



**TEXAS CLEAN RIVERS PROGRAM
BASIN HIGHLIGHTS REPORT
OF THE
CANADIAN RIVER BASIN
APRIL 1998**



As the Texas Clean Rivers Program (CRP) completes its seventh year in the Canadian River Basin, the Red River Authority of Texas reaffirms its commitment to the program and provides this summary report of the goals accomplished during the past year ending in March 1998. The rules were developed by the Texas Natural Resource Conservation Commission (TNRCC) for the CRP and are utilized by river authorities and other agencies to conduct regional assessments of water quality throughout each river basin in the state. Biennial assessment reports for each of the 23 major rivers in the state were submitted in 1992, 1994, and 1996 to the Governor's Office, the TNRCC and other agencies. The vital data included in these reports together with new data obtained during this period have been utilized in the presentation of this 1998 Basin Highlights Report. The intent of this report is to inform the public, stakeholders and other interested parties of the strides being made to reach a better understanding of the local watersheds for improved management and protection of our water resources.

THE RIVER

The Canadian River Basin includes all or parts of 15 counties in the Texas Panhandle. Since there is no single local entity having jurisdiction for the entire Canadian River Basin, it was agreed that Red River Authority of Texas, with the support of the Canadian River Municipal Water Authority (CRMWA) and the Palo Duro River Authority (PDRA), would conduct the water quality assessment for the Canadian River Basin. As a tributary to the Arkansas River, the headwaters of the Canadian River begin in northeastern New Mexico and eventually flow into the Mississippi. From the northeastern slopes of the Sangre de Cristo Mountains in New Mexico, the Canadian River drops in elevation from 9,000 feet to 3,660 feet and covers a drainage area of 12,616 square miles. The Canadian crosses a relatively flat prairie with a gradual slope to an elevation of 2,870 feet at the Oklahoma border intersecting two ecoregions: the Western High Plains and Southwestern Tablelands. Average annual precipitation varies from 25 inches in the mountainous upper reaches, 15 inches in eastern New Mexico and 22 inches near the Texas-Oklahoma border. There are three major reservoirs and four major aquifers in the Texas portion of the Canadian River Basin, which provide various water uses to more than 250,000 people.



GOALS OF THE PROGRAM

In contemplation of the immense geographical area to assess, the Basin Advisory Committee recommended that the Authority divide the basin into more manageable areas or sub-basins to make better use of the available resources. The basin was divided into five geographical basin reaches. Each basin reach was further divided into subwatersheds consistent with established hydrological unit areas (HUA) to facilitate improved planning, monitoring, geographical analysis, and dissemination of information. Major strides have been made since the four principal goals were established to successfully evaluate the water quality of the Canadian River Basin, as well as the specific objectives set to achieve these goals. The four principal goals include:

Identifying Water Quality Conditions of the Canadian River Basin

The thrust of the CRP for this year has been identification of water quality conditions which exhibit concerns within the Canadian River Basin. Under the Authority's approved Basinwide Monitoring Plan (BMP) and Quality Assurance Project Plan (QAPP), seven new stations have been established throughout the basin for the collection of chemical, physical, and biological data. The focus has been directed toward accurately identifying the water quality concerns that came out of the 1996 Assessments of Water Quality for the basin. The BMP was designed and implemented by basin reach in an effort to converge available resources in the most beneficial areas. As a result, 71 sampling events have occurred and 2,238 chemical, physical, and/or biological parameters were analyzed to provide sufficient data to form conclusions based on good science for the development of future action plans that will ultimately provide improved management of our water resources. The data obtained have proven useful to the local communities facing more stringent discharge permit requirements to help offset some of the pressures of unfunded mandates. The data will also be beneficial in addressing the stream segments designated by the TNRCC for Total Maximum Daily Loads (TMDL) analysis to be performed. These segments and the

parameters of concern are found in the basin reach descriptions.

The Authority conducted eight Rapid Bioassessments within the basin during this period. This information has greatly expanded our knowledge of the water resources (i.e. biological health) and enabled us to identify more accurately the impact of point and nonpoint sources of pollution within the watershed. Additionally, this information supplements the Texas Surface Water Quality Management database (SWQM), in which trend analysis were recently performed. Detected trends are also delineated in the basin reach descriptions in this report. The analysis of the data also demonstrates that the basin as a whole supports fishing, swimming, and other permitted uses with only a few exceptions in some stream segments. For more details on the monitoring results, access our website at www.rra.dst.tx.us/CRP. Additionally, a USGS Fact Sheet (insert to this report) was published jointly by the U.S. Geological Survey and the Red River Authority of Texas, which shows complete monitoring coverages during the FY 1997 period. Improved water resource management, protection, and conservation are becoming more prevalent as a direct result of the public's awareness and the dissemination of more accurate information with which to make informed decisions.

Involving the Public through Education

In accordance with the Authority's approved Public Participation Plan, several public events were held within the basin involving at least 1,500 people from municipal, industrial, agricultural, educational, and private sectors, all of whom demonstrated a vested interest in the Clean Rivers Program (CRP) and its outcome. This was accomplished through the distribution of printed materials published through the CRP, the world wide web and public meetings and forums conducted during this reporting period. With the assistance of audio/visual presentations depicting current trends in environmental conditions and water quality concerns identified throughout the course of this year's assessment, a broad cross section of society has been reached, which ranged from the private sector to the professional sectors through events such as the Basin Advisory Committee, the High Plains Ogallala Area

Regional Water Management Plan, Wichita Falls Regional Water Resource Conference, Civic Clubs, and individual inquiries. Probably the two most outstanding initiatives that gained the greatest level of success were the Clean Rivers Program World Wide Web Home Page and the High Plains Ogallala Area Regional Water Management Plan. Both are utilized by people from all walks of life who demonstrate their determination toward learning about and protecting our water and land resources. We have seen a growing level of interest and participation in both, leading to a greater personal involvement on the part of the general public.

Finding Feasible Solutions for Controlling Pollution

The assessment process evaluated existing pollution control and abatement programs with regard to identified water quality concerns. While regional activities impact the local watersheds, site specific problems tend to be intensified by the larger scale influences of naturally occurring and anthropogenic pollution to receiving waters. Such is the case where elevated levels of chlorides in the Canadian River Basin that originate from an underlain shallow brine aquifer near Logan, New Mexico. This aquifer is under artisan pressure and contains water about as salty as seawater. This brine is leaking upwards to the Canadian River. The Lake Meredith Salinity Control Project plans to intercept the flow with wells drilled along the river, and then dispose the brine by deep well injection or other means. This project would decrease the undesirable elevated concentrations of chlorides in Lake Meredith, which is the primary public drinking water supply for many residents of the Texas Panhandle. The effectiveness of the Salinity Control Project is another means of reclaiming full benefit of the resources. Water quality monitoring is conducted by the Canadian River Municipal Water Authority and the Red River Authority under the TNRC approved QAPP and will be continued at key stations to address both the stream standards and the public drinking water standards.

The coordinated collection, management, and analysis of water quality data are key elements in determining reasonable scientific solutions for maintaining and improving the quality and

availability of natural resources for all intended uses. The CRP is accomplishing these tasks and represents the combined efforts and determination of the stakeholders through participation in Receiving Water Assessments (RWA) and Rapid Bioassessments (RBA) and other targeted monitoring activities within the local watersheds. Municipal and industrial wastewater dischargers have long since been considered a point source of pollution to the receiving waters. However, conscientious maintenance and continued monitoring, coupled with the application of improved technologies demonstrate that most discharges actually provide a means of support to the ecosystem and contribute to needed streamflows during drought conditions. Monitoring conducted during this period gives evidence of these findings and provides valuable data for the administrators of a discharge permit to aid in planning, permitting, and preventative maintenance. These combined efforts of the regulated communities and the regulators alike exemplify how the CRP has been able to achieve a cooperative spirit to insure that the impact to receiving waters of our watersheds remain compatible with the ecosystem and in balance with natural habitats. For details of the water quality monitoring activities within the Canadian River Basin, access the CRP Website at www.rra.dst.tx.us/CRP.

Watershed runoff from urban and agricultural activities can be major contributors of pollution without effective control programs in place to reduce or prevent adverse impacts resulting from agricultural and livestock practices. Nutrient and bacteriological data has been and continues to be a key part in the Authority's monitoring plan to address the extent of nonpoint pollution in all areas of the basin. This information will enable the creation of a nonpoint source pollution study to be performed in those areas most affected. Hopefully, this will lead to best management practices, which will aid in alleviating the problems that nonpoint source pollution poses.

***Providing Administrative and Technical
Assistance to Local Entities***

The CRP was designed so that it could be continuously critiqued by the stakeholders in an effort to provide the greatest local benefit and assistance to municipal, industrial, and agricultural sectors with minimum cost to the stakeholders. This is being accomplished in part through cooperative waste load evaluations, receiving waters assessments, and nonpoint source pollution control strategies toward the establishment of localized stream standards. Coordination of permitting and providing quality assured data enables both the regulator and the regulated community to work together in finding reasonable solutions toward improving management practices that result in protecting our water resources. One such example is the development of a common QAPP with which any entity desiring to participate in the water quality monitoring effort can combine resources to advance the common goals of watershed protection. Surveys of the local entities have been conducted which identified and prioritized local water quality issues and needs for implementation of the strategic water quality monitoring, which will result in the establishment of realistic water quality stream standards. The assimilated data are growing in popularity for use in local planning and water resource management due to its accuracy and ready access. Being able to find the information needed to make informed decisions regarding water resource management along with other related data enable the local communities to combat many of the unfunded mandates being imposed by the federal government without regard to local considerations. The central clearinghouse for current inventories of water quality, water resource, and socio-economic data related geographically is rapidly becoming a dependable resource for everyone due to its ready access and continuous expansion as the needs dictate for the benefit of the public. Be sure to visit our website often and provide your comments and suggestions for improvement. Access can be through the Internet at www.rra.dst.tx.us/CRP or directly through an arranged connection. Links are also provided to other environmental and natural resource websites for your convenience.

For More Information:

Red River Authority of Texas

**900 8th Street, Suite 520
Hamilton Building
Wichita Falls, Texas 76301-6894**

Administration: (940) 723-0855

Laboratory: (940) 723-8697

Internet: www.rra.dst.tx.us

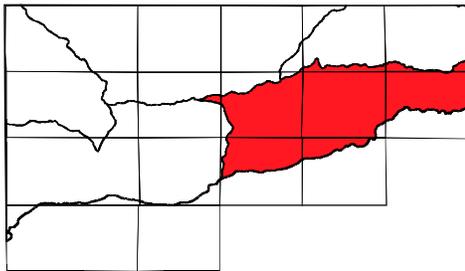
E-mail: info@rra.dst.tx.us

FIVE REACHES OF THE CANADIAN RIVER BASIN

For the assessment to be comprehensive in nature and useful as a resource management tool, an analytic watershed approach was followed for proper identification and isolation of individual factors or elements having an influence on the quality of the water resources obtained from large geographical areas. Each primary area of study was hydrologically divided into five basin reaches containing approximately 4,500 square miles each. The subwatershed areas are being further divided into intensive study areas (ISA) for use in prioritized biological assessments, intensive monitoring surveys, receiving water assessments, stream segment classification and in determining accurate cause and effect relationships of pollution impacting the watersheds.

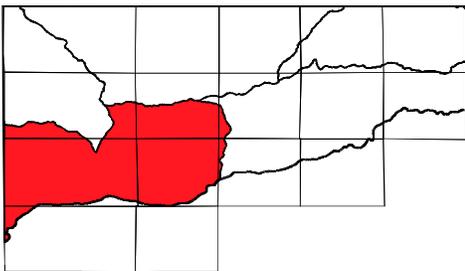
Four types of water quality monitoring were determined to be useful components for inclusion in the Basinwide Monitoring Plan to accomplish the state's monitoring objectives. The four types of monitoring components are fixed station monitoring, systematic watershed monitoring, targeted monitoring and volunteer environmental monitoring. The Authority is employing each of these types in its basinwide monitoring program.

Reach I - The Canadian River main stem watershed from the Texas-Oklahoma state-line upstream from the Sanford Dam on the Canadian River. (Hemphill/Lipscomb Counties to Hutchinson/Carson Counties)



There are two subwatersheds in this reach totaling 4,790 square miles of contributing drainage area in Texas and Oklahoma, 2,831 square miles in Texas, and 21 active water quality monitoring stations. Mean streamflow of the main stem measures 84.2 cubic feet per second. There are 36 permitted municipal and industrial discharges, 12 permitted solid waste disposal sites and 10 water rights permits issued in this reach. Estimated population was reported to be 46,000 in 1995. The Authority conducted six monitoring events during this period and 136 parameters were screened and analyzed, which revealed the general quality of the water to be suitable to support fishing, swimming, and high aquatic life. Of the constituents screened, only nutrients were identified as a concern. Trend analysis for constituents of concern at stations located in this reach showed a decreasing trend for total kjeldahl nitrogen (TKN), o-phosphate, and total phosphorus in Segment 101.

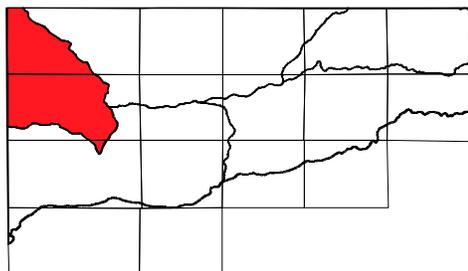
Reach II - The Canadian River main stem watershed from Sanford Dam upstream to the Texas-New Mexico state-line. (Moore/Potter Counties to Oldham/Hartley Counties)



Reach II also contains two subwatersheds with 3,760 square miles of contributing drainage in Texas and New Mexico, 3,108 square miles Texas, and 72 active water quality monitoring stations. Mean streamflow of the main stem measures 287 cubic feet per second. There are 18 permitted municipal and industrial discharges, six permitted solid waste disposal sites, and 11 water rights permits issued in this reach. Estimated population in 1995 was reported at 115,000. The Authority conducted 49 monitoring events during this period and 1,544 parameters were screened and analyzed, which revealed the general quality of the water to be suitable to support fishing, swimming, and excellent aquatic life. Of the constituents screened, nutrients and total dissolved solids were identified as concerns. Trend analysis for constituents at stations located in this reach showed an increasing trend for chloride, sulfate, and conductivity in Segment 102, and a decreasing trend for total phosphorus, orthophosphorus, and TKN at Station 10018 (East Amarillo Creek). This reach contains one segment that is on the state's 303d list for a TMDL study to be conducted. Segment 102 is listed for elevated levels of fecal coliforms.

* All Parameters screened utilized the State's Surface Water Quality Monitoring Standards, and, as such, do not reflect drinking water standards.

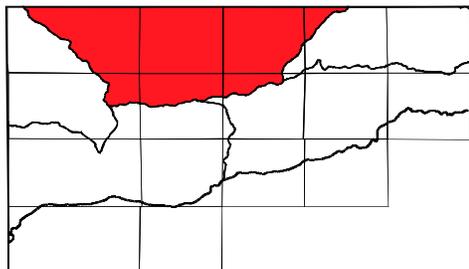
Reach III - Rita Blanca Creek watershed upstream to the Texas-New Mexico state-line on the west and the Texas-Oklahoma state-line on the north. (Hartley County to Dallam County)



The three subwatersheds contained in Reach III have 3,554 square miles of contributing drainage in Texas, New Mexico and Oklahoma with 1,527 square miles in Texas and three active water quality monitoring stations. There are 17 permitted municipal and industrial discharges, three permitted solid waste disposal sites and one water rights permit issued in this reach. In 1995 estimated population was 6,000. The Authority conducted 12 monitoring events during this period and 454 parameters were screened and analyzed, which revealed the general water quality is not suitable enough to support fishing, swimming, and has limited aquatic life. Of

the constituents screened, nutrients, total dissolved solids, and pH were identified as the primary concerns. Trend analysis for constituents of concern located in this reach showed an increasing trend for chloride and total phosphate in Segment 105 and a decreasing trend for orthophosphorus and pH for Segment 105.

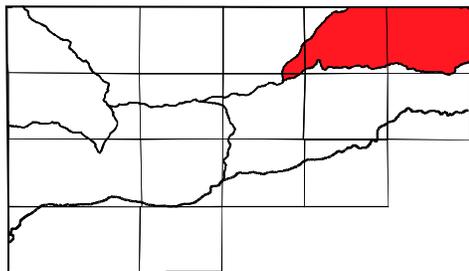
Reach IV - Palo Duro Creek watershed from the Texas-Oklahoma state-line upstream to its headwaters and the portions of Coldwater Creek, Frisco Creek and Lower Beaver River located in Texas. (Ochiltree/Hutchinson Counties to Dallam Counties)



Reach IV also contains three subwatersheds with 6,520 square miles of contributing drainage in Texas, New Mexico and Oklahoma, with 3,448 square miles in Texas and six active water quality monitoring stations. There are 26 permitted municipal and industrial discharges, eight permitted solid waste disposal sites, and 15 water rights permits issued in this reach. Estimated population was reported to be 25,000 in 1995. The Authority conducted one monitoring event during this period and 36 parameters were screened and analyzed, which revealed the general quality of the water to be suitable to support fishing, swimming, and high aquatic life. Reach IV

contains no classified segments, therefore designated uses are not known at this time. Of the constituents screened, no concerns were identified. No trend analysis was performed for this reach.

Reach V - Wolf Creek, Mammoth Creek and Kiowa Creek watersheds from the Texas-Oklahoma state-line upstream to the headwaters of each. (Lipscomb County to Hansford County)



Reach V includes three subwatersheds with 3,589 square miles of contributing drainage in Texas and Oklahoma, with 1,617 square miles in Texas and three active water quality monitoring stations. Mean streamflow of the main stem measures 8.33 cubic feet per second. There are 10 permitted municipal and industrial discharges, six permitted solid waste disposal sites, and three water rights permits issued in this reach. The 1995 estimated population was reported at 15,000. The Authority conducted three monitoring events during this period and 68 parameters were screened and analyzed which revealed the general water quality is suitable for

fishing, swimming, and high aquatic life. Of the constituents screened, no major concerns were identified. No trend analysis was performed for this reach.

* All Parameters screened utilized the State's Surface Water Quality Monitoring Standards, and, as such, do not reflect drinking water standards.