

Innovative Wetland on Brays Bayou Effectively Removes Bacteria from Polluted Stormwater Runoff

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Bacteria is the number one pollutant of concern in Houston's waterways. A recently constructed stormwater wetland on Brays Bayou at Mason Park, in the greater southeast side of Houston, is proving to be surprisingly effective at removing bacteria from polluted stormwater runoff. The constructed wetland serves a 30 acre watershed in a predominantly latino community and is a collaborative effort between 12 different state and federal agencies, and local organizations. Constructed wetlands are known to be fairly effective at removing bacteria from stormwater, but the Brays Bayou stormwater wetland is the first documented proof of the effectiveness of this method in the Houston region. This wetland consistently removes over 95% of the bacteria in the stormwater inflow, and almost always removes well over 99% of the bacteria.

Because wetlands are such an important part of the natural landscape of the Upper Texas Gulf Coast, it is fitting that wetlands might be able to play a key role in ridding our bayous of a pollutant that is otherwise difficult to remove.

The Mason Park stormwater wetland is as effective as any industrial water treatment facility, but the similarity ends there. It is much cheaper to build and maintain (there are no moving parts, for example). But more importantly, this stormwater wetland adds both beauty and habitat to its location. Rather than a sterile concrete-lined channel, this wetland is a verdant ribbon of waving green vegetation attracting a wonderful variety of birds.

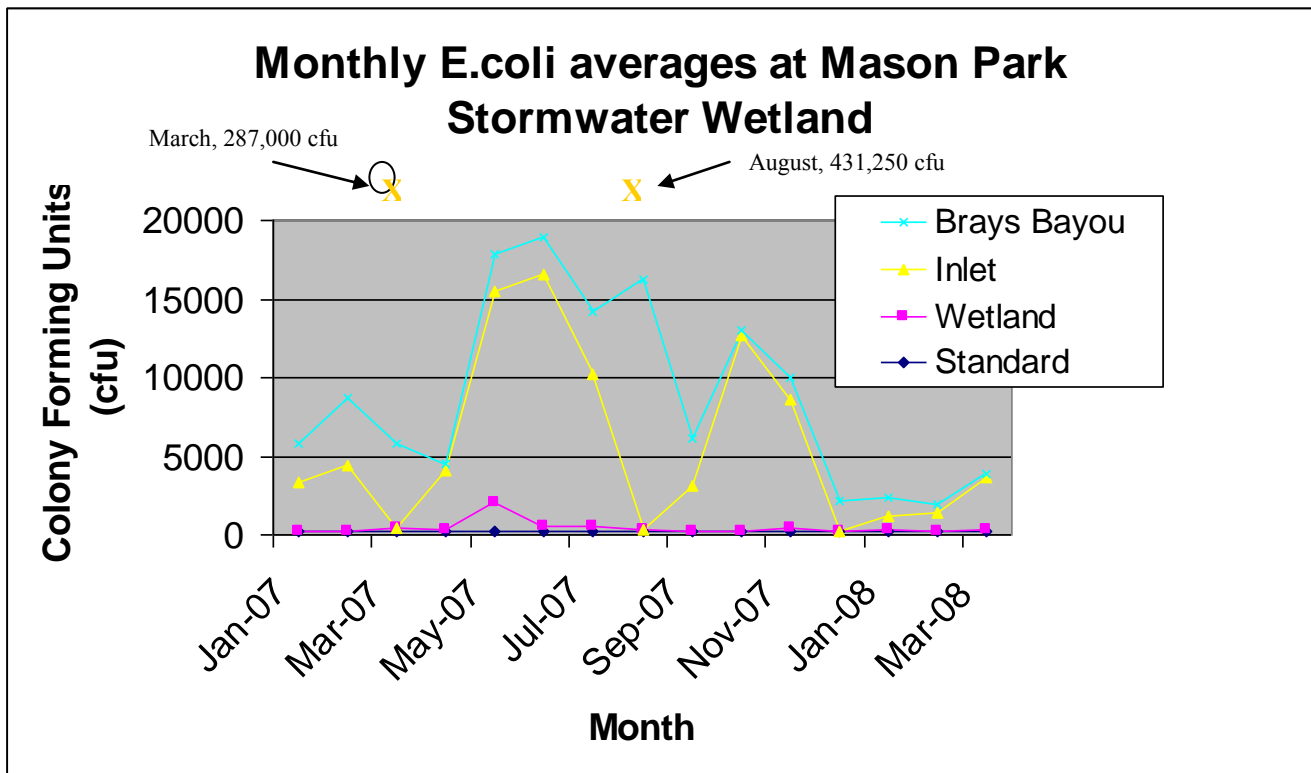
The recent health concerns from contact recreation activities in waters with high fecal coliform contamination (bacteria) has brought this issue of bacteria contamination to the forefront. Contamination may arise from several sources, from aging and failing stormwater and wastewater infrastructure to contaminated stormwater runoff.

Texas AgriLife Extension Service/Texas Sea Grant, part of the Texas A&M University System, has a long history of practical education based on University research, and through the Texas Coastal Watershed Program effort, has completed many on-the-ground demonstration projects to support its goal of improved water quality for the health of our bays and bayous. The Mason Park stormwater wetland is the prime example of this real and tangible effort to improve local water quality. This project represents a collaboration of many contributing partners including Harris County Flood Control District, Houston Parks and Recreation Department, local student volunteers and the Wetland Restoration Team.

The significance of this achievement is made clear in the context of our state water quality standards for local water bodies set forth by the Texas Commission on Environmental Quality. Bacteria in water

is measured as 'colony forming units per a 100 ml sample of the water'. For the Bray Bayou channel at Mason Park the noncontact recreation limit is 168 cfu.

Based on the E. coli test data, the treatment marsh is performing its job, despite being only partially mature (up to 75% vegetation cover), releasing waters back into the main channel which are cleaner than the inlet source. The average colony count obtained at the Inlet (the originating source of stormwater runoff for the wetland) was 61,229 col/ 100 ml, with counts ranging from over 400,000 to 841. The average count at the Wetland (the post-treatment release point from the wetland) was 278 col/ 100 ml, with a range of 1910 to zero. The adjacent Brays channel itself had an average count of 3055 col/ 100 ml, ranging from 15,875 to 275 (refer to Charts 1 and 2 below).



The effective nature of Mason Park Stormwater Wetland shows the potential for these types of BMPs to address the rising concerns related to bacteria contamination within our waterways. The success measured in this study show a great potential for local water quality improvements utilizing natural systems which provide great additional benefits in addition to the improved water quality, such as habitat and recreational opportunities. The partnerships developed during this project also demonstrate the effectiveness of community-based efforts to address a larger, compelling issue. By involving local high school students in the restoration process, Extension effectively linked inner city youth with issues and solutions in their own backyard.

However, stormwater wetlands are few and far between within our watersheds. In a heavily urbanized park in the middle of a mega-metropolis such as Houston, this local community has an effective tool for controlling insidious pollution. With four million additional residents coming our way in the next

few decades, pollutant loadings in our bays and bayous will increase dramatically, perhaps endangering their aquatic integrity. The Mason Park wetland suggests a simple solution that could clean our stormwater runoff while adding to the beauty and diversity of our natural environment. Imagine Houston festooned with garlands of linear wetlands along its many drainage ways. Stormwater treatment never looked so good!



Mason Park Stormwater Wetland along Brays Bayou, Houston, Texas