

August 29, 1995

**Project Step II Application for Certification from the
Border Environmental Cooperation Commission for
El Paso's Northwest Reuse Project**

1. General Description of The Project

El Paso Water Utilities - Public Service Board (EPWU) is continuing its efforts to use reclaimed water where feasible to lessen demands on the potable water supply system. Over the past several years, a series of projects has been undertaken to increase the use of reclaimed water for irrigation, industrial purposes and aquifer recharge.

The Northwest Area of El Paso presents an immediate opportunity for providing reclaimed water use because of improvements now being carried out at the Northwest Wastewater Treatment Plant (WWTP). These improvements will enable the plant to meet more stringent river discharge standards recently imposed by the U. S. Environmental Protection Agency, and allow plant effluent to meet quality standards for turf irrigation, certain commercial uses and industrial applications.

The Northwest WWTP will have a capacity of up to 17.5 million gallons per day (MOD) of highly treated wastewater suitable for recycling as a reclaimed water supply. A total of about 657 million gallons per year (MG/yr) of reclaimed water is the average projected

- demand from potential large-volume water users in the Northwest Area. It is anticipated that new users not currently in operation would consume an additional 621 MG/yr by the year 2005, bringing the total estimated demand to about 1278 MG/yr by 2005. Demand during summer months will increase to a peak of 3741 MG/yr. Peak demand reduction for fresh water is critical in a water short area; therefore, overall demand reduction may be

The Public Service Board has approved the implementation of the Northwest Reclaimed Water System. The Northwest Reclaimed Water Delivery System will be constructed in five phases. Phases I and II will constitute the backbone of the delivery system and will provide reclaimed water to potential customers in the Coronado, Redd Road and Transmountain Road service areas. Engineering design for Phases I and II is scheduled to be completed in March, 1996. Future service areas will be constructed under Phases III, IV and V. The delivery system will consist of the pipelines, booster pumps and storage reservoirs necessary to transmit the required quantities of reclaimed water to the points of

Facilities installed under Phase I will transmit reclaimed water from the Northwest WWTP to a Lower Coronado Reservoir and Booster Station, from which it will be transmitted to a Shadow Mountain Reservoir and Booster and then to an Upper Coronado Reservoir.

Facilities installed under Phase II will transmit reclaimed water from the facilities of Phase I to a Redd Road Reservoir and to the Redd Road and Transmountain service areas.

a. Project Originator

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- b. Project Location:** The project area is generally located within the area bounded on the south by Executive Center Blvd. where the Northwest Wastewater Treatment Plant (WWTP) is located; on the west by the Rio Grander on the east by the Franklin Mountains; and on the north by Trans Mountain Woodrow Bean Drive as shown in Figure No. 1.
- c. Environmental Issue:** The primary sources of raw water supply available for municipal water purposes to the residents within El Paso County include surface water from the Rio Grande and groundwater from the Mesilla and Hueco bolson aquifers. Management of these sources requires a conservation practice, including a reclaimed water system, so that the integrity and quality of those limited resources are protected and preserved to the greatest extent reasonably possible. The construction of a facility to produce and distribute reclaimed wastewater will free existing water resources, would enhance El Paso's water supply, and also reduce its reliance on dwindling ground water sources. Continued development of El Paso's raw water supplies along the trends followed in the past would result in depleting the City's principal groundwater source, the Hueco Bolson, early in the next century.
- d. Project Alternatives:** El Paso needs to develop alternative sources of raw water supply. Because of this need, the PSB and the El Paso County Water Improvement District (EPCWID) entered into a Memorandum of Understanding regarding several water management issues among which was a decision to jointly develop a 50-year *Water Resource Management Plan* for El Paso County. This document presents the plan adopted for management of the water resources of the El Paso area through the year 2040. It defines the quantities and costs of the new water supplies and facilities projected to be required to the year 2040 and the schedule proposed for their implementation.

The *El Paso Water Resource Management Plan* is comprised of water source and active Service Area. The "Management Plan" components develop the following resources as part of the 50-year plan, but none substitute for each other, nor is one alternative better than the other. Instead, all of these, including reclamation and reuse of wastewater, are being developed to meet the areas future water needs:

1)Implementation of an aggressive water conservation program targeted to reduce the overall average annual individual gross water consumption to 160 gpcd by the year 2000.

2)Acquisition of additional supplies of Rio Grande Project surface water. For

3)Desalination - Development and construction of desalination technology

and equipment could provide a viable conservation alternative.

Wastewater and brackish well water would be treated by reverse osmosis, electro dialysis, or ion-exchange resin columns to produce an extremely high quality water with TDS around 100-250 mg/l. This high quality effluent could be blended with brackish water to produce water which could be used for human consumption and other beneficial purposes.

4) Increased Use of Surface Water - Increased use of surface water would alleviate El Paso's dependence on ground water and help provide a water supply necessary to sustain the El Paso region thorough the year 2035i and beyond. Presently, the quality of surface water delivered to El Paso from Caballo Reservoir is high enough to make treatment of this water for potable use a cost effective alternative.

5) No project alternatives - This alternative would maintain the status quo.This involves maintaining current use of existing water supplies and not seeking alternative ways to reduce El Paso's reliance on ground water. El Paso County, southern New Mexico and Juarez, Mexico will be affected if new sources of water supply are not simultaneously developed.

e. Project Justification: In order to preserve the precious water resources available to El Paso, EPWU wants to conserve its existing ground water supplies and make use of its wastewater by using it for turf irrigation and industrial uses. Expansion of the Northwest WWTP to provide reclaimed wastewater for industrial processes

and irrigation would enable current potable water resources to be used to supply water to approximately 14,100 residents in colonias within the Upper Valley region of El Paso County. Expansion of the Northwest WWTP to provide reuse of reclaimed wastewater will lessen the impact on the Mesilla bolson aquifer, a limited resource. This aquifer supplies water to New Mexico and Northwest El Paso County.

The project's objective is to have the Northwest WWTP provide reclaimed water through the construction of pipelines, pump stations and reservoirs which constitute a system to provide reclaimed water. This will remove large industrial, commercial and turf irrigation users from the potable water system and would reduce potable water peak and average demand.

- I. Project Strengths and Weaknesses:** The reclaimed water system offers EPWU customers an economically attractive source of water supply. The potable water "freed-up" when existing and future customers use reclaimed water is a new source of supply that can be used to meet the demands of additional population growth. Based on the cost of future water supplies, the proposed program shall provide economic benefits to reclaimed water users.

Reuse of wastewater is not a new concept in the United States. Reuse of reclaimed wastewater is expanding rapidly, particularly in the southwest and other sunbelt states. The experience gained and the research gathered by other users will be used by EPWU to determine reclaimed wastewater reuse practices and policies. While various literature contains theoretical considerations pertaining to this technology, the practical applications will be tapped to gain more understanding of wastewater reclamation and reuse. The literature on this subject observes that there have been no documented incidences of gastrointestinal or other adverse health effects from contact with, or use of, turf irrigated with reclaimed wastewater. Development of substantially all of the identified potential use of reclaimed wastewater for non-potable purposes is technically and economically feasible.

There are approximately 30 customers within El Paso that consume large amounts of potable water. Included in this number are about 10 industrial customers, several garment finishers and a petroleum refinery. These industrial customers use a large amount of potable water all year. Since El Paso's surface water supplies are only available during the irrigation season, the industrial customers use a higher proportion of groundwater than the average El Paso customer.

The provision of reclaimed water under this project will be in compliance with 30 T.A.C. §§ 310. These regulations are designed to protect human health. In addition, an aggressive program of backflow prevention equipment installation and

testing will be implemented. All reclaimed water piping will be uniquely colored (violet) to minimize the possibility of interconnection between potable and non-potable sources.

The provision of reclaimed water for non-potable uses will provide an alternative type of water conservation that will serve as a viable means of ensuring a fresh water supply for the future.

The product complies with state and local laws and the general public has not voiced objections in the El Paso area to this extent of reuse.

- g. **Binational Aspects:** El Paso/Cd. Juarez is the largest border region in the United States. Reclamation and reuse of wastewater for industrial and commercial use, as well as for turf irrigation, will lessen the impact on existing water supply sources. EPWU's role in preserving precious, non-renewable water resources would serve as a water conservation model for water utilities in Mexico. The experience gained and the wealth of information gathered for the project by the EPWU could be shared with Mexican utilities to help sustain limited ground water supplies shared by both nations. A binational effort between the sister cities to conserve potable water by using reclaimed water for industrial and commercial use, as well as for turf irrigation, could help the region develop additional similar conservation programs.

2. **Environment**

- a. **Documentation of Environmental Regulatory Compliance:** Various local, regional, state and federal agencies are being contacted to ensure their approval of this project. The Texas Water Development Board (TWDB) has provided financial assistance to EPWU for an amendment to the Northwest WWTP Facility Plan, the preparation of an environmental information document (EID), final design, plans and specifications, and all necessary contract documents for Phases I and II of the wastewater reuse project. An KID which will identify potential environmental impacts to natural and cultural resources within the project area is being prepared. A draft of the final KID and the amended facility plan will be completed before September 28, 1995, and will be made available prior to BECC consideration.

The Texas Natural Resource Conservation Commission (TNRCC) has been contacted and made aware of this project. The EPWU is aware of TNRCC requirements and is proceeding with obtaining tentative approval from the TNRCC, as well as the TWDB, prior to the September 28, BECC meeting.

- 1) Environmental Issues Affected by Project Development:
 - a) Best utilization of water resources through the next fifty years throughout El Paso County. Increases EPWU's water supply capacity to meet a growing population with less water resources;
 - b) Wastewater reuse will increasingly become a fundamental and integral part of water resource management for the El Paso metropolitan area;
 - c) Conservation of the potable water source; groundwater resources would be freed for potable use in colonies within Northwest and other El Paso regions;
 - d) Enhancement of El Paso/Cd. Juarez's water supply and reduction on their reliance on groundwater;
 - e) Reclaimed wastewater is being treated to drinking water standards and injected into the Hueco bolson for recharge to reduce aquifer overdraft;
 - f) Reclaimed wastewater could be treated and used to recharge groundwater to control saltwater intrusion; and,
 - g) Removes large industrial, commercial, and turf irrigators from the potable water supply system.
- 2) **Environmental Action Required:** The Northwest El Paso Reuse Project is a water conservation effort which proposes to use filtered secondary effluent from El Paso's Northwest WWTP for turf irrigation and industrial use in the Northwest region of El Paso. There are no adverse effects to the environment from the construction and development of the distribution system to provide reclaimed water within the proposed service area; EPWU water and wastewater basic infrastructure already exists. However, plans are underway to prepare a facility plan along with an environmental information document as a condition of approval for this project. Most trenching for this project would be done in existing streets and in the bottom of arroyo beds to minimize environmental impacts. Mr. John Balliew, P.E., is the contact person for Environmental Compliance issues.
- 2) **Required Permits:** EPWU currently holds a National Pollution Discharge Elimination Systems (NPDES) discharge permit for the wastewater treatment facility which will supply the reclaimed water for the wastewater

reuse distribution systems. Chapter 310 of the Texas Administrative Code (T.A.C.) does not require permitting of reclaimed water uses that do not result in additional discharges to surface waters. For the planned uses of reclaimed water within the proposed wastewater reuse systems, no additional specific state or federal permits will be required.

However, under Section 310.4 of the T.A.C., the EPWU must notify the Executive Director of the TNRCC of EPWU's intent to supply reclaimed water to customers for reuse and must obtain approval of the Executive Director prior to such reuse. A notice of intent has been submitted to the TNRCC, which included the following:

- a) A description of the intended wastewater reuse, including origin, destination, quantity, and quality of the reclaimed water to be reused; and
- b) A description of means for compliance with the applicable requirements of Chapter 310 of the T.A.C.

The above EPWU notification of the TNRCC is all that is required for customers reusing reclaimed water for turf irrigation. Industrial customers planning to reuse reclaimed water for washing, cooling, or other processes must also separately notify the TNRCC of such intent prior to implementing the reuse.

The EPWU will also notify EPA Region 6 to ensure no additional modifications of the NPDES permits are required.

John Balliew, P.E., EPWU's Environmental Compliance Manager, is the contact person for issues pertaining to permitting and/or environmental compliance.

- 4) Copies of all documents submitted to regulatory agencies are shown in Appendix B of this application.

b. Conformance with Local and Regional Conservation and Development Plans:

- 1) **Applicable Local and Regional Plans:** An initial comprehensive study was pursued to develop the *El Paso Water Resource Management Plan* which was followed with a study concerning the potential for using treated wastewater effluent to supplement the need for water. The results of these two studies indicate that wastewater reuse is a fundamental goal and an

integral part of water resource management for the El Paso metropolitan area. This project aims at fulfilling this goal.

A more recent Preliminary Engineering Report has been developed which addresses a plan for implementing wastewater reuse in the northwest part of the City. The implementation plan was developed with significant public participation. This included interviews with potential major users of the reuse water, as well as participation of a local Citizen's Advisory Committee.

- 2) **Description of How Project Complies with the Plans:** The *El Paso Water Resources Management Plan* is comprised of water source and action components formulated to develop and supply the municipal water needs of the EPWU Service Area through the next 50 years. This document presents the plan adopted for management of the water resources of the El Paso area through the year 2040; it defines a realistic and viable approach for providing the anticipated municipal water needs of the El Paso area, as well as establishing management directions. It also defines the quantities and costs of the new water supplies and facilities projected to be required over the next 50 years and the schedule proposed for their implementation. The reuse project falls within the recommendations of the *El Paso Water Resource Management Plan* and is one of the top priority components required to help meet El Paso's future demand for reliable, high quality sources of raw water.

c. Environmental Assessment:

1)Impacts on Biological Diversity: This project will not adversely affect the biological diversity of flora nor fauna within the region where the project's distribution system will be constructed and developed. It will have no additional affect on the biological diversity as the existing water supply and wastewater system. The water quality standards for reclamation and reuse of wastewater renders it harmless to El Paso's flora and fauna. This project will enhance the floral niches within Northwest El Paso due to use of reclaimed water for turf irrigation.

2)Impacts on Sensitive Environmental Habitats: Same as above.

3) Impacts on Human Health: Literature reviewed on wastewater reclamation and reuse unanimously notes there have been no documented incidences of gastrointestinal or other illnesses from contact with, or use of, turf irrigated with reclaimed water.

Water used by industry does not pose public health dangers because of the use of closed-cycle processes.

All necessary measures will be administered to avoid unnecessary human contact with the reclaimed water, and no deliberate or accidental ingestion by humans is anticipated due to EPWU's implementation of stringent precautionary procedures and methods.

EPWU will take precautionary measures to ensure the groundwater is protected from nitrates or other contaminants. EPWU will enforce land application rates for spray irrigation that will ensure that nitrates and nitrites are assimilated by natural autotrophic, chemosynthetic microorganisms residing in the soils. Soil pH and temperature conditions within El Paso would reduce these possible contaminants to micro-nutrients which would help enhance the indigenous floral environment.

Project alternatives or not implementing the project have already been discussed throughout this document. As previously mentioned, an KID is being prepared and a draft version will be provided prior to BECC certification.

3. Technical Feasibility

a. Project Specifications - Wastewater Treatment

- 1) **Description of Discharges:** Title 31, Chapter 310 of the Texas Administrative Code (T.A.C.), Section (§) 310.1, defines reclaimed water as "domestic wastewater that is under the direct control of the treatment plant owner/operator which has been treated to a quality suitable for a beneficial use." EPWU currently has a discharge permit for the wastewater treatment facility which will supply the reclaimed water. The reclaimed water will be distributed by EPWU using piping and equipment similar to that utilized in EPWU's potable water system. The Northwest WWTP serves a domestic and commercial area, and does not have any significant heavy industries. There will be no additional discharge of reclaimed water from the Northwest plant into surface waters.
- 2) **Projection of the Supply of Wastewater for the Proposed Life of the Project:** As long as there is a water supply available, there will be enough wastewater available for reclamation and reuse. It is therefore anticipated that the supply of wastewater is adequate for the 50 year life of this project.

- 3) **Design of Catchment System to Include the Main Intercepting and Collecting Systems:** The catchment system, including main interceptors and collectors, is already in existence and consists of EPWU's wastewater system. Reclaimed water distribution systems will be designed to Texas Natural Resources Conservation Commission standards. Underground reclaimed water piping in the treatment and distribution systems will be separated from potable water piping by a distance of at least 9 feet. All underground reclaimed water distribution piping and service connections will be violet colored or will be marked by magnetic tape placed 6 inches directly above the backfilled pipe. All exposed reclaimed water piping will be violet colored and stenciled with a warning reading, "NON-POTABLE WATER" in both English and Spanish. Reclaimed water distribution system designs and materials will be approved by the Executive Director of the Texas Natural Resources and Conservation Commission, in accordance with the Texas Engineering Practice Act.
- 4) **Design of Exit Sewer System:** The infrastructure for the exit sewer system already exists and is part of EPWU's wastewater system. The exit sewer system does not apply to reclamation and reuse of wastewater.
- 5) **Design and Treatment of Reclaimed water Systems:** Pipelines will be designed to carry peak flows equivalent to three (3) times the average flow of the peak month demand. Where practical, demand-side storage will be provided in the system in order to reduce peak pumping demands, line sizes, and variations in the operating pressures within the system. Pipelines serving irrigation customers with on-site storage capabilities will be sized for the average flow of the peak monthly demand. Reuse pipelines serving commercial laundries and garment finishers will be sized for a peak flow of 1.5 times the average demand to provide for a 16-hour (two-shift) operations. Reuse pipelines serving refineries and other industrial users will be sized for the average flow without any peaking factor. Various segments of the reuse distribution systems from the treatment plant will be sized conservatively and will be designed with a reserve capacity of 25 to 50 percent for future extension into developing areas. The distribution pipeline networks will be sized to carry the cumulative flows in all branches, taking into consideration flows from both pumping and storage. The reclaimed water distribution system will be designed to supply a minimum pressure of 30 pounds per square inch (psi) at service connections to provide for operation of sprinkler systems and will be designed to limit maximum service pressures to 100 psi.

The Northwest WWTP features full effluent sand filtration with filter conditioning and disinfection with ultraviolet (UV) radiation. The resultant

high-quality effluent is suitable for unrestricted irrigation as defined in 30 T.A.C. §§ 310. In addition, all reclaimed water will be chlorinated as a secondary disinfection practice. Any additional treatment required for reuse by industrial customers will be the responsibility of the customers.

Treatment will be designed to continually meet the water quality requirements of Subsection 310.8 (1)(D)(I) of the T.A.C., with a suitable margin of safety. Reclaimed water will not be stored at the treatment plant. To ensure reliable service, to meet peak demands and to sustain system operating pressures, reclaimed water storage facilities will be located at several points within the distribution system. These shall consist of welded steel tanks conforming to 30 T.A.C. §§ 310.7. Each storage tank will be equipped with rechlorination facilities. The reclaimed effluent will be chlorinated at each point of storage. Disinfection will be accomplished by chlorination systems designed to feed chlorine at a rate to produce a concentration of at least 10 milligrams/liter (mg/l) at peak flow and the feed rate will be adjustable to less than 1 mg/l. All reclaimed water treatment processes, including filtration and chlorination, will have backup equipment sufficient to allow operation at peak capacity with loss of one third of the pumping, chemical feed, and other essential equipment.

- 6) **Analysis of Treated Water Quality:** Reclaimed water will be sampled for chlorine residual; total suspended solids (TSS); turbidity (NTU) and fecal coliform concentration; and for 5-day biochemical oxygen demand, in accordance with approved methods. The EPWU has the full laboratory capability to conduct these analyses.
- 7) **Reuse of Treated Water:** The present plans for reuse of reclaimed water are for two types of use: a) Irrigation of large turf areas and landscaping, including parks, golf courses and other sport fields, cemeteries, school grounds, highway medians and beautification zones; and b) Commercial and industrial process water, including garment finishers, smelting, refining and cooling.
- 8) **Sludge Treatment Analysis and Final Disposal:** All solid residuals resulting from treatment are disposed or reused in accordance with 40 C.F.R. § 503 and 30 T.A.C. §§ 312.

b. Technical Process:

- 1) **Proven Technologies:** An engineering report prepared for EPWU entitled "Feasibility Report on Wastewater Reuse Opportunities" describes an assessment of the present level of nationwide wastewater reuse. The

assessment was made following the *El Paso Water Resource Management Plan*, for the purpose of determining Wastewater reuse practices and policies that have been developed through experience and associated research. This preliminary report outlines the reuse options of this project for EPWU. It was performed by research and review of current literature and by personal contacts with Boyle Engineering. The focus of the surveys was on the practical applications of Wastewater reuse rather than on theoretical considerations.

Articles within the literature which document proven technologies pertaining to reclamation and reuse of Wastewater for non-potable purposes include:

Asano, Taskashi and Richard A. Mills, *Planning and Analysis of Water Reuse Projects*. Management and Operations Journal of the AWWA. January, 1990.

Blackburn, C.B., *Wastewater Effluent Reuse Study for El Paso Refining, Inc., El Paso, Texas*. Nalco Chemical Company, Naperville, IL. October, 1989.

Bouwer, Herman, *Treating Sewage for Irrigation and Drinking*. Paper presented at the 1991 Regional Meeting of the U. S. Committee on Irrigation and Drainage, El Paso, TX. January 31 -February 2, 1991.

Cafaro, Dennis T., Correspondence and abstracts re: City of Colorado Springs, CO Non-Potable Water Irrigation Use. October, 1991.

California Municipal Wastewater Reclamation in 1987. California State Resources Control Board, Office of Water Recycling, Sacramento, CA. June, 1990.

Chevron Wastewater Reclamation Project, Pilot Plant Study. Prepared by CH2M Hill for East Bay Municipal Utility District, Oakland, CA and Chevron USA, Inc., Richmond, CA. July, 1987.

El Paso Water Utilities, Northwest Area, Environmental Information Document, Final Report. Brown and Caldwell Consultants. April, 1991.

Facilities Planning Information: Recommended Planning Outline

for Water Reclamation Projects. California State Water Resources Control Board, Office of Water Recycling. June, 1989.

Hough, Stephen G., *Risks of Water Reuse - Real or Perceived.* Paper presented at WPCF 64th Annual Conference and Exposition, Toronto, Ontario, Canada, October 7 - 10, 1991.

Kemp, Diane C. and Richard D. Moore, P.E., *Financing Reclaimed Water Programs.* Paper presented at WPCF 64th Annual Conference and Exposition, Toronto, Ontario, Canada, October 7 -10, 1991.

Mission Trail Historic District, Volume 1 - Planning Report. Department of Planning, Research and Development, City of El Paso. September, 1991.

1990 Reuse Inventory, Use It Again, Florida!. Florida Department of Environmental Regulation.

Phoenix Water Resources Plan. City of Phoenix Water and Wastewater Department, Water Conservation and Resources Division. 1990.

Proceedings of CONSERV90, National Conference and Exposition Offering Water Supply Solutions for the 1990's., Phoenix, AZ. August 12 - 16, 1990.

Resolving Competition Between Urban and Agricultural Water Use. U.S. Conservation Laboratory, ARC, USDA, Phoenix, AZ. November, 1991.

Rhone, Richard A. and William D. O'Brien, *Conjunctive Use Operations in the Central and West Coast Basins of Los Angeles County.* Paper presented at the 1991 Regional Meeting of the U.S. Committee on Irrigation and Drainage, El Paso, TX. January 31 -February 2, 1991.

Texas Water Code, Chapter 310 - Use of Reclaimed Water, Subchapter A: Use of Reclaimed Water. Texas Water Commission. June, 1990.

Theme: Implementing Water Reuse. Proceedings of Water Reuse Symposium IV, Denver, CO. August 20, 1987.

Tucson Water Resources Plan, 1990-2100. Prepared by CH2MHill for Tucson Water, City of Tucson, AZ. July, 1989.

Water Reclamation Loan Program Guidelines, California State Water Reclamation Projects. California State Water Resources Control Board, Office of Water Recycling. September, 1989.

Water Reclamation Loan Program, Background Information of Economic Analyses of Reclamation Projects. California State Water Resources Control Board, Office of Water Recycling. April, 1992.

York, David W., Ph.D., P.E. and James Crook, Ph.D., P.E., *Florida 's Reuse Program: Paving the Way.* Paper **presented at the 62nd National Conference of the WPCF**, San Francisco, CA. October 17, 1989.

Justification for selecting the technology to be used by EPWU for providing reclamation and reuse of wastewater in El Paso is derived from the successes that California and Florida have obtained from their conservation efforts. California is generally recognized as the leading state in the nation for development of wastewater reuse. California has had a Wastewater Reclamation and Reuse Law in effect since 1967. Florida, however, may be equal to or ahead of California in volume of reclaimed water reused. California was reported to be reusing about 267,000 acre-ft of reclaimed water per year in 1987. Florida was reportedly using about 361,000 acre-ft of reclaimed water in 1990.

- c. **Quality Control Program:** Quality assurance and quality control (QA/QC) procedures currently exist for every critical point in EPWU's water supply and wastewater distribution systems. There are many aspects of EPWU's QA/QC, the purpose of which is to assure that the analytical results reported by the laboratory accurately express the actual concentrations of constituents in the water. Each critical point within the water and wastewater system, as well as each analytical procedure, has distinct QA/QC criteria that is being met in accordance with appropriate federal, state, and local statutes pertaining to water and wastewater distribution. Several key procedures follow as examples of methods which may be implemented, if determined necessary at the time of system operation, for ensuring product quality and reliability, optimal customer/supplier operations and conformance standards for customer facilities.

EPWU QA/QC procedures for providing reclaimed water for reuse for non-potable purposes will ensure quality of wastewater to appropriate standards.

Similar laboratory methods and techniques, equipment, and recordkeeping management practices used to monitor EPWU's water and wastewater requirements for compliance to all federal, local and state statutes will be used to monitor reclaimed water quality parameters.

QA/QC procedures for providing reclaimed water to customers, as well as the operation of reclaimed water treatment and distribution systems by the EPWU, will consist of conforming to policies and procedures similar in concept to the following:

- 1) Reclaimed water service connections shall be provided only to those wastewater reuse customers whom have executed an agreement with the EPWU which includes provisions that they will conform to the requirements of EPWU's standards and guidelines.
- 2) No distribution of reclaimed water to customers shall begin prior to approval of the EPWU and the Executive Director of the Texas Natural Resources Conservation Commission (TNRCC) pursuant to the requirements of Chapter 310 of the T.A.C. and Subsection 310.8 (1)(D)(I) of the T.A.C. with a suitable margin of safety.
- 3) Records of reclaimed wastewater reuse shall be maintained by the EPWU for a period of three years and shall include the following information and data:
 - a) Copies of all notifications made to the TNRCC pertaining to reclaimed water systems operations.
 - b) Copies of contract agreements with reclaimed water users.
 - c) Records of reclaimed water meter readings for each wastewater reuse customer.
 - d) Reclaimed water quality analyses.
- 4) The EPWU shall report to the TNRCC the following information on a monthly basis by the 25th day of each month following the reporting period:
 - a) The volume of reclaimed water delivered during the reported month to each wastewater reuse customer.
 - b) The quality of reclaimed water delivered to reclaimed water users reported as a monthly average for each quality standard, except

those listed as not to exceed values which shall be reported as individual analyses.

- 5) The EPWU shall notify the Executive Director of the TNRCC, in writing, within 5 days of learning of a reclaimed water use not authorized in the customer's contract or approved by the Executive Director of the TNRCC

Reclaimed water customer connections and system components, including piping, valves, sprinkler systems, hose bibs, and all other elements of the reclaimed water distribution system downstream of the EPWU service meter, shall conform to the following requirements and standards:

- 1) Any reclaimed water storage provided by the customer on-site shall meet the requirements of Section 310.7 of the T.A.C.
- 2) Reclaimed water customers who have a potable water service system shall install in their potable water system a reduced-pressure principle backflow preventer of the same size as the potable water service meter. The backflow preventer shall be installed within ten feet of the meter and in a location allowing access for testing and servicing, which will prevent pending of any leakage, and which will provide protection against freezing **The backflow preventer** shall be tested immediately after installation and at least once per year thereafter, and certification of the testing shall be kept
- 3) Where an emergency backup for a reclaimed water supply is provided with potable water, the potable water shall be supplied to a tank or reservoir through an air gap having at least 6 inches of separation at the highest possible water level in the reclaimed water system.
- 4) All new or replacement buried reclaimed water customer pipelines shall be violet colored and for shall be marked by magnetic tape, as specified by the EPWU, placed 6 inches directly above the backfilled pipe.
- 5) All exposed reclaimed water customer piping shall be violet colored and stenciled with a warning reading "NON-POTABLE WATER" in both English and Spanish languages.
- 6) All reclaimed water customer systems shall have a master cut-off valve located near the reclaimed water service connection.
- 7) Reclaimed water irrigation systems operated by automatic controllers shall

have a drawing of the area served by the controller sealed in plastic and placed in the controller box. The controller box shall be keyed so that only authorized customer personnel have access to the controller. The controller shall be clearly labeled in both English and Spanish languages indicating it is a component of a reclaimed water irrigation

- 8) Signs in both English and Spanish languages shall be posted at all storage areas, hose bibs, faucets, valves, and other readily accessible components of the customer's reclaimed water system. Alternatively, and if approved, such features may be secured to prevent access by unauthorized personnel.
The means of securing the features may include valves keyed to be operable only with special tools or by other means, as approved by the EPWU.
- 9) Turf areas irrigated with reclaimed water shall be posted at points of normal access with signs in English and Spanish languages indicating that the area is irrigated with reclaimed water.
- 10) Irrigation tailwater controls shall be constructed to prevent discharge of reclaimed water outside the customer's property boundaries.
- 11) EPWU representatives, at their discretion, shall be allowed to review plumbing plans, inspect the customer's reclaimed water system, inspect and/or test potable water backflow preventers, and conduct dye tests for cross connections before serving the customer with reclaimed water.

d. Investment Timetable: The EPWU financed the concept development for this project construction phases of the project to deliver treated wastewater for reuse. Once funding for construction is identified, the EPWU's goal is to begin construction of four main trunk lines, with their respective booster pump stations and storage tanks, within fiscal years 1996 and 1997.

Figure No. 2 illustrates the recommended system proposed for construction of the backbone for the reclaimed water project, Phases I and II, in addition to the subsequent three phases which will consist of construction of interior piping to serve potential users. A detailed description of stages of project development is as follows:

- 1) Phase I Construction - Construction of several common lines will be

required to serve the potential major users in the Upper Coronado Service Area. Due to relative closeness of other major users, Phase I construction should also include service lines to Coronado High School and an adjacent park, a service line to a park in the Shadow Mountain Service Area, and a service line to a school located at Escondido and Westwind. Due to its proximity to one of these common lines, the service line to Pacific Park should also be included in this construction phase. The segments for Phase I construction include:

Northwest WWTP common
Interstate 10 common
Pacific Park
Mesall-10 common
Lower Coronado common
LC schools
Shadow Mountain common
Upper Coronado common
UC schools

NOTE: The routing of Phase II is preliminary. On-going work on the extension of Artcraft Road and related planning will define the service area and specific routing of lines.

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- 2) Phase II Construction - This phase of construction requires the common facilities for the Redd Road and Trans-Mountain Service Area. This construction should also include the service lines to the schools in the service area. The interior piping included in this construction phase will only accommodate near future development. When actual dual system development becomes a reality in this region, additional interior piping will be required to support the demand. The segments used for Phase II construction to accommodate restricted development include:

Redd Road/Trans Mountain common RR-SO RR-S9 (There are existing yard meter users along this routing.) RR-S10

The common facilities named for Phases I and II constitute the "backbone system" for the proposed reclaimed water project.

- 3) Phase III Construction - Actual construction of Phase III facilities is dependent upon obtaining a commitment from potential users who are not major users. This proposed phase does not include any common facilities.

It consists only of construction of interior piping to serve potential users. Segments should be deleted if sufficient customer commitment is not obtained to justify construction. The following factors influence development of this phase of construction: 1) the number of existing potential users; 2) potential development within the service areas; and 3) Phases I and II common facilities to support this construction will have been constructed. Components included in this phase of construction are:

Upper Coronado-Escondido
UC-Casitas Coronado
UC-Belvidere
Lower Coronado-South Resler
LC-Remcon

- 4) Phase IV Construction - This phase provides service to the Mesa Hills Service Area. Actual construction of this phase is highly dependent upon obtaining commitments from potential users who are not major users. This is because the locations of major users are at the periphery of the service area and construction to serve only them cannot be justified. Service to this area will require construction of the common line.

The components anticipated to be needed to serve this area are:

Mesa Hills common
MH Parks
MH Schools
MH Mall

- 5) Phase V Construction - This phase will provide service to the Country Club Road Service Area. Construction within this service area requires consideration of the type of demand typical for this area. Most of the potential users identified in this area have surface water irrigation rights. Potential service to this area is, therefore, primarily restricted to winter usage. However, the potential also exists for EPWU to negotiate transfer of water rights and provide full year reclaimed water irrigation service. Construction for service to this area has, therefore, been placed as the last phase for the system. Sizing of the system to serve this area is based on winter usage. Depending on the success in acquiring transfer of water rights, the size of facilities needed to serve the area will need to be addressed. Based on the current expectations, facilities to be constructed in this phase include:

Country Club Road common

ESTIMATED COSTS PER CONSTRUCTION PHASE

PHASE I CONSTRUCTION - (Part of Backbone System)	(Completion - 1997)
NW WWTP - Common	\$2,109,157
I-10 - Common	\$399,031
MesaQ-10 - Common	\$1,933,834
Lower Coronado - Common	\$1,132,828 <u>gnCl-s Coronado HS ~ Adjacent Park)</u>
Shadow Mtn - Common	71,204
Upper Coronado - Common	\$1,153,357
warrior	
P ; P ; Dg	
<i>To Pacific Park</i>	\$26,504
LC - School	\$14,604
UC - School	\$93,270
TOTAL	\$6,933,789
PHASE II CONSTRUCTION - (Put of Backbone System)	(Completion - 1998)
Redd Roa--TM - Common	\$3,597,969
Ulterior Piping	
RR - S8S33,867	
RR - S9	\$133,994 <u>0~sL Yard Meter Customers may be served)</u>
RR - S10S46,151	
TOTAL	\$3,811,981
PHASE III CONSTRUCTION	(Completion - 1999)
Interior Piping	NOTE: As an option, SM - Apans may be included with customer commitment Add \$230,043 if justified.
UC - Escondido	\$193,577
UC - Casitas Coronado	\$178,673
UC - Lelvidere	\$215,825
LC - South Resler	\$136,142
LC - Fkmcon	\$340,619
TOTAL	\$1,064,836
PHASE IV CONSTRUCTION	(Completion - 2001)
Mesa Egos - Common	\$1,386,592
terior Piping	
MH - Parks	\$292,052
MH - Schook	\$237,066
MH - Ma0S	\$110,435
TOTAL	\$2,026,145
PHASE V CONSTRUCTION	(Completion - 2003)
Counby Club Rd - Commons	\$719,664 <u>(Uses Routing In Montoya Dnun)</u>
Ulterior PW	
CCR - Park South	\$125,608
CCR - Park East	\$106,046
TOTAL	\$951,318
PROJECT TOTAL COST	\$14,788,069

CCR Park East
CCR Park South

The project financing plan with its respective sequences to be followed is submitted as Table No. 1.

4. **Economic and Financial Feasibility**

Economic and financial feasibility information is presented within the attached report titled "Reclaimed Water System Improvements" dated December 23, 1994. The cost-benefit ratio will increase as the cost of potable water increases. New water supplies are expected to be expensive while the cost of re-use water is expected to remain a more economical alternative.

- a. **Benefit/Cost Ratio:** Please refer to the attached executive summary of "Reclaimed Water System Implementation Financial Analysis" prepared by Raftelis Environmental Consulting Group in December, 1994.

Analysis of Cash Flow:

- b. **Plan to Recover the Investment:**
- c. **Sensitivity Analysis:**
- d. **Financial Statements for a 15 year horizon**

5. Social Aspects

a. Project Impacts on Local Populations: All EPWU customers will benefit from this project due to the availability and use of reclaimed water. Based on the cost of future water supplies, the proposed program provides economic benefits to both reclaimed and potable water users.

Acceptance of reclamation and reuse of wastewater for non-potable use by northwest El Paso could be used as a means of locating and attracting new commercial and industrial facilities, especially those that are moderate to large water users.

b. Project Impacts on Cultural Resources: The cultural resources assessment for the project will be conducted by the Texas Water Development Board. It is anticipated by the EPWU that this project will not have any adverse affects on the cultural resources within the regions that will be developed for placement of infrastructure for delivering reclaimed water for reuse. No negative impacts to

cultural resources have resulted due to the existing EPWU water and wastewater infrastructure.

Pursuant to TWDB guidelines for State Revolving Funds, public hearings will be held to review the environmental and cultural resources effects of the proposed project. Notice of the hearings will be published when copies of the KID are sent to the appropriate state and federal agencies; these will be made available to the public for review. Comments from agencies, public correspondence, and minutes of the public hearings will be included in the final KID. Any possible negative impacts on cultural resources will be addressed within the final KID.

- c. **Characterization of Local Economic Situation:** The area that will be served by this project is located in the northwest portion of El Paso County. From El Paso's current population of approximately 570,500, the northwest area contains approximately 78,000 people with a 5.9% per year growth rate. The racial make up of the City's northwest population comprises of 50% White, 2% Black and 48% Others. Hispanics comprise approximately 46% of the population within this area. The median income for this region is \$23,600; the unemployment rate averages around 5.1%. The northwest colonies are estimated to have around 14,100 people, with a per capita income of around \$14,175 and 6.8% unemployment rate. About 80% of this population are Hispanics.

6. Community Participation

Public Need: The public within El Paso, Texas; Southern New Mexico; and Northern Mexico, the region served by the Mesilla bolson aquifer, will benefit from prolonged raw water resources. This project will help ensure that this *supply is* not depleted by commercial and industrial use, as well as for turf irrigation needs. The public expects a reliable fresh water supply, and this conservation effort will assure that future generations have an additional resource of water supply and help extend the life of the existing underground aquifer system.

On July 10, 1995, a public meeting was held at Coronado High School located at 100 Champions in El Paso, Texas. The purpose of the meeting was to provide a description of the project to area residents and allow for public comment. Citizens attending asked several questions and gave favorable input to EPWU staff in regard to the project. Additional public meetings are planned within the next four to six weeks in order to seek further public comment.

7. Operation and Maintenance:

- a) **Start-up Operation Program:** The existing Northwest Plant is presently treating about 6.5 MOD of wastewater and currently permitted for 6.8

MGD. The plant expansion will bring the plant's capacity to 17.5 MGD. The start-up program consists of thorough training by our consultant's Process/Operations Engineer; review of manufacturer's operation and maintenance manuals; review of the Operations and Maintenance Manuals prepared by the consulting engineer; and hands-on training by our certified Class A Superintendent and Wastewater Treatment Manager. The following **treatment** units have been successfully started-up: Ultraviolet (UV) Light Disinfection, Sand Filtration, Headworks, Grit Removal, Secondary Clarifiers, Thickening and Aeration. The UV Light Disinfection System has been in operation since March, 1995, and is presently operating to specifications. The new Headworks and Grit Removal Unit has been successfully operating since May, 1995.

Also, as part of the start-up program, any new unit operation is first tested, and then accepted if manufacturer's criteria and compliance concerns are met, and certified by a Professional Engineer before any wastewater from existing units within the "old" section of the plant is diverted to the "new" unit operation. If any new unit operation is deemed unacceptable, the wastewater will continue to be treated in the "old" section of the plant, until such time the new treatment unit operation performs to specifications.

b) Contingency Program: During the start-up program, the contingency plan will consist of testing every new unit operation before any wastewater from the old section of the plant is diverted to the new unit. Once the Engineer deems the unit acceptable, within specifications and in compliance with all applicable regulations, the unit will be certified. If the new unit is not acceptable, the wastewater will continue to be treated in the old plant until such time the new treatment unit operation is acceptable and meets specifications.

After completion of facilities, we anticipate only minor interruptions; however, for reliability, each customer will be treated on a case-by-case basis and will be required to make the appropriate arrangements for an on-site facility to store process water.

c) Operation and Maintenance Program: EPWU has established a well defined operation and maintenance (O&M) program for all its water and wastewater facilities. Annually, Texas A&M University Extension Service provides training for EPWU water and **wastewater treatment plant operators** to help them obtain State certification. The engineering **consultant firm and contractors involved** in the Northwest WWTP expansion project have developed 26 volumes of O&M manuals that will

be used by the plant personnel which will ensure proper plant performance. The TWDB will review and approve the manuals prior to executing its requirements. In addition to these O&M manuals, EPWU engineering consultants are conducting operational training sessions to supplement operating manuals during plant start-up of new unit operations. They are also developing O&M instruction manuals and standard operating procedures specific to the Northwest WWTP for use as reference and training purposes. Currently, about 95% of the EPWU plant operators are State certified. The 1995-96 O&M Budget for the plant is \$1,263,300. The appropriation will be adjusted as the need arises with increased influent flow to the plant.

d) Safety Program: The Northwest WWTP has an exceptional Safety Program consisting of weekly meetings, hands-on training, and viewing of special videos on general safety topics and the Hazardous Communication Act. EPWU offers several classes on safety and O&M on a continuous basis. The success of EPWU's Northwest WWTP's Safety Program has received accolades in the form of the prestigious George Burke Award from the Water Environment Federation for a perfect safety record and exceptional performance for 1992.