

# FINAL ENVIRONMENTAL IMPACT STATEMENT BAYOU SORREL LOCK REPLACEMENT, LOUISIANA

Lead Agency: US Army Corps of Engineers

**ABSTRACT:** The Bayou Sorrel lock is located in Iberville Parish, Louisiana, on the Gulf Intracoastal Waterway (GIWW), Morgan City to Port Allen Alternate Route. The lock allows navigation traffic to pass through the East Atchafalaya Basin Protection Levee (EABPL) that separates the Atchafalaya Basin Floodway from protected lands between the floodway and the Mississippi River. Analyses of the locks on the GIWW system have shown that navigation delays are highest at the Bayou Sorrel lock, due mainly to its inadequate size. Another deficiency of the lock is its inability to withstand a project flood on the Atchafalaya Basin, Louisiana, project. A project flood is the greatest flood having a reasonable probability of occurrence. Since the lock was constructed, the Atchafalaya Basin, Louisiana, project flood flow-line has been raised for the Atchafalaya Basin Floodway. Consequently, the lock would be overtopped during a project flood.

Alternatives investigated for alleviating problems at Bayou Sorrel include a float-in floodgate to flood proof the existing lock, an in-kind replacement lock, and replacement locks of various dimensions. Alternative sites for a new lock were considered, but were not investigated in detail. The potential alignments for a replacement lock are very restricted by the location of connecting waterways, residential areas, and the alignment of the EABPL. The only area investigated in detail for a new lock is immediately to the west and north of the existing lock, between the existing lock and the EABPL. Other possible sites for a new lock would require extensive realignment of channels, relocation of infrastructure, and significant losses of fish and wildlife habitats.

Alternatives subjected to detailed engineering and economic analyses include two different lock sizes: a 1,200-foot long by 75-foot wide, by 15-foot deep lock and a 1,200-foot long by 110-foot wide, by 15-foot deep lock. All lock designs included the use of sector gates. Three construction variations were evaluated for each size lock: concrete chamber, earthen chamber, and earthen chamber with drains to lessen the construction duration. Also evaluated were a float-in floodgate that would be necessary for flood control if a new lock were not constructed for navigation and an in-kind replacement lock that would provide adequate flood protection but not benefit navigation. The recommended plan is a new 1,200-foot long by 75-foot wide, by 15-foot deep concrete-chambered lock along with new connecting channels and bank protection along both banks the GIWW for about 1.5 miles north of the new lock.

The recommended plan has been designed to avoid and minimize adverse impacts to fish and wildlife habitats through innovative project construction sequencing that largely avoids impacts to undisturbed habitats. A compensatory mitigation plan has been developed and incorporated into the project to fully compensate for unavoidable impacts.

Date: \_\_\_\_\_

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Note: Information, displays, maps, et cetera, discussed in the Main Report and Appendixes are incorporated by reference in the Environmental Impact Statement.

# 1. SUMMARY

## 1.1. MAJOR CONCLUSIONS AND FINDINGS

### 1.1.1. Purpose and Need

The purpose of this study is to determine the feasibility of providing navigation and flood control improvements at the Bayou Sorrel lock in Iberville Parish, Louisiana. A reconnaissance study of all the locks on the Gulf Intracoastal Waterway (GIWW), completed in 1992, determined that the Bayou Sorrel lock had the highest average navigation delays of all locks on the GIWW (except for the Inner Harbor Navigation Canal lock, which is currently being replaced). In addition to the navigation problems at the Bayou Sorrel lock, the lock would not be able to withstand a project flood in the Atchafalaya Basin, Louisiana, project. The Bayou Sorrel lock is a feature of the Atchafalaya Basin, Louisiana, project, which in turn is a feature of the Flood Control, Mississippi River and Tributaries (MR&T) project, authorized by the Flood Control Act of 1928, as amended. A project design flood is the greatest flood having a reasonable probability of occurrence. Since the lock was constructed, the Atchafalaya Basin, Louisiana, project flood flow-line has been raised. Consequently, the lock would be overtopped during a project flood.

### 1.1.2. Alternatives

This Environmental Impact Statement (EIS) evaluates three primary action alternatives and the no-action alternative, which involves continued operation of the existing lock. The first primary action alternative would provide for a floodgate to be placed in front of the existing lock to protect the lock and areas behind it from a project flood in the Atchafalaya Basin, Louisiana, project. The floodgate would provide adequate flood protection, but would not solve the problem of navigation delays at Bayou Sorrel. This alternative would be funded at full Federal cost through the MR&T project. This plan is referred to as Plan 1 in this EIS.

The second primary alternative would be to construct a new, in-kind replacement lock at Bayou Sorrel. This replacement lock would have the same dimensions as the existing lock, but it would be built to withstand a project flood. This alternative would not solve the navigation delays at Bayou Sorrel, but it is more cost effective than the float-in floodgate plan for assuring adequate flood protection at Bayou Sorrel. Although the float-in floodgate is much less costly to construct, the costs to navigation due to the shutdown in navigation required for its construction push its overall, average-annual costs higher than the floodgate alternative. This alternative would be funded at full Federal cost through the MR&T project. This replacement lock is referred to as Plan 2 in this EIS.

The third primary alternative would provide for a new lock with greater capacity than the existing lock and the ability to withstand a project flood. Secondary alternatives under this primary alternative are locks of various dimensions and construction materials. Both of the secondary alternatives also include erosion protection on each side of the GIWW from the lock to the first

bend in the channel north of the Bayou Sorrel Bridge, a distance of about 1.5 miles. Any lock replacement alternative would require cost sharing with the Inland Waterway Trust Fund. Both concrete-chambered and earthen-chambered lock designs were evaluated in detail. Also, lock chamber widths of 75 and 110 feet were investigated in detail. Neither of these two factors changes the anticipated impacts of the project. Therefore, there are no separate analyses for locks with different construction techniques and chamber sizes provided in this EIS. This alternative is referred to as Plan 3 in this EIS.

The alignment of a replacement lock is constrained by the position of existing waterways, the East Atchafalaya Basin Protection Levee (EABPL), and populated areas. Only one practical location for a new lock exists. The site is approximately the same location where construction had begun for the existing lock, before soil failures forced abandonment of the area. However, modern technology makes it practical to build a lock at this site. Since there is only one practical location for a new lock, other locations have not been evaluated in detail.

### **1.1.3. Rationale for the Recommended Plan**

The recommended plan, Plan 3C, calls for a 1,200-foot long by 75-foot wide, concrete chambered, sector-gated lock. The concrete-chamber design would allow for more rapid filling and emptying compared to an earthen-chambered lock. The sector-gated design has been proven appropriate for relatively low head differential locks. In addition to a new lock, the recommended plan includes erosion protection on each side of the GIWW from the lock to the first bend in the channel north of the Bayou Sorrel Bridge, a distance of about 1.5 miles. The recommended plan has been selected because it maximizes net national economic benefits (NED) and is environmentally acceptable. A larger, 110-foot wide, concrete-chambered lock is favored by the navigation industry, but the higher cost of the 110-foot wide lock outweighs its anticipated incremental benefit. The recommended plan also includes compensatory mitigation for impacts to fish and wildlife habitats that consists of reforestation and managing 126 acres of land and providing for water flow from the East Access Channel through existing and future dredged material disposal sites.

### **1.1.4. Environmental Impacts**

Fish and wildlife habitat impacts of the recommended plan are substantial in terms of acreage, but are restricted mainly to previously impacted areas such as borrow pits, existing channels, small woodlots, levees, mowed areas, and existing dredged material disposal areas. Impacts have been avoided and minimized through a carefully designed plan for dredging connecting channels and disposing of the dredged material. Remaining impacts are mitigated through a compensatory mitigation plan that would be accomplished on the Government-owned property at the site.

### **1.1.5. Environmental Features**

Environmental features include avoidance and minimization of potential project impacts through innovative project construction sequencing and a fish and wildlife mitigation plan to compensate for unavoidable impacts. The fish and wildlife mitigation plan includes planting available areas with desirable tree species and managing those areas to establish functional forest habitat. The mitigation plan also includes maintenance of two openings along the bank of the GIWW that allow headwater flows from the channel to enter the swamp, thereby helping to maintain water quality.

The new lock would have the ability to pass water from the Atchafalaya Basin Floodway into Lower Grand River to help alleviate water quality problems that occasionally occur during periods of low rainfall and high temperatures. The project operation plan would address this function of the lock.

### **1.1.6. Threatened and Endangered Species**

Three species listed as threatened or endangered may occur in the project area. These species are the bald eagle, the Louisiana black bear, and the pallid sturgeon. Bald eagles occasionally forage around the existing lock site and an active nest occurs about two miles southwest of the lock. Roaming bears sometimes pass through the area, but the habitat is not considered occupied due to the lack of female bears with cubs. Pallid sturgeon have not been documented from the Bayou Sorrel area, but the East Access Channel and GIWW may provide suitable habitat for this species.

The US Army Corps of Engineers (USACE), New Orleans District prepared biological assessments for the Louisiana black bear and the pallid sturgeon. The conclusions of those assessments are that the recommended plan would not be likely to adversely affect those species. No assessment was prepared for the bald eagle since no eagle nests occur within one mile of the proposed project site. The U.S. Fish and Wildlife Service (USFWS) has reviewed these assessments and has concurred with the conclusions.

### **1.1.7. Executive Order 11988, Floodplain Management**

Executive Order 11988 requires Federal agencies to evaluate the potential effects of their actions on floodplains and to avoid adverse floodplain impacts wherever possible. All of the Bayou Sorrel area is within the 100-year floodplain (Classification "A" and "A-1") except for the EABPL and the road embankment for Highway 75 that runs alongside Lower Grand River and the GIWW, which are Classification "C". Essentially all land areas are within the floodplain. There are no alternatives that would avoid floodplain impacts from direct construction activities. However, the recommended plan would provide greater protection from a project flood than the existing lock. The plan would not increase flooding potential or change water levels in protected or non-protected areas, except for providing protection against a devastating flood. The

recommended plan is not expected to induce development within the floodplain. The adequacy of the existing lock to pass a project flood is not limiting development within the floodplain. Development is being limited by the low elevation of the land.

#### **1.1.8. Executive Order 11990, Protection of Wetlands**

Executive Order 11990 requires Federal agencies to take action to minimize destruction of wetlands and to preserve and enhance the natural and beneficial values of wetlands. Nearly all of the land in the vicinity of Bayou Sorrel is considered wetland. Even some of the dredged material disposal areas used for the disposal of material dredged annually from the GIWW are technically wetlands, although their functional value is low. The recommended plan has been designed to avoid adverse impacts to wetlands. No new dredged material disposal areas would be created in wetland areas. The new lock site and most of the connecting channels would be constructed mainly through previously disturbed wetlands that have low to moderate functional values. The mitigation plan, included as part of the recommended plan, fully mitigates for all adverse impacts to wetland habitats.

#### **1.1.9. Executive Order 12898, Environmental Justice**

1.1.9.1. Executive Order 12898 directs Federal agencies to analyze the environmental effects, including human health, economic and social effects, of their actions on minority and low-income communities. No specific census data is available for the Bayou Sorrel community, but the community appears to be typical of rural southern Louisiana. The community appears to have a relatively small minority population, but again, no data is available to refute or substantiate this observation. No human health, economic, or social effects are expected in the community of Bayou Sorrel except for about five residences, consisting of mobile homes and small wood-framed structures, in the area where the new lock's tailbay channel and northern guidewall would be located. The owners of these improvements are tenants by virtue of year-to-year leases from the underlying fee owner of the land. No other structures are located near the proposed lock. The five structures appear to be modest, single family residences or recreation camps. The structures are within an existing USACE channel easement for the GIWW and should not have been constructed at that location. The occupants of those structures would be required to relocate since the area would be needed for construction of the new lock. A determination has been made that the residents would not be eligible for relocation under the Uniform Relocations Assistance and Real Property Acquisition Policies Act (PL91-646), or URA, since the structures were built on land over which the Government holds a perpetual channel easement for the GIWW.

1.1.9.2. There is no evidence that the residents that require relocation are significantly different in ethnic composition or have a different income level than the rest of the community of Bayou Sorrel. As a consequence, no disproportionate adverse impacts to low income and/or minority populations as a result of the proposed project are expected.

#### **1.1.10. Section 404(b)(1) Evaluation**

Clean Water Act, Section 404(b)(1) evaluations have been prepared and are included in the Environmental Appendix. A separate evaluation was prepared for the erosion protection since that feature was added as part of the recommended plan after the initial evaluation was prepared. The USACE has determined that on the basis of Section 404(b)(1) guidelines, the disposal of dredged material into the proposed disposal sites would comply with the requirements of the guidelines with inclusion of appropriate and practical conditions to minimize pollution and adverse effects on the aquatic ecosystem. Impacts to wetlands have been avoided and minimized to the maximum extent practicable.

#### **1.1.11. State Water Quality Certification (Section 401)**

The USACE applied for and obtained State Water Quality Certification for the recommended plan from the Louisiana Department of Environmental Quality (LDEQ), pursuant to Section 401 of the Clean Water Act, during the public review period of the draft EIS. A revision to the State Water Quality Certification was also received for the erosion protection feature that was added to the recommended plan since public review of the draft EIS. Copies of the certification letters are included in the Environmental Appendix. The USACE did not seek an exemption to obtaining a State Water Quality Certificate as allowed by Section 404(r) of the Clean Water Act. Application for State Water Quality Certification was being made voluntarily and as a matter of comity. All criteria either have been or will be met for a Section 404(r) exemption: information on the effects of discharge of dredged material into the waters of the United States, including application of Section 404(b)(1) guidelines, are included in this EIS and this EIS will be submitted to Congress before the actual discharge takes place.

#### **1.1.12. Consistency with the Louisiana Coastal Resources Program (Coastal Zone Management Act of 1972)**

The project location is about 12 miles outside of the Louisiana Coastal Zone Boundary, and the project is not expected to affect the coastal zone of Louisiana in any way. Therefore, a Louisiana Coastal Resources Consistency Determination has not been prepared. As a matter of comity, the Louisiana Department of Natural Resources (LDNR), Coastal Management Division was advised of the project through distribution of the draft report and EIS. The LDNR advised that the project is located outside of the Louisiana Coastal Zone; it would not impact coastal resources, and is consistent with the Louisiana Coastal Resources Program.

### **1.2. AREAS OF RESOLVED CONTROVERSY**

There are no areas of controversy that have been completed resolved, although one of the major issues raised by local residents has been partially resolved by the addition of erosion protection into the recommended plan. See the next section on Unresolved Issues for explanation.

### **1.3. UNRESOLVED ISSUES**

**1.3.1.** Local residents have voiced two major, related issues. Residents are concerned about the vehicular bridge at Bayou Sorrel. They fear that increased vessel traffic and larger tows on the GIWW, as a result of a new lock, would increase the frequency of barge tows hitting the bridge and putting it out of service. Some residents have suggested building a new lock north of the community of Bayou Sorrel so that vessels using the GIWW, Morgan City to Port Allen Alternate Route bypass the entire community. Alternatives for a new lock north of Bayou Sorrel have not been investigated in detail due to the impacts and costs associated with dredging and mitigating for a new navigation channel through miles of cypress swamp and bottomland hardwood forest. The fact that an existing, developed navigation corridor can be used to site the new lock precludes consideration of a new corridor through undeveloped swamps and woodlands.

**1.3.2.** The second issue is bank erosion along the GIWW. Bank erosion is likely being caused by vessel wakes, prop wash from tows, and physical damage to the bank by tows waiting for entry into the lock. Most of the erosion appears to be occurring along developed properties to the north of the lock. Some local residents have been complaining for years about this problem.

**1.3.3.** The erosion issue has been partially solved through the addition of erosion protection to the recommended plan. Some of the residents who raised the bank erosion issue live along the reach of the GIWW where erosion protection is planned. However, other local residents that live along the GIWW north of the planned erosion protection are continuing to voice their displeasure with the recommended plan since their properties would continue to erode.

### **1.4. ENVIRONMENTAL COMMITMENTS AND MITIGATION PLAN**

A number of commitments that would minimize and/or compensate for adverse effects to the natural environment have been included in the recommended plan. These commitments are summarized in Table 1.

**TABLE 1  
ENVIRONMENTAL COMMITMENTS**

Significant Issue or Resource	Reason for Commitment	Commitment
Bottomland hardwood forest and cypress swamp	To avoid the conversion of forest and swamp into dredged material disposal areas	All dredged material from project construction would be placed into existing borrow pits, existing dredged material disposal areas, and the existing lock's tailbay channel, forebay channel, and lock chamber.
Bottomland hardwood forest and cypress swamp	To mitigate for unavoidable losses to forest and swamp from channel construction and dredged material disposal	During project construction and during the project life, dredged material disposal areas on Government-owned property (126 acres) would be planted with desirable tree species, monitored, and managed to maximize their wildlife habitat value.
Cypress swamp	To mitigate for impacts to water quality (low dissolved oxygen) resulting from dredged material disposal areas blocking headwater flows into the swamp	Two water conveyance ditches would be maintained to carry headwater flows from the East Access Channel into the swamp through the existing disposal areas. Sediment traps would be excavated on the ditches as necessary to prevent the deposition of heavy grained sediments in the swamp.
Aquatic Habitats	To minimize the potential for contaminants to be released from sediments during the dredging.	All applicable State non-point source regulations pertaining to construction activities will be followed. Dredging specifications would require the removal of the top layer of material from the open-water areas and wetlands in the lock tailbay, forebay and lock chamber areas and deposition of this material into the designated disposal areas before dredging the deeper materials. Silt curtains would be used, where feasible and practicable, when dredging from open water areas and wetlands to minimize transport of suspended sediments. All practicable measures would be used, such as internal dikes, to ensure the maximum retention of sediments within dredged material disposal areas.