

TEXAS WATER QUALITY STANDARDS: CRITERIA FOR RECREATION
TCEQ Staff Draft **August 31, 2007**

The following information is intended to provide a draft overview of (1) the current recreational criteria in the water quality standards, (2) the recent history of recreational criteria in Texas, (3) the status of ongoing revisions of water quality standards, and (4) options that are under consideration for recreational criteria.

STATUS OF CURRENT RECREATIONAL CRITERIA:

- Uses and numerical criteria for Texas waters are established in Texas Surface Water Quality Standards (Title 30, Chapter 307 of the Texas Administrative Code). Water bodies in Texas are presumed to have contact recreation except where specifically proven otherwise by a use-attainability analysis.
- The water quality standards have two recreational use designations: (primary) contact recreation, and noncontact recreation. Contact recreation is defined as “recreational activities involving a significant risk of ingestion of water, including wading by children, swimming, water skiing, diving, and surfing.” Noncontact recreation is defined as “aquatic recreational pursuits not involving a significant risk of water ingestion: including fishing, commercial and recreational boating, and limited body contact incidental to shoreline activity.”
- In the year 2,000 standards revisions, TCEQ adopted EPA’s recommended recreational indicator bacteria -- *E. coli* for freshwater and enterococci for saltwater. Fecal coliform was also temporarily continued as an indicator to allow for a transition period.
- Applicable uses and bacteria criteria in the current Texas water quality standards:

	Contact recreation (# per 100 ml)	Noncontact recreation (# per 100 ml)
<u><i>E. coli</i> (freshwater)</u>		
geometric mean	126	605
single sample max	394	---
<u>Enterococci (saltwater)</u>		
geometric mean	35	168
single sample max	89	---
<u>Fecal coliform (all waters)</u>		
geometric mean	200	2,000
Single sample max	400	---

- Recreation criteria are not attained in numerous Texas water bodies. In the 2006 Texas 303(d) list of impaired water bodies, 36% of assessed stream and river miles did not meet recreation criteria.

NOTES ON HISTORY OF CONTACT RECREATION STANDARDS IN TEXAS:

In the first Texas water quality standards to be adopted under the federal Clean Water Act in 1973, recreational uses and criteria were a mix of contact and noncontact recreation. The classified list of water bodies was also much smaller then. The San Jacinto watershed, for example, included only the above-tidal portions of Spring Creek, Cypress Creek, Caney Creek, and Peach Creek.

Initially, urban bayous were often classified as noncontact recreation, with fecal coliform criteria of either 2,000 or 1,000 per 100 ml, as a geometric mean. These uses and criteria were generally assigned based on the experience of aquatic scientists who were familiar with the water bodies. The uses and criteria were periodically adjusted for some of the bayous based on observations and other information. Peach Creek, for example, was designated for contact recreation in 1981, with a fecal coliform criterion of 200 per 100 ml.

By 1984, the criterion for the remaining noncontact water bodies was uniformly set at 2,000 fecal coliform per 100 ml, rather than having some at 1,000 per 100 ml. Up until this time, specific uses and criteria were not "presumed" for unclassified water bodies in the general criteria of the standards.

In 1983, EPA substantially changed the federal regulations for state water quality standards, and use-attainability analyses were required for all water bodies that were designated for less than primary contact recreation. Accordingly, EPA conditionally approved the 1984 revisions of the Texas Surface Water Quality Standards to require use-attainability analyses for a large number of specific segments and for smaller, unclassified water bodies.

Initial proposals for recreational uses of less than primary contact were disapproved by EPA. An example was the use-attainability analysis submitted for Dickinson Bayou in 1986. EPA did concur that designated recreational uses were not required for the Houston Ship Channel.

In 1986, a consortium of environmental groups (Sportsmen's Clubs of Texas, Sierra Club, Environmental Defense Fund) sued EPA for approving the Texas Surface Water Quality Standards, and part of the lawsuit focused on the lack of use-attainability analyses for designations of less than "fishable/swimmable." The lawsuit was revised in 1988, remained in court for years, and is now no longer an active legal action.

In the 1988 water quality standards revisions, the "presumed" use for small, unclassified streams was designated as contact recreation, except where a use-attainability analysis was approved by EPA and the stream was individually designated in the water quality standards. Classified water bodies also were designated for contact recreation except for those few instances where a use-attainability analysis had been approved by EPA, such as for Houston Ship Channel Segments 1006 and 1007. There were other ship channel areas C such as Texas City, Bayport Channel, and the lower part of the Houston Ship Channel (Segment 1005) C that were also designated for noncontact recreation due to concerns by channel operators that recreation wasn't safe due to ship traffic. However, these other ship channels were still assigned criteria commensurate with contact recreation use.

In the standards revisions for the year 2,000, TCEQ adopted EPA's current (1986) criteria that are based on *E. coli* for freshwater and enterococci for tidal waters. Fecal coliform was temporarily retained as a criterion to allow for a transition period for monitoring programs.

The National Beach Act of 2000 required states to (1) monitor coastal swimming beaches and post notice when bacterial indicators are elevated, and (2) adopt EPA's current saltwater recreational bacterial indicator (enterococci) in state water quality standards by April 10, 2004.

In November 2004, EPA promulgated recreational indicator criteria for coastal and Great Lakes states. Of the 35 applicable states, TCEQ was among the 14 states considered fully compliant with the Beach Act. The monitoring and public notice requirements of the Beach Act are addressed by local beachwatch programs under coordination of the Texas General Land Office.

STATUS OF PENDING REVISIONS OF THE WATER QUALITY STANDARDS:

For previous standards revisions in 2000, EPA has approved them except for:

- Toxic criteria to protect aquatic life in freshwater
- Site-specific selenium criteria for 4 water bodies
- Modifications of how D.O. criteria for East Texas streams are applied
- Various narrative provisions and criteria

Status of upcoming revisions:

- Preliminary informal recommendations for changes, January-March 2006
- Initiation of rulemaking approved in November 2006
- Water Quality Standards Advisory Workgroup meetings:
 - March 7, 2007: nutrient criteria, toxic criteria
 - May 16, 2007: recreation criteria, standards applicability & assessment
 - June 26, 2007: whole effluent testing, site-specific standards
 - Sept 6, 2007: nutrient criteria, standards applicability

Major Revisions under consideration:

Consider numerical nutrient criteria for large water supply reservoirs.

Recalculate human-health toxic criteria to incorporate updated procedures to address child exposure, estimated amounts of fish consumed, and bioaccumulation rates – in coordination with toxicologists in the TCEQ Chief Engineer’s Office.

Consider updating selected toxic criteria for both human-health and aquatic-life protection - including consideration of EPA 2001 guidelines for mercury to protect human consumption of fish.

Review recent site-specific studies to consider (1) revised uses and/or criteria for about 40 larger water bodies, (2) aquatic-life uses for about 43 new small streams in Appendix D, and (3) toxic criteria for about 16 water bodies.

Review recreational criteria in order to consider (1) a broader range of recreational uses and associated bacteria criteria, (2) a methodology to study and assign recreational uses and criteria, and (3) updated procedures to assess whether recreational uses are being attained:

- Revised use categories could include primary and secondary contact recreation.
- Methodology for use-attainability would facilitate site-specific recreational criteria.
- Considerations for assessing attainment:
 - Assessing impairments with the average criterion, rather than the using both the average and single-sample max.
 - More clearly defining “non-representative” sampling situations that might be excluded.
 - Reviewing possibility of limited exemptions of data at very high streamflows
- In coordination with HGAC and others, TCEQ has initiated a federal grant to (1) evaluate options for recreational water quality standards and (2) to develop a framework and examples of recreational use-attainability analysis.

A large number of additional revisions will also be considered in order to incorporate new data and information, and to improve clarity of various provisions.

TCEQ is concurrently evaluating, updating, and revising the Procedures to Implement the Texas Surface Water Quality Standards, RG-194. For example, TCEQ is evaluating new EPA requirements for whole effluent toxicity testing based on sublethal effects and for establishing permit limits based on “reasonable potential” of toxicity.

For more information:

Search TCEQ’s website for “water quality standards,” and browse handouts for the water quality standards advisory workgroup

[http://www.tceq.state.tx.us/permitting/water_quality/wq_assessment/standards/WQ_standards_revisions_future.html].

EXAMPLES OF OPTIONS TO CONSIDER FOR RECREATIONAL CRITERIA:
(Excerpt from TCEQ website on the Water Quality Standards Workgroup)

Broader range of recreational uses:

- Option 1: No changes to 2000 TSWQS recreational uses & criteria.
- Option 2: Separate contact recreation use into two subcategories (primary and secondary) and keep noncontact recreation use.
 - a) Primary contact recreation: significant risk of ingestion of water; examples include wading by children, swimming, water skiing, diving, and surfing.
 - b) Secondary contact recreation: incidental contact; probability of ingesting appreciable quantities of water is minimal; examples include fishing, commercial and recreational boating, and limited body contact incidental to shoreline activity. May be assigned only where a use attainability analysis has been conducted consistent with EPA regulations (40 CFR 131.10) that further demonstrates there is no reasonable potential for primary contact recreation uses to occur.
 - c) Noncontact recreation (NCR): incidental contact; probability of ingesting appreciable quantities of water is minimal; any type of contact recreation considered unsafe for reasons unrelated to water quality; recreation prohibited for safety reasons (i.e. ship channel, etc.); examples include fishing, commercial and recreational boating, and limited body contact incidental to shoreline activity. Applies to NCR segments designated in Appendix A; no new NCR designations for Appendix A are recommended at this time.
- Option 3 (for freshwater): Have two types of primary contact recreation waters (Recreation Class 1A and Recreation Class 1B), secondary contact recreation, and noncontact recreation.
 - a) Primary contact recreation
 - i. Recreation Class 1A (Existing PCR Use)
 - 1. Default use category
 - 2. Primary contact recreation uses have been documented or are presumed to be present.
 - ii. Recreation Class 1B (Potential PCR Use)

1. Intended to protect waters with the potential to support primary contact recreation uses and may be assigned only if a reasonable level of inquiry has failed to identify any existing primary contact recreation uses of the waterbody.
 - b) Secondary contact recreation (same as Option 2)
 - c) Noncontact recreation (same as Option 2)
- Additional options: Developed in coordination with workgroup.

Freshwater risk levels for the options listed above:

- Option 1 Risk Levels

- 1) No change in risk levels used in 2000 TSWQS
 - a. Contact recreation: 8 illnesses per 1000 swimmers (Geometric mean: 126 per 100 ml)
 - b. Noncontact recreation: 14-15 illnesses per 1000 swimmers (Geometric mean: 605 per 100 ml)

- Option 2 Risk Levels

- 1) Primary contact recreation
 - a. 8 illnesses per 1000 swimmers (Geometric mean: 126 per 100 ml)
- 2) Secondary contact recreation
 - a. Five times the primary contact recreation geometric mean (630 per 100 ml). This is a risk level between 14-15 illnesses per 1000 swimmers.
- 3) Noncontact recreation
 - a. Five times the primary contact recreation geometric mean (630 per 100 ml). This is a risk level between 14-15 illnesses per 1000 swimmers.

- Option 3 Risk Levels

- 1) Primary contact recreation
 - a. Recreation Class 1A: 8 illnesses per 1000 swimmers (Geometric mean: 126 per 100 ml)
 - b. Recreation Class 1B: 10 illnesses per 1000 swimmers (Geometric mean: 206 per 100 ml)
- 2) Secondary contact recreation
 - a. Five times the primary contact recreation geometric mean (630 per 100 ml). This is a risk level between 14-15 illnesses per 1000 swimmers.

- 3) Noncontact recreation
 - a. Five times the primary contact recreation geometric mean (630 per 100 ml). This is a risk level between 14-15 illnesses per 1000 swimmers.

- Additional options: Developed in coordination with workgroup.

Saltwater risk levels for the options listed above:

- Option 1 Risk Levels

- 1) No change in risk levels used in 2000 TSWQS
 - a. Contact recreation: 1.9 illnesses per 1000 swimmers (Geometric mean: 35 per 100 ml)
 - b. Noncontact recreation: 27-28 illnesses per 1000 swimmers (Geometric mean: 168 per 100 ml)

- Option 2 Risk Levels

- 1) Primary contact recreation
 - a. 1.9 illnesses per 1000 swimmers (Geometric mean: 35 per 100 ml)
- 2) Secondary contact recreation
 - c. Five times the primary contact recreation geometric mean (175 per 100 ml). This is a risk level between 27-28 illnesses per 1000 swimmers.
- 3) Noncontact recreation
 - d. Five times the primary contact recreation geometric mean (175 per 100 ml). This is a risk level between 27-28 illnesses per 1000 swimmers.

- Additional options: Developed in coordination with workgroup.

Non-human sources of bacteria:

- Currently, TCEQ utilizes Bacterial Source Tracking (BST) to help establish relative sources for Total Maximum Daily Loads but does not use BST with respect to water quality standards.
- EPA's current position on addressing non-human sources of bacteria can be found in the final rule promulgating EPA's water quality criteria for bacteria for coastal recreation waters. In an attachment to a December 20, 2006 EPA Region 6 letter, Region 6 provided an option to limit the application of bacteria criteria in waters affected solely by non-human sources. Region 6 stated that "while this rule is specific to coastal waters, the policy regarding the application of bacteriological criteria in waters impacted by non-human sources applies to inland freshwaters as well: "States and Territories must apply

the *E. coli* and enterococci criteria to all coastal recreation waters. If, however, sanitary surveys and epidemiological studies show the sources of the indicator bacteria to be non-human and the indicator densities do not indicate a human health risk, then it is reasonable for the State or Territory to not consider those sources of fecal contamination in determining whether the standard is being attained. This is the approach taken in the 1986 bacteria criteria document. It would be reasonable for a State or Territory to use existing epidemiological studies rather than conduct new or independent epidemiological studies for every water body if it is scientifically appropriate to do so.” ”

Options for Presumptions (Freshwater):

- a) Continue to assume contact recreation for all unclassified water bodies.
- b) Apply secondary contact recreation to unclassified intermittent streams.
- c) Additional options: Developed in coordination with workgroup.

Update the freshwater single sample numbers:

- Options for contact recreation or primary contact recreation
 - a) Use newly collected state data to calculate a new standard deviation and base the criterion on the 82% confidence level. The 82% confidence level was used to calculate single sample numbers in the 2000 TSWQS.
 - b) Use EPA’s single sample values based on different levels of recreational usage.
 - 75% confidence level: designated bathing beach
 - 82% confidence level: moderate use

- Options for secondary contact recreation and noncontact recreation
 - a) Use newly collected state data to calculate a new standard deviation based on 82% confidence level (moderate use).
 - b) Use EPA’s single sample values based on different levels of recreational usage.
 - 82% confidence level: moderate use
 - 90% confidence level: light use
 - 95% confidence level: infrequent use