05*	*<0.05*	*<0.05*	*<0.0100*
Alkalinity (Bicarbonate $CaCO_3$)	*NA*	*NA*	*NA*	*93*	*104*	*NA*
Hardness ($CaCO_3$)	*NA*	*NA*	*NA*	*344*	*296*	*NA*
Calcium (Hardness $CaCO_3$)	*NA*	*NA*	*0.01*	*106*	*84.8*	*NA*
Magnesium (Hardness $CaCO_3$)	*NA*	*NA*	*0.05*	*19.4*	*20.4*	*NA*
Herbicides - Drinking Water						
2,4 - D	*NA*	*NA*	*0.005*	*<0.005*	*<0.005*	*NA*
2,4,5 - TP Silvex	*NA*	*NA*	*0.001*	*<0.001*	*<0.001*	*NA*
Priority Pollutants/Pesticides						
A-BHC	*NA*	*NA*	*D1 = 0.04, D2 = 0.02*	*<0.04*	*<0.02*	*NA*
B-BHC	*NA*	*NA*	*D1 = 0.04, D2 = 0.02*	*<0.04*	*<0.02*	*NA*
D-BHC	*NA*	*NA*	*D1 = 0.04, D2 = 0.02*	*<0.04*	*<0.02*	*NA*
G-BHC	*NA*	*NA*	*D1 = 0.04, D2 = 0.02*	*<0.04*	*<0.02*	*NA*
Aldrin	*NA*	*NA*	*D1 = 0.04, D2 = 0.02*	*<0.04*	*<0.02*	*NA*
Chlordane	*NA*	*NA*	*D1 = 0.15, D2 = 0.10*	*<0.15*	*<0.10*	*NA*
4,4' - DDD	*NA*	*NA*	*D1 = 0.08, D2 = 0.04*	*<0.08*	*<0.04*	*NA*
4,4' - DDE	*NA*	*NA*	*D1 = 0.08, D2 = 0.04*	*<0.08*	*<0.04*	*NA*
4,4' - DDT	*NA*	*NA*	*D1 = 0.08, D2 = 0.04*	*<0.08*	*<0.04*	*NA*
Dieldrin	*NA*	*NA*	*D1 = 0.08, D2 = 0.04*	*<0.08*	*<0.04*	*NA*
Endosulfan I	*NA*	*NA*	*D1 = 0.08, D2 = 0.04*	*<0.08*	*<0.04*	*NA*
Endosulfan II	*NA*	*NA*	*D1 = 0.08, D2 = 0.04*	*<0.08*	*<0.04*	*NA*
Endosulfan Sulfate	*NA*	*NA*	*D1 = 0.08, D2 = 0.04*	*<0.08*	*<0.04*	*NA*
Endrin	*NA*	*NA*	*D1 = 0.08, D2 = 0.04*	*<0.08*	*<0.04*	*NA*
Endrin Aldehyde	*NA*	*NA*	*D1 = 0.08, D2 = 0.04*	*<0.08*	*<0.04*	*NA*
Endrin Ketone	*NA*	*NA*	*D1 = 0.08, D2 = 0.04*	*<0.08*	*<0.04*	*NA*
Heptachlor	*NA*	*NA*	*D1 = 0.04, D2 = 0.02*	*<0.04*	*<0.02*	*NA*
Heptachlor Epoxide	*NA*	*NA*	*D1 = 0.04, D2 = 0.02*	*<0.04*	*<0.02*	*NA*
Methoxychlor	*NA*	*NA*	*D1 = 0.40, D2 = 0.20*	*<0.40*	*<0.20*	*NA*
Toxaphene	*NA*	*NA*	*D1 = 1.00, D2 = 0.50*	*<1.00*	*<0.50*	*NA*
PCB - 1016	*NA*	*NA*	*1.00*	*<1.00*	*<1.00*	*NA*
PCB - 1221	*NA*	*NA*	*1.00*	*<1.00*	*<1.00*	*NA*

PCB - 1232	*NA*	*NA*	*1.00*	*<1.00*	*<1.00*	*NA*
PCB - 1242	*NA*	*NA*	*1.00*	*<1.00*	*<1.00*	*NA*
PCB - 1248	*NA*	*NA*	*1.00*	*<1.00*	*<1.00*	*NA*
PCB - 1254	*NA*	*NA*	*1.00*	*<1.00*	*<1.00*	*NA*
PCB - 1260	*NA*	*NA*	*1.00*	*<1.00*	*<1.00*	*NA*

Notes:

1) Detection limits for Raw Water Samples may not be consistent with the Surface Water Samples.

2) Asbestos fibers longer than 10 µm (micrometers).

Legend:

NA Not Applicable

mg/l milligrams per liter

pci/l pico curries per liter

µmhos/cm micromhos per centimeter

U Compound analyzed but not detected. The reported value is the minimum attainable detection limit for the sample.

Energy Efficiency

The high service (finished water) and low service (raw water) pumps consume most of the energy in a water plant. The site of the proposed water treatment plant is adjacent to the Donna Irrigation District raw water conveyance canal and is at a lower elevation than the canal. The preliminary water treatment plant design is for raw water to be conveyed from the canal to the plant intake by gravity, eliminating the need for raw water pumps. This will reduce energy consumption at the plant. High efficiency pumps and motors will be specified for the high service pumps that supply water to the distribution system. Wire-to-water efficiencies of approximately 75 percent are possible for the high service pumps.

Well-Head Protection Program

The City of Donna does not currently utilize groundwater and there are no plans to supplement surface water supplies with groundwater in the future. Therefor, a well-head protection program is not required.

Transportation and Distribution Infrastructure

The source of the raw water supply is the Rio Grande River. The raw water is transported by a pumping station, located at the river south of Donna, to a concrete lined canal that discharges to the Donna Reservoir. Another raw water pump station, which also has a backup power source, pumps into the canal that will supply raw water to the new WTF. All of these raw water facilities are owned and operated by the Hidalgo County Irrigation District No.1.

The City of Donna's existing and proposed water distribution system includes the location of lines to connect the new water treatment facility to the distribution system. The completed water distribution network will be supplemented with a total of three elevated water storage tanks (two existing and one proposal). These, together with the WTF high service pump station, provide four strategically located points of water supply volume to the distribution infrastructure.

Type and Capacity of the Water Treatment Plant

The plant will incorporate conventional treatment technologies, similar to the majority of surface water treatment plants currently operating in the Lower Rio Grande Valley.

The following types of flocculation and settling equipment are being evaluated:

- *Straight-flow flocculation and sedimentation basins that provide six hours of settling time*
- *Straight-flow flocculation and sedimentation basins with plate or tube settlers that provide two hours of settling time*
- *Reactor/clarifiers that combine both processes in a single basin and provide two hours of settling time*

The preliminary design parameters for the proposed water treatment plant components are presented in **Table 3-3.**

TABLE 3-3

WATER TREATMENT PLANT PRELIMINARY DESIGN CRITERIA

Design Parameters	Units	Proposed Design Value	TNRCC Design Criteria
Plant Capacity	*mgd*	*4.5*	*For total plant capacity: 0.6 gpm/connection*
Number of Service Connections		*7000*	
Design Peak Flow (Max Day)	*mgd*	*4.5*	
Interconnect	*mgd*	*1.5*	
Raw Water Pumping Capacity		*Not Required*	*0.6 gpm/connection with largest pump out of service*
Coagulation			
Number of Flash Mixers		*2*	*2 minimum*

Flocculation Basins		*2*	*2 minimum*
Design Peak Flow Per Reactor	*mgd*	*2.25*	
Sedimentation			
Number of Reactors		*2 - 4*	
Type		*Rectangular*	
Design Peak Flow Per Reactor	*mgd*	*2.25*	
Detention Time at Max Day Flow	*hours*	*2 or 6*	*6 hours, conventional* *2 hours, solids contact*
Weir Overflow Rate	*gpd/ft*	*15,000*	*15,000 to 20,000 gpd/ft*
Side Water Depth	*ft*	*12ft - 15ft*	
Filtration Capacity	*mgd*	*4.5*	
Number of Units		*4 to 8*	
Type		*Mixed Media, Gravity*	
Filtration Rate	*gpm/sf*	*5.0*	*Less than or equal to 5.0 gpm/sf*

Sensitivity Analysis

The major technical items of concern regarding the City of Donna water system are the raw water supply and finished water quality. Since the water supply is from the Rio Grande River, the source is subject to drought conditions and contamination. Drought conditions would severely limit the amount of water available to the WTF. This is being curtailed by the implementation of water conservation plans by most Texas Valley Cities, including the City of Donna. If a toxic spill or other contaminant intrusion occurred in the Rio Grande River, raw water intakes would be closed until the substance was no longer present. This concern is partially alleviated by the finished water storage facilities in the water service area. The City of Donna has two existing elevated water storage tanks and a third tank is proposed for this project. The water stored in these tanks could last a few days, if such an event occurred.

2) Technical Process.

The proposed water system improvements will incorporate conventional technologies. The technologies selected for final design and construction will be selected based on their relative ranking when evaluated using the following criteria:

- *Protection of public health*
- *Regulatory compliance*
- *Their effect on the urban and natural environments*
- *Cost effectiveness*
- *Ease of operation*
- *Ease of maintenance*

II. Wastewater Treatment Project Component

1) Project Specifications.

Wastewater Quantity

The existing Donna wastewater treatment plant has a capacity of 2.3 mgd. The design flow for the year 2015 is 2.7mgd. Therefore, the capacity of the plant will be increased 0.4 mgd.

Wastewater Quality

The five year average influent and effluent monitoring reports indicate the following:

Influent Effluent

BOD_5 = 236 mg/l BOD_5 = 8.46

TSS = 168 mg/l TSS = 11.37

Industrial Wastewater Pretreatment

Since the City does not have a significant industrial user base, industrial wastewater reduction and pretreatment programs are not applicable.

Present and Future Service Area

The area served by the existing wastewater collection system is completely within the City of Donna city limits. The future service area includes the Colonias located south, east, and west of the city limits.

Topographical Considerations

Donna and its surrounding area is generally flat, sloping gently from the northwest to the southeast. Natural ground elevations in the facility planning area range from 95 to 80 feet mean sea level over a distance of approximately 4.2 miles. Due to the relatively flat terrain, some deep sewers may be required. In areas with high ground water, infiltration and inflow can also be a problem, however, the typical depth to groundwater in the Donna area is around 30 feet.

Lift Stations

The City of Donna currently uses Eco Resources, a utility operating company, to operate the existing wastewater treatment plant and thirteen existing lift stations. The maintenance records supplied by Eco Resources indicate that all of the lift stations require significant rehabilitation and repair work and most require immediate attention to reduce or eliminate health and safety concerns. The primary concerns with the lift stations are listed below:

- *Many are undersized*
- *Stand-by pumps are missing or inoperable*
- *Inadequate ventilation*
- *Faulty electrical control systems*
- *Poor security conditions*
- *Health and safety concerns, including odors.*

Efforts to eliminate specific lift stations with gravity sewer interceptors will eliminate many problems associated with the City's existing trunk lines. This will also reduce operation and maintenance costs associated with the lift stations. Replacing specific lift stations with interceptor gravity lines requires additional capital costs to implement, but is more cost effective over the life of the system. The proposed sewage collection system will be designed using six lift stations over the entire planning area. Numerous advantages exist in eliminating up to 10 of the existing lift stations. Gravity systems, in lieu of lift stations, are much more cost effective and energy efficient. The new lift stations will be able to handle increased capacities without the numerous health and safety problems which exist at the existing lift stations today. Noxious odors will be minimized from these stations. Money spent on items such as daily inspections, telephone line charges, alarms and associated maintenance costs will be eliminated or minimized once the new gravity sewers are constructed.

Wastewater Treatment Plant

The existing wastewater treatment plant consists of the following unit processes and facilities:

- *Headworks: manually cleaned bar screen and grit collector*
- *Aeration: Two - 1.15 MGD aeration basins*
- *Clarifiers: One - 70' diameter final clarifier*

  Two - 54' diameter final clarifiers
- *Aerobic Digester: One - 54' wide x 110' long Aerobic Digester*
- *Return Activated Sludge Pump Station*
- *Supernatant Return Sludge Pump Station*
- *Sludge Thickener: One - 22' diameter gravity sludge thickener*
- *Chlorination & Dechlorination: 32' long x 21' wide Contact Chamber*
- *Sludge Lagoons*

Improvements to the existing wastewater treatment plant include expanding the treatment capacity from 2.30 to 2.70 mgd, adding a sludge dewatering unit process, improving the decant operation of the sludge digesters, adding a mechanically cleaned bar screen and new grit chamber and adding an influent lift station.

Appropriate technologies for screening include cylindrical fine screens and climber screens. Grit chambers can be aerated channels or vortex-type degritters. Type of material is an important consideration for equipment located at the plant headworks. Stainless steel screens are appropriate to minimize corrosion.

Sludge Management

The existing sludge management system consists of aerobic digestion of secondary sludge with disposal at TNRCC approved land application sites. The current method of sludge disposal will be discontinued with the proposed sludge handling system.

Proposed improvements include modifying the aerobic digesters and adding sludge dewatering as a unit process. The current operation of the aerobic digesters consists of lowering pumps into the digester basin in order to decant supernatant and return the supernatant to the head of the plant. The digesters will be modified to eliminate the need for pumps to decant the basin. Downward opening slide gates will be installed, and during decant operation the gates will be lowered and the decant will flow by gravity back to the influent lift station. Sludge drawn off of the aerobic digesters will be pumped to the dewatering unit for dewatering. The use of sludge drying beds for processing is limited due to the unavailability of land at the existing WWTP site.

Mechanical dewatering or sludge drying beds are effective technologies for dewatering sludge. Mechanical sludge is the more expensive option; however, it requires significantly less area and, if operated properly, is easier to operate. The dewatered sludge will be transported by a permitted sludge hauler or to a permitted landfill for ultimate disposal.

Sludge production is based on the five year average BOD_5 calculated below:

The current sludge rate is calculated below assuming 15% reduction in volume during aeration and 50% reduction in volume during digestion.

The existing sludge production rate is approximately 1800 lbs of sludge per day.

The required capacity of the proposed wastewater treatment facility is 2.70 MGD. The projected sludge production is calculated below:

At this rate, the amount of sludge to be disposed of is approximately 2100 lbs/day.

Infiltration and Inflow

Infiltration and inflow are not generated in sufficient quantities to be considered in this analysis.

Energy Efficiency

The selection of equipment at the WWTP and the lift stations (also for the WTF), will include an analysis of percent efficiency of electrical motors and pump performance. Only those pumps and motors that operate at their maximum efficiency with given operational conditions, will be specified on the project. In addition to efficiency ratings, the design will take advantage of the area topography. By installing gravity sewer interceptors as a collection system "backbone", up to ten existing lift stations are to be eliminated. At the WTF, topography will also allow gravity flow of raw water from the canal through the plant without installing a raw water pump station.

Sensitivity Analysis

The major technical concerns for wastewater treatment is the discharge of poorly treated effluent from the WWTP and overflows within the sewage collection system. Environmental and health impacts would result if improperly treated sewage was released to the water courses in the area and eventually all the way downstream. Proper operation and maintenance and providing the improvements at the WWTP that are proposed will practically eliminate this concern.

Overflows within the collection system are typically caused by malfunctioning lift stations. This project has targeted ten existing lift stations for removal. The existing collection system has 13 lift stations, while the new expanded collection system operates with only 6 lift stations.

2) Technical Process.

The facilities and improvements proposed for expansion of the City's water and wastewater systems and other related projects are consistent with good engineering practice. The minimal standards for the design and construction of water and wastewater systems established by the Texas Natural Resource Conservation Commission (TNRCC) will be strictly followed. This compliance will be assured through the submittal of all plans and specifications to the TNRCC or TWDB for their review and approval. The project will utilize proven technology for water treatment and distribution and wastewater treatment and collection. The expansion of the water distribution and wastewater collection systems will be constructed of PVC materials which offers the necessary durability and affordability required for a project of this nature. In addition, proven mechanical technologies (including design methods for valve and piping placement, system compatibility and flexibility, and treatment component integration) and electrical technologies (including alarm systems, automatic and remote monitoring of facility operations, and power conservation through improved design) will be utilized to allow the proposed facilities to be operated with the minimum consumption of resources while providing maximum treatment capabilities.

The facilities proposed for expansion of the existing water treatment plant and the treatment process to be used are consistent with those currently employed. Expansion of this existing facility using technologies which are currently in use will reduce the cost of operator training. Also, the use of elevated storage to maintain water pressure is consistent with TNRCC policy concerning water distribution. All construction related to this proposed project will be done in strict accordance to industry standards and in accordance with a quality assurance program established in the contract documents.

b) Operation and Maintenance Plan.

The construction contract documents will require the contractor, through the equipment supplier, to provide training to the City's water and sewer operators. Also, the contract documents will require the contractor to supply the City with operation and maintenance manuals. The costs for these programs are included in the estimated construction costs. The requirement for training of personnel and supplying operation and maintenance manuals will be clearly defined in the contract documents and the technical specifications.

Through its contracted operator, ECO Resources, Inc., the City will continue to implement its program of operation and maintenance to promote the long term function of the proposed facilities. Since the proposed new facilities will employ technologies and equipment similar to those currently utilized by the City, the existing operation and maintenance program will be implemented once construction is complete. The operation, maintenance, and training, programs that have been put in place by ECO Resources, is included in the Appendix.

1) Start-Up Operation Plan.

As mentioned earlier, the construction phase will include quality control monitoring and will lead up to final inspections and testing prior to project acceptance. The quality control program will act as a vehicle for close communication between the City and the contractors and will enable for a smooth start-up and operation of the proposed facilities. A quality control program and operating manual should enable quick resolution of any potential problems should they occur. Wastewater improvement will be tested with clear water before sewage is allowed entrance.

2) Contingency Plan.

The construction contract documents will provide for a one year warranty period for workmanship and materials. Should there be a need for follow-up corrective measures to be taken, the contractor will be contacted immediately. Generally, original equipment problems with workmanship and materials will be apparent within the construction one year guarantee period. After that the City of Donna will control repairs which will be easily incorporated into their Operation and Maintenance program.

The proposed facilities will be designed to provide system flexibility and redundancy, including pipe and valve configuration and back up power and treatment systems, which will allow the City to continue to operate them should a contingency program be needed. This design will give the City's contract operator the flexibility to bypass systems or reroute processes to alternate treatment routes and supply power and treatment chemicals to the system should it be required. The intent of this design is to allow the City to treat and supply potable water to and collect wastewater from residents should emergency situations arise. Although a contingency program for every emergency situation cannot be developed, the proposed systems will be able to function as designed during foreseeable emergency situations.

3) Safety Plan.

The safety plan for operation and maintenance of the equipment included in the proposed projects includes initial training by the contractor/equipment supplier, certification through state agencies for operation of the equipment, and regular routine refresher courses required by the State for each operator. During construction, the contractor will provide his employees with a site specific health and safety plan.

Through its contracted operator, the City will continue to implement its existing safety program to reduce the potential for accidents during operation of the facilities. Since the proposed new facilities will employ technologies and equipment similar to those currently utilized by the City, the existing safety program will be implemented once construction is complete.

4) Quality Assurance Plan.

During design, City of Donna staff will have extensive input into the specification of products to be used on the project to assure consistency to approved local standards. The design documents will set up a process for shop drawing submittal to verify product quality prior to installation. The City, with the assistance of its' contracted design and construction consultants, will provide construction administration and inspection of the proposed facilities to assure quality conformance to project specifications by the contractor. The City will prepare a list (punchlist) of items to be corrected by the construction contractor and require him to correct these items before final approval will be given. As the project nears completion, the City will hold a final inspection with the contractor.

5) Pollution Prevention Plan.

A detailed pollution prevention plan will be prepared prior to construction of the proposed facilities. This plan will be consistent with federal, state, and local regulations concerning the prevention of pollution and the steps necessary to reduce the potential for pollution from construction activities. This plan will identify the pollutants of concern during construction of the project and the methods necessary to prevent contamination. All contractors will be required to understand the requirements of this plan and be responsible for it's implementation.

Pollution prevention during operation of the proposed facilities will be handled through the state and federal permits which control the operation of water and wastewater treatment facilities. In addition, the City, with the assistance of its contracted operator, will continue to implement its existing pollution prevention program to reduce the potential for pollutant release during operation of the facilities. Since the proposed new facilities will employ technologies and equipment similar to those currently utilized by the City, the existing pollution prevention program will be implemented once construction is complete.

c. Compliance with Applicable Design Regulations and Standards.

The proposed water and wastewater infrastructure projects will be located only in the United States and therefore be governed by U.S. design regulations and standards. The regulations of the following agencies will be utilized:

AgencyApprovals/Permits Required			
Texas Water Development Board	*Sam G. Angoori, P.E.*	*P.O. Box 13231 Austin, Texas 78711 (512) 475-2075 phone (512) 475-2053 fax*	*Approval of all plans and specifications. Approvals are in progress pending the final design work for this project.*
Texas Natural Resource Conservation Commission	*Joseph L. Strouse, P.E.*	*P.O. Box 13087 Austin, Texas 78711 (512) 239-6960 phone*	*Approval of WTF plans and specifications in conjunction with the TWDB. These*

		(512) 239-6972 fax	*approvals are in progress pending the final design work for this project. Approval of the WWTP discharge permit is tentatively scheduled for August, 1998.*

4. FINANCIAL FEASIBILITY AND PROJECT MANAGEMENT

a. Financial Feasibility.

1) Financial Statements - Historical. *Bound copies of the City of Donna's audited financial statements for fiscal years 1992, 1993, 1994, 1995, and 1996 were submitted to the Commission staff as a part of the this application and are incorporated herein by reference. Each of the financial statements includes the following:*

- *Balance sheet*
- *Income statement*
- *Statement of sources and uses of funds*
- *All accompanying footnotes*
- *Auditor's report*

2) Financial Statements - Pro Forma. *The City of Donna's pro forma financial statement with income projections extending throughout the life of the loan was submitted to the Commission staff and is incorporated herein by reference.*

A sources and uses statement for the project being financed is presented within this section; Table 4-1 including estimated construction costs, administrative expenses and financing costs. These statements reflect constant values. The projected annual revenue streams, net of the costs of effective operations and maintenance, are in the range of 1.2 to 2.0 times the project's annual debt service requirements.

TABLE 4-1

SOURCES AND USES STATEMENT FOR THE PROJECT BEING FINANCED

Sources (Debts & Grants)	Water		Sewer		Water/Sewer	Total
	EDAP	Non-EDAP	EDAP	Non-EDAP	NADBank	
Combination Tax & Revenue Certificates of Obligation, Series 1997		*$6,795,000*				*$6,795,000*
Combination Tax & Revenue Certificates of Obligation, Series 1997-A				*$2,775,000*		*$2,775,000*
EDAP - Water Grant	*$4,950,000*					*$4,950,000*
EDAP - Wastewater Grant			*$5,125,000*			*$5,125,000*
NADBank (BEIF Grant)					*$2,000,000*	*$2,000,000*
NADBank (Interest Transition Assistance)					*$2,200,000*	*$2,200,000*
Total Sources	*$4,950,000*	*$6,795,000*	*$5,125,000*	*$2,775,000*	*$4,200,000*	*$23,845,000*
Uses						
Administration	*$20,000*	*$25,000*	*$19,000*	*$11,000*	*$30,000*	*$105,000*
Construction	*$3,250,000*	*$4,430,000*	*$3,820,000*	*$1,760,000*	*$1,500,000*	*$14,760,000*
Engineering	*$256,000*	*$415,000*	*$321,000*	*$142,000*	*$140,000*	*$1,274,000*
Contingencies	*$480,000*	*$630,000*	*$592,000*	*$230,561*	*$165,000*	*$2,097,561*
Permit Application	*$11,000*	*$5,000*	*$17,000*	*$8,000*		*$41,000*
Geotechnical Investigation	*$22,000*	*$18,000*	*$20,000*	*$5,000*		*$65,000*
Surveying	*$105,000*	*$20,000*	*$70,000*	*$30,000*	*$60,000*	*$285,000*
O & M Manuals	*$10,000*	*$30,000*	*$20,000*	*$20,000*		*$80,000*
Construction Inspection	*$50,000*	*$100,000*	*$80,000*	*$30,000*	*$75,000*	*$335,000*
Material Testing	*$45,000*	*$35,000*	*$40,000*	*$15,000*		*$135,000*
Water Rights	*$590,000*					*$590,000*
Land	*$71,000*	*$34,000*	*$85,000*	*$15,000*	*$15,000*	*$220,000*
Legal & Bond Counsel		*$20,000*		*$10,000*	*$15,000*	*$45,000*

Financial Advisor	*$40,000*	*$44,000*	*$41,000*	*$32,000*		*$157,000*
Bond Issuance Fees		*$3,725*		*$3,000*		*$6,725*
Loan Origination Fee				*$61,064*		*$61,064*
Capitalized Interest		*$985,275*		*$402,375*		*$3,587,650*
Total Uses	*$4,950,000*	*$6,795,000*	*$5,125,000*	*$2,775,000*	*$2,000,000*	*$23,845,000*

Financial Structure of the Project.

Total project costs for the proposed water and wastewater improvements are estimated to be $23,845,000, which includes Transition Interest Assistance. The financial projections assume that the City of Donna obtains the funding from the Texas Water Development Board (TWDB) and the North American Development Bank (NADBank), while attaining the projected level of sales volume. The financial structure of the project is summarized in **Table 4-2.**

TABLE 4-2

FINANCIAL STRUCTURE

Funding Agency	Amount of Grant Dedicated to Project	Amount of Loan Dedicated to Project	Percent of Total Project
Texas Water Development Board			
Combination Tax and Revenue Certificates of Obligation, Series 1997		*$6,795,000*	*28.5 %*
Combination Tax and Revenue Certificates of Obligation, Series 1997-A		*$2,775,000*	*11.6 %*
EDAP-Water Grant	*$4,950,000*		*20.8 %*
EDAP – Wastewater Grant	*$5,125,000*		*21.5 %*
Total: Texas Water Development Board	**$10,075,000**	**$9,570,000**	**82.4 %**
NADBank			
EPA – BEIF Grant	*$2,000,000*		*8.4 %*
Transition Fund (Interest Assistance for 7 Years)	*$2,200,000*		*9.2 %*
Total: NADBank	**$4,200,000**		**17.6 %**
Total Project Funding	**$14,275,000**	**$9,570,000**	**100%**

4) Capital Improvement Plan/Budget.

The City's 20-year plan for water and wastewater system capital improvements was submitted to the Commission staff as part of this application and the tables are incorporated herein by reference.

Engineering design costs for the proposed project will be approximately $0.70 million per quarter. Related engineering construction costs will be approximately $0.07 million per quarter. Project construction costs will be approximately $3.8 million per quarter.

Design of the project is scheduled to begin in October, 1997. It is estimated that project-engineering design will be completed within 6 months of the notice to proceed. A construction completion date has been set for 12 months after award of contract. The various sub-projects within the proposed project will be designed concurrently. A similar schedule is proposed for construction. Some of the smaller projects will begin construction before the larger projects; however, the proposed schedule calls for completion of all projects in 1999.

5) Operations & Maintenance Budget - Historical.

Bound copies of the City of Donna's operation and maintenance budgets for fiscal years 1989 through 1996 are included on page 105 of the City's 1996 audited financial statement that accompanies this application and are incorporated herein by reference.

6) Operations & Maintenance Budget - Pro Forma.

A pro forma operation and maintenance budgets in constant (1996) values for the entire loan term is provided were submitted to the Commission staff and are incorporated herein by reference; O&M budget totals exclude depreciation. The annual operations and maintenance budgets for 1997 through 2017 include a fund allocation for the following expense categories: water distribution, sewage collection, sewage treatment, utility collection, water treatment, administrative activities, planning and development, interest and other items, ECO management fee, operating transfers out, and equipment replacement.

In 1995, a Phase I Facilities Engineering Plan prepared for the City determined that the average annual operation and maintenance cost of the City's water and wastewater facilities was $1,249,231 or approximately $384 per connection (approximately 3,253 connections). In 1996, the average annual O&M budget was $1,380,632 or approximately $413 per connection (approximately 3,343 connections). In 1997, the average annual O&M budget was $1,459,052 or approximately $424 per connection (approximately 3,441 connections). In 1998, the average annual O&M budget will be approximately $1,798,991 or approximately $415 per connection (approximately 4,335 connections). In 1999, the average annual O&M budget will be approximately $1,877,411 or approximately $421 per connection (approximately 4,459 connections). In terms of 2000 dollars, the average annual O&M budget will be approximately $2,034,251 or approximately $444 per connection. Although the City is expanding it's existing water and wastewater treatment facilities, the per connection cost for operation and maintenance is not anticipated to increase significantly.

7) Sensitivity Analysis.

An analysis of the financial impacts of this project was conducted. Essentially, this analysis reviewed the economic factors in the region, which might affect the City of Donna's timetable for repaying the requested loan.

The critical variables that could affect the project include the following:

- *Final approval and securing of grants and loans from the TWDB*

- *City of Donna water and sewer fund revenues*
- *Interest rate fluctuations prior to securing the TWDB loans*
- *Currently unforeseen environmental issues*
- *Higher than anticipated construction costs due to unusually high near term inflation*

According to the Donna City Attorney, there are not legal impediments to the City of Donna, which would prevent the City from undertaking long-term financial obligations at this time.

8) Financial Break-Even Analysis.

A break-even analysis for the City of Donna was performed as part of this application. An analysis of the existing operational and maintenance costs for the City (including existing and future revenues from water and wastewater users, and future project operation and maintenance costs) were investigated to determine the pay-back period for the NADBank loan.

A financial break-even analysis for the project is provided within the application information and is incorporated herein by reference.

9) Demographic and Economic Information of the Proposed Service Area.

Improved infrastructure and environmental conditions in the region will offer a more attractive setting for economic development. This increase in economic development means increased revenues for public entities from sales and property taxes.

The short-term economic impacts from implementing the proposed project includes the cost of connecting each residence and the affected area to the existing municipal water distribution and wastewater collection facilities. This cost will be borne by each household that initiates water and sewer service. This impact will be a one-time expense and will be supported through user fees.

Long-term impacts from implementing the proposed project include residential and commercial growth. The proposed improvements should increase the value of existing property which, when coupled with a projected growth in residential and commercial development, will provide a larger tax base for the City and allow for the users to better afford the operation and maintenance costs required to insure the project's long-term sustainable development.

The residents of the colonias, totaling approximately 4,344 in 1995, will realize the largest short-term benefit from the proposed improvements. All residents within the City and the colonias will receive short-term and long-term benefits from the proposed construction as their water and wastewater service will improve, and the increased tax revenues will allow the City to better serve it's residents with environmentally sound facilities long into the future.

b. Fee/Rate Model.

1) Fee/Rate Schedules - Historical.

Historical rate schedules were submitted as part of this application and the information is incorporated herein by reference.

2) User Fee Structure.

The City of Donna has already increased their water and sewer rates to cover O&M, existing debt service, and proposed debt service. Another rate increase is not required. The City of Donna used the following steps to institute the current user fee schedule:

- *First publication notifying the public, in a newspaper of general circulation in the area, at least three days prior to first public meeting.*
- *First public meeting and first reading by City Council*
- *Second publication notifying public of second public meeting at least fifteen days after first reading.*
- *Second public meeting and second reading by City Council.*
- *City Council determines effective date.*

The current water and sewer rate schedule covers operation and maintenance costs, which includes equipment replacement, and existing and future debt service. The pro forma schedules were submitted to the Commission as part of this application and the information is incorporated herein by reference. **Table 4-3** *shows the current minimum bill based on the water meter size. In addition, to the minimum charge, a usage charge based on gallons consumed is added to the monthly bill*

TABLE 4-3

Water Rates

Charge (USD)		
Meter Size	**Inside**	**Outside**
¾ in	*12.00*	*20.00*
1 in	*15.00*	*21.00*
1 ½ in	*36.00*	*55.00*
2 in	*46.00*	*70.00*
3 in	*65.00*	*100.00*
4 in	*85.00*	*130.00*
6 in	*140.00*	*210.00*
8 in	*500.00*	*326.00*
	Cost / 1,000 gallons	
Type of Connection	**0 - 20,000**	**20,000 - up**
A1 Single Residence	*1.55*	*1.80*

A2 Commercial	*1.90*	*2.20*
A3 Outside	*2.25*	*2.80*
A4 Water Retailer	*2.70*	*3.40*

c. Project Management.

1) Organizational Structure.

The City of Donna's organizational chart showing key personnel and departments was submitted as part of this application and the information is incorporated herein by reference.

2) Institutional Capacity and Legal Framework.

The City Attorney's opinion on the status of the current operations regarding technical and administrative functions and legal framework was submitted as part of this application and the information is incorporated herein by reference. The City Attorney's opinion demonstrates that the City of Donna is legally empowered to undertake long-term loan obligations and to use assets or cash-flow as financial guarantees. The City Attorney has identified no legal issues that could impede the project's progress.

5. COMMUNITY PARTICIPATION

a. Comprehensive Community Participation Plan.

1) Local Steering Committee. *The public has been and will continue to be meaningfully engaged in this water and wastewater infrastructure improvement project during both the development and implementation phases. Comments from concerned citizens, regulatory agencies, and City officials have already contributed significantly to the success of this project.*

A local steering committee, made up of individuals from a variety of organizations within the Donna area, will continue to assist the City with the development and implementation of the Comprehensive Community Participation Plan for this project. To the extent possible, steering committee representatives have been and will continue to be responsible for developing outreach activities, conducting surveys of public support, disseminating information about the project, engaging public participation in the process, developing public education and media campaigns, attending public meetings, preparing minutes, and soliciting public support for this project within Donna and the surrounding colonias.

The purpose of the steering committee is to gauge the response of the public concerning the proposed project. This committee, comprised of a diverse group of Donna area business and community leaders, has been and will continue to be involved in the decision making process by offering suggestions to local officials concerning potential environmental and economic impacts resulting from the construction and implementation of the proposed project. This committee will also be responsible for developing methods to further involve the public in the project as well as soliciting public support for this water and wastewater infrastructure improvement project. The steering committee members include, but are not limited to, the following individuals:

- *Estela Villegas - Representative for the Community Organizations*
- *Lucy Bravo - Representative for the Chamber of Commerce*
- *Ed Alvarado - Representative for Local Businesses*
- *Mayor Hilda Adame - Representative for the City of Donna*
- *Elida Herrera - Representative for the Colonias*

The local steering committee will continue routine progress meetings so the City can continue to keep local businesses and area residents informed as to the status of this project.

Members of the BECC Board of Directors, Advisory Council, and/or staff are welcomed to participate, where appropriate, in the implementation of this Comprehensive Community Participation Plan to ensure compliance with the Community Participation criteria.

2) Meetings with Local Organizations. *The City of Donna has met with and will continue to meet with local organizations affected by the project to provide information on and develop support for this project.*

Through the local steering committee and Public Meetings, a communication link between the City and local business leaders, civic leaders, community leaders, and neighborhood organizations has been established. The City has encouraged individual meetings with these organizations to develop a better understanding of the local perception of this water and wastewater infrastructure project. This coordination has allowed the City to develop the proposed project in a manner which will achieve the maximize benefits to all residents, businesses, and organizations within the Donna city limits and surrounding colonias.

During the preparation of the Donna Environmental Improvement Plan, prepared by the City under the Border XXI Community Grants Program, two public meetings were held in Donna. The purpose of this project and these public meetings was to discuss environmental issues surrounding Donna as well as areas between Donna, Texas, and Rio Bravo, Tamaulipas, Mexico, located south of Donna. This transboundary study therefor focused on environmental issues on both sides of the U.S./Mexico border, especially common areas of environmental concern such as the Rio Grande River.

Public meetings pertaining to this Border XXI transboundary study were held at the Donna City Hall on December 5, 1995 and September 16, 1996. Approximately 30 City officials from Rio Bravo, Mexico attended the December 5th meeting in Donna in which the presentation for this Border XXI transboundary study was given in both English and Spanish. Overall, the identification of environmental concerns for the area ranging from Donna, Texas, to Rio Bravo, Mexico, was well received at both public meetings by officials on both sides of the U.S./Mexico border as well as Donna area residents.

3) Public Access to Project Information. *The City of Donna made the Step II project proposal (in the form of the Facility Engineering Plan, the EID, and Step II application) available to the public 30 days before the Public Meeting held on October 8, 1997. This information has been and will continue to be made available at the Donna City Hall which is a publicly accessible location; this information is available for public review during and after work hours (8:00 am until 5:30 p.m.) Monday through Friday. The availability of the project information was also disclosed in the public meeting notices. Other avenues in which to distribute project information such as providing copies to the local steering committee, will continue to be conducted.*

During development of the EID, a Public Hearing was held to discuss the environmental impacts resulting from the implementation and operation of this proposed water and wastewater infrastructure improvement project. During this meeting, the City and their environmental consultant, Rust Environment & Infrastructure, presented a discussion of the scope of the project and the potential environmental impacts to the Donna area should the project be implemented. Verbal and written comments from attendees were solicited at this Public Hearing. A comment period extending 30 days following the Public Hearing was established so that the City could receive as many comments as possible from the public concerning this project. No comments were received.

1. **Public Meetings.** *A local Public Meeting was held on October 8, 1997 in Donna, Hidalgo County, Texas, by the City of Donna according to the following BECC requirements. All public officials will be notified of the Public Meetings. A notice of the public meeting was provided to the BECC and published in the local newspaper (The Monitor). The notice designated an accessible location (i.e., Donna City Hall) where the public could obtain the project proposal. The notice was posted 30 days prior to the meeting. During the public meeting, the City provided a briefing on the proposed project and heard public comments on the proposed project. Impacts of user fees were presented at the public meeting. A summary document containing the fundamental aspects of the project was available during the public meeting. The City recorded the minutes of the public meeting which included the names of the participants and comments made. The minutes serve as the official record of the meeting. A second public meeting will also be held at a time and place recommended by the BECC.*

The project applicant has agreed to hold an additional public meeting on May 8th for project certification in June 1998. Public notice of the meeting will be provided in the newspaper and the Steering Committee will be reactivated. The project applicant has further agreed to visit "colonias" that will benefit from the project and hold informational meetings in neighboring Mexican communities. During the course of the last week of April, informational meetings with the project's Steering Committee were held in Reynosa, Tamaulipas and also in the Rotery "Colonia" in Donna. Several meetings have been scheduled in Rio Bravo Tamaulipas as well as in several "colonias" on May 6th.

The project applicant will revise the Final Community Participation Report so that it include results of this stage of the public process, which will end with the May 8th public review meeting. Furthermore, the applicant has indicated it will continue with outreach and community participation actions during the post-certification stage with work being carried out by the Citizen's Follow Up Committee.

b. Report Documenting Public Support. *As part of the City of Donna Comprehensive Community Participation Plan, a local steering committee was appointed by the City Manager. Facts sheets were prepared and distributed to citizens and businesses in the area. The steering committee attended the Public Meeting held on October 8, 1997.*

Once certification of the project by the BECC is obtained, the City of Donna will provide to the BECC a Post-Certification Participation Plan. This plan will discuss the goal of achieving public involvement in the construction, operation, and maintenance phases of the proposed water and wastewater infrastructure improvements. The Post-Certification Plan may include a public information program to provide continuing education on the project and the benefits to the community. The Post-Certification plan may also consist of outlining the activities of the on-going steering committee and the continued guidance of this committee to provide citizen input to the City on the implementation of the project plan.

The Post-Certification Participation Plan will continue to encourage citizen participation during the planning and design phases of this project. To the extent possible, this Post-Certification Participation Plan may consider and evaluate the effectiveness of incorporating citizen volunteers into the project during the construction and operation phases of this project. Volunteers may be utilized to assist the public in understanding the various phases of the project, or may assist the City as volunteer crossing guards in school zones or around City parks during the construction phases of this project.

As part of the Post-Certification Participation Plan, local schools will be encouraged to promote the awareness of water conservation as well as ways in which each student can conserve water and change water consumption patterns in their households. The Texas Natural Resource Conservation Commission (TNRCC) distributes free publications which are available to teachers. Such publications and visual aids are designed to reinforce the concept of water conservation. Many TNRCC publications are written in both English and Spanish. The Post-Certification Participation Plan will also encourage schools to emphasize the importance of the preservation of all natural resources in addition to the protection of water resources. Education programs will not necessarily be limited to school-age children; this Plan will also be designed to increase the Donna residents' access to water conservation information as well as information regarding the human health and environmental benefits derived from this water and wastewater improvement project.

Education is one of the best means of facilitating community participation in this water and wastewater infrastructure improvement project. Since one of the most important resources in the Donna area is water, the current and future protection of water resources will encourage a healthy social and economic environment for future generations. Sustainable development is the goal of this water and wastewater infrastructure improvement project; the citizens of Donna and the surrounding colonias are committed to participating in the long-term sustainable development of this area which is evidenced by the overwhelming public support for this project.

6. SUSTAINABLE DEVELOPMENT

a. Definition and Principles.

Sustainable development 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." This verbiage was defined in the Border XXI environmental program which was developed by U.S. and Mexican authorities. This definition is based on the internationally accepted sustainable development definition from the Rio Declaration of Environment and Development which defines sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs."

The City of Donna has developed a comprehensive approach for this project with respect to the principles of sustainability. The City of Donna understands that implementation of the proposed water and wastewater infrastructure improvement project will not only improve the quality of life of Donna area residents but will also be designed to meet the water and wastewater needs of the present and future generations of individuals living within the Donna area and surrounding colonias.

The following principles of sustainability and the manner in which these principles are incorporated into the City of Donna's approach to this water and wastewater improvement project are detailed in the following paragraphs.

Principle 1. *Human beings are at the center of concerns for sustainable development. They are entitled to a healthy and productive life in harmony with nature.*

This principle will be integrally applied to the water and wastewater improvements in the Donna area. Poor water quality and substandard wastewater services currently contribute to increased health problems in the Donna area. Since the population within the City of Donna and surrounding colonias is continually growing, federal and state aid to local residents for health care would also increase if the proposed water and wastewater improvements were not implemented. Out-of-pocket health care expenses are also likely to increase if no water and wastewater infrastructure improvements are made in the Donna area. A healthy lifestyle for the residents of the Donna area is greatly dependent on clean drinking water and the safe disposal of sanitary wastes. Such water and wastewater improvements are therefor essential to the long-term sustainable development of the Donna area.

Substandard sanitary waste disposal currently exists throughout the Donna area. Once wastewater collection lines are installed throughout Donna and the surrounding colonias, this action will have an immediate positive impact on the environment and on the human health in the area. Disease carrying rodents, mosquitos, and flies will decrease as will the breeding ground for microscopic bacterial organisms. Also, surface soils and surface water will no longer be subjected to daily degradation by improperly disposed sanitary wastes. Again, the human health and environment will show positive improvements on an immediate basis once water and especially wastewater infrastructure improvements are implemented within the Donna area.

Principle 2. *The right to development must be fulfilled so as to equitably meet developmental and environmental needs of present and future generations.*

Substandard housing as well as water and wastewater services would continue in the Donna area without the proposed water and wastewater infrastructure improvements. Many residents employ pit privies or septic systems which do not meet state or county standards, especially due to small lot size and the density of development. Many colonias in the Donna area were originally platted at a time when Hidalgo County did not require water or wastewater plans to be included in the design of subdivisions. Development nonetheless proceeded since colonias were often the only means available to a low income family to own their own home.

Today, the average home in Donna is occupied by slightly fewer than five residents. According to the U.S. Census, the median annual household income of families in the three census tracts making up the Donna project averaged $17,000 in 1990. Although much of the planning area is developed, enough vacant areas remain for the population to nearly double. Assuming the same occupancy per household, over the next 20 years, the Donna area population will rise from approximately 15,000 to almost 30,000 people in 2015.

With the implementation of the improvement projects proposed for the City of Donna and surrounding colonias, such improvements will positively and equitably meet the long-term developmental and environmental needs of both present and future generations.

Developments (i.e., commercial or industrial businesses, residential communities, churches, shopping areas, etc.) will be attracted to the Donna area as a result of the planned infrastructure improvements within and around the Donna city limits. Future developments within the Donna area translates into an increase in local jobs and economic gains for local businesses. Economic development in this area will also result in the expansion of the City's tax base which will result in other long-term improvements in the health and well being of the residents of the Donna area.

According to the Texas Water Development Board (TWDB) development within and surrounding the Donna area could not proceed forward without some impacts to the environment. Environmental impacts would be minimal considering that most areas surrounding Donna have already been significantly altered by humans through intensive agricultural activities. The consequences of not constructing the water and wastewater projects would be far more severe than any impacts identified as a result of constructing the project. Failure to provide wastewater collection and treatment will only allow what is now a very dangerous human health and safety situation to worsen along with continued environmental degradation.

Principle 3. *In order to achieve sustainable development, environmental protection shall constitute an integral part of the development process and cannot be considered in isolation from it.*

The City of Donna has been pro-active in their approach to development and environmental concerns. The Donna Environmental Information Document (EID) and Border XXI Environmental Improvement Plan (EIP) both detailed the environmental concerns and potential sources of environmental impacts that future developments would have on the City of Donna. The City plans to incorporate the recommendations made in these two environmental documents into their long-term Master Plan for the City. The City of Donna is unique in that not only must the City consider environmental conditions within and surrounding the City but transboundary environmental issues must also be taken into consideration due to Donna's close proximity to Mexico.

Overall, the City of Donna feels that sustainable development can only be achieved through environmental protection. The City of Donna has made a considerable effort to make environmental awareness an integral part of the City's development process. Incorporating environmental issues into the design phase of community master planning will serve to benefit the environment and the residents of the Donna area through maximization of the remaining natural resources which occur in this area.

Principle 4. *The stakeholders (i.e., the groups and individuals impacted by, and having an impact on development projects), must be part of any related activity. Specifically, this means that the following items should be addressed:*

1) Border residents experiencing the environmental problems first hand must be given the opportunity to participate in the decision-making process on ways to protect, manage, and employ environmental resources in their communities.

The City of Donna has undertaken extensive public participation during the development of this project culminating with a public hearing on the proposed water and wastewater improvements on December 19, 1995. The public hearing was advertised on November 18, 1995 in the Donna Events, a newspaper of local circulation, and was advertised in the Monitor, a Valley-wide publication, on November 16, 1995. Except for statements of support of the project by the Donna City Mayor and Donna City Manager, no public comments were voiced at the Public Hearing.

Copies of the Environmental Information Document were available to the public prior to the final Public Hearing and were provided to the Texas Natural Resources Conservation Commission, the Texas Historical Commission, the Texas Parks and Wildlife Department, the U.S. Fish and Wildlife Service, the U.S. Army Corps of Engineers, the Federal Emergency Management Agency, Hidalgo County, and the City of Donna. Each agency has reviewed the proposed project and supports the action. A Notice of Availability of the EID for review was also sent to the Bureau of Land Management, the Bureau of Reclamation, the Natural Resources Conservation Service, the Bureau of Mines, the Department of Housing, the National Park Service, the U.S. Forest Service, and the U.S. Geological Survey. No comments were received from any of these agencies regarding this water and wastewater infrastructure improvement project.

2) The efforts and expertise of the different institutions involved in environmental, social, and economic endeavors within all sectors of the society must be brought together for better balanced development planning and better use of scarce resources.

There are no resources such as land resources, water resources, natural materials, or recreational and/or open space areas that will be irretrievably committed or whose options will be irreversibly constrained as a result of this project.

Since the purpose of this project is to provide safe, clean drinking water to Donna area residents as well as to provide sanitary sewer services to these same residents (especially those which lack sanitary sewer services or those in need of upgraded services), the most significant natural resource related to this particular project is water.

Education is one of the best means of facilitating community participation in this water and wastewater infrastructure improvement project. Since one of the most important resources in the Donna area is water, the current and future protection of water resources will encourage a healthy social and economic environment for future generations. Sustainable development is the goal of this water and wastewater infrastructure improvement project; the citizens of Donna and the surrounding colonias are committed to participating in the long-term sustainable development of this area which is evidenced by the overwhelming public support for this project.

b. Institutional and Human Capacity Building.

The City of Donna enlisted the service of a private consultant to analyze water and sewer user fees. A recommended rate structure resulted from this analysis, which would provide adequate revenues to pay for the operation and maintenance expenses and debt service requirements of the capital improvements. Therefor, with this new user fee system in effect, local self-sufficiency for the service is realized. This strengthens the capacity of the City of Donna to operate and support the project. As additional businesses, institutions, and residents locate within the Donna area, additional revenues for the City will be generated by taxes and utility fees. Jobs will be created by the availability of infrastructure which in turn will stimulate the Donna economy. Therefor a repetitive and complimentary cycle is established.

The City of Donna has also privatized the operation and maintenance of their water and sewer systems. The billings for water and sewer are also prepared and collected by this private operating company. This operating company already has trained and licensed utility operators and has corporate policies in place for training of maintenance, operating, and administration personnel.

c. Conformance with Applicable Local and Regional Conservation and Development Plans.

The City of Donna adopted a Water Conservation and Emergency Water Demand Management Plan in August, 1995. There is no regional plan for water conservation except for the common knowledge that all water purveyors should have some form of water conservation. The City of Donna's plan compliments the plans of surrounding cities and water suppliers.

The only means of regional coordination of the various projects in the Texas Valley area is through the local Council of Governments, specifically the Lower Rio Grande Valley Development Council (LRGVDC). Specific information is as follows:

Agency: Lower Rio Grande Valley Development Council

Contact Person: Commissioner Israel Tamez, President

Address: 311 N. 15th Street

McAllen, Texas 78501-4705

Phone: (956) 682-3481

Fax: (956) 631-4670

Date of Conformance: March 28, 1996

d. Natural Resource Conservation.

The conservation of water will be achieved through this project on two different levels; an operational level and a community level. The design and implementation of the water and wastewater infrastructure improvement projects will be engineered using best available technologies. The WTF will incorporate maximum reclamation of process water typically discharged to waste. The use of air instead of water for backflushing will be utilized as much as possible.

The City of Donna has also instituted a user charge system for water that does not reward persons who use large monthly volumes of water. As evidenced by the water usage charts, it is readily apparent that water conservation has taken place in the City of Donna. Water usage has dropped consistently in the past two years.

On the community level, water conservation will be emphasized in local schools. Local schools will be encouraged to promote the awareness of water conservation as well as ways in which each student can conserve water and change water consumption patterns in their households. The Texas Natural Resource Conservation Commission (TNRCC) distributes free publications which are available to teachers. Such publications and visual aids are designed to reinforce the concept of water conservation. Many TNRCC publications are written in both English and Spanish. The importance placed on water in the Donna area schools will compliment and be part of the City's Post-Certification Participation Plan which encourages schools to emphasize the importance of the preservation of all natural resources in addition to the protection of water resources. Education programs will not necessarily be limited to school-age children; adults will also be encouraged to work with children to conserve water.

The Donna City Council may choose to discuss the advantages of water conservation as it relates to the implementation of the water and wastewater improvement projects at one or more City Council meetings. The City Council may also give one or more short presentations on residential water conservation during and following the design and implementation phases of this project. Water conservation exhibits may be established at the new WTF; such displays would serve to compliment City sponsored tours of the WTF which would further educate and encourage the conservation of water in South Texas. To the extent possible, xeriscaping (landscaping with shrubs, trees, and other native plants which require little water) may be incorporated into the WTF aesthetics. Utilization of native (indigenous) plants will also be used as a natural resource conservation teaching tool for visitors (children or adults) to the WTF facility. Other facilities proposed as part of the water and wastewater improvements would most likely lack adequate space for landscaping. However, the intent is for the City of Donna to set the example for water conserving measures.

The Water Conservation and Emergency Water Demand Management Plan adopted by the City of Donna, includes a set of trigger conditions, rated in severity of the drought or emergency condition. These stages are mild, moderate, and severe. To trigger these stages, water demand must reach a certain level of water treatment facility capacity for three consecutive days. Each stage is a result of excessive water consumption. When the mild stage is reached, the public is informed to institute voluntary water conservation measures. The moderate condition will prohibit certain activities such as car washing and the filling of swimming pools; a schedule for lawn watering will also be implemented. When the severe condition is reached, all outdoor watering is prohibited and violators are subject to fines.

The City of Donna does not have or need a Watershed Management Plan since all surface waters are controlled by the TNRCC and the various Irrigation Districts. This includes the Donna Reservoir and irrigation canals which are supplied from the Rio Grande River.

e. Community Development.

The purpose of this water and wastewater infrastructure improvement project is to provide the residents and businesses within Donna and the surrounding colonias with safe, clean drinking water and safe, reliable sanitary sewer services. Construction of the project to connect the surrounding colonias to municipal water and wastewater treatment facilities for the first time is planned as part of this project. The City will then be able to supply potable water to and collect and treat all wastewater from all residents in the surrounding colonias. Construction of these projects will improve the area's public health by providing a permanent and safe drinking water source to area residents. Also, these improvement projects will reduce the volume of pollutants that reach area water resources by eliminating ineffective and outdated wastewater collection and treatment methods.

The implementation of these improvements will foster individual and community pride among residents and neighborhoods; many of which have only previously experienced pit privies or substandard septic systems and drinking water which, in some cases, is of such poor quality that many families rely solely on bottled water for drinking purposes. Additionally, the proposed project will create approximately 50-100 full-time jobs during the project construction.

Prior to, during, and after the implementation of the proposed water and wastewater improvements, the City of Donna will undertake the on-going process of educating residents (adults and children) on the importance of water conservation. Again, the Donna City Council may choose to hold water conservation workshops in conjunction with City Council meetings, local offices of the Texas Department of Health and the Hidalgo County Health Department may additionally hold workshops or present booths or exhibits at local health fairs, community fairs, or charitable events. Local teachers will also be encouraged to incorporate water conservation into the school curriculum at all grade levels. Local businesses will be encouraged to implement water conservation measures on their premises. The ultimate goal of all of these water conservation measures will be to:

- *conserve water as a natural resource which supports sustainable development in the Donna area and surrounding colonias*
- *conserve water to minimize monthly water costs for residents, business owners, and the City of Donna*

From a socio-economic point of view, increased water and wastewater services will have immediate direct positive benefits to the health and welfare of Donna area residents (as well as immediate direct positive benefits to the environment). The proposed water and wastewater improvements are designed to accommodate a population of 30,000 by the year 2015 which represent a doubling of the current population of 15,000 individuals. The City of Donna has been very pro-active in their long-term vision for the City by anticipating and planning for substantial growth in and

around Donna within the next 20 years. The City's Master Plan, the passing of Model Subdivision Rules, and the establishment of a Water Conservation Plan (to name a few) have all been aimed at continually raising the standard of living for the Donna area. Many actions taken by the City have resulted from community input; the residents of Donna support the development of their City both from a residential view point and an industrial view point. Growth in the Donna area ultimately means an opportunity for new jobs as well as a boost in the trade of goods and services in this area. All such activities promote a positive economic benefit to the Donna area.

The proposed project will not only directly increase the quality of living of the residents and business owners within Donna and the surrounding colonias but will secondarily provide job opportunities for new businesses which move into the area and increase the flow of goods and services in the Donna area. Additionally, illnesses related to poor water quality and substandard sanitary sewer services will decrease upon the implementation of the proposed water and wastewater infrastructure improvement projects in this area.

Several of the long-term benefits of the water and wastewater improvement projects in the Donna area include:

- *increases in the standard of living for residents based on an increase in the quality of the water flowing into homes and an increase in the sanitary sewer services for each home*
- *increases health benefits related to cleaner water and a high quality of sanitary sewer services per household; disease causing agents (rodents, insects, bacteria, etc.) will be minimized or eliminated*
- *increases in residential and business developments in the Donna area*
- *increases in jobs in the Donna area following associated residential and business developments*
- *increases in the economy of the Donna area*
- *increases in water and wastewater treatment capabilities in the Donna area; reduction of water pollution will be achieved with proven water and wastewater treatment technologies*
- *increases in the quality of the environment (soil and surface water sources)*
- *sustainable development in the Donna area will be achieved, in part, by the implementation of these infrastructure improvements*

Few negative impacts will be felt by the residents and business owners of the Donna area as a result of the water and wastewater improvements. Perhaps the largest impacts would be an increase in monthly fees for water and wastewater services. However, the City of Donna raised water and sewer rates significantly in 1996 and no additional rate increases have been planned.

The tariff for water and wastewater service to the colonias will correspond to TWDB requirements. The current arrangement is that the colonias would be charged the same rates as those residents living within the Donna City Limits. The colonias therefor, will be charged "Inside City Limits" rates and not "Outside City Limits" rates. The current rate structure (tariff) was adopted in 1996 and a further increase in rates would require a thorough analysis. The grant funding from the NADBank will contribute to lowering of the City's total debt service by assisting in payment of the interest portion of infrastructure loan debt. Since water and wastewater revenues pay for the debt service, a reduction in debt service would lower the revenues needed to support it. The political action group, Valley Interfaith, typically represents the colonias. The group has been supporting every phase of the water and wastewater improvement projects. Without support documentation, this group has advised us that the colonias residents water bills, who are presently served by Colonia Nueva Water Distribution System, will actually have a decrease in their water bills when the City of Donna takes over their service. The colonias do not presently have any wastewater service, therefor they will be receiving an additional bill for wastewater. The City of Donna does not have a formal payment plan for customers experiencing economic difficulties, but does accommodate those customers, on an individual basis, with repayment plans. In this way, the City will be eventually reimbursed while the customer can continue enjoying the water and wastewater services.

Through the preparation of the Environmental Information Document (EID), the community has participated in the development of this project. Citizens were asked to voice their concerns about the development of the proposed project and comment on the measures proposed to mitigate the impacts created by the project's construction. This participation allowed civic leaders to gauge the public's perception of the project and make changes to its scope to better serve the community. Additionally, with the establishment of a local steering committee, the City has developed another line of communication with the community. This committee, with representatives from local business and community leaders, has participated from the beginning and will continue to participate in the future development of this project. At this time, the residents, business leaders, and community leaders have shown support for this project. The population of the Donna area is looking forward to the design and implementation of these proposed water and wastewater infrastructure improvements.