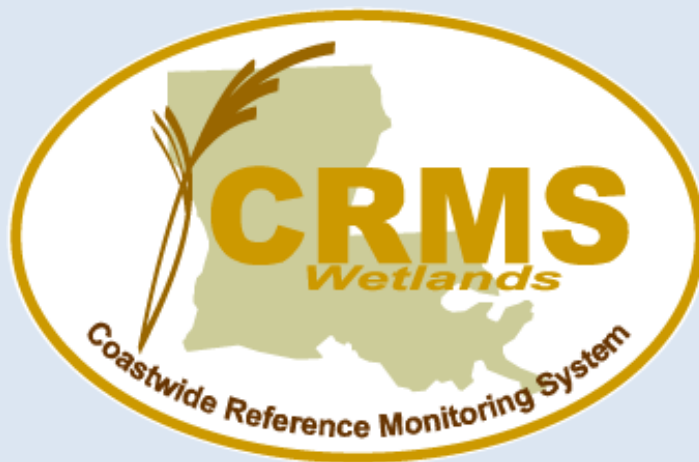


Coastwide Reference Monitoring System

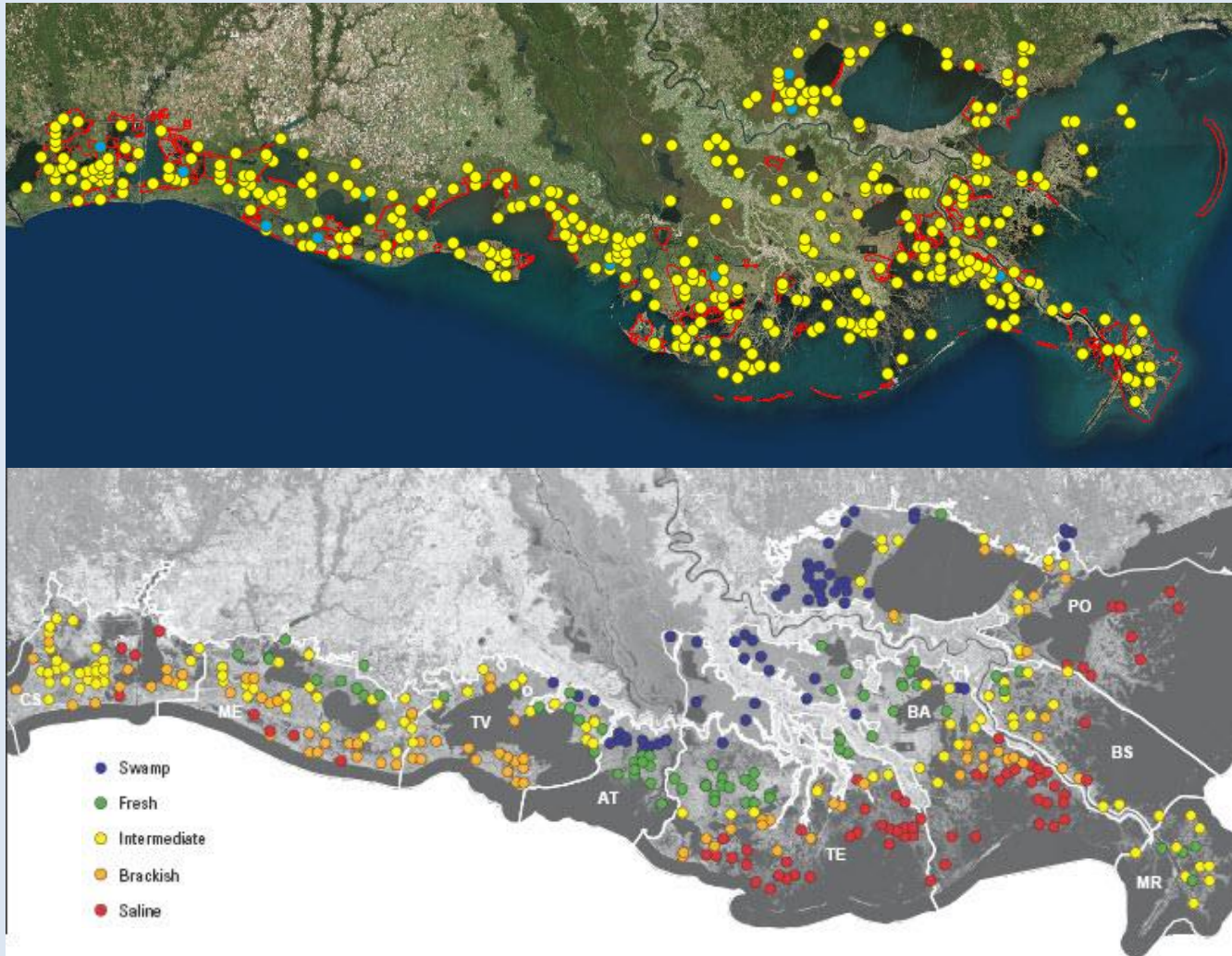


Dona Weifenbach
Coastal Protection and Restoration Authority
and
Sarai Piazza
USGS

September 11, 2014



CRMS Design and Assessment




- Long-term dataset
- 10 real-time hydro
- Sites inside & outside of CWPPRA projects
- Sites in swamp, fresh, intermediate, brackish, and salt marsh
- Data used for future scenario modeling




CRMS Website


a CWPPRA funded project




Coastwide Reference Monitoring System

Home Data Mapping Library Visualization Program



**Map**



**Data**

**Factsheet**

Wetland restoration efforts conducted in Louisiana require monitoring the effectiveness of individual projects as well as monitoring the cumulative effects of all projects in restoring, creating, enhancing, and protecting the coastal landscape. The effectiveness of the traditional paired-reference monitoring approach in Louisiana has been limited because of difficulty in finding comparable test sites. CRMS is a multiple reference approach that uses aspects of hydrogeomorphic functional assessments and probabilistic sampling.

This approach includes a suite of sites that encompass the range of ecological conditions for each stratum, with projects placed on a continuum of conditions found for that stratum. Trajectories in reference sites are then compared with project trajectories through time. The approach could serve as a model for evaluating wetland ecosystems.



- CWPPRA (1990) and CRMS (2006) data
- Programmatic documents
- Derived data & products from current data

NEW FEATURES THIS MONTH:

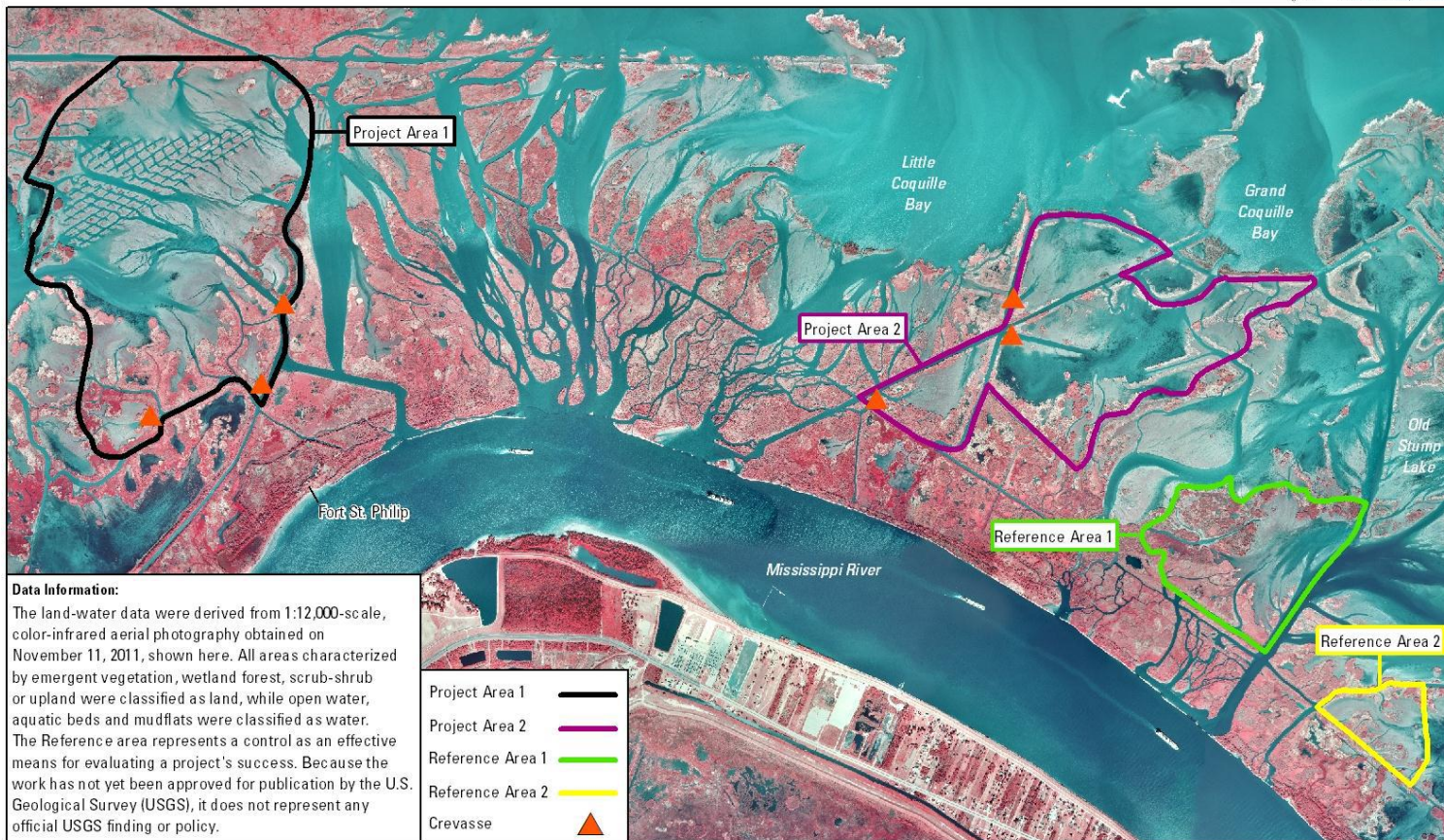
- 1) Data download from interactive hydro chart,
- 2) Chart depth of flooding,
- 3) Landsat TM land change layer,
- 4) Hydrologic Unit Codes (HUC) layer.



Delta Management at Fort St. Phillip



Delta Management at Fort St. Philip (BS-11)
Coastal Wetlands Planning, Protection and Restoration Act
2011 Photomosaic



Prepared by:
U.S. Department of the Interior
U.S. Geological Survey
National Wetlands Research Center
Lafayette, Louisiana
and
Louisiana Coastal Protection and Restoration Authority
New Orleans Regional Office



Project Location



Plaquemines Parish

Federal Sponsor:
U.S. Fish and Wildlife Service

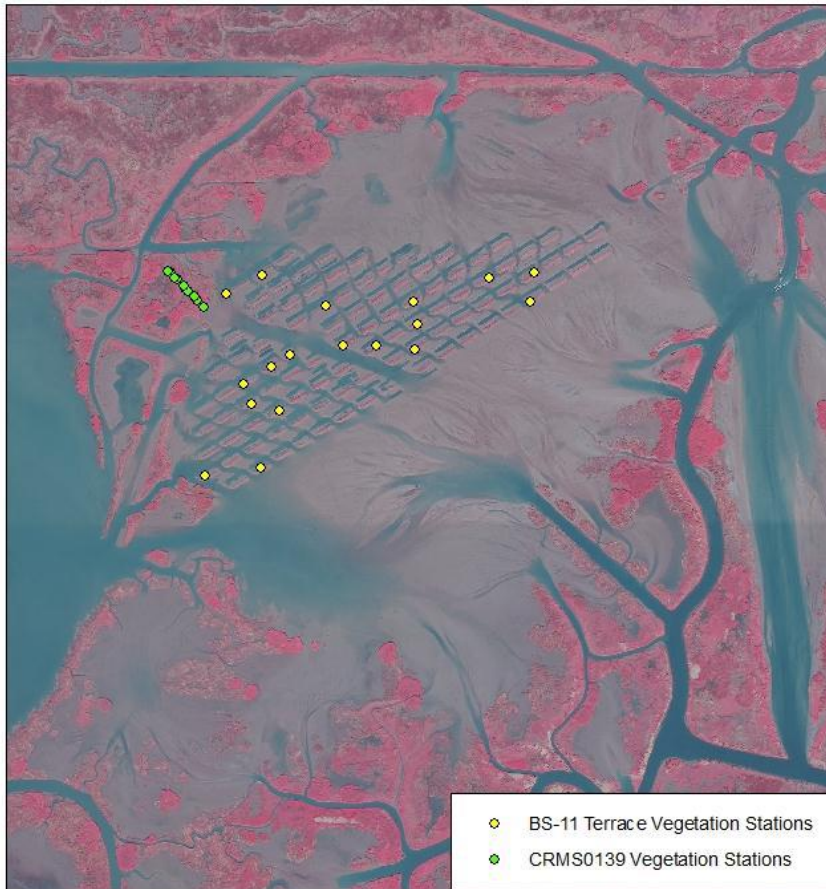


Map ID: USGS-NWRC 2012-02-0064

- Outfall management & sediment trapping near mouth of MS River, constructed in Fall 2006
- 2012 OM&M Report results: terraces are capturing sediment and project is building subaerial land

Delta Management at Fort St. Phillip

- Project Specific vegetation stations on terraces to monitor plantings. Data collected 2007 and 2011, again in 2016 and 2021
- CRMS site in project area
- Emerging mudflats being colonized



Delta Management at Fort St. Philip (BS-11)
Vegetation Stations

0 0.1 0.2 0.4 Miles
 0 0.175 0.35 0.7 Kilometers



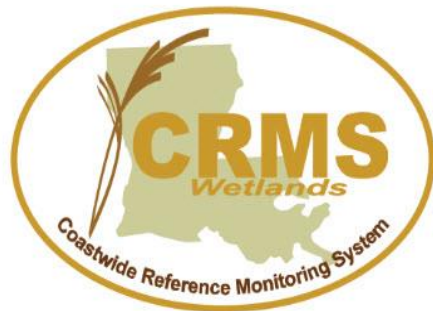
Map Produced by:
Coastal Protection and Restoration Authority
New Orleans Regional Office
September 4, 2012

Background Imagery:
2008 CIR DOQQ





Report Carding



Coastwide Reference Monitoring System (CRMS)

Site Level Report Card

Site: CRMS0139

Year: 2013



7/24/2014

About the Interactive Report Card

Through the Coastal Wetlands Planning, Protection, and Restoration Act (CWPPRA) a comprehensive, standardized monitoring and assessment program has been developed to evaluate coastal restoration projects throughout the Louisiana coastal zone. The Coastwide Reference Monitoring System (CRMS) collects monitoring data for numerous ecological variables. Using CRMS data, indices have been developed to assess wetland hydrology, vegetation, and soils. This interactive report card provides summary information and displays index scores for individual CRMS sites, restoration projects, hydrologic basins, and the entire Louisiana coast.

Index Development

What is an Index?

An index combines and synthesizes scientific data to help inform or assess a topic of interest. Each index helps explain the condition of a particular aspect of the coastal wetland ecosystem. By comparing indices at various time and spatial scales we can understand the overall condition of coastal wetlands in Louisiana.

How were the indices developed?

CRMS Analytical Teams, made up of agency and academic personnel, developed indices based on the suite of parameters available from the 2006 to 2009 CRMS dataset. Three indices have been developed: a floristic quality (FQI), hydrologic (HI), and submergence vulnerability (SVI), and a landscape index is currently being refined. Wetland vegetation, hydrology, and soils are undeniably interconnected and form the basis for ecological processes that ultimately influence future land change and the sustainability of coastal habitats. Although these indices have been developed using 4 years of baseline CRMS data, the indices will be refined to better define ecological relationships as the data set becomes more robust overtime.

Because no regulatory thresholds exist for the ecological parameters of interest, it was not possible to assess index scores based on previously defined values that would indicate an acceptable or unacceptable score. Therefore, for the FQI and the HI, assessments were made relative to a baseline distribution of the index scores derived from 2006 to 2009 data at CRMS sites across the Louisiana coast. Because ideal thresholds were not available for the FQI and HI, scores were classified as 'good' (green) if they exceeded the 75th percentile of index scores calculated for all CRMS sites during the baseline period, 'poor' (red) if they did not exceed the 25th percentile, or 'fair' (yellow) if they were intermediate to the 25th and 75th percentiles (Figure 1).

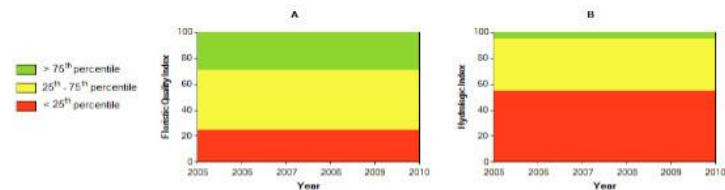
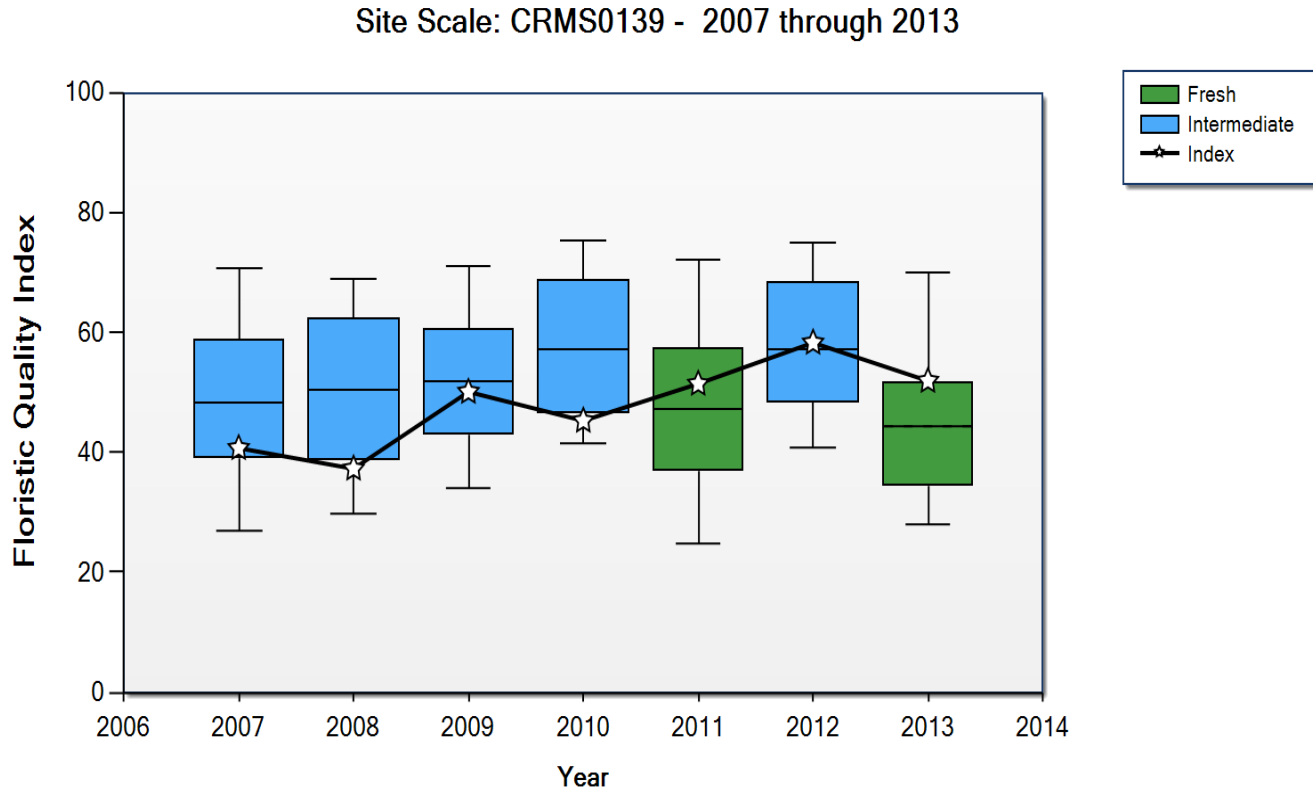


Figure 1. Example of how classifications change based on the assessment index and index score distribution. A) Floristic Quality Index distribution and B) Hydrologic Index distribution based on coastwide data from 2006 to 2009.



Vegetation Site Scale Assessment



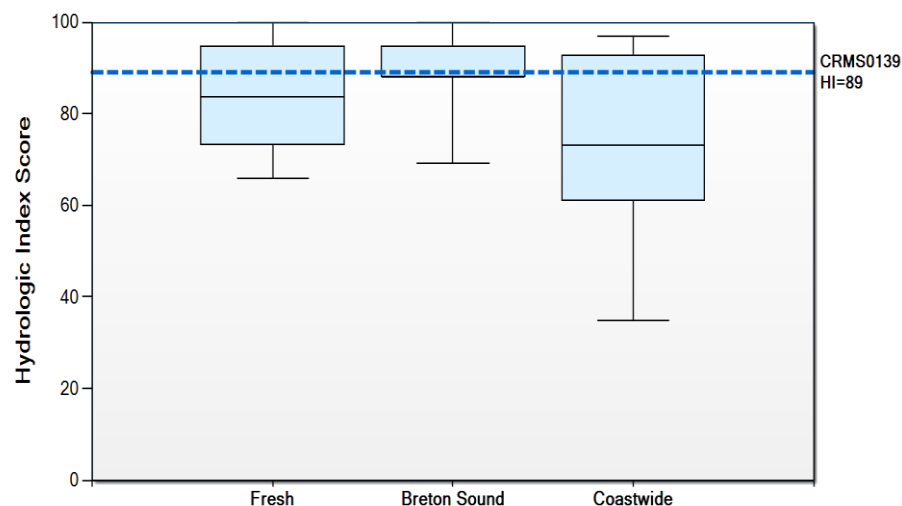
- Based on species composition, CRMS site switched back and forth from fresh to intermediate marsh during wet years

Annual site FQI scores in relation to the distribution of scores in similar marsh types each year.

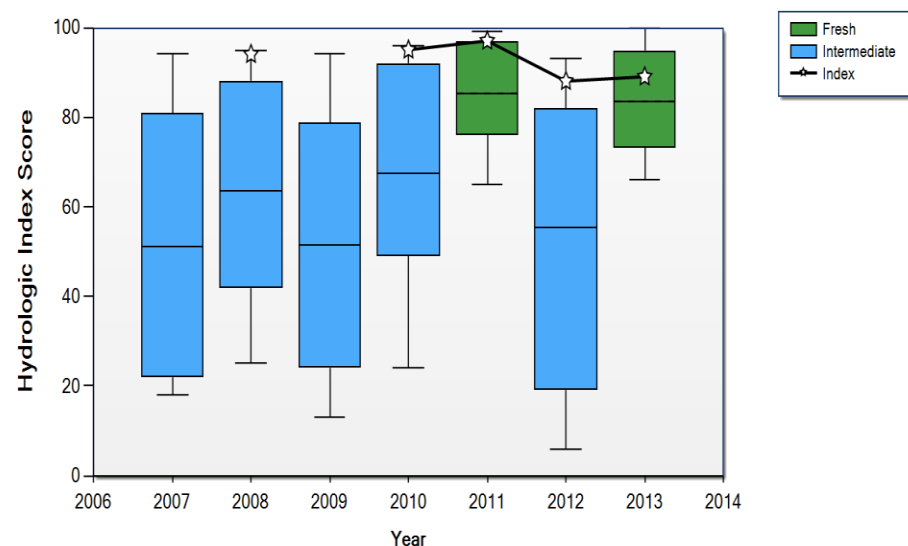


Hydrologic Index Site Scale Assessment

Site Scale: CRMS0139 - 2013



Site Scale: CRMS0139 - 2007 through 2013

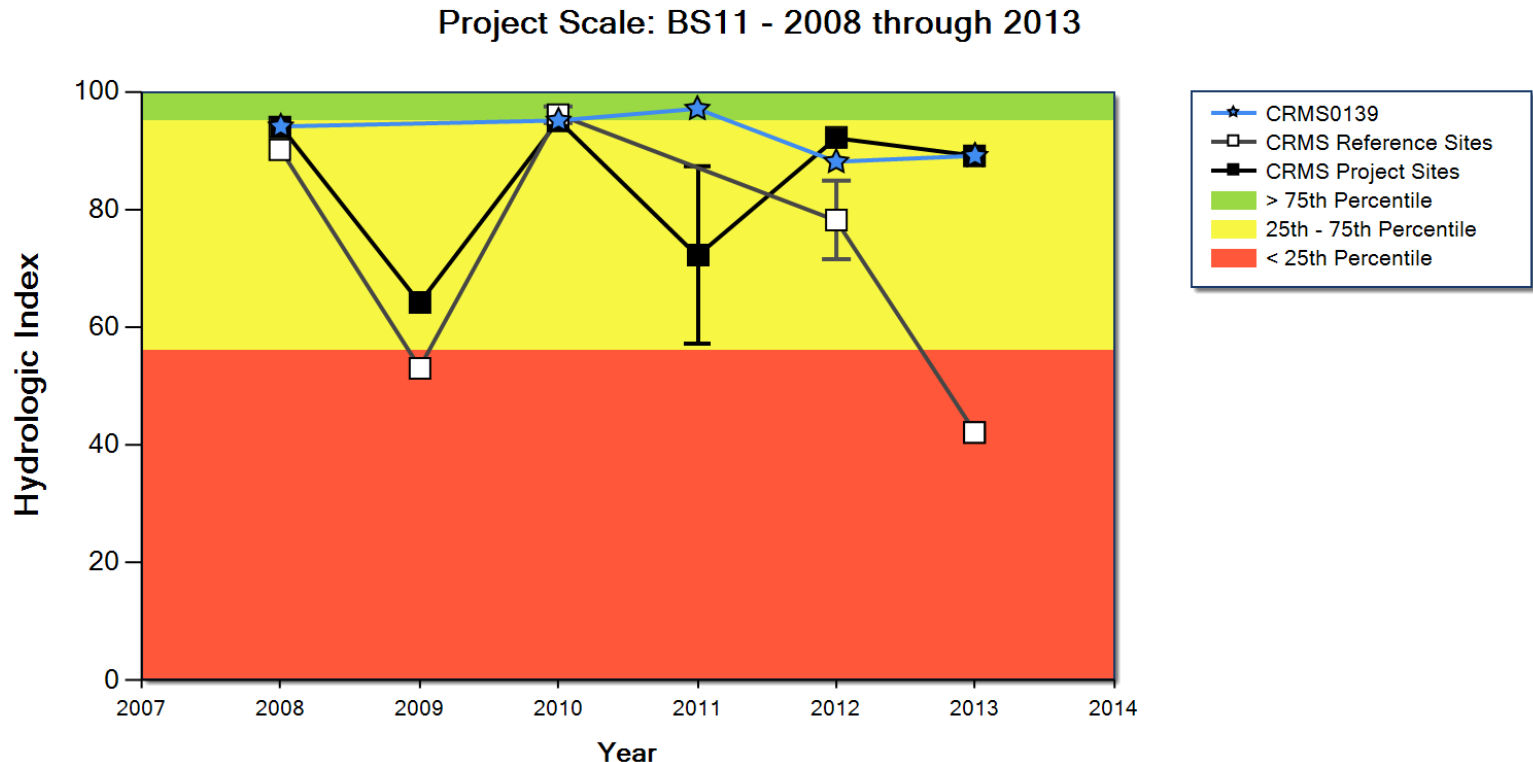


Site HI score relative to similar marsh type, basin, and coastwide scores.

Annual HI scores in relation to the distribution of scores in similar marsh types each year.



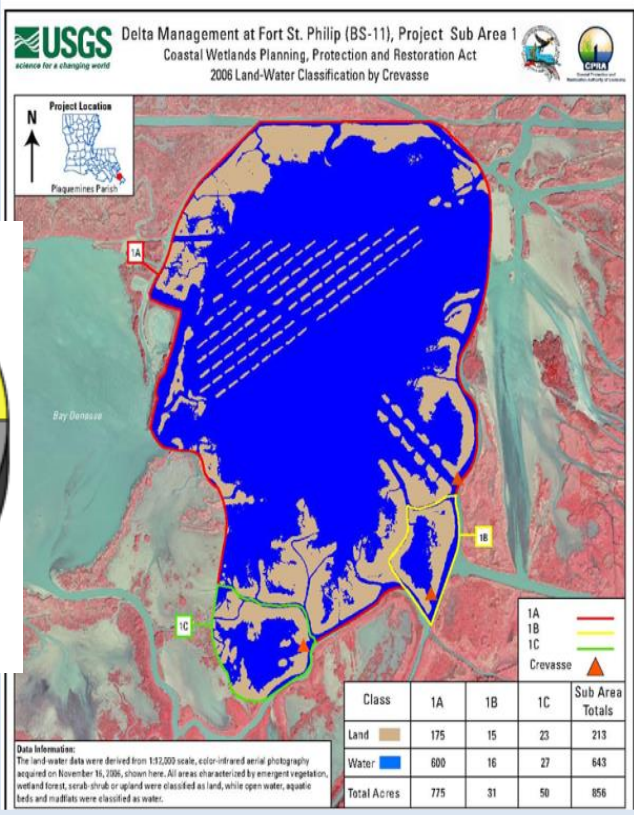
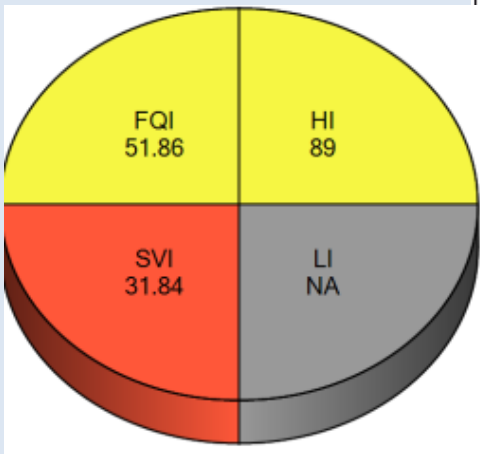
BS-11 Project Assessment



- HI for CRMS site compares against CWPPRA project and reference sites in that marsh type in the Breton Sound Basin

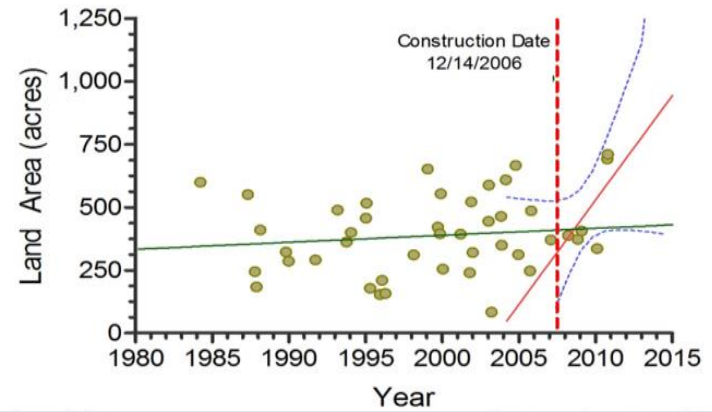


Overall Project Assessment

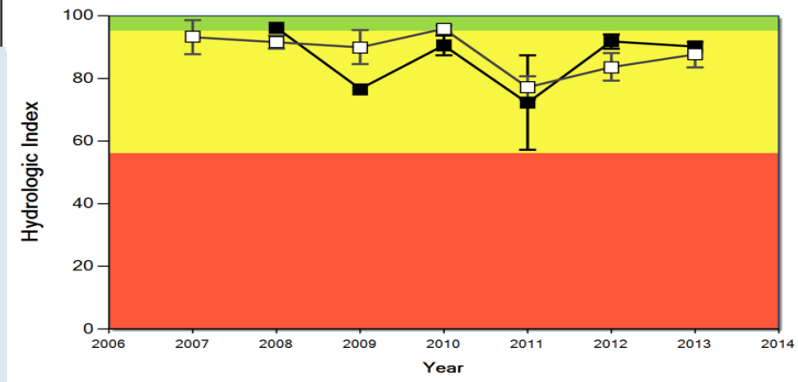


Delta Management at Fort St. Philip (BS-11) Land Area Trends Pre- and Post-Construction

Pre-Construction = 2.78 ± 4.23 acres/year $r^2 = 0.0122$
Post-Construction = 83.0 ± 36.7 acres/year $r^2 = 0.506$



Basin Scale: Breton Sound - 2007 through 2013



Layering CRMS data from different spatial scales helps resource managers evaluate projects



CRMS Implementation Status

Milestones

- OM&M Reports in progress for 2014
 - BA-20 Jonathan Davis Wetland Protection (NRCS)
 - BS-03 A Caernarvon Outfall Management (NRCS) **
 - CS-18 Sabine Refuge Shoreline Protection (USFWS)
 - CS-24 Perry Ridge Shore Protection (NRCS)
 - CS-28 Sabine Refuge Marsh Creation Cycle 3 (COE)
 - LA-08 Bioengineered Oyster Reef Demonstration (NMFS)**
 - PO-17 Bayou Labranche Wetland Creation (COE)
 - ME-04 Freshwater Bayou (NRCS)
 - PO-24 Hopedale Hydrologic Restoration (NMFS) **
 - PO-33 Goose Point/Point Platte Marsh Creation (USFWS)
 - TE-26 Lake Chapeau Sediment Input and Hydrologic Restoration (NMFS)
 - TE-28 Brady Canal Hydrologic Restoration (NRCS)**
 - TV-04 Cote Blanche Hydrologic Restoration (NRCS)
 - TV-09 Boston Canal Shoreline Protection (NRCS)
 - TV-14 Marsh Island Hydrologic Restoration (COE)
- Website training scheduled in Baton Rouge on Wednesday, October 1 in the LaSalle Building
- CRMS presentations at SOC, CEER, RAE, participated in monitoring workshops with GOMA and NAS
- Forested Floristic Quality Index publication in review, report card graphics being developed.



CRMS Implementation Status

Milestones

- Coast-wide Elevation Survey of all 390 CRMS sites April – August 2014. Three contractors were selected to perform the work concurrently by regional office. All sites surveyed to NAVD88 Geoid 12a.
 - East 137 sites, John Chance Land Surveys
 - Central, 114 sites, T. Baker Smith
 - West, 139 sites, C&C Technologies
- CRMS 2012 Coastwide Aerial Photography land/water products are available on the CRMS website
- Present CRMS contract expires July 31, 2015. Preparations for next contract are in progress.



<http://www.lacoast.gov/crms2>

