

CIVIL ENGINEERING
PROGRAM/PROJECT MANAGEMENT
CONSTRUCTION/CONSTRUCTION MANAGEMENT
COASTAL ENGINEERING
ENVIRONMENTAL SERVICES
OIL & GAS SERVICES

COASTAL ENGINEERING

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Royal offers clients a professional and knowledgeable staff of engineers, planners, and scientists who are experts in solving the complex issues that are present in coastal and estuarine systems. Royal is extremely familiar with unique issues relevant to design and construction in the coastal zone including risk analysis, proper selection of materials, constructability issues, cost implications, and environmental impacts. Federal, state, and local officials have made a tremendous effort to formulate synergistic coastal restoration and Royal offers permitting, design, and construction services to support those efforts. Royal has long-standing relationships with governmental decision makers and is proud to play an active role in advocating these long-term strategic plans to enhance the sustainability of our home region.



Our Coastal Engineering Services and Experience include:

- ⊗ Ecosystem Restoration- Planning and Design
- ⊗ Wetland Regulatory Compliance/Section 10/404
- ⊗ State and Federal Permits
- ⊗ Hydraulic and Hydrodynamic Modeling
- ⊗ Geophysical/Geotechnical Investigations
- ⊗ Water Control Structures
- ⊗ Shoreline Protection
- ⊗ Levees and Dikes
- ⊗ Offshore Breakwaters
- ⊗ Beneficial Use of Dredged Material
- ⊗ Marsh Creation Design
- ⊗ Coastal, Riverine & Deltaic Processes
- ⊗ Sediment Management
- ⊗ Sand Source Investigations
- ⊗ Project and Construction Management
- ⊗ Bulkhead Design
- ⊗ Barrier Island Restoration

CORPORATE HEADQUARTERS

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ADDITIONAL LOCATIONS

- ⊗ New Orleans, Louisiana
- ⊗ Cameron, Louisiana
- ⊗ St. Bernard Parish, Louisiana
- ⊗ Lafayette, Louisiana
- ⊗ Houston, Texas
- ⊗ Mobile, Alabama

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ROYAL DIVISIONS

West Big Burns Marsh Management Water Control Structure Modifications

Client: Miami Corporation

Location: Cameron Parish, Louisiana

Project Type: Coastal Permitting, Surveying



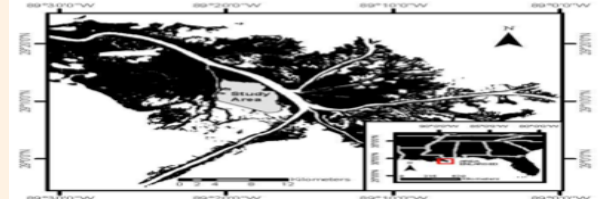
Royal was contracted by Miami Corporation to explore alternatives for water control structure modifications at the West Big Burns Bridge marsh management site in Cameron Parish, LA. These modifications are eligible for funding under the Coastal Impact Assistance Program (CIAP). Royal prepared a Coastal Use Permit (CUP) and a preliminary engineering evaluation for a new water control structures. The new structure would replace two existing structures to the east of the bridge on State Hwy 27. Prior to construction the flow capacity under the bridge is greater than that of the two existing structures combined. Therefore the new structure will be limited hydraulically by the estimated flow capacity of the bridge opening. Royal formulated a design of the new structure based on longevity, constructability, cost, and the functional needs to manage water levels in the estuary.

Sediment Flux and Fate in the Mississippi River Diversion at West Bay: Observation Study

Client: NOAA CREST Program

Location: Plaquemines Parish, Louisiana

Project Type: Coastal, Sediment Transport Analysis, Marsh Creation, Dredging, Survey, Geotechnical



Construction on this unique CWPPRA project was completed in November 2003 and opened a major sediment diversion for the purpose of land building. The initial design flow was 20,000 cfs at 50% river stage with plans to increase flow capacity to 50,000 cfs at 50% river stage. The project goal is to restore 9,831 acres of wetlands over 20 years. This study was intended to increase the understanding of sediment delivery by the diversion, sediment retention within the bay and, ultimately, the success of the diversion toward building land. Specific objectives were: (1) through hydrographic means, estimate sediment flux into West Bay from the Mississippi River over a two-year period; (2) determine short-term sediment accretion rates and describe seasonal sediment distribution patterns using radio chemical techniques and x-radiographic images of bay bottom samples; (3) estimate sediment retention over two years in West Bay by comparing pre and post-construction bathymetric surveys; and (4) identify coastal processes which may influence the efficiency of sediment retention within the project area by analyzing velocity, salinity, tide, turbidity, and wind data. The results of this study will be used as an initial baseline for future performance monitoring efforts.

Lake Chapeau Water Control Structure Demolition

Client: LA- Office of Coastal Protection and Restoration

Location: Terrebonne Parish, Louisiana

Project Type: Coastal Use Permitting, Field Survey Coordination, Final Design, Construction Management, Field Inspections



Royal is performing the design, construction administration, and inspection services for the Lake Chapeau (TE-26) Structure No. 3 Demolition. Adjacent marsh to this rock installation was severely scoured by recent hurricane activity. Royal is charged with analyzing the extent of the erosion and using rock from the existing structure to line the bottom of the newly formed channel to prevent further scouring. The scope of services includes the supervision of a pre-design topographic and hydrographic survey. Royal will perform all engineering and design services for the project including a site investigation, preparation of a permit application, preliminary plans and specifications, and final contract documents for bidding.