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Explanation of Basin/Water Body Fact Sheet Information

In this section of the report, water quality within each stream, reservoir, estuary, and Gulf of Mexico water bodies is assessed individually. Basin narrative and graphical summaries are provided for a cumulative overview of water quality. This assessment approach identifies problems that are unique to individual basins, spatially delineates problem areas, accounts for differences among basins, and evaluates cumulative pollution impacts. All 25 basins and 368 classified segments are included in the assessments, which begin with the Canadian Basin (numbered 0100) and end with the Gulf of Mexico (numbered 2500). In addition, all assessed unclassified water bodies in each of the basins are included.

Basin Narrative Summary

The basin narrative summary provides basic introductory information concerning geography, economy, size, and number of segments within the basin. The most prominent water quality problems, spatial and temporal trends in water quality, and unique water quality characteristics may be identified.

Basin Map

A map of the basin follows the basin narrative summary. The location of the basin within the state and its relationship to surrounding counties is provided within the insert of each map. The area covered by the basin watershed is identified by green coloration on the inset. Each of the classified water bodies (segments) are shown on the map. Unclassified water bodies are not included, due to lack of geographical information system (GIS) coverage. Colored icons are used on the map to provide a quick reference to the segment number (blue bar at the top of the icon), uses that are threatened (icon bordered in green), partially supported (icon bordered in yellow), not supported (icon bordered in red) and water quality concerns (icon also bordered in red). Icons are not provided for water bodies in which all uses are fully supported and have no water quality concerns. Each classified water body within the basin is shown on the map and the upstream and downstream boundaries delineated by red-colored bars. The icons used on the map to reference assessment indicators are described on the following page.

Basin Graphical Summary

A two-page basin graphical summary provides a visual presentation of all classified and unclassified water bodies within a basin regarding the status

of use support on the front page and water quality concerns on the back page. The basin graphical summary provides a quick, detailed reference to prominent water quality problems within a basin. The summary also identifies the indicators used to assess support of designated uses and water quality concerns. Shaded cells in the table identify for each water body indicators that contribute to threatened, partially supported, and not supported uses and water quality concerns. On the front page of the table, within the cells for each indicator, letters are used to identify uses that are supported (S), threatened (T), partially supported (P), or not supported (N). In similar fashion, on the back page of the summary, cells are marked to indicate presence of water quality concerns (C) or no concerns (NC). Indicators that are not applicable (X) or were not assessed (NA) are also shown on both pages of the table. The water body fact sheets that follow provide more detailed assessment information on for each water body in the basin.

Water Body Fact Sheets

Fact sheets are provided for each classified and unclassified water body that was assessed within each basin. The fact sheets are generally arranged from the most downstream water body to most upstream within the basin. The basin map is a handy reference for locating classified water bodies and their assigned segment number.

Basin Name and Segment Number

The basin name and segment numbers of classified segments are taken directly from the TSWQS. Unclassified water bodies are included if sufficient historical SWQM data are available for assessment of at least one designated beneficial use. The number assigned to unclassified water bodies includes the root segment into which they drain. A single letter is attached to the root number as suffix, beginning with the start of the alphabet for a water body closest to the confluence with the main segment. Letters are sequentially assigned progressing in an upstream direction.

Water Body Description

The water body description is taken directly from the TSWQS for classified segments and provides the upstream and downstream boundaries for streams and rivers and the geographical boundaries for reservoirs and bays. For unclassified water bodies, a description is provided from the confluence with the parent segment that encompasses the counties covered by the watershed and approximate distance from a nearby, named city.

Water Body Classification and Water Body Type

The classification status of a water body (classified or unclassified) is provided. The water body type (freshwater stream, tidal stream, reservoir, or estuary) is also identified.

Length/Surface Area

The length or surface area for each water body is determined by physical measurement or computer-assisted techniques using USGS topographic maps (1:24,000 scale) or Delorme Street Atlas software. Stream and river lengths are reported in miles and kilometers; reservoir area, in acres and hectares; and bays and oceans, in square miles and square kilometers.

Use Support Summary

An overview of the more prominent water quality problems associated with support of TSWQS designated beneficial uses is discussed. The designated use(s), the level of attainment (supported, threatened, partially supported, or not supported), the indicators affecting use support, and the affected stream reach, reservoir or estuary area are identified and discussed. Impairment of uses is assumed to encompass the entire water body unless a geographical area of impact is provided. The guidance for screening and assessment of designated uses is described in detail in Volume 1.

Water Quality Concerns Summary

An overview of the more prominent water quality problems associated with indicators for which there are no existing water quality standards are discussed. Screening levels developed by the TNRCC and the CRP are used to evaluate water bodies that may experience nutrient enrichment, excessive algal growths, sediment contamination, and elevated concentrations of contaminants in fish tissue may be included. The indicator(s) causing the water quality concern and the affected stream reach or reservoir or estuary area are identified. The guidance for screening and assessment of water quality concerns is described in detail in Volume 1.

Additional Information Summary

An additional information summary is provided for discussion of relevant information that may relate to identified impairment of uses and water quality concerns. An additional information summary is included on the water body fact sheet only if there is something to report. The discussion in the summary may include descriptions of TMDLs that have been completed, initiated, or are planned to remediate identified water quality problems. Results of special water quality studies designed to identify causes and sources of pollutants or pollution may be highlighted. The occurrence of major pollutant spills and fish kills may be included. Results

of important regulatory activities like receiving water assessments, use attainability analyses, pollution clean-ups, and enforcement actions may also be discussed.

Monitoring Sites Used In the Assessment

Surface water quality monitoring site identification numbers and station descriptions for sites where field measurements, routine water chemistry, sediment chemistry, fish tissue, and biological data were collected over the five-year period (06-1994-05/31/1999) and used in the assessment are provided. Sites are included if enough data were available to assess at least one designated use. For this reason, data availability among sites is highly variable. The graphical basin summary provides an indication of which uses were assessed for each water body. These include stations that are located on each classified water body (on segment) or on other tributary streams, reservoirs, and estuaries (off segment) that ultimately drain to the classified segment. Stations which are monitored by the TNRCC, USGS, International Boundary and Water Commission (IBWC), TDH, river authorities, cities, local governments, and Texas Watch volunteers and for which water quality data are resident in the SWQM Database are included. SWQM data from these sites may be obtained by contacting the TNRCC's Information Resources data line (512-239-DATA).

Published Studies

The date(s) of intensive surveys and special studies which have been published by the TNRCC are listed in the table, as well as the publication number, title of the report, and the author name. Copies of the reports may be obtained, pending availability, by contacting the TNRCC’s Publications Ordering Team (512/239-0028).

Permitted Wastewater Treatment Facilities

The number of domestic and industrial outfalls permitted by the TNRCC as of August 31, 1999 is provided for each water body. The information is not provided for unclassified water bodies. The number of outfalls does not necessarily equal the number of permittees, since a single permit may be issued for more than one outfall.

Summary of Historical Fish Kills

The number of fish kills that have occurred within each water body over the past five-year period is provided. The water body is identified and information is provided concerning the date the kill began, the size of the kill, and the suspected cause(s). Fish kill data are maintained on a personal computer database by the Kills and Spills Team at Texas Parks and Wildlife Department. More detailed information pertaining to referenced fish kills may be obtained by contacting the TPWD (512/912-7095).

Explanation of Water Quality Indicator Icons Used on the Basin Maps

Basin maps are provided as a quick reference to the general location of classified segments within the basin. Icons are used to indicate the presence of threatened, partially supported, and nonsupported designated uses and water quality concerns.

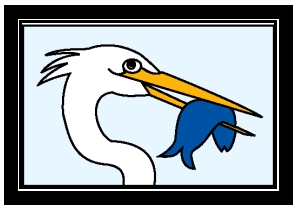
Conceptual Icon

Blue bar identifies segment number

Internal symbol identifies indicator used to assess a use or concern

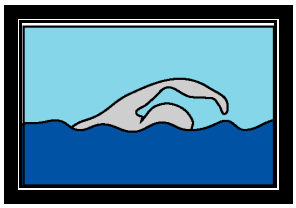
Border color indicates level of use support or presence of water quality concern. Green = threatened use, yellow = partially supported use, red = nonsupported use, and orange = water quality concern.

Icons for Designated Uses



Aquatic Life

A specific subcategory of aquatic life use (exceptional, high, intermediate, limited, or minimal) is assigned to each water body for protection and propagation of desirable fish, benthic macroinvertebrates, and other aquatic biota. Support of the use is determined by four indicators (dissolved oxygen criteria, acute and chronic toxic substances in water criteria, ambient water and sediment toxicity test results, and fish and macrobenthos data).

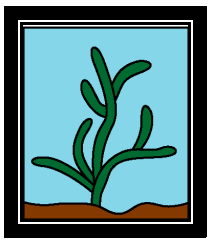


Contact Recreation

The contact recreation use is assigned to water bodies where recreational activities including wading by small children, swimming, water skiing, diving, and surfing commonly occur. Support of the use is determined by bacterial indicators (fecal coliform or *E. coli*).

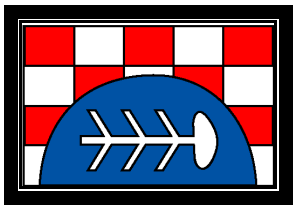
Noncontact Recreation

A noncontact recreation use is primarily assigned to water bodies where ship and barge traffic or other activities make contact recreation unsafe. Recreational activities such as boating that do not involve a significant risk of water ingestion are allowed. Support of the use is determined by bacterial indicators (fecal coliform or *E. coli*).



General Use

Water temperature, pH, chloride, sulfate, total dissolved solids and enterococci bacteria indicators are used to determine support of general water quality, rather than a specific use.

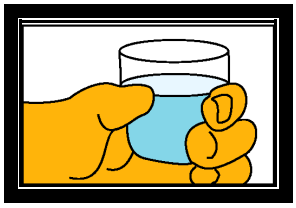


Fish Consumption

The fish consumption use is assigned to all water bodies to ensure that fish and shellfish is safe for human consumption. Support of the use is determined by human health criteria in water (to protect against bioacumulation of toxic substances) and issuance of consumption advisories and aquatic life closures by the Texas Department of Health.

Oyster Waters

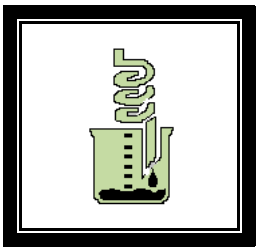
The oyster waters use is assigned to estuarine water bodies that are suitable for harvesting shellfish. Support of the use is determined from maps developed by the Texas Department of Health that depict the classification of shellfish growing areas.



Public Water Supply

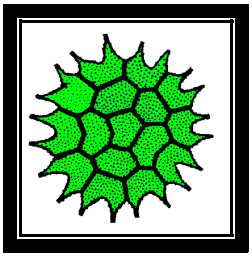
A public water supply use is assigned to all water bodies that are used as a supply for public drinking water. The use is designed to ensure that finished drinking water (after treatment) is safe for consumption. Primary organic substances in finished drinking water is the indicator used to determine support of the use.

Icons for Water Quality Concerns



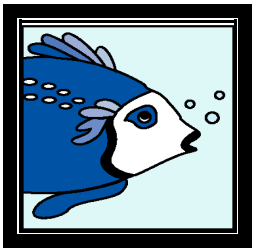
Nutrient Enrichment

Elevated concentrations of nutrients from point and nonpoint sources may contribute to excessive eutrophication in a water body. Nutrient enrichment concerns are determined by four indicators (ammonia and nitrite + nitrate nitrogen, orthophosphorus, and total phosphorus). Statewide 85th percentile concentrations by water body type are used to identify water bodies with nutrient enrichment concerns.



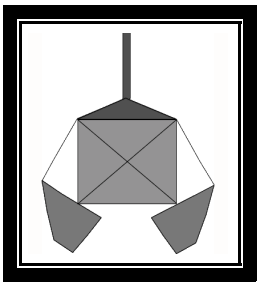
Chlorophyll a

Elevated concentrations of chlorophyll *a* signal potential problems associated with excessive algal growths. Algal blooms may occur in response to elevated nutrient concentrations. Statewide 85th percentile concentrations by water body type are used to identify water bodies with chlorophyll *a* concerns.



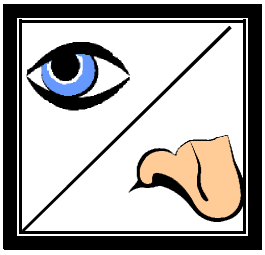
Fish Tissue

Elevated concentrations metals and organic substances in fish tissue signal potential health risks to humans and other organisms that consume fish in their diets. Screening levels slightly below those used by the Texas Department of Health to establish consumption advisories are used to identify fish consumption concerns.



Sediment

Elevated concentrations of metals and organic substances in sediment may contribute to water quality problems when they are re-suspended by wind activity and spring and fall overturn in deep reservoirs. Metals in sediment may be released into the water column when changes in pH occur near the sediment-water interface. Contaminated sediments may also affect small creatures such as worms, crustaceans, and insect larvae that live directly in the bottoms of water bodies. Statewide 85th percentile concentrations by water body type, threshold effects levels (TELS), and probable effect levels (PELS), are indicators used to identify sediment concerns.



Narrative Criteria

Narrative criteria concerns are identified in water bodies where activities or substances impair taste, odor, color, and other aesthetic qualities.