BAYOU ST. JOHN
COMPREHENSIVE
MANAGEMENT PLAN

Prepared for the
Bayou St. John Committee by
The Lake Pontchartrain Basin Foundation

September 1, 2006
BAYOU ST. JOHN COMMITTEE

Canoe & Trail Adventures
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The role of this private enterprise is to provide outdoor adventures involving recreational and educational opportunities for New Orleans area residents. Mr. Almquist has been invested in the health of Bayou St. John since the 1970s as a business owner and an environmentalist.

City Park New Orleans
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City Park, the botanical heart of the city, has jurisdiction over Bayou St. John water bottoms from Robert E. Lee Boulevard and the Harding Street Bridge. City Park lagoons depend upon flow from the bayou. Before Hurricane Katrina, the park conducted several volunteer programs including a fishing education program for inner city children.

Lake Pontchartrain Basin Foundation
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The Lake Pontchartrain Basin Foundation follows a citizen-based comprehensive management plan which focuses on the health of all waters connected to Lake Pontchartrain. The health of these water bodies not only depends upon water quality but also habitat functions for wildlife and recreation and education opportunities for residents and visitors. The Foundation spearheaded Bayou St. John planning efforts represented in this plan, and will continue to conduct water quality monitoring and encourage environmental education.

Louisiana State University Agriculture Center/Louisiana SeaGrant
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With the overall mission of offering innovation, providing education and improving lives, the Louisiana State University Agriculture Center assists New Orleans City Park with habitat enhancement, fish stocking programs, water quality monitoring and education activities. Mr. Schexnayder is actively seeking and successfully acquiring funds to upgrade water flow from Bayou St. John into City Park lagoons.

Orleans Levee Board
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The Orleans Levee Board has jurisdiction of Bayou St. John from the mouth of the bayou at Lake Pontchartrain to Robert E. Lee Boulevard. They control the flow of water from the lake into the bayou through sector and sluice gates. Their focus is flood control for the adjacent bayou communities and bank maintenance along the whole bayou.
Pontchartrain Institute for Environmental Sciences
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Dr. O’Connell conducts fish studies in Bayou St. John and City Park lagoons for the
Pontchartrain Institute. His activities offer both a status on the fish ecology of the area
and educational opportunities for his university students.

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wetlands education and technical resources. She provides hands-on learning
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Sewerage and Water Board of New Orleans
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The Sewerage and Water Board has jurisdiction of Bayou St. John from the Harding
Street Bridge to the terminus at Lafitte Street. They control the water level of the bayou
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Ms. Franze works in the Biology Department and concentrates on vegetated habitats,
particularly submerged aquatic vegetation in Bayou St. John and Lake Pontchartrain. She
continues to coordinate and manage wetland planting projects in the area.

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EXECUTIVE SUMMARY

Bayou St. John is an urban resource that not only holds incredible potential for today’s users, but also links residents and visitors to the historical development of the city of New Orleans. The bayou began naturally due to drainage from the Mississippi River to Lake Pontchartrain. Today, the remaining waterways are utilized for aesthetics and recreation. These waterways are generally isolated from the flow of the lake and water levels are managed to avoid flooding. To ensure that the multiple benefits of the bayou are continuously realized there must be coordination among jurisdictional managing entities and understanding and support from the public.

In late 2004, the Bayou St. John Committee was established with a mission to identify sustainable methods to benefit Bayou St. John water quality, habitat management, recreational access and educational opportunities. The committee agreed to focus on the following goals:

1. Manage Bayou St. John water flow and water quality;
2. Enhance the estuarine habitat potential for fish and wildlife in and along Bayou St. John;
3. Increase and facilitate recreational access to Bayou St. John;
4. Create public awareness and educational opportunities related to the cultural and historical links between Bayou St. John and the development of New Orleans; and
5. Identify and create public awareness and educational opportunities related to bayou and estuarine ecology along Bayou St. John.

The committee divided into two subcommittees to address these five goals. The Technical Subcommittee focused on water flow, water quality and habitat (Goals 1 and 2), while the Recreation/Education Subcommittee concentrated on access, cultural and environmental education (Goals 3, 4 and 5). After meeting with several neighborhood organizations, a public meeting was held August 20, 2005 to propose these five goals and to gain feedback from area residents, businesses and users.

Based on the information gathered from the subcommittees and public input, it was decided that a comprehensive management plan be created. This comprehensive management plan includes an overview of Bayou St. John issues and an Action Plan. The overview provides the location, jurisdiction, history, environmental conditions and recreational and educational use of the bayou. The Action Plan expands the goals into objectives and action items based upon recommendations from the Bayou St. John Committee members and input from the public meeting.

Bayou St. John and its connecting waterways are public resources that must be properly managed and maintained for continued multiple uses. The Bayou St. John Comprehensive Management Plan provides a guide to manage and improve the bayou and may be utilized by jurisdictional agencies, nonprofits, civic organizations and any other interested individual or group.
Hurricane Katrina caused major impacts to the Bayou St. John area. After floodwater was pumped out of the city, the sluice gates were still closed causing low water levels in the bayou and high salinity. Flood waters inundated City Park lagoons and greenways. City Park must now concentrate on debris removal, restoration of its facilities, and reforestation. Some Bayou St. John Committee members lost property and job positions. The Orleans Levee Board will be restructured and may not have oversight of bayou water flow. Several Bayou St. John and City Park neighborhoods sustained severe to moderate damage from the storm. Some of the schools in the area remain closed. Tourism in the city is slowly recovering.

Based upon its widespread impacts, Hurricane Katrina will affect the implementation of some of the recommendations in this plan. The issue of the opening and closing of the flood gates at the mouth of the bayou may need to be reevaluated with the public. Taking Hurricane Katrina impacts into consideration, the Bayou St. John Committee recommends that this plan be used as a guide while remaining flexible.
BAYOU ST. JOHN OVERVIEW

Location and Jurisdiction
Bayou St. John traverses the center of the City of New Orleans (Figure 1). The mouth of Bayou St. John enters from Lake Pontchartrain bound by Lake Vista and Lakeview neighborhoods, travels south past City Park on the western side and residential neighborhoods to the east and ends in Mid-City New Orleans, north of downtown. City Park lagoons depend upon bayou water flow by drawing from the bayou in several locations. The bayou is about four miles long, is as wide as 700 feet and as narrow as 200 feet (Orleans Levee Board, 1996). Figures 2 and 3 provide visual images of the bayou and lagoon systems and their surrounding environments.

Figure 1: Site Map
Figure 2: Bayou St. John Location Map

Bayou St. John
Location Map

August 2005
Figure 3: Bayou St. John Aerial Map

Bayou St. John
Aerial Map

Bayou St. John Comprehensive Management Plan
The Orleans Levee Board has jurisdiction from the mouth of the bayou, past the new flood control structure near the mouth to the old flood control structure at Robert E. Lee Boulevard. Their main interest is to protect the city from flooding by operating and maintaining the 1992-built flood control structure which has both sector and sluice gates to manage water flow (Figure 4). Along with the lagoon system, New Orleans City Park is responsible for the stretch of bayou located between Robert E. Lee Boulevard and the Harding Street (Cabrini/Friendship/Magnolia) Bridge. City Park looks to the bayou as a means to create a healthy lagoon system in the park and as an aesthetic, recreational and cultural amenity connected to the park. The Sewerage and Water Board of New Orleans manages the bayou from the Harding Street Bridge to Lafitte Street, where the bayou length terminates. They are responsible for drawing excess water through drains to their stormwater pumping system.

**Figure 4: 1992 Flood Control Structure**

### History

Approximately 500 years ago, it is believed that Bayou St. John, once known as Bayouk Choupic (mudfish) by the Acolapissa Indians, originally formed as either a tributary of Bayous Metairie and Gentilly flowing between the Mississippi River and Lake Pontchartrain, or as channels dug by Mississippi River floodwaters (Freiberg, 1980 and www.gnocdc.org, 2005). As noted in “The Old Portage” sign (Figure 5), before the French or Spanish discovered or exhibited any interest in the area, Native American tribes summered and traded along the bayou’s swampy banks. First known inhabitants before 1700 were the Chapitoulas Indians, who lived along the bayou near the Mississippi River (Freiberg, 1980). The Acolapissa Indians built huts of cypress in the area where John F. Kennedy Senior High School now sits. Once abandoned by the Acolapissa, the Biloxi Indians used these huts periodically throughout the

**Figure 5: The Old Portage**
year (Freiberg, 1980). During French colonization, the Houmas Indians chose Bayou St. John as their home where today’s St. Louis Cemetery III on Esplanade Avenue exists (Freiberg, 1980).

Bayou St. John appealed to Native Americans and later to colonists because it provided access between trading areas today known as Biloxi, Mississippi and New Orleans, Louisiana. Traveling through the Biloxi Marsh, to the Mississippi and Breton Sounds, through Lakes Borgne and Pontchartrain to the mouth of the bayou was far easier than traveling up the fast-moving Mississippi River to get to New Orleans. Led by Native Americans on this route, Pierre LeMoyne, Sieur d’Iberville and his brother Jean Baptiste LeMoyne, Sieur de Bienville first explored the bayou area in 1699 finding vast swamplands and several well-worn pathways. Trails led to several tributaries, one of which was connected to the portage of the Mississippi River by way of a log bridge (Freiberg, 1980). This portage eventually led to the decision to develop a city at the site of present-day New Orleans.

Bienville quickly returned to further explore the bayou. Like today, Bienville found the mouth of Bayou St. John as very shallow. Described in Edna B. Freiberg’s book, Bayou St. John: In Colonial Louisiana 1699-1803, their canoe bottoms scraped a sandbar where lake currents “promoted this shoal condition at the mouth of all the bayous that joined Pontchartrain’s waters” (1980). With little more than four feet beneath them and the muddy bottom, Bienville’s party made their way along the bayou dodging cypress trees and navigating around many islands (Freiberg, 1980). Bienville found the cypress swamp haunting with draping Spanish moss, palmettos, reeds and grasses as far as he could see (Freiberg, 1980). Reaching higher banks, Bienville reported finding oak, persimmon, liriodendron, pecan, wild cherry, acacia and sweet gum trees (Freiberg, 1980).

Soon after discovery of the bayou and its portage to the Mississippi River, the area was first secured by constructing Fort St. Jean on high ground near the mouth of the bayou. Once secure, colonization was promoted resulting in about a half-dozen colonists establishing homesteads along the bayou and leaving behind some of the most early plantation architecture native to New Orleans (Boudreaux, 1982). These families grew corn, indigo, sugar cane and timber (Boudreaux, 1982). As the city expanded, the Bayou St. John area became more than just agricultural settlements. Until steam engines were utilized, the bayou was the major port of New Orleans. A canal was built from the bayou to Rampart Street in 1796, later filled in the 1920s (Boudreaux, 1982). Although a lock system was constructed by 1931, the bayou remained navigable only until 1936. After which, the Works Progress Administration constructed concrete levees and additional bridges traversing the bayou (Figure 6).

As use of the bayou changed and residential development along the bayou persisted, water flow management from Lake Pontchartrain to the bayou became an essential task. In 1962, a flood control structure was built at Robert E. Lee Boulevard to replace the 1930s lock (Ward, 1982). The structure operated based on the opening and closing of valve-controlled culverts and a recirculation system designed as a waterfall (Ward, 1982).
In the late 1970s and early 1980s the Orleans Levee Board, responsible for Lake Pontchartrain area hurricane protection, began discussions about closing the mouth of the bayou entirely in order to abandon the need to enhance the levees lining the bayou (Record of Public Hearing, 1979). The public, supported by neighborhood groups and elected officials, fought to instead implement alternative flood control methods resulting in construction of a new flood control structure near the mouth of the bayou.

While urban expansion and human intervention continued to impact the Bayou St. John area, there have been several efforts to preserve its aesthetic beauty. New Orleans City Park, which traverses the majority of the western side of the bayou, is one of the largest and oldest urban parks in the United States. Tracts were set aside for the park as early as 1854 and grew to the present day estimate of 1,300 acres (www.neworleanscitypark.com, 2005). Initiated in 1891 and still well organized, the City Park Improvement Association provides oversight to improve, operate and develop the park (www.neworleanscitypark.com, 2005).

The New Orleans Museum of Art (NOMA), located in City Park, added a sculpture garden, which altered the hydrology of City Park lagoons. The NOMA Sculpture Garden Biologic/Hydrologic Management Study was prepared for NOMA in 2002 recommending specific actions to improve lagoon conditions in conjunction with constructing the sculpture garden. The report focuses on environmental factors including water quality, water flow and habitat.

In 1982, Bayou St. John was designated by the Louisiana Legislature as a “Historic and Scenic River”, which “requires protection and preservation of its aesthetic, scenic, recreation, fish, wildlife, ecological, archaeological, botanical and other natural and physical features” (Act 267). The Historic and Scenic River program is administered by the Louisiana Department of Wildlife and Fisheries.

In 1996, the Orleans Levee Board commissioned the Bayou St. John Environmental Management Study. This document provides historical background, jurisdictional control, existing water management, a biological investigation and a plan of action. The
study influenced the goals, objectives and actions of this comprehensive management plan and remains to be a useful guide for the scientific community and jurisdictional entities to make technical decisions.

There are several neighborhood associations that protect their residential and aesthetic interests along Bayou St. John. Historically, the Bayou St. John Neighborhood Improvement Association, established in 1927, and the Faubourg St. John Neighborhood Association, created in 1976, took on responsibility for overseeing how governmental management of bayou resources impacted the natural and built bayou environment (Furlong, 1997). Ray Boudreaux, an active member of the Improvement Association and long time bayou area resident eloquently remarked that the bayou’s “banks provide repose for recreation and recollection for residents of its neighborhood and of the city” (Furlong, 1997). This standard for the bayou has led residents like Mr. Boudreaux to take legal actions ensuring that the bayou maintains its historical and recreational integrity. Today, there are many active neighborhood organizations including but not limited to the Mid-City Neighborhood Association, the Lake Vista Property Owners Association, Lakeview Civic Improvement Association, Park Island Neighborhood Association, Parkview Civic Association, Lake Terrace Property Owners Association and the Esplanade Ridge/Tremé Civic Association.

Environmental Conditions

Hydrology, water quality and biological conditions characterize the environmental conditions of Bayou St. John and City Park lagoons. The impacts of Hurricane Katrina upon these conditions were significant. Mid-City and Gentilly, neighborhoods adjacent to the bayou and all of City Park flooded as a result of breaches in the Orleans and London Avenue canals. The bayou received these floodwaters as well. After the storm passed, floodwaters were pumped out to Lake Pontchartrain. The sluice gates on the flood control structure were closed before the storm and remained closed until late October. Thus, due to conditions caused by Katrina in addition to a drought the water height in the bayou was below normal and the salinity level was above normal conditions. Water samples taken from the bayou at Robert E. Lee have averaged 7.5 parts per thousand salinity levels since October 2005. The normal average salinity measurement is about 3.5 parts per thousand. The following paragraphs provide current environmental information and issues under normal weather conditions.

Hydrology

Water in Bayou St. John is provided by Lake Pontchartrain and precipitation. Water flows naturally from Lake Pontchartrain into Bayou St. John due to wind, currents, tides and storm surges that impact the lake and due to the lake’s higher elevation to the bayou. Water movement from the lake is controlled by a flood control structure constructed in 1992 and operated by the Orleans Levee Board by opening and closing sluice gates (Figure 4). The Orleans Levee Board decides to open and close the sluice gates based upon water levels and potential storm events. The 1992 flood control structure was constructed to manage water through opening and closing sector gates, which are
generally kept closed. An older flood control structure, located at Robert E. Lee Boulevard, no longer manipulates water flow (Figure 7).

**Figure 7: Old Flood Control Structure**

![Old Flood Control Structure](image)

The Sewerage and Water Board of New Orleans regulates bayou hydrology through a system of valves and culverts that allow water to drain to stormwater pumping facilities. A valve at Lafitte Street and a 30-inch drainage culvert at Moss Street and Florida Avenue (Figure 8) draw the water down based upon certain water levels and increasing gravity (Orleans Levee Board, 1996).

**Figure 8: Bayou St. John Drainage Culvert**

![Bayou St. John Drainage Culvert](image)

There are two pump stations and one gravity culvert that cause water to flow from the bayou into the City Park lagoon system (Figure 9). One pump station is located between De Saix Boulevard and Esplanade Avenue, while the other is where Moss Street meets both City Park and Carrollton Avenues. The culvert is located near Mirabeau Avenue.

There are several issues affecting Bayou St. John and City Park lagoon hydrology. While the old flood control structure no longer controls water movement, it does tend to hinder water flow. Once utilized to control water levels between Lake Pontchartrain and the bayou, this structure has three butterfly valves (Figure 10). In October 2005, two of the butterfly valves were closed or blocked by debris and one was open. When the new control structure was proposed in the 1980s, the old control structure was to be removed. Due to funding limitations and past perception that the old structure acts as a “back-up” flood control measure, it has not been removed. Based upon recent committee and public meetings, there is consensus to remove this structure.
Whether or not to control water flow by opening and closing the 1992 flood control structure sector gates has been an ongoing debate since its conceptual design in the 1980s. The Orleans Levee Board would like to keep the sector gates closed to ensure flood protection, while residents, biologists, boaters and other public and nonprofit groups would like to see the gates left open except during potential flooding or during periods of poor Lake Pontchartrain water quality.

Currently, only the sluice gates are opened and closed to regulate water flow. The sector gates are kept sealed except to periodically ensure operational capability. If the sector gates were to be left open during certain times of the year, it is possible that the Sewerage and Water Board would have to drain more water from the bayou. This may cause potential financial burdens on the agency and would need to be taken into consideration.

Water flow into City Park lagoons has been limited by aging and insufficient pumps that draw water from the bayou. New Orleans City Park has received a Wallop Breaux grant through the Louisiana Department of Wildlife and Fisheries to improve these systems premised upon improving habitat for sport fishes.

Water Quality
The health of Bayou St. John and connective waterways are mainly dependent upon the water quality of Lake Pontchartrain and water flow management. Stormwater runoff
slightly affects water quality, however, the bayou and lagoons are not the lowest points for drainage in the area. Past navigable use of the bayou may have impacted bayou sediments particularly activities related to dry dock operations. Sediment samples have not been taken or assessed as of the writing of this document.

Litter and illegal dumping do impact water quality and general aesthetics of the bayou and lagoons. In the past, there have been several automobiles driven over the bank and into the bayou. Recreational use along the bayou and in City Park contributes to litter and debris, including pet waste. There are annual cleanups conducted by neighborhood, park and nonprofit groups, but more attention is necessary. Massive neighborhood cleanup efforts have occurred post Hurricane Katrina. Figure 11 provides an image of these efforts.

**Figure 11: Neighborhood Cleanup Efforts**

In 2004 and 2005, the Louisiana State University Agriculture Center (LSU AgCenter) and the Lake Pontchartrain Basin Foundation conducted monthly water quality monitoring to sample water temperature, conductivity, dissolved oxygen and salinity. Four sites were sampled in Bayou St. John during 2004 and 2005. Three sites were sampled in City Park lagoons throughout 2004 and 2005, while three other lagoon sites were sampled only in 2004.

**Bayou St. John Water Quality Monitoring Results**

The two most important parameters of Bayou St. John water quality are dissolved oxygen and salinity. Dissolved oxygen is the amount of oxygen in water available to aquatic life to breathe. Exhibited during the July 1995 fish kill in Bayou St. John, low dissolved oxygen creates uninhabitable conditions for fish and shellfish species. Throughout 2004 and 2005, the average range of dissolved oxygen in the bayou measured 6.0 to 7.0 milligrams per liter (mg/l). However, nine individual samples taken during summers 2004 and 2005 measured between 3.0 to 5.00 mg/l, representing lower dissolved oxygen rates. There are strategies to prevent low dissolved oxygen rates. One method is to limit water flow from Lake Pontchartrain when nutrient levels are high.

Salinity is the total amount of salt dissolved in water. Salinity levels indicate types of plant and animal species that can survive in the bayou. In 2004 and 2005, the salinity range in the bayou measured a minimum 2.1 to a maximum 7.5 parts per thousand (ppt). The average 2004 to 2005 salinity measurements were between 3.0 and 4.0 ppt. Similar findings occurred in 1972, 1982 and 1995 (Orleans Levee Board, 1996). The maximum measurement was the only individual sample above 6.0 ppt. It is thought that a salinity level no higher than 6.0 ppt is acceptable to existing flora and fauna, especially for longer
Bayou St. John Comprehensive Management Plan

periods of time. Disallowing water to flow from Lake Pontchartrain when salinity measurements are high would aid in reducing fish and crab kills and other negative impacts due to salinity. High salinity levels tend to occur during drought years, when lower bayou water levels will need to be acceptable in order to keep salinities low.

City Park Lagoon Water Quality Monitoring Results
In 2004 and 2005, dissolved oxygen measured an average range of 5.0 to 10.0 mg/l. During this time period, the minimum to maximum salinity range was 0.1 to 3.5 ppt. Past monitoring indicates that the lagoons in 1972 and 1995 were more brackish than in 2004 and 2005 (Orleans Levee Board, 1996).

Biology
The bayou supports an estuarine environment while the lagoons sustain both estuarine and freshwater communities. Estuarine and freshwater fish species are important for basic ecological health of the water bodies, but also for recreational fishing, attracting waterfowl and to help control unwanted algae growth. Native plant species support the animal communities of the bayou and lagoons while also providing aesthetic appeal, buffers from urban uses and shade for users.

Urbanization and multiple landscaping approaches along Bayou St. John and City Park lagoons has severely altered the natural vegetation. Restoration of bayou flora to its previously impacted condition is impossible due to the need to manipulate the hydrology for flood control. However, it is feasible to rehabilitate the plant ecology along the bayou so that it has increased diversity and productivity while remaining aesthetically appropriate and compatible with its urban surroundings. Creating native plant communities along the bayou and lagoons will depend on targeting estuarine habitats in and along shorelines and estuarine to freshwater habitats along bayou and lagoon banks.

A major effort by City Park to remove non-native plants and replant shorelines with native species has been under way since 2002. The Natural Resource Conservation Service, the City of New Orleans, Bayou Land Resource, Conservation and Development and others have conducted demonstration projects within City Park to study plant species and planting techniques. The results of these projects will help guide future efforts to improve habitat. Table 1 lists the desirable and undesirable plant species that both currently exist and could be re-introduced.

Fish species occur in the bayou and lagoons due to water flow from Lake Pontchartrain and stocking activities. In November 2002, as part of a voluntary effort to help manage the fisheries of City Park, personnel of the Nekton Research Laboratory (NRL) of the Pontchartrain Institute for Environmental Sciences at the University of New Orleans conducted a scientific survey of fishery resources. In cooperation with the LSU AgCenter and City Park, NRL members volunteered their time and resources to sample the freshwater fishes by electrofishing some of the ponds and lagoons located in the park. Four water bodies within the park and a section of Bayou St. John were all thoroughly sampled. A total of 17 fish species were collected including eight game species, nine
non-game species and one introduced species. Table 2 lists freshwater fishes found in Bayou St. John waters.

The most common game species were the largemouth bass and bluegill, but there were also some very large black crappies and big redear sunfish in two of the lagoons. Numerous important non-game fishes included inland silversides and gizzard shad, both important as prey species for larger fishes. The most striking outcome of this research was the obvious difference in fish composition among the different water bodies. Those lagoons and ponds with an abundance of natural bank vegetation and plenty of submerged structures (e.g., sunken logs, etc.) had more fishes, bigger fishes, and a greater diversity of fish species. More disturbed water bodies experienced less habitat heterogeneity, such as an area in Bayou St. John near the park entrance, which had far fewer fishes.

As of summer 2005, NRL members have been pursuing funding from the Louisiana Department of Wildlife and Fisheries to reintroduce and track native redfish in Bayou St. John, and to assess the ability of this key game fish to use habitats offered by the bayou. If the proposed project is funded all fishery species will be monitored in the bayou and lagoons on a quarterly basis.

Estuarine fishes cannot reproduce in the bayou and lagoons due to their dependence upon higher salinity regimes. However, estuarine fishes may enter the sluice gates of the new flood control structure or be introduced during adult and juvenile stages. Naturally occurring only in the lower reaches of the Rio Grande River, the Rio Grande cichlid is an invasive species that has been encroaching upon native fish habitat. They also wreak havoc on submerged aquatic vegetation. If possible, this fish species must be limited if not eradicated from both the bayou and southeastern lagoons. Table 3 lists estuarine fishes found in Bayou St. John.

Blue crabs (*Callinectes sapidus*), found mostly in the bayou, are also unable to reproduce in lower salinity ranges. Like the estuarine fish community, blue crabs provide for recreational fishing, attract waterfowl and help control undesired algal growth.

Preferred over fish stocking programs is the natural flow of species from Lake Pontchartrain into the bayou and connecting lagoon system. This process would be enhanced by periodically opening the sector gates of the new flood control structure. As previously discussed, the opening of these gates is controversial. Since construction of the new flood control structure, fish species and blue crabs have been able to enter through the sluice gates, which are kept open unless flooding is eminent. Because fishes cannot typically exit the bayou or lagoons upon their free will, it is important to manage the bayou and lagoons to keep proper water levels, salinity ranges and dissolved oxygen amounts.
### Table 1: Undesirable and Desirable Plant Species

<table>
<thead>
<tr>
<th>Type</th>
<th>Conditions</th>
<th>Scientific Name</th>
<th>Common Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undesirable</td>
<td>General</td>
<td>Sapium sebiferum</td>
<td>Chinese tallow</td>
</tr>
<tr>
<td>Undesirable</td>
<td>General</td>
<td>Eichhornia crassipes</td>
<td>water hyacinth</td>
</tr>
<tr>
<td>Undesirable</td>
<td>General</td>
<td>Alternanthera philoxeroides</td>
<td>alligator weed</td>
</tr>
<tr>
<td>Undesirable</td>
<td>General</td>
<td>Prunus serotina</td>
<td>black cherry</td>
</tr>
<tr>
<td>Desired Trees</td>
<td>Dry Soils</td>
<td>Quercus virginana</td>
<td>live oak</td>
</tr>
<tr>
<td>Desired Trees</td>
<td>Dry Soils</td>
<td>Quercus nigra</td>
<td>water oak</td>
</tr>
<tr>
<td>Desired Trees</td>
<td>Dry Soils</td>
<td>Persea palustris</td>
<td>red bay</td>
</tr>
<tr>
<td>Desired Trees</td>
<td>Wet Banks</td>
<td>Salix nigra</td>
<td>black willow</td>
</tr>
<tr>
<td>Desired Trees</td>
<td>Wet Banks</td>
<td>Taxodium distichum</td>
<td>bald cypress</td>
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<td>Desired Trees</td>
<td>Wet Banks</td>
<td>Nyssa aquatica</td>
<td>water tupelo</td>
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<td>Wet Banks</td>
<td>Acer rubrum</td>
<td>red maple</td>
</tr>
<tr>
<td>Desired Trees</td>
<td>Wet Banks</td>
<td>Morus rubra</td>
<td>red mulberry</td>
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<td>Desired Shrubs, Berries and Mosses</td>
<td>General</td>
<td>Myrica cerifera</td>
<td>wax myrtle</td>
</tr>
<tr>
<td>Desired Shrubs, Berries and Mosses</td>
<td>General</td>
<td>Tillandsia useneoides</td>
<td>Spanish moss</td>
</tr>
<tr>
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<td>General</td>
<td>Sambucus Canadensis</td>
<td>elder berry</td>
</tr>
<tr>
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<td>General</td>
<td>Sesbania bequilla</td>
<td>Sesbania</td>
</tr>
<tr>
<td>Desired Shrubs, Berries and Mosses</td>
<td>General</td>
<td>Kosteletzyka virginica</td>
<td>saltmarsh mallow</td>
</tr>
<tr>
<td>Desired Shrubs, Berries and Mosses</td>
<td>General</td>
<td>Helianthus angustifolius</td>
<td>swamp sunflower</td>
</tr>
<tr>
<td>Desired Grasses</td>
<td>Dry</td>
<td>Arundinaria gigantea</td>
<td>bamboo</td>
</tr>
<tr>
<td>Desired Grasses</td>
<td>Wet</td>
<td>Phragmites australis</td>
<td>roseau cane</td>
</tr>
<tr>
<td>Desired Grasses</td>
<td>Wet</td>
<td>Spartina patens</td>
<td>Spartina patens</td>
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<tr>
<td>Desired Grasses</td>
<td>Wet</td>
<td>Cladium jamaicense</td>
<td>sawgrass</td>
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<tr>
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<td>Wet</td>
<td>Scirpus californicus</td>
<td>bullwhip</td>
</tr>
<tr>
<td>Desired Grasses</td>
<td>Wet</td>
<td>Eichinochloa walteri</td>
<td>millet</td>
</tr>
<tr>
<td>Desired Grasses</td>
<td>Wet</td>
<td>Sagittaria</td>
<td>bull tongue</td>
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<tr>
<td>Desired Grasses</td>
<td>Wet</td>
<td>Vigna luteola</td>
<td>deer pea</td>
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<tr>
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<td>Wet</td>
<td>Pontederia cordata</td>
<td>pickerelweed</td>
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<td>Desired Grasses</td>
<td>Wet</td>
<td>Crinum americanum</td>
<td>southern swamp lily</td>
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<tr>
<td>Desired Grasses</td>
<td>Wet</td>
<td>Hymenocalis crassifolia</td>
<td>marsh spider lily</td>
</tr>
<tr>
<td>Submerged Aquatics</td>
<td>General</td>
<td>Vallesnaria americana</td>
<td>eel grass</td>
</tr>
<tr>
<td>Submerged Aquatics</td>
<td>General</td>
<td>Ruppia maritima</td>
<td>widgeon grass</td>
</tr>
<tr>
<td>Submerged Aquatics</td>
<td>General</td>
<td>Potomogeton pectinatus</td>
<td>sago pondweed</td>
</tr>
<tr>
<td>Submerged Aquatics</td>
<td>General</td>
<td>Ceratophyllum demersum</td>
<td>coontail</td>
</tr>
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</table>

Table 2: Bayou St. John Freshwater Fishes

<table>
<thead>
<tr>
<th>Scientific Name</th>
<th>Common Name</th>
</tr>
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<tbody>
<tr>
<td>Lepomis miniatus</td>
<td>red spotted sunfish</td>
</tr>
<tr>
<td>Lepomis gulosus</td>
<td>warmouth</td>
</tr>
<tr>
<td>Lepomis microlophus</td>
<td>readear sunfish</td>
</tr>
<tr>
<td>Lepomis macrochirus</td>
<td>bluegill</td>
</tr>
<tr>
<td>Gambusia affinis</td>
<td>western mosquitofish</td>
</tr>
<tr>
<td>Micropterus salmoides</td>
<td>largemouth bass</td>
</tr>
<tr>
<td>Lepomis oculatus</td>
<td>spotted gar</td>
</tr>
<tr>
<td>Lepisosteus osseus</td>
<td>longnose gar</td>
</tr>
<tr>
<td>Dorosoma petenense</td>
<td>threadfin shad</td>
</tr>
<tr>
<td>Ictiobus bubalus</td>
<td>smallmouth buffalo</td>
</tr>
<tr>
<td>Ictalurus furcatus</td>
<td>blue catfish</td>
</tr>
<tr>
<td>Ameiurus natalis</td>
<td>yellow bullhead</td>
</tr>
<tr>
<td>Ictalurus punctatus</td>
<td>channel catfish</td>
</tr>
</tbody>
</table>

Sources: Dr. Martin O'Connell, August 8, 2005 and Orleans Levee Board, 1996.

Table 3: Bayou St. John Estuarine Fishes

<table>
<thead>
<tr>
<th>Scientific Name</th>
<th>Common Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elops saurus</td>
<td>ladyfish</td>
</tr>
<tr>
<td>Brevoortia patronus</td>
<td>Gulf menhaden</td>
</tr>
<tr>
<td>Strongylura marina</td>
<td>Atlantic needlefish</td>
</tr>
<tr>
<td>Cyprinodon variegatus</td>
<td>sheepshead minnow</td>
</tr>
<tr>
<td>Fundulus grandis</td>
<td>Gulf killifish</td>
</tr>
<tr>
<td>Lucania parva</td>
<td>rainwater killifish</td>
</tr>
<tr>
<td>Menidia beryline</td>
<td>inland silverside</td>
</tr>
<tr>
<td>Syngnathus scovelli</td>
<td>Gulf pipefish</td>
</tr>
<tr>
<td>Lagodon rhomboids</td>
<td>pinfish</td>
</tr>
<tr>
<td>Cynoscion nebulosus</td>
<td>spotted seatrout</td>
</tr>
<tr>
<td>Leiostomus xanthurus</td>
<td>spot</td>
</tr>
<tr>
<td>Pogonias cromis</td>
<td>black drum</td>
</tr>
<tr>
<td>Gobiosoma bosc</td>
<td>naked goby</td>
</tr>
<tr>
<td>Archosargus probatocephalus</td>
<td>sheepshead minnow</td>
</tr>
<tr>
<td>Mugil cephalus</td>
<td>mullet</td>
</tr>
<tr>
<td>Cichlasoma cyanoguttatum</td>
<td>Rio Grande cichlid</td>
</tr>
</tbody>
</table>

Sources: Dr. Martin O’Connell, August 8, 2005 and Orleans Levee Board, 1996.

Recreation and Education

Bayou St. John is a recreational resource for nearby residents, New Orleans area citizens and visitors. Common active recreational uses include walking, jogging, pet walking, biking, canoeing, kayaking and fishing (Figure 12). Frequent passive uses are picnicking,
reading and painting. Recreation has been encouraged over the years by nearby and complementary businesses that rent and sell bicycles, canoes and kayaks.

**Figure 12: Active Recreational Uses of Bayou St. John**

Annual events promote bayou use and interest. There is Super Sunday in spring (Figure 13), the Greek Festival in May, Beach Sweep in September, caroling by canoes in December and neighborhood cleanups throughout the year.

Recreational use of the bayou encourages stewardship, but can also result in issues with debris. At the public meeting held in August 2005, many members of the public complained of too much litter in and around the bayou. There is also a need to encourage pet owners to clean up after their pets. This issue not only affects the aesthetic quality of the bayou, but also negatively impacts water quality and habitat needs.

Education programs in City Park and along the bayou have also promoted more use of the bayou, and may create understanding of why the area needs to be maintained and preserved. City Park operates a fishing education program for children. The center holds an annual fishing rodeo and offers fishing licenses. City Park also provides cultural and historical tours of their botanical and carousel gardens. In a partnership with the LSU AgCenter, City Park has participated in native species planting projects with children and adults (Figure 14).
Figure 13: Super Sunday Mardi Gras Indians on Bayou St. John

Figure 14: City Park Planting Project
The Lake Pontchartrain Basin Foundation has funded several educational and recreational efforts along the bayou. One example is the “Water Watch” program conducted by Cabrini High School students. In Figure 15 a student is taking a water quality sample. Along with Cabrini High School, there are several schools along the bayou and lagoons including Holy Rosary, Christian Brothers and John F. Kennedy High. Students from these schools may improve their life sciences skills from ecology lessons along the bayou and lagoon banks.

The Pitot House, so named after the first New Orleans mayor, is a Creole colonial style house museum providing insight to historical life along Bayou St. John (www.pitothouse.org, 2005). The house, shown in Figure 16, was restored by the Louisiana Landmarks Society and is utilized for their headquarters, guided tours and special events.

Figure 16: Pitot House

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1 Unsure when or if school will reopen due to Hurricane Katrina damage.
ACTION PLAN

The Action Plan for comprehensively managing Bayou St. John is defined by goals, objectives and action items that are intended to guide implementation. The goals, objectives and action items draw upon recommendations collected from meetings with neighborhood organizations, public meetings, Bayou St. John Committee meetings and the 1996 Bayou St. John Environmental Management Study. Action plan implementation relies upon everyone; government agencies, non-profit organizations, and the public. However, the Action Plan recommends specific entities be responsible or provide coordinating leadership per objective or action item.

Implementation of Objective 1.1, under Goal 1 weighs heavily upon the success of the entire Action Plan. Action 1.1a involves the creation of a memorandum of agreement which must be implemented by the responsible agencies: the Orleans Levee Board, New Orleans City Park and the Sewerage and Water Board of New Orleans. A memorandum of agreement depends upon cooperation among the responsible agencies regarding their roles in water flow management of the bayou and lagoon systems. Roles of responsible agencies are to operate flood control gates, communicate with the public on flood control needs and monitor water levels, water quality and habitat. Once a memorandum of agreement has been adopted, a “Water Management Operations Manual” is needed to guide the responsible agencies. This is reflected in Action 1.1b and is dependent upon the responsible agencies in addition to input from the University of New Orleans and the LSU AgCenter. The manual will be based upon Lake Pontchartrain and Bayou St. John water surface, salinity and nutrient levels. The manual will define: (1) sector and sluice gate opening and closing periods and procedures; (2) City Park lagoon flow; and (3) addition and removal of water to and from the bayou and lagoons.

Each goal, objective, action and responsible/coordinating leadership entity is provided. The Bayou St. John Committee encourages any interested group or individual to help implement this Action Plan. Interested groups or individuals who would like to conduct any of the action items may seek guidance from the leadership entities listed under each objective or action.

Goal 1: Manage Bayou St. John water flow and water quality.

Objective 1.1: Coordinate Bayou St. John water flow management.

Action 1.1a: Create and sign a memorandum of understanding and agreement among the responsible agencies, Orleans Levee Board, New Orleans City Park (City Park) and the Sewerage and Water Board of New Orleans, regarding their roles in managing the bayou and lagoon systems.

Leadership: Orleans Levee Board, City Park and Sewerage and Water Board
Action 1.1b: Establish a comprehensive “Water Management Operations Manual” for the responsible agencies to implement.
Leadership: Orleans Levee Board, City Park, Sewerage and Water Board, LSU AgCenter and University of New Orleans (UNO)

Objective 1.2: Improve Bayou St. John water flow.
Action 1.2a: Remove the old flood control structure at Robert E. Lee Boulevard. Until removal occurs, ensure that butterfly valves are clear of debris.
Leadership: Orleans Levee Board and LSU AgCenter
Action 1.2b: Regularly clean debris from sluice gates of new flood control structure.
Leadership: Orleans Levee Board
Action 1.2c: To flush undesirable water from the bayou, draw down water level by opening Sewerage and Water Board drains.
Leadership: See Water Management Operations Manual
Action 1.2d: Repair or replace pumps, spillways, dams and weir drains in Bayou St. John and leading to and from the City Park lagoon system.
Leadership: LSU AgCenter and City Park
Action 1.2e: Conduct a bathymetric survey of the bayou and lagoons to determine bottom depths and depth of accumulated organic material and debris.
Leadership: UNO

Objective 1.3: Improve Bayou St. John water quality.
Action 1.3a: Implement a long term water quality monitoring program.
Leadership: LPBF, LSU AgCenter and UNO
Action 1.3b: Continue to measure salinity ranges at the mouth of the bayou, at City Park lagoon water intakes, in City Park lagoons and at the southern end of the bayou.
Leadership: LSU AgCenter and UNO
Action 1.3c: Target a salinity range for the bayou between 2.5 ppt and 3.5 ppt, while avoiding salinity measurements higher than 6.0 ppt.
Leadership: LSU AgCenter and UNO and see Water Management Operations Manual
Action 1.3d: Target low nutrient levels for the bayou and lagoons by prohibiting water flow from the lake into the bayou during Bonnet Carré Spillway openings or other times of high lake nutrient levels.
Leadership: LSU AgCenter and UNO and see Water Management Operations Manual
**Action 1.3e:** Investigate potential benefits of an aeration system in the bayou to mitigate low dissolved oxygen conditions and to encourage organic processes.  
*Leadership:* LSU AgCenter and UNO

**Action 1.3f:** Keep algae growth low by increasing fish and crab populations and by enhancing fish and crab habitat.  
*Leadership:* LSU AgCenter and UNO

**Action 1.3g:** Plant wetlands in areas that may treat stormwater runoff such as in City Park golf course ponds.  
*Leadership:* LSU AgCenter, UNO and City Park

**Action 1.3h:** Support existing and increase litter clean up programs.  
*Leadership:* LPBF, City Park, Faubourg St. John Neighborhood Association (FSJNA) and other Civic Groups

**Action 1.3i:** Prevent future automobile dumping by placing bollards in front of popular dumping sites.  
*Leadership:* City of New Orleans

**Goal 2: Enhance the estuarine habitat in and along Bayou St. John.**

**Objective 2.1:** Enhance existing and establish more of an estuarine, native plant community in the bayou and a freshwater to estuarine, native plant community in the lagoons.  
*Leadership:* LSU AgCenter, UNO and City Park

**Action 2.1a:** Plant submerged aquatic vegetation.  

**Action 2.1b:** Eradicate the Rio Grande cichlid, an invasive fish species that will inevitably destroy submerged aquatic vegetation.  

**Action 2.1c:** Along bayou and lagoon shorelines, promote and plant native vegetation representative of fresh and estuarine wetland habitats, while minimizing invasive plant species growth.  

**Action 2.1d:** Locate sites to demonstrate wetland creation and benefits, such as in City Park golf course ponds or at lagoon intakes.  

**Action 2.1e:** Create one-half to one-acre islands in wide sections of the bayou like those that were originally present.  

**Action 2.1f:** Monitor all planting projects.

**Objective 2.2:** Enhance existing and establish more of an estuarine, native fish and shellfish community in the bayou and a freshwater to estuarine, native fish community in the lagoons.  
*Leadership:* LSU AgCenter and UNO

**Action 2.2a:** Monitor movement of fishes and crabs from the lake into the bayou through the new flood control structure.
Action 2.2b: Once water flow issues are improved, stock the bayou and lagoons with hatchery reared and wild captured young of appropriate fish and crab species.

Action 2.2c: Eradicate the Rio Grande cichlid.

Action 2.2d: Conduct experiments in the south lagoon system by stocking it with marine fish.

Action 2.2e: Monitor all fish and crab enhancement, introduction and removal activities.

Goal 3: Increase and facilitate recreational access and use of Bayou St. John.

Objective 3.1: Address the needs of “active” recreational user groups.

Action 3.1a: Promote fishing and crabbing in Bayou St. John.
   Leadership: LSU AgCenter and City Park

Action 3.1b: Collaborate with Canoe & Trail Adventures, Laid Back Tours and others to identify best non-motorized boat launching sites considering shoreline accessibility, private property and parking needs.
   Leadership: City Park, Orleans Levee Board, Civic Groups and Business Community

Action 3.1c: Encourage organized non-motorized boat races.
   Leadership: FSJNA and Business Community

Action 3.1d: Support the Regional Planning Commission and City Planning Commission’s bicycle path planning efforts.
   Leadership: FSJNA and other Civic Groups

Objective 3.2: Address needs of “passive” user groups.

Action 3.2a: Implement pet waste controls by erecting signs, providing pet waste bags and sufficient waste receptacles.
   Leadership: FSJNA and other Civic Groups

Action 3.2b: Encourage Wisner Avenue parking in designated gravel-filled areas, while discouraging parking on grass by posting no parking on grass signs.
   Leadership: Orleans Levee Board and City Park

Action 3.2c: Preserve scenic vistas by continuing to keep as much green space available as possible.
   Leadership: Civic Groups

Objective 3.3: Promote complementary uses.

Action 3.3a: Encourage recreational use while maintaining a sustainable environment upon which active and passive use depends.
   Leadership: Civic Groups
Action 3.3b: Support connectivity to other existing and potential recreational assets such as the Canal Streetcar Line and the future Lafitte Linear Park.
Leadership: Civic Groups

Action 3.3c: Request an addition to the City of New Orleans’ Code of Ordinances to prohibit motorized boat use on Bayou St. John.
Leadership: FSJNA and other Civic Groups

Goal 4: Create public awareness and educational opportunities related to the cultural and historical links between Bayou St. John and the development of New Orleans.

Objective 4.1: Develop a public awareness campaign.
Action 4.1a: Create informational materials for television and radio public service announcements, press releases, press conferences and signage.
Leadership: LPBF, LSU AgCenter

Action 4.1b: Support existing and encourage more Bayou St. John events.
Leadership: Civic Groups

Action 4.1c: Create a central Bayou St. John website linking all educational and recreational opportunities and involved groups.
Leadership: LPBF, Civic Groups, Business Community

Action 4.1d: Identify and contact visitor information groups to promote Bayou St. John opportunities.
Leadership: City Park, and Civic Groups

Objective 4.2: Identify and provide awareness and educational opportunities related to all cultural and historical links to the bayou including, but not limited to Native Americans (i.e. Acolapissas and Biloxi), Europeans and African Americans.
Leadership: To be determined

Action 4.2a: Research available historical materials to identify historical cultures.

Action 4.2b: Develop a series of signs along the bayou identifying Bayou St. John cultural facts.

Action 4.2c: Facilitate walking, biking and canoe tours retracing and identifying the history and cultures that used the bayou.

Action 4.2d: Locate existing educational materials related to Bayou St. John culture and history.

Action 4.2e: Create educational materials on Bayou St. John culture and history.
**Action 4.2f:** Support, promote and partner with established cultural history programs and sites along the bayou, i.e. Pitot House.

**Goal 5:** Identify and create public awareness and educational opportunities related to bayou and estuarine ecology along Bayou St. John.

**Objective 5.1:** Provide awareness of the historical natural environment.
*Leadership:* LPBF, City Park and Business Community
*Action 5.1a:* Develop a series of signs along the bayou identifying native species.
*Action 5.1b:* Facilitate ecotourism field trips/tours by walking, biking and canoeing.

**Objective 5.2:** Conduct educational programs related to bayou and estuarine ecology.
*Action 5.2a:* Host wetland ecology field trips and study programs for kindergarten through university students, i.e. University of New Orleans program.
*Leadership:* UNO, LPBF and City Park
*Action 5.2b:* Create environmental educational materials for adults and kindergarten through twelfth grade students.
*Leadership:* UNO and LPBF
*Action 5.2c:* Reach diverse groups and distribute outreach materials.
*Leadership:* UNO, LPBF and City Park

**Objective 5.3:** Establish an ongoing volunteer stewardship program for Bayou St. John.
*Leadership:* LPBF and City Park
*Action 5.3a:* Create a list of service learning projects for the bayou.
*Action 5.3b:* Implement service learning projects including litter clean ups and beneficial plantings with interested volunteers and service learning groups.
REFERENCES


New Orleans Municipal papers, Collection 16, Box 2, Special Collections, Howard Tilton Library, Tulane University.

Record of Public Hearing (May 29, 1979). Lake Vista Community Center. “Concerning a permit application by the Board of Commissioners, Orleans Levee Board, for dredging in a area and installation of culverts, roadway embankments, levee, seawall, and fill in Bayou St. John at Lake Pontchartrain in New Orleans, Louisiana.”


