

Water Quality

Designated Uses  
Contact Recreation • Limited Quality Aquatic Habitat

Monitoring Agencies  
City of Houston Health and Human Services  
City of Houston Public Works and Engineering (historical)  
Texas Natural Resource Conservation Commission  
United States Geological Survey (flow)

Dissolved oxygen, water temperature, and bacteria levels are critical factors that impact aquatic life. These charts show the actual value of water samples taken between 1994-1999.

Oxygen in the water is important to aquatic life. Generally, dissolved oxygen levels are considered good for aquatic organisms at 5mg/l (or higher). Fish populations can still be supported, although stressed, at levels as low as 3 mg/l.

Temperature affects the quality of aquatic life and also dictates the amount of oxygen that can be contained in water.

Bacteria counts are important in assessing a waterbody's suitability for contact recreation, such as swimming. Fecal coliform densities below 200 colonies/100 ml of water are considered acceptable.

Fig. 1  
Fecal coliform densities during the time frame represented were all within reportable limits.

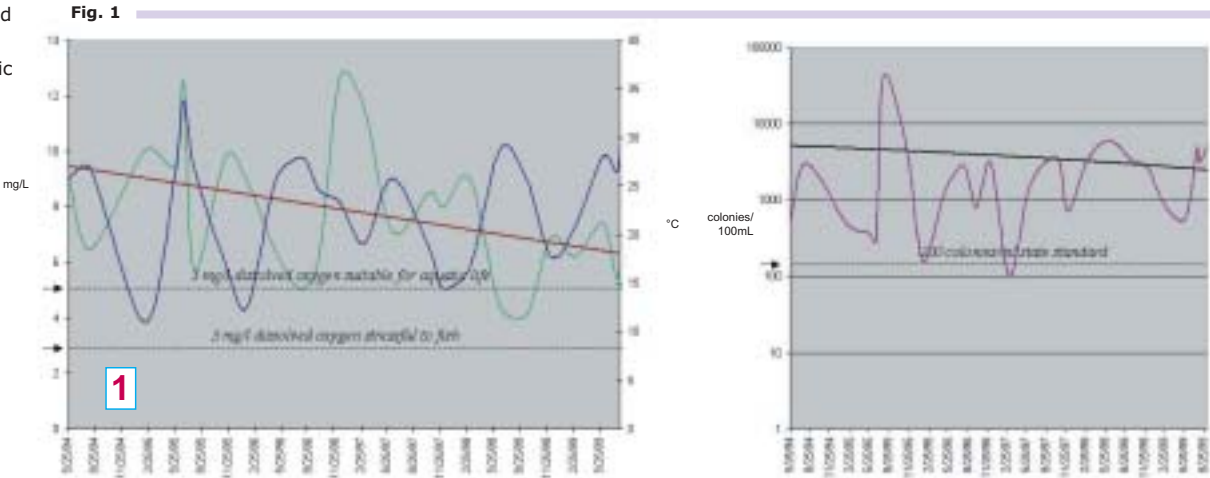


Fig. 2  
Fecal coliform densities on 11/6/97, 12/3/97, and 1/7/98 were reported as >160,000 colonies/100 ml; densities on 9/2/99 were reported as >200,000 colonies/100 ml.

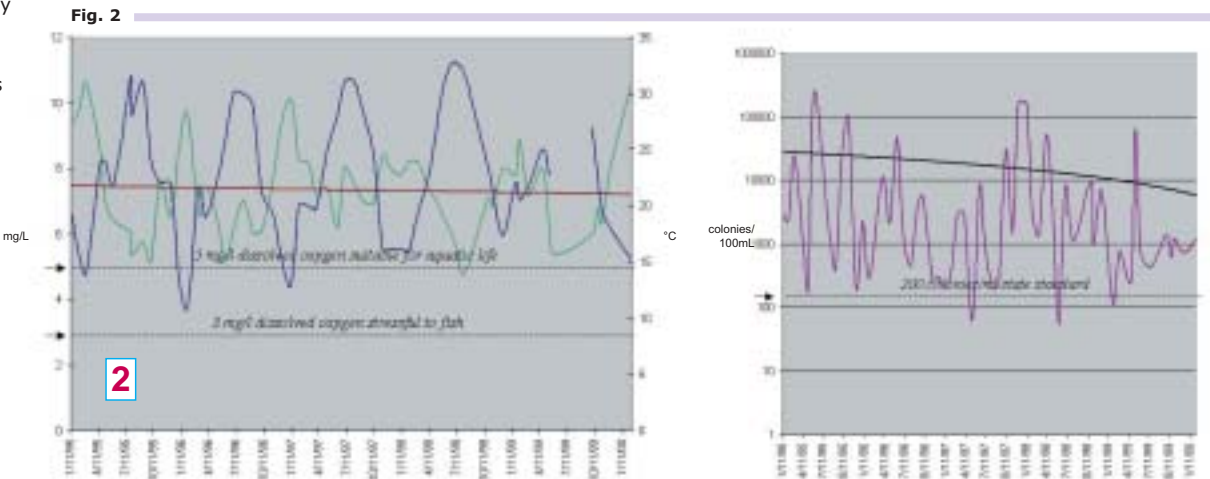
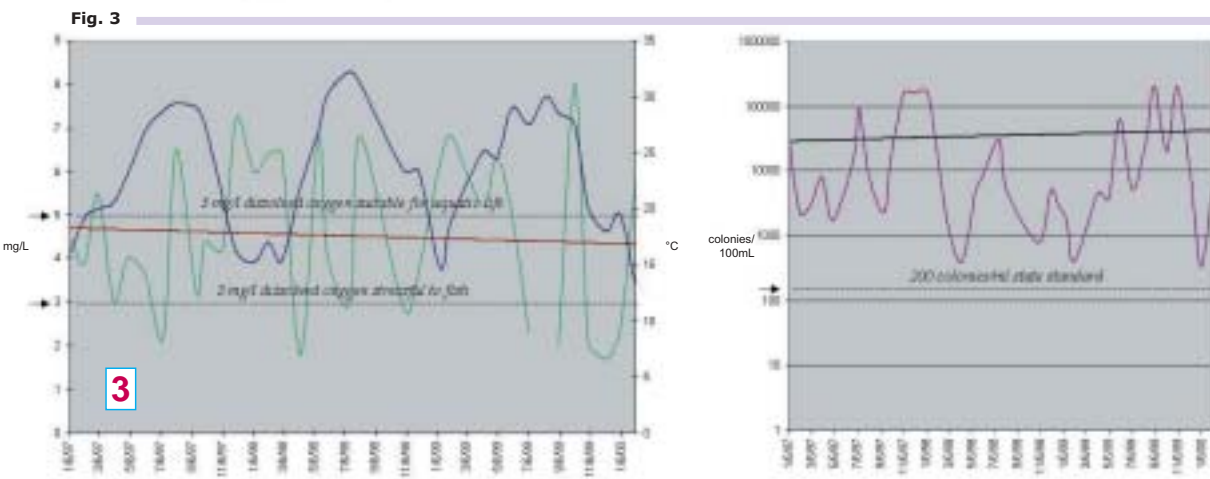


Fig. 3  
Fecal coliform densities on 5/4/95 and 12/6/95 were reported as <200 colonies/100 ml; densities on 1/7/98 were reported as >160,000 colonies/100 ml.



NOTE:  
Trend lines do not necessarily correspond to actual values on the y-axis. The slope of the trend lines exhibit the best-fit line and indicate either increasing, decreasing, or no change in the corresponding parameter over time plotted.

Throughout the watershed the temperature dissolved oxygen relationship appears to be satisfactory. Dissolved oxygen readings are adequate for survival of aquatic populations in the upper and middle sections of the watershed. However, in the lower reaches of the bayou, these levels dip below the levels that support healthy fish habitation. There is substantially more urban development in the middle and lower portions of the watershed, resulting in polluted stormwater runoff, which can cause lower oxygen levels.

Although the stations in the middle and lower portions of the watershed exhibit a stable or slightly decreasing trend in dissolved oxygen values, the station located in the upper portion of the watershed shows a significant decline in oxygen levels since 1994. Continued development in the upper portions of the watershed could continue this trend.

Bacteria counts throughout the watershed are well above contact recreation standards at each station. Typically, these densities are higher after rainstorms, which wash bacteria from many sources into area waterways. Fecal coliform numbers generally decline rapidly after a rainfall unless there is a continuous source of bacteria present, such as a leaking septic tank or sewer line.

Degree of development also impacts the amount of bacteria present as evidenced by the higher fecal densities in the lower portions of the watershed.

Flood Control

Before extensive development occurred throughout the watershed, Greens Bayou had a relatively small channel with tree-lined banks and tight meanders. During flood events, water would pond in forested and grassy areas and slowly infiltrate into the soil.

As residential development increased impervious cover, reducing infiltration and accelerating runoff, physical modifications to the channel to control flooding became a necessity. Individuals first dug ditches from suburbs to the bayou to reduce flooding problems, but these efforts soon became inefficient and more substantial modifications were required to effectively protect the surrounding communities.

Major modifications below US HWY 59 began in 1973, and modifications in the upper reaches of the bayou began in the early 1980's. With these modifications, the bayou's physical nature was compromised. The bayou's meanders and bends were straightened, the cross-sections were enlarged, and portions of its banks were paved. Although this increased hydraulic capacities, aquatic habitat was degraded due to reduction of near-stream vegetation (shade cover) and pool and riffle sequences, which provide diverse aquatic habitat.



In the 1990's, other more "environmentally friendly" types of flood damage reduction measures were implemented. The Harris County Flood Control District constructed a large detention structure and a wetlands mitigation bank (1450 acres) near John Ralston Road to provide temporary flood water storage. Smaller detention basins were also created along the bayou and its tributaries. Water is detained in these basins until the floodwaters recede and the bayou can accommodate added water. Since these structures do not affect the bayou during non-flooding events, aquatic and aesthetic properties are minimally affected.

The District, in cooperation with other federal, state, and local agencies, is also active in purchasing homes and other buildings that are frequently inundated during flood events. This "buyout" program has been quite successful in Harris County, with several hundred homes having been purchased in the last decade. Participants are given fair-market value for their property and may receive assistance in relocating. Flood-prone structures are then removed, resulting in reduced flood losses.

Since flooding problems are not always the result of activities or land uses in close proximity to a large waterbody, the District also purchases available land outside the floodplain. Depending on the landscape and land use, any part of a watershed can be inundated with water as it makes its way to the major drainage channel during a heavy rain event. Thus, watershed planning in terms of flood damage reduction is essential in protecting lives and property in a drainage basin/watershed.





Watershed Profile

|                       |   |
|-----------------------|---|
| Area                  | 213 Sq. Miles   |
| Rainfall              | Average Annual 46"  |
| Elevation             | 20'-134'  |
| Geology               | Sedimentary formations consisting of materials deposited by water   |
| Vegetation            | Coastal short grass prairie (predominant)<br>Pine-hardwood forest   |
| Soils                 | Clay and silt, locally sandy<br>Poorly drained<br>High moisture retention at the surface<br>Some areas with higher permeabilities serve as aquifer recharge zones |
| Major Ecoregion       | Western Gulf Coastal Plain  |
| Cities                | Houston<br>Humble   |
| Tributaries           | Halls Bayou<br>Garners Bayou<br>Spring Gully<br>Big Gulch<br>Goodyear Creek   |
| Aquifers              | Gulf Coast  |
| Issues                | Flooding/high moisture retention at surface due to nature of soils<br>Water quality (bacteria)<br>Loss of habitat   |
| Wastewater Discharges | Over 95 million gallons per day (domestic)<br>Approximately 300 total outfalls (domestic and industrial)  |

Watershed

drinking water, plus  
our recreational  
and fishing areas.

No matter where we live or work, we are always in a watershed – an area of land that drains to a particular creek, river, bayou or lake. As our population grows, so do the risks to our waterways from activities in the watershed. Understanding our role in watershed management is key to the protection of our waterways, floodplains, and

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Greens Bayou Watershed

Coolgreen Corridor Local Residents Get Involved

The "Coolgreen Corridor" is land set aside to reduce flood damage, but is primarily intended to be a nature preserve. The corridor connects Herman Brown Park with Greens Bayou, approximately 1.5 miles north of Interstate 10 in Houston. Currently, there is no official entrance to the preserve; however, visitors can access the corridor's nature trails through a vacant lot on Pecan Grove Drive off of Coolgreen Avenue.

The movement to acquire the original 23-acre strip of land began in 1989 after several severe flooding events damaged residents' homes. Previously, in anticipation of the completion of the NE segment of Beltway 8, the Harris County Flood Control District dug ditches to alleviate flooding problems associated with the highway development. The beltway was completed before detention basins could be put in, and stormwater from the ditches increased flow in the bayou, resulting in increased flooding problems to homes downstream.

Almost a decade later, a conservation investor donated money through the Brown Foundation, allowing the land to be purchased and donated to the Houston Parks Board, and, finally, to the City of Houston. The sale included a deed restriction requiring that the land not be developed under any circumstances.

Since that acquisition, two private landowners and Texaco USA have donated adjacent land, expanding the corridor to over 50 acres. Currently, members of the Legacy Land Trust are contacting other property owners, mainly those with flood-prone property, in an effort to enlarge the corridor further. Their visions include expanding the strip to Sheldon State Park, creating a continuous wildlife corridor and refuge between Herman Brown Park and Sheldon State Park.

Projects involving public and private entities are extremely important when attempting to preserve or clean up the environment. When these groups are able to work together, partnerships can be established with multiple benefits for all involved. The Coolgreen Corridor is a prime example of a project that benefits a variety of local interests as well as maintains the health of the environment. The Coolgreen Corridor serves to enhance aesthetics of the waterway and surrounding neighborhoods, to filter runoff and enhance water quality, and to reduce flooding. The land includes specific designated sites for bird habitat, and preserves a contiguous corridor in which migratory animals can move, enhancing the diversity of species and enriching the habitat. In addition, people can experience nature in the middle of a highly urban area while learning about the bayou ecosystem.

Contacts

For more information about your watershed, please contact the following:

Bayou Preservation Association

(713) 529-6443  
[www.bayoupreservation.org](http://www.bayoupreservation.org)

Harris County Flood Control

(713) 684-4197

Houston-Galveston Area Council

(713) 627-3200  
[www.hgac.cog.tx.us](http://www.hgac.cog.tx.us)

Legacy Land Trust

(713) 524-2100

Texas Natural Resource Conservation Commission

(512) 239-4491  
[www.tnrcc.state.tx.us](http://www.tnrcc.state.tx.us)

Texas Parks & Wildlife Department

(800) 792-1112  
[www.tpwd.state.tx.us](http://www.tpwd.state.tx.us)

HOUSTON-GALVESTON AREA COUNCIL

A voluntary association of local governments in the 13-county Gulf Coast Planning Region.

THE TEXAS CLEAN RIVERS PROGRAM

A partnership between the Texas Natural Resource Conservation Commission, regional water quality authorities...and you!

TNRCC

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