

IV. TECHNICAL SUMMARY

The technical summary section includes summaries of data collected from 1996 to 2001, a trend analysis on data collected from 1989 to 1999, and maps of watersheds and water quality characteristics. Discussions also include how water bodies were identified as being impaired and any corrective measures or special projects to prevent water bodies from future impairment. Also within this section is a technical process section, which describes the methodology used by TCEQ (formerly TNRCC) to assess water bodies and identifying water quality impairments.

Technical Process

Once the data are collected, the assessment process attempts to answer the question, “How’s the water?” TCEQ (formerly TNRCC) provides guidance for water quality data analyses in a document called Guidance for Assessing Texas Surface and Finished Drinking Water Quality Data. All data used to evaluate water quality standards compliance is processed according to this guidance document.

TCEQ (formerly TNRCC) protects water quality by establishing categories, called designated uses, which water bodies potentially, or actually do, support. Generally, there are these uses, each with standards that are established to protect these designated uses. For each water quality standard, there is a set value called a criterion, that is used as a benchmark for comparisons. Criteria are set to represent a specific area, or segment.

Stream segments may be an entire water body or just a portion of a stream, depending on its chemical, physical and biological characteristics. All streams in Texas have not been classified. Those that have not are assigned the same quality criteria as the nearest classified downstream segment. Only under special circumstances, as when a special study was done, would a nonclassified segment have its own criteria.

An example of how this system works is that the designated use of aquatic life has been assigned a standard of dissolved oxygen to protect it. In most freshwater streams a dissolved oxygen criteria of five mg/L must be met continuously for the stream to meet its standard. Table 4 lists the designated uses their associated standards followed by a discussion of each designated use.

Table 4 - Designated Uses and Water Quality Standards for Texas Waters

Designated Use	Applicable Water Quality Standard
Contact Recreation	Bacteria Indicators
Aquatic Life Use	Dissolved Oxygen (DO) Fish Community Index Benthic Macroinvertebrate Community Index Habitat
Public Water Supply	Chloride (Cl) in Drinking Water Sulfate in Drinking Water Total Dissolved Solids in Drinking Water
General	Chloride (Cl) Sulfate Total Dissolved Solids pH Temperature

Contact Recreation

This use refers to the ability of a water body to safely support activities that include physical contact with water, such as swimming. The applicable water quality standard for this designated use is a measure of bacteria levels. In freshwater, *E. coli* is the preferred organism, while in coastal water bodies *Enterococci* is a more appropriate indicator. For freshwater, the *E. coli* criterion is set at 394 colony forming units per 100 ml (cfu/100ml) of water (and a long-term geometric mean of 126 cfu/100 ml). In the past, fecal coliform was used as the bacteria indicator, but it is currently being phased out in favor of *E. coli*.

Aquatic Life Use

There are several criteria that can be used to assess support of a designated use. In addition to a variety of standards, there are four different levels for each criterion. If a perennial stream is not classified (is a stream segment), the aquatic life use designation is assumed to be “high”. As a general rule, streams influenced by tidal fluctuations have dissolved oxygen criterion 1 mg/L lower than those listed in the Table 5. Additionally, reservoirs and coastal streams can only be assessed using dissolved oxygen.

Public Water Supply

This use is evaluated by assessing finished drinking water and/or surface water conditions. Finished drinking water is assessed for toxic contaminants at the point of entry to distribution systems. Finished drinking water is also assessed for – chloride, sulfate and total dissolved solids, which have criteria of 300, 300 and 1000 mg/L, respectively. These criteria for dissolved solids are applied statewide and were developed to ensure

Table 5 - Aquatic Life Use Criteria

Level	Dissolved Oxygen (Grab Sample)	Dissolved Oxygen (24-hour Minimum)	Fish Community	Benthic Community (IBI Score)	Habitat Index (IBI Score)
Index Score					
Exceptional	6.0	4.0	58-60	>36	26-31
High	5.0	3.0	48-52	29-36	20-25
Intermediate	4.0	2.0	40-44	22-28	14-19
Limited	3.0	2.0	<34	<22	<14

that water supply utilities could treat and deliver water that is free of tastes and odor. The CRMWD assesses the chloride content in the pretreated water it supplies to its customers, such as the city of Odessa, which in turn assesses the finished drinking water.

General Use

Temperature, pH, chloride, sulfate and total dissolved solids criteria are used as benchmarks for gauging support for this use. In the Colorado River basin, only the pH criterion is common among all water bodies. This criterion is set such that pH values should be between 6.5 and 9.0 standard units. For the other criteria, there are differences among segments. Segment specific criteria will be noted for each river segment in each watershed summary.

Watershed Summaries

To facilitate discussions on a smaller geographical area, the Colorado River basin was divided into eight subwatersheds in this section. Those watersheds, listed from east to west, are:

- ◆ Coastal Watershed Complex - Colorado River from Columbus to Matagorda Bay including the Tres Palacios River and Caney Creek
- ◆ Colorado River from Austin to Columbus
- ◆ Austin including Town Lake, Lake Austin and Colorado River tributaries
- ◆ Lake Travis including Pedernales River and Lake Marble Falls
- ◆ Lake LBJ including Llano River and Inks Lake
- ◆ Lake Buchanan including San Saba River
- ◆ Upper Colorado River Basin from Lake J.B. Thomas to O.H. Ivie Reservoir
- ◆ Concho River including Lakes Nasworthy, Twin Buttes, O.C. Fisher and tributaries

Maps of each subwatershed are included along with discussion of any impairments, trends, water quality projects and factors that affect water quality. The watershed summary maps contain major and minor water bodies, segment ID, wastewater dischargers, permitted animal feeding operations and other information pertinent to assessing the water bodies within each subwatershed.

The watershed summary also contains data summary tables for chemistry, biological collections, and metals.

Fig. ? - Colorado River Basin Major Watersheds

