

Name of Project: Caernarvon Freshwater Diversion

- Selected on WRDA 1965
- Construction finished April, 1991
- Location:



Project Location

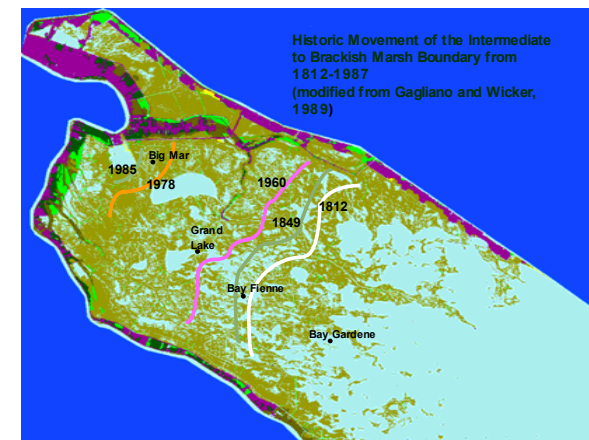
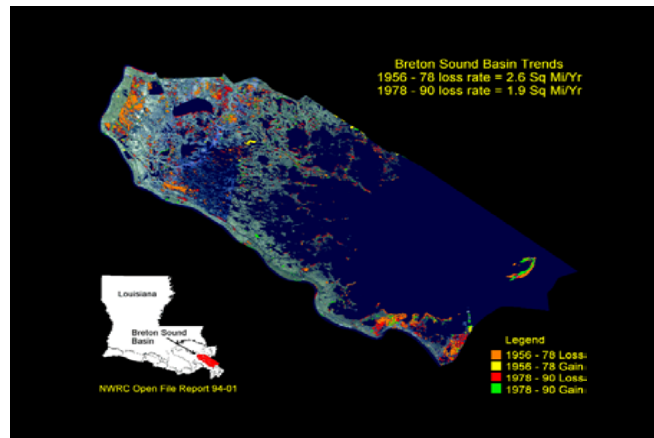
Caernarvon Freshwater Diversion



- Project Features
 - Diversion structure: 8,000 cfs, 5 15'x15' gated culverts
 - 7,690' outfall channel
 - 11,300' of guide levees

Planning

- Assumed causes of loss:
 1. Saltwater intrusion and loss of sediment and nutrients due restriction of riverine input assumed to be the major cause of habitat loss, and vegetative change in the region
 2. Subsidence and human changes to the landscape are additional causes of land loss in the project area



Goals and Objectives

- The goal of the project is to restore historical salinity conditions to the basin, 5 and 15 ppt with project isohalines
- Objectives include reduction in rate of land loss, enhancement of emergent marsh vegetation, enhancement of commercial and recreational wildlife and fisheries productivity

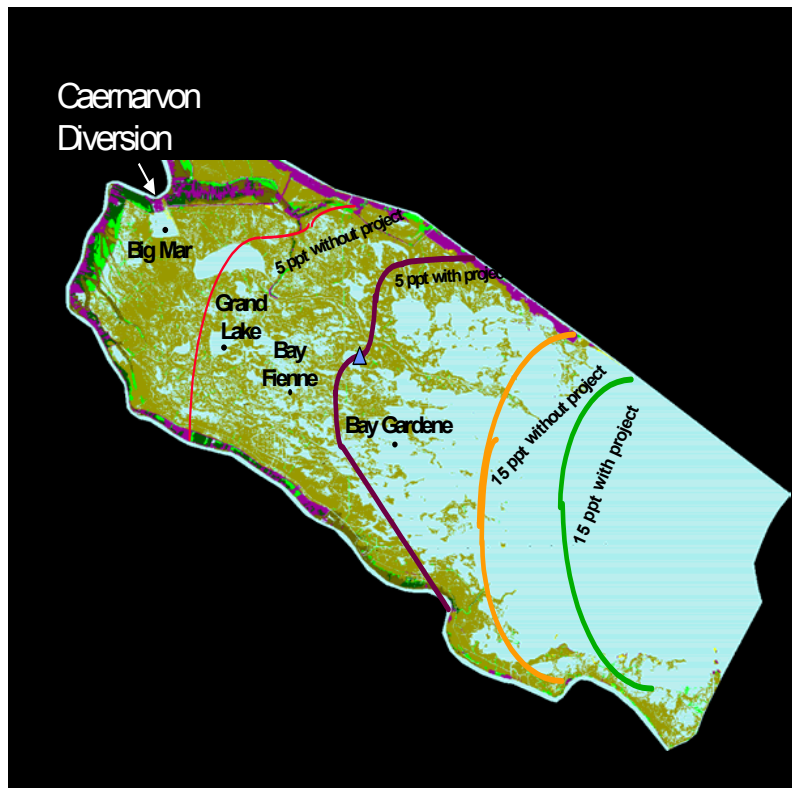
Construction

- Final Features
 - Site moved from Scarsdale to Caernavon at request of local parishes

Monitoring Variables

- Monitoring consists of a 3 year pre-construction and 7 year post-construction intensive monitoring plan, and a 43 year less detailed long-term monitoring plan
- Biological, hydrological, water and sediment quality variables are collected
- More intensive academic or management studies are conducted as needed

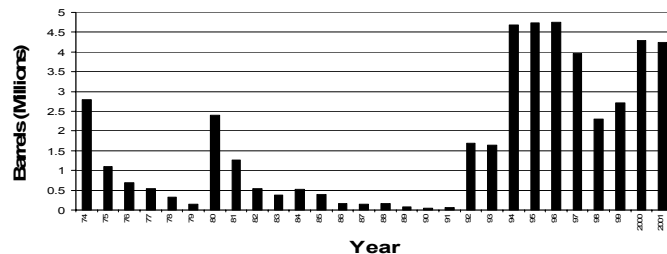
Physical Response



- Project operation has maintained the with-project 5 ppt line.
- The with-project 15 ppt line is little affected by project operation.

Biological Response

Oysters Available on the Public Oyster Grounds in Coastal Study Area II
(Seed and Sack Oysters Combined)

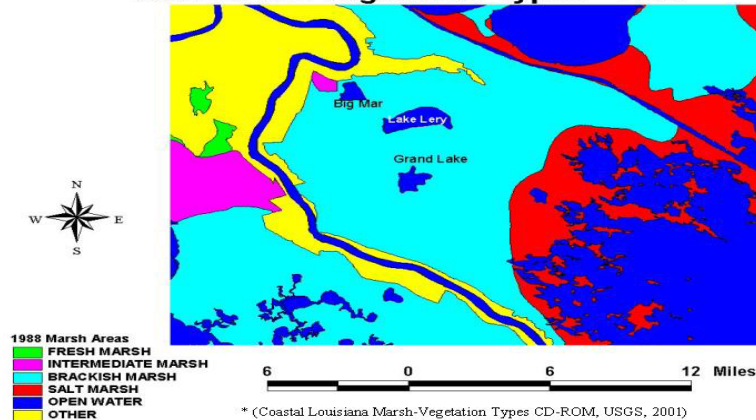


- Most fish and wildlife monitored benefited from diversion
- Biomass studies indicate that marsh elevation increase is more than subsidence in the upper basin

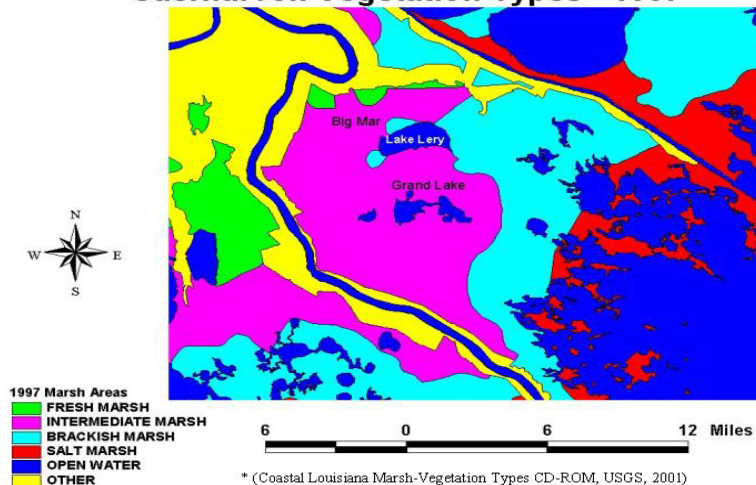


Landscape Response

Caernarvon Vegetation Types - 1988



Caernarvon Vegetation Types - 1997



- Vegetative communities in the upper basin are becoming fresher marsh types
- Biodiversity increasing due to variety of marsh types

Project Adaptive Management

- Implemented Changes
 - Several operational plans have been utilized to enhance the biological response and minimize real or perceived adverse responses of the project
 - Studies have been conducted to better understand the observed biological response and recommend new management options

Project Adaptive Management

- Recommended Improvements
 - Continue improving operational plan to maximize benefits, such as a pulsing flow strategy
 - Monitoring has shown benefits to the upper marsh and to fish and wildlife. Try to extend those benefits to a greater portion of the basin, possibly with pulsing
 - Continue mitigation of conflicts with user groups

Lessons Learned for Future Projects

Recommended for incorporation

- Diversions are big, controversial projects. Try to get the support of all groups affected by the project early in the planning process
- Deal with oyster issues before project goes on-line
- Conduct monitoring and some problem-focused studies to help manage crucial issues
- Solicit input from user groups to help mitigate adverse effects from project operations
- Changes in operational plans, while important to adaptive management, cause difficulties with project evaluation