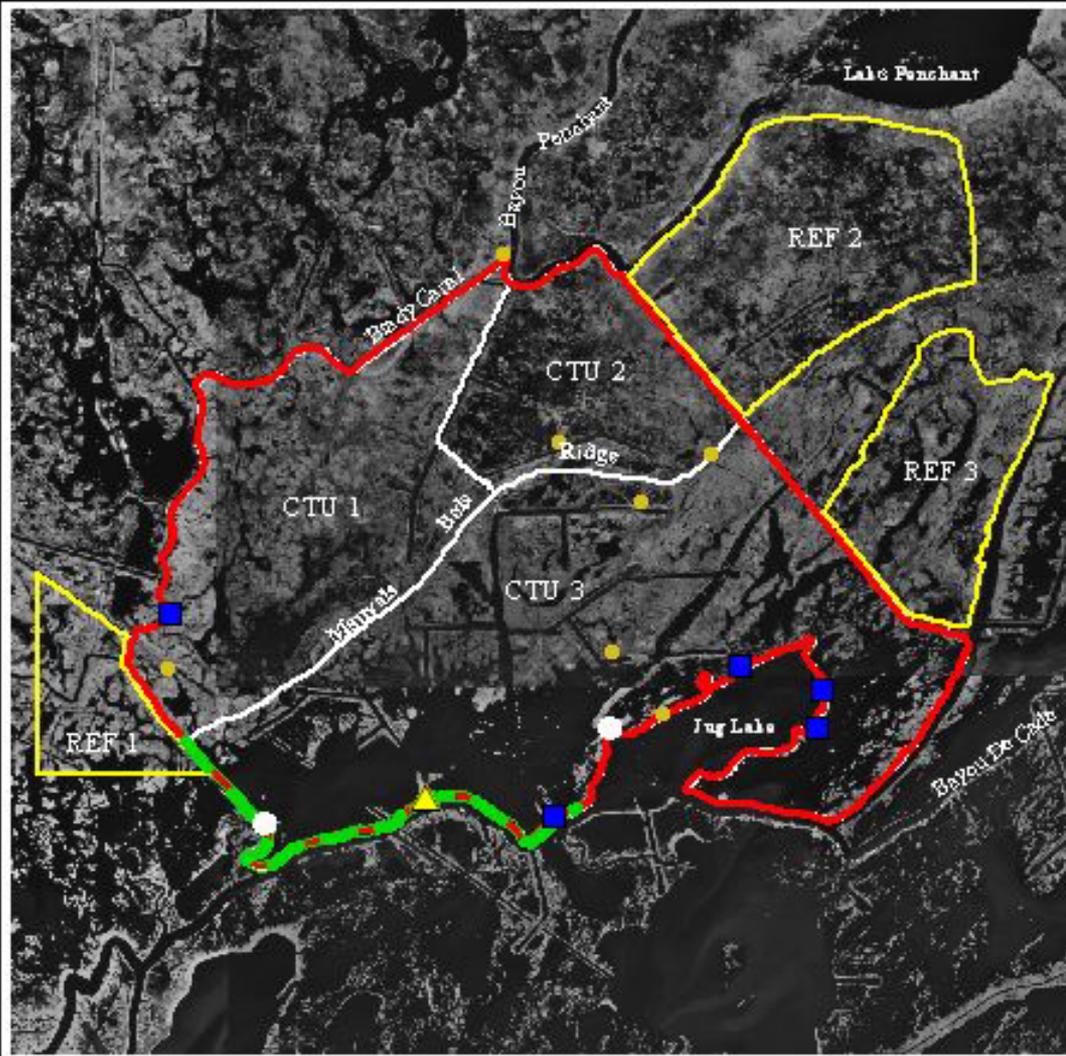# Brady Canal Hydrologic Restoration

- Selected on PPL3
- Construction finished July 10,2000
- Location:

Terrebonne Parish

- Features
  - Plug
  - Weirs
  - Embankment
  - Armored channels

Planning

- Assumed Causes of Loss:
    1. Subsidence
    2. Tidal Scour
    3. Storm Surges
    4. Saltwater Intrusion
    5. Man Induced Activities

Goals and Objectives (Monitoring Plan, 1998)

Objectives
- Maintain and enhance existing marshes by reducing the rate of tidal exchange
- Improve retention of introduced freshwater and sediment

Goals
- Decrease the rate of marsh loss
- Maintain or increase the abundance of vegetation typical of fresh and intermediate type marsh
- Decrease water level variability
- Decrease salinity variability in southern portion of project
- Increase vertical accretion within the project area
- Increase frequency of occurrence of SAV's

Construction

- ● Final Features
  - – Three (3) steel sheet pile weirs with variable crested bays
  - – One (1) steel sheet pile and rock riprap weir with a barge bay
  - – One (1) steel sheet pile weir with fixed crest
  - – One (1) rock riprap plug
  - – Two (2) rock armored channel crossings
  - – 8,531 feet of earthen embankment
  - – 4,405 feet of rock armored earthen embankment
  - – 3,660 feet of rock riprap embankment
  - – Maintenance of 21,600 feet of earthen embankment (no const. to date)
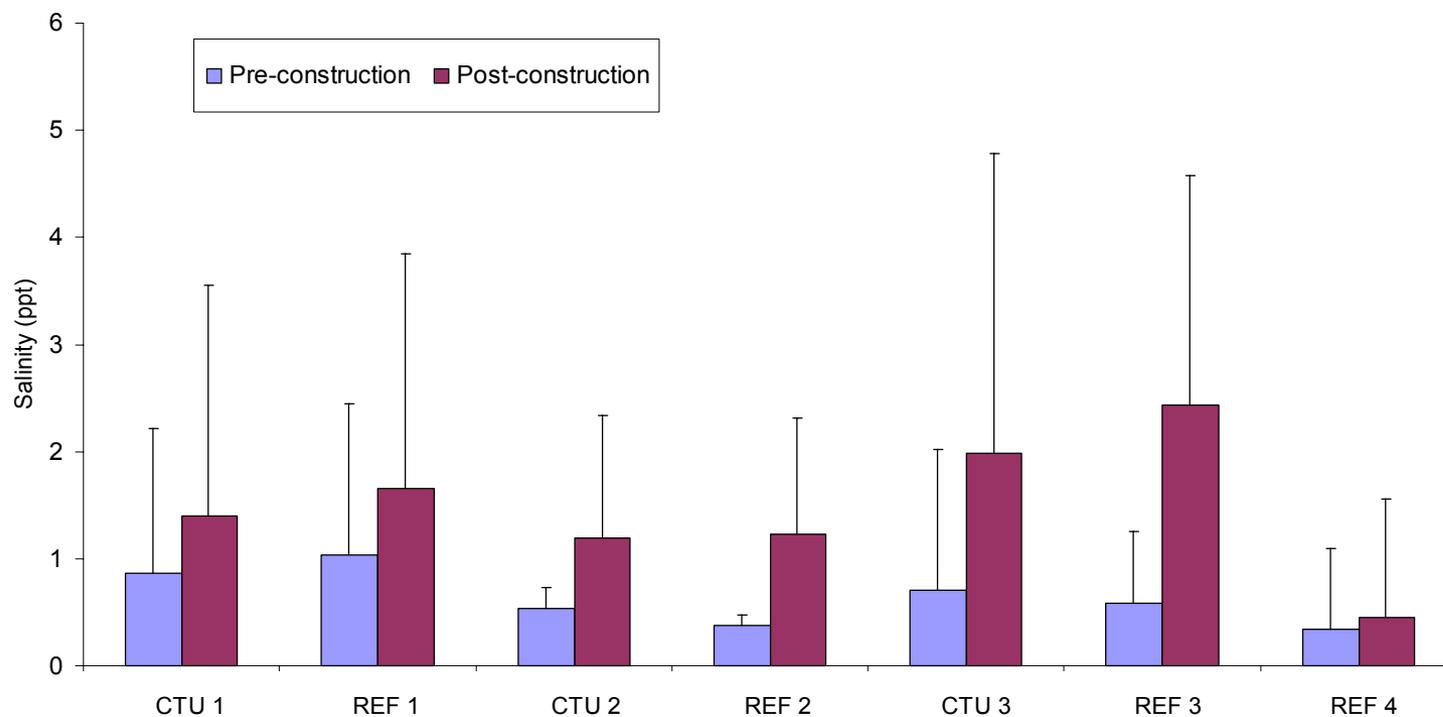
Monitoring Variables

Vegetation Stations   ▲ Continuous Recorder Stations
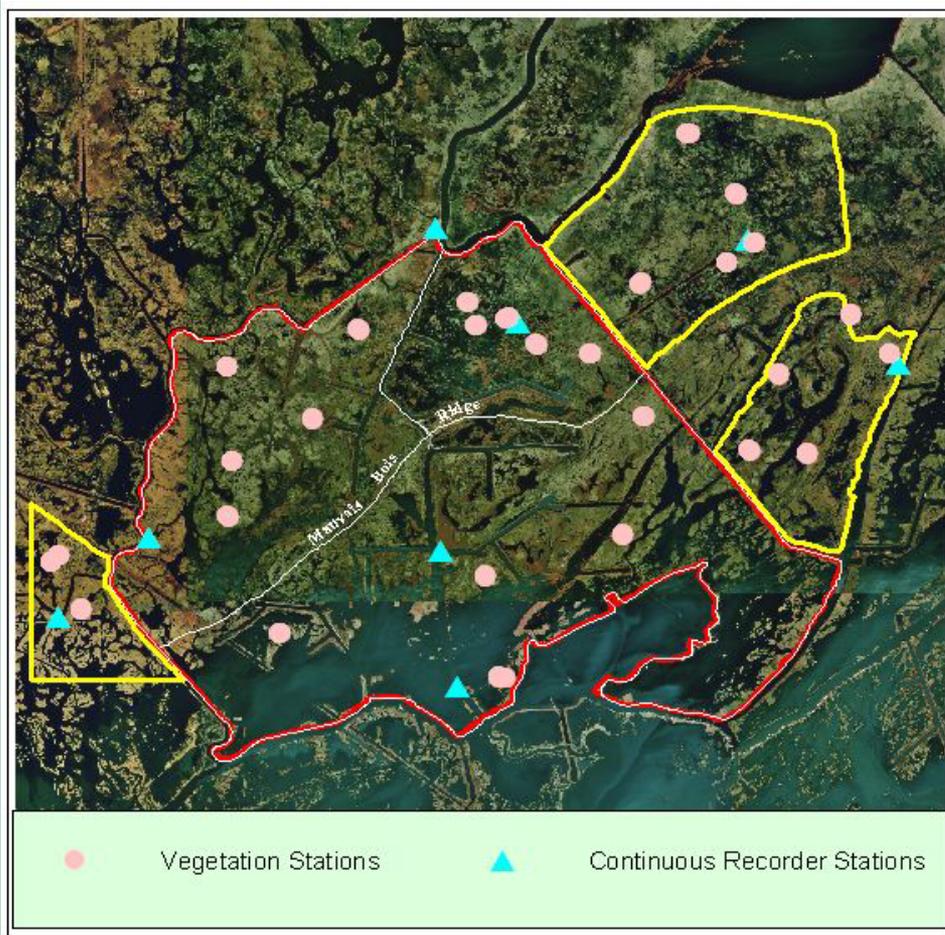
- Water level
- Salinity
- Marsh mat movement
- Vegetation (pre-const. only)
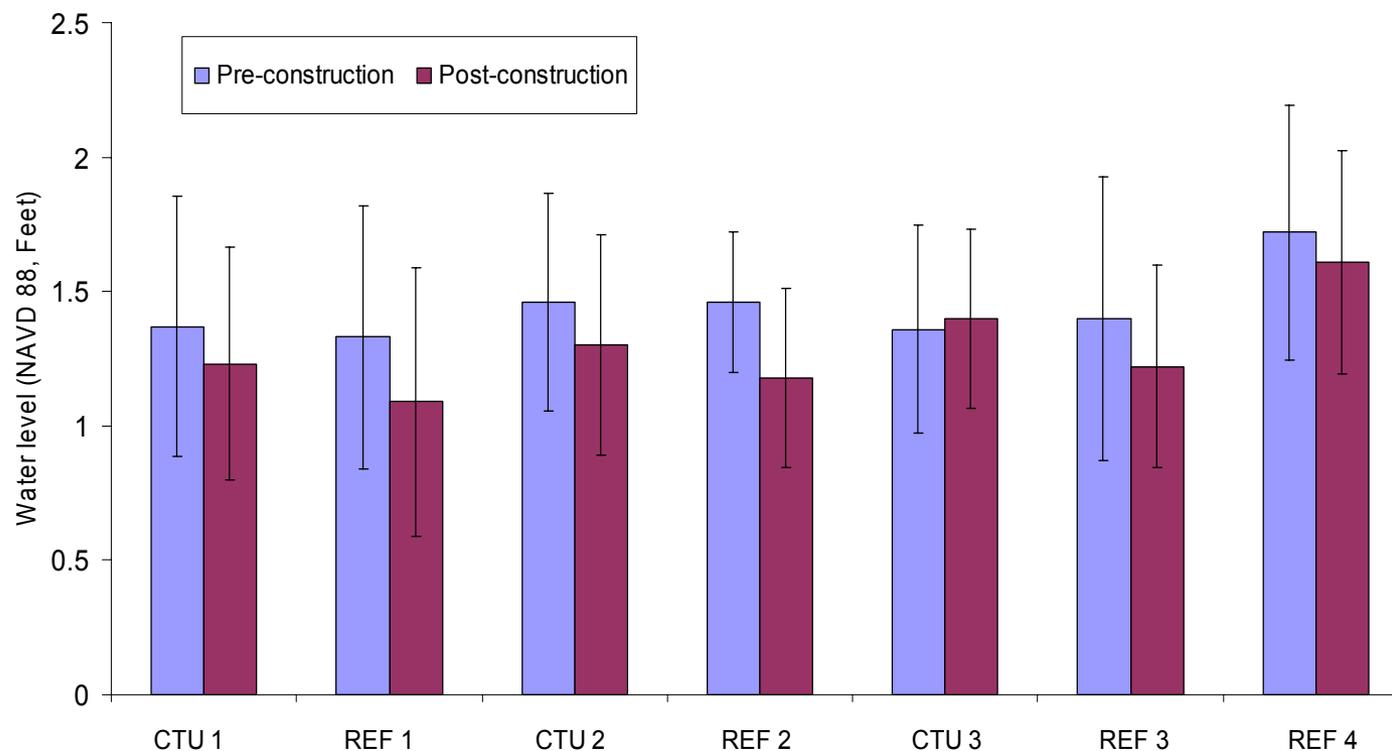- Submerged aquatic vegetation (pre-const. only)
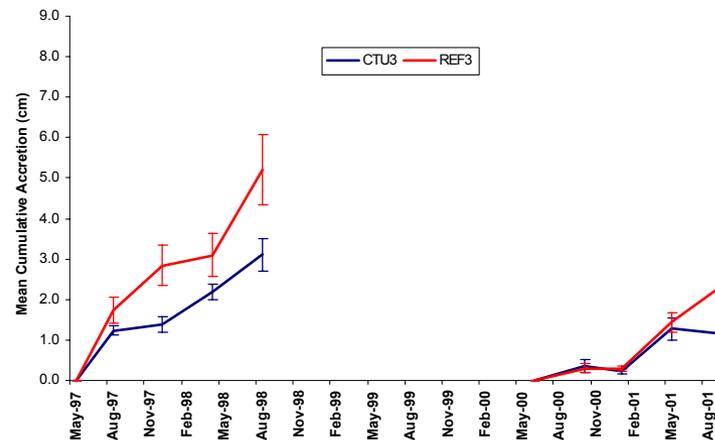- Accretion

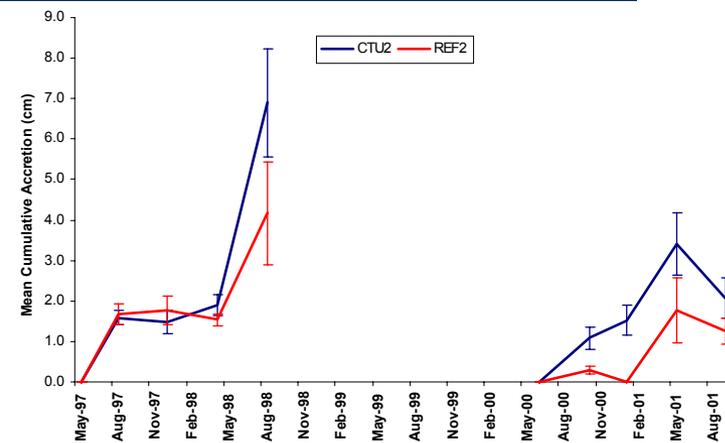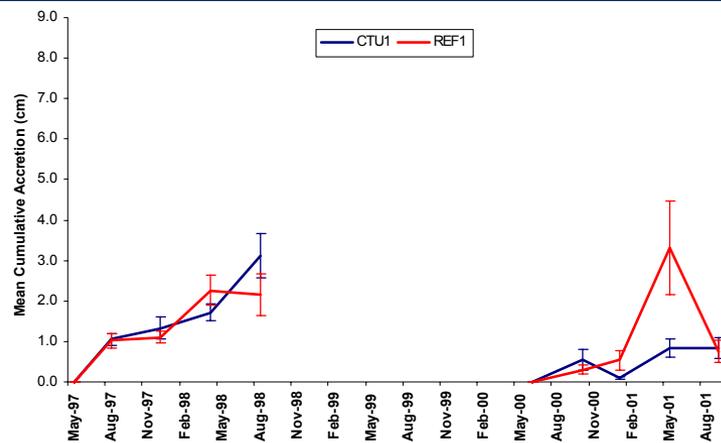# Physical Response - Salinity

Mean Salinity (+ std. dev.)

Physical Response – Water level

Mean Water level (± std. dev.)

Physical Response - Accretion

Physical Response – Accretion II

*Project ($r^2 = 0.3386$)
*Reference ($r^2 = 0.3426$)

Project ($r^2 = 0.1243$)
*Reference ($r^2 = 0.4203$)
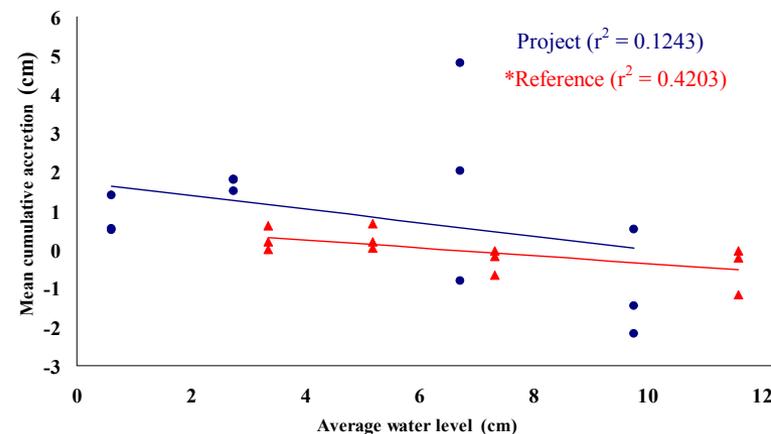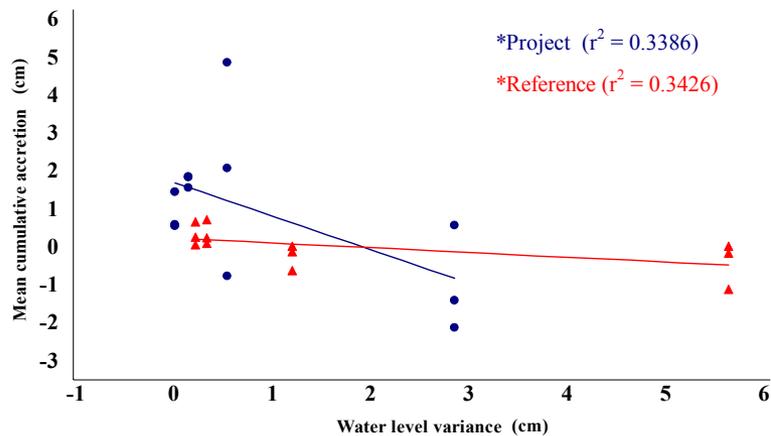
- 1999/2000 data only

- Ran correlations between percent time marsh flooded, percent vegetative cover, average duration of flood event, average water level, and water level variance

- Found significant negative correlations between water level variance and average water level.

Biological Response

- Vegetation and submerged aquatic vegetation
  - sampling occurred in 1996 and 1999 (pre-construction)

- No post construction sampling has occurred.
  - sampling scheduled for fall 2002

- Dominate vegetation: *Sagittaria lancifolia, Eleocharis spp., and Spartina patens (CTU and REF 3)*

- Dominate SAV's: *Ceratophyllum demersum, Najas guadalupensis,and Hydrilla verticillata (1996); Nymphaea spp. Ceratophyllum demersum, Nuphar luteum, and Ruppia maritima (1999)*

Landscape Response

- Habitat mapping was performed by National Wetlands Research Center personnel in 1998 and is scheduled for the Fall of 2002.

Project Adaptive Management

- Implemented Changes
  - No changes have occurred to this date.

Project Adaptive Management

- Recommended Improvements
  - All project components, as initially planned, should be completed
  - Project needs to be operated as was originally intended
  - A more natural alternative than rock should be considered in the construction of remaining structures and in the maintenance of existing structures

Lessons Learned for Future Projects

- ● Recommended for incorporation in CWPPRA
    - – An Operation and Maintenance Plan should be developed prior to the 95% review phase and approved shortly after final inspection of all construction activities
    - – If modifications to a project occur, the monitoring of the project should be re-evaluated
    - – The current process for altering a monitoring plan needs to be less cumbersome
    - – The goals and objectives of a project may need to be more specific quantitatively for certain parameters
    - – Avoid using specific years in monitoring plans, instead refer to number of years post-construction

Lessons Learned for Future Projects

- ● Recommended for incorporation in CWPPRA
  - – More research is required during the planning phase of a project with respect to successes/failures of other similar type projects
  - – Existing data from constructed projects should be researched and used to assist in the planning and design of approved projects
  - – Should structures be operated if they are hydrologically ineffective
  - – Design structures such that the cost required to operate them are minimized
  - – Has there been any research to support the use of rock as an effective water control structure in regards to controlling salinity and water levels
  - – A more natural method of bank refurbishment or stabilization should be investigated and pursued other than rock

Lessons Learned for Future Projects

- ## Recommended for incorporation in CWPPRA
  - When two CWPPRA projects have overlapping project boundaries, significant project components of one project should not be deferred in anticipation that they could be installed in the second project at a later time