UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS, TX 75202-2733

MAR 4 2003

FINDING OF NO SIGNIFICANT IMPACT

To All Interested Agencies and Public Groups:

In accordance with the regulations of the Council on Environmental Quality (CEQ), "*Regulations For Implementing The Procedural Provisions of the National Environmental Policy Act*," at 40 Code of Federal Regulations, Part 1500, the U. S. Environmental Protection Agency (EPA) has performed an environmental assessment of the following proposed action.

Proposed Action: Border Environmental Infrastructure Fund (BEIF) grant for the proposed improvements to the Water Treatment and Distribution System and the Wastewater Treatment and Collection System for the city of Matamoros

Applicant: City of Matamoros, Tamaulipas, México

Estimated Total for the Combined Projects (U.S. Dollars)	$427,839,000
Estimated Costs for Immediate Projects*	
Water Treatment/Distribution Systems Expansion Cost*	$ 32,270,000
Wastewater Treatment/Collection Systems Costs*	$ 35,806,000

* BEIF/EPA Funding totalling $33,000,000 (U.S. Dollars) will be applied towards construction of the Wastewater Treatment and Collection Systems.

Estimated Costs for Future Projects:	
Water Treatment/Distribution Systems Expansion Cost	$177,064,000
Wastewater Treatment/Collection Systems Costs	$182,699,000

Proposed Action. The municipality of Matamoros proposes to construct a series of projects to improve its drinking water treatment and distribution system, and its wastewater treatment and collection system. The immediate projects would be completed by 2005, and would include a drinking water project consisting of rehabilitating and expanding of water treatment plant II (WTPII), a raw water storage pond, pumping stations, elevated regulating tanks, distribution lines, reinforcement and reconditioning of the existing lines, storage ponds, interconnections, meters, and household water taps. This phase would also construct a wastewater treatment plant (WWTP) and collection system, holding ponds, and 16 pumping stations.

Future projects would be completed between the years of 2005 and 2020, and would expand the WTPII, the raw water pond and raw water pumping station, storage, and distribution lines. This phase would construct two WWTPs, install collection lines, 18 pumping stations, and

include reconditioning and structural remediation projects, to include replacement and reconditioning of three storm water pump stations, installation of 22 kilometers (km) of the collection system and the construction of 25 km of force lines.

The municipality of Matamoros is across the U.S-México border from the city of Brownsville, Cameron County, Texas, at latitude 25° 52' north and longitude 97° 30' east. It is bordered by the Rio Grande to the north, the municipality of San Fernando to the south, the Gulf of México to the east, and by the municipalities of Rio Grande and Valle Hermoso to the west. The municipality of Matamoros includes 443 localities, including Heroica Matamoros (municipal seat), Control, Estación Ramírez, Buena Vista, Las Rusias, Santa Adelaida, La Gloria, Sandoval, México Agrario, 20 de Noviembre, Ignacio Zaragoza and La Unión. The city of Matamoros is the center of the municipality of Matamoros.

Findings: Projects constructed in México and funded through BEIF monies provided by EPA and administered by the North American Development Bank (NADBank) are subject to environmental review under the National Environmental Policy Act of 1969, as amended. The EPA has performed an environmental review and assessment of the Environmental Information Document prepared by Estudios y Tecnicas Especializadas en Ingenieria, S.A. de C.V. (ETEISA) for the city of Matamoros. The environmental assessment (EA) is required for Border Environment Cooperation Commission (BECC) Certification associated with the BEIF grant. Six alternatives were evaluated: 1) three process alternatives for the WWTPs; 2) the No-action alternative; and, 3) two site alternatives for construction of the WTPs.

On the basis of the EA, the Regional Administrator has made a preliminary determination that the project is not a major Federal action significantly affecting the quality of the human environment and that the preparation of an Environmental Impact Statement (EIS) is not warranted. The project individually, cumulatively, or in conjunction with any other action will not have a significant adverse effect on the quality of the environment. Comments regarding this preliminary decision not to prepare an EIS and to issue a Finding of No Significant Impact (FNSI) may be submitted to the U.S. Environmental Protection Agency, Office of Planning and Coordination (6EN-XP), 1445 Ross Avenue, Dallas, Texas 75202-2733. All comments will be taken into consideration. This preliminary decision and the FNSI will become final after the 30-day comment period expires if no new information is provided to alter this finding. No administrative action will be taken on this decision during the 30-day comment period. Copies of the EA and requests for review of the Administrative Record containing the information supporting this decision may be requested in writing at the above address, or by telephone at (214) 665-8150.

Responsible Official,

for Lawrence E. Starfield
Acting Regional Administrator

Enclosure

ENVIRONMENTAL ASSESSMENT FOR THE PROPOSED IMPROVEMENT OF THE WATER TREATMENT AND DISTRIBUTION SYSTEM AND THE WASTEWATER TREATMENT AND COLLECTION SYSTEM FOR THE CITY OF MATAMOROS, TAMAULIPAS, MÉXICO

1.0 DESCRIPTION OF THE PROPOSED ACTION

1.1 Proposed Action. The municipality of Matamoros, in the state of Tamaulipas, México, proposes to construct a series of projects to improve its drinking water treatment and distribution system, and its wastewater treatment and collection system. The immediate projects would be completed by 2005, and include a drinking water project consisting of rehabilitation and expansion of the water treatment plant II (WTPII) to 1,600 liters per second (lps), 36.5 million gallons per day (MGD), to replace an existing WTP and two package treatment plants, a raw water storage pond, pumping stations, elevated regulating tanks, distribution lines, reinforcement and reconditioning of the existing lines, storage ponds, interconnections, meters, and household water taps. This phase includes construction of one of the three (3) wastewater treatment plants (WWTPs), installation of collection lines, holding ponds, and 16 pumping stations.

Future projects would be completed between the years of 2005 and 2020, and would expand the WTP by 3,400 lps (77.6 MGD), the raw water pond capacity, raw water pumping station, storage, and distribution lines. The wastewater treatment project would construct two WWTPs, install collection lines, and 18 pumping stations, and would include reconditioning and structural remediation projects, to include replacement and reconditioning of three storm water pump stations, installation of 22 kilometers (km) of the collection system and the construction of 25 km of force lines.

The municipality of Matamoros is across the U.S.-México border from the city of Brownsville, Cameron County, Texas, at latitude 25º 52' north and longitude 97º 30' east (Figs 1-2), and an elevation averaging 10 meters above mean sea level. The municipality is bordered by the Rio Grande to the north, the municipality of San Fernando to the south, the Gulf of México to the east, and by the municipalities of Rio Grande and Valle Hermoso (Fig.3) to the west. The municipality of Matamoros includes 443 localities, including Heroica Matamoros (municipal seat), Control, Estación Ramírez, Buena Vista, Las Rusias, Santa Adelaida, La Gloria, Sandoval, México Agrario, 20 de Noviembre, Ignacio Zaragoza and La Unión. The city of Matamoros is the center of the municipality of Matamoros. Brownsville is the largest city in Cameron County and serves as the terminus of U.S. Highways 77, 83, and 281 and the Missouri Pacific and Southern Pacific Railroads (Fig.4).

1.2 Estimated Costs for Total Proposed Project Alternative.

1.2.1 Estimated Costs (U.S. Dollars) for the Immediate Actions Through 2005.

Drinking Water Treatment/Distribution Systems Expansion	$32,270,000
Wastewater Treatment/Collection Systems Construction*	$35,806,000

Estimated Total Cost for Immediate Project Actions	$68,076,000

1.2.2 Estimated Costs for the Future Actions - 2005 Through 2020.

Drinking Water Treatment/Distribution Systems Expansion	$177,064,000
Wastewater Treatment/Collection Systems Construction	$182,699,000
Estimated Total Cost for Future Project Actions	$359,763,000
Estimated Total for the Combined Projects	$427,839,000

* BEIF funds (U.S. Dollars) will apply to Wastewater Treatment and Collection Systems Phase I projects (2002-2005) as follows:

Construction of three modules of the East WWTP	$ 3.76 million
Pumping station and collectors capacity	$15.04 million
Replacement of collapsed pipe of primary system	$ 3.00 million
Construction of 14 km of Interceptor lines	$11.20 million
Total BEIF funds	$33.00 million

1.3 Purpose and Need for the Proposed Action. Matamoros has serious problems with its sewerage system. The area along the U.S.-México border has experienced an accelerated demographic growth over the last four decades, creating serious drinking water and wastewater treatment and collection systems problems. The capacity of the infrastructure and existing services of Matamoros has not kept pace with the industrial activity and population growth in the area. The drinking water and wastewater systems are not adequate to serve the area, resulting in hazardous environmental conditions and a low quality of life for area residents. Nineteen of its 23 pumping stations are operating with structural, mechanical and/or electrical faults, and four are not currently in operation. Pipes within the system have experienced a large number of collapses, obstructing the flow of water and resulting in pipe corrosion. The vast majority of the 1,105 manholes are filled with silt, resulting in frequent flooding. The storm water sewer collection system is in poor condition with frequent mechanical and electrical failures, and has poor carrying capacity because of the silt. Line slopes are not adequate to transport the collected water.

The temporary solutions have reduced the efficiency of the available systems and seriously impaired their operation and maintenance. In some areas, the temporary solutions included connecting the sanitary sewer to the storm sewer system, resulting in raw sewage flowing to storm water pump stations and being discharged to the Rio Grande. During storms or other high flows, raw sewage accumulates at several locations within the city and poses a public health hazard. Currently, untreated wastewater is being discharged to drains that discharge into irrigation channels, and into the Rio Grande and the Lagunas de Tamaulipas systems. Untreated wastewater from failing septic tanks, from leaks in the old sewer lines, and from overflows caused by the lack of conveying and pumping capacity are also polluting the soil and the shallow ground water beneath the city.

The design of the proposed project is based on the Capital Improvement Program (CIP) report, delivered in September 2001, by the International Boundary and Water Commission (IBWC) to address the water quality needs of the city of Matamoros for the next 20 years. The CIP report identifies immediate actions as critical projects to be completed by the year 2005, and future projects as those necessary to meet the needs of the city by the year 2020. The report includes three treatment plants that discharge to agricultural drains. The project design eliminates all discharges to the Rio Grande and to tidal areas of the Gulf of Mexico. Without the project, growth will continue in the area, placing increased strain on the existing sewerage services and aggravate existing soil, water, air pollution and health risk problems for residents in the area.

The U.S. Section of the IBWC manages projects financed by the U.S. Environmental Protection Agency (EPA) aimed at identifying and studying water quality requirements, and enable the provision of sustainable water quality services along the U.S.-México border. The proposed projects will increase and improve the drinking water treatment and distribution system, and the wastewater treatment and collection system. The wastewater treatment must comply with the discharge limits established by Mexican authorities, reducing transboundary impacts to the United States and eliminating the discharges of raw wastewater into the Rio Grande. The selected alternatives must comply with the cost, reliability, environmental, economic, regulatory and social factors of the CIP.

1.4 Scope of the Environmental Assessment. Projects constructed in México and financed through EPA funds administered by the North American Development Bank (NADBank), and certified by the Border Environment Cooperation Commission (BECC), are subject to environmental review under the National Environmental Policy Act of 1969, as amended (NEPA). The environmental assessment (EA) was performed by the EPA based on the Environmental Information Document prepared by Estudios y Tecnicas Especializadas en Ingenieria, S.A. de C.V. (ETEISA) for the city of Matamoros. The EA is aimed at addressing the potential impacts to the environment in México and the U.S. resulting from the funding of the proposed project. The EA presents and objectively evaluates the alternatives, including alternatives that were eliminated from detailed study and the reasons for elimination; considers each alternative to permit an evaluation based on the comparative merits; and includes appropriate mitigation measures.

There are five major bilateral agreements between México and the U.S. relating to air, water, and land resource protection and pollution control. The *1889 International Boundary Convention* established the International Boundary Commission (IBC). The *Water Treaty of 1944* replaced the IBC with the IBWC, which was created by the governments of the U.S. and México to apply the provisions of various border and water treaties and to settle differences arising from such applications through a joint international commission. The IBWC jurisdiction extends along the U.S.-México International Border and inland into both countries where international border and water projects may exist.

In 1983, the U.S. and México signed the *Agreement for the Protection and Improvement*

of the Environment in the Border Area (La Paz Agreement) to protect, improve, and conserve the environment of the border area. The La Paz Agreement defined the border region as the area lying 62 miles (100 km) north and south of the U.S.-México International Border. In 1992, the *Integrated Border Environmental Plan* (IBEP) was released, and building on this, the Border XXI Program increased the scope to include environmental health and natural resources issues. A bilateral agreement was signed in 1994, as part of the *North American Free Trade Agreement* (NAFTA), to address the deficiencies in water and waste infrastructure in the border area.

A second environmental agreement negotiated to augment NAFTA is the 1994 BECC-NADBank Agreement to target water, wastewater, and solid waste environmental problems in the border region to remedy international border environmental or health problems. The Border Environmental Infrastructure Fund (BEIF) was established by the NADBank to make environmental infrastructure projects affordable for communities throughout the U.S.-México border region by combining grant funds with loans or guarantees for projects that would otherwise not be financially feasible.

2.0 ALTERNATIVES CONSIDERED AND PREFERRED ALTERNATIVE

2.1 Alternatives Considered. Alternatives evaluated included 1) the No-action Alternative (applicable to both wastewater and water treatment); 2) three technology options for wastewater treatment; and, 3) two site alternatives for the water treatment facility.

2.1.1 No-action Alternative. Under the No-action Alternative, the city of Matamoros will continue to operate as it does at present and drinking water, sewerage and drainage services will continue to be inadequate. The discharge of untreated wastewater into open channels and into the Rio Grande would continue and the pollution and potential transboundary consequences would not be corrected. The bodies of water or the irrigation channels used for crops would continue to receive water contaminated by fecal coliform bacteria. The No-action Alternative would result in a negative impact on ground water because wastewater contamination would tend to continue to infiltrate under ground water resources. Continuous population growth would tend to exacerbate the health and safety problems with the quality of life for resident, and the levels of soils and surface water contamination in the area.

2.1.2 Drinking Water Treatment Plant Alternatives.

Alternative 1 - Immediate Expansion Project. Between 2002 and 2005, the existing WTPII would be rehabilitated and expanded to 1600 lps (36.5 MGD). A raw water storage pond, pumping stations, elevated regulating tanks, distribution lines, reinforcement and reconditioning of the existing lines, storage ponds, interconnections, meters, and household water taps would also be constructed. After completion of the expansion, the existing WTPI and two package treatment plants would be de-commissioned.

Between 2005 and 2020, the WTPII would expanded by 3400 lps (77.6 MGD) to bring the total potable water treatment capacity to 5000 lps (114.12 MGD). The actual WTP and

WWTP capacity increases would be based on population growth. The BTC would review the WTP and WWTP phases every three years and adjust future expansions accordingly. The raw water pond capacity, raw water pumping station, storage, and distribution lines system would also be expanded. The 2240 lps (51.12 MGD) total design treatment capacity of the WWTP, was developed and presented to the Bi-national Technical Committee (BTC) by CNA. The 114.12 MGD capacity of the WTP is a worst case estimate and does not include population projection adjustment factors.

Alternative 2 - Construction of a New WTP at a New Site. This alternative was eliminated because sufficient amount of land is available at the site of the existing WTPII for the proposed expansions. No additional land or site would have to be acquired, nor would the extensive re-routing of distribution lines be necessary to accommodate the relocation of the WTP.

2.1.3 Wastewater Treatment Plant Alternatives. The proposed project would construct three WWTPs with a total design capacity of 51.12 MGD (2,240 lps). The first phase would be completed by the year 2005, and would construct three modules of the East WWTP with a treatment capacity of 6.84 MGD (300 lps), collection lines and 16 pumping stations. Future projects would be completed by the year 2020, and would construct two WWTPs, collection lines, 18 pumping stations, and include reconditioning and structural remediation projects, to include replacement and reconditioning of three storm water pump stations. The three treatment process technologies evaluated for use in the WWTPs included the following:

Process Alternative 1 - Anaerobic-facultative[1]-maturation Stabilization Pond Alternative. This alternative is highly efficient in reducing bacteria from high concentrated sewage. The anaerobic pond reduces the solids and organic loads sent to the facultative ponds. This alternative allows the re-utilization of treated effluent for irrigation purposes, is appropriate for the desert environment, takes advantage of the natural organic processes, and does not require the use of chlorine. It is economically feasible, requires low operation and maintenance costs, and does not require highly skilled operating personnel. Pond lining costs is significantly less than those of the other alternatives. Total annual amortization and operations and maintenance costs for this process for the three proposed WWTPs are estimated to be $1,630,038 (U.S. dollars).

Process Alternative 2 - Facultative-maturation Stabilization Pond Alternative. Facultative pond systems normally utilize a single, shallow basin to allow solids in the wastewater to settle to the bottom of the pond as a sludge layer that undergoes anaerobic decomposition. The depuration process is effected by both aerobic and algae and occurs in the upper strata of the pond. This alternative requires a larger pond area, making the cost of lining the pond more expensive than

[1]In the integrated facultative pond screened raw wastewater is transferred into an anaerobic pit that is integrated into the bottom of the pond. The anaerobic pit uses microorganisms that thrive in oxygen-lacking conditions and are capable of digesting complex organic chains to simpler chains for further digestion in the facultative portion of the pond. The facultative portion of the pond allows for photosynthesizing plants and algae to deliver oxygen to the water so that aerobic and facultative bacteria are capable of digesting organic matter remaining in the wastewater to carbon dioxide and water. The facultative pond would remove 50 percent of the influent biological oxygen demand and virtually all suspended solids.

Alternative 1. Total annual amortization and operations and maintenance costs for this process for the three proposed WWTPs are estimated to be $1,685,429 (U.S. dollars).

Process Alternative 3 - Conventional Activated Sludge Alternative. The organic matter removal efficiency of this process is 95 to 99 percent. This process is very flexible in the process operation and widely used to treat municipal wastewater, especially when there is no sufficient land area available for the facility. Nutrients removal efficiency is up to 20 percent, but the mechanical equipment operation and maintenance costs are significantly higher than the other alternatives. There is also a greater amount of emissions generated by this process as compared with the other processes. Total annual amortization and operations and maintenance costs for this process for the three proposed WWTPs are estimated to be $2,183,166 (U.S. dollars).

2.2 Preferred Alternatives.

2.2.1 Preferred Water Treatment and Distribution System Alternative. The preferred WTP alternative is Alternative 1, to expand the existing WTPII two phases, an immediate phase of 1600 lps (36.5 MGD) and a future phase of 3400 lps (77.6 MGD), for a total capacity of of 5000 lps (114.12 MGD). A raw water storage pond, pumping stations, elevated regulating tanks, distribution lines, reinforcement and reconditioning of the existing lines, storage ponds, interconnections, meters, and household water taps would also be constructed and expanded during the future phase activity. After completion of the expansion, the existing WTPI and two package treatment plants would be de-commissioned. The total actual capacity increases of the WTP and WWTP facilities would both be based on population growth.

2.2.2 Preferred Wastewater Treatment and Collection System Alternative. The preferred alternative includes construction of three WWTPs, with a total design treatment capacity of 51.12 MGD, using the Alternative 1, Anaerobic-facultative-maturation Stabilization Pond Alternative, and would replace or recondition three storm water pump stations by the year 2020. Construction of each of the WWTPs would be adjusted to reflect population growth dynamics for each service area.

East WWTP. Three modules of the East WWTP, with a total capacity of 6.84 MGD (300 lps), would be constructed between 2003 and 2005. A fourth module with a capacity of 2.28 MGD (100 lps) would be constructed in 2010. Approximately 40.39 hectares (ha) of primarily agricultural land has been acquired for the East WWTP, located approximately 1.75 miles (3.0 kilometers) from the U.S.-Mexico border. BEIF funds would be used only for construction of the three modules of the East WWTP.

West WWTP. Three modules of the West WWTP, with a total capacity of 16.09 MGD (705 lps), would be constructed starting in 2005. A fourth module with a capacity of 5.36 MGD (235 lps) would be constructed in 2014. Approximately 95.85 ha of primarily agricultural land has been acquired for the West WWTP, located approximately 3.3 miles (5.15 kilometers) from the U.S.-Mexico border.

South WWTP. Two modules of the South WWTP, with a total capacity of 10.27 MGD (450 lps), would be constructed commencing in 2008. Two additional modules, with a capacity of 10.27 MGD (450 lps), would be constructed in 2016. Approximately 91.32 ha of primarily agricultural land has been acquired for the South WWTP, located about 6.0 miles (9.5 kilometers) from the U.S.-Mexico border.

2.2.3 Recommendation. On the basis of this environmental assessment and other available information, the EPA recommends acceptance of the preferred alternative, and the issuance of a Finding of No Significant Impact. The treatment process would meet the wastewater discharge criteria established by México, and would meet operations and maintenance cost requirements. The project individually, cumulatively, or in conjunction with any other action, is not expected to have a significant adverse effect on the quality of the environment, and the preparation of an Environmental Impact Statement is not warranted.

3.0 AFFECTED ENVIRONMENT AND POTENTIAL ENVIRONMENTAL IMPACTS

3.1 Land Use. The Brownsville/Matamoros area is the manufacturing center of the Lower Rio Grande Valley region (Fig.4). Brownsville has eight public and private industrial parks, each equipped with the infrastructure necessary to support business. There are more than 150 manufacturers located on both sides of the river. The automotive industry in particular has concentrated in the area. Other key industries include microelectronics, electrical equipment, medical/dental instruments and household consumer durables. A large supplier base has also developed in the region to capture some of the $2 billion that local manufacturers spend annually on supplies and components.

The municipality of Matamoros has two industrial parks covering a total area of 684 ha with 72 industrial and commercial operations. Approximately 152, 951 ha are used for agriculture, and 116,650 ha are used mainly for livestock and wildlife grazing. Major crops are corn, beans, sorghum, okra and cotton.

3.1.1 No-action Alternative. Under the No-action Alternative, land use would not be affected because the construction and operation of the proposed projects would not occur. There would not be any long or short term impacts on land use associated with this alternative except for the continuation of conditions determined to be unsafe and hazardous to human health and well-being.

3.1.2 Immediate and Future Projects. Implementation of the drinking water and wastewater projects will be within the urbanized area of the municipality of Matamoros, and will have no impact on land use in the U.S. Construction of the three WWTPs would affect three different sites located approximately 1.75, 3.3, and 6.0 miles from the U.S.-Mexico border. All line work would be constructed primarily in existing rights-of-way, and in some areas not previously disturbed by utility activities. The undeveloped areas are primarily agricultural and pasture lands. No significant beneficial uses of the land will be eliminated by the implementation of any of the alternatives.

3.2 Soils. Based on field observations, the soils in the Matamoros area are primarily Solonchak Gleyco and Vertisol soils. Solonchak Gleyco soils have an extremely fine texture considered un-phase physic saturated with water or chemic phase sodium soils typically used for grass. The Vertisol soils are calcium soils, with high clay content more than one meter thick. These soils are dark grey and usually covered with high grass and shrubs.

3.2.1 No-action Alternative. Soils would not be affected because the construction and operation of the water distribution and sewer systems, and the construction and operation of the WWTPs would not take place. The general project area would remain the same under the No-action Alternative.

3.2.2 Immediate and Future Projects. Construction of the WWTPs and related units will affect soils already disturbed by urban development or currently under cultivation, resulting in some reduction in agricultural land inventory. The expansion of the WTPII would be on a site already dedicated to this use. All three WWTP options and related line work would result in impacts to the soils within the proposed site. Construction of the East WWTP, the West WWTP and the South WWTP would involve grading, excavation, and cut/fill activities and would affect 40.39 ha, 95.85 ha, and 91.32 ha, respectively (Fig.5). The construction activities would result in minimal impact to the soils which have been disturbed areas with agricultural activities. No significant impacts to soils is expected to from the implementation of the proposed projects.

3.3 Water Resources.

3.3.1 Surface Water. The proposed project areas are located in the physiographic province named North Gulf Coastal Plain, particularly in the Tamaulipan Coastal Plain Subprovince (Fig.6), in the Great Alluvial Plain. The city of Matamoros is located in Hydrologic Region No. 24 of the Rio Bravo-Rio Conchos in the Rio Bravo-Matamoros-Reynosa Basin within the Rio Bravo-Matamoros Sub-Basin. The principal streams in the Rio-Bravo-Matamoros Sub-Basin are the Arroyo El Tigre, Arroyo Cabras Pintas, Arroyo de En Medio, and Arroyo La Pita.

México Water Quality Standards. The Instituto Nacional de Ecologia (INE) of México, through the National Water Commission (*Comisión Nacional del Agua* - CNA), sets national surface water quality standards for discharges of wastewater to all water receptors. This water quality regulation is listed in México Norm NOM-001-ECOL-1996, which establishes the maximum permitted levels of contaminants in wastewater that can be discharged into water bodies and/or onto properties in México. Natural water bodies in México are defined as rivers, natural and artificial reservoirs and lakes, and coastal waters. Wastewater can be discharged into water bodies and onto an artificial site such as land application.

According to the *Ley Federal de Derechos en Materia de Agua* (Federal Water Rights Law), the irrigation systems and the drains located in the Municipality of Matamoros, as well as the Laguna Palangana, are classified as a “B” Water Body. NOM-001-ECOL-1996, requires that discharges into this type of water body have an effluent quality of 75 mg/liter for both biological oxygen demand (BOD_5) and 75 mg/liter for total suspended solids (TSS). Presently, the wastewater from Matamoros receives no treatment prior to discharge into open streams and the Rio Grande.

The proposed project area is in the general vicinity of segments No. 2301 and 2302 of the Lower Rio Grande Hydrologic Region within the Rio Grande Basin. The Rio Grande is the only natural surface water source present in the general project area. There are numerous irrigation canals along the Lower Rio Grande in Cameron County for agricultural use and drinking water supplies. Dependence on surface water from the Rio Grande as the only water supply source for the portion of the study area within Brownsville is not expected to change over the next 50 years.

3.3.2 Ground Water. The major aquifers in the area are the Gulf Coast Aquifer, which underlies

the entire coastal region of Texas, and the Carrizo aquifer, a broad band that sweeps across the state north from the Rio Grande at Laredo. In the Gulf Coast Aquifer, total ground water withdrawals stood at approximately 22,770 acre-feet (ac-ft) in 1997, about half of which was for municipal uses. The greatest total volume used from this aquifer in recent years was 37,990 ac-ft, of which 26,540 ac-ft was used for irrigation. The largest volume of ground water used to meet municipal demands was 11,685 ac-ft in 1996.

Twenty "minor" aquifers produce significant quantities of water within smaller geographic areas or small quantities in large geographic areas, and include the Rio Grande Alluvium, also called the Rio Grande Aquifer, and the Laredo Formation. While ground water is available from these and other formations, it is generally of such poor quality that it cannot be used for agriculture or municipal use without treatment. Due to the poor quality, this ground water is usually regarded as a secondary source and higher in demand when sufficient surface water is not available.

Ground water in Matamoros is generally between one and two meters below the surface within an aquifer comprised of very fine, unconsolidated material. The only ground water use is for livestock because of the high salt content. The hydro-geology in the Matamoros area is associated with quaternary sediments, alluvial, eolian, lacustral and littoral. The quaternary materials are predominant, while the eolian, lacustral and littoral are located towards the Gulf coast.

3.3.3 Environmental Concerns.

No-action alternative. Implementation of the No-action Alternative would continue the discharge of untreated wastewater into open channels and into the Rio Grande, and continue the pollution and potential transboundary consequences. The negative impact on ground water would tend to increase through normal population growth and because wastewater contamination would tend to continue to infiltrate under ground water resources.

Immediate and Future Projects. Construction of the WWTPs will allow wastewater to be treated to effluent limits set by the Secretariat for Environment, Natural Resources and Fisheries (*Secretaría de Medio Ambiente y Recursos Naturales* - SEMARNAT) regulations prior to discharge. The proposed interceptors will collect wastewater that is currently discharged into the Rio Grande system without treatment. The West and South WWTPs will discharge into irrigation systems that flow to agricultural areas south of Matamoros and have no connection with the Rio Grande or tidal areas along the Gulf of Mexico. The East WWTP will discharge into an irrigation system and eventually to the Laguna Palangana, located south of Matamoros, approximately 20 km from the Gulf of Mexico.

An important objective of the proposed project is to improve the conveying and pumping capacity of the sewer collection system in order to eliminate sewage overflows, which cause flooding of urban areas in Matamoros, and reduce the human health hazards and the sanitation concerns of area businesses. The wastewater system would use "Overflow Works,"

(*Obras de Excedencias*), designed according to CNA specifications, to allow storm water volumes exceeding system capacity to be transferred to a storm water pumping station and pumped to drains. The pumping stations would screen major solids from the storm water. No discharges into the Rio Grande is associated with the proposed projects.

The immediate projects would eliminate or reduce ground water contamination within the project area through the discontinued discharges of untreated wastewater, and would benefit the ecological system in the region. The elimination of existing untreated wastewater discharges into surface and ground water resources would improve the quality of these resources resulting in positive transboundary impacts. The most significant transboundary environmental effect will be the improved environmental conditions and quality of life for residents within the municipality of Matamoros, and the surrounding area.

3.4 Air Resources. The proposed project area is in the Brownsville/Matamoros region or southeast Border Air Quality Control Region (AQCR) 15. According to the Texas Commission on Environmental Quality (TCEQ), this area is classified Class I (only minor air quality degradation allowed) for particulate matter and Class III (substantial degradation allowed) for SO_2, NO_2, carbon monoxide (CO), and O_3. There is no air quality information for the city of Matamoros, except for predominant wind direction data from weather stations. However, the information related to Brownsville air quality could be similar to Matamoros, due to the proximity of the two cities close to each other and have similar meteorological conditions (Figs 5 and 7). The air quality standards of Mexico are based on the U.S. air quality standards and are similar. A comparison between U.S. and Mexican Ambient Air Quality Standards is given in Table 1.

3.4.1 No-action Alternative. None of the pollutants normally associated with the operation and maintenance of earth moving equipment and vehicular traffic would occur with the implementation of the No-action Alternative. However, odor and health hazard conditions would continue.

3.4.2 Immediate and Future Projects. The primary impacts associated with the proposed construction and operation of the proposed alternatives would be fugitive dust and vehicular exhaust emissions, noise, and odors. Noise and fugitive dust and residues would be generated during the clearing and preparation of the proposed construction sites and the trenching to install the distribution and collection lines. The Rulings of the Mexican Environmental Studies (MIA), requires a buffer zone of 500 meters between WWTPs and the nearest residential area, and a tree barrier, to reduce nuisances to surrounding areas. The prevailing wind in Matamoros is from the northwest to southeast.

All pumping equipment will be electric. Gasoline powered emergency electric power generation may be used episodically but are not considered to produce any significant level of emissions. The earth moving equipment and vehicular traffic throughout the construction site will result in insignificant levels 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. These impacts would be minimal and controllable, limited primarily to the Matamoros urban area. The intermittent nature and levels of these emissions will attenuate rapidly over distance from the source. Normal erosion control measures, including sprinkling water on disturbed surfaces, as necessary, should reduce emissions levels in the area. No significant impact is expected to the ambient air quality in the general project area.

3.5 Biological Resources. The proposed project area is located in the general Tamaulipan biotic province (Fig.6), which is characterized by extensive plains with medium and short grasses, thorny shrubs, mesquites and cacti. The fauna in this area includes amphibians, reptiles, birds and mammals. According to the Texas Parks and Wildlife Deparment (TPWD), the Tamaulipan biotic province is the equivalent of the natural regions known as Coastal Sand Plains and South Texas Brush Country, which are located at the southeast end of the state of Texas.

Flora. The predominant vegetation in the general area is the brush type, whose main species are mesquite (*Prosopis glandulosa*), huizache (*Acacia farmesiana*), as well as the yucca and guajillo. Flora types and associations commonly comprising the province of Tamaulipeca include brush (ceniza, blackbrush, creosotebush, mesquite); grassland (tobasa, black grama, blue grama, buffalograss, bermuda grass); shrub (yucca, ocotillo, mesquite, juniper); parks (mesquite, granjeno parks, oak, mesquite, juniper parks, ashe); woods (mesquite, granjeno woods, mesquite, saltceder, mesquite, hackberry); forest (young forest/grassland, pine, hardwood forest, pecan, elm forest); marsh (marsh/barrier island - fresh marsh, brackish marsh, saline marsh); swamp (bald cypress, water tupelo swamp).

The predominant vegetation within Matamoros is the same as that found throughout the Great Plains Province and includes pastureland (*gramineae, bouteloua tifida, tridente fine, tridente texano, setaria macrostachya* - common name Plains Bristlegrass), which is usually invaded by thorny shrubs and undesirable weeds, thorny deciduous forest *(prosopis glandulosa* and *Acacia farmesiana*), in addition to some cactaceae of the genera *Nopalea* and *Opuntia*. Most species are trees measuring 8 to 12 meters high.

Fauna. Birds reported in the Texas side of the Rio Grande Delta and the Southern Plain region, which includes the proposed project area, include muscovy duck, hook-billed kite, gray hawk, plain chachalaca, white-tipped dove, red-billed pigeon, ferruginous pygmy owl, ringed kingfisher, buff-bellied hummingbird, rose-throated becard, great kiskadee, green jay, brown jay, clay-colored robin, tropical parula, altamira oriole, audubon's oriole, and olive sparrow. Mammal species in the area may include bats, rodents and carnivores (bears, wolves, coyotes and ocelots).

Fauna species present within the municipality of Matamoros, on the Méxican side, include *Bufo sp., Hyla sp., Rana pipiens, Eumeces tetragrammus, Crotalus atrox, Micrurus fulvious, Columber constrictor, Oxybelus aestivus, Bubulcus ibis, Dendrocygna autumnalis, Cathartes aura, Coragyps atratus, Falco sparverius, Ortalis vetula, Fullica Americana, Columbina inca, Columbina passerina, Zenaida macroura, Pitangus sulphuratus, Pyrocephalus rubinas, Sayornis phoebe, Tyrannus melancholicus, Cyanocorax yncas, Mimus polygottos,*

Lanius ludovicianus, Agelaius phoeniceus, Cardinalis cardinales, Euphagus cyanocephalus, Guiraca caerulea, Icterus gularis, Molothrus aeneus, Molothrus ater, Quiscalus mexicanus, Sturnella magna, Xanthocephalus xanthocephalus, Didelphis marsupialis, Lepus californicus, Sylvilagus floridanus, Mus musculus, Neotoma micropus, Peromyscus sp., Rattus sp., Reinthrodontomys sp., Procyon lotor, Mephitis macroura. None of these species were observed in the proposed project area during the field work.

Regarding migratory birds and sensitive habitats, the only data on waterfowl distribution in México comes from mid-winter surveys performed by the U.S. Fish and Wildlife Service (FWS). Based on these data, 28 Key Wetland areas that receive 83.8 percent of the migratory waterfowl distributed in México. Seven of these areas are located in the Mississippi Flyway, 14 in the Pacific Flyway, and seven in the Central Flyway. Of the 28 Key Wetlands, six receive more than 40 percent of the migratory waterfowl wintering in México. The two nearest the proposed project area are Laguna Madre, located 60 km south of Matamoros, and Lagunas de Tamaulipas, located 25 km southeast of Matamoros.

The 2001 Conservation Plan developed by Ducks Unlimited México Asociación Civil (DUMAC) presents conservation programs intended to protect wetland habitats along the Gulf coast that are vulnerable to loss and degradation, such as the Laguna Madre in Tamaulipas, and the Tamiahua and Alvarado Lagoons in Veracruz. DUMAC has a waterfowl species banding project to capture and band resident waterfowl species in the states of Tamaulipas, Veracruz, Campeche and Yucatan to determine their movements and distribution in México. DUMAC is also starting a wetlands management and conservation project in the San Fernando River Delta, located approximately 80 km south of Matamoros, and in the Hermalbo Ranch, located 200 km south of Matamoros, both in the state of Tamaulipas.

3.5.1 No-action alternative. The No-action Alternative will not have any direct or indirect impact on biological resources in the project area. However, the existing situation with the operation and condition of the drainage and sewerage supply systems and the wastewater treatment system will remain unchanged and continue the discharges of untreated wastewater into the Rio Grande system.

3.5.2 Immediate and Future Projects. Construction and operation of the proposed projects in Matamoros are not expected to have significant impacts on the routes of migratory birds that spend the winter in central México. There will be an indirect positive impact on the Rio Grande system with the cessation of discharges of untreated wastewater. Some beneficial indirect impacts could occur to aquatic and migratory species since the water quality of the Rio Grande would improve through the elimination untreated effluent discharges from Matamoros. In the long term, aquatic flora and fauna will tend to flourish due to the improved quality of water flowing into the Rio Grande. No significant adverse environmental impacts will result from the proposed project alternatives.

3.6. Threatened and Endangered Species and Critical/Sensitive Habitats. The U.S. Fish and Wildlife Service (FWS) administers laws affecting threatened and endangered species (T&E) in the U.S. under the Endangered Species Act. In México, SEMARNAT administers laws affecting the environment, including threatened and endangered species. The U.S., México and the state of Texas have various species on their T&E lists. The FWS also identifies species that are candidates for possible addition to the T&E list. México does not have a list of candidate species.

It is not known whether any federally or state listed threatened, endangered, or proposed

candidate species occurs or potentially occurs within the proposed project areas. However, based on the existing habitat, there is a very low likelihood for most of the listed species to occur within the sites proposed for construction of the projects. Of the species under the *Norma Oficial Mexicana* (Official Méxican Norm, NOM-059-ECOL-2001)[2], none was observed during the survey of the project study area. The only species of possible consideration is the ebony tree (*Pithecellobuim flexicaule*), which is well identified and protected, and the eastern diamondback rattlesnake (*Crotalux adamanteus*), which is considered under special protection, and the eastern coral snake (*Micrurus fulvious fulvious*), which is considered as uncommon.

Although T&E species and critical/sensitive habitats were not found within the proposed construction areas, some listed migratory bird species could occur as migrants. Implementation of the No-action Alternative would not directly impact T&E species, except that untreated wastewaters would continue to be discharged into the ecosystem. Implementation of the proposed projects would not affect the routes of migratory birds wintering in central México, and no significant negative impacts would be anticipated since construction would occur in dedicated rights-of-way or in areas that have been previously disturbed by agricultural activities. Sensitive habitats, such as wetlands in the Lagunas of Tamaulipas or the Laguna Madre, will not be impacted. The closest sensitive area is located 25 km south of Matamoros. None of the species listed were observed in the project areas during the fieldwork

3.7 Cultural Resources. Matamoros has two museums, *Casa Mata* (Mata House), which covers mainly historical aspects of the city, and *Muséo del Maíz* (Corn Museum), which covers the evolution and different kinds of corn in the life of man, and the *Instituto Regional de las Bellas Artes* (Regional Institute of Fine Arts). None of the tourist and cultural attractions will be affected by the proposed projects. The National Institute of Anthropology and History (INAH) has submitted a concurrence letter related to historical and cultural resources. Furthermore, the Rulings of the Mexican Environmental Studies (MIA) require that in the event an object or structure of historical significance is uncovered during the construction process of a project, the work must cease and the INAH be notified.

Brownsville has some historical attractions and natural wonders. The first two battles of the Mexican-American War were fought here at Palo Alto on May 6, 1846, and Resaca de la Palma on May 8, 1846. The Palo Alto National Battlefield is now part of the National Park System. The last battle of the Civil War was also fought here. The historic Brownsville Museum, Stillman House Museum and the old Fort Brown are popular stops for history buffs. None of these tourist and cultural attractions will be adversely affected by the development of the proposed projects in Matamoros.

3.8 Socio-economic factors. The city of Matamoros represents the central portion of the municipality of Matamoros. The total population of the municipality is 418,141, of which almost 90 percent live within the city of Matamoros. The socio-economy of Brownsville is more closely

[2] The Norma Oficial Mexicana specifies those species and sub-species that are in danger of extinction, threatened, uncommon, and species under special protection.

related to Matamoros than to other communities in Texas. The economy of the region on both sides of the border has historically been based on agriculture. Cattle and hogs are also raised in significant numbers. Much of the non-farm income or the area comes from raising fruits and vegetables, fishing, and seafood processing.

The Brownsville/Matamoros area is the manufacturing center of the Rio Grande Valley. More than 150 manufacturers are located on both sides of the river, employing over 75,000 workers. In addition, there is a Foreign Trade Zone, an Enterprise Zone and the Port of Brownsville. All the multi-modal transportation options needed to move products across the world are available here. Brownsville has a long-term transportation plan with $1 billion in road improvements scheduled over the next 25 years to accommodate the expanding NAFTA trade. The city's main highway will become part of Interstate 69. The East Loop is under construction to link the international bridges to the airport and Port of Brownsville. A fourth bridge to provide direct access from the port to the eastern end of Matamoros is in the planning process. Other services include shipping, railroads and airports. The region also produces oil and natural gas.

The average income in the municipality of Matamoros is considered very low, with 51.2 percent of the population relying on two incomes for support. The malnutrition index for the area is low according to the *Instituto Nacional de Nutrición*. The number of diseases of the digestive tract recorded between 1999 and 2002 reveals a rising trend that could be related to the inadequate treatment of wastewater and the deficient drainage system of Matamoros. Analysis of the causes of death revealed that three of five instances were associated with digestive tract transmission, representing 23 percent of all the illnesses present in the city. Over five-and-a-half percent of the population over 15 years of age is illiterate, with approximately 28 percent of this population not completing elementary school. The *Comisión Federal de Electricidad* (Federal Electricity Commission) provides electric power, while potable water, sewerage and sanitation services are provided by the *Junta de Aguas y Drenaje de Matamoros* (JAD - Waters and Drainage Council). The municipality of Matamoros provides the other infrastructure services.

3.8.1 No-action alternative. Economic conditions in the town of Brownsville are more like those of Matamoros. Implementation of the No-action Alternative would allow the environmental conditions to continue to deteriorate on both sides of the border due to the proximity of the two communities. The city of Matamoros would continue to use the existing wastewater collection and treatment infrastructure. Negative impacts on the ground water resources of the city would persist due to the infiltration of nutrients and fecal coliforms present in raw sewage. Additionally, the use of untreated wastewater to irrigate crops for human consumption, may contribute to the morbidity of waterborne diseases.

The ground water resources for Brownsville would not be affected by the infiltration since the ground water flows towards the Gulf of México. Although Brownsville is not directly exposed to potentially contagious diseases from exposure to the inadequate facilities in Matamoros, interaction between the populations, given their proximity, could increase the possibility of disease transmission and increasing health risks.

3.8.2 Immediate and Future Projects. Socio-economic factors in the proposed project area will not be adversely affected by the construction and operation of the proposed projects. The proposed wastewater improvements are intended to accommodate a substantial business and population growth within the project area for the next 20 years. Construction of the systems will improve the overall public health of residents of the two border cities and will have a positive impact the environment and will provide the residents with safe drinking and wastewater services. Matamoros has shown support for community growth and development of businesses and has acquired the land necessary for the implementation of the proposed WWTPs infrastructure improvement projects. Implementation of the proposed project would not result in the relocation of any individual, and the number of jobs generated by the project is relatively low making it unlikely that a significant number of workers and their families would migrate into the region. However, the increased services may lead to increased property values within the study area.

In the short term, the city of Matamoros will have to increase the water supply, sewerage system service, and storm water systems to its population. The construction and operation of these projects will terminate the discharge of untreated wastewater into the Rio Grande, and will reduce the public health risks. The discharge of raw sewage into the irrigation canals used to water crops for human consumption will be eliminated. The pollution of ground and surface water resources will be eliminated, reducing the generation and spread of harmful fauna as well as the possible transmission of infectious disease amongst inhabitants.

3.9 Cumulative Impacts. The immediate projects, scheduled for completion by the year 2005, include the water treatment and distribution system, the wastewater collection and treatment system, and storm water system projects considered critical for the health and safety of the Region. The sewer projects include the construction of a WWTP. The future projects, scheduled for completion by the year 2020, will provide capacity and rehabilitation of the collection system and are not required by the year 2005. The future projects include additional water distribution system, two WWTPs, and sewer system improvement projects.

No cumulative significant adverse environmental impacts have been identified as resulting from the proposed project in association with other ongoing or completed actions in the area. However, failure to implement the WTP and WWTP collection and treatment system improvements could result in increased wastewater flows without the treatment capacity, and exacerbate the existing raw sewage discharge problems. Failure to implement the potable water system improvements could limit the revenues received through user fees, and limit the funding for other projects to manage wastewater and storm water flows.

4.0 OTHER ENVIRONMENTAL CONSIDERATIONS

4.1 Flood Plains. The area proposed for the implementation of the proposed action is located in México. No construction or operational activities associated with the proposed project are occurring in the United States. México does not have specific regulations for flood plain management nor for the protection of wetlands. The sites proposed for construction of the

proposed project alternative are located outside of the Rio Grande flood plain. A levee road located along the Rio Grande flood plain protects the proposed project areas. No significant construction should occur within the Rio Grande floodway or the *Cauce de Alivio,* which are part of the binational flood control system for this area. Any new storm water outfalls in the Rio Grande must be evaluated for impacts to the flood waters by both sections of the IBWC.

4.2 Cross-Border Impacts. All project activities would be carried out in the municipality of Matamoros on the México side of the border and there would be no impact on the cultural resources, soil or geology in the U.S. Because of the close proximity and social association between the two border communities, both México and the U.S. would benefit from the proposed WWTP project. There is the potential for the water quality and odors emanating from the raw sewage in the Rio Grande to impact land use in the U.S. Cross-border impacts could result from odors emanating from the proposed treatment plant. However, implementation of the proposed project and the termination of discharges of untreated wastewater will improve the ambient air quality, and the quality of surface and ground water in the region. The predominant wind direction is from northwest to southeast.

4.3 Unavoidable Adverse Effects. The construction and line rehabilitation projects will have primarily positive impacts on the environment by improving the existing infrastructures. This will eliminate and prevent pollution to the surface water resources, especially the Rio Grande, and reduce the transmission of infectious and contagious diseases benefitting the health and the environmental conditions. Construction of the proposed improvements will result in the temporary disruption of traffic and pedestrian patterns. For the most part, this impact is unavoidable, but will be mitigated by prompt backfilling of trenches and limiting the amount of trench openings at any one time. Existing rights-of-way and public easements will be used for most of the project elements. Noise will be limited by confining work to daylight hours and using a small number of construction equipment. No significant adverse impacts on natural resources, water, wastewater, or other community infrastructure, such as public schools, emergency medical care, public safety, recreation or transportation, are expected to result from the direct, indirect or cumulative effects of the proposed facilities. The availability of wastewater service to the area may induce secondary development and possibly accelerate the conversion of land use from agriculture to urban use.

4.4 Relationship Between Local, Short Term Use of the Environment and the Maintenance/enhancement of Long Term Beneficial Uses. In the short term, inconveniences will include the generation of dust, the trenching of streets and other pathways for installation of collection and distribution lines, and increased traffic near the construction areas. In the long-term, the infiltration of untreated wastewater into the aquifer due to the leaks in the wastewater collection system would be eliminated, significant positive impacts to ground water used as the potable water supply would occur. The long-term beneficial uses of the environment will result in a better socio-economic and community setting because of the correction of public health and safety hazards. No unacceptable short-or long-term impacts to jurisdictional wetlands, prime farmland, sensitive habitat, or endangered or threatened species have been identified as resulting from this project. If the proposed sewer improvements project have any impact on land values in

the area, it will be to improve them. The expense of replacing the wastewater treatment and collection systems in the future would be greater. Significant impacts to municipal economics would potentially occur with the implementation of the No-action Alternative.

4.5 Irreversible and Irretrievable Commitment of Resources. The only irreversibly and irretrievably commitment of resources associated with this project are the labor, materials, machinery wear, monies spent, and energy used for construction and operation of the facilities.

5.0 LIST OF AGENCIES CONTACTED

Secretaría de Salubridad y Asistencia
Instituto Nacional de Estadística, Geografía e Informática
Instituto Nacional de Ecología
Secretaría de Salud, Gobierno del Estado de Tamaulipas
Instituto Nacional de Antropología e Historia
Comisión Nacional del Agua
Junta de Aguas y Drenaje de Matamoros
Municipio de Matamoros, Tamaulipas, México
City of Brownsville, Cameron County, Texas
County of Cameron, Texas
U.S. Army Corps of Engineers
U.S. Fish and Wildlife Service
International Boundary and Water Commission
Border Environment Cooperation Commission
North American Development Bank
Texas Parks and Wildlife
Texas Water Development Board
Texas Commission on Environmental Quality
Ducks Unlimited México Asociación Civil

6.0 MAPS, TABLES AND CORRESPONDENCE LETTERS

Figure 2 Location of the City of Brownsville, Texas

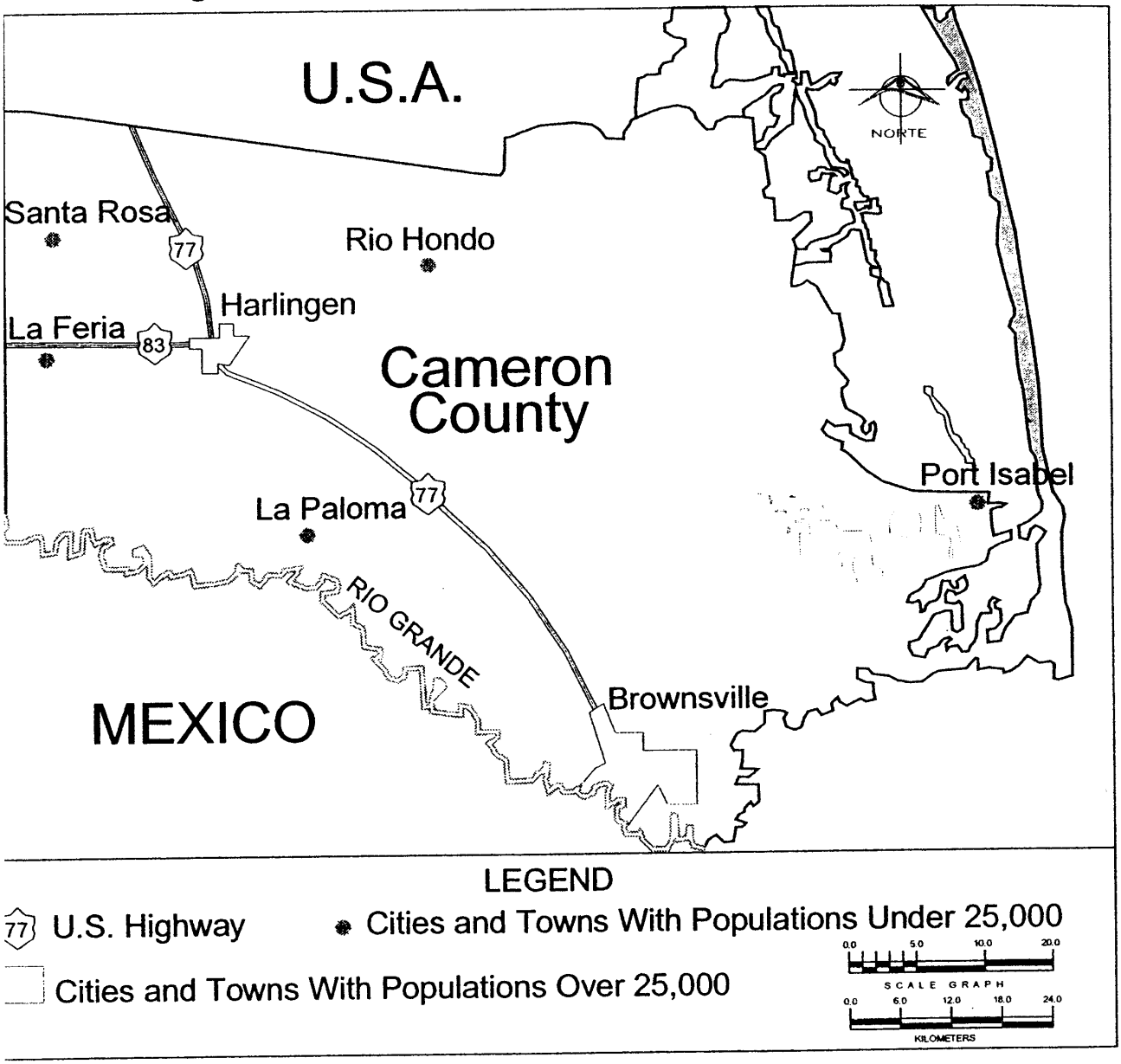


Figure 1 "Area of Concern" for the proposal

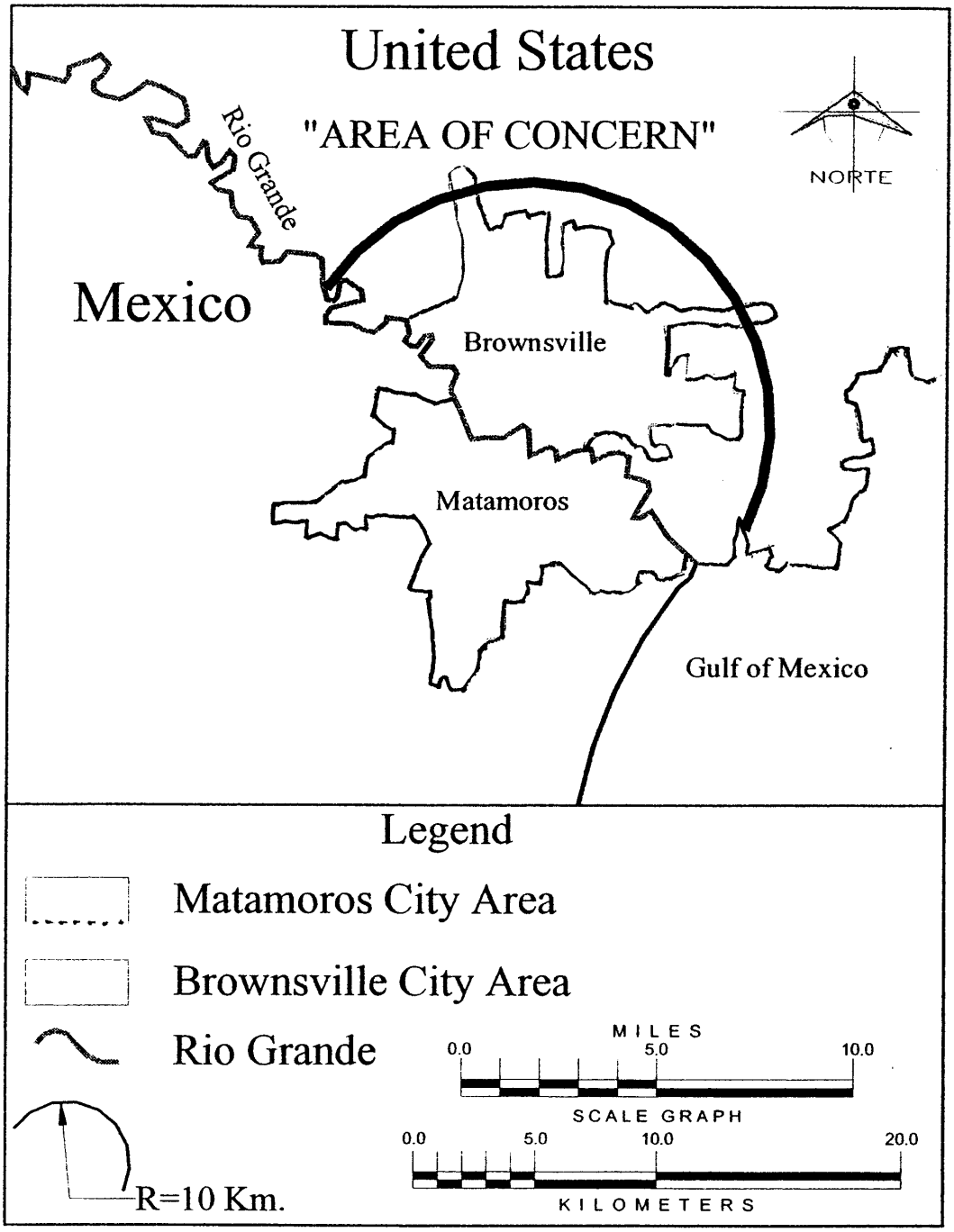


Figure 4 Region M – Rio Grande

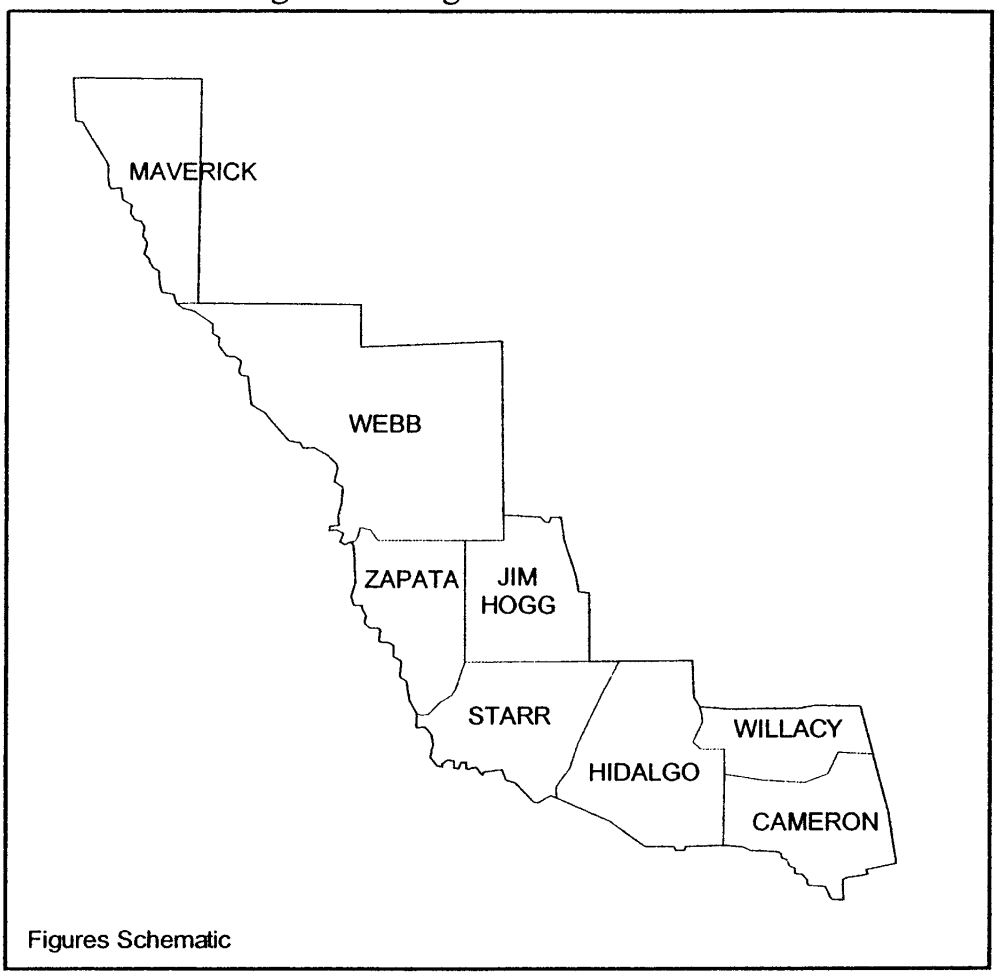


Figure 3 Location of the city of Matamoros, Tamaulipas.

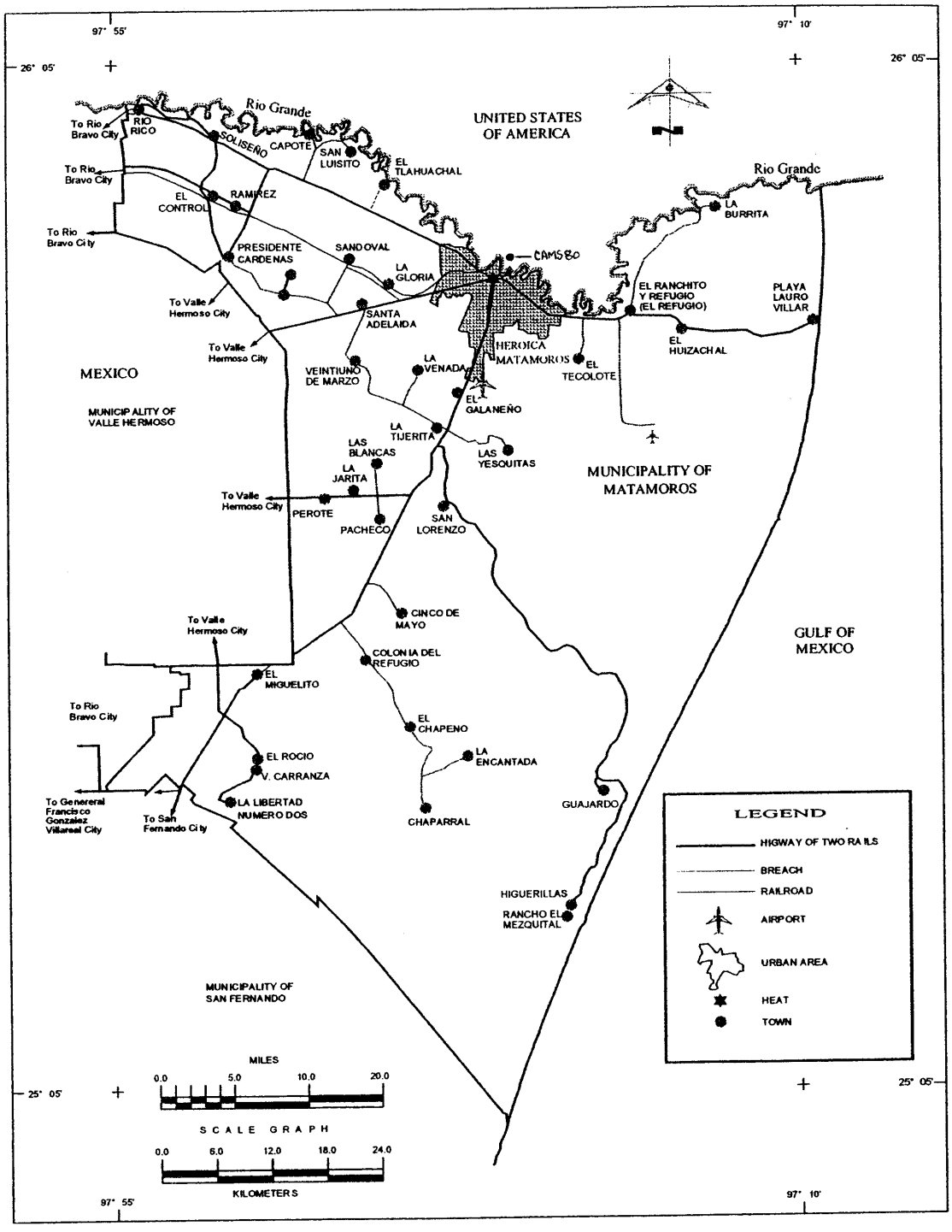


Figure 6 Biotic provinces in Texas.

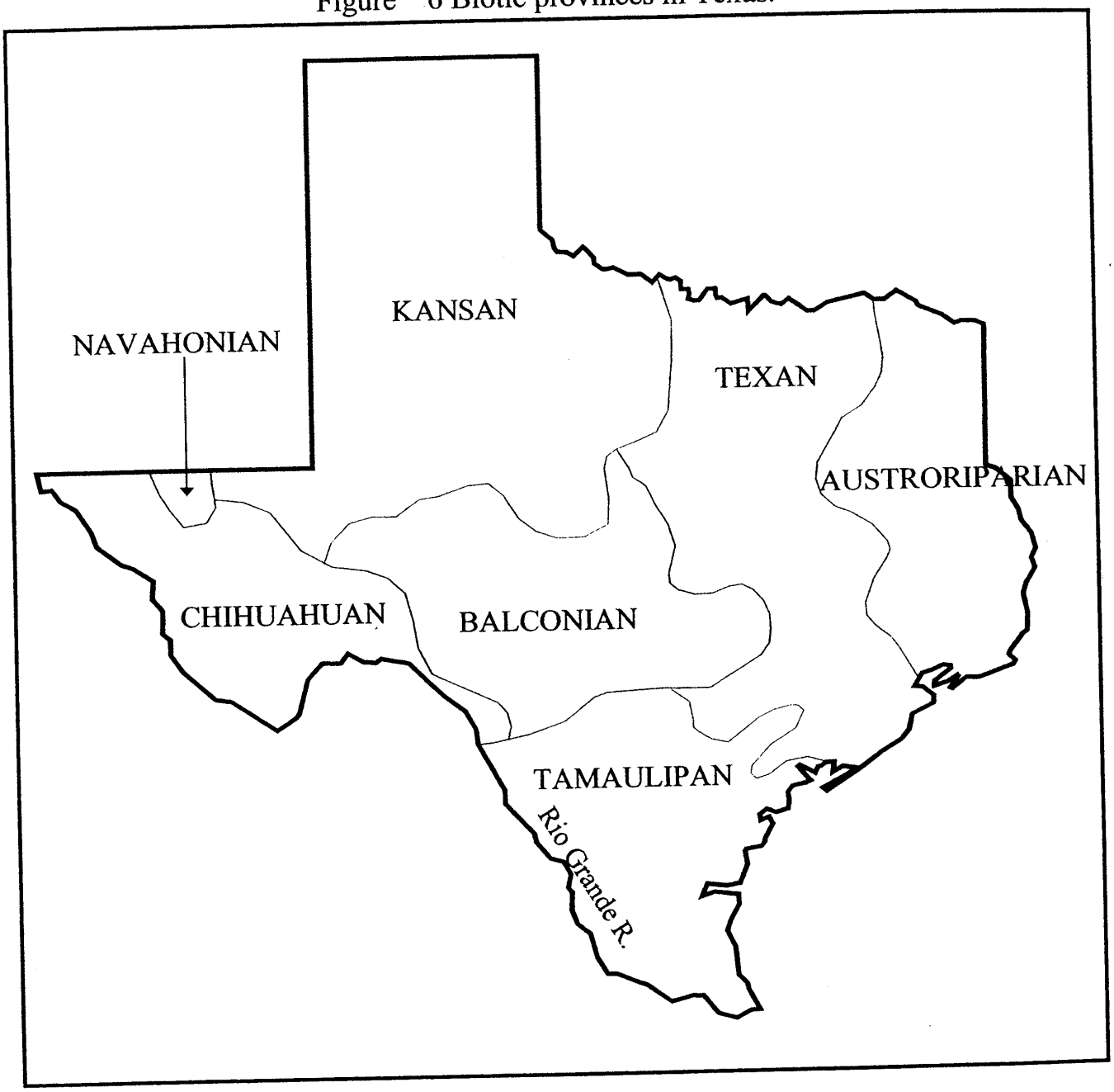
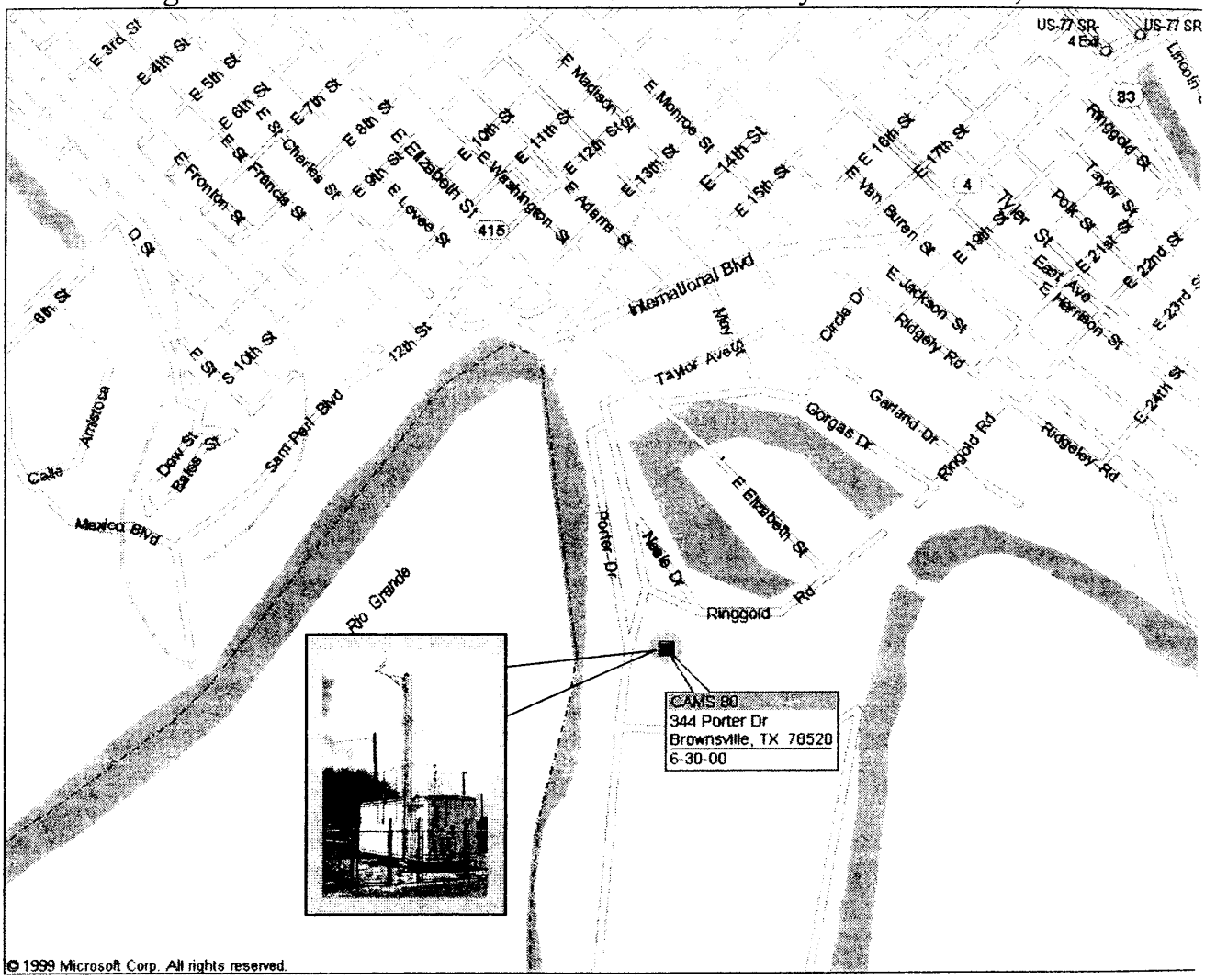


Figure 7 Location of stations C80/C180 at the City of Brownsville, Texas.



5 Location of the WWTPs in the urban area of Matamoros, Tamaulipas.

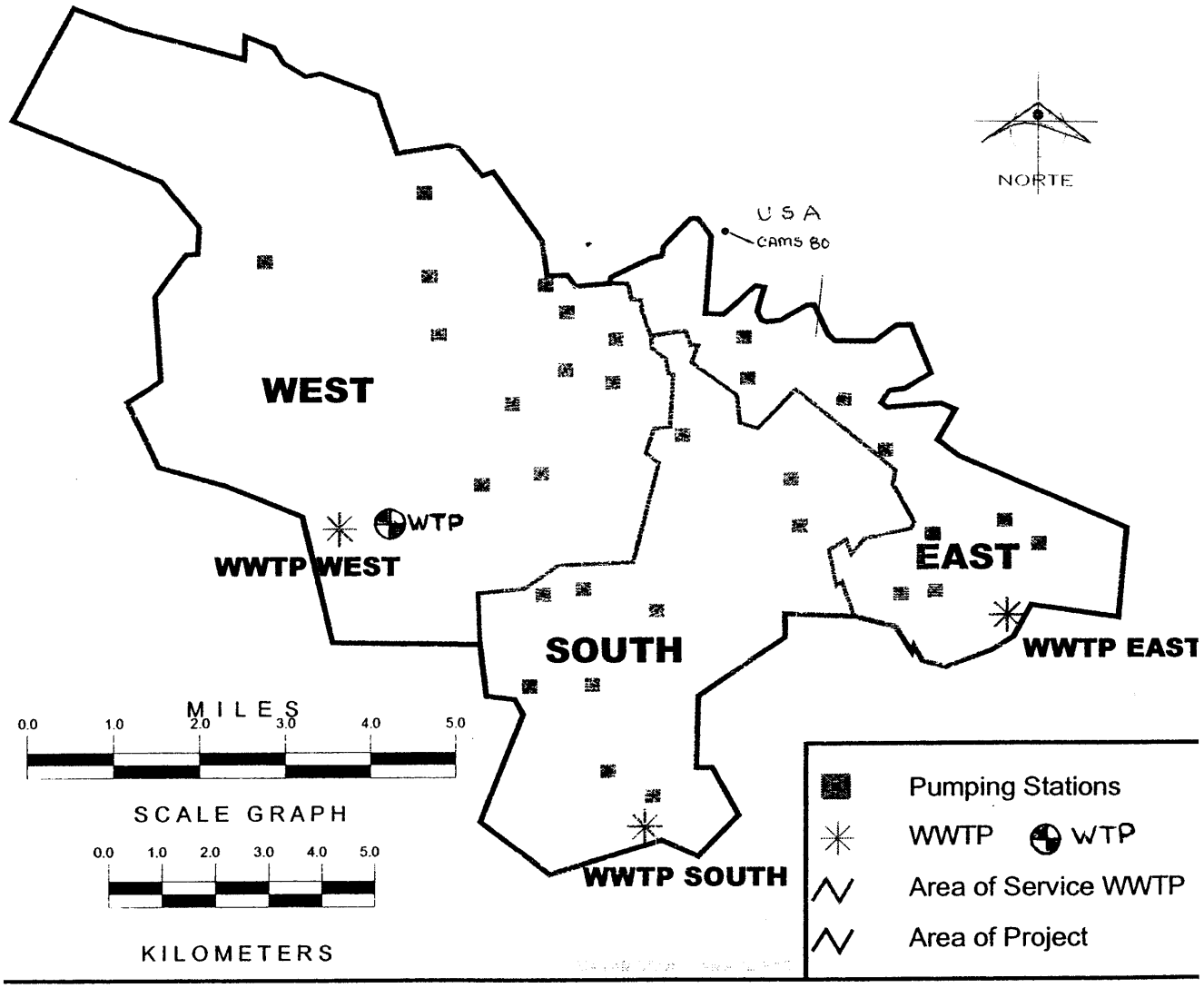


Table 1 Comparison of U.S. and Mexican Ambient Air Quality Standards.

	Mexico		U.S.	
Pollutant	**Units**	**Average**	**Units**	**Average**
Ozone (O_3)	0.12 ppm	1 hr	0.12 ppm	1 hr P&S
			0.08 ppm	8 hr P&S
Sulfur Dioxide (SO_2)	0.13 ppm	24 hr	0.14 ppm	24 hr P
	0.03 ppm	AAM	0.03 ppm	AAM P
			0.50 ppm	3 hr S
Nitrogen Dioxide (NO_2)	0.21 ppm	1 hr	0.25 ppm	24 hr
			0.053 ppm	AAM P&S
Carbon Monoxide (CO)	11 ppm	8 hr	9 ppm	8 hr P
			35 ppm	1 hr P
Total Suspended Particles (TSP)	260 $\mu g/m^3$	24 hr	N/A	N/A
	75 $\mu g/m^3$	AGM		
Particulate (PM_{10})	150 $\mu g/m^3$	24 hr	150 $\mu g/m^3$	24 hr
	50 $\mu g/m^3$	AAM	50 $\mu g/m^3$	AAM
Particulate ($PM_{2.5}$)	N/A	N/A	65 $\mu g/m^3$	24 hr
			15 $\mu g/m^3$	AAM
Lead (Pb)	1.5 $\mu g/m^3$	3 month arithmetic mean	1.5 $\mu g/m^3$	QAM

Legend:
ppm= parts per million
$\mu g/m^3$= micrograms per cubic meter
PM_{10}= Particulate matter less than 10 u
P= Primary Air Quality Standard
S= Secondary Air Quality Standard
AAM= Annual arithmethical mean
N/A= No Applicable
AGM= Annual Geometric mean
hr= hour
QAM= Quarterly arithmethical mean
Source: Secretaría del Medio Ambiente y Recursos Naturales (SEMARNAT) Web site; OAQSP, 1999 EPA Web site.

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