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

December 8, 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 La Grulla.

Applicant: City of La Grulla, Starr County, Texas

Estimated Costs for the Water System Improvement Project:	$ 4,040,662.00
Estimated Cost for the Wastewater System Improvement Projects:	$15,383,265.00
Total Estimated Costs for the Proposed Improvement Projects:	$19,423,927.00

Proposed Action. The city of La Grulla proposes to improve its potable water treatment and distribution system, construct a new wastewater treatment plant (WWTP), and extend its wastewater collection system. The proposed improvements to the potable water system include increasing the capacity of the intake pump station, the raw water pump station, and the filters to 2.0 million gallons per day (MGD); replacement of pumps at the transfer pump station and the Alto Bonito Pump Station; and installation of a mechanical rapid mixer and concrete-lined backwash filter ponds. Water distribution system improvements include water lines and improvements to the high-service pump station. The proposed improvements to the WWTP include improvements to the existing plant, construction of a new 1.35 MGD WWTP, construction of a gravity collection system, force main, manholes, and lift stations. All of the proposed improvements are scheduled for completion by 2005.

The city of La Grulla is located in the Lower Rio Grande Valley of south Texas, approximately 1.5 miles from the U.S.-Mexico border. Its 1.7 million gallons per day (MGD) water treatment plant (WTP) is not able to service the estimated 1,692 residents of La Grulla, and the estimated 4,912 residents in the colonias north of the city. The city cannot provide wastewater treatment service to the colonias and residents rely on on-site cesspools and septic

tanks for wastewater treatment. Many of these systems are inadequate due to design, soils and lot sizes resulting in overflows and seepages of wastewater to alleys, empty lots, and backyards.

Findings: The major federal action involved is the possible grant funding from the Border Environmental Infrastructure Fund (BEIF) administered by the North American Development Bank (NADBank), and grants from the Economically Distressed Areas Program (EDAP) and the EPA financed Colonia Wastewater Treatment Assistance Program (CWTAP). Additional funds will be provided by the Rural Development Agency. The Border Environment Cooperation Commission (BECC) has provided funding for preparation of the Environmental Information Document (EID). The BECC must certify the EID before BEIF funds will be allocated to the city. The exact funding has not been finalized.

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,

/S/

Richard E. Greene
Regional Administrator

Enclosure

ENVIRONMENTAL ASSESSMENT
FOR THE PROPOSED IMPROVEMENT OF THE
WATER TREATMENT AND DISTRIBUTION SYSTEM AND THE
WASTEWATER TREATMENT AND COLLECTION SYSTEM
CITY OF LA GRULLA, STARR COUNTY, TEXAS

1.0 DESCRIPTION OF THE PROPOSED ACTION

1.1 Purpose and Need for the Proposed Project. The city of La Grulla is located in the Lower Rio Grande Valley of south Texas, approximately 1.5 miles from the U.S.-Mexico border. Growth in the area has occurred predominately in the residential colonias located approximately 2.5 miles north of the city, in an area about four miles wide and extending five miles northward (Figures 1 and 2). The estimated 1,692 residents of La Grulla, and the estimated 4,912 residents in the colonias, are served from the 1.7 million gallons per day (MGD) water treatment plant (WTP). Water service for these areas has been provided by extending 2-inch lines from the water distribution system in violation of Texas Commission on Environmental Quality (TCEQ) regulations for minimum water pressure and the number of allowable connections on a 2-in line. The water distribution system was not sized to serve the colonias and several extensions serving the colonia areas are undersized so that periods of low water pressure occur at peak flow periods in the morning and evening.

The colonias do not have wastewater collection service and residents rely on on-site cesspools and septic tanks for wastewater treatment. Many of these systems were not installed in accordance with TCEQ regulations, and soils and most lot sizes are not adequate for the on-site wastewater treatment systems to function properly. The systems tend to overflow or seep to alleys, empty lots, and backyards. Residents report that these units are simply discharged to open areas that are not designated for such use. The Texas Department of Health has determined that “a nuisance dangerous to public health and safety exists” due to the inadequacies of the water supply and wastewater treatment systems.

The proposed project would provide wastewater collection service to these areas. The wastewater collection system was improved in 1987 under a Texas Department of Community Affairs grant. The improvements included construction of a wastewater treatment process which presently consists of a facultative lagoon and two effluent reservoirs. The original plans included an irrigation system to dispose of treated wastewater. The system was never installed because it was believed that the ponds would not contain enough water due to the high evaporation rate. However, the estimated evaporation rate seems to be significantly less than the projected effluent flow rate, and there is a strong indication that the ponds may be functioning as percolation ponds. The city collection system consists of 6 and 8-inch diameter collectors and three small-capacity lift stations, and does not have the depth or size to accommodate any areas beyond the immediate city.

1.2 Proposed Action. The city of La Grulla proposes to improve through the year 2025, its WTP and distribution system, construct a new wastewater treatment plant (WWTP) and extend its wastewater collection system. The proposed improvements to the WTP include increasing

the capacity of the intake pump station, raw water pump station, and filters to 2.0 MGD; replacement of pumps at the transfer pump station and the Alto Bonito Pump Station; and installation of a mechanical rapid mixer and concrete-lined backwash filter ponds. Water distribution system improvements scheduled for completion by 2005, include water lines and improvements to the high-service pump station (Figure 3). The proposed WWTP project includes replacement of the existing 0.12 MGD WWTP with a new 1.35 MGD WWTP, construction of a gravity collection system, force main, manholes, and lift stations. Based on projections, La Grulla will need a total of approximately 1.70 MGD to provide service through the year 2025. The proposed plant may be able to assimilate the increased flow without additional plant expansion.

The major federal action involved is the possible grant funding from the Border Environmental Infrastructure Fund (BEIF) administered by the North American Development Bank (NADBank), and grants from the Economically Distressed Areas Program (EDAP) and the EPA financed Colonia Wastewater Treatment Assistance Program (CWTAP). The BEIF was established by the NADBank to make environmental infrastructure projects affordable for communities throughout the U.S.-Mexico border region by combining grant funds with loans or guarantees for projects that would otherwise not be financially feasible. The Texas Water Development Board (TWDB) administers CWTAP planning, design and construction grants for water and wastewater projects. Additional funding will be provided by the Rural Development Agency. The Border Environment Cooperation Commission (BECC) has provided funding for preparation of the Environmental Information Document (EID). The EID is the basis for the environmental assessment (EA) required for NADBank and Texas Water Development Board funding. Currently, the city does not have a Certificate of Convenience and Necessity (CCN) on file with the TCEQ, but has submitted an application for a CCN with the application for funding from the NADBank and TWDB.

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2.0 ALTERNATIVES CONSIDERED AND PREFERRED ALTERNATIVE

2.1 Alternatives Available to the EPA.

2.1.1 Approval for Grant Funding for the Project as Proposed. EPA can recommend approval of the grant funding for the proposed purpose.

2.1.2 Approval for Grant Funding for a Modified Project. Information received during the EA process could result in identification of significant adverse impacts that would require modification of the project to mitigate the impacts. Modification of the project may allow the EPA to accept the project as modified and recommend approval of the grant funding.

2.1.3 Recommend Preparation of an EIS. A determination that the project as proposed could result in potentially significant adverse impacts to the environment that cannot be satisfactorily mitigated would preclude a recommendation of approval of the grant funding. The preparation of an Environmental Impact Statement (EIS) would then be recommended to evaluate the

potentially significant impacts. The EIS process includes a scoping meeting to identify critical facts and issues, a Draft EIS, a public comment period on the Draft EIS, a public hearing on the Draft EIS, the Final EIS, a public comment period on the Final EIS, and a Record of Decision.

2.2 Alternatives Considered by the Applicant. Alternatives evaluated by the applicant included: 1) No-action Alternatives for both the wastewater and the water treatment systems; 2) four technology options for wastewater treatment; and, 3) two expansion alternatives for the water treatment facility and two water distribution alternatives.

2.2.1 Water Treatment Plant Alternatives.

WTP Alternative 1 - No-action Alternative. The No-action Alternative is not compatible with the purpose and need for the proposed improvement projects and is not recommended. This alternative would not address the needs of the area and would continue a condition that is potentially hazardous to the health and safety of area residents. Although this alternative seems to be the least expensive, the potential costs associated with the adverse health and safety condition could be higher and remediation would still be needed. Inadequate water flows and pressures would continue to exist and the city's non-compliance TCEQ regulations would remain in violation. Failure to address the needed improvements could lead to further deterioration of existing plant equipment and increase the risk of failure, and could also expose the city to potential violations of the anticipated Safe Drinking Water Act (SDWA) regulations.

WTP Alternative 2 - Capacity and Regulatory Improvements. Alternative 2 is the preferred alternative. It would increase the firm capacity of the WTP from 1.7 MGD to 2.0 MGD to meet TCEQ regulations, and would address potential health hazards due to inadequate water pressures. It would also increase the efficiency and water quality of the WTP, and would meet any future SDWA regulation changes. The total cost for this alternative is $1,632,000, with capital, and operation and maintenance (O&M) costs for capacity improvements estimated at $768,600, and capital/O&M costs for regulatory improvements estimated at $863,400. This alternative has the highest initial cost, but over time the cost would be less than the cost of having to upgrade the WTP eventually to meet SDWA regulations. The benefits outweigh the difference in project cost.

Alternative 3 - Capacity Improvements Only. This alternative would only address the immediate need to upgrade firm capacity of the WTP to meet TCEQ regulations and is not recommended. It would address the capacity inadequacies, but would not meet the anticipated SDWA regulations. The cost for this alternative is estimated to be $711,000. The difference in cost with Alternative 2 does not outweigh the risk.

2.2.2 Water Distribution System (WDS).

WDS Alternative 1 - No-action Alternative. The No-action Alternative would not address the deficiencies in the La Victoria Subdivision and would continue to create a health hazard situation due to inadequate water pressure and low flow conditions. Also, the city would continue to be in non-compliance with TCEQ regulations for water distribution systems.

WDS Alternative 2 - Provide Water Service to the Colonia Areas. Under Alternative 2, the city would provide drinking water service to an area extending approximately eight miles to the north of La Grulla along FM 2360, and about two miles east, and 3.5 miles west of the FM 2360-US Highway 83 intersect. Modeling of the water distribution system to evaluate its performance using demand information for 1999 and 2001, determined that, except for the La Victoria Subdivision area, most of the water system meets demand and pressure requirements.

2.2.3 Wastewater Treatment Plant (WWTP) Process Alternatives.

WWTP Process Alternative 1 - No-action Alternative. The No-action Alternative has the lowest upfront cost to the city, but these benefits do not outweigh the potential consequences. The potential for human health and safety hazards due to the inadequate on-site disposal units and lot sizing would still remain. Colonia residents would continue to rely on septic tanks and cesspools, the majority of which have not been permitted by the county.

WWTP Process Alternative 2 - Facultative Lagoon. Alternative 2 is the least technically complex but would have the highest cost and is not recommended. The high costs associated with this alternative are not economically feasible for the city. It would require nearly 50 acres of land for the installation of the three treatment trains to meet the requirements, with each train consisting of one primary pond and two secondary ponds. This system would be similar to the existing La Grulla system, with modifications to include a liner, increased capacity, and sufficient land area for irrigation.

The existing 0.12 MGD La Grulla system is permitted to discharge wastewater effluent only to a designated 32-acre irrigation field. If an expanded 1.35 MGD facultative system is selected, it is assumed that the wastewater effluent will have to be irrigated similar to the current permitting requirements requiring and irrigation area of approximately 360 acres. Facultative pond systems cannot consistently produce as high quality an effluent as aerated or mechanical systems.

The construction costs for this alternative total $19.8 million; non-construction costs total $7.7 million; estimated O&M costs total $0.18 million. The key capital cost items for this system include lagoon modifications and construction, irrigation system installation, and land acquisition and/or long-term irrigation agreement with local farmers, pumps and conveyance piping, and costs for connections of unserved households to system. Estimated non-construction costs include the permitting, engineering, legal and administrative services, services during construction, commission and setup, land and right-of-way acquisition, and land for irrigation of effluent.

WWTP Process - Alternative 3 - Aerated Lagoon System to Irrigation System. This option is similar to Alternative 2 and has the second highest cost and is not recommended. The high costs associated with this alternative are not economically feasible for the city. The existing facultative pond and the first of the two existing stabilization ponds would be retrofitted with

aerators to increase their treatment capacity. Aerated ponds are more consistent in providing higher quality effluent than facultative ponds. Two settling ponds in parallel would follow the aerated ponds. The settling ponds would be constructed by modifying the third pond at the existing WWTP facility. Two ponds in series would be required for a total aerated pond surface area of 4.6 acres.

The estimated construction costs total $11.6 million, non-construction costs are estimate at $4.8 million, and the O&M costs were estimated at $0.13 million without irrigation and $0.16 million with irrigation. The key capital cost items for this system are the same as for Alternative 2 with the addition of the installation of floating aerating mixers and the power requirements for the aeration mixers.

WWTP Process Alternative 4 - Aerated Lagoon System to River. Alternative 4 provides the lowest cost of all alternatives and is the recommended alternative. This alternative uses the aerated lagoon system but the effluent is discharged to the Rio Grande and must meet higher water quality standards than for irrigation. The estimated construction costs total $2.3 million, the non-construction costs are estimated to be $0.8 million, and the O&M costs are estimated at $0.14 million. The key capital cost items for this system would include lagoon modifications and construction, the installation of floating aerating mixers, land/easement acquisition, pumps and conveyance piping, and costs for connections of unserved households to system. Key O&M cost items for this system would include power requirements for the aeration mixers, and pumping for conveyance to WWTP and to the river discharge point.

WWTP Process Alternative 5 - Mechanical Activated Sludge Plant. This alternative is not recommended, primarily because the high costs associated with future O&M expenses are not economically feasible for the city. If a facultative or pond system is inadequate for meeting state treatment requirements, then city will be required to convert its wastewater treatment facility to a more conventional treatment process such as a mechanical activated sludge system. Rather than designing a custom wastewater treatment plant, a vendor supplied packaged system would be preferred to minimize costs, minimize O&M requirements, and produce a consistent high quality effluent. Unlike with the pond systems in Alternatives 2, 3 and 4, which required periodic pond cleanout, the mechanical system will generate biosolid sludge waste. The city would have to develop a plan to dispose of this material, which would most likely involve dewatering to produce a Class B biosolids product. The city is not permitted by TCEQ for disposal of sludge. All package plant effluent would be discharged to the Rio Grande and meet the effluent limits of the discharge permit.

The estimated construction costs total $3.9 million, the non-construction costs are estimated to be $1.4 million, and the O&M costs are estimated at $0.33 million. The key capital cost items for this system are the package treatment plant, the pumps and conveyance piping, the costs for connections of unserved households to system, the lagoon modifications and construction, and land/easement acquisition. Key O&M cost items for this system would include the pumping for conveyance to WWTP and possibly to the discharge point, power requirements for the treatment system, and sludge handling and disposal.

2.2.4 Wastewater Collection System Alternatives.

WW Collection Alternative 1 - No Action Alternative. The No-action Alternative has the lowest cost upfront cost to the city, but the benefits do not outweigh the potential health and safety hazards for residents and is not recommended. Under the No-action Alternative colonia residents would continue to rely on septic tanks and cesspool systems which are not designed properly. The potential human health and safety hazards resulting from the small lot sizes and soils with low permeability would remain.

WW Collection Alternative 2 - On-Site Septic Systems. Installation of properly designed on-site septic systems would be relatively low-cost and have minor maintenance requirements. The residents are familiar with them, but the drains tend to clog with grease and tanks have to be cleaned every 2-3 years. The generally small lot sizes present the greatest obstacle for this option. The TCEQ requires a minimum of 0.5 acres or 21,780 square feet (sq.ft) per lot for post-1988 subdivisions with municipal water service, and on-site septic systems. The average drain field size required for these lots is 1125 sq. ft, or about 25 percent of the average lot in the area. Given the separation distances required for these systems from lot lines, foundations, potable water lines, etc., it becomes apparent that these lots are simply not large enough for the long term use of on-site septic systems. Also, the soils in this area consist mostly of McAllen Fine Sandy Clay Loam, a Cl III soil. The majority of the residents are low-income families and cost for these systems average $800 to $1200.

WW Collection Alternative 3 - Septic Systems for Household Groups or Subdivisions. These systems are being utilized for developments that do not meet the TCEQ minimum lot size requirements, or where the construction of standard gravity collection systems is not feasible. These systems are relatively expensive, costing $7500 to $12,500 depending on system size and the type of effluent disposal available. They require electrical power, and therefore represent a monthly expense throughout the life of the system. Repairs and maintenance for these systems normally require the services of professionals. This option is being discounted for this area because the cost associated with these systems is prohibitive given the fact that the majority of the residents in these subdivisions are low-income.

WW Collection Alternative 4 - Gravity Collection System. The costs associated with Alternative 4 will be lower than Alternatives 2 and 3. Given the general topography of the area, the average lot size, the conveyance distance, the operation costs, and the general acceptance of the subdivision residents, a gravity collection system is the most feasible of the options available. A properly designed and well-constructed system can readily handle the flows generated by the various subdivisions. Except for routine pump maintenance and power costs associated with the lift stations, this type of system is relatively maintenance free. Operating costs are minimal and the cost to the residents is minimal. Maintenance is taken care of by the city. Construction costs are also minimized because the natural slope of the area generally allows for small diameter collectors and shallow system depth.

2.2.5 Alternate Methods of Sludge Control. Two alternatives of sludge disposal were considered. Alternative 1 involves handling the sludge on-site, and Alternative 2 is to transport the sludge to a sanitary landfill.

Alternative 1 - On-site Sludge Disposal or Incineration. The proposed site does not have enough land to provide on-site disposal and this alternative would put a landfill close to the raw water storage ponds and finished water ground storage. The existing plant site has enough land to provide for on-site sludge incineration of sludge. Incineration would provide the benefit of quick disposal, but this option would have an obvious impact to air quality.

Alternative 2 - Disposal at Municipal Landfill Facility. The city currently operates a landfill site located northwest of the city limits, which is not permitted by TCEQ to receive sludge disposal. Based on the *Technical Report for Municipal and Private Wastewater Discharge Permits, Southwest Engineers, October 1998*, sludge will not have to removed any sooner than 40 year from the year the plant was completed (1986). Therefore, sludge will not have to be removed until the year 2026.

2.3 Preferred Alternatives. The alternatives were evaluated based on cost effectiveness; political, social and economic impacts; project longevity; construction, topographic and soils constraints; practicality; CCN, city boundaries and Extra Territorial Jurisdiction (ETJ); ease of right-of-way (ROW) acquisition; ability of existing systems to handle additional demand, treatment capabilities, and effectiveness; age of existing system; O&M facility; population served and percentage of population with inadequate services; aesthetic and environmental impact; disruption from construction, and work force from affected areas.

2.3.1 Preferred Water Treatment Alternative. Alternative 2 is the preferred alternative. It would allow the city to come into full compliance with TCEQ regulations, and meet any future SDWA water treatment regulations. The WTP would operate more efficiently, reducing future O&M, and would provide customers with a higher quality drinking water.

2.3.2 Preferred Water Distribution System Alternative. Alternative 2 is the preferred alternative. It would improve service to the La Victoria subdivision and would involve abandoning the 3-inch water line between Sunrise and Olmito Street and installing a new 4-inch water main. The new 4-inch water main would be connected to the existing 6-inch water main, approximately 1,870 feet north of Olmito Street, and to the existing 2-inch water main at the intersection of Pastor's Lane and Olmito Street. Also, an additional 4,100-foot, 4-inch parallel water main would be linked to the existing 6-inch water main along FM 2360 and two existing water lines would be connected to provide adequate pressure.

2.3.3 Preferred Wastewater Treatment Alternative. Alternative 4, Aerated Lagoon System with discharge to Rio Grande River, is the preferred alternative due to its simple operation and minimal maintenance requirements, and lowest construction costs.

2.3.4 Preferred Wastewater Collection System Alternative. Alternative 4 is the preferred alternative for wastewater collection. This alternative uses standard gravity collection and conveyance system connecting to the existing city of La Grulla facilities.

2.3.5 Preferred Alternative for Sludge Control. Alternative 2 to dispose sludge at the municipal landfill facility, provides the best choice for community health, environmental protection and practicality for the city. An application to TCEQ for sludge disposal would be required although the sludge will not have to be removed from the facultative pond until the year 2026.[1]. Long-term environmental impacts from sludge handling will be minimal.

2.4 Recommendation. On the basis of this environmental assessment and other available information, the EPA recommends acceptance of the preferred alternatives and the issuance of a Finding of No Significant Impact. The treatment processes would meet the purpose and need for the La Grulla service area, and would get the city into compliance with State and Federal regulations. The project individually, cumulatively, or in conjunction with any other action, is not expected to result in any significant adverse impacts to environmental, social, or economic issues, and the preparation of an Environmental Impact Statement is not warranted. The U.S. Fish and Wildlife Service (FWS) and Texas Parks and Wildlife Department (TPWD) have found no impact to threatened or endangered species or wildlife habitats.

From records with the Texas Archeological Research Laboratory (TARL), it was determined that fourteen (14) prehistoric archeological sites are located within the proposed project area. No sites listed in the National Register of Historic Places (NRHP) or registered as State Archeological Landmarks were found within the project area. Correspondence with the Texas Historical Commission (THC) indicates that no historic properties will be affected by the project, and have given authorization for the project to proceed. All construction in floodplains will conform to the requirements under the National Flood Insurance Program, and it was determined that the proposed project is not subject to U.S. Army Corps of Engineers jurisdiction under Section 404 of the Clean Water Act. Finally, an Environmental Justice analysis was performed on the potential environmental impacts to low-income and minority communities in the proposed project areas. It was determined that the project would not disproportionately affect these communities.

3.0 AFFECTED ENVIRONMENT AND POTENTIAL ENVIRONMENTAL IMPACTS

3.1 Land Resources.

3.1.1 Geologic Resources. The landscape of the project area is defined by an escarpment comprised of low-lying hills approximately 50 to 100 feet above the Rio Grande flood plain. The escarpment roughly runs parallel with the river, forming a boundary between the flood plain and the plain to the north. The flood plain area located within the project area is characterized by

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[1] Based on Southwest Engineers, *Technical Report for Municipal and Private Wastewater Discharge Permits,* October 1998.

oxbows and abandoned river channels west and south of the city. An abandoned river channel also intersects northwesterly-southeasterly the project area along F.M. Road 2360.

Geologic formations found in the southern flood plain area include Fluviatile Terrace Deposits and Alluvium Floodplain Deposits. The former is encountered as gravel, sand, silt, and clay. Soils deposited in the Pleistocene era. The latter is encountered as undivided clay, silt, sand, gravel, and organic matter. Soils were deposited during the Recent (Holocene) era. Silt and quartz sand and calcareous both dark gray to dark brown. Gravel along the Rio Grande includes older sedimentary rocks from Cretaceous and Tertiary periods and igneous and sedimentary rocks from Trans-Pecos Texas, Mexico, and New Mexico. Gravel in side streams of the Rio Grande mostly local Tertiary rocks and chert.

Geologic formations in the northern plain area include the Goliad Formation, comprised of clay, sand, sandstone, marl, caliche, limestone, and conglomerate. Clays are commonly light shades of pink and green with calcareous concretions. Sand and sandstones are medium to very coarse grained, mostly quartz, in part crossbedded. Conglomerate is composed of black chert and dark siliceous granules and pebbles in calcareous matrix. Sand and conglomerate are typically well bedded, while marl and limestone is poorly bedded or massive. Fossils of Tertiary and Cretaceous era are fairly common. Thickness of the formation may reach 600-feet.

3.1.2 Soils. There are three soils associations at the proposed project site. Soils of the Rio Grande-Reynosa Association are found in the southern floodplain. Along the terraced area that divides the southern from the northern plain are the Jimenez-Quemado Association. This Association is also found in the plain to the north, along with soils of the McAllen-Brennan Association.

Rio Grande-Reynosa Association. This association comprises the nearly level to gently sloping flood plain and low terraces along the Rio Grande. These areas run the length of the River and range from 3 to 4 miles in width. They are located exclusively within the floodplain; flooding is infrequent. Rio Grande soils make up 28 percent of the association, Reynosa soils 15 percent, with Zalla, Camargo, Lagloria, Matamoros, and Grulla series making up lesser amounts. Approximately 75 percent of this association is cultivated and irrigated, but most of the remaining percentage of land is brushy and used for range. These soils are generally fertile.

Jimenez-Quemado Association. This association comprises the undulating to hilly gravelly ridges that make up the escarpments above the terraces and flood plains along the Rio Grande. The major soils are a source of gravel, and there are several large pits in this association. Jimenez soils make up 52 percent of the association, Quemado soils 38 percent, with Ramadero, McAllen, and Brennan series making up lesser amounts. All of this association is well suited to and is used for range. The soils respond to mechanical brush control and seeding.

McAllen-Brennan Association. This association comprises nearly level to gently sloping plains. With the exception of small stream valleys, very slight depressions, and few low ridges, this area

is almost featureless. McAllen soils make up 60 percent of the association, Brennan soils make up 18 percent, with Zapata, Ramadero, Tiocano, and Rio series making up lesser amounts. Approximately 10 percent of this association, in dispersed areas, is used for cultivation, but the dominant use is for range. Seeding for pasture does occur. Soils are naturally fertile and are well suited to irrigation.

The soils listed below make up the project site and the surrounding area.

Gr – Grulla Clay. This soil is deep, extremely to very hard and found in nearly level depressions of bottomlands. Soil slopes are level to slightly concave with gradients less than 1 percent. Areas range from 15 to more than 200 acres. This soil is poorly drained, with very slow permeability. Surface water is common for a few weeks after heavy rains unless a drainage system is provided. This soil is typically saturated during fall and winter months. Where artificial surface drainage is provided, crop use may include cotton, grain sorghum, and vegetables. Native vegetation includes mesquite, huisache, retama, sienna bush, sedges, buffalo grass, and trichloris grass.

Gu – Grulla Clay, depressional. This soil is deep, extremely to very hard and found in active flood plains of the Rio Grande, and in the beds or floors of resacas or abandoned stream channels. Soil slopes are concave with gradients less than 1 percent. Areas range from 10 to 150 acres. This soil is poorly drained, with very slow permeability. Most years soil is either flooded by the Rio Grande and its tributaries, or receives runoff from surrounding areas. Soils are wet several months each year. During average annual rainfall periods water may collect at surface levels for up to 3 months. Cultivation of these areas cannot occur without artificial surface drainage.

Jq – Jimenez Series. This soil is very shallow to shallow hard and is located on high terraces and ridges along the Rio Grande. Soil slopes range from 1 to 30 percent. Areas may reach sizes as large as 500 acres. Jimenez series soils are well drained and possess medium to rapid runoff characteristics. Permeability above the caliche layer is moderately rapid, with medium internal drainage. Land use is exclusively as range for sheep, goats, and cattle. Native vegetation consists of mid grasses, a few short grasses, woody shrubs, and perennial forbs. With retrogression, woody plants, dominated by guajillo and blackbrush, form a dense canopy. Other increasers and invaders are threeawn, hairy tridens, and red grama.

Mm – Matamoros Silty Clay. This soils is deep, very hard to hard and is found on nearly level bottomlands with slopes less than 1 percent. Areas of this soil are encountered in irregular shapes of 20 to 100 acres. Slopes are nearly level to slightly concave, with gradients less than 1 percent. This soil is moderately well drained, but surface runoff is slow to ponded due to level to slightly depressed topography. Permeability is slow. Typically, a perched water table forms following heavy irrigation or rainfall because lower layers have contrasting textures. Soils are used for cultivation and are irrigated. Crops include cotton, grain sorghum, sugarcane, and a wide variety of cool season vegetables. Native vegetation includes forflower trichloris grass,

sacaton grass, cottontop grass, plains bristlegrass, common bermudagrass, hackberry, Rio Grande ash, and mesquite trees.

Mc – McAllen Fine Sandy Loam. This soil is deep, soft to slightly hard soil is located on nearly level to gently sloping uplands. Slopes are typically less than 1 percent, but range from 0 to 5 percent. Soil is encountered in irregularly shaped, broad areas of several hundred acres. This soil is well drained, with slow medium surface runoff and moderate permeability. When irrigated, water may accumulate at depths of 4 to 8 feet below surface. Land use is primarily as range. Soil is suited to irrigation and some dry farming. Main crops are cotton and grain sorghum on dryland. Irrigated crops are cotton, grain sorghum, and some citrus. Native grasses are twoflower and fourflower trichloris, Alovegrass tridens, Arizona cottontop, and plains bristlegrass. Woody species include Texas ebony, mesquite, spiny hackberry, lotebush, blackbrush, cenizo, Coyotillo, lime pricklyash, and pricklypear.

Ra – Ramadero Loam. This soil is very deep, hard to very hard and is found on long and narrow upland drainageways or valley floors. Slopes are concave, with gradients less than 1 percent. This soil is well drained. Surface runoff is slow to medium with moderate permeability characteristics. The majority of land use is for range. Rangeland vegetation includes thorny brush, mesquite trees, fourflower trichloris, plains bristlegrass, Arizona cottontop, cenchrus, windmillgrass, whorled dropseed, and threeawn. Some cultivated areas are common. These crops include corn, grain sorghum, and vegetables.

Re – Reynosa Silty Clay Loam. This soil is very deep and hard, and is found on nearly level to gently sloping stream terraces. Slopes are typically less than 1 percent, but range up to 3 percent. Soil is encountered in irregularly shaped, broad areas of several hundred acres. This soil is well drained. Surface runoff is negligible on slopes less than 1 percent and low on 1 to 3 percent. Permeability is moderate. Most of these areas are irrigated for cultivation. Crops include cotton grain sorghum, and several cool season vegetables. Native grasses consist of trichloris, little bluestem Texas wintergrass, and bristlegrass. Woody species include large mesquite trees, spiny hackberry, lotebush, blackbrush, and common hackberry.

Zp – Zapata Soils. This soil is hard and very shallow, and is located on nearly level to undulating uplands. This soil is gently sloping, ranging from 1 to 8 percent. Areas are irregularly shaped to elongated. This soil is well drained, with very high surface runoff. Permeability is moderate. Land use is as native range. Grasses include tanglehead, plains bristlegrass, twoflower trichloris, hodded windmillgrass and perennial threeawn. Brushy plants include blackbrush, cenizo, guajillo, kidneywood, and ratany.

3.1.3 Land Use. The scope of the proposed project is to upgrade the city's existing water and wastewater systems to provide adequate service to current residential areas within the city's extra-territorial jurisdiction (ETJ). The original planning and design of the existing water and wastewater systems did not take into account these large service areas. The improvements would upgrade service to existing housing units alone, and it is not anticipated that the proposed project would affect existing land use trends. Distribution and collection line upgrades would

meet the current capacities of both the WTP and WWTP. It is anticipated that the most of the construction will be within existing street and highway ROWs. The property on which the existing water and wastewater treatment plants are situated would not affect agricultural lands since these areas have been dedicated for their current use for several years.

The project would have a beneficial long-term environmental impact since the use of on-site septic units, many of which do not meet minimum state standards, would be eliminated or reduced. The WWTP currently does not use irrigation fields to treat effluent. Two of the design alternatives for the WWTP include installation of an approximately 360-acre irrigation field.

Prime farmland. The Natural Resource Conservation Service (NRCS) defines prime farmland as that land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops. Prime farmland has an adequate and dependable water supply, a favorable water temperature and growing season, acceptable acidity and alkalinity, acceptable salt and sodium content and few or no roads. Air and water flow readily through the soil and the soil is not subject to excessive soil erosion. It is protected from flooding and is not saturated with water for long periods of time. Less than 1 percent of land in Starr County is considered prime farmland. None of these areas are located within the project area, which are predominantly residential.

3.2 Water Resources.

3.2.1 Surface Water. Raw water for the city of La Grulla is purchased from the Hidalgo County Irrigation District No. 2. The raw water is drawn from the Rio Grande through two 700 gallons per minute (gpm - 1,008,000 gallons per day) pumps. One pump can supply sufficient raw water. The raw water reservoir has a storage capacity of 2,330,000 gallons, and a maximum capacity of 2,500,000 gallons. The city has a maximum water usage allowance of 200 acre-foot (65,170,200 gallons) for municipal purposes at the contracted rate of $50.00 per acre-foot. The contract for water expired on November 9, 2002, and its renewal will take into consideration increases in water usage that may result from the proposed project.

The proposed project will have a positive effect on water quality. Improvements to the WTP would help the city provide a higher level of drinking water quality and replacement of undersized water distribution lines would bring the distribution into compliance with TCEQ regulations. The city has adopted both a Water Contingency Plan and a Drought Contingency Plan to provide guidance for long-term increases in residential and commercial water usage resulting from the proposed project.

Effluent from the WWTP would be discharged to River Segment 2302 of the Rio Grande. Segment 2302 is currently on the Clean Water Act (CWA) Section 303(d) list which identifies state waters that do not meet, or are not expected to meet, the applicable water quality standards. The area of concern is centralized in the monitoring site between the Pharr International Bridge to downstream of the Santa Ana Wildlife Refuge. No fish kills have been reported in the segment since October 2000.

It is anticipated that the discharge of treated wastewater will not have a negative impact to on the Rio Grande. Effluent discharges to the Rio Grande would require a discharge permit and would have to meet the water quality standards for the receiving stream. The proposed aerated treatment system would meet BOD and TSS parameters. Mechanical aerators would help pump dissolved oxygen into effluent and maintain appropriate oxygen concentrations to treat wastewater.

The proposed discharge route from the WWTP would follow existing rights-of-way to the outfall location, which would be downstream and beyond the required 200-feet from the existing water intake structure for the city. All sections of the line fall within the proposed Certificate of Convenience and Necessity (CCN) area. The U.S. Fish and Wildlife Service (FWS), Texas Parks and Wildlife Department (TPWD) and U.S. Army Corps of Engineers (COE) have reviewed the proposed route layout and have determined that the route would have no negative impact on the environment.

3.2.2 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. Elimination of on-site treatment units would reduce the potential for water contamination from the septic tanks and cesspools.

3.2.3 Flood Plain Management and Wetlands Protection. The WTP lies within the 100-year flood plain. Any construction will be built so that the base level is at least one foot above the flood elevation, and will comply with the applicable building codes and Federal Emergency Management Agency (FEMA) requirements to minimize the potential impact on the flood plain. The project will have a minimal effect on drainage in the area since any additions will utilize existing drainage patterns. Flood plain management notices were also sent to the appropriate agencies.

3.3 Air Resources. Starr County is located in the Lower Rio Grande Plain of Texas, which is within the Gulf Coastal Plain and the Tamaulipan Biotic Province extending into southern Texas from Mexico. Climate of the Tamaulipan Province is semiarid and megathermal, which indicates that there is a marked deficiency of moisture for plant growth and that some plant

growth continues throughout the year. This is the only area of megathermal climate in Texas and only one of three in the United States. Precipitation averages 23 inches a year, mostly falling during the growing season which averages 327 days. Wind direction is predominantly southeasterly. Several freezes during the 1980's, economic pressures, and rapid population growth have replaced agricultural land, in particular the citrus orchards, in the project area with colonias, urban development, and a greater variety of crops, including aloe vera. The lack of rainfall makes most of the region more suitable for ranching than farming.

3.3.1 Air Quality. Since prevailing winds are southeasterly from the gulf coast, the effects of any odors should be directed away from the city to the northwest. Appropriate buffer zone distances will be used for reduction of odors to businesses and residences. Proper operation and maintenance of the treatment plants should significantly reduce any odor problems. The most serious potential effect on air quality would be a leak in the chlorimine disinfection system. The WTP is required to have an Emergency Release Plan and Risk Management Plan to minimize potential dangers to the public.

As population increases within the project area, increases in automobile traffic, commercial development, and construction would most likely result in higher levels of air pollutants. It should be noted that the project would not affect large-scale population growth patterns. It is anticipated that populations of existing residential areas would increase, but that future colonia areas would not be developed. No adverse regional air quality impacts are foreseen as a result of the proposed project.

3.3.2 Noise. The loudest noises generated by plant operation would result from the normal repairs and maintenance, which will occur during daylight hours. However, given the distances between the existing residences and the site should attenuate noise levels.

3.4 Biological Resources. The proposed project area is located in the general Tamaulipan biotic province, 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 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.

3.4.1 Flora. The Tamaulipan brushlands change gradually to the northeast of Starr County, to the prairie and oak-hickory alternes of the Texas Province. The line separating pedocal soils from pedalfers separates the main body of the Tamaulipan brushlands from the Texas Province and forms a fairly distinct boundary between the two provinces. Thorny brush is the dominant vegetation type of the Tamaulipan Province. This brushland stretches from the Balcones fault line southward into Mexico.

A few species of plants account for the bulk of brush vegetation in the Tamaulipan Province including mesquite (*Prosopis juliflora*), various species of *Acacia* and *Mimosa*, granjeno (*Celtis pallida*), lignum vitae (*Porliera angustifolia*), cenizo (*Leucophyllum texanum*),

white brush (*Aloysia texana*), prickly pear (*Opuntia lindheimeri*), tasajillo (*Opuntia leptocaulis*), and *Condalia* and *Castela*. Mesquite in an open stand and mixed with various grasses is characteristic of sandy areas. Clay soils usually have all of the species listed above, including mesquite. (Jahrsdoerfer & Leslie, 1988)

The Tamaulipan province is poorly drained. Several small basins, without exterior drainage, exist in this area and contain permanent or semi-permanent bodies of water. The Rio Grande has few tributaries and no major ones in the Tamaulipan Province of Texas. Brushlands of the lower Rio Grande Valley, in Cameron, Willacy, Hidalgo, and Starr Counties, are more luxuriant than the brushlands farther south, and are characterized by the predominance of several plant species that decrease in abundance northward. The most important of these species include: retama (*Parkinsonia aculeta*), Texas ebony (*Siderocarpos flexicaulis*), wild olive (*Cordia boissieri*) and knackaway (*Ehretia elliptica*). The most luxuriant brush occurs on the immediate flood plain of the lower Rio Grande. The lower Rio Grande Valley, comprising Cameron, Willacy, Hidalgo, and Starr Counties, is best treated as part of a separate biotic province from the area of Tamaulipan Province to the north and west. (Jahrsdoerfer & Leslie, 1988)

3.4.2 Fauna. Among the wildlife that find habitat in Starr County are white tailed deer, javelina, bobwhites, turkeys, scaled quail, mourning doves, cottontails, white-winged doves, jackrabbits, armadillos, opossums, and raccoons. The principal species of fish found in the Rio Grande are buffalo fish, bass, flathead catfish, and channel catfish. Vertebrate fauna of the Tamaulipan Province includes Neotropical and primarily grassland species that range northward into the Texan and Kansan provinces. At least 61 species of mammals occur in the Tamaulipan Province of Texas. Fifteen of the 61 species of the Neotropical species include *Aello megalophylla, Dasypterus intermedius, Conepatus leuconotus, Felis cacomitli, Liomys irroratus,* and *Oryzomys cousei* are limited in Texas to the Matamoran District. The majority of small mammals in the Tamaulipan Province consist of a few species that occur throughout the province in Texas. Species include *Citelllus mexicanus, Perognathus hispidus, Perognathus merriami, Oncychomys leucogaster, Peromyscus leucopus, Sigmodon hispidus, Neptoma micropus,* and *Sylvilagus floridanus.*

There are 36 species of snakes, 19 lizards, two land turtles, three urodeles and 19 anurans. Six of the 36 species of snakes known from the Tamaulipan of Texas are unknown from other provinces in the state. Common snakes of the Tamaulipan Province include: *Coluber flagellum, Arizona elegans, Natrix erythrogaster, Natrix rhombifera,* and *Crolatus atrox.* Six of the 19 lizard species known from the Tamaulipan Province of Texas occur only in this province. Two, *Crotaphytus reticulatus* and *Sceloporus cyanogenys*, are known in Texas only from the vicinity of the Rio Grande upstream from the area known as the Matamoran District, while three species, *Holbrookia propinqua, Sceloporus variabilis*, and *Eumeces tetragramus,* range northward to approximately the northern limit of the province. The two species of land turtles occurring in the Tamaulipan Province are the *Terrapene ornata*, which is widely distributed in provinces to the north and west, and the *Gopherus berlandieri*, which is restricted to the Tamaulipan, and its northern and northeastern limits of distribution correspond closely to the

boundaries of this province. The urodele (salamanders/newt) fauna is small. One species, *Triturus meridionalis*, appears to be restricted to this province. Five of the 19 species of anurans (frogs/toads) are found in Texas only in the Tamaulipan. Three of these, *Hyla baudinii*, *Syrrhophus campi*, and *Leptodactylus labialis* are presently found in the Matamoran District.[2]

3.4.3 Threatened and Endangered Species.[3] A substantial number of endangered and threatened animal species may be encountered in the region of Starr County were the proposed project is to be located. According to the TPWD field office in Austin, Texas, and the FWS list of Threatened and Endangered Species of South Texas, four endangered species of flora have been identified as possibly being encountered in the proposed project area.

Star Cactus (*Astrophytum asterias)*: Star Cactus is a flat to low dome-shaped, spineless cactus, two to six inches in diameter and less than two and a half inches tall. In native habitat, blooms occur from March through May and fruits from April through June. Native habitat is sparsely vegetated areas in gravelly, saline clays or loams and low elevations in the Rio Grande Plains.

Star Cactus was both Federally and State listed as endangered in 1993, and occurs in Cameron, Starr, and Hidalgo counties in Texas and in Nuevo Leon and Tamaulipas states in Mexico. In Texas, it is now limited to one site along a creek drainage in Starr County. Loss of habitat threatens this species. Root-plowing and other mechanical and chemical brush control practices as well as conversion of habitat to agricultural fields and urbanization have played roles in the decline of this species. It is thought that known sites in Cameron and Hidalgo counties have been eliminated as result of habitat conversion.

Walker's Manioc *(Manihut walkercre)***:** Walker's Manioc was both Federally and State listed as endangered in 1991, and is a profusely branching perennial herb that reaches up to 6 feet tall with fine-lobed leaves. The root of Walker's Manioc measures about 4 inches long and is shaped like a carrot. Native habitat is found in areas of sandy loam with underlying caliche layer in open area within native brush. Species is found in Starr and Hidalgo counties in the south Texas plains and in the state of Tamaulipas, Mexico.

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[2] Blair, 1950.

[3] Under the Endangered Species Act (ESA) of 1973, both animal and plant species are listed for conservation and recovery. According to the ESA, species may be listed as either endangered or threatened. A species may be classified as "endangered" when it is in danger of extinction within the foreseeable future throughout a significant portion of its range. A "threatened" classification is provided to those animals and plants likely to become endangered within the foreseeable future throughout all or a significant portion of their ranges. The United States Fish and Wildlife Service and the National Marine Fisheries Service share responsibility for administering the ESA.

In 1973, the Texas legislature authorized the Texas Parks and Wildlife Department (TPWD) to establish a list of endangered animals in the state of Texas. State listed endangered species are those species the Executive Director of the TPWD has named as being "threatened with statewide extinction." State listed threatened species are those species the TPWD has determined are likely to become endangered in the future. In 1988, the TPWD was authorized to establish a list of threatened and endangered plant species for the state. An endangered plant is one that is "in danger of extinction throughout all or a significant portion of its range." A threatened plant is likely to become endangered within the foreseeable future.

Recently, several populations have been discovered from far South Texas and adjacent Mexico. Historical localities, where the species was found during the 1940's, no longer support Walker's Manioc. Much of the native brush habitat in the historical range of Walker's Manioc has been cleared for agriculture, urbanization, or improved pasture. It has been estimated that 90 percent of the native brush in the Lower Rio Grande Valley has been converted to other land uses.

Johnston's Frankenia *(Frankenia jognstonii)*: Johnston's Frankenia is a rounded, grayish-green, or sometimes bluish-green, spineless, salt-loving shrub. It has very small, oblong leaves (¼ to ½ inches long) with margins that curl under. The shrub will reach one foot in height and two feet wide. The underside of the leaf is lighter in color due to small, dense, grayish-white hairs that are barely visible with the naked eye. Salt crystals are often visible and tasteable on the underside of the leaves. From November through February, Johnston's Frankenia turns from grayish-green to its autumn color, crimson red. During this red phase, when many other south Texas shrubs have lost their leaves, these endangered plants are easy to detect.

Populations of Johnston's Frankenia are clumped, and tend to occur within openings in the blackbrush dominated brushlands on pockets of highly saline soils. Habitat for this shrub is threatened by mechanical alteration from root-plowing and bulldozing. This species was both Federally and State listed as endangered in 1984, but the FWS regional office in Albuquerque has recommended its removal from the endangered list.

Zapata Bladderpod *(Lesquerella thamnophila)*: Zapata Bladderpod is a gray-green, hairy, perennial with sprawling, vine-like stems that reach 17-34 inches long. Bright yellow flower blooms occur in March and April. Habitat for this species is native chaparrals of Starr and Zapata Counties of the western Lower Rio Grande Valley, as well as in Mexico, on gravelly to sandy terraces above the Rio Grande flood plain. This species was Federally listed as endangered in 1999.

Endangered Animal Species identified for Starr County include the interior least term *(Sterna antillarum athalassos)*, the jaguarundi *(Felis yagouaroundi)*, and the ocelot *(Felis pardalis)*. Category 1[4] threatened species include the proposed ferruginous pygmyowl cactus *(Glaucidim brasilianium cactorum)*, the Gulf Coast hog-nosed skunk *(Conepatus leuconotus texensis)*. Category 2[5] species include the Audubons oriole *(Icterus graduacauda audubonii)*, Brownsville common yellowthroat *(Geothlypis trichas insperata)*, Coues rice rat *(Oryzomys couesi aquaticus)*, ferruginous hawk *(Buteo regalis)*, loggherhead shrike *(Lanius ludovicianus)*, northern grayhawk *(Buteo nitidus)*, teticulate collared lizard *(Crotaphytus reticulates)*, Rio Grande lesser siren *(Siren intermedia texana)*, Sennett's hooded oriole *(Icterus cucullatus*

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[4] FWS has substantial information to support their listing as threatened or endangered.

[5] Information indicates that listing is appropriate, but substantial data is not currently known to support immediate preparation of rules. (FWS, 2001)

sennettii), small papillosus *(Enchnocereus papillosus var. augusticeps)*, Texas horned lizard *(Phrynossoma cornutum)*, and the Texas olive sparrow *(Arremonops rufivirgatus rufivirgatus)*

The FWS has responsibility for protection of migratory birds under the provisions of the Migratory Bird Treaty Act. Nests of species protected by the Act could be encountered during construction and the FWS recommended that the proposed disturbed areas first be surveyed, or that construction avoid the general nesting period of March through August. The FWS also recommended that care be given to not disturb native trees in the project area and requested that all landscaping associated with the project use native vegetation species that are drought-tolerant, adaptable, and less water consuming. The city will have these mitigative efforts documented by the contractor and verified by the city as deemed necessary to comply with the recommendations of the FWS. The contractor will also be required to survey the proposed disturbed areas in the event the work is to occur in densely wooded areas.

Direct long-term effect on endangered species in the area should be negligible, since the project will be located in urban and residential areas and street ROWs. In the event that any rare threatened and endangered species, special features or natural communities are encountered during construction activity, work will be suspended in the area and the appropriate federal and state agencies will be contacted for guidance. A copy of the FWS letter is included in Section 6.0 of this document.

3.5 Cultural Resources. According to Texas Archeological Research Laboratory (TARL) records, fourteen (14) prehistoric archeological sites were determined to be located within the proposed project area. No sites listed in the National Register of Historic Places (NRHP) or registered as State Archeological Landmarks were found within the project area. Correspondence with the Texas Historical Commission (THC) indicates that no historic properties will be affected by the project, and have given authorization for the project to proceed. A copy of the THC response is included in Part 6 of this EA.

3.6 Socio-economics and Environmental Justice. A basic Environmental Justice[6] (EJ) analysis was performed utilizing the EJ Index[7] to assess potential disproportionately high and adverse effects of the proposed project on minority and low income communities. The EJ study was based on three criteria: (1) whether the community currently suffers, or has historically

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[6] The EPA defines environmental justice as conveyed by the Executive Order, as the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. The goal of fair treatment is not to shift risks among populations, but to identify potential disproportionately high and adverse human health and environmental effects on minority populations and low income populations and identify alternatives to mitigate those impacts.

[7] The EPA Region 6 EJ Index Methodology defines demographic criteria and applies basic principles of science to evaluate the potential impacts on minority and low-income communities. The methodology uses Geographical Information System maps, U.S. Census demographic data, and a mathematical formula to analyze one square mile and 50 square mile geographic areas around a project site. The index indicators range from 0, where the factors affecting minorities are considered to be in proportion when compared to the state average, to 100, where the factors are considered to be greatly disproportionate when compared to the state average.

suffered, from environmental and health risks or hazards, (2) whether a potential for disproportionate risk exists, and (3) whether the community has been sufficiently involved in the decision-making process.

The EJ analysis uses a comparison of (1) the percentage of minority people, (2) the percentage of economically stressed households earning less than $15,000 a year, and (3) the population within a one-half and four mile radius of the site in comparison with state-wide percentages. The index for the one square mile area around the proposed project was calculated to be “50", and the index for the 50 square mile area around the facility was calculated to be “25" (Figure 4). The results of the EJ analysis support census data indicating La Grulla and its colonias as an economically distressed area. The index indicates a disproportionately high percentage of minority and low income populations, which is characteristic of most colonias and the border area. In this case, the index is a good indicator for high project priority to receive financial assistance.

The income and demography of the proposed project area reflect those of the region in general. According to 1990 census data, the annual median household income for Starr County was $10,182, which is 37.7 percent of the $27,016 annual median household income of the State. Surveys conducted in December 2001, estimated the annual median household income in the colonia areas at $13,938. According to Texas Workforce Commission data for December 2001, the State unemployment rate of 5.7 percent, while the unemployment rate for Starr County was 20.6 percent. No unemployment data is collected for a city the size of La Grulla or the surrounding colonia areas. The nearest city within the county with such data is Rio Grande City, which had a Year 2001 annual unemployment rate of14.9 percent.

The county has had some influence from the North American Free Trade Agreement (NAFTA), but the growth in transportation and warehousing activity has not been as great as in other counties. In 2001, during the winter months of November through March, the average unemployment rate for Starr County was 23.2 percent. However, during the spring and summer months, the average rate dropped to 15.7 percent, possibly indicating a labor force heavily dependent upon the agricultural industry with many residents leaving the area to work the fields as migrant workers.[8]

The project will not disproportionately impact minority or low-income populations and the entire population would benefit from the proposed project. No significant adverse impact to minority or low income communities from the proposed project is expected, and the project will not result in the relocation of households or significant changes in land uses and land values. The proposed project could stimulate growth in the area by providing the essential infrastructures for residential and commercial development and provide additional employment opportunities. The primary consequences will be the potential rates charged to the users for the various alternatives. The current average monthly bill to a typical residential household for up to 3,000

[8] Business Services Company, 2001.

gallons is a flat $16.00. The average monthly bill for wastewater service is $12.50. In Year 2000, the average combined residential billing for water and wastewater service was $31.77.

The intent of the NADBank BEIF program is to relieve unhealthy living conditions in low income and minority communities created to a great extent by reliance on substandard community wastewater treatment and water supply. Conditions such as these led to the commissioning of a facilities plan for the La Grulla planning area to correct, as economically as possible, health hazards by the elimination of inadequate on-site wastewater disposal systems and implementing of proper water distribution and wastewater collection systems. Without grant funding from the BECC/NADBank, the city would have to borrow TWDB loan funds and would have to increase its utility service rate structure to accommodate repayment of bonds.

3.7 Cumulative Impacts. The following recent projects have had an effect on the environment and the project discussed in this report:

1987 Texas Department of Community Affairs (TDCA) – The city received grant money for improvements to the wastewater collection system. Phase I of this project included construction of pond-type WWTP, 2,700 linear feet (l.f.) of 6" force main, 2,940 l.f. of 6" wastewater collection lines, 37 service connections, 1 lift station, and eight manholes. Phase II of this project included construction of pond-type WWTP, 18,190 l.f. of 6" wastewater collection lines, 152 residential service connections, 1 lift station, and 41 manholes.

2001 Texas Department of Housing and Community Affairs (TDHCA) – The city received grant money for construction of a new 300,000 gallon toro ellipsoidal elevated welded-steel storage tank with the bottom of tank 103.67 feet above ground level. Associated accessories will include control building, piping, electrical controls, six foot high chain link fencing with three strands of barbed wire and related appurtenances. The proposed project has been reviewed and approved for construction by TCEQ.

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.

3.8 Cross-Border Impacts. Because of the proximity of the project area to the U.S.-Mexico border proposed improvements would benefit communities in the two nations. There is also the potential for odors emanating from the proposed WWTP to affect these areas. However, implementation of the proposed project and the termination the use of on-site treatment of wastewater will improve the ambient air quality, and the quality of surface and ground water in the region. The predominant wind direction is from southeast to northwest, into primarily undeveloped agricultural areas.

4.0 OTHER ENVIRONMENTAL CONSIDERATIONS

4.1 Unavoidable Adverse Effects. The greatest unavoidable impacts would result if the No-action alternatives were implemented because the health and safety risks to area residents would remain. Residents would continue to lack adequate water service, and the on-site wastewater treatment systems would continue to be potentially hazardous to their health and safety. The primary impacts from implementation of the project will be of short duration and primarily involve disruption of traffic and pedestrian patterns, generation of dust from the trenching of streets and other pathways for installation of collection and distribution lines, and increased traffic near the construction areas, and runoff from trenches and cleared areas. Dust control measures, such as watering the access roads will be part of the specifications for the project. There will be some noise disturbance during construction. For the most part, these impacts are unavoidable, but will be mitigated by prompt backfilling of trenches and limiting the amount of trench openings at any one time. Existing ROWs 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.

The proposed projects will improve the existing infrastructures, and eliminate and prevent pollution, and reduce the transmission of infectious and contagious diseases benefitting the health and the environmental conditions. 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 a reliable supply of potable water and wastewater service to the area may induce secondary development and possibly accelerate the conversion of land use from agriculture to urban use. However, providing the infrastructure for future growth may enable the city to control growth within its ETJ.

4.2 Relationship Between Local, Short Term Use of the Environment and the Maintenance/enhancement of Long Term Beneficial Uses. The development of this project will have a beneficial impact on area residents. The primary short-term use of the environment will be the disturbance created by construction activities. Excavation and trench work to install the transmission and force mains, new wastewater collection lines and water distribution lines may temporarily affect natural drainage patterns. After completion of the proposed improvements, the terrain will be restored to preconstruction contours. Some parts of the project that need to be built in the flood plain will require fill dirt to raise the sites at least one foot above flood level. The COE has determined that all construction of the proposed project is exempt from CWA Section 404 permit. Since construction activities will be greater than one acre, a National Pollutant Discharge Elimination (NPDES) construction site storm water permit from the EPA will be required. This permit will have to be obtained before construction can begin. Project specifications require the contractor to dispose of all construction wastes in accordance with federal, state, and local laws. The short-term environmental impacts are

outweighed by the beneficial impact of having an upgraded WTP and WWTP system with the treatment capacity to meet both current and future demands.

Long-term beneficial uses would derive the elimination or reduction of potential infiltration of untreated wastewater into ground water due to seepage from on-site wastewater treatment systems. These beneficial uses of the environment may 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 delaying the wastewater treatment and collection systems improvement may increase. Significant impacts to municipal economics could potentially occur with the implementation of the No-action Alternative.

4.3 Irreversible and Irretrievable Commitment of Resources to the Proposed Project. The irreversible and irretrievable commitment of financial resources for this project include grant and loan funds used to construct the project and utilization of a large irrigation field at the WWTP. Irreversible and irretrievable commitments of natural resources include land, and the resources and energy used for the proposed improvements. The majority of the project area will be on land already committed to the same land use.

5.0 LIST OF AGENCIES CONTACTED

U.S. National Park Service
U.S. Army Corps of Engineers - Construction Operation Division - Regulatory Office
U.S. Natural Resource Conservation Service; District Conservationist
U.S. Fish and Wildlife Service - Ecological Services
Federal Emergency Management Agency
International Boundary and Water Commission
Texas Water Development Board
Texas Commission on Environmental Quality
Texas Parks and Wildlife Department, Wildlife Program, Wildlife Division
Texas Parks & Wildlife, Endangered Species
Texas Historical Commission, State Historical Preservation Officer
Texas Natural Resource Conservation Commission
Starr County Commissioner’s Court
City of La Grulla Zoning and Planning Commission

6.0 MAPS, TABLES AND CORRESPONDENCE LETTERS

7.0 REFERENCES

CH2MHill. "La Grulla Wastewater Treatment Plant Evaluation," 2002.
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Starr Engineering Company. *Environmental Information Document for Proposed Water and Wastewater Improvements, Rio WSC, StarrCounty, Texas,* 1999.
Southwest Engineers. *Technical Report for Municipal and Private Wastewater Discharge Permits*, 1998.
United States Soil Conservation Service. *Soil Survey of Starr County*, 1972.