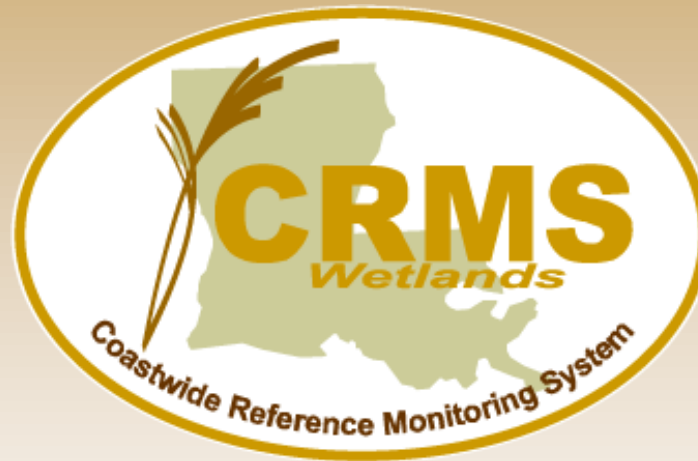




# CRMS Website Training

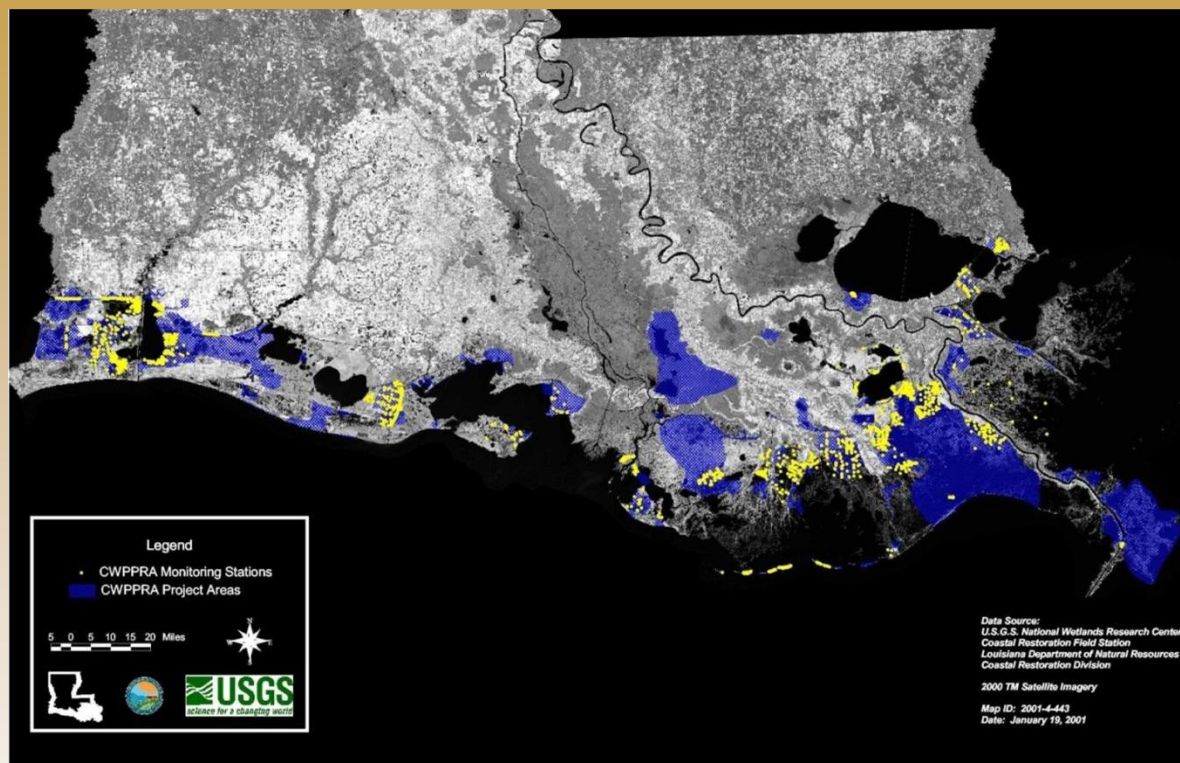


**September 2018**

<https://lacoast.gov/crms>

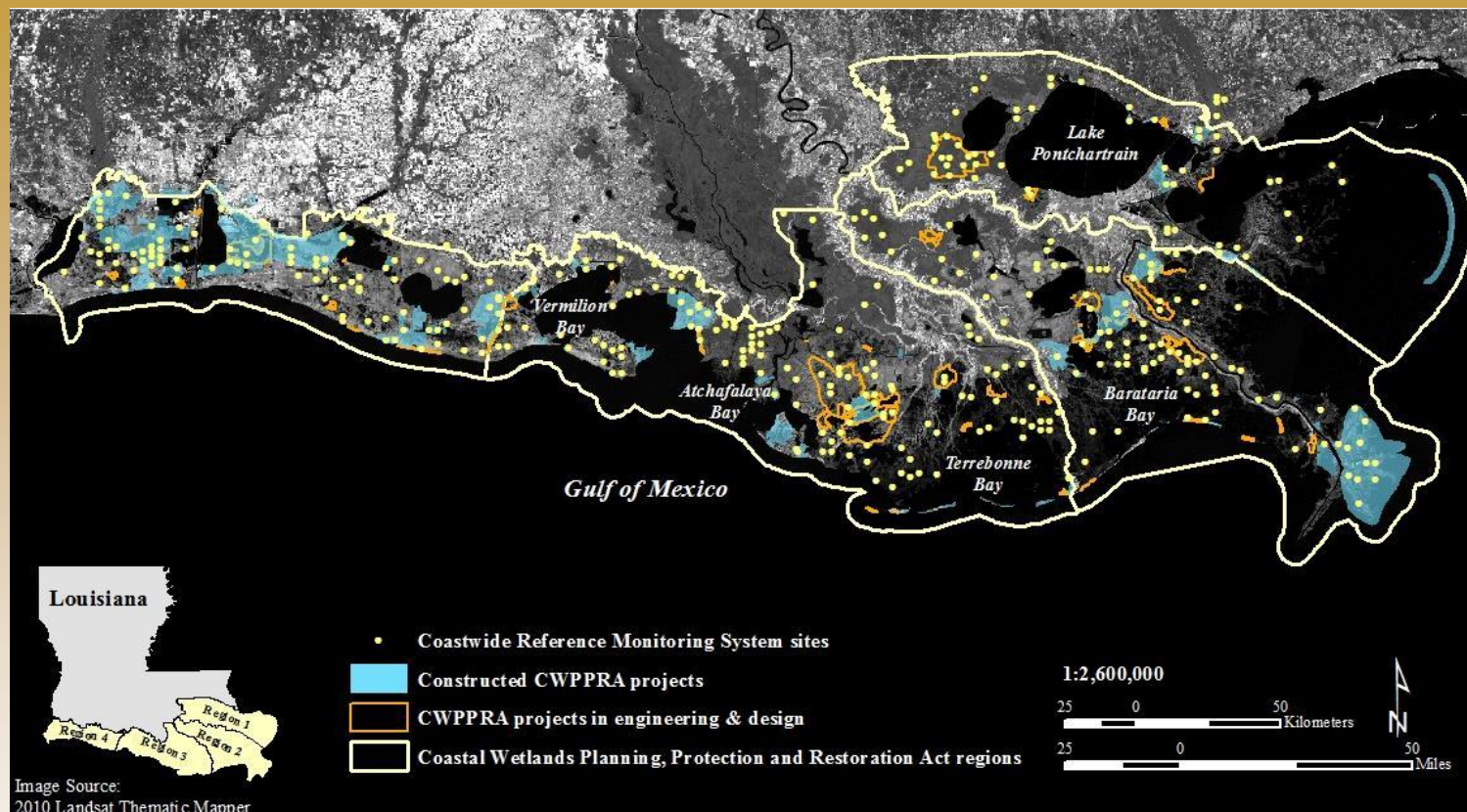
- **Introduction**
  - **Resources on website (<https://lacoast.gov/crms>)**  
Library/Presentations- pdf of this presentation will be posted
  - **CWPPRA/CRMS background**
  - **Charting**
  - **Bulk Charting**
  - **Data Download**
  - **Mapping Viewer**
- 





- CWPPRA was congressionally funded in 1990 and mandated 20 years of restoration project monitoring
- CWPPRA program uses multiple restoration techniques
  - size and types of projects vary
- Initially the program used paired project and reference sites
  - difficult to find “uninfluenced” reference
  - pre-construction vs. post-construction time scales
- Inconsistent monitoring variables and collection frequencies across projects with short data records

**Restoration project types:** diversions of freshwater and sediments, marsh creation, shoreline protection, sediment and nutrient trapping, hydrologic restoration, and vegetation planting



- To improve our ability to determine the effectiveness of individual coastal restoration projects.
- Provide information to evaluate coastal wetlands at the project, basin, and coastwide scales.
- To determine the ecological condition of coastal wetlands to ensure that the strategic coastal planning for Louisiana (Coast 2050, LCA, Louisiana Master Plan) is effective in recreating a sustainable coastal ecosystem.

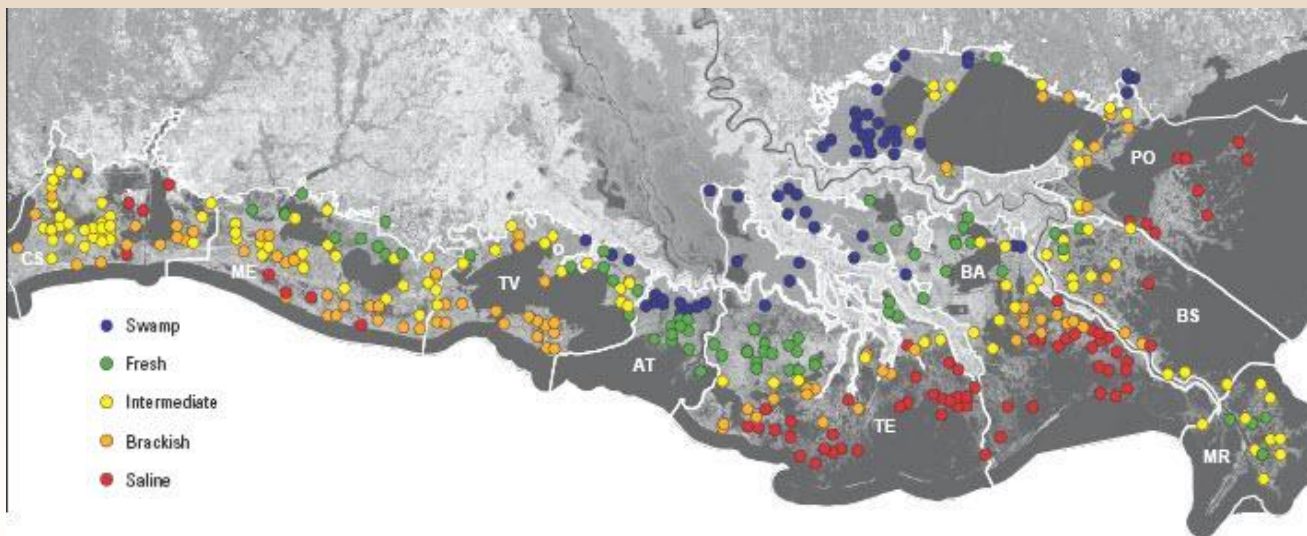
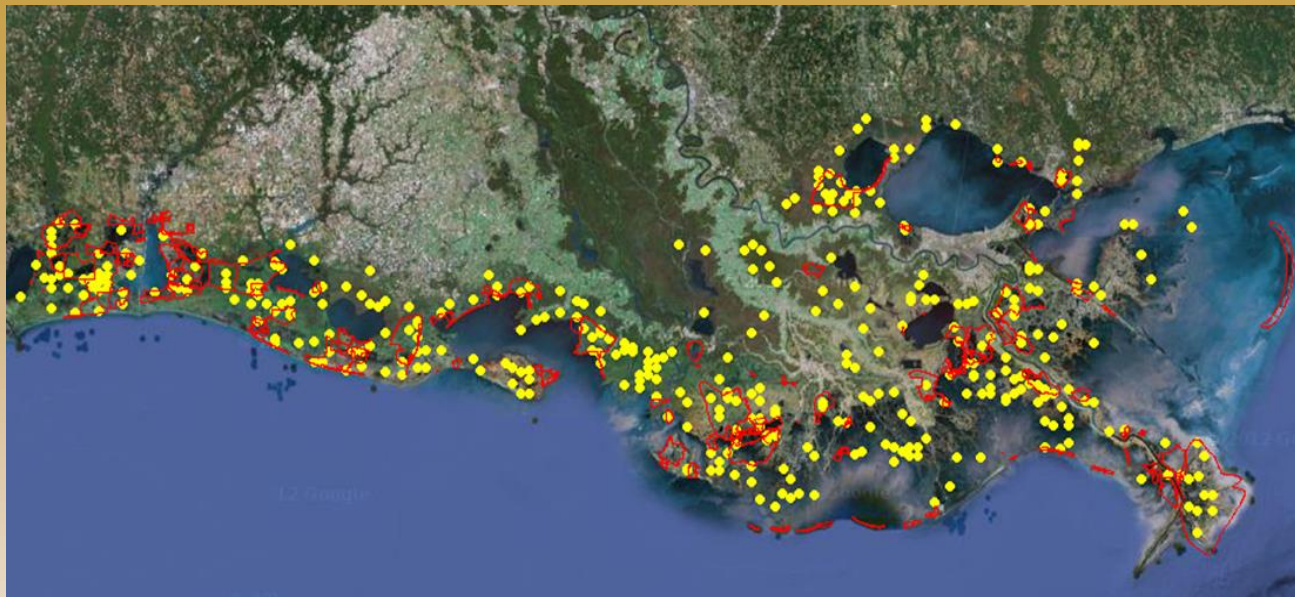


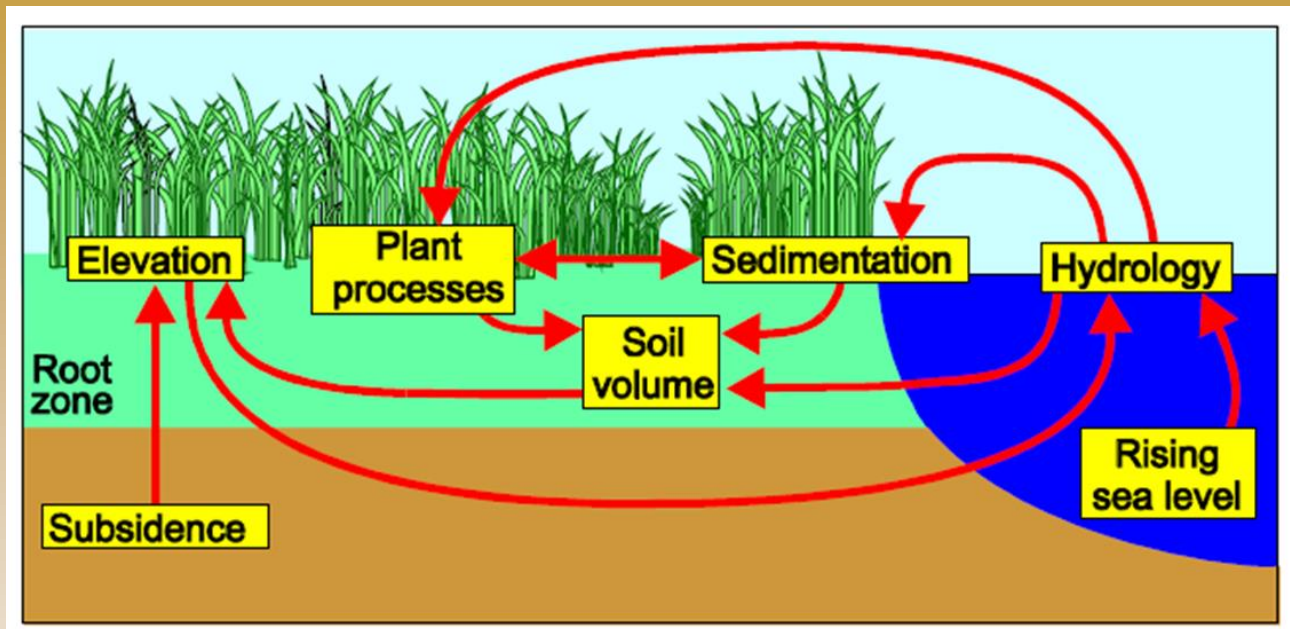


# Coastwide Reference Monitoring System – *Wetlands*

## CRMS Design and Assessment

- Funded by CWPPRA in 2003 & State of LA
- CPRA/USGS Sponsors
- ~ 390 CRMS sites
- Long-term dataset (2006-2039)
- Fully funded through FY20
- Sites inside & outside of CWPPRA projects
- Sites in swamp, fresh, intermediate, brackish, and salt marsh
- Barrier islands monitored through BICM, not CRMS
- Multi-scale assessments through CRMS report cards
- Data used for future scenario modeling





### Questions to address through CRMS:

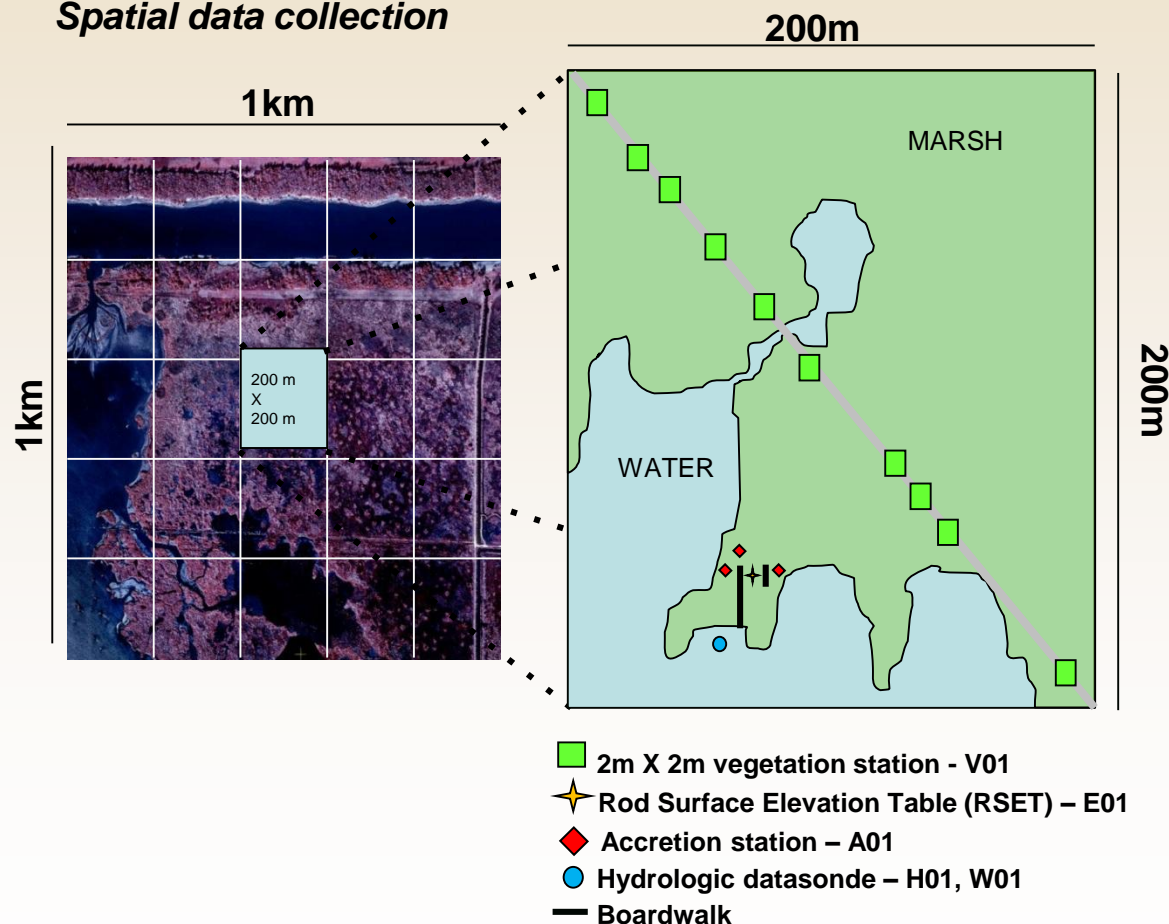
Did the restoration program:

- reduce coastal wetland loss?
- sustain a diversity of vegetation types within basins?

Is the restoration program effective in reducing major stressors on wetlands (e.g., flooding regime, salinity, elevation change)?



## Spatial data collection



Typical Marsh Site



Typical Swamp Site

**CRMS sites contain numerous CRMS stations**

See cheat sheet for details of the standardized naming conventions



# Coastwide Reference Monitoring System – *Wetlands* Station Naming Conventions

## CRMS DATA COLLECTION INFORMATION AND SCHEDULE

CRMS website: <http://lacoast.gov/crms>

Standard operating procedures: CRMS website-Program/Administration/Support Docs/Folse et al. 2014.

Download “raw” data from Coastal Information Management System (CIMS): CRMS website-Data/Tabular/CIMS Data Tool (<http://cims.coastal.louisiana.gov/>)

**Hydrographic:** Station number (H01): Continuous hourly salinity, temperature, and water level data are collected. At most sites the data sonde is in an open water body or bayou.

- Station number (W01): Continuous hourly salinity, temperature, and water level but the data sonde is in a well in the marsh instead of an open water body.
- Station number (M01): Marsh mat stations are established in floating marshes where the marsh mat rises and falls with water level.

CRMS sites with *realtime* hydro gages: CRMS0061, 0282, 0411, 0465, 0568, 0609, 0615, 0651, 2418, 5373 -- <http://waterdata.usgs.gov/la/nwis/current/?type=flow>

**Soil Porewater Salinity:** Station number (P01, P02, P03): Discrete collections near the CRMS boardwalks: 1) intermittently throughout the year during hydro data sonde servicing and 2) twice annually during spring and fall RSET/accretion sampling. Collected at each vegetation station (10 herbaceous vegetation stations per CRMS site) during vegetation sampling in the late summer/early fall.

**Herbaceous Vegetation:** Station number (V01, V02, etc.): Species composition, percent cover, and dominant height once annually (late summer/early fall) at 10 stations per CRMS site. Plots are 2X2m.

**Vertical Accretion** (Station number (A01, A02, etc.)) & **Surface Elevation** (Station number E01 or E02): Collected twice annually (spring and fall) using cryo-coring and rod-surface elevation tables.

### Swamp Forest:

- 1) Overstory Station number (F01, F02, etc.) (at least every 3 years): species composition and diameter at breast height (DBH) for woody shrubs and trees > 5 cm DBH in late summer/early fall. Canopy cover with a densiometer annually during herbaceous vegetation sampling. Plots are 20X20m.
- 2) Understory Station number (F01UNW, UC, USE, etc.) (every 3 years): species composition, height, DBH, stem density of woody shrubs and trees < 5 cm DBH (late summer/ early fall). Plots are 6X6m.
- 3) Swamp Herbaceous Vegetation Station number (F01VNW, VC, VSE, etc.) (annually in the late summer/early fall): same as for herbaceous vegetation as described above but at 9 stations per swamp CRMS site. Plots are 2X2m.

**Soil Properties:** Station number (S01, S02, etc): Collected upon site establishment and every 10 years in marshes and 6 years in swamps.

- pH, salinity, bulk density, soil moisture, percent organic matter, wet/dry volume

# Cheat Sheet:

Provided via email  
(09/12/18) and available  
in the FAQ's on home  
page



## Aerial photo

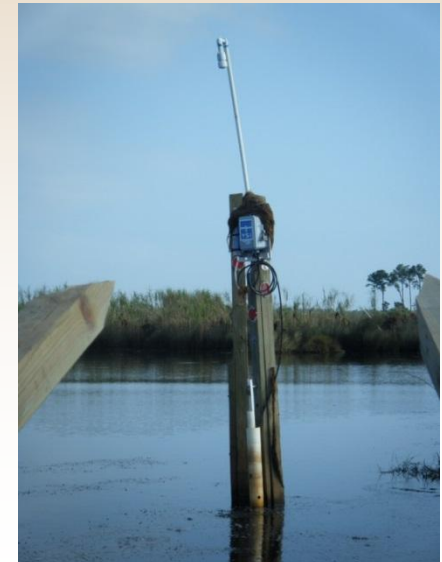
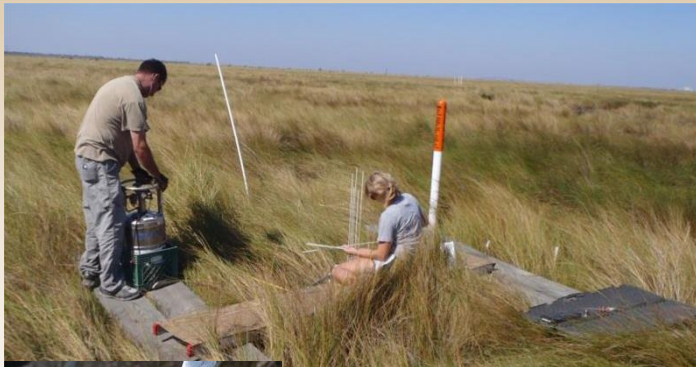
2005

2008

**1km<sup>2</sup> scale:**

High resolution aerial photography based land:water analyses to investigate land change through time.

**200m<sup>2</sup> scale:** Field data collection using standardized data collection protocols and consistent sampling intervals







# Coastwide Reference Monitoring System – *Wetlands*

## Site Layout







# Coastwide Reference Monitoring System – Wetlands Site Layout



## HYDROGRAPHIC STATIONS

M01 | Vertical movement of marsh mats

H01 | Hourly Underwater Sonde

**H01** - Installed in open water, this sonde captures hourly salinity, water surface elevation, and water temperature data.

**M01 Floating System:** This monitoring system is deployed in thick marsh mats that can support instrument weight. The data sonde is suspended in the fluid ooze layer and records vertical mat movement, salinity, and water temperature.

**M01 Static System:** An anchored pulley system is used to record vertical mat movement in thin marsh mats that cannot support the weight of the monitoring equipment.

## SOIL POREWATER STATION

P01, P02 | Soil Porewater Salinity

**P01, P02** - Water samples are extracted from 10 cm and 30 cm depths using a syringe. The salinity of the collected water is used to assess the salt exposure experienced within the root zone of the marsh.

## SURFACE ELEVATION CHANGE STATION

E01 | Surface Elevation Changes

**E01** - This station uses a Rod Surface Elevation Table (RSET) instrument to measure surface elevation changes relative to a steel rod that is set deep (~100 ft) into the marsh subsurface. An RSET table connects to the rod using a permanently attached collar and measurements are taken by lowering 9 fiberglass pins to the marsh surface. Data is collected over time to measure changes in surface elevation.

## VERTICAL ACCRETION STATION

A01 | Soil Accretion

**A01** - Soil accretion, or land building, data is collected by measuring soil that accumulates above a feldspar marker horizon that has been previously placed on the marsh surface. A specialized cryogenic coring device is used to ensure accurate readings of the feldspar location within the core.



# Coastwide Reference Monitoring System – *Wetlands* Site Data Collection

Data Type	Parameter	Method	Scale	Frequency
<b>Land change</b>	Land:Water Ratio	Satellite Imagery	Hydrologic Basin	3 years
	Land:Water Ratio	Digital Aerial Photography	CRMS Site (1 km <sup>2</sup> )	3 years
<b>Vegetation</b>	Emergent Vegetation	Braun Blanquet: % Cover, Species Richness, Height of Dominant Species	(10) 2m x 2m plots per marsh site or (9) plots per swamp sites	Annually during peak biomass
	Forested Vegetation	DBH, Canopy Cover, Understory veg	(3) 20m x 20m Forested plots & (9) 6m X6m Understory plots per site	3 yrs during peak biomass
<b>Soils</b>	Soil Characteristics	Core samples profiled into 4 cm increments to 24 cm. Bulk Density, OM%, Soil Salinity, pH, and Moisture.	3 cores, 18 archived samples per site	6 to 10 years
	Vertical Accretion	Feldspar Plots/Cryogenic Cores	3 plots per site	Twice per year
	Marsh Elevation Change	Rod Surface Elevation Table (RSET)	4 directions per site	Twice per year
<b>Hydrology</b>	Soil Porewater	10 and 30 cm syringe sippers	3 samples per depth per site and at vegetation plots	Variable and annually
	Surface Water Salinity, Temp and Water Level	Submersible Data Logger	in available water within 200m of CRMS site or in a well	Hourly





### A STANDARD OPERATING PROCEDURES MANUAL FOR THE COAST-WIDE REFERENCE MONITORING SYSTEM-*WETLANDS*:

Methods for Site Establishment, Data Collection, and Quality  
Assurance/Quality Control

Todd M. Folse, Jonathan L. West, Melissa K. Hymel, John P. Troutman,  
Leigh A. Sharp, Dona Weifenbach, Tommy E. McGinnis, Laurie B.  
Rodrigue, William M. Boshart, Danielle, C. Richardi, C. Mike Miller, and  
W. Bernard Wood

The Louisiana Coastal Protection and Restoration Authority

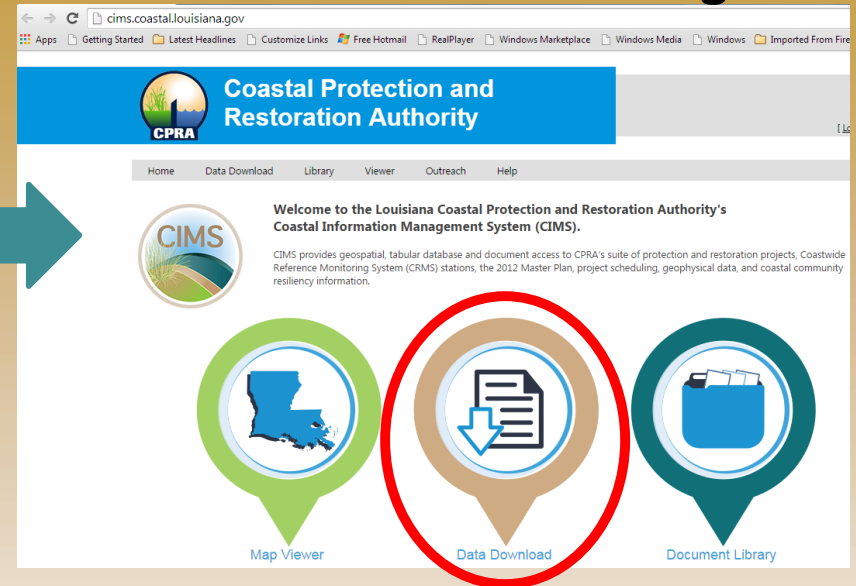
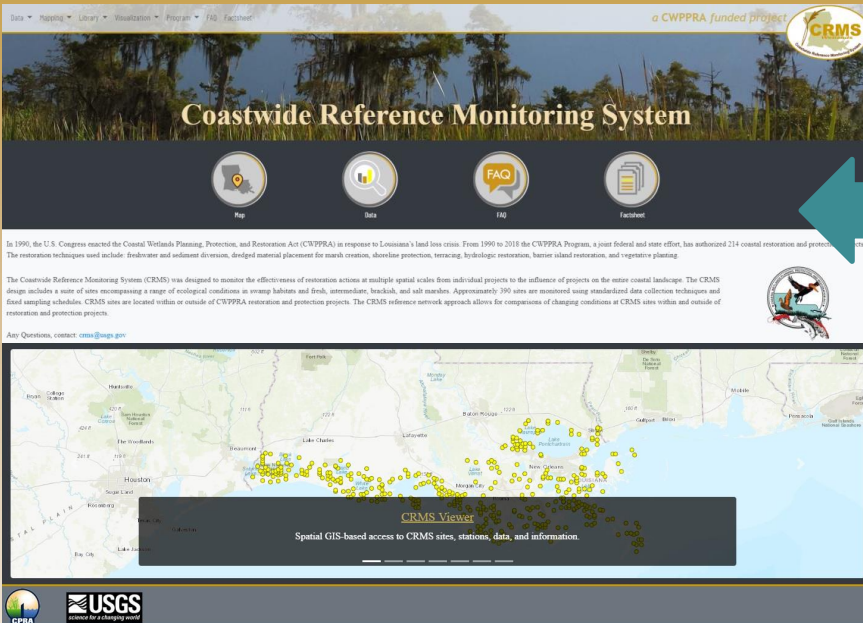
- **QA/QC procedure for each data type**
- **Field procedures**
- **Data entry**
- **Initial data review**
- **Automated review during submission into database buffer**
- **CPRA regional office review**
- **Final approval and acceptance into CIMS database-- data lag varies by data type**



# Coastwide Reference Monitoring System – *Wetlands* Database

**lacoast.gov/crms**

**cims.coastal.louisiana.gov**



## CRMS Data Records:

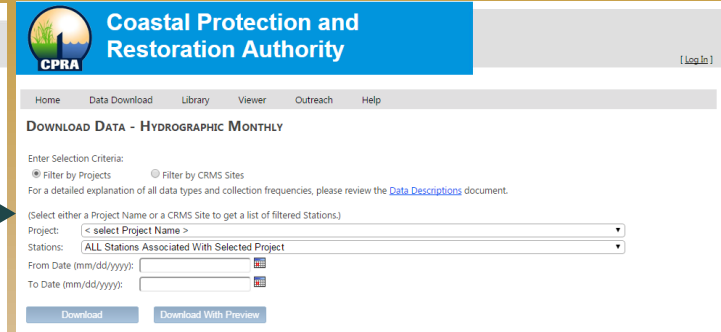
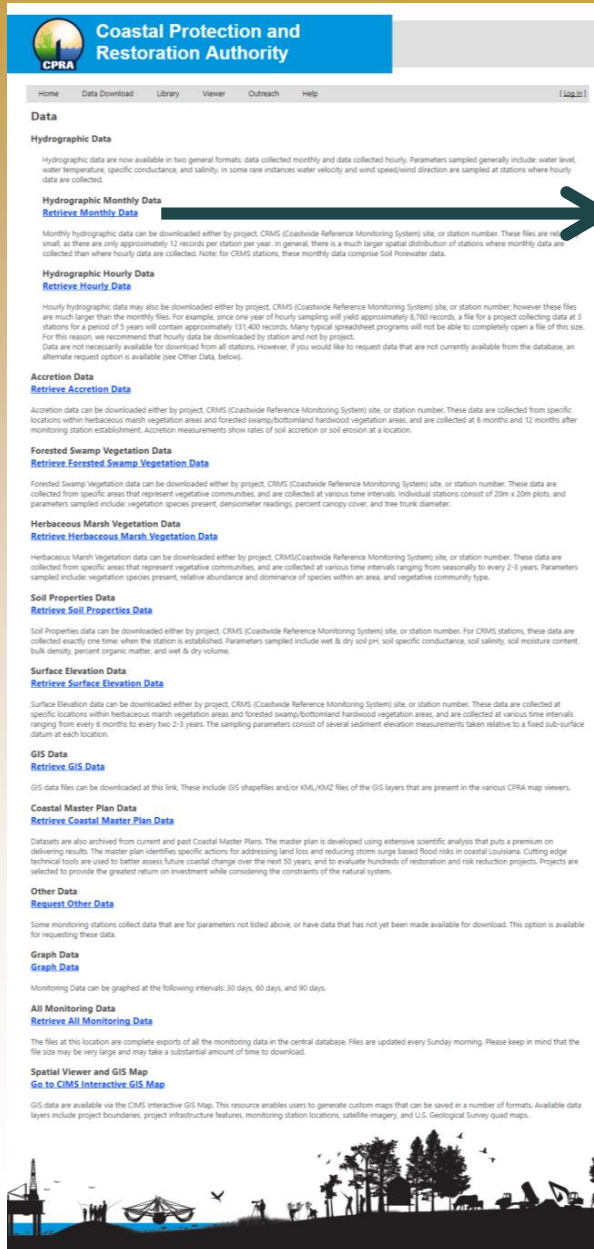
Continuous Hydro – 64 million  
Marsh Veg - 390K  
Discrete Hydro - 308K  
Surface Elevation - 256K  
Accretion - 55K  
Forested Veg - 53K  
Soils – 8K





# Coastwide Reference Monitoring System – Wetlands

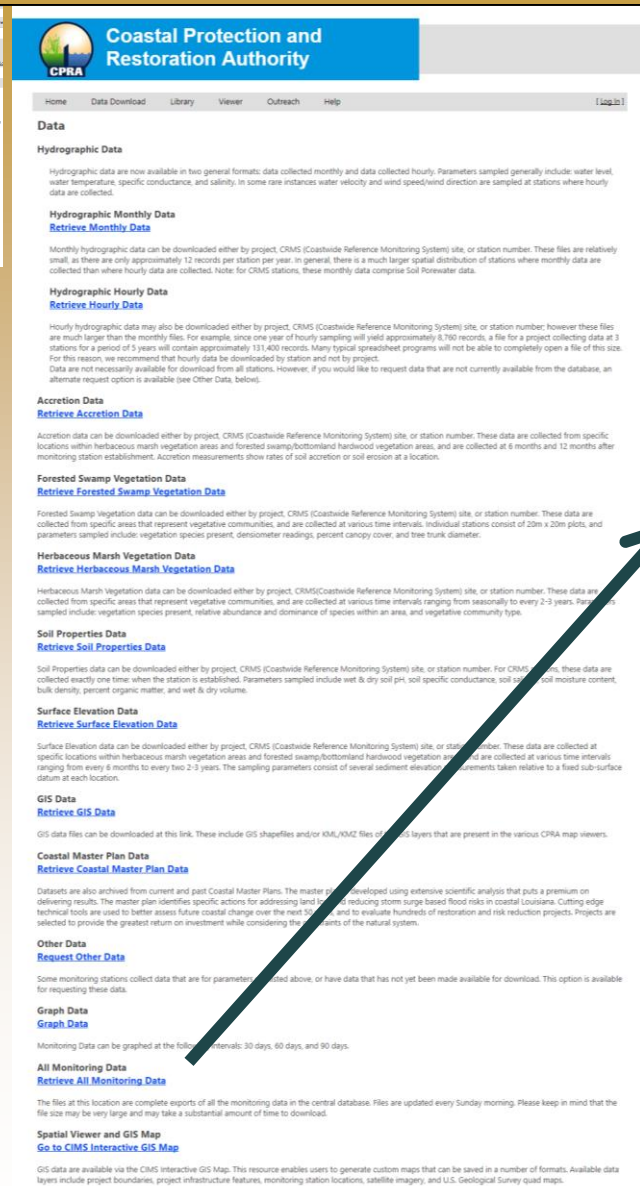
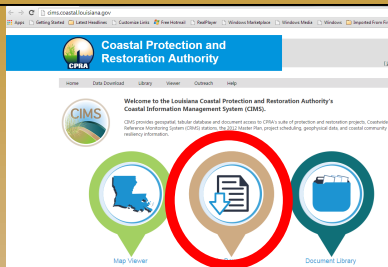
## CIMS Database Filter to CRMS Data





# Coastwide Reference Monitoring System – Wetlands

## CIMS Database Full Table Exports



## All Monitoring Data

### [Retrieve All Monitoring Data](#)

### CIMS FULL TABLE EXPORTS

This page contains links to weekly exports of data from CIMS. Please keep in mind that many of these files are very large and download. Also, some of the files may be too large to open in spreadsheet programs such as Microsoft Excel. If you are looking for data added during the current week, please use one of the custom download screens in the "Data Download" section.

### FULL TABLE EXPORTS - ALL AVAILABLE DATA

These files are complete exports of all monitoring data in the CIMS database for each available data type. Data are in CSV (comma-separated values) format and compressed into a ZIP file. Files are updated every Sunday morning.

Data File	File Size (compressed)	Date of export
<a href="#">Continuous Hydrographic (Hourly)</a>	978,415 KB	11/05/17 01:22 AM
<a href="#">Discrete Hydrographic (Monthly)</a>	3,337 KB	11/05/17 01:27 AM
<a href="#">Marsh Vegetation</a>	5,295 KB	11/05/17 01:43 AM
<a href="#">Forest Vegetation</a>	545 KB	11/05/17 01:43 AM
<a href="#">Surface Elevation</a>	2,341 KB	11/05/17 01:44 AM
<a href="#">Soil Properties</a>	200 KB	11/05/17 01:44 AM
<a href="#">Accretion</a>	1,092 KB	11/05/17 01:45 AM

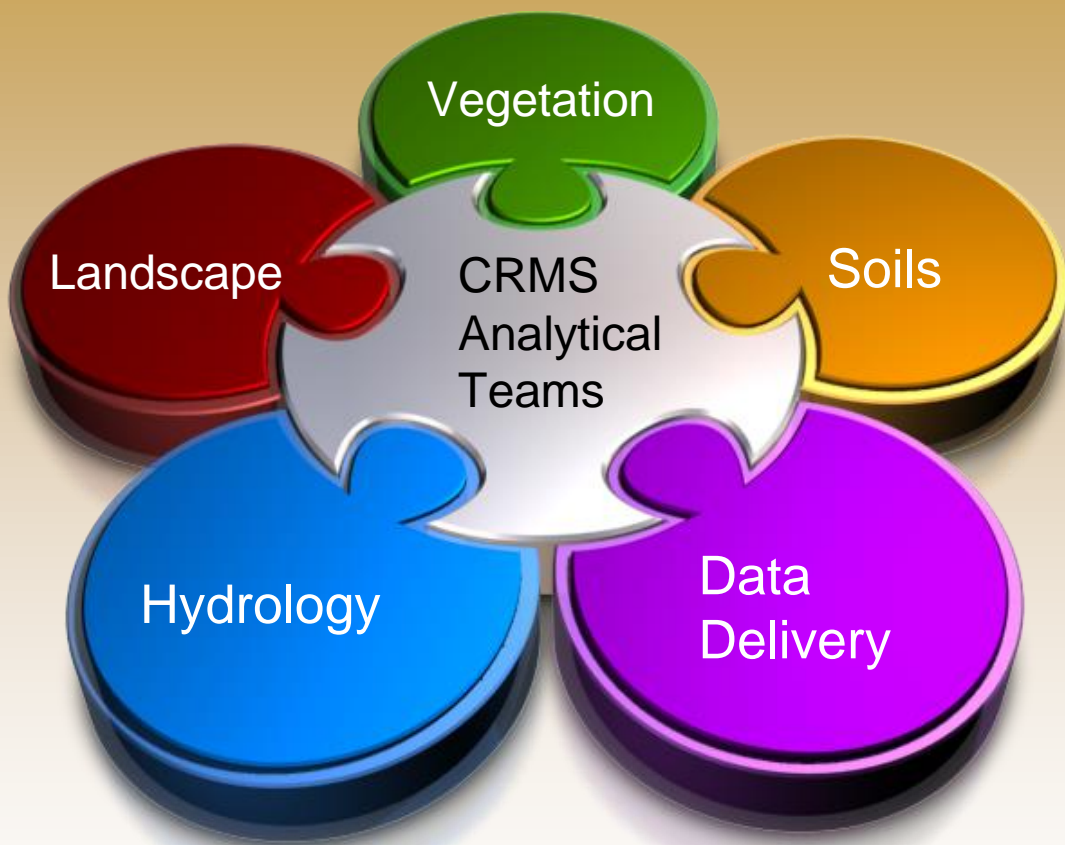
### FULL TABLE EXPORTS - CRMS DATA ONLY

These files are complete exports of all monitoring data in the CIMS database that are taken at Coastwide Reference Monitoring Stations (CRMS). Data are in CSV (comma-separated values) format and compressed into a ZIP file. Files are updated every Sunday morning.

Data File	File Size (compressed)	Date of export
<a href="#">Continuous Hydrographic (Hourly)</a>	672,063 KB	11/05/17 01:44 AM
<a href="#">Discrete Hydrographic (Monthly)</a>	2,447 KB	11/05/17 01:49 AM
<a href="#">Marsh Vegetation</a>	4,451 KB	11/05/17 01:50 AM
<a href="#">Forest Vegetation</a>	541 KB	11/05/17 01:50 AM
<a href="#">Surface Elevation</a>	2,268 KB	11/05/17 01:50 AM
<a href="#">Soil Properties</a>	184 KB	11/05/17 01:50 AM
<a href="#">Accretion</a>	1,044 KB	11/05/17 01:57 AM





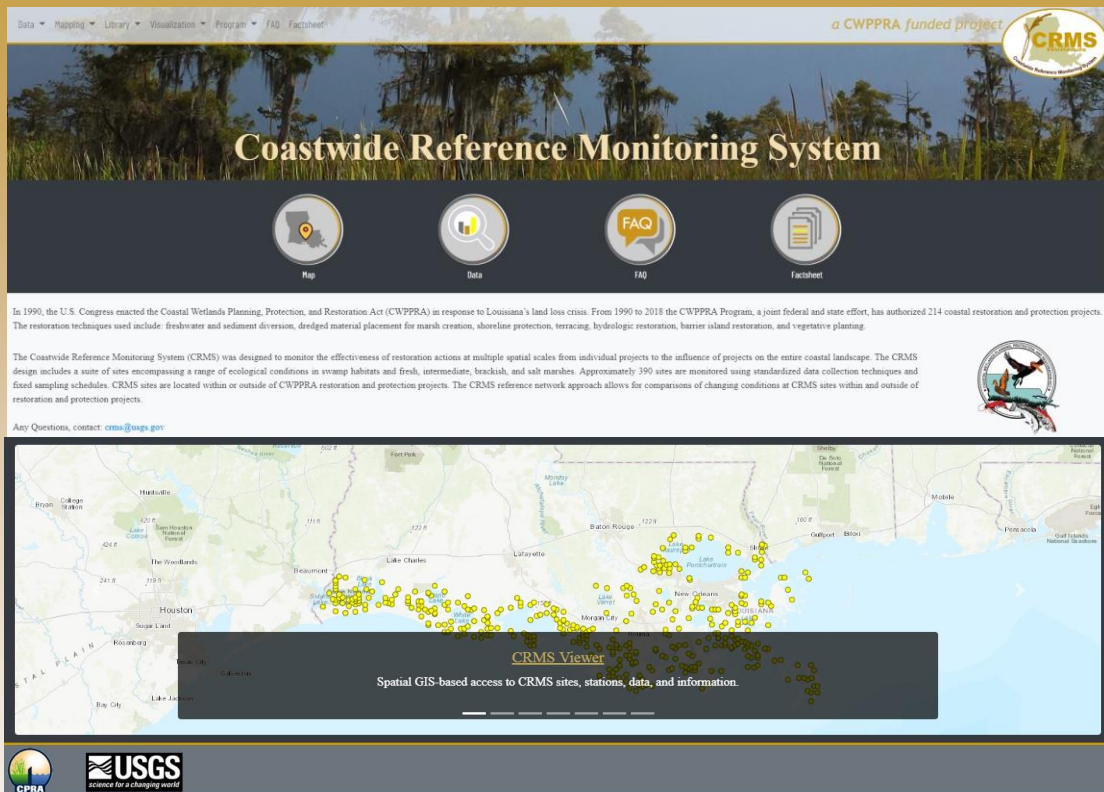


- Federal and State Scientists
- Academics
- WARC's Advanced Applications Team
- Oversight by CWPPRA Monitoring Work Group



# Coastwide Reference Monitoring System – *Wetlands* Analytical Teams

- Web mapping viewer
- Summarize and visualize data at multiple scales
- On-the-fly user defined graphics and tools
- Simple queries and data downloads
- Develop multi-metric ecological indices
- Develop report card
- Continually evolving







# Coastwide Reference Monitoring System - *Wetlands*

## Overview of Report Card Indices

### Vegetation:

- **Floristic Quality Index (FQI)**  
used to determine wetland quality based on plant species composition.
- **Forested Floristic Quality Index (FFQI)**  
used to determine forested wetland quality based on tree and herbaceous species composition.
- **Vegetation Volume Index (VVI)**  
quantifies the 3D vegetative structure irrespective of species.

### Hydrology:

- **Hydrologic Index (HI)**  
assesses the suitability of average salinity and percent time flooded in maximizing vegetation primary productivity.

### Soils:

- **Submergence Vulnerability Index (SVI)**  
assesses the vulnerability of a site to submergence based on it's elevation relative to ESLR.



Coastwide Reference Monitoring System (CRMS)

Site Level Report Card

Site: CRMS0672  
Year: 2014



3/17/2015

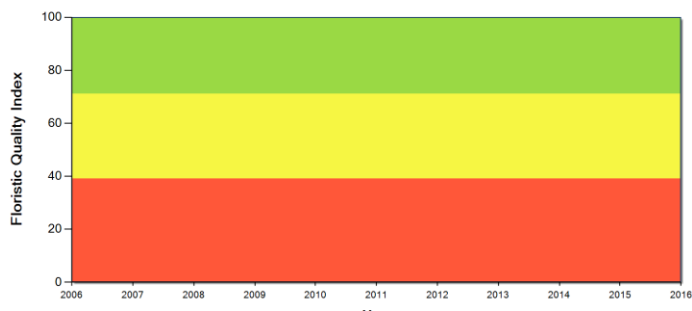


# Coastwide Reference Monitoring System - *Wetlands*

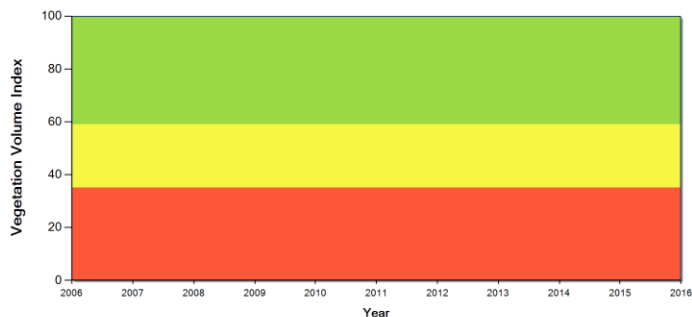
## Overview of Report Card Indices

- **Developed using CRMS dataset**
- **Good (>75%), fair (25-50%), poor (<25%)**
- **Category thresholds vary by index**
- **SVI is a continuous scale without discrete thresholds**

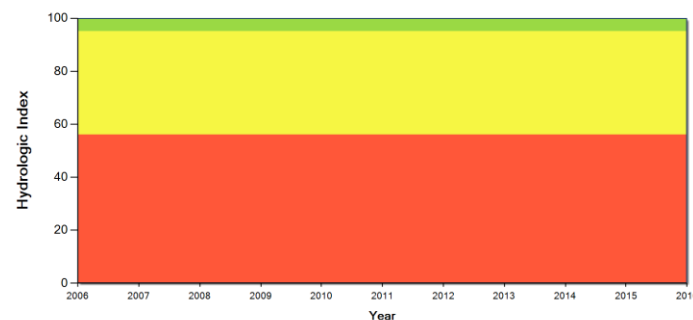
**FQI**



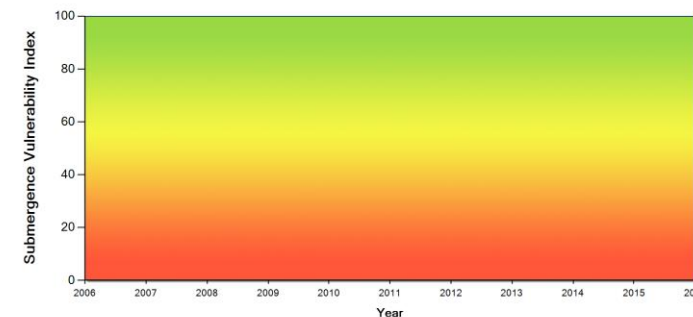
**WVI**



**HI**



**SVI**







# Coastwide Reference Monitoring System – Wetlands Website Navigation

<https://lacoast.gov/crms>



- Recent website redesign
- Main menu with a series of submenus
- Largely self explanatory
  - Program/Admin- Support Docs (framework, SOP, etc),
  - Program/Admin- Publications, 100+
  - Program/Contacts- **EMAIL CRMS** and USGS/CPRA CRMS Leads
- Best functionality in Google Chrome
- OPM dictated website security changes may result in slower functionality
- This presentation focuses on most used features



# Coastwide Reference Monitoring System – Wetlands Website Navigation

Data ▾ Mapping ▾ Library ▾ Visualization ▾ Program ▾ FAQ Factsheet

a CWPRA funded project



## Coastwide Reference Monitoring System



Map



Data

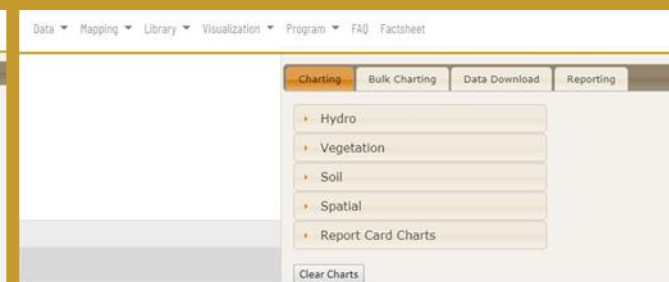
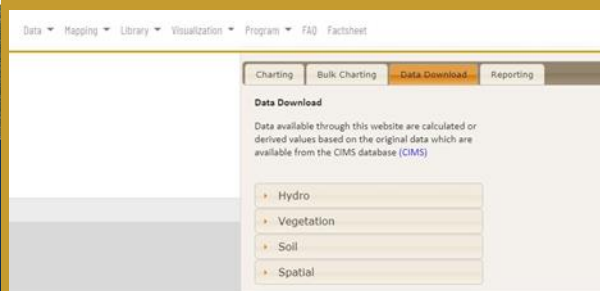
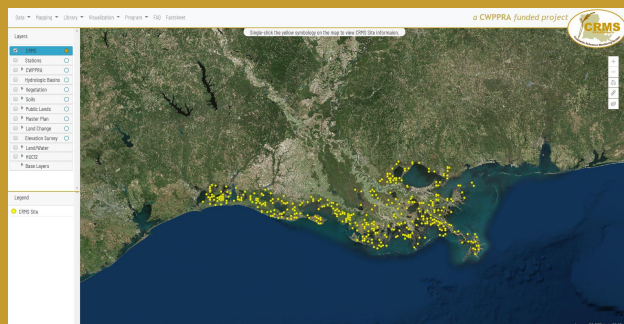


FAQ



Factsheet

**Data/Reporting → Charting**





# Coastwide Reference Monitoring System – Wetlands Website Navigation

Data ▾ Mapping ▾ Library ▾ Visualization ▾ Program ▾ FAQ Factsheet

a CWPRA funded project



## Coastwide Reference Monitoring System



Map



Data

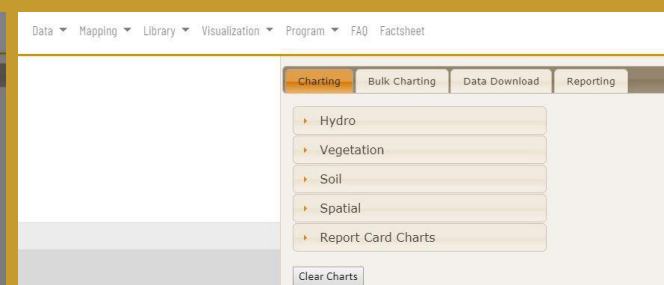
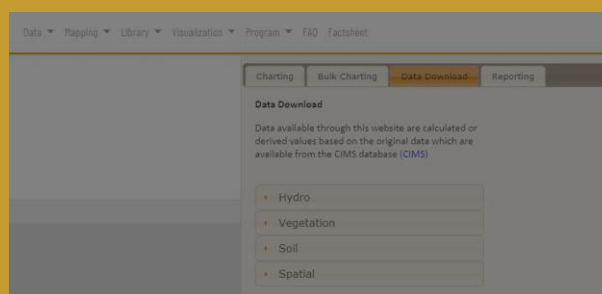
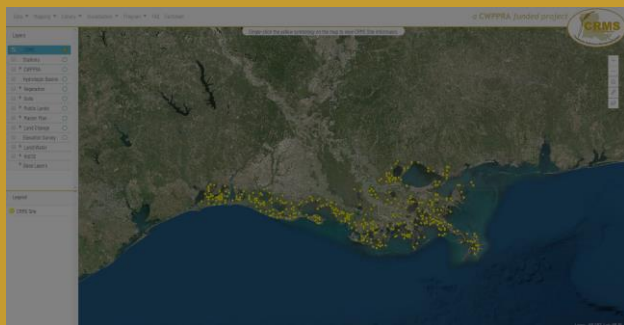


FAQ



Factsheet

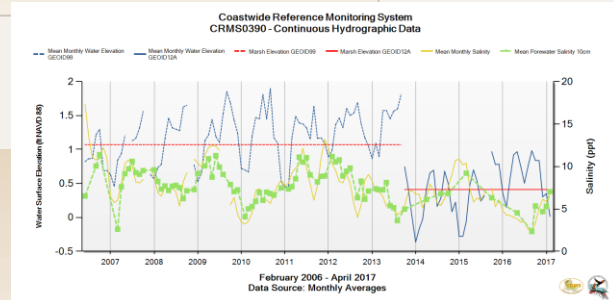
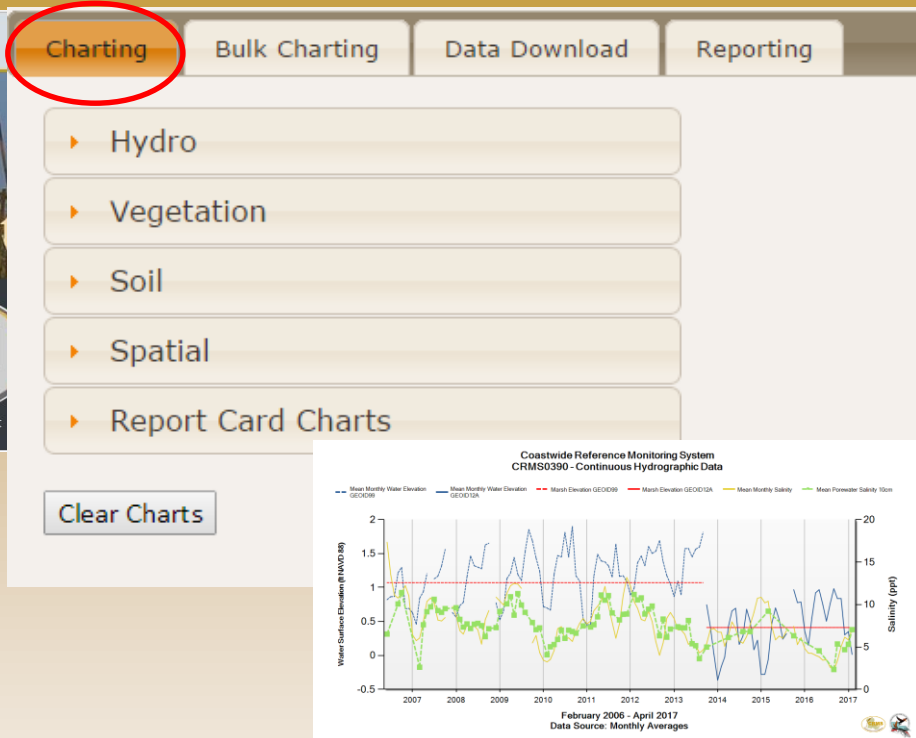
Data/Reporting → Charting





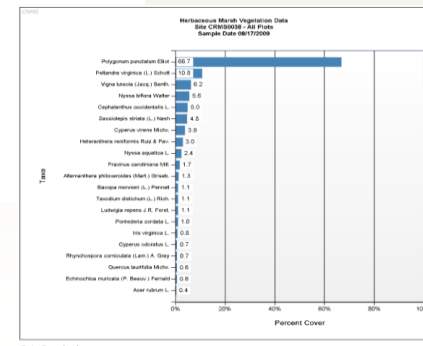
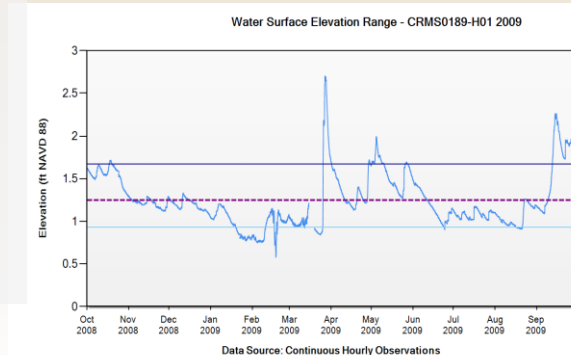


# Coastwide Reference Monitoring System – Wetlands Using the Charting Interface

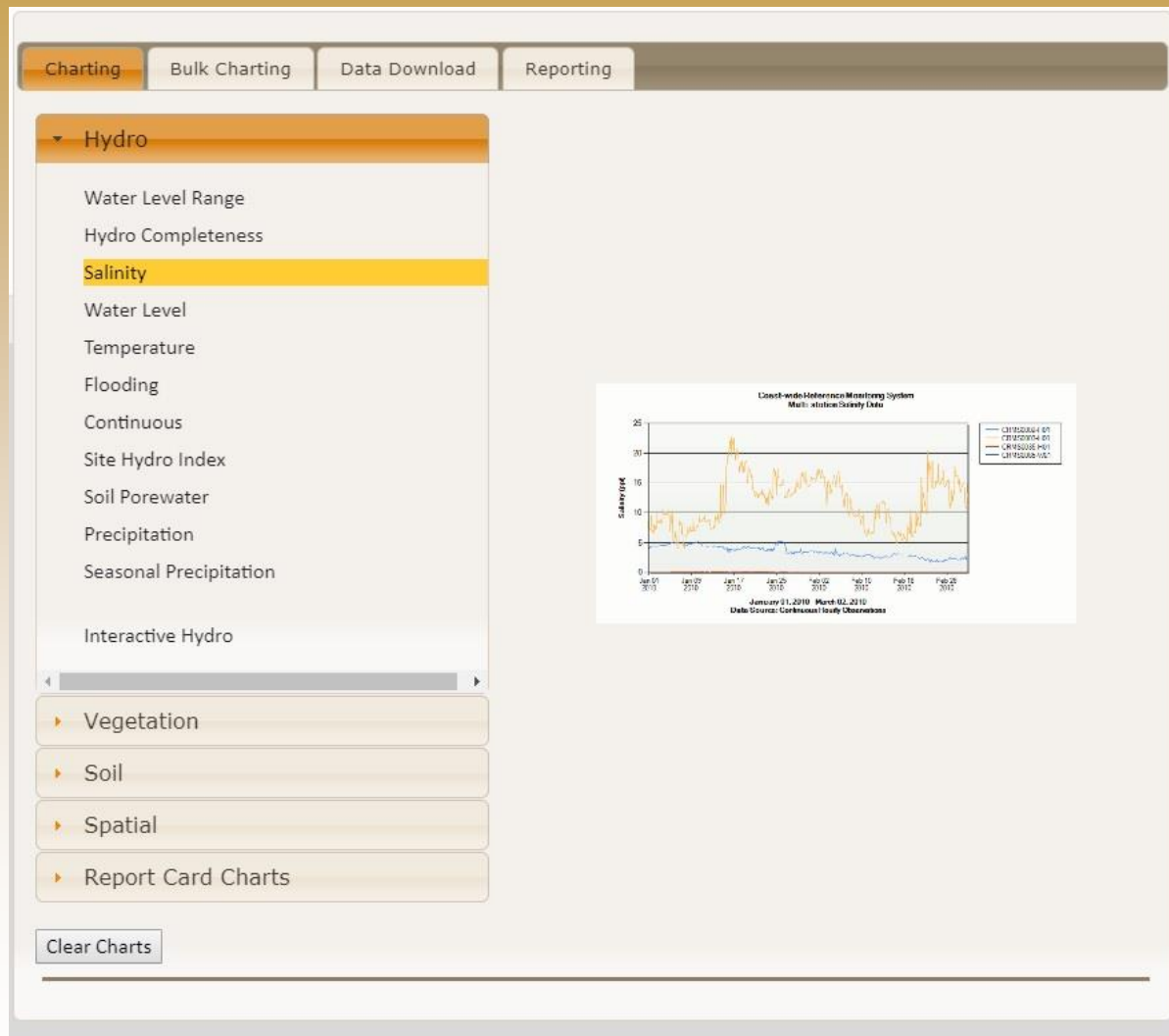


## Charts...Lots of Charts

- Surface Elevation/Accretion
- % Organic / Bulk Density
- Vegetation
- Forested
- Porewater
- Hydrographic (Salinity, Temp, Water Level)
- Precipitation
- Report Card



1. Pick a Data Category  
Hydro
2. Pick a Parameter  
Salinity





# Coastwide Reference Monitoring System – *Wetlands* Using the Charting Interface

1. Pick a Data Category  
Hydro
2. Pick a Parameter  
Salinity
3. Pick a Scale  
Station
4. Enter Start / End Dates  
1/1/2001  
12/31/2011  
Apply Date Filter

The screenshot shows the "Charting" tab selected in the top navigation bar. Below the tabs, there are four main sections: "Hydro", "Vegetation", "Soil", and "Spatial". The "Hydro" section is expanded, showing a list of parameters: "Water Level Range", "Hydro Completeness", "Salinity" (highlighted), "Water Level", "Temperature", "Flooding", "Continuous", "Site Hydro Index", "Soil Porewater", "Precipitation", "Seasonal Precipitation", and "Interactive Hydro". To the right of the parameter list, there are date range selection fields: "Water Year is October 1 - September 30", "Scale: Station", "Date Range: 1/1/1992 - 4/5/2017", "Min Date: 01/01/2001", and "Max Date: 12/31/2011". Below these fields is a calendar widget showing the month of December 2011. The calendar has a header with days of the week (Su, Mo, Tu, We, Th, Fr, Sa) and a grid of dates. The date 31 is highlighted. At the bottom of the interface, there is a "Clear Charts" button.

Charting Bulk Charting Data Download Reporting

Water Year is October 1 - September 30

Scale: Station

Date Range: 1/1/1992 - 4/5/2017

Min Date: 01/01/2001

Max Date: 12/31/2011

Apply Date

Dec 2011

Su	Mo	Tu	We	Th	Fr	Sa
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

Clear Charts





# Coastwide Reference Monitoring System – *Wetlands* Using the Charting Interface

1. Pick a Data Category  
Hydro
2. Pick a Parameter  
Salinity
3. Pick a Scale  
Station
4. Enter Start / End Dates  
1/1/2001  
12/31/2011  
Apply Date Filter
5. Select Station  
Submit Request

A screenshot of the CRMS Charting Interface. The interface has a top navigation bar with tabs: "Charting" (selected), "Bulk Charting", "Data Download", and "Reporting". Below the tabs, there's a section for "Hydro" data. Under "Hydro", there's a list of parameters: "Water Level Range", "Hydro Completeness", "Salinity" (highlighted), "Water Level", "Temperature", "Flooding", "Continuous", "Site Hydro Index", "Soil Porewater", "Precipitation", and "Seasonal Precipitation". Below this list are four buttons: "Vegetation", "Soil", "Spatial", and "Report Card Charts". A "Clear Charts" button is also present. To the right of the parameter list, there's a "Water Year is October 1 - September 30" label. Below this, there's a "Scale:" dropdown menu set to "Station". There's a "Date Range:" section with "1/1/1992 - 4/5/2017" displayed. Below this, there are input fields for "Min Date:" (01/01/2001) and "Max Date:" (12/31/2011). An "Apply Date Filter" button with an information icon is next to these fields. Below the date filter, there are two checkboxes: "Mean annual salinity" and "Mean growing season salinity". A "Selection" section contains a list of station IDs: CRMS0151-H01, CRMS0153-H01, CRMS0154-H01, CRMS0156-H01 (highlighted), CRMS0157-H01, CRMS0159-H01, CRMS0161-H01, CRMS0162-H01, CRMS0163-H01, CRMS0164-H01, CRMS0171-H01, CRMS0172-H01, and CRMS0173-H01. At the bottom right, there's a checkbox for "Include major weather\storm events" and a link "Show Map Selector". A "Submit Request" button is at the bottom right.

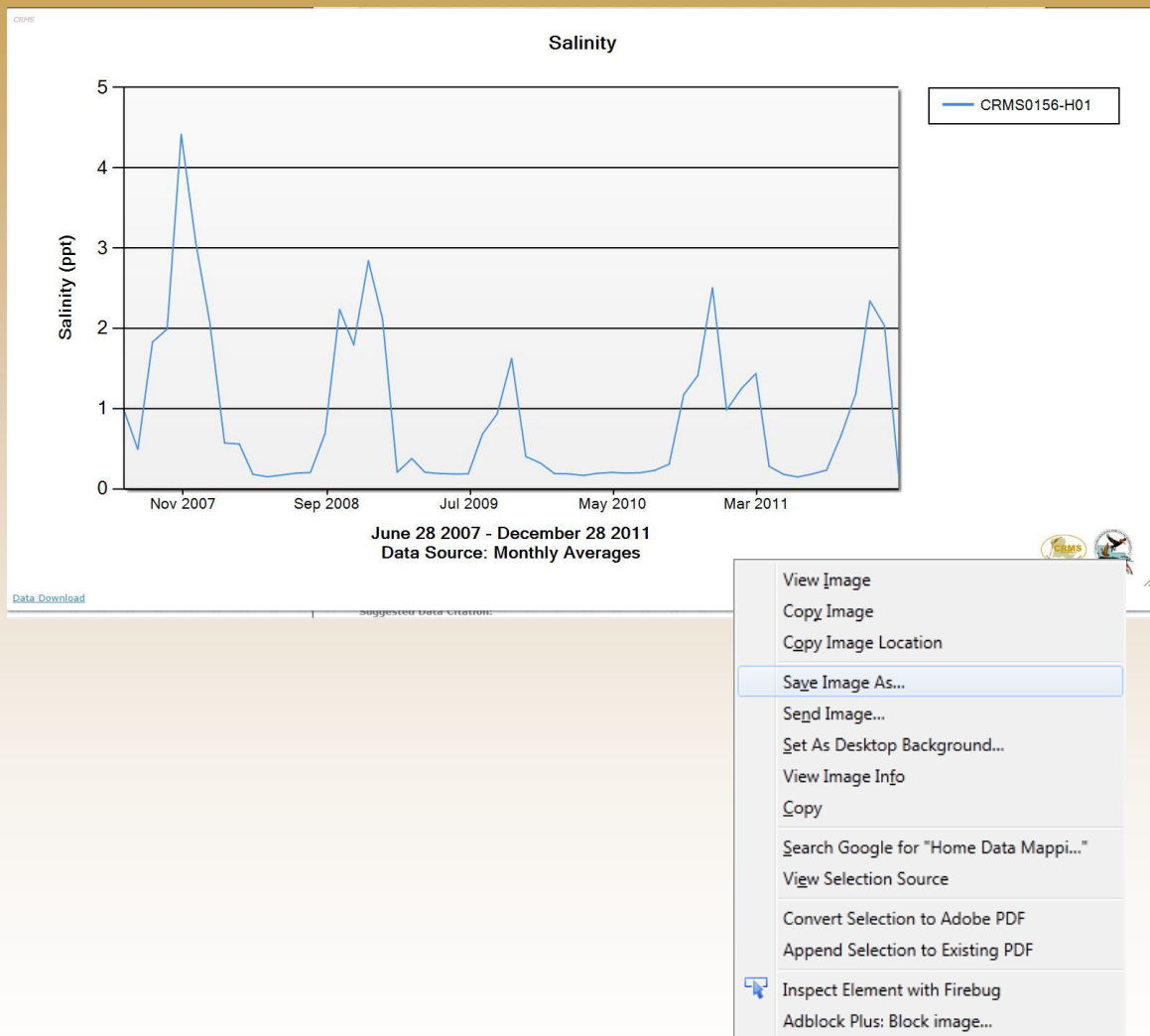


# Coastwide Reference Monitoring System – *Wetlands* Using the Charting Interface

1. Pick a Data Category  
Hydro
2. Pick a Parameter  
Salinity
3. Pick a Scale  
Station
4. Enter Start / End Dates  
1/1/2001  
12/31/2011  
Apply Date Filter
5. Select Station  
Submit Request

The screenshot shows the CRMS Charting Interface. At the top, there are four tabs: "Charting", "Bulk Charting", "Data Download", and "Reporting". The "Charting" tab is selected. Below the tabs, there is a "Hydro" section with a dropdown menu showing "Salinity" selected. Other options include "Water Level Range", "Hydro Completeness", "Water Level", "Temperature", "Flooding", "Continuous", "Site Hydro Index", "Soil Porewater", "Precipitation", and "Seasonal Precipitation". Below this, there are buttons for "Vegetation", "Soil", "Spatial", and "Report Card Charts". A "Clear Charts" button is also present. To the right, there is a "Water Year is October 1 - September 30" section. It includes a "Scale" dropdown set to "Station", a "Date Range" section with "Min Date" set to "01/01/2001" and "Max Date" set to "12/31/2011", and an "Apply Date Filter" button. Below this, there are checkboxes for "Mean annual salinity" and "Mean growing season salinity". A "Selection" section lists various station IDs, including CRMS0129-H01, CRMS0131-H01, CRMS0132-H01, CRMS0135-H01, CRMS0136-H01, CRMS0139-H01, CRMS0146-H01, CRMS0147-H01, CRMS0148-H01, CRMS0151-H01, CRMS0153-H01, CRMS0154-H01, and CRMS0156-H01. There is a checkbox for "Include major weather\storm events" and a link to "Show Map Selector". A "Submit Request" button is located at the bottom right. A red circle highlights a small chart preview at the bottom left, showing a line graph of salinity data over time.

1. Pick a Data Category
  1. Hydro
2. Pick a Parameter
  1. Salinity
3. Pick a Scale
  1. Station
4. Enter Start / End Dates
  1. 1/1/2001
  2. 12/31/2011
  3. Apply Date Filter
5. Select Station
6. View Chart
7. Save Chart Image

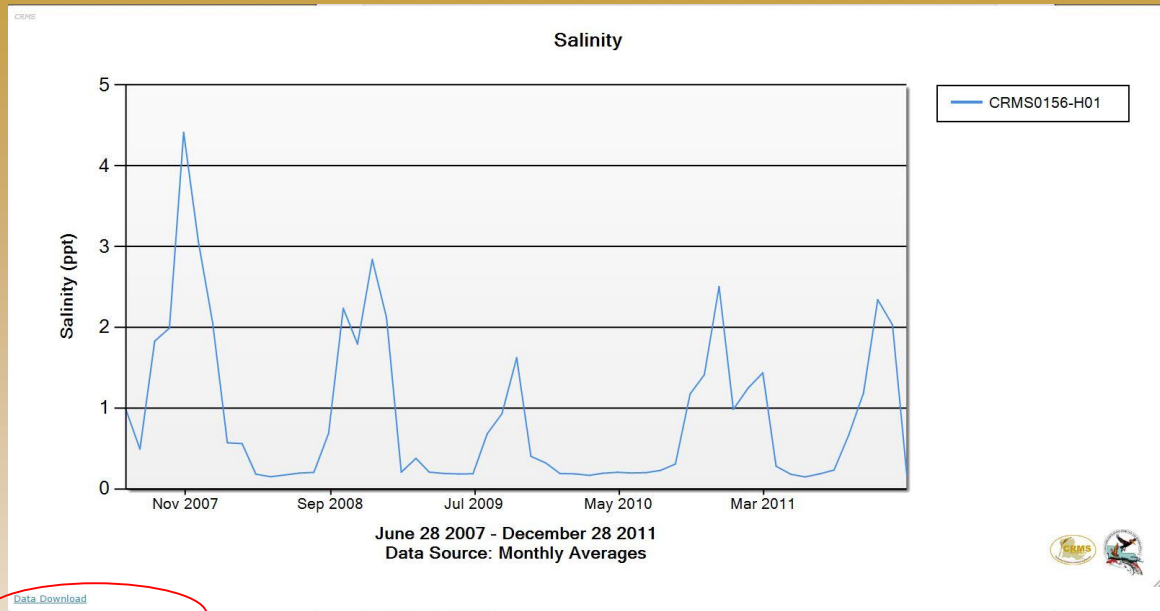






# Coastwide Reference Monitoring System – *Wetlands* Using the Charting Interface

1. Pick a Data Category  
Hydro
2. Pick a Parameter  
Salinity
3. Pick a Scale  
Station
4. Enter Start / End Dates  
1/1/2001  
12/31/2011  
Apply Date Filter
5. Pick Station
6. Save Chart Image
7. View Chart
8. Download Data (optional)



Data Download

	A1		Station_ID		
	A	B	C	D	E
1	Station_ID	MonDate	Salinity	Water_Level	Water_Temperature
2	CRMS0156-H01	1/1/2011 0:00	1.560417	1.8325	9.65125
3	CRMS0156-H01	1/2/2011 0:00	2.130833	1.62625	12.42083
4	CRMS0156-H01	1/3/2011 0:00	1.746667	1.434167	8.210417
5	CRMS0156-H01	1/4/2011 0:00	0.95375	1.350417	7.404583
6	CRMS0156-H01	1/5/2011 0:00	1.085833	1.344167	7.54125
7	CRMS0156-H01	1/6/2011 0:00	1.333333	1.408333	7.622083
8	CRMS0156-H01	1/7/2011 0:00	1.514583	1.237083	7.506667
9	CRMS0156-H01	1/8/2011 0:00	1.60125	1.127917	7.66375
10	CRMS0156-H01	1/9/2011 0:00	1.908333	1.9775	8.087916
11	CRMS0156-H01	1/10/2011 0:00	2.137083	1.900417	11.25458
12	CRMS0156-H01	1/11/2011 0:00	1.789583	1.528333	8.947917
13	CRMS0156-H01	1/12/2011 0:00	1.529583	1.18125	6.955
14	CRMS0156-H01	1/13/2011 0:00	1.455417	1.05125	6.779583
15	CRMS0156-H01	1/14/2011 0:00	1.21125	0.9725	6.984583
16	CRMS0156-H01	1/15/2011 0:00	0.7083333	1.16	6.829583



## Multi-Station Charting- Plots data from multiple stations on the same chart

Pick a Data Category  
**Hydro**

Pick a Parameter  
**Water Level**

Pick a Scale  
**Multi Station**

Enter Start / End Dates  
**1/1/2001**

**12/31/2011**

**Apply Date Filter**

**Select Stations**

ChartingBulk ChartingData DownloadReporting

Hydro

Water Level RangeHydro CompletenessSalinityWater LevelTemperatureFloodingContinuousSite Hydro IndexSoil PorewaterPrecipitationSeasonal PrecipitationInteractive Hydro

Vegetation

Soil

Spatial

Report Card Charts

Clear Charts

Water Year is October 1 - September 30

Scale: Multi Station

Date Range:  
1/1/1992 - 4/5/2017

Min Date: 01/01/2001

Max Date: 12/31/2011

Apply Date Filter

Basin: Galcasieu/SabinProject: All ProjectsSelection limited to 10 items

Options

Selection

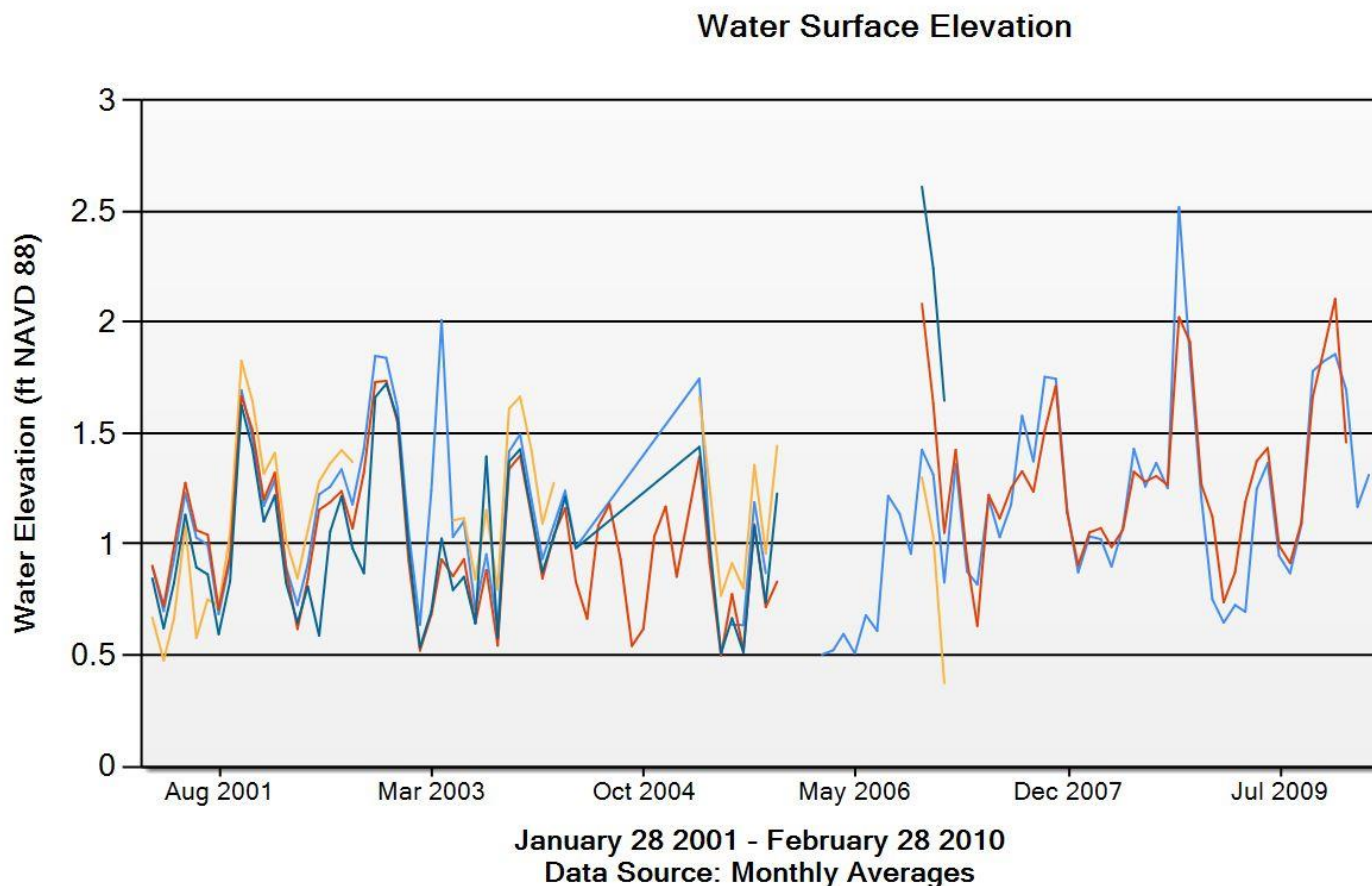
CS20	
CS20-106	CS20-03
CS20-14R	CS20-07
CS20-15R	CS20-09
	CS20-17

☐ Include major weather\storm events  
[Show Map Selector](#)

Previous Selection

Submit Request

### Multi-Station Water Level Chart



- CS20-03 GEOID99
- CS20-07 GEOID99
- CS20-09 GEOID99
- CS20-17 GEOID99

- View Image
- Copy Image
- Copy Image Location
- Save Image As...
- Send Image...
- Set As Desktop Background...
- View Image Info
- Copy
- Search Google for "Home Data Mappi..."
- View Selection Source
- Convert Selection to Adobe PDF
- Append Selection to Existing PDF
- Inspect Element with Firebug
- Adblock Plus: Block image...





# Coastwide Reference Monitoring System – *Wetlands*

## Pairing the Charting Interface with the Map Selector

**“Map Selector”** allows chart stations to be picked in a mapping interface.

Great if you have an area of interest, but don't know the station IDs.

The screenshot displays the "Charting" tab of the CRMS interface. On the left, a sidebar lists various data categories: Hydro, Vegetation, Soil, Spatial, and Report Card Charts. The "Hydro" category is expanded, showing sub-options like Water Level Range, Hydro Completeness, Salinity (highlighted with a red arrow), Water Level, Temperature, Flooding, Continuous, Site Hydro Index, Soil Porewater, Precipitation, Seasonal Precipitation, and Interactive Hydro. To the right, the "Water Year" is set to "October 1 - September 30". The "Scale" is set to "Multi Station". The "Date Range" is "1/1/1992 - 4/5/2017", with "Min Date" and "Max Date" fields set to "1/1/1992" and "4/5/2017" respectively. An "Apply Date Filter" button is present. Below this, "Basin" is set to "All Basins" and "Project" is set to "All Projects", with a note "Selection limited to 10 items". A table with two columns, "Options" and "Selection", lists station IDs: AT04-01, AT04-02, AT04-03, AT04-04, AT04-06, BA01-01, BA01-02, BA01-03, and BA01-04. At the bottom, there is a checkbox for "Include major weather/storm events" and a link "Show Map Selector" circled in red. Other buttons include "Clear Charts", "Previous Selection", and "Submit Request".

Charting Bulk Charting Data Download Reporting

▼ Hydro

- Water Level Range
- Hydro Completeness
- Salinity**
- Water Level
- Temperature
- Flooding
- Continuous
- Site Hydro Index
- Soil Porewater
- Precipitation
- Seasonal Precipitation
- Interactive Hydro

Water Year is October 1 - September 30

Scale: Multi Station ▼

Date Range: 1/1/1992 - 4/5/2017

Min Date: 1/1/1992

Max Date: 4/5/2017

Apply Date Filter ⓘ

Basin: All Basins ▼ Project: All Projects ▼ Selection limited to 10 items

Options	Selection
AT04-01	
AT04-02	
AT04-03	
AT04-04	
AT04-06	
BA01-01	
BA01-02	
BA01-03	
BA01-04	

Clear Charts

☐ Include major weather/storm events

[Show Map Selector](#)

Previous Selection ⓘ

Submit Request



# Coastwide Reference Monitoring System – *Wetlands*

## Pairing the Charting Interface with the Map Selector

Select Mode - Drag the Mouse inside the map to select stations.



■ CRMS Stations    ■ CWPPRA Stations

Clear Selected

Submit

BA01-02

BA01-03

Show Map Selector

Submit Request



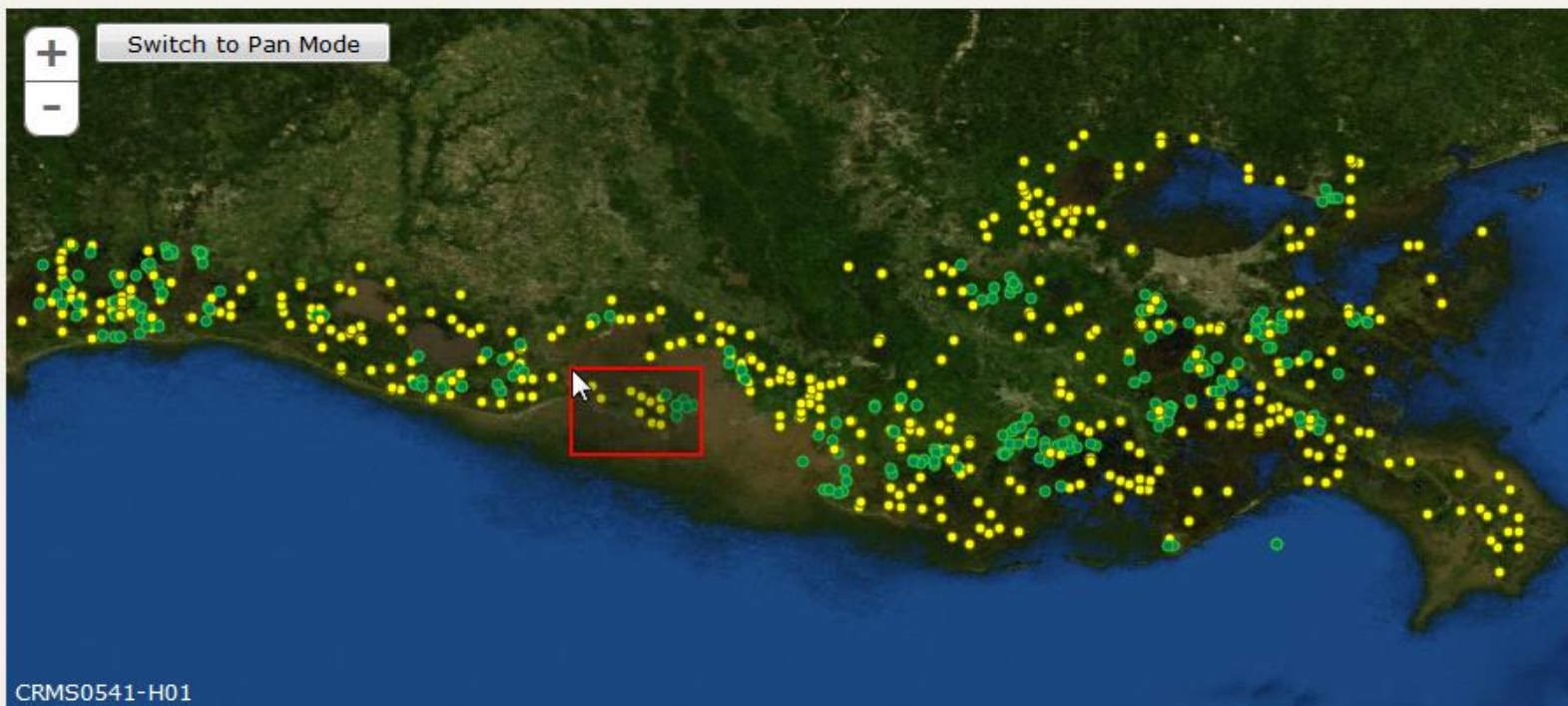


# Coastwide Reference Monitoring System – *Wetlands*

## Pairing the Charting Interface with the Map Selector

[Previous Charting Version](#)

Select Mode - Drag the Mouse inside the map to select stations.



● CRMS Stations

● CWPPRA Stations

Clear Selected

Submit

BA01-02

BA01-03

☐ Include major weather\storm events

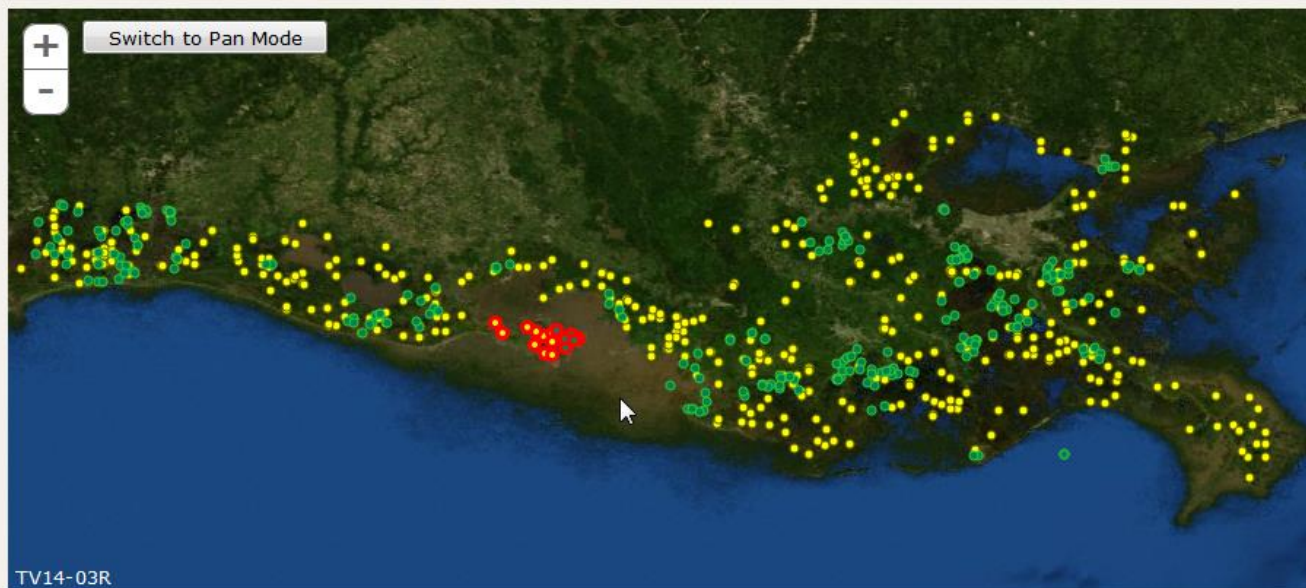




# Coastwide Reference Monitoring System – *Wetlands*

## Pairing the Charting Interface with the Map Selector

Select Mode - Drag the Mouse inside the map to select stations.



■ CRMS Stations    ■ CWPPRA Stations

Clear Selected

Submit

BA01-02

CRMS0524-W01

BA01-03

CRMS0529-H01

[Show Map Selector](#)

Submit Request





# Coastwide Reference Monitoring System – Wetlands

## Pairing the Charting Interface with the Map Selector

The sites/stations that were selected on the map appear in the right side of the selection box.

ChartingBulk ChartingData DownloadReporting

Hydro

Water Level Range

Hydro Completeness

Salinity

Water Level

Temperature

Flooding

Continuous

Site Hydro Index

Soil Porewater

Precipitation

Seasonal Precipitation

Interactive Hydro

Vegetation

Soil

Spatial

Report Card Charts

Clear Charts

Water Year is October 1 - September 30

Scale: Multi Station

Date Range:  
1/1/1992 - 4/5/2017

Min Date: 1/1/1992

Max Date: 4/5/2017

Apply Date Filter

Basin: All BasinsProject: All ProjectsSelection limited to 10 items

Options	Selection
AT04-01	CRMS0498-H01
AT04-02	CRMS0499-H01
AT04-03	CRMS0504-H01
AT04-04	CRMS0520-H01
AT04-06	CRMS0522-W01
BA01-01	CRMS0523-H01
BA01-02	CRMS0524-W01
BA01-03	CRMS0529-H01
BA01-04	CRMS0530-W01

☐ Include major weather/storm events

Show Map Selector

Previous Selection

Submit Request



# Coastwide Reference Monitoring System – *Wetlands* Pairing the Charting Interface with the Map Selector

Filter the list by a Basin

ChartingBulk ChartingData DownloadReporting

Hydro

Water Level Range

Hydro Completeness

Salinity

Water Level

Temperature

Flooding

Continuous

Site Hydro Index

Soil Porewater

Precipitation

Seasonal Precipitation

Interactive Hydro

Vegetation

Soil

Spatial

Report Card Charts

Clear Charts

Water Year is October 1 - September 30

Scale: Multi Station

Date Range:  
1/1/1992 - 8/15/2018

Min Date: 1/1/1992

Max Date: 8/15/2018

Apply Date Filter

Basin: Mississippi River

Project: All Projects

Selection limited to 10 items

CRMS0161-H01

CRMS0162-H01

CRMS0163-H01

Selection

Include major weather\storm events

Show Map Selector

Previous Selection

Submit Request





# Coastwide Reference Monitoring System – *Wetlands*

## Pairing the Charting Interface with the Map Selector


[Previous Charting Version](#)

Select Mode - Drag the Mouse inside the map to select stations. ✕

+

-

Switch to Pan Mode



● CRMS Stations    ● CWPPRA Stations

CRMS0162-H01

CRMS0163-H01

CRMS0164-H01

Clear Selected

Submit

☐ Include major weather\storm events



# Coastwide Reference Monitoring System – *Wetlands* Using the Interactive Hydro Charting Interface

## Interactive Hydro Chart

For hydro **data exploration** without having to download data.

Charting

Bulk Charting

Data Download

Reporting

Hydro

Water Level Range

Hydro Completeness

Salinity

Water Level

Temperature

Flooding

Continuous

Site Hydro Index

Soil Porewater

Precipitation

Seasonal Precipitation

Interactive Hydro

Vegetation

Soil

Spatial

Report Card Charts

Water Year is October 1 - September 30

Scale: Multi Station

Date Range:  
1/1/1992 - 8/15/2018

Min Date: 01/01/2001

Max Date: 12/31/2005

Apply Date Filter

Basin: All Basins

Project: All Projects

Selection limited to 10 items

Options	Selection
CS20	
CS20-106	CS20-03
CS20-14R	CS20-07
CS20-15R	CS20-09
	CS20-17

Clear Charts

Include major weather\storm events

Show Map Selector

Previous Selection

Submit Request




# Coastwide Reference Monitoring System – *Wetlands* Using the Interactive Hydro Charting Interface

**Great for data discovery, fast manipulation, and comparison of sites without having to generate charts.**

Data ▼ Mapping ▼ Library ▼ Visualization ▼ Program ▼ FAQ Factsheet

*a CWPPRA funded project*



### Interactive Hydro

Stations	Parameter	Color
None ▼	Choose One... ▼	Red ▼
None ▼	Choose One... ▼	Blue ▼
None ▼	Choose One... ▼	Orange ▼

Submit





# Coastwide Reference Monitoring System – Wetlands Using the Interactive Hydro Charting Interface

## Same station with multiple parameters

Data ▾ Mapping ▾ Library ▾ Visualization ▾ Program ▾ FAQ Factsheet

a CWPPRA funded project

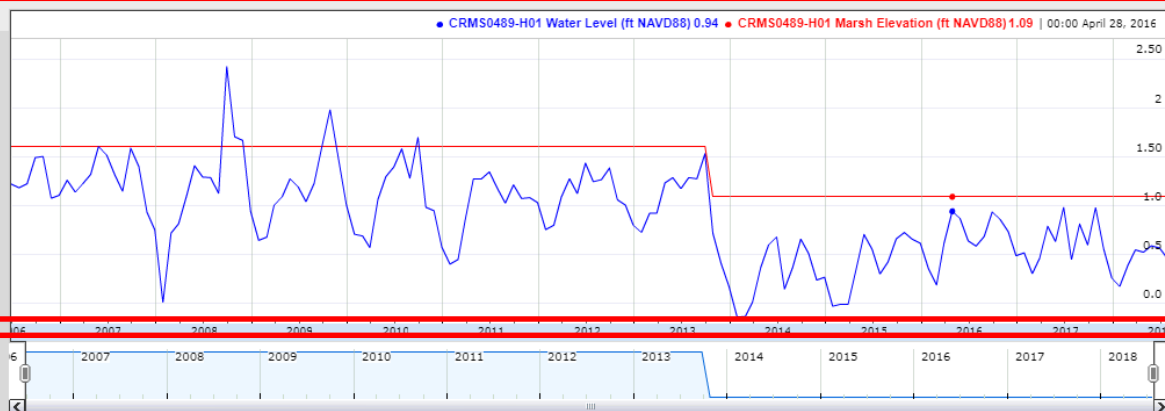


### Interactive Hydro

Stations	Parameter	Color
CRMS0489-H01 ▾	Marsh Elevation ▾	Red ▾
CRMS0489-H01 ▾	Water Level ▾	Blue ▾
None ▾	Choose One... ▾	Orange ▾
<input type="button" value="Submit"/>		

Download type for .csv: Hourly ▾

Charted data  
for POR



Full Period of record  
(POR) – Adjustable

NOTE: Water elevations prior to Oct. 1, 2013 are GEOID99 and GEOID12a thereafter

Period of record < 6 months: Chart includes **Continuous Hourly** data.

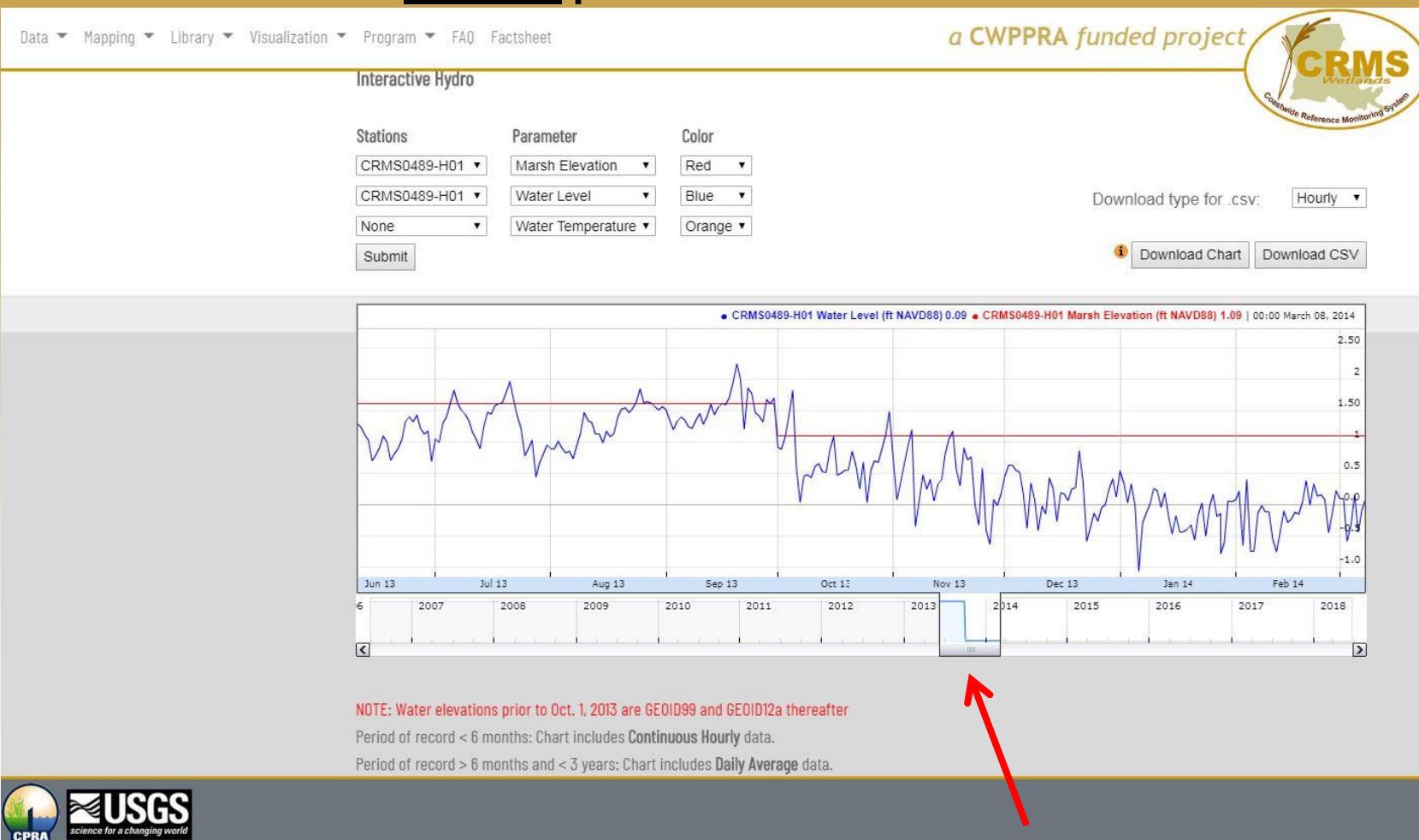
Period of record > 6 months and < 3 years: Chart includes **Daily Average** data.

Period of record > 3 years: Chart includes **Monthly Average** data.



# Coastwide Reference Monitoring System – Wetlands Using the Interactive Hydro Charting Interface

## Same station with multiple parameters



### Data availability time extent:

- Changing window size controls temporal accuracy of the chart
- Window can slide along time line



# Coastwide Reference Monitoring System – Wetlands Using the Interactive Hydro Charting Interface

## Same station with multiple parameters

Data ▾ Mapping ▾ Library ▾ Visualization ▾ Program ▾ FAQ Factsheet

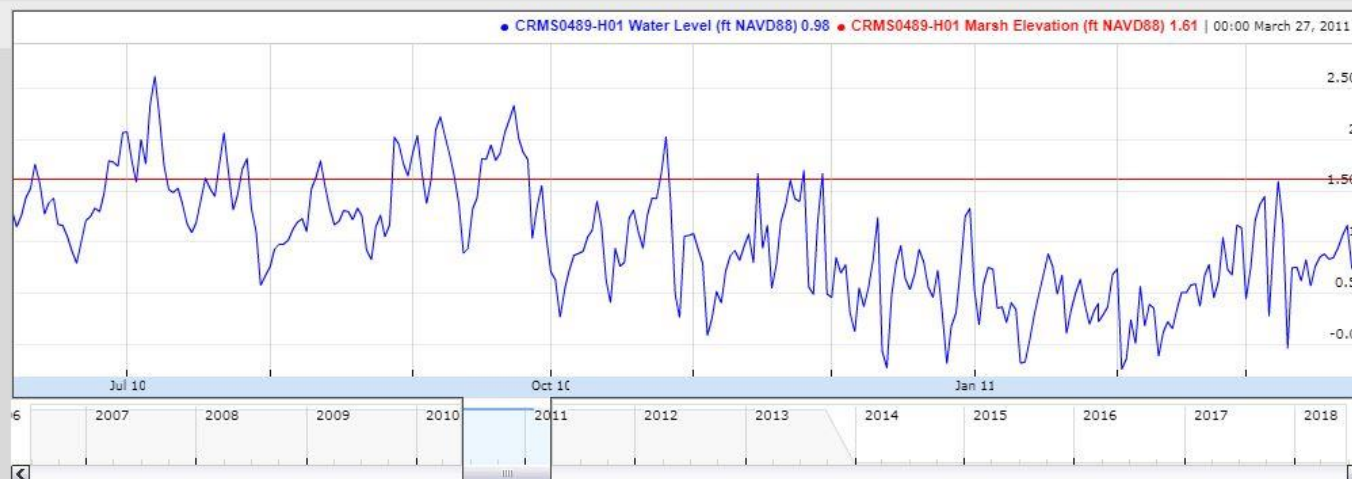
a CWPPRA funded project



### Interactive Hydro

Stations	Parameter	Color
CRMS0489-H01 ▾	Marsh Elevation ▾	Red ▾
CRMS0489-H01 ▾	Water Level ▾	Blue ▾
None ▾	Water Temperature ▾	Orange ▾
<input type="button" value="Submit"/>		

Download type for .csv: Hourly ▾



NOTE: Water elevations prior to Oct. 1, 2013 are GEOID99 and GEOID12a thereafter

Period of record < 6 months: Chart includes Continuous Hourly data.

Period of record > 6 months and < 3 years: Chart includes Daily Average data.





# Coastwide Reference Monitoring System – Wetlands Using the Interactive Hydro Charting Interface

## Multiple stations with the same parameter

Data ▾ Mapping ▾ Library ▾ Visualization ▾ Program ▾ FAQ Factsheet

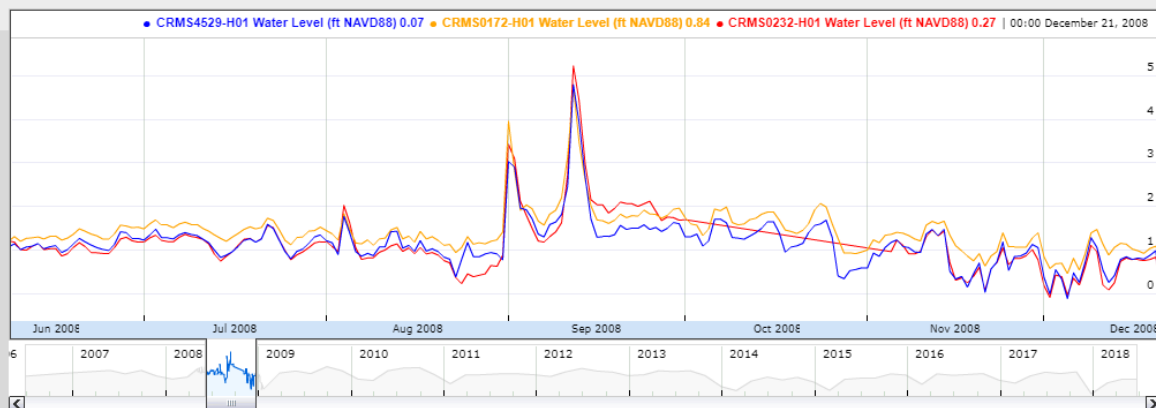
a CWPRA funded project



### Interactive Hydro

Stations	Parameter	Color
CRMS0232-H01 ▾	Water Level ▾	Red ▾
CRMS4529-H01 ▾	Water Level ▾	Blue ▾
CRMS0172-H01 ▾	Water Level ▾	Orange ▾
<input type="button" value="Submit"/>		

Download type for .csv:  ▾



NOTE: Water elevations prior to Oct. 1, 2013 are GEOID99 and GEOID12a thereafter

Period of record < 6 months: Chart includes **Continuous Hourly** data.

Period of record > 6 months and < 3 years: Chart includes **Daily Average** data.

Period of record > 3 years: Chart includes **Monthly Average** data.



# Coastwide Reference Monitoring System – Wetlands Using the Interactive Hydro Charting Interface

## Multiple stations with the same parameter

Data ▾ Mapping ▾ Library ▾ Visualization ▾ Program ▾ FAQ Factsheet

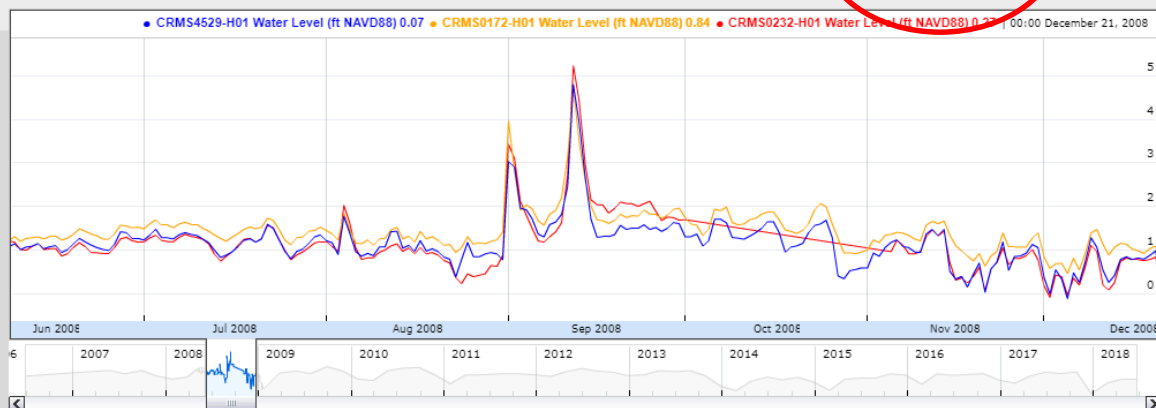
a CWPRA funded project



### Interactive Hydro

Stations	Parameter	Color
CRMS0232-H01 ▾	Water Level ▾	Red ▾
CRMS4529-H01 ▾	Water Level ▾	Blue ▾
CRMS0172-H01 ▾	Water Level ▾	Orange ▾
<input type="button" value="Submit"/>		

Download type for .csv:  ▾



NOTE: Water elevations prior to Oct. 1, 2013 are GEOID99 and GEOID12a thereafter

Period of record < 6 months: Chart includes **Continuous Hourly** data.

Period of record > 6 months and < 3 years: Chart includes **Daily Average** data.

Period of record > 3 years: Chart includes **Monthly Average** data.

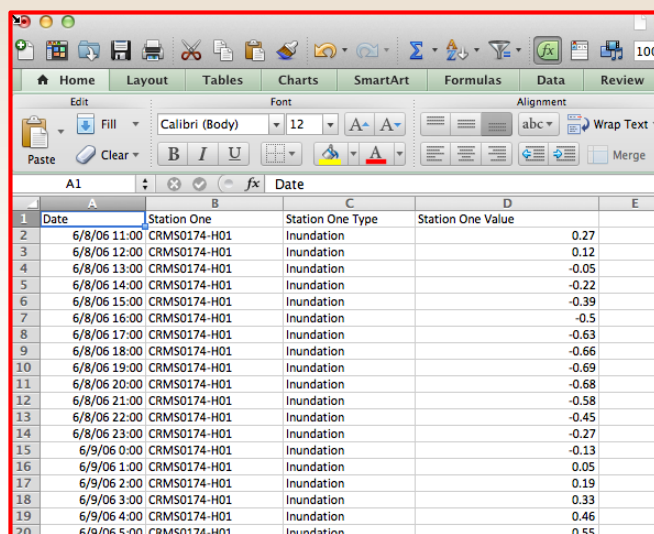
## Downloading Chart:

- Take screenshot for 1 chart
- Chart Gallery breaks into component parts



## Downloading Chart Data:

- Set time frequency of data (hourly, daily, monthly)
- Data will be in CSV format



	A	B	C	D	E
	Date	Station One	Station One Type	Station One Value	
1					
2	6/8/06 11:00	CRMS0174-H01	Inundation	0.27	
3	6/8/06 12:00	CRMS0174-H01	Inundation	0.12	
4	6/8/06 13:00	CRMS0174-H01	Inundation	-0.05	
5	6/8/06 14:00	CRMS0174-H01	Inundation	-0.22	
6	6/8/06 15:00	CRMS0174-H01	Inundation	-0.39	
7	6/8/06 16:00	CRMS0174-H01	Inundation	-0.5	
8	6/8/06 17:00	CRMS0174-H01	Inundation	-0.63	
9	6/8/06 18:00	CRMS0174-H01	Inundation	-0.66	
10	6/8/06 19:00	CRMS0174-H01	Inundation	-0.69	
11	6/8/06 20:00	CRMS0174-H01	Inundation	-0.68	
12	6/8/06 21:00	CRMS0174-H01	Inundation	-0.58	
13	6/8/06 22:00	CRMS0174-H01	Inundation	-0.45	
14	6/8/06 23:00	CRMS0174-H01	Inundation	-0.27	
15	6/9/06 0:00	CRMS0174-H01	Inundation	-0.13	
16	6/9/06 1:00	CRMS0174-H01	Inundation	0.05	
17	6/9/06 2:00	CRMS0174-H01	Inundation	0.19	
18	6/9/06 3:00	CRMS0174-H01	Inundation	0.33	
19	6/9/06 4:00	CRMS0174-H01	Inundation	0.46	
20	6/9/06 5:00	CRMS0174-H01	Inundation	0.55	



## Bulk Charting: creates multiple charts with the same parameter input

Great for creating figures for reports that all need to be uniformly designed.

Charting

**Bulk Charting**

Data Download

Reporting

**Bulk Charting**

▼ Hydro

Water Level Range

Hydro Completeness

Salinity

**Water Level**

Temperature

Flooding

Continuous

Site Hydro Index

Soil Porewater

Precipitation

▶ Vegetation

▶ Soil

▶ Spatial

▶ Report Card Charts

Water Year is October 1 - September 30

Date Range:  
1/1/1992 - 10/29/2017

Min Date:

Max Date:

Basin:  Project:

Options

Selection

CS20	Select All	Deselect All
CS20-14R		CS20-03
CS20-15R		CS20-07
		CS20-09
		CS20-106
		CS20-17

[Show Map Selector](#)

Email Address:



Water Surface Elevation



Water Surface Elevation



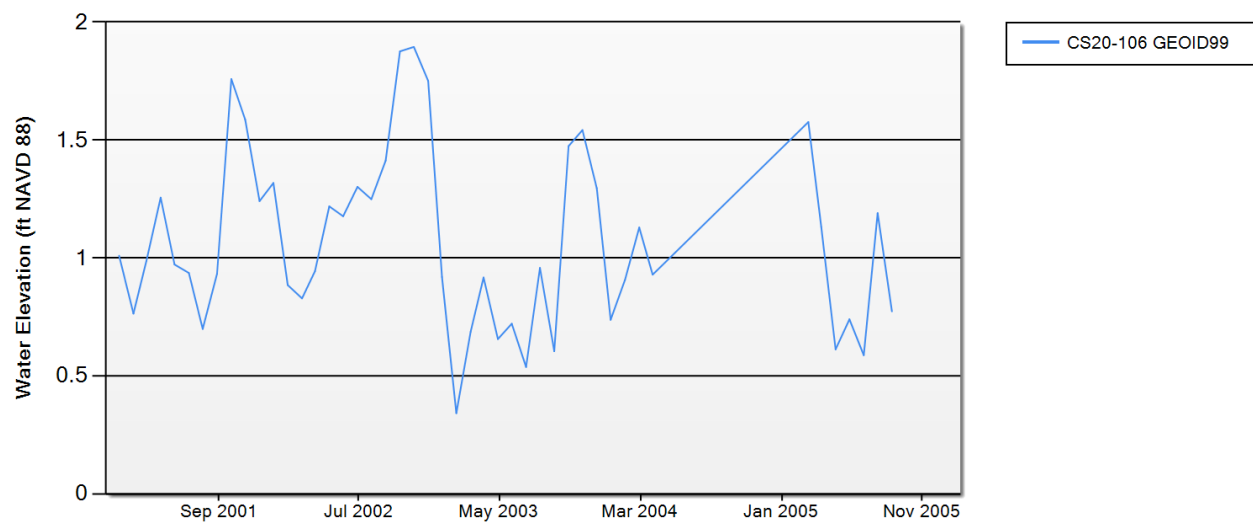
Water Surface Elevation



Water Surface Elevation



Water Surface Elevation



January 28 2001 - December 28 2005  
Data Source: Monthly Averages



# Coastwide Reference Monitoring System – Wetlands Bulk Charting

Charting

**Bulk Charting**

Data Download

Reporting

**Bulk Charting**

Hydro

Vegetation

Forested

Herbaceous

**Site Floristic Quality Index**

Project/Reference FQI

Marsh Class

Volume Vegetation Index

Soil

Spatial

Report Card Charts

Basin: All Basins

Project: All Projects

Select All	Deselect All
BA39-01	CRMS0647
BA39-02	CRMS0655
BA39-03	CRMS0672
CRMS0002	
CRMS0003	
CRMS0006	
CRMS0008	
CRMS0030	
CRMS0000	

Choose Colors

Cancel

☒

 Spartina patens

☐

 Phragmites australis

☐

 Typha latifolia

☐

 Typha domingensis

☐

 Distichlis spicata

☐

 Schoenoplectus robustus

☐

 Paspalum vaginatum

☐

 Amaranthus bigelovii

☐

 Paspalum distichum

☐

 Symphyotrichum subulatum

☐

 Other

Show Map Selector

Submit Request

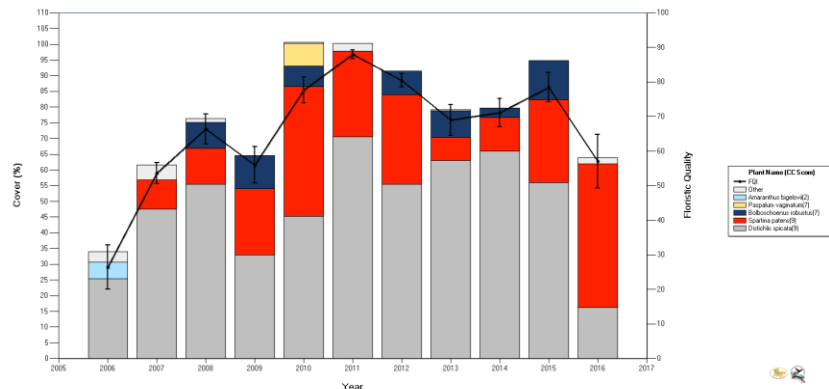
piazzas@usgs.gov

## Site Floristic Quality Index:

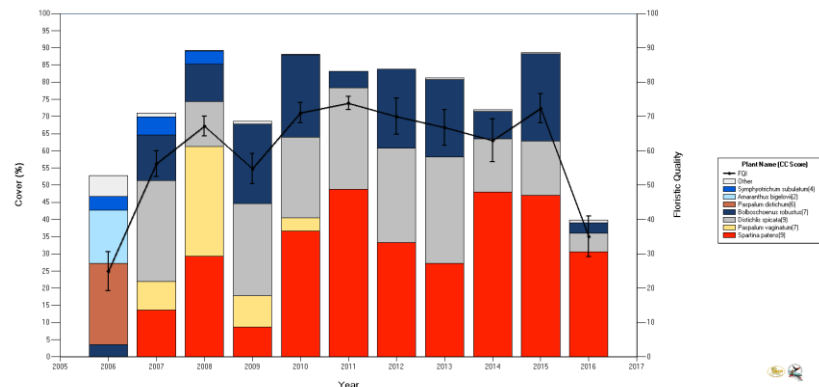
User can define color ramp for species of interest in all charts generated by one request.

Great for looking at species presence/absence or tracking invasive species

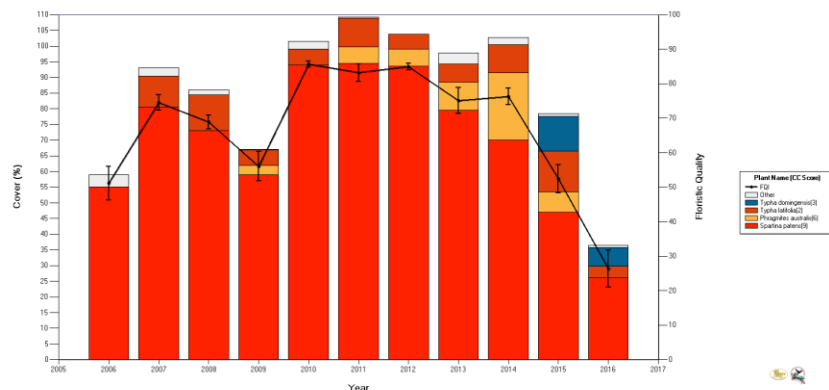
Floristic Quality Index for Brackish Marsh, Site CRM50655



Floristic Quality Index for Brackish Marsh, Site CRM50672



Floristic Quality Index for Intermediate Marsh, Site CRM50647



Ex: All *Spartina patens* are red as defined by user.



# Coastwide Reference Monitoring System – Wetlands Site Navigation

Data ▾ Mapping ▾ Library ▾ Visualization ▾ Program ▾ FAQ Factsheet

a CWPRA funded project



## Coastwide Reference Monitoring System



Map



Data



FAQ

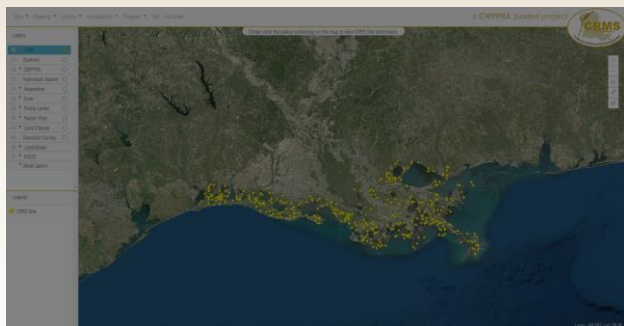


Factsheet



## Data/Reporting

## Charting



Data ▾ Mapping ▾ Library ▾ Visualization ▾ Program ▾ FAQ Factsheet

Charting Bulk Charting **Data Download** Reporting

**Data Download**

Data available through this website are calculated or derived values based on the original data which are available from the CIMS database (CIMS)

- Hydro
- Vegetation
- Soil
- Spatial

Data ▾ Mapping ▾ Library ▾ Visualization ▾ Program ▾ FAQ Factsheet

Charting Bulk Charting Data Download Reporting

- Hydro
- Vegetation
- Soil
- Spatial
- Report Card Charts

Clear Charts





# Coastwide Reference Monitoring System – Wetlands Bulk Data Download

Data ▾ Mapping ▾ Library ▾ Visualization ▾ Program ▾ FAQ Factsheet

Charting Bulk Charting **Data Download** Reporting

**Data Download**

Data available through this website are calculated or derived values based on the original data which are available from the CIMS database ([CIMS](#))

▶ Hydro

▶ Vegetation

▶ Soil

▶ Spatial

#### Suggested Data Citation:

Coastal Protection and Restoration Authority (CPRA) of Louisiana. 2018. Coastwide Reference Monitoring System-Wetlands Monitoring Data. Retrieved from Coastal Information Management System (CIMS) database. <http://cims.coastal.louisiana.gov>. Accessed 15 August 2018

Coastal Protection and Restoration Authority [Login]

Home Data Download Library Viewer Outreach Help

**Monitoring Data**

**Hydrographic Data**

Hydrographic data are now available in two general formats: data collected monthly and data collected hourly. Parameters sampled generally include: water level, water temperature, specific conductance, and salinity. In some rare instances water velocity and wind speed/wind direction are sampled at stations where hourly data are collected.

**Hydrographic Monthly Data**  
[Retrieve Monthly Data](#)

Monthly hydrographic data can be downloaded either by project, CRMS (Coastwide Reference Monitoring System) site, or station number. These files are relatively small, as there are only approximately 12 records per station per year. In general, there is a much larger spatial distribution of stations where monthly data are collected than where hourly data are collected. Note: for CRMS stations, these monthly data comprise Soil Porewater data.

**Hydrographic Hourly Data**  
[Retrieve Hourly Data](#)

Hourly hydrographic data may also be downloaded either by project, CRMS (Coastwide Reference Monitoring System) site, or station number; however these files are much larger than the monthly files. For example, since one year of hourly sampling will yield approximately 8,760 records, a file for a project collecting data at 3 stations for a period of 5 years will contain approximately 131,400 records. Many typical spreadsheet programs will not be able to completely open a file of this size. For this reason, we recommend that hourly data be downloaded by station and not by project. Data are not necessarily available for download from all stations. However, if you would like to request data that are not currently available from the database, an alternate request option is available (see Other Data, below).

**Accretion Data**  
[Retrieve Accretion Data](#)

Accretion data can be downloaded either by project, CRMS (Coastwide Reference Monitoring System) site, or station number. These data are collected from specific locations within herbaceous marsh vegetation areas and forested swamp/bottomland hardwood vegetation areas, and are collected at 6 months and 12 months after monitoring station establishment. Accretion measurements show rates of soil accretion or soil erosion at a location.

**Forested Swamp Vegetation Data**  
[Retrieve Forested Swamp Vegetation Data](#)

Forested Swamp Vegetation data can be downloaded either by project, CRMS (Coastwide Reference Monitoring System) site, or station number. These data are collected from specific areas that represent vegetative communities, and are collected at various time intervals. Individual stations consist of 20m x 20m plots, and parameters sampled include: vegetation species present, densiometer readings, percent canopy cover, and tree trunk diameter.



# Coastwide Reference Monitoring System – *Wetlands* Bulk Data Download

## • CRMS bulk data download **All values** for selected years, for **selected stations**

(queue processes first come first serve)

### ▼ Hydro

- Hydro Averages
- Hydro Index
- Percent Flooded
- Water Level Range
- Shifted Water Elevation Data

### ▼ Vegetation

- Basal Area
- Floristic Quality Index
- Marsh Class
- Veg Percent Cover
- Veg Species
- Veg Species by Parish
- Vegetation Volume Index

### ▼ Soil

- Surface Elevation Change Rate
- Submergence Vulnerability Index
- Vertical Accretion Rates
- Marsh Elevation

### ▼ Spatial

- Land Area
- 1km Land/Water

## Same interface for data selection as charting

Charting

Bulk Charting

**Data Download**

Reporting

### Data Download

Data available through this website are calculated or derived values based on the original data which are available from the CIMS database ([CIMS](#))

### ▼ Hydro

- Hydro Averages**
- Hydro Index
- Percent Flooded
- Water Level Range
- Shifted Water Elevation Data

### ▶ Vegetation

### ▶ Soil

### ▶ Spatial

Water Year is October 1 - September 30

Yearly ▼

Calendar Year ▼

Year:

	Select All	Deselect All
1992	▲	1994
1993		1995
1997		1996
1998		
1999		
2000		
2001		
2002		
2003	▼	

Submit

Basin: All Basins ▼ Project: All Projects ▼

	Select All	Deselect All
BA04-17	▲	BA04-07
BA04-20		BA04-10
BA04-55		
BA04-56		
BA20-08		
BA20-11		
BA20-20		
BA20-90R		
BA20-91R	▼	

[Show Map Selector](#)

Email Address:

Submit Request



# Coastwide Reference Monitoring System – Wetlands

## Bulk Data Download

### Vegetation Species Search

[Charting](#)[Bulk Charting](#)[Data Download](#)[Reporting](#)

#### Data Download

Data available through this website are calculated or derived values based on the original data which are available from the CIMS database ([CIMS](#))

Scale: 

Year

Selection

<input type="button" value="Select All"/>	<input type="button" value="Deselect All"/>
1992	2013
1994	2014
1995	2015
1996	2016
1997	
1998	
1999	
2000	
2001	

Options

Selection

<input type="button" value="Select All"/>	<input type="button" value="Deselect All"/>
avic	
Heliotropium curassavicum L.	Avicennia germinans (L.) L.

[Show Map Selector](#)Email Address: 

	A	B	C
1	Station_Id	Species	Collection_Date
2	BA35-12	Avicennia germinans (L.) L.	10/28/2013
3	BA35-14	Avicennia germinans (L.) L.	10/28/2013
4	BA35-15	Avicennia germinans (L.) L.	10/28/2013
5	BA35-85	Avicennia germinans (L.) L.	10/28/2013
6	BA38-15	Avicennia germinans (L.) L.	10/29/2013
7	BA38-35	Avicennia germinans (L.) L.	10/29/2013
8	BA38-75	Avicennia germinans (L.) L.	10/29/2013
9	BA38-85	Avicennia germinans (L.) L.	10/29/2013
10	CRMS0171-V18	Avicennia germinans (L.) L.	8/27/2013
11	CRMS0171-V41	Avicennia germinans (L.) L.	8/27/2013
12	CRMS0171-V47	Avicennia germinans (L.) L.	8/27/2013
13	CRMS0171-V52	Avicennia germinans (L.) L.	8/27/2013
14	CRMS0171-V58	Avicennia germinans (L.) L.	8/27/2013
15	CRMS0172-V30	Avicennia germinans (L.) L.	8/27/2013
16	CRMS0172-V35	Avicennia germinans (L.) L.	8/27/2013
17	CRMS0172-V61	Avicennia germinans (L.) L.	8/27/2013
18	CRMS0172-V62	Avicennia germinans (L.) L.	8/27/2013
19	CRMS0178-V26	Avicennia germinans (L.) L.	8/8/2013
20	CRMS0178-V38	Avicennia germinans (L.) L.	8/8/2013
21	CRMS0178-V48	Avicennia germinans (L.) L.	8/8/2013
22	CRMS0178-V49	Avicennia germinans (L.) L.	8/8/2013
23	CRMS0178-V51	Avicennia germinans (L.) L.	8/8/2013
24	CRMS0178-V53	Avicennia germinans (L.) L.	8/8/2013
25	CRMS0178-V56	Avicennia germinans (L.) L.	8/8/2013
26	CRMS0178-V69	Avicennia germinans (L.) L.	8/8/2013
27	CRMS0292-V01	Avicennia germinans (L.) L.	8/8/2013
28	CRMS0292-V02	Avicennia germinans (L.) L.	8/8/2013

	A	B	C
1	Station_ID	Longitude	Latitude
2	BA35-12	-89.72997	29.30619
3	BA35-14	-89.72978	29.30696
4	BA35-15	-89.72973	29.30717
5	BA35-74	-89.70175	29.30198
6	BA35-85	-89.69659	29.30122
7	BA38-14	-89.77844	29.31492
8	BA38-15	-89.77842	29.31535
9	BA38-25	-89.77337	29.31595
10	BA38-35	-89.76869	29.31437
11	BA38-44	-89.76399	29.31353
12	BA38-74	-89.74866	29.3114
13	BA38-75	-89.74859	29.3118
14	BA38-85	-89.74458	29.3093
15	CRMS0171-V13	-89.7943	29.32426
16	CRMS0171-V18	-89.79441	29.32416
17	CRMS0171-V40	-89.7849	29.32276

Mapping functionality being developed



# Coastwide Reference Monitoring System – Wetlands

## Bulk Data Download

### Vegetation Species by Parish and Year

[Charting](#)[Bulk Charting](#)[Data Download](#)[Reporting](#)

#### Data Download

Data available through this website are calculated or derived values based on the original data which are available from the CIMS database ([CIMS](#))

[Hydro](#)[Vegetation](#)[Basal Area](#)[Floristic Quality Index](#)[Marsh Class](#)[Veg Percent Cover](#)[Veg Species](#)[Veg Species by Parish](#)[Vegetation Volume Index](#)[Soil](#)[Spatial](#)

#### Year

	Select All
2006	
2007	
2008	
2009	
2010	
2011	
2012	
2014	
2015	

2013

#### Parish

	Select All
ASCENSION	
ASSUMPTION	
CALCASIEU	
CAMERON	
IBERIA	
JEFFERSON	
LAFOURCHE	
LIVINGSTON	
PLAQUEMINES	

#### Selection

	Deselect All
ORLEANS	

Email Address: 

	A	B	C	D
1	Collection_Date	si_Parish	Scientific_Name_Cur_Recog	
44	2013	ORLEANS	Amaranthus australis (A. Gray) Sauer	
45	2013	ORLEANS	Bolboschoenus robustus (Pursh) Soják	
46	2013	ORLEANS	Cyperus filicinus Vahl	
47	2013	ORLEANS	Cyperus odoratus L.	
48	2013	ORLEANS	Distichlis spicata (L.) Greene	
49	2013	ORLEANS	Eleocharis parvula (Roem. & Schult.) Link ex Bluff, Nees & Scha	
50	2013	ORLEANS	Eleocharis R. Br.	
51	2013	ORLEANS	Ipomoea sagittata Poir.	
52	2013	ORLEANS	Iva frutescens L.	
53	2013	ORLEANS	Juncus roemerianus Scheele	
54	2013	ORLEANS	Lythrum lineare L.	
55	2013	ORLEANS	Panicum virgatum L.	
56	2013	ORLEANS	Phragmites australis (Cav.) Trin. ex Steud.	
57	2013	ORLEANS	Pluchea odorata (L.) Cass.	
58	2013	ORLEANS	Sabatia calycina (Lam.) A. Heller	
59	2013	ORLEANS	Schoenoplectus americanus (Pers.) Volkart ex Schinz & R. Kelle	
60	2013	ORLEANS	Solidago L.	
61	2013	ORLEANS	Spartina alterniflora Loisel.	
62	2013	ORLEANS	Spartina patens (Aiton) Muhl.	
63	2013	ORLEANS	Symphyotrichum Nees	





# Coastwide Reference Monitoring System – Wetlands Site Navigation/Reporting

Data ▾ Mapping ▾ Library ▾ Visualization ▾ Program ▾ FAQ Factsheet

a CWPRA funded project



## Coastwide Reference Monitoring System



Map



Data



FAQ

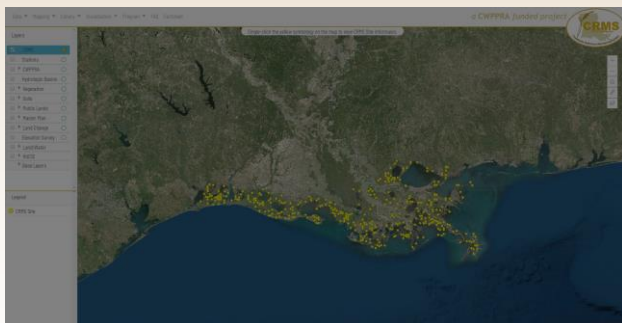


Factsheet



## Data/Reporting

## Charting



Data ▾ Mapping ▾ Library ▾ Visualization ▾ Program ▾ FAQ Factsheet

Charting Bulk Charting Data Download Reporting

**Data Download**

Data available through this website are calculated or derived values based on the original data which are available from the CIMS database (CIMS)

- Hydro
- Vegetation
- Soil
- Spatial

Data ▾ Mapping ▾ Library ▾ Visualization ▾ Program ▾ FAQ Factsheet

Charting Bulk Charting Data Download Reporting

- Hydro
- Vegetation
- Soil
- Spatial
- Report Card Charts

Clear Charts



# Coastwide Reference Monitoring System – *Wetlands* Reporting

Charting

Bulk Charting

Data Download

Reporting

## Generate Report Card

Year: 2011

### Generate Report Card

Site Level Report

Project Level Report

Basin Level Report

Coastwide Level Report

OM&M

CRMS0002

CRMS0003

CRMS0006

CRMS0008

CRMS0030

CRMS0033

CRMS0034

CRMS0035

CRMS0038

CRMS0039

CRMS0046

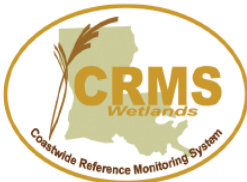
CRMS0047

Submit Request

Report Card CRMS0003 2011



# Coastwide Reference Monitoring System – Wetlands Report Cards



## Coastwide Reference Monitoring System (CRMS)

### Site Level Report Card

Site: CRMS0003  
Year: 2011



7/16/2012

### About the program

In 1990, the U.S. Congress enacted the Coastal Wetlands Planning, Protection and Restoration Act (CWPRA) in response to the growing awareness of Louisiana's land loss crisis. The CWPRA was the first federal, statutorily mandated program with a stable source of federal funds dedicated exclusively to the short- and long-term restoration of the coastal wetlands of Louisiana. To date, the CWPRA program has constructed more than 78 restoration projects. These projects use a variety of methods to restore, protect, and create coastal wetland habitat including: diversions of freshwater and sediments to improve marsh vegetation; dredged material placement for marsh creation; shoreline protection; sediments and nutrient trapping; hydrologic restoration through outfall, marsh, and delta management; barrier island restoration; and vegetation planting projects.

### Need for a Monitoring System

Louisiana's coastal protection and restoration efforts, implemented through numerous CWPRA projects, require monitoring and evaluation of project effectiveness and cumulative effects of all projects to achieve a sustainable coastal environment. In 2003, the CWPRA Task Force approved the implementation of a Coastwide Reference Monitoring System (CRMS) as a means to monitor and evaluate the effectiveness of CWPRA projects at three levels: project, region, and coastwide (Cieffer et al., 2003). The CRMS network is currently funded through CWPRA and the state of Louisiana and provides data for a variety of user groups including resource managers, academics, landowners, and researchers.



### CRMS Approach and Design

The CRMS approach includes a suite of sites (391) that encompasses a range of ecological conditions across the coast. The CRMS site locations were selected randomly throughout the coastal zone. Sites represent the entire range of ecological variability within a degraded coastal landscape. Sites are located within (project sites) and outside (reference sites) of coastal restoration projects. Trajectories of changing conditions in reference sites are compared with trajectories of change within project sites through time. The CRMS design not only allows for monitoring and evaluating the effectiveness of each project but will also support ongoing evaluation of the cumulative effects of all CWPRA projects throughout the coastal ecosystem of Louisiana. More information about the CRMS project is provided within a USGS factsheet (<http://pubs.usgs.gov/facts/2010/3018/>).

### About the Interactive Report Card

Through the Coastal Wetlands Planning, Protection, and Restoration Act (CWPRA) 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).

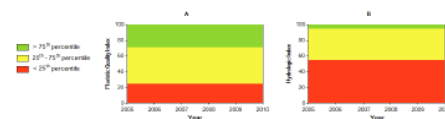


Figure 1. Example of how classifications change based on the assessment index and index score distribution. A) Floristic Quality Index distribution and B) Hydrologic index distribution based on coastwide data from 2006 to 2009.

### Site Scale Assessment: CRMS0003 Floristic Quality Index (FQI)

The following graphics provide information about the CRMS site of interest with regard to the floristic quality index. These graphics provide an assessment of the vegetation quality of this site relative to other sites within a similar marsh type, basin, and coastwide.

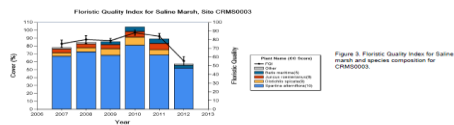


Figure 3. Floristic Quality Index for Saline Marsh, Site CRMS0003.

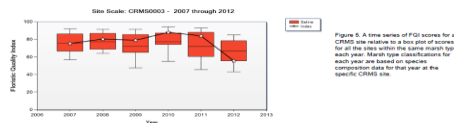
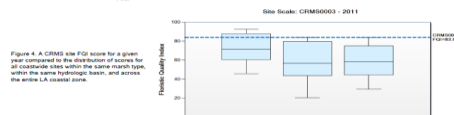


Figure 5. A time series of FQI scores for a CRMS site across the coast as shown over time. The mean (± SE) FQI scores are calculated for all project and reference sites by year. CRMS Project Sites: 2006 N = 74, 2007 N = 133, 2008 N = 142, 2009 N = 144, 2010 N = 196, 2011 N = 143, 2012 N = 143. CRMS Reference Sites: 2006 N = 122, 2007 N = 237, 2008 N = 245, 2009 N = 243, 2010 N = 238, 2011 N = 244, 2012 N = 243.

### Coastwide Scale Assessment: Floristic Quality Index (FQI)

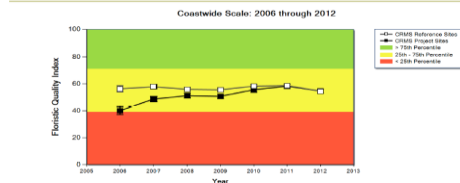


Figure 17. FQI scores across the coast as shown over time. The mean (± SE) FQI scores are calculated for all project and reference sites by year. CRMS Project Sites: 2006 N = 74, 2007 N = 133, 2008 N = 142, 2009 N = 144, 2010 N = 196, 2011 N = 143, 2012 N = 143. CRMS Reference Sites: 2006 N = 122, 2007 N = 237, 2008 N = 245, 2009 N = 243, 2010 N = 238, 2011 N = 244, 2012 N = 243.

### Coastwide Scale Assessment: Hydrologic Index (HI)

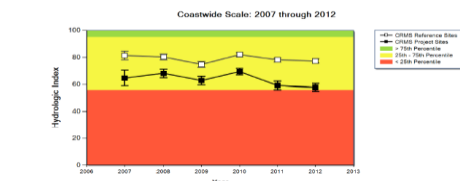


Figure 18. HI scores across the coast as shown over time. The mean (± SE) HI scores are calculated for all project and reference sites by year. CRMS Project Sites: 2007 N = 26, 2008 N = 72, 2009 N = 92, 2010 N = 111, 2011 N = 121, 2012 N = 127. CRMS Reference Sites: 2007 N = 60, 2008 N = 131, 2009 N = 171, 2010 N = 200, 2011 N = 209, 2012 N = 212.

- Dynamic documents
- Program and Index explanations
- Multi-scale assessments site, project, basin, coastwide



# Coastwide Reference Monitoring System – Wetlands Site Navigation/Mapping Viewer

Data ▾ Mapping ▾ Library ▾ Visualization ▾ Program ▾ FAQ Factsheet

a CWPPRA funded project



## Coastwide Reference Monitoring System



Map



Data



FAQ



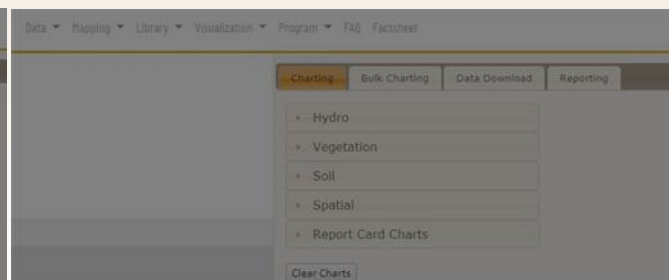
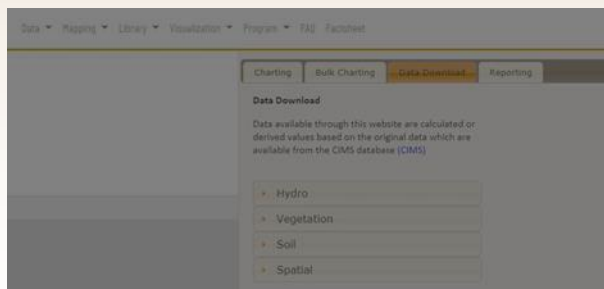
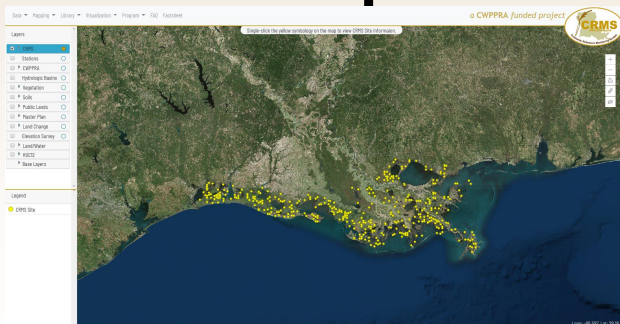
Factsheet



### Map

### Data

### Charting







# Coastwide Reference Monitoring System – Wetlands Mapping Viewer

Data ▾ Mapping ▾ Library ▾ Visualization ▾ Program ▾ FAQ Factsheet

a CWPPRA funded project



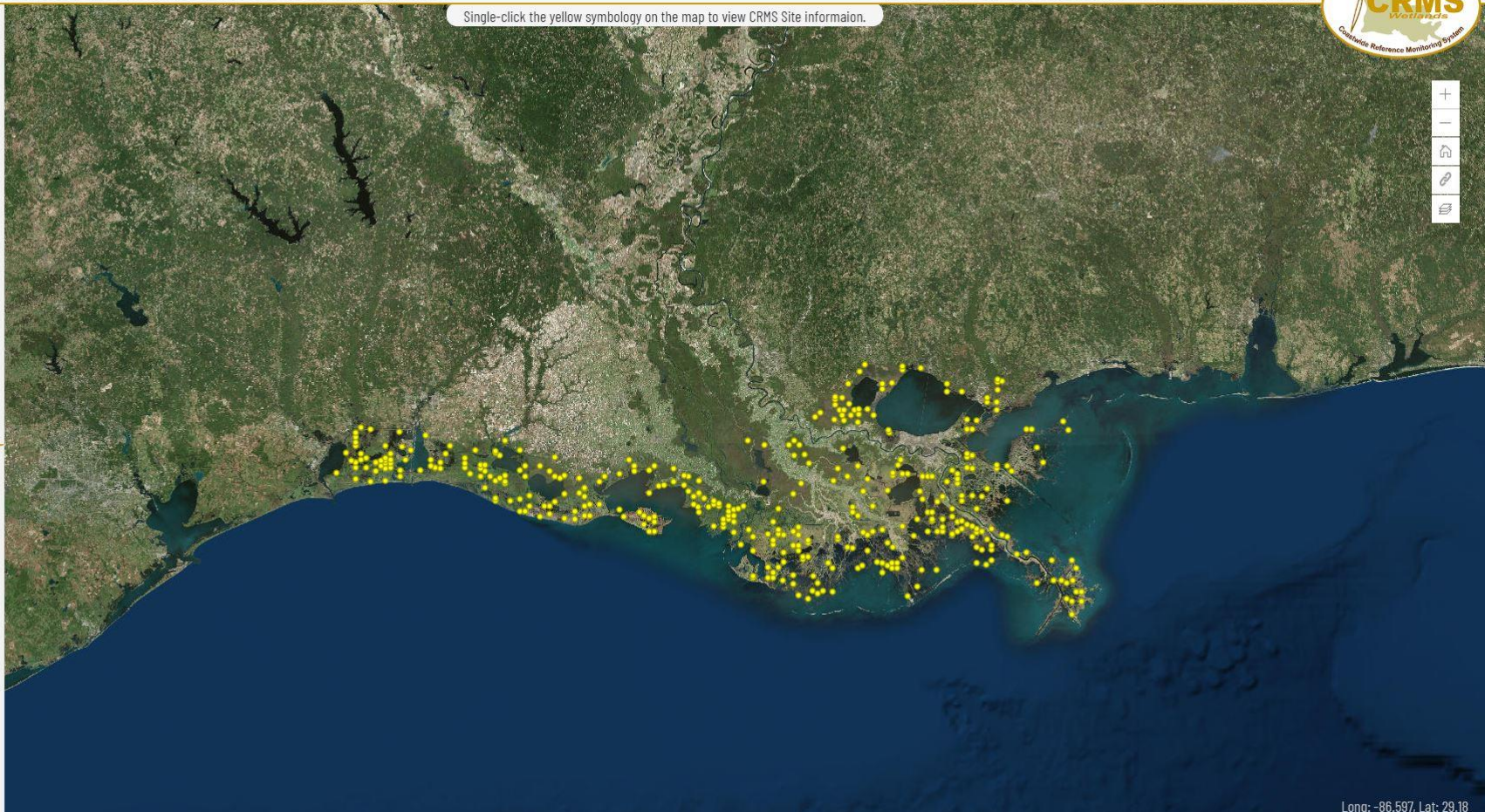
Layers

Single-click the yellow symbology on the map to view CRMS Site information.

- ☒ CRMS
- ☐ Stations
- ☐ CWPPRA
- ☐ Hydrologic Basins
- ☐ Vegetation
- ☐ Soils
- ☐ Public Lands
- ☐ Master Plan
- ☐ Land Change
- ☐ Elevation Survey
- ☐ Land/Water
- ☐ HUC12
- ☐ Base Layers

Legend

CRMS Site



Long: -86.597, Lat: 29.18





# Coastwide Reference Monitoring System – Wetlands Mapping Viewer

Data ▾ Mapping ▾ Library ▾ Visualization ▾ Program ▾ FAQ Factsheet

a CWPRA funded project



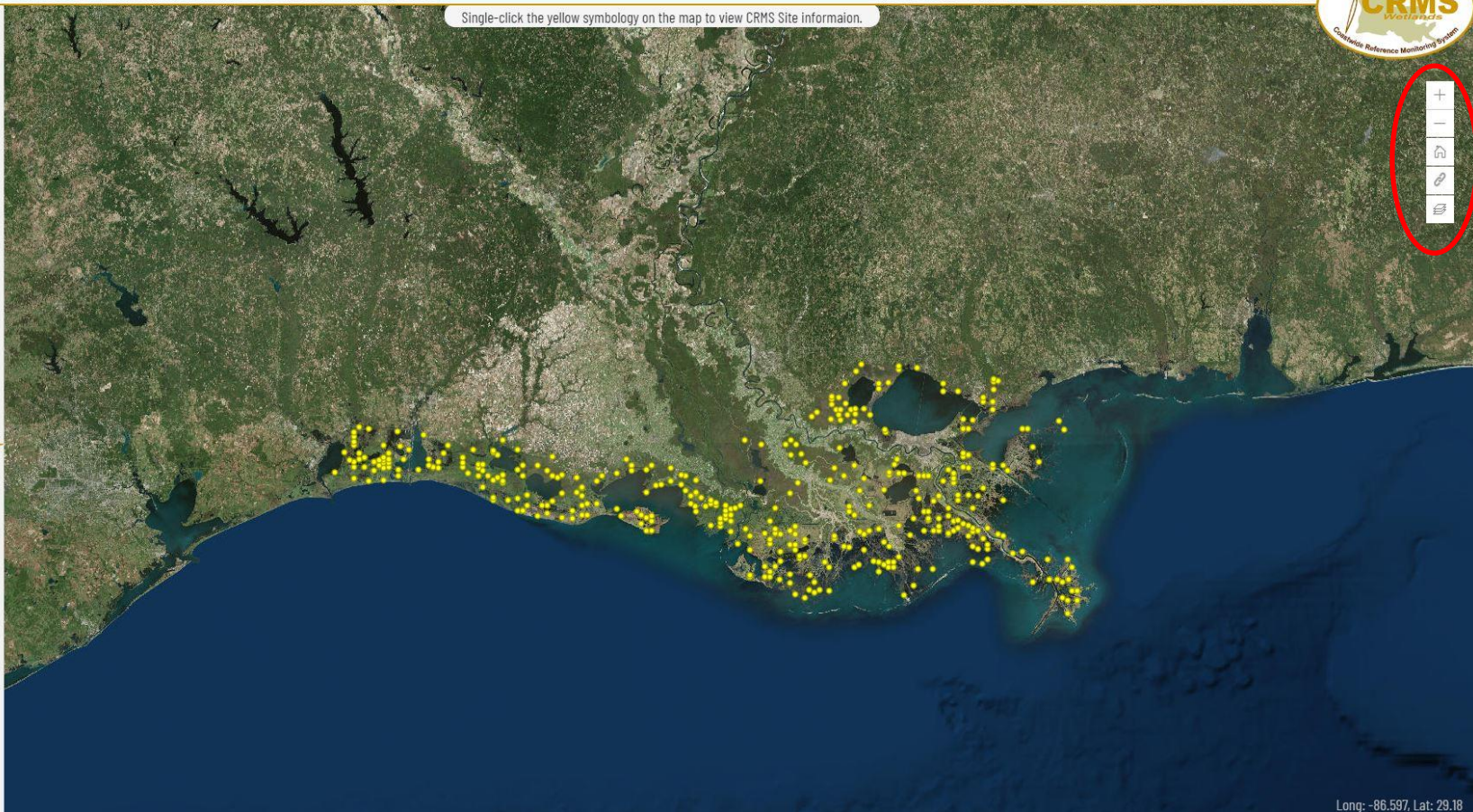
Layers

- ☒ CRMS
- ☐ Stations
- ☐ CWPRA
- ☐ Hydrologic Basins
- ☐ Vegetation
- ☐ Soils
- ☐ Public Lands
- ☐ Master Plan
- ☐ Land Change
- ☐ Elevation Survey
- ☐ Land/Water
- ☐ HUC12
- ☐ Base Layers

Legend

- CRMS Site

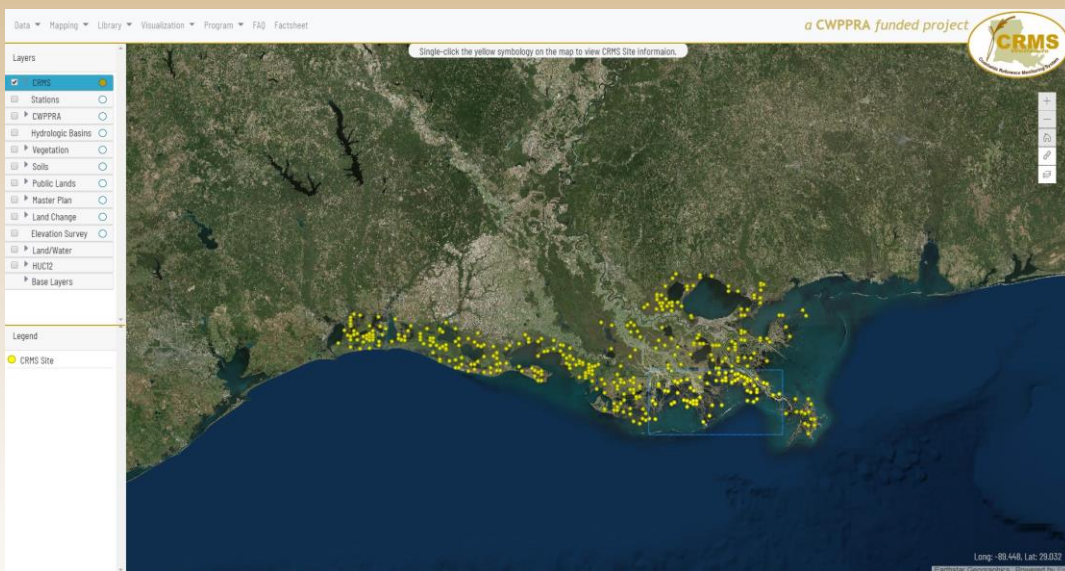
Single-click the yellow symbology on the map to view CRMS Site informaion.



Long: -86.597, Lat: 29.18

## Zoom:

To a specific area of the map:  
Shift + left click & dragging  
mouse



In & out



To Full Extent



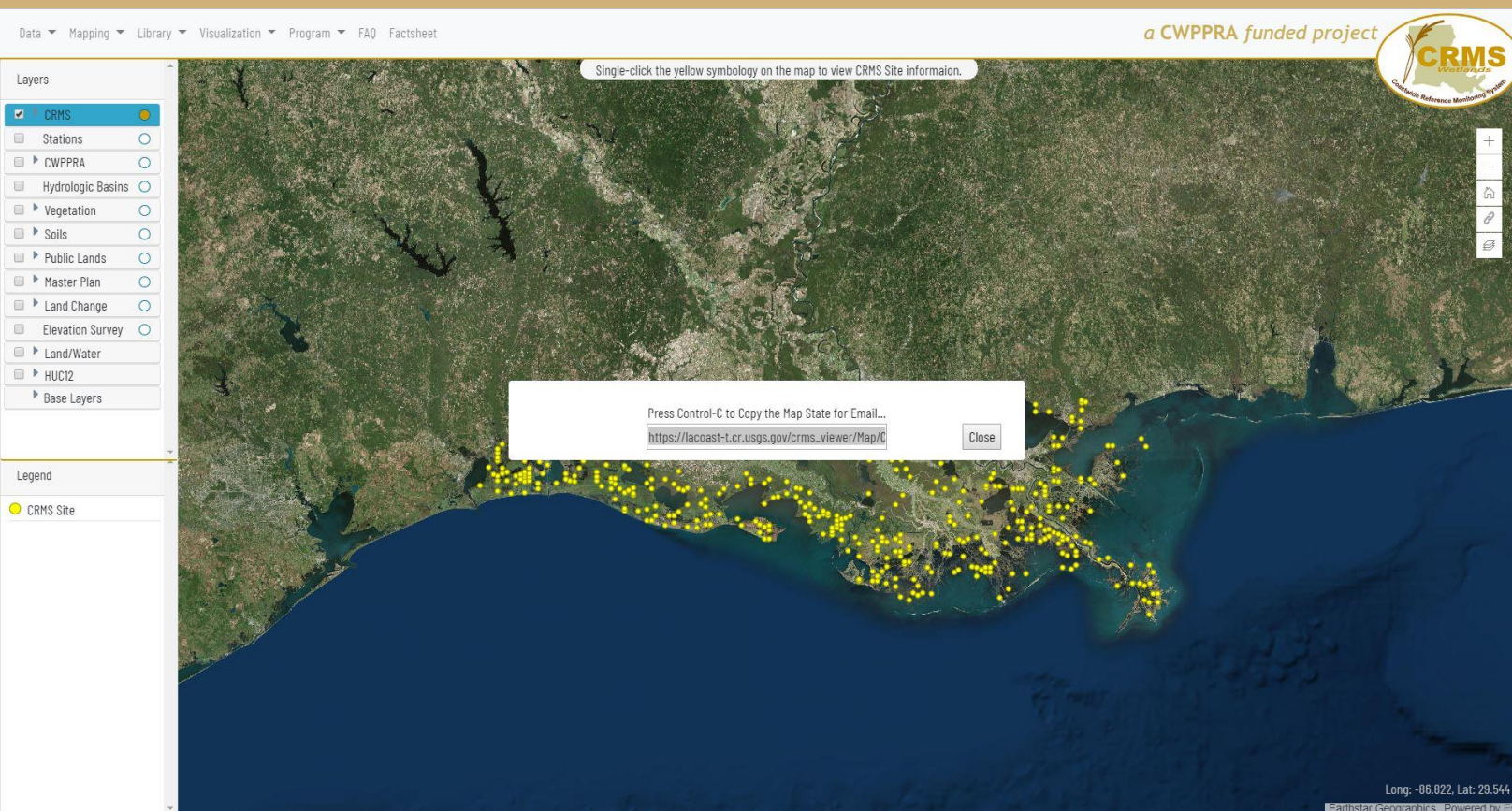




# Coastwide Reference Monitoring System – Wetlands

## Save State Button

Link created to save the current state of the map.



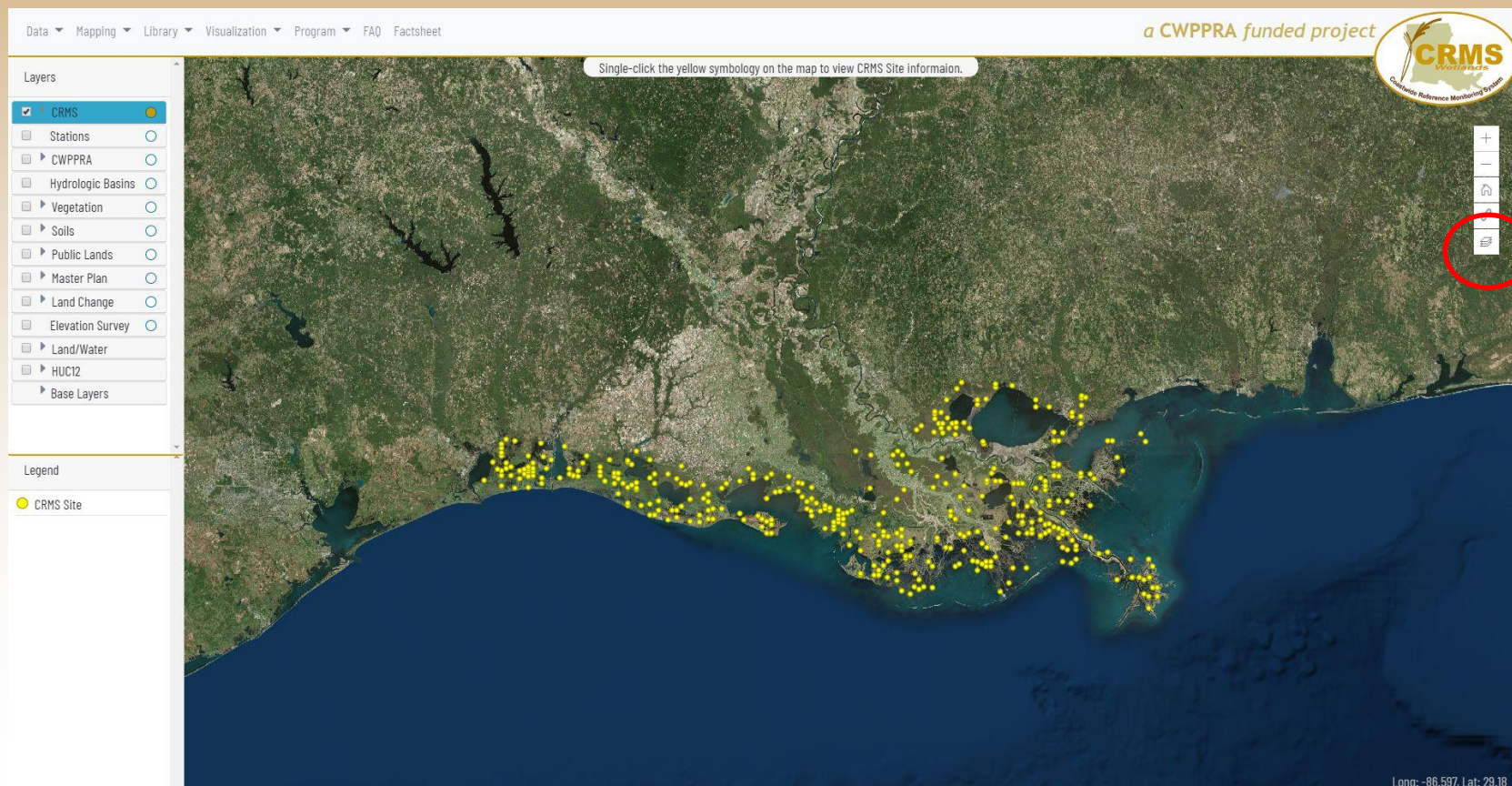
Email this link to someone so you are both looking at the same information on individual computers.





# Coastwide Reference Monitoring System – Wetlands Mapping Viewer

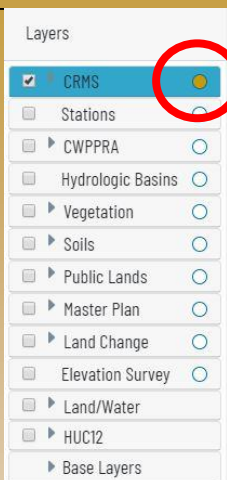
## Show or hide the Layers Menu







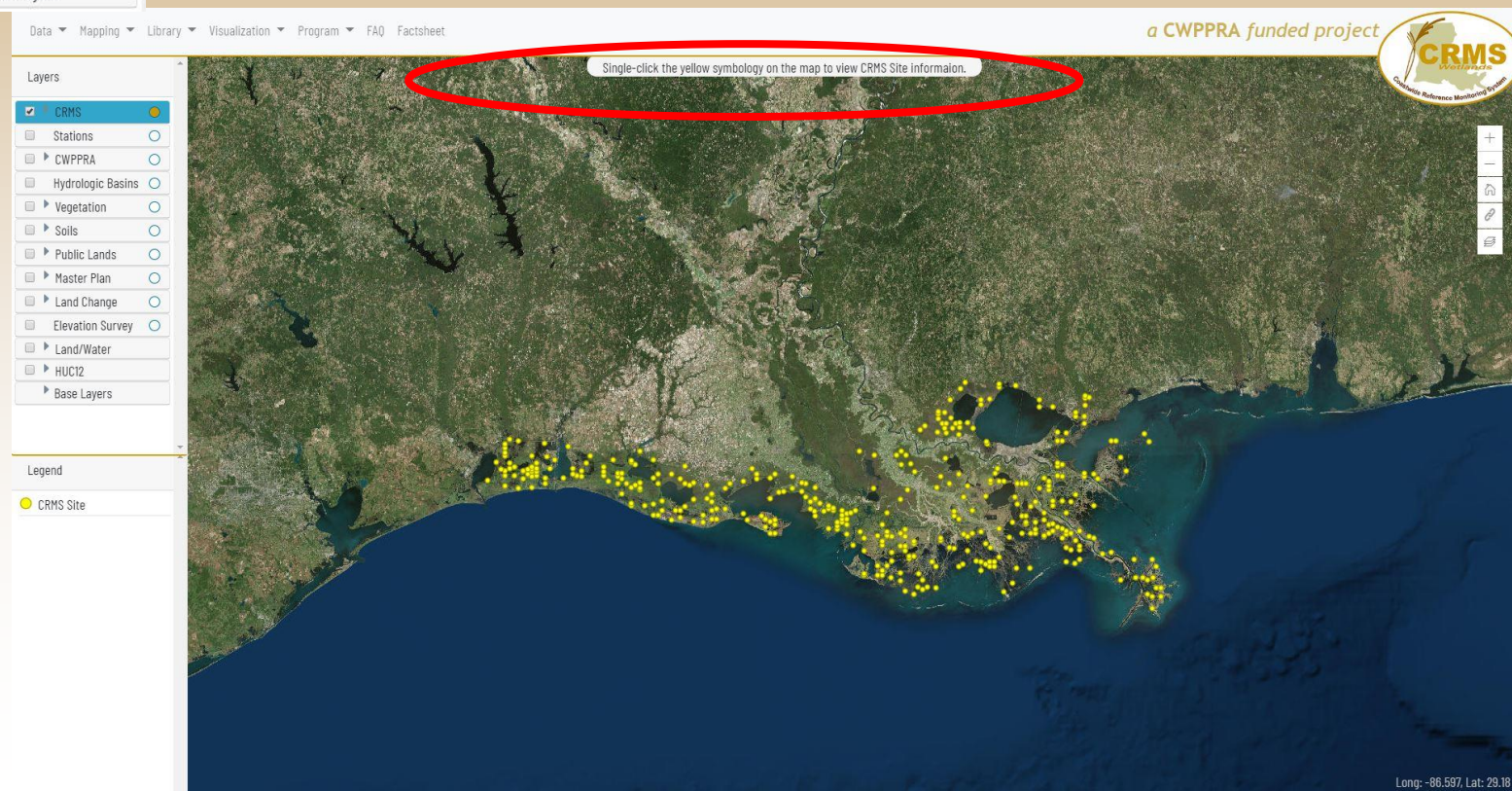
# Coastwide Reference Monitoring System – Wetlands Activating Layers



**You must activate the layer to interact with it on the map!!!!**

Layer tip shows how to interact with the current active layer.

Single-click the yellow symbology on the map to view CRMS Site information.





# Coastwide Reference Monitoring System – *Wetlands*

## CRMS Active Layer Features

### Layers



CRMS



[Download KML](#)

[Download Lat./Long.](#)

Zoom To: CRMS0002 ▼

☐ 1km Buffer

☐ 200m Buffer

☐ Realtime Hydro Sites

☐ Floating Marsh Sites

[Classify](#)

☐ Stations



☐ CWPPRA



☐ Hydrologic Basins



☐ Vegetation



☐ Soils



☐ Public Lands



### Legend

CRMS Site

Expands CRMS layer menu

Download a KML file to used in Google Earth.

Download a csv file of latitude and longitude centerpoint of 1km<sup>2</sup>.

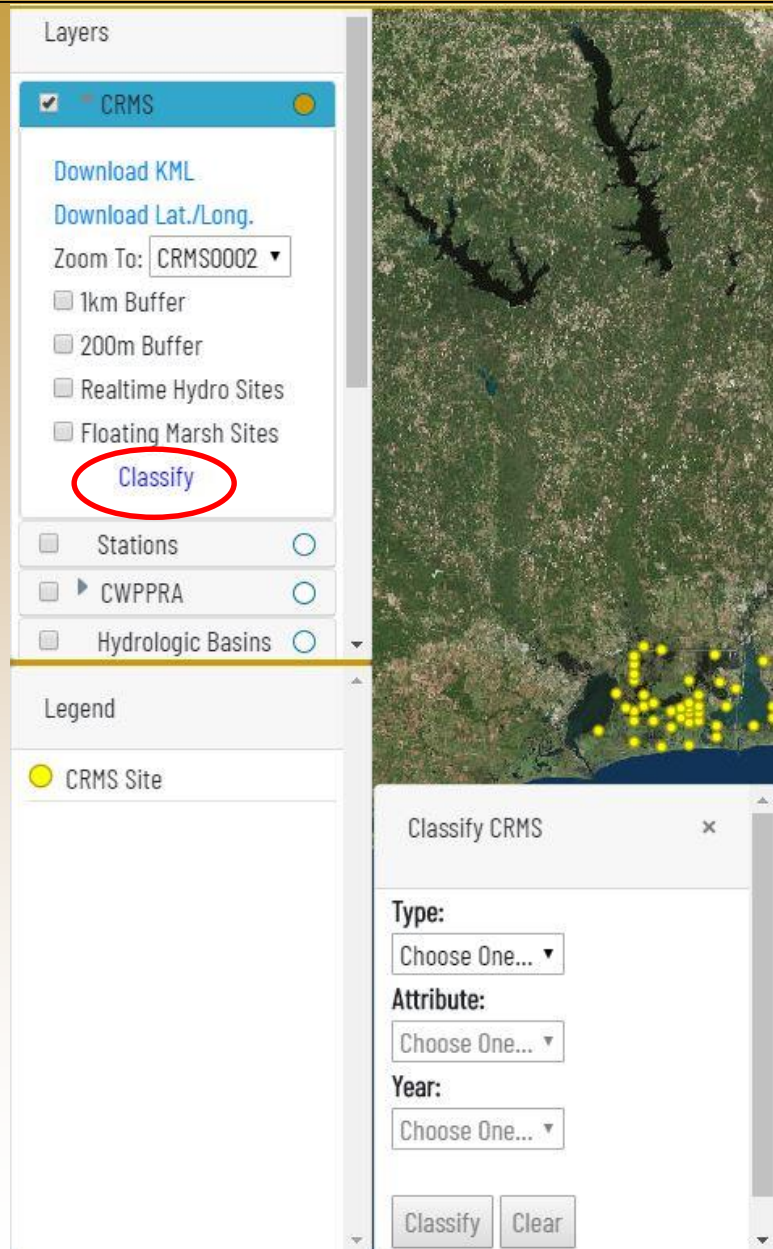
Zooms to the site and shows the site information bubble.

Adds/removes the 1 km<sup>2</sup> buffer layer  
Aerial Photography Boundary

Adds/removes the 200 m<sup>2</sup> buffer layer  
Ecological Data Collection Area

Highlights realtime hydro sites in blue

Highlights floating marsh sites in red



**Classify Tool- allows all CRMS sites to be visualized based on user-selected parameters.**

A Type, Attribute, and Year must be chosen to Classify the CRMS sites.

- **Vegetation**

- FQI
- Total Percent Cover
- Marsh Classification

- **Hydro**

- Percent Time Flooded
- Flooding depth
- Hydro Index
- Salinity
- Water Level

- **Soil**

- Surface Elevation Change Rate (cm/yr)
- Submergence Vulnerability Index (SVI)
- Bulk Density (mean 0-16cm, 3 cores)
- Percent Organic (mean 0-16cm, 3 cores)

- **Spatial**

- Land Acres
- Percent Land





Earthstar Geographics Powered by Esri

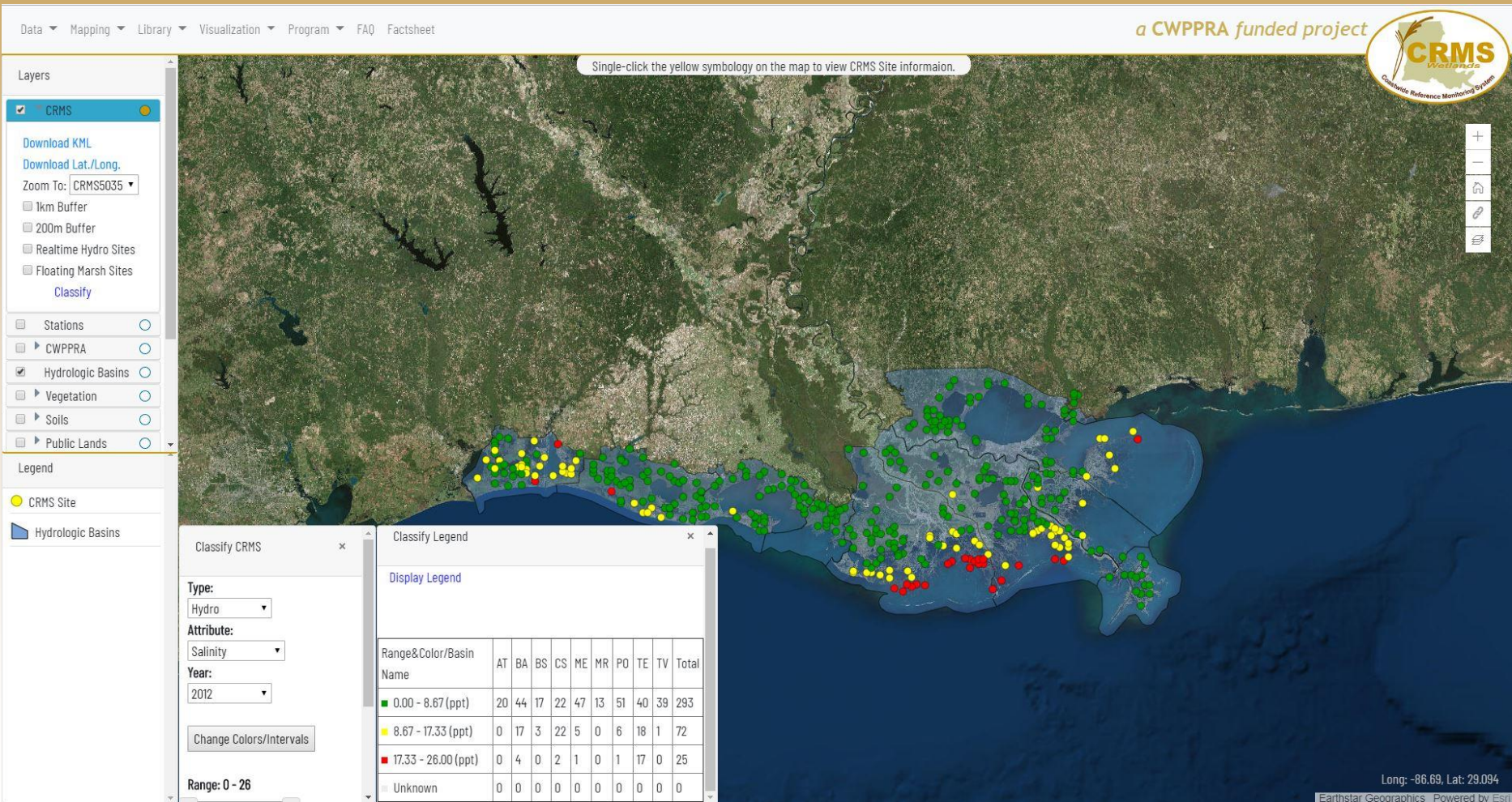




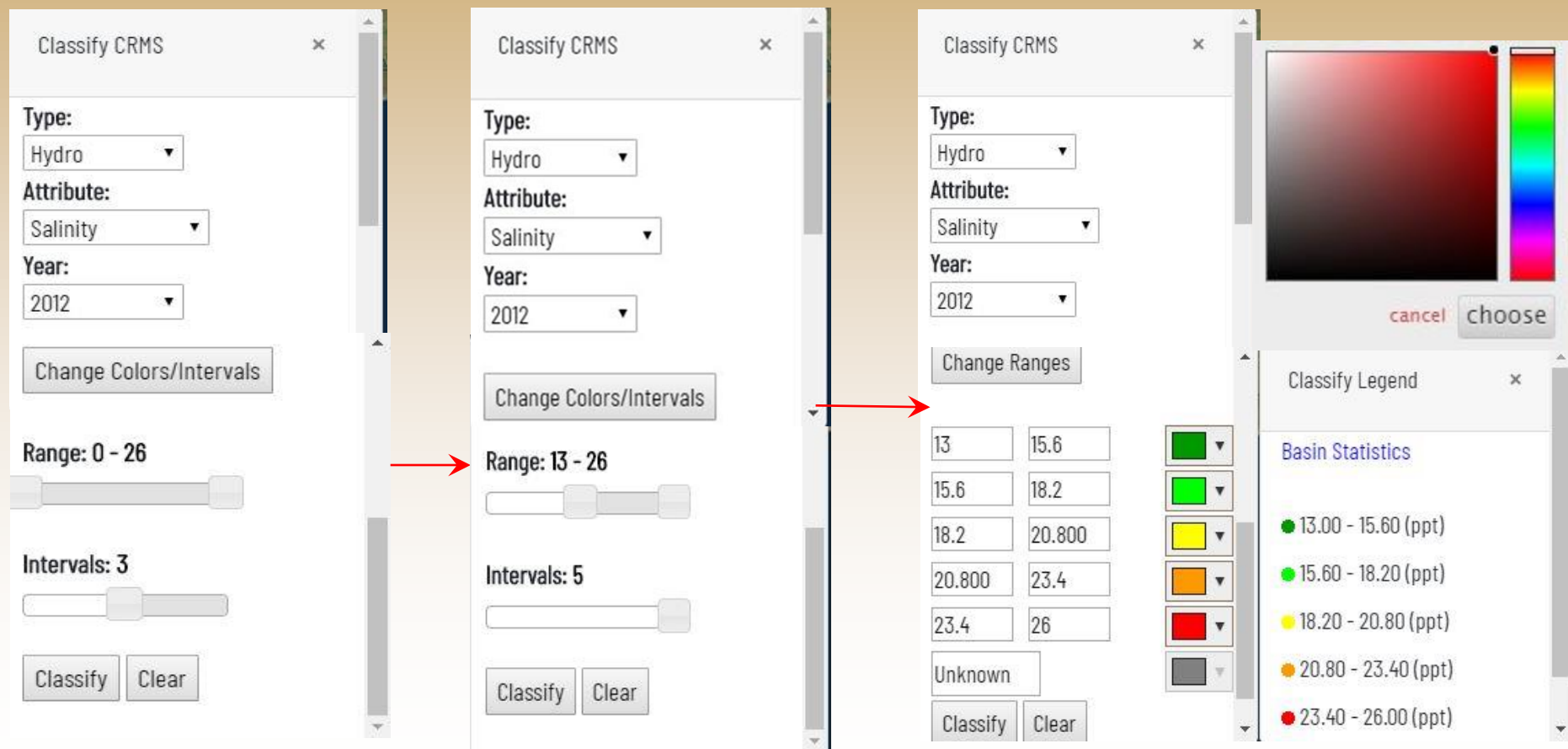
# Coastwide Reference Monitoring System – Wetlands

## CRMS Classify Tool

The tool will tally the classification categories by hydrologic basin.  
For each CRMS index the defaults are red, yellow, green (as in the report card).



User can define classification intervals and color ramp.



The image shows three sequential screenshots of the 'Classify CRMS' tool interface, illustrating the process of defining classification intervals and color ramp.

**Screenshot 1 (Left):** The 'Type' is set to 'Hydro' and the 'Attribute' is 'Salinity'. The 'Year' is '2012'. The 'Range' is '0 - 26' and 'Intervals' is '3'. A red arrow points from the 'Change Colors/Intervals' button to the next screenshot.

**Screenshot 2 (Middle):** The 'Range' is updated to '13 - 26' and 'Intervals' is updated to '5'. A red arrow points from the 'Change Colors/Intervals' button to the next screenshot.

**Screenshot 3 (Right):** The 'Change Ranges' button is clicked, opening a color ramp selection dialog. The dialog shows a color ramp from black to red, with a 'choose' button. Below the dialog, the 'Classify Legend' is displayed, showing the resulting classification intervals and their corresponding colors.

**Classify Legend:**

- 13.00 - 15.60 (ppt) (Dark Green)
- 15.60 - 18.20 (ppt) (Light Green)
- 18.20 - 20.80 (ppt) (Yellow)
- 20.80 - 23.40 (ppt) (Orange)
- 23.40 - 26.00 (ppt) (Red)






# Coastwide Reference Monitoring System – Wetlands Site Bubbles

Click a point for site level information bubble

a CWPRA funded project



CRMS

Download KML  
Download Lat./Long.  
Zoom To: CRMS5035  
☐ 1km Buffer  
☐ 200m Buffer  
☐ Realtime Hydro Sites  
☐ Floating Marsh Sites  
[Classify](#)

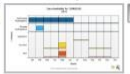
☐ Stations  
☐ CWPRA  
☐ Hydrologic Basins  
☐ Vegetation  
☐ Soils  
☐ Public Lands

Legend  
● CRMS Site




Layer Info



Info Water Veg Soil Spatial Rep. Card Tools

Site ID: CRMS5035  
Lat, Long: 29.62121, -91.03966  
Marsh Elevation: 0.64ft NAVD88 GEOID12A  
Data Availability: 2018



Pre/Post Construction Pictures:

 Post Construction  
 Pre Construction  
 Preliminary Site Visit North

 CRMS5035 Survey Report Initial  
 CRMS5035 Survey Report Summer 2014

Long: -91.963, Lat: 29.128  
Earthstar Geographics Powered by Esri



### Site Information Bubble

Layer Info

Info

Water

Veg

Soil

Spatial

Rep. Card

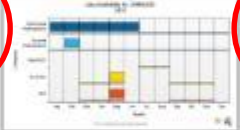
Tools

**Site ID:** CRMS5035


**Lat, Long:** 29.62121, -91.03966

**Marsh Elevation:** 0.64ft NAVD88 GEOID12A


**Data Availability:** 2018




**Pre/Post Construction Pictures:**




Post Construction




Pre Construction



Preliminary Site  
Visit North

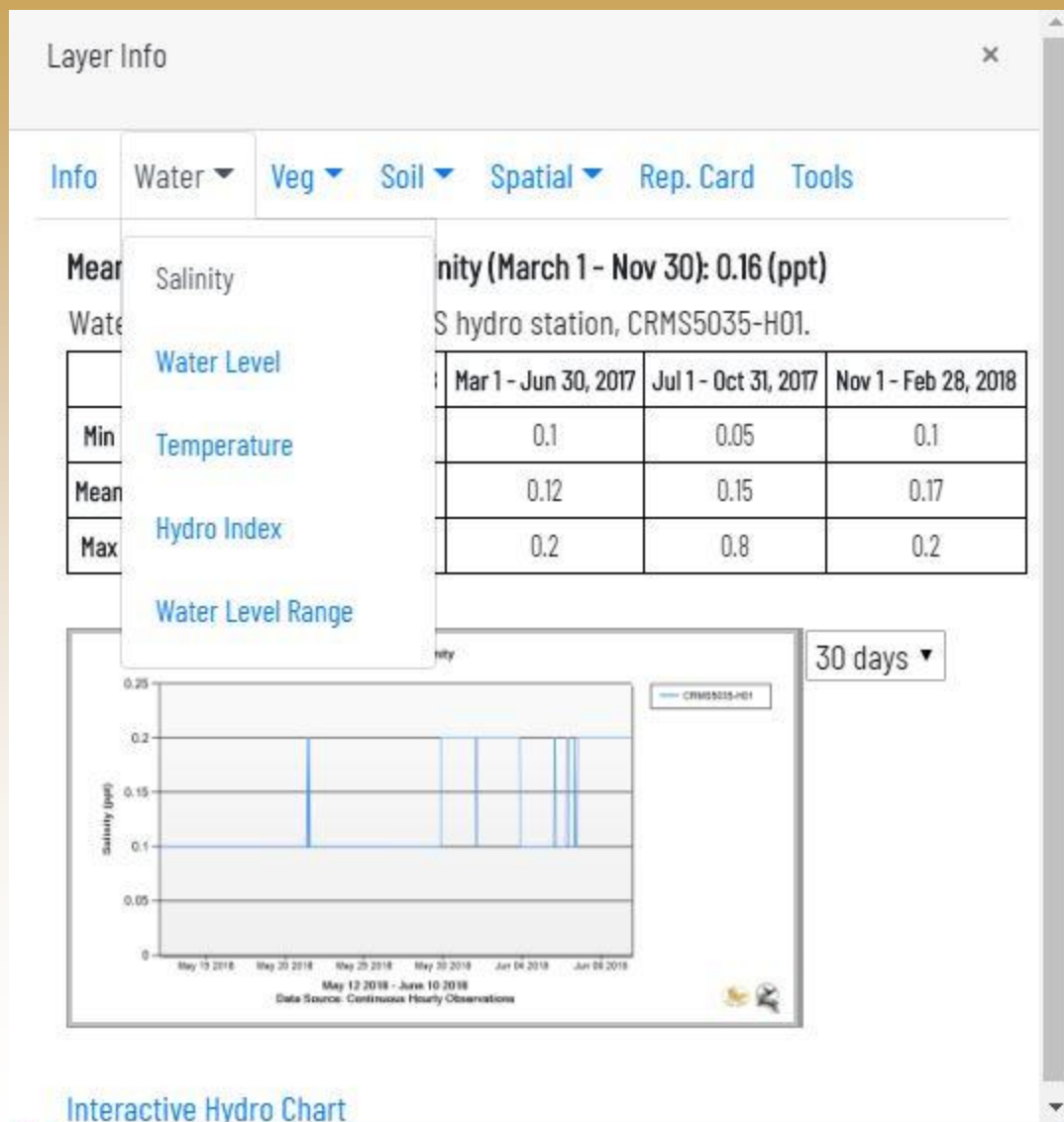
 CRMS5035 Survey Report Initial

 CRMS5035 Survey Report Summer 2014

General information about the CRMS site including data availability, site photos, and survey reports.

Arrows allow user to scroll through data availability by year.

### Site Information Bubble



The Water tab contains all hydrologic information for the selected site.

Salinity – Brief overview of salinity data for the site. Also charts most recent salinity data for the site.

### Site Information Bubble

The Water tab contains all hydrologic information for the selected site.

Hydro Index – All Hydro Index charts available for the site.

Layer Info

Info Water Veg Soil Spatial Rep. Card Tools

Mean Salinity  
Water  
Min Temperature  
Mean Hydro Index  
Max Water Level Range

Hydro Index (March 1 - Nov 30): 0.16 (ppt)

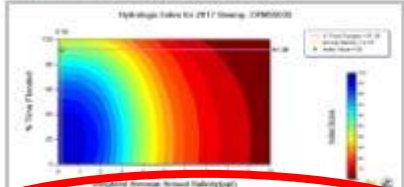
1 hydro station, CRMS5035-H01.

Mar 1 - Jun 30, 2017	Jul 1 - Oct 31, 2017	Nov 1 - Feb 28, 2018
0.1	0.05	0.1
0.12	0.15	0.17
0.2		

Layer Info

Info Water Veg Soil Spatial Rep. Card Tools

2017 Hydro Chart



What does this chart mean?

CRMS

The Hydrologic Index (HI) jointly assesses the suitability of two critical aspects of wetlands (percent time flooded, in maximizing vegetation primary productivity for the 5 different marsh classes: intermediate, brackish, and saline). The index score ranges from 0 - 100, and the score represents the vegetation productivity expected to occur if the separate effects of salinity and inundation are combined in the following fashion, according to the following formula:

$$HI = fld \times sal$$

where fld is the percent maximum productivity attributable to percent time flooded, and sal is the percent maximum productivity attributable to the average annual salinity. Relationships describing how percent maximum productivity were taken from the Habitat Switching Module of the LCA ecosystem model (Mitsch et al. 2004).

The HI is calculated for a given water year, which begins October 1 and ends the following September 30.



### Site Information Bubble

Layer Info

Info Water Veg Soil Spatial Rep. Card Tools

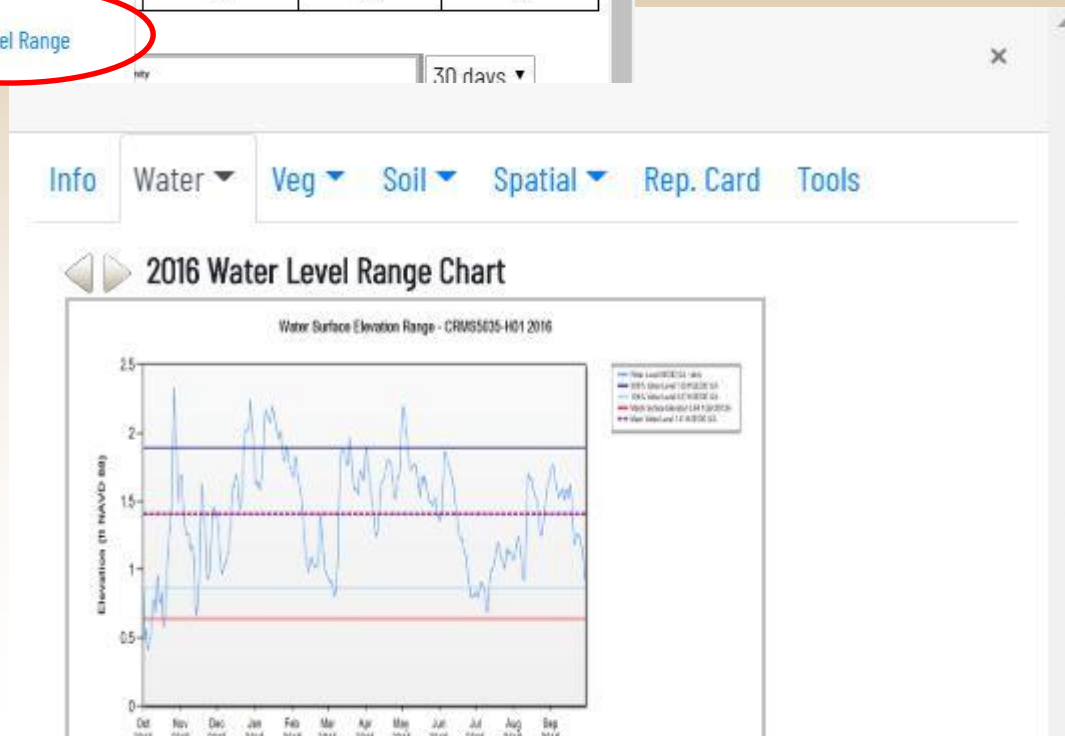
Mean Salinity  
Water Level  
Min Temperature  
Mean Hydro Index  
Max Water Level Range

Salinity (March 1 - Nov 30): 0.16 (ppt)  
S hydro station, CRMS5035-H01.

	Mar 1 - Jun 30, 2017	Jul 1 - Oct 31, 2017	Nov 1 - Feb 28, 2018
Min	0.1	0.05	0.1
Mean	0.12	0.15	0.17
Max	0.2	0.8	0.2

30 days

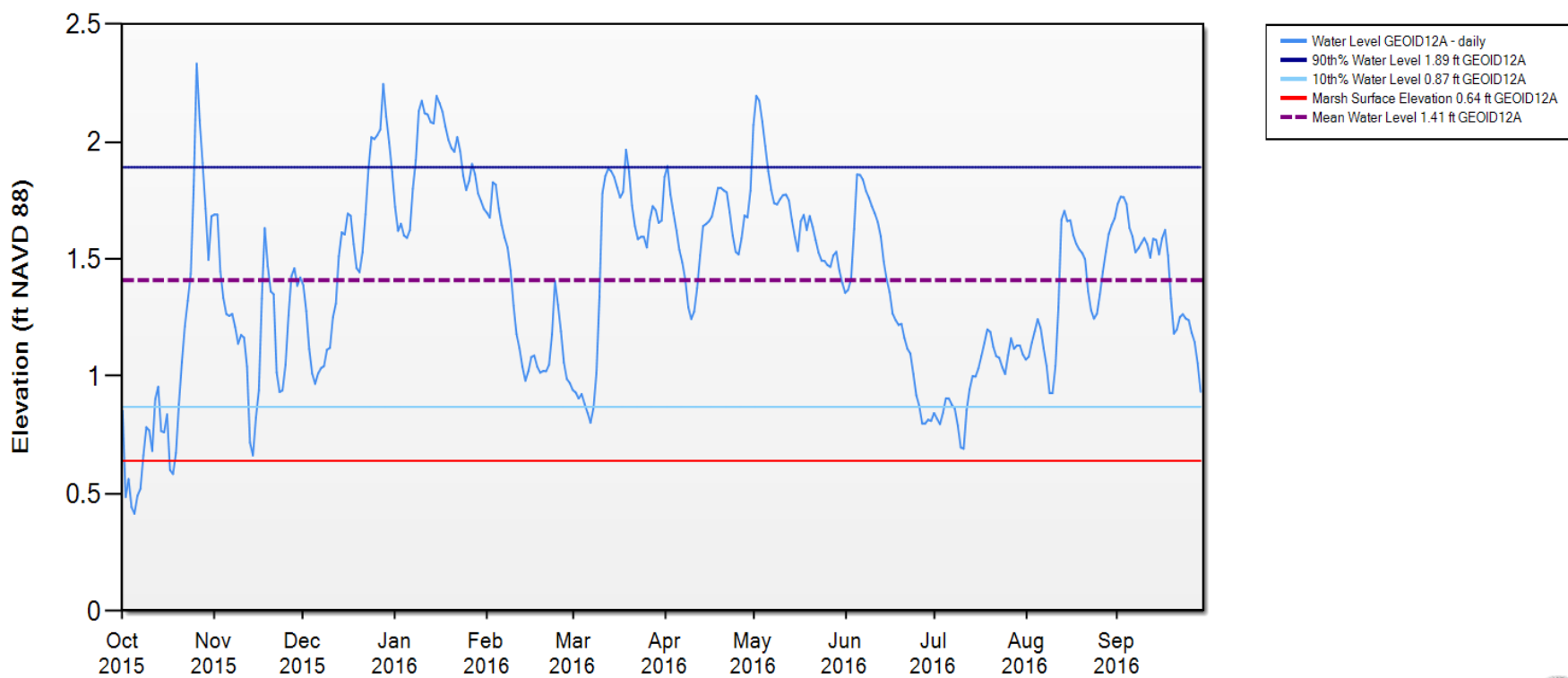
The Water tab contains all hydrologic information for the selected site.



Water Level Range – All water level range charts available for the current site.

### Site Information Bubble

Water Surface Elevation Range - CRMS5035-H01 2016



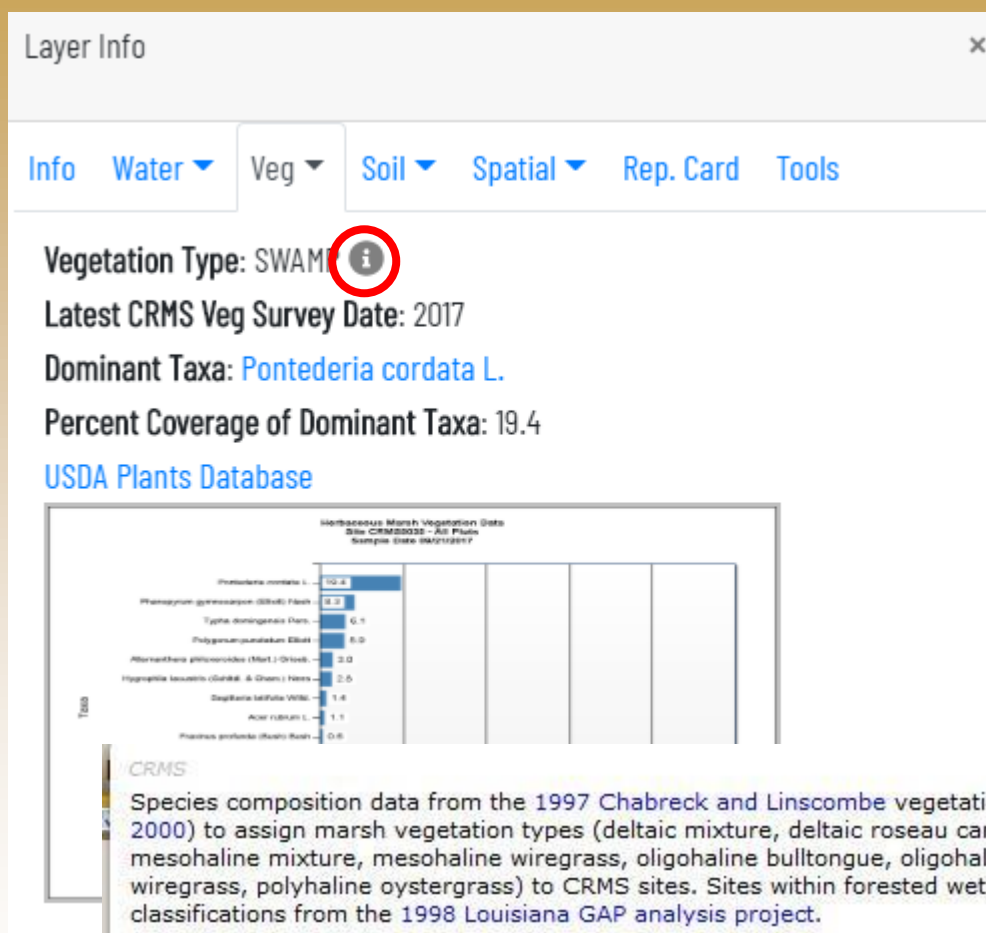
Data Source: Continuous Daily Observations



## Site Information Bubble

The Vegetation tab contains all vegetation information for the selected site.

Herbaceous – Percent cover by species chart.



Chabreck, R.H. and Linscombe G. 1997. Vegetation type map of the Louisiana coastal marshes. Louisiana Department of Wildlife and Fisheries, New Orleans, Louisiana.

Louisiana Gap Analysis Project. 1998. Land Cover Classification for the Louisiana GAP Analysis Project. U.S. Geological Survey Biological Research Division, National Wetlands Research Center, Lafayette, Louisiana. [http://sabdata.cr.usgs.gov/sabnet\\_public/pub\\_sab\\_app.aspx?prodid=780](http://sabdata.cr.usgs.gov/sabnet_public/pub_sab_app.aspx?prodid=780)

### Site Information Bubble

Veg ▾

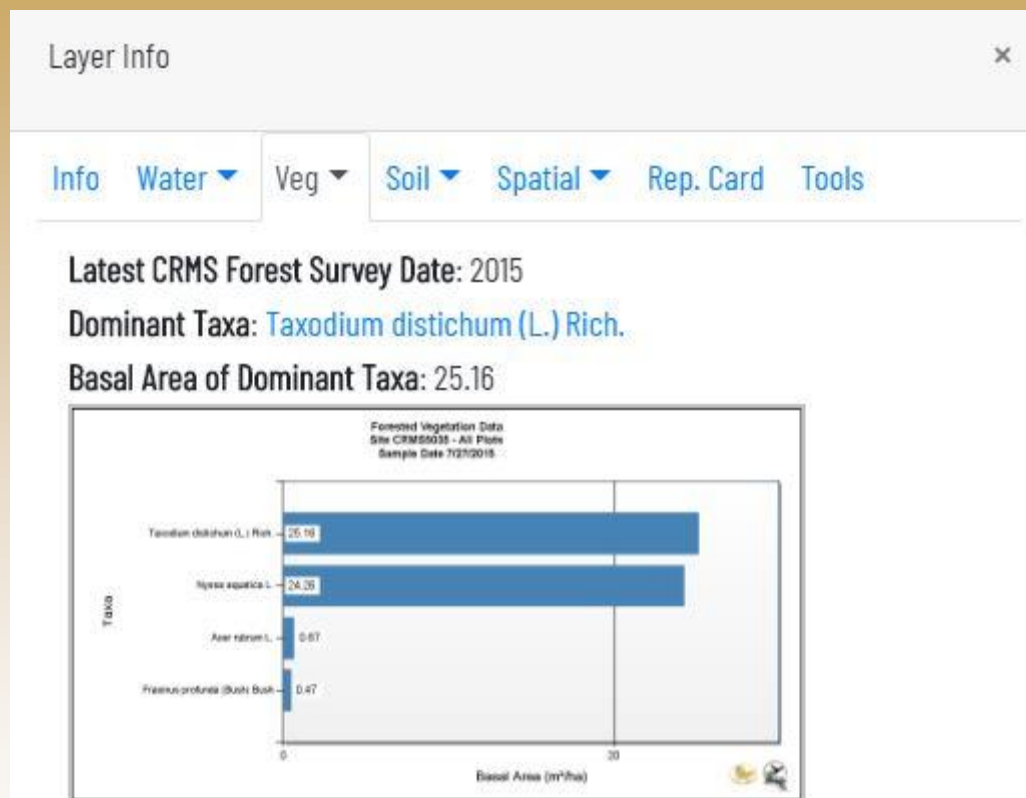
Herbaceous

Forested

FQI

Marsh Classification

Forested – Species  
driven basal area chart.





### Site Information Bubble

Veg ▼

Herbaceous

Forested

FQI

Marsh Classification



Floristic Quality Index (FQI) chart showing vegetative species composition and FQI score annually.



### Site Information Bubble

Veg ▼

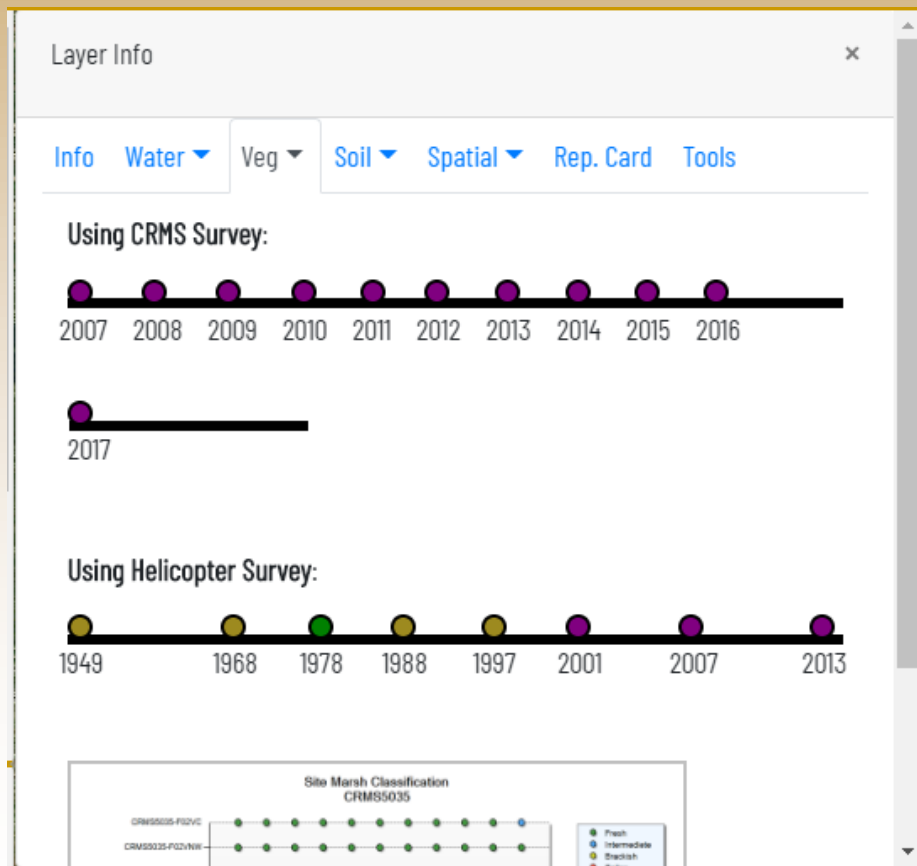
Herbaceous

Forested

FQI

Marsh Classification

**Marsh Classification** – The chart displays marsh class by site over time.



Top bar is marsh class at the site level using annual on-the-ground vegetation survey data.

Bottom bar is marsh class at the site level using the coastwide helicopter survey data.

### Site Information Bubble

Soil ▾

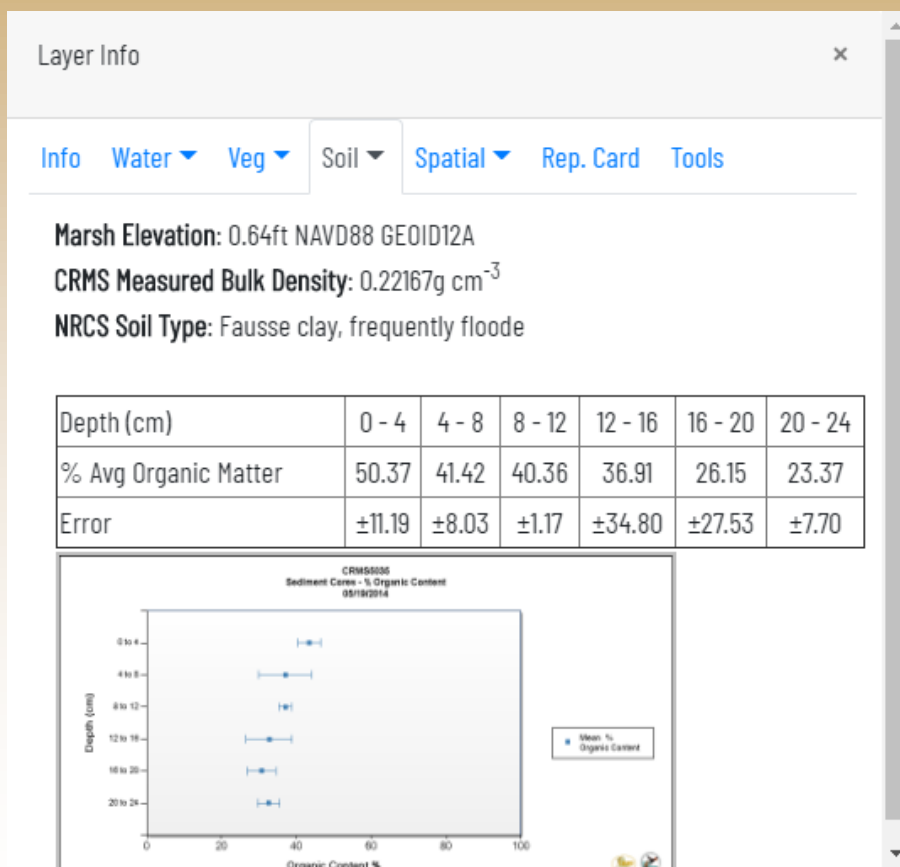
Percent Organic

Bulk Density

Surf.

Elev./Accretion/SVI

The Soil tab contains all soil information for the selected site.



**Bulk Properties –**  
 Soil profiles taken at site establishment.



### Site Information Bubble

Soil ▼

Percent Organic

Bulk Density

Surf.

Elev./Accretion/SVI

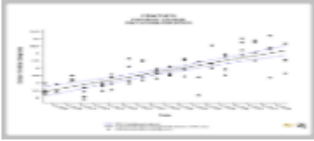
Layer Info
×

Info
Water ▼
Veg ▼
Soil ▼
Spatial ▼
Rep. Card
Tools


**Marsh Elevation:** 0.64ft NAVD88 GEOID12A

**CRMS Measured Bulk Density:** 0.22167g cm<sup>-3</sup>


**NRCS Soil Type:** Fausse clay, frequently floode



What does this chart mean?



What does this chart mean?



What does this chart mean?

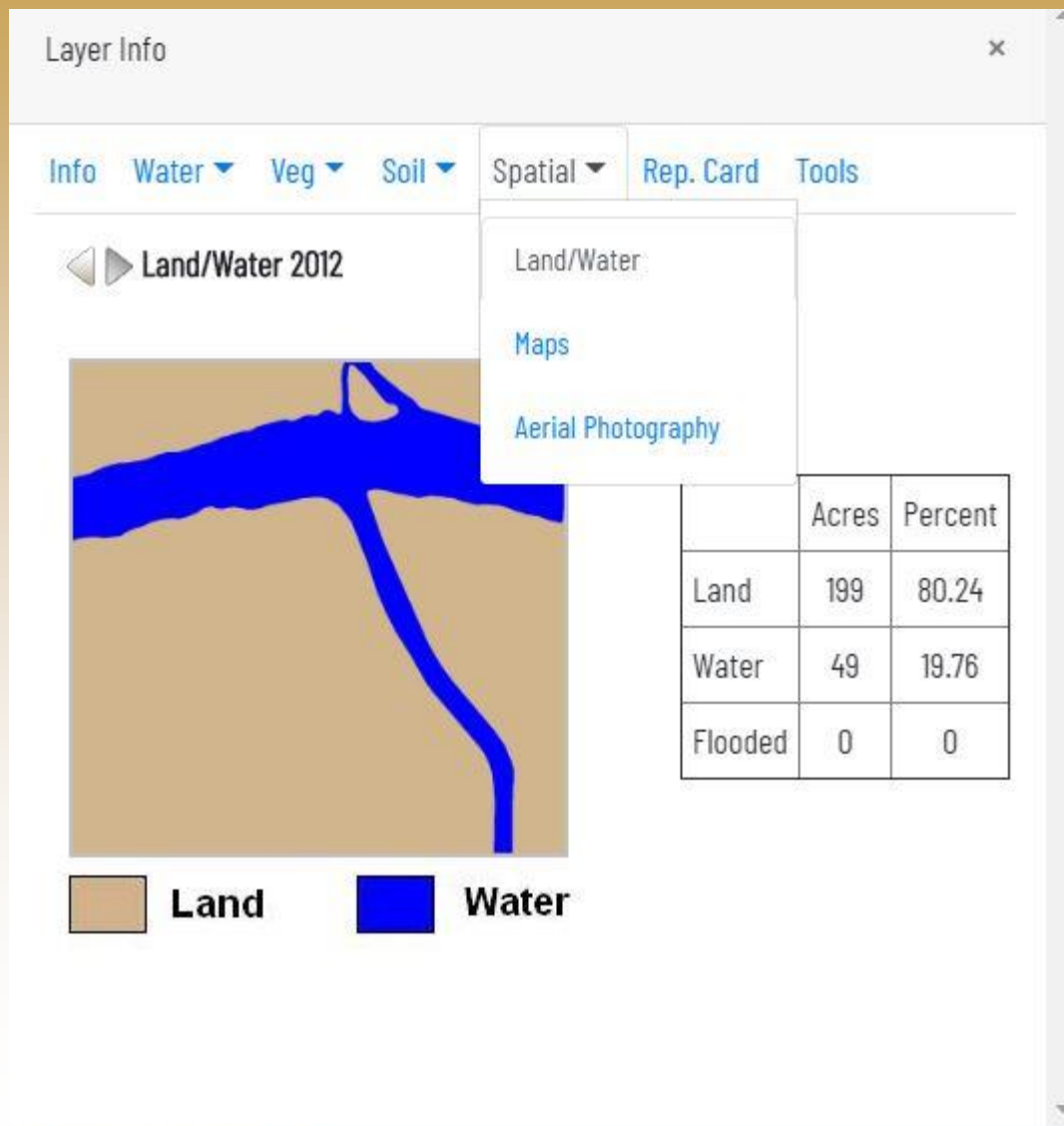
### Surface

**Elevation/Accretion/SVI –**  
currently displays site level  
elevation change, accretion,  
and submergence  
vulnerability charts.





### Site Information Bubble



The Spatial tab contains all spatial information for the selected site.

Land/Water with acreage breakdowns.

2015/2016-  
Land/Water classification available for TV, ME, CS Basins through Science Base.

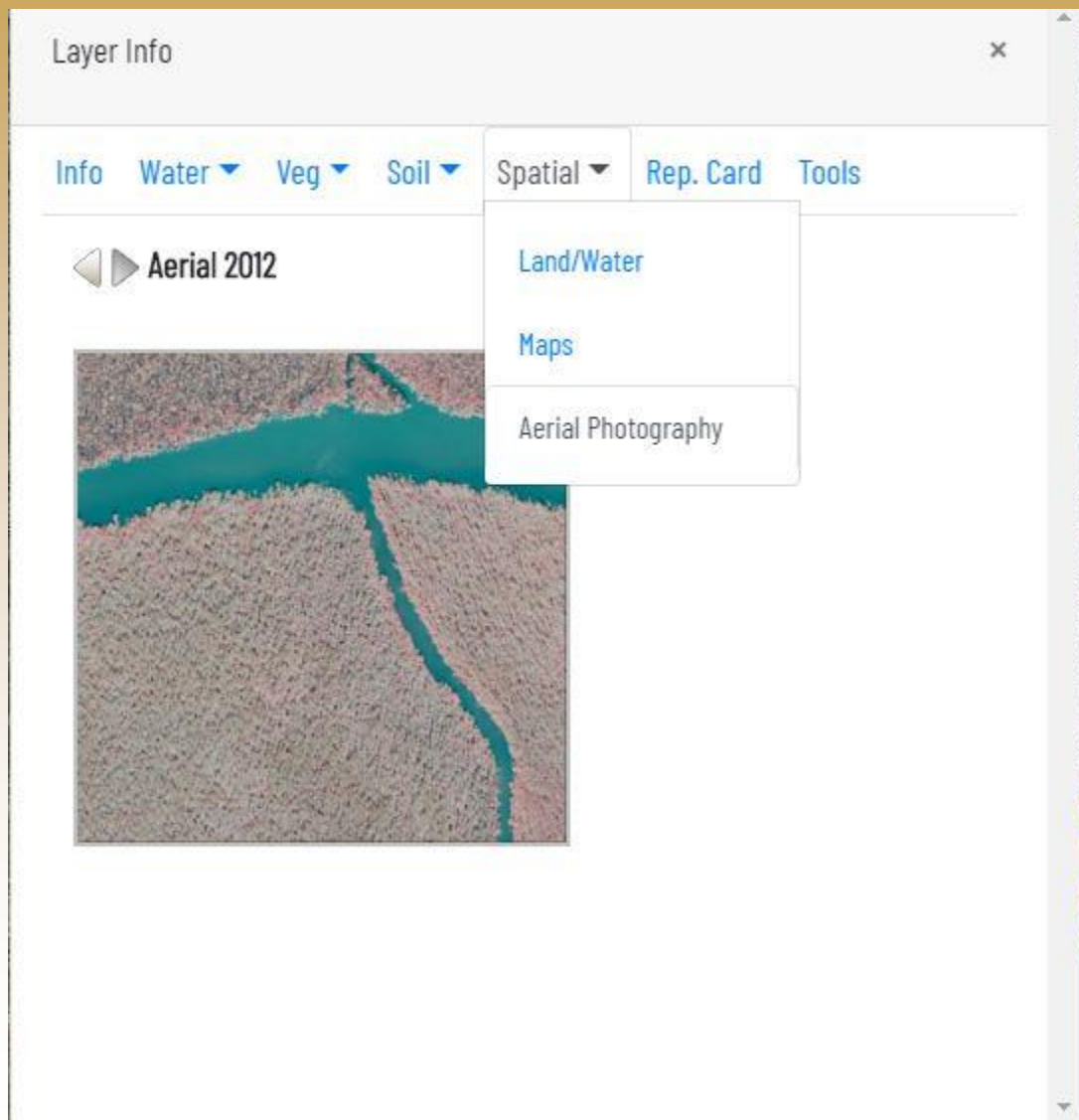
<https://www.sciencebase.gov/catalog/item/58ebb4f2e4b0b4d95d3200b7>

### Site Information Bubble



CRMS site land/water maps at the 1km<sup>2</sup> scale.

### Site Information Bubble



The Spatial tab contains all spatial information for the selected site.

Aerial Photography

### Site Information Bubble



The Report Card tab contains all report card information for the selected site.

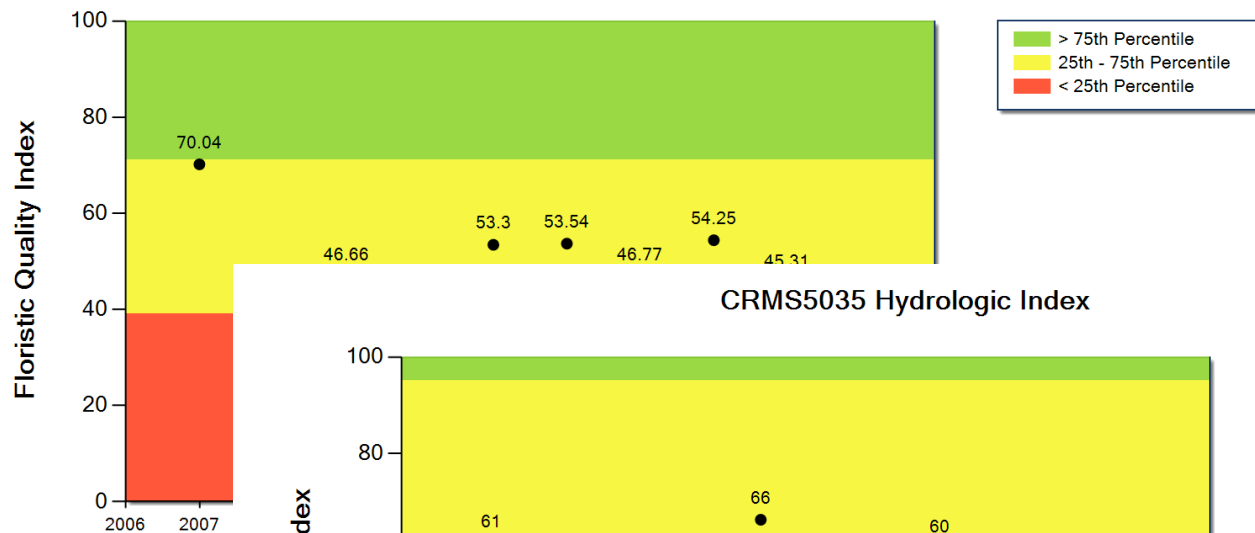
Report Card- Generate site report cards for previous years in the bubble or look at summary graphics.

Click on thumbnails to expand graphics.

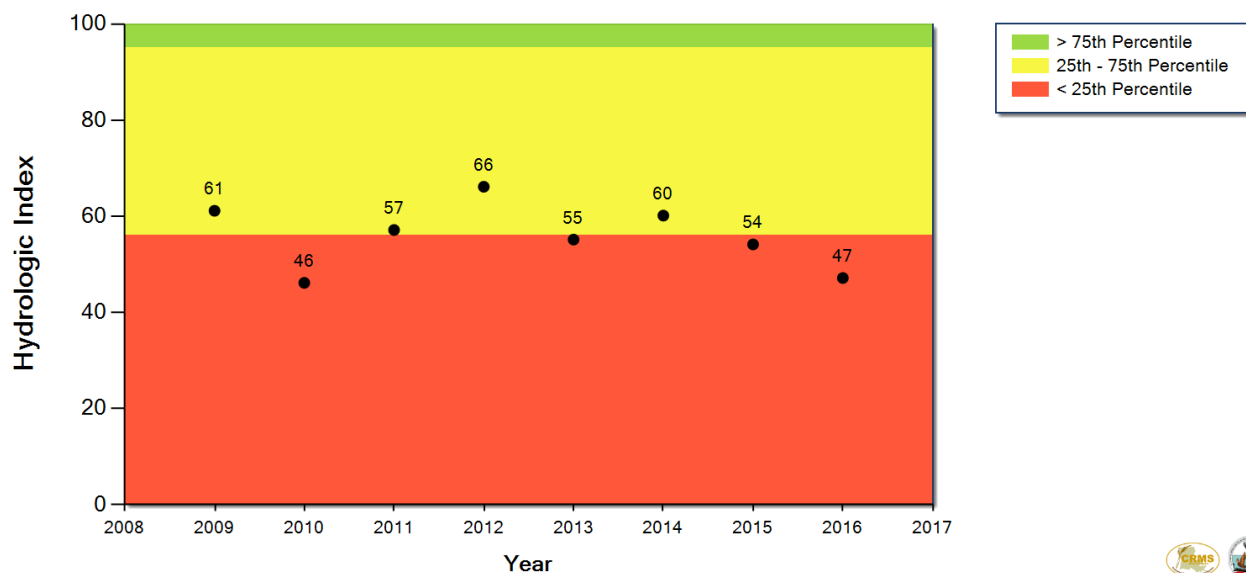


### Site Information Bubble

CRMS5035 Floristic Quality Index



CRMS5035 Hydrologic Index



**Report Card Summary Graphics- Allow you to visualize individual index scores through time for a particular site.**



# Coastwide Reference Monitoring System – *Wetlands*

## CRMS Acreage Assessment Tool

**Acreage Assessment Tool provides area estimates of a chosen layer given a defined polygon.**

Layers:

Coastwide Vegetation  
Land/Water

Area:

CRMS Sites (1km buffer)  
CWPPRA Projects – *access thru project layer*  
Hydro Basins - *access thru basins layer*

Years:

Varies based on layer dataset

### Layers

- ☒ CRMS
- ☐ Stations
- ☐ CWPPRA
- ☐ Hydrologic Basins
- ☐ Vegetation
- ☐ Soils
- ☐ Public Lands
- ☐ Master Plan
- ☐ Land Change
- ☐ Elevation Survey
- ☐ Land/Water
- ☐ HUC12
- ☐ Base Layers

### Layer Info

Info Water ▼ Veg ▼ Soil ▼ Spatial ▼ Rep. Card Tools

#### Assessment

Land/Water

Coastwide Vegetation



# Coastwide Reference Monitoring System – Wetlands

## Acreage Assessment-Site Level

### Site Information Bubble

**Acreage Assessment** – Use the acreage assessment tool to determine area breakdowns of the available land/water data.

Layer Info

Info Water ▾ Veg ▾ Soil ▾ Spatial ▾ Rep. Card Tools

Assessment

Land/Water

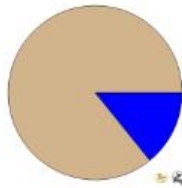
Click a Year to Assess

1985 1987 1990 1995 1998 1999 2002 2004

2006 2008 2009 2010 2013 2014 2015 2016

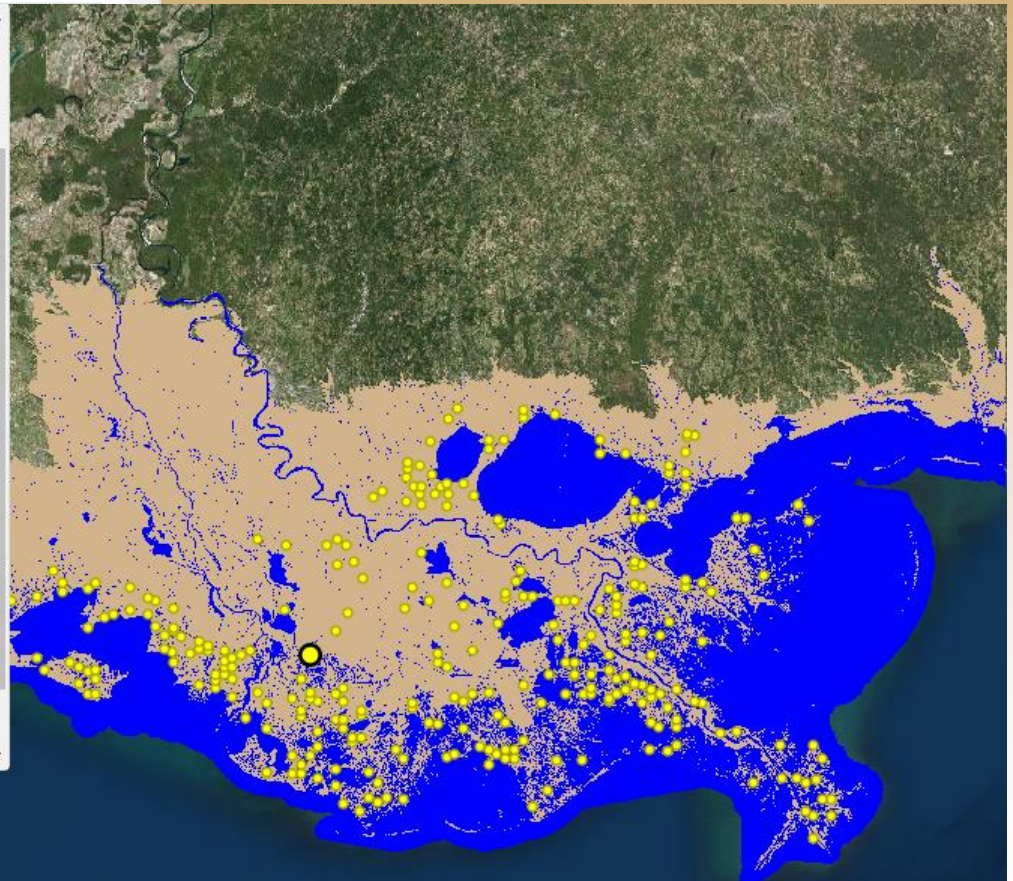
CRMS5035 1Km<sup>2</sup> Land/Water for 2004

Land:	220.62 acres	(85.81%)
Water:	36.47 acres	(14.19%)
Total:	257.09 acres	



[Expand](#)

[Data Download](#)





# Coastwide Reference Monitoring System – *Wetlands* Acreage Assessment - Site Level

## Site Information Bubble

**Acreage Assessment** – Use the acreage assessment tool to determine area breakdowns of the available coastwide vegetation surveys data.

Layer Info

Info Water ▾ Veg ▾ Soil ▾ Spatial ▾ Rep. Card Tools

Assessment

Land/Water

Coastwide Vegetation

Click a Year to Assess

1949 1968 1978 1988 1997 2001 2007 2013

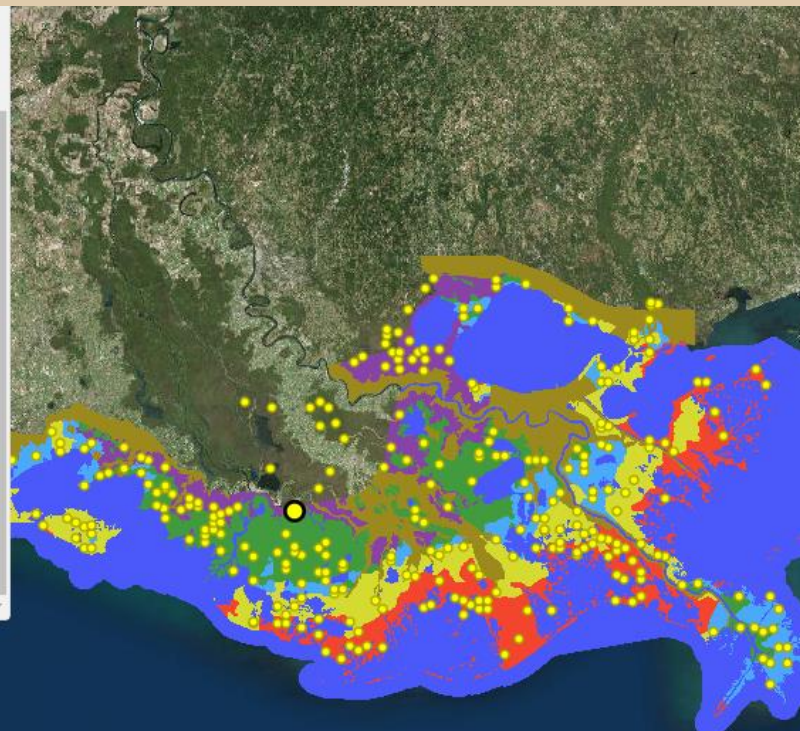
CRMS5035 1Km<sup>2</sup> Coastwide Vegetation for 2013

Saline:	N/A
Fresh:	N/A
Brackish:	N/A
Intermediate:	N/A
Swamp:	189.04 acres (100.00%)
Water:	N/A
Other:	N/A
Total:	189.04 acres



[Expand](#)

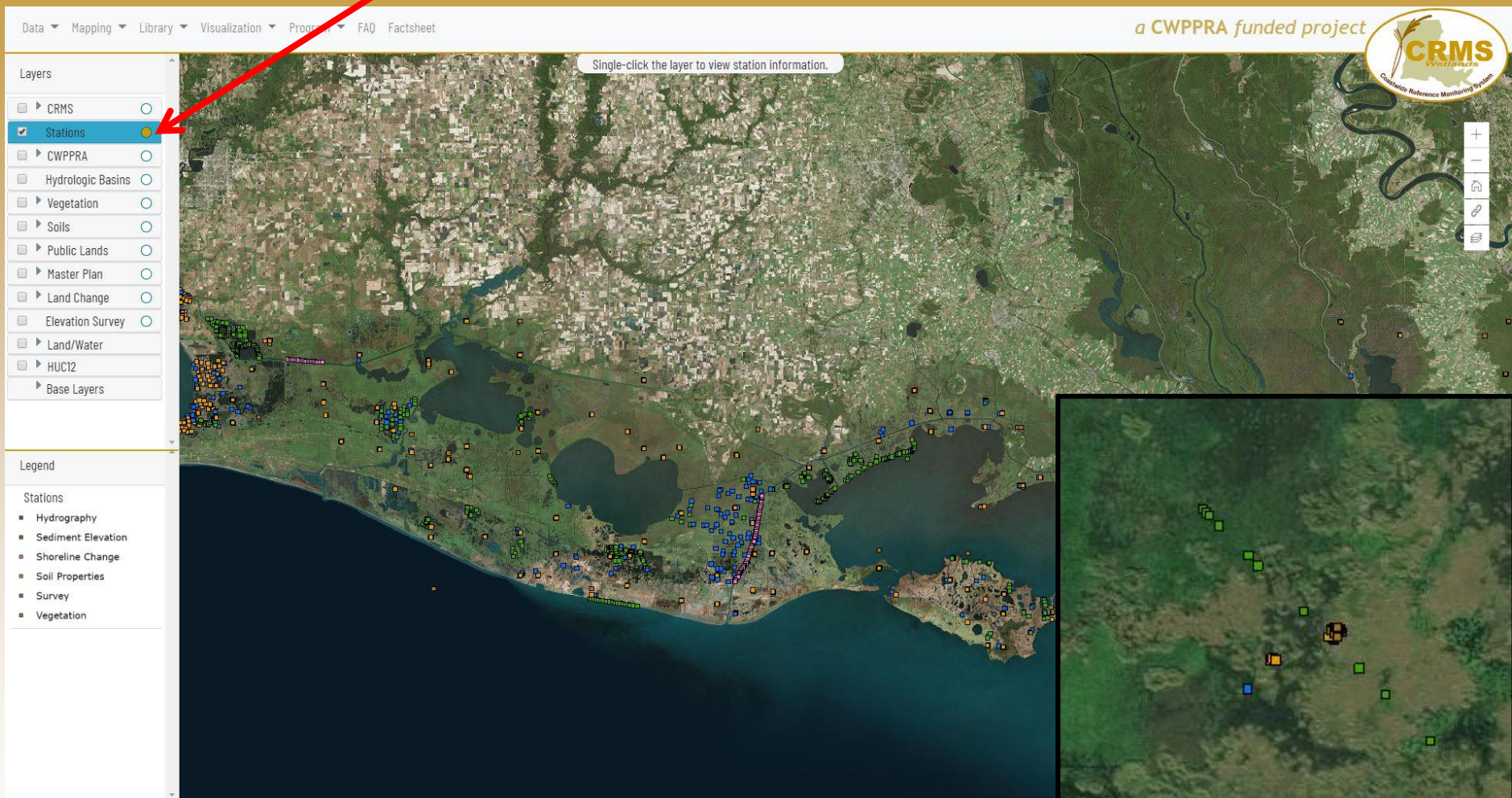
[Data Download](#)







# Coastwide Reference Monitoring System – Wetlands Stations Layer

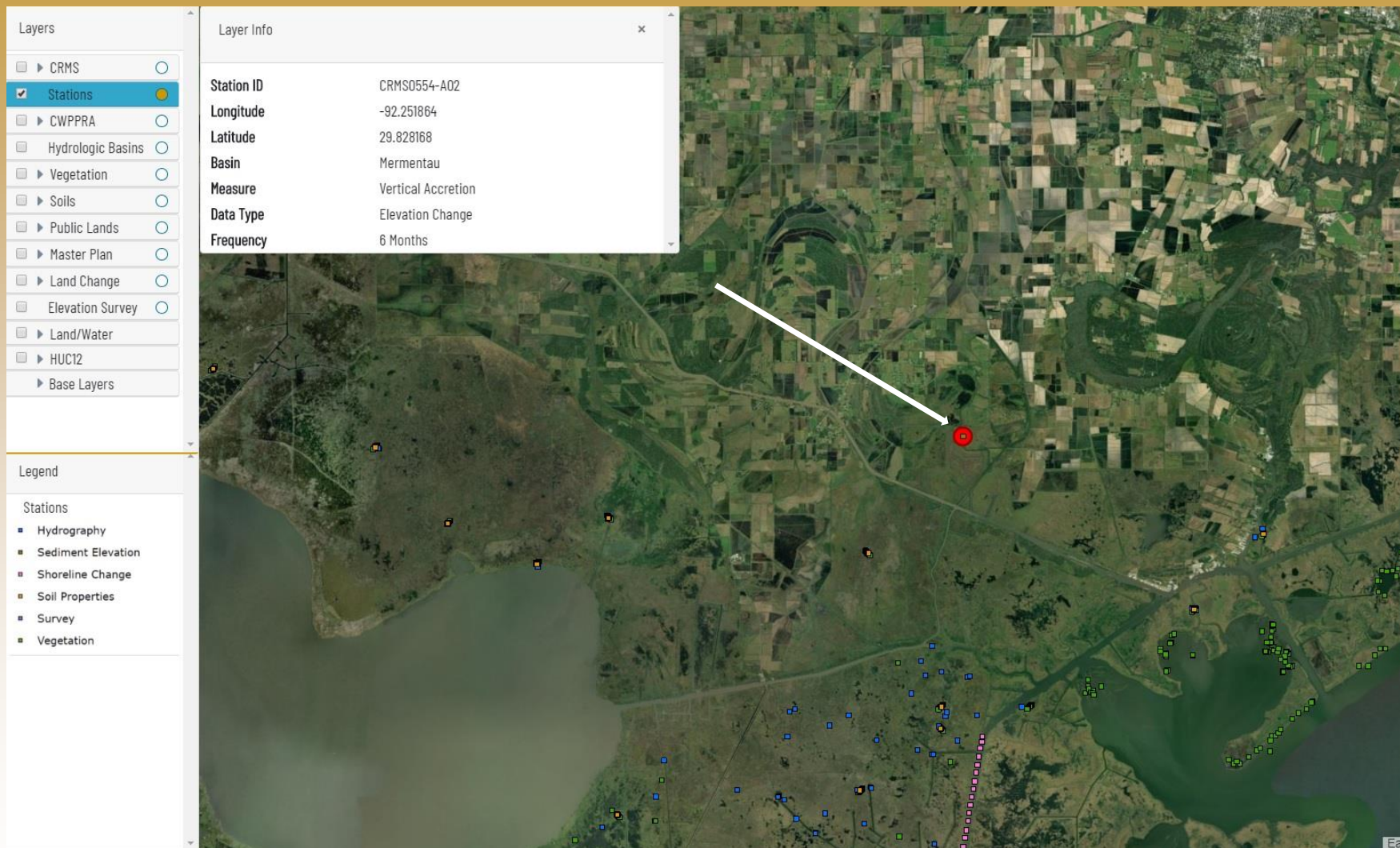


**Zoom in tight and you will see the stations associated with every CRMS site.**





# Coastwide Reference Monitoring System – Wetlands *Stations Layer*



Points on the map display a brief description of the station's information





# Coastwide Reference Monitoring System – Wetlands

## Project Level Information

Layers

- ☐ CRMS
- ☐ Stations
- ☒ CWPPRA

Zoom To: AT-02

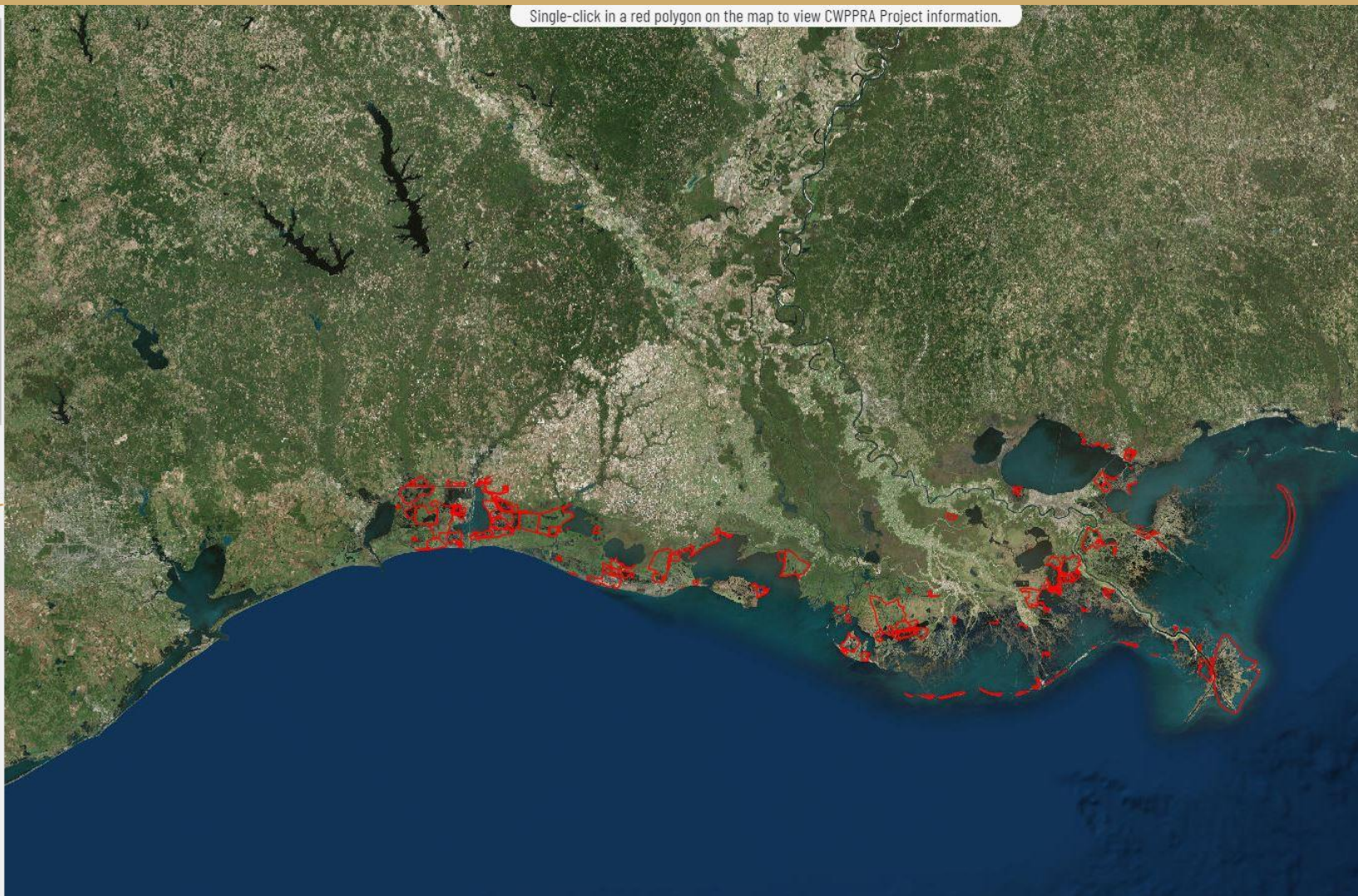
- ☒ Constructed
- ☒ Not Constructed
- ☐ Infrastructure

- ☐ Hydrologic Basins
- ☐ Vegetation
- ☐ Soils
- ☐ Public Lands
- ☐ Master Plan
- ☐ Land Change
- ☐ Elevation Survey
- ☐ Land/Water

Legend

- CWPPRA Projects

Single-click in a red polygon on the map to view CWPPRA Project information.





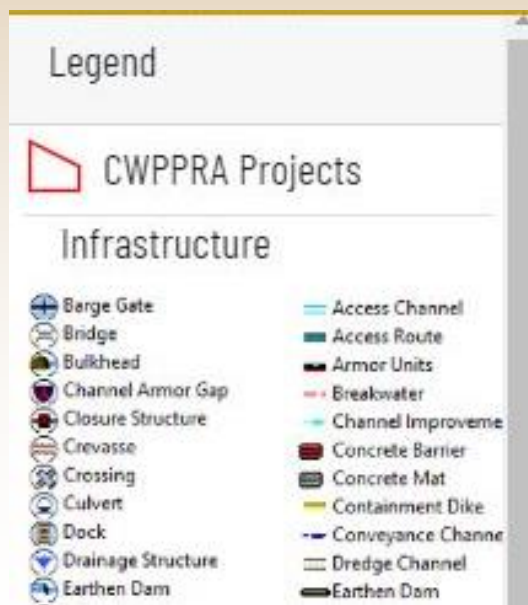
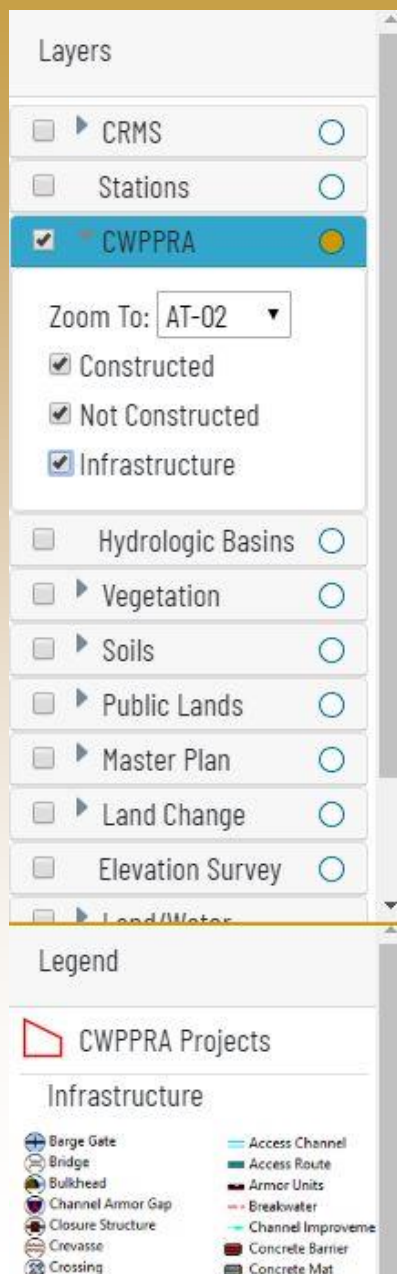
# Coastwide Reference Monitoring System – *Wetlands*

## Project Level Information

Zoom to function zooms to the project and shows the information bubble for it.

Adds/removes the Constructed projects layer to the map.

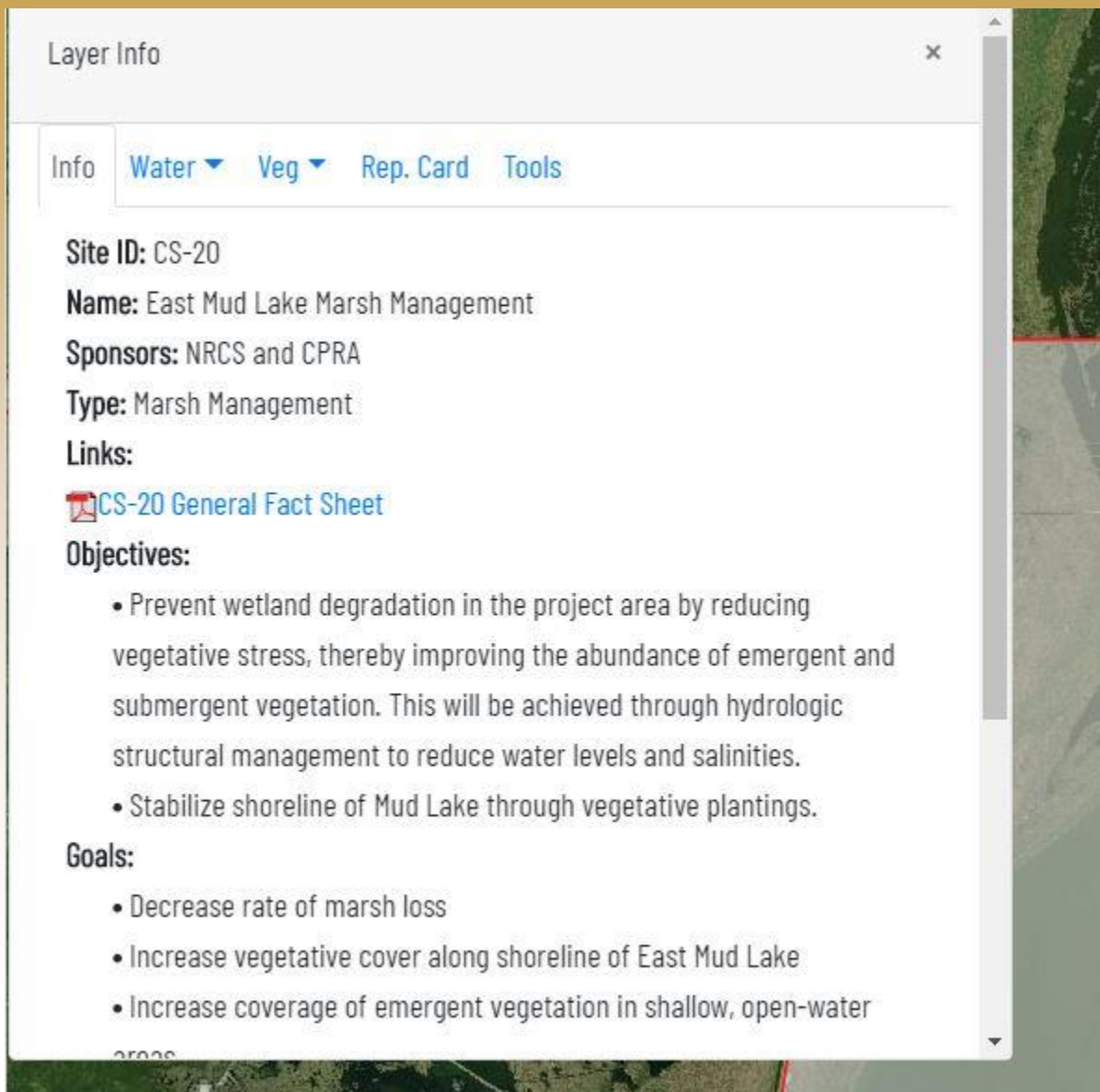
Adds/removes the “planning” projects layer to the map.



Adds/removes the Project Infrastructure layer to the map and shows the legend



### Project Information Bubble

A screenshot of a web application showing a "Layer Info" window. The window has a close button (X) in the top right corner. Below the title bar, there are four tabs: "Info", "Water", "Veg", "Rep. Card", and "Tools". The "Info" tab is selected. The content of the "Info" tab includes:


**Site ID:** CS-20

**Name:** East Mud Lake Marsh Management

**Sponsors:** NRCS and CPRA

**Type:** Marsh Management

**Links:**

 [CS-20 General Fact Sheet](#)

**Objectives:**

- Prevent wetland degradation in the project area by reducing vegetative stress, thereby improving the abundance of emergent and submergent vegetation. This will be achieved through hydrologic structural management to reduce water levels and salinities.
- Stabilize shoreline of Mud Lake through vegetative plantings.

**Goals:**

- Decrease rate of marsh loss
- Increase vegetative cover along shoreline of East Mud Lake
- Increase coverage of emergent vegetation in shallow, open-water areas

The information bubble appears when a CWPPRA project is clicked. The Project Info tab is automatically chosen when the bubble pops up on the screen.



### Project Information Bubble

Water ▾

Summary

Salinity

Water Level

Temperature

Water Level Range

Layer Info

Info Water ▾ Veg ▾ Rep. Card Tools

◀ 2017 ▶

	Mean Annual Salinity	Salinity 10%	Salinity 90%	% Time Flooded	Tide Range (ft)
CRMS0655-H01	11.7	5.9	19.1	90.6	—
CRMS0672-H01	12.5	8.2	18.4	85.5	—
<b>Project Mean</b>	<b>12.1</b>	<b>7.1</b>	<b>18.8</b>	<b>88.1</b>	—
CS20-14R	<70%	<70%	<70%	<70%	—
<b>Reference Mean</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	—

<70% - The available data covers less than seventy percent of the entire water year(Oct. 1 - Sept. 30).

**Salinity 10%:** 90% of all hourly salinity records for the given water year exceed the value for salinity 10%.

**Salinity 90%:** 10% of all hourly salinity records for the given water year exceed the value for salinity 90%.

70% threshold not reached yet this water year

The Water tab contains all hydrologic information for the selected project.

**Summary –**  
Gives a brief overview of the hydro data available for the project.



### Project Information Bubble

**Summary** – Gives a brief overview of the hydro data available for the project and access to historic summaries.

Water ▼

Summary

Salinity

Water Level

Temperature

Water Level Range

Layer Info

Info

Water ▼

Veg ▼

Rep. Card

Tools

◀ 2016 ▶

	Mean Annual Salinity	Salinity 10%	Salinity 90%	% Time Flooded	Tide Range (ft)
CRMS0655-H01	13.3	8.3	18.7	94.3	—
CRMS0672-H01	12.1	7.2	16.8	92.1	—
<b>Project Mean</b>	<b>12.7</b>	<b>7.8</b>	<b>17.8</b>	<b>93.2</b>	—
CS20-14R	13.9	7.5	20.2	83.4	—
<b>Reference Mean</b>	<b>13.9</b>	<b>7.5</b>	<b>20.2</b>	<b>83.4</b>	—

<70% - The available data covers less than seventy percent of the entire water year(Oct. 1 - Sept. 30).

**Salinity 10%:** 90% of all hourly salinity records for the given water year exceed the value for salinity 10%.

**Salinity 90%:** 10% of all hourly salinity records for the given water year exceed the value for salinity 90%.



### Project Information Bubble

Water ▾

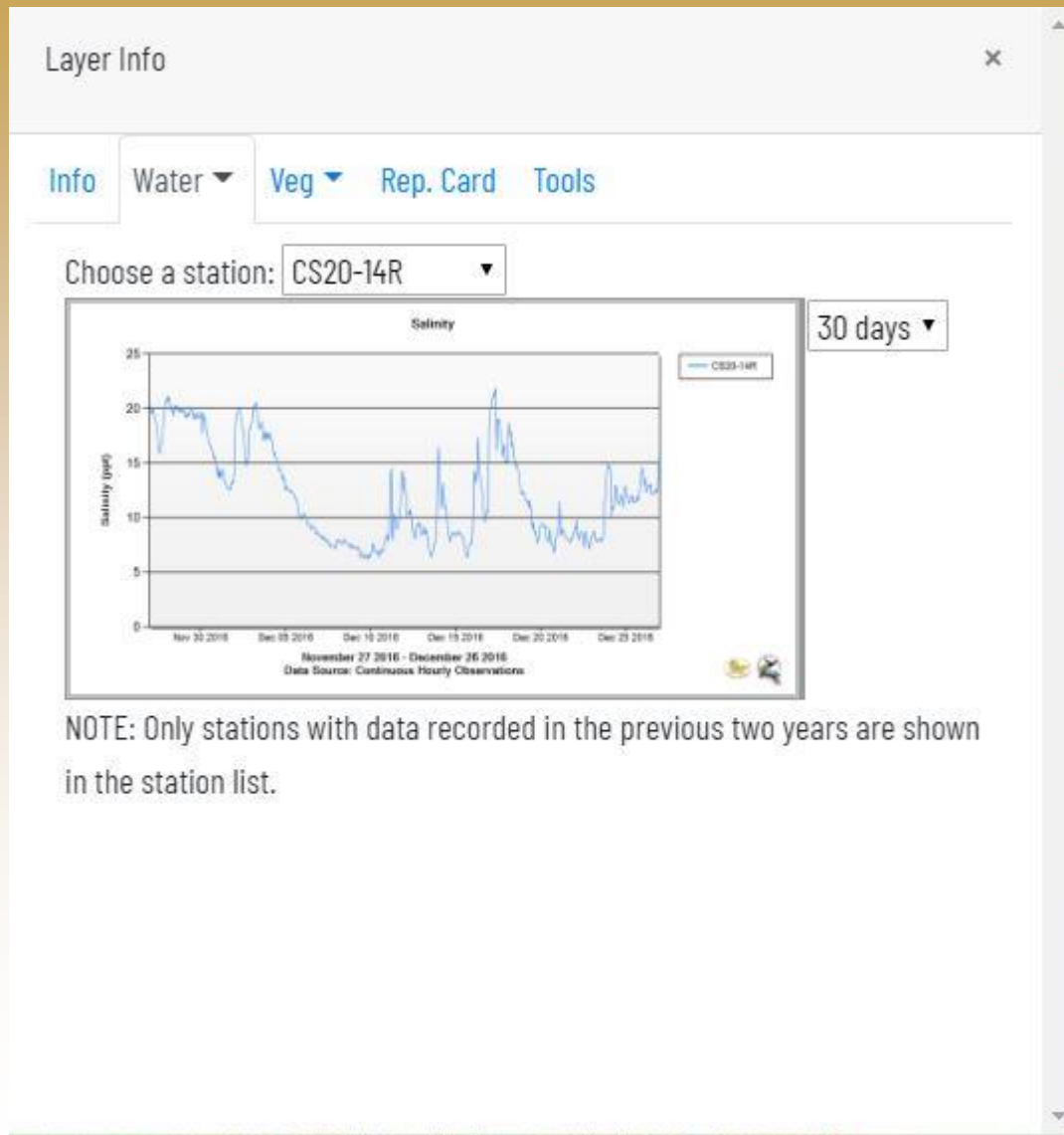
Summary

Salinity

Water Level

Temperature

Water Level Range



**Salinity** – Charts most recent data for hydro stations located within the project.





## Project Information Bubble

Water ▾

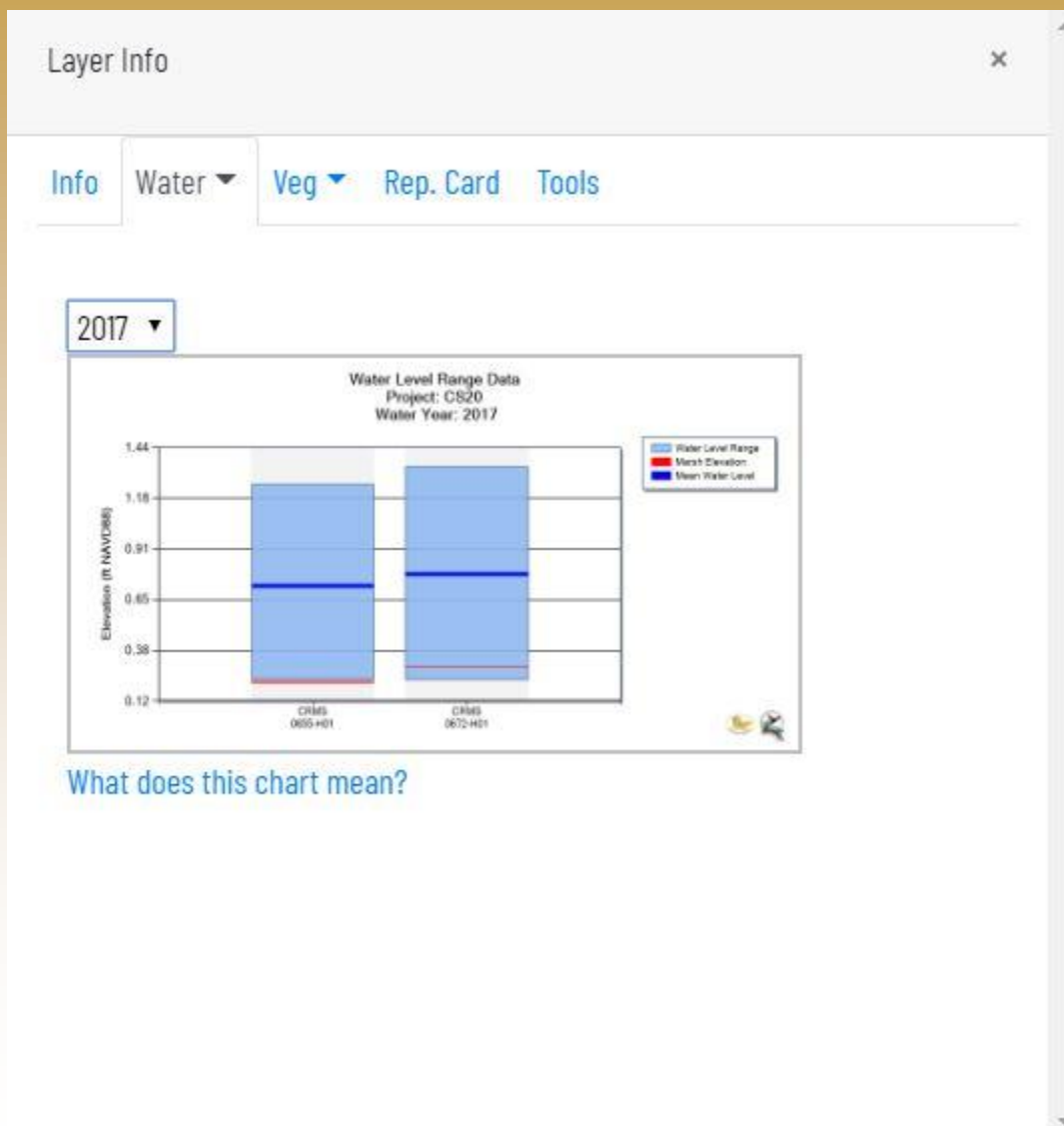
Summary

Salinity

Water Level

Temperature

Water Level Range



**Water Level Range**  
– Charts water level range data for **hydro stations located within the project.**

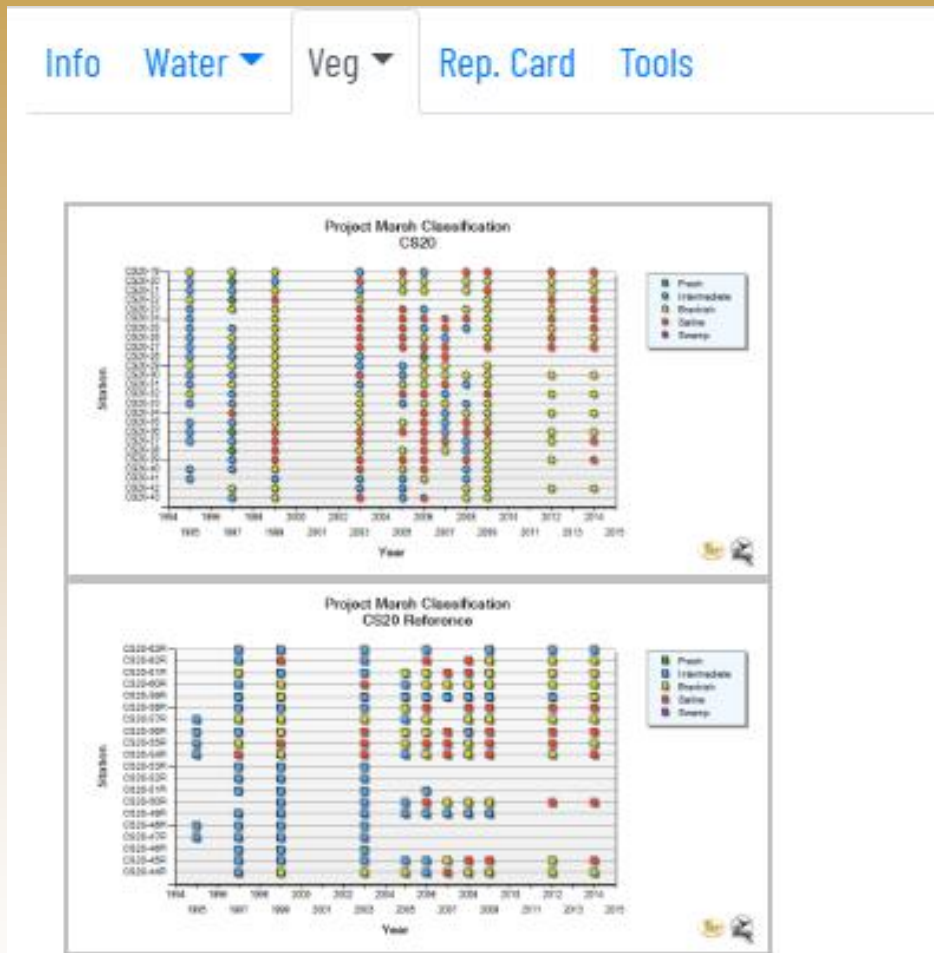
### Project Information Bubble

Veg ▼

Marsh Class

Project/Ref FQI

Side by Side

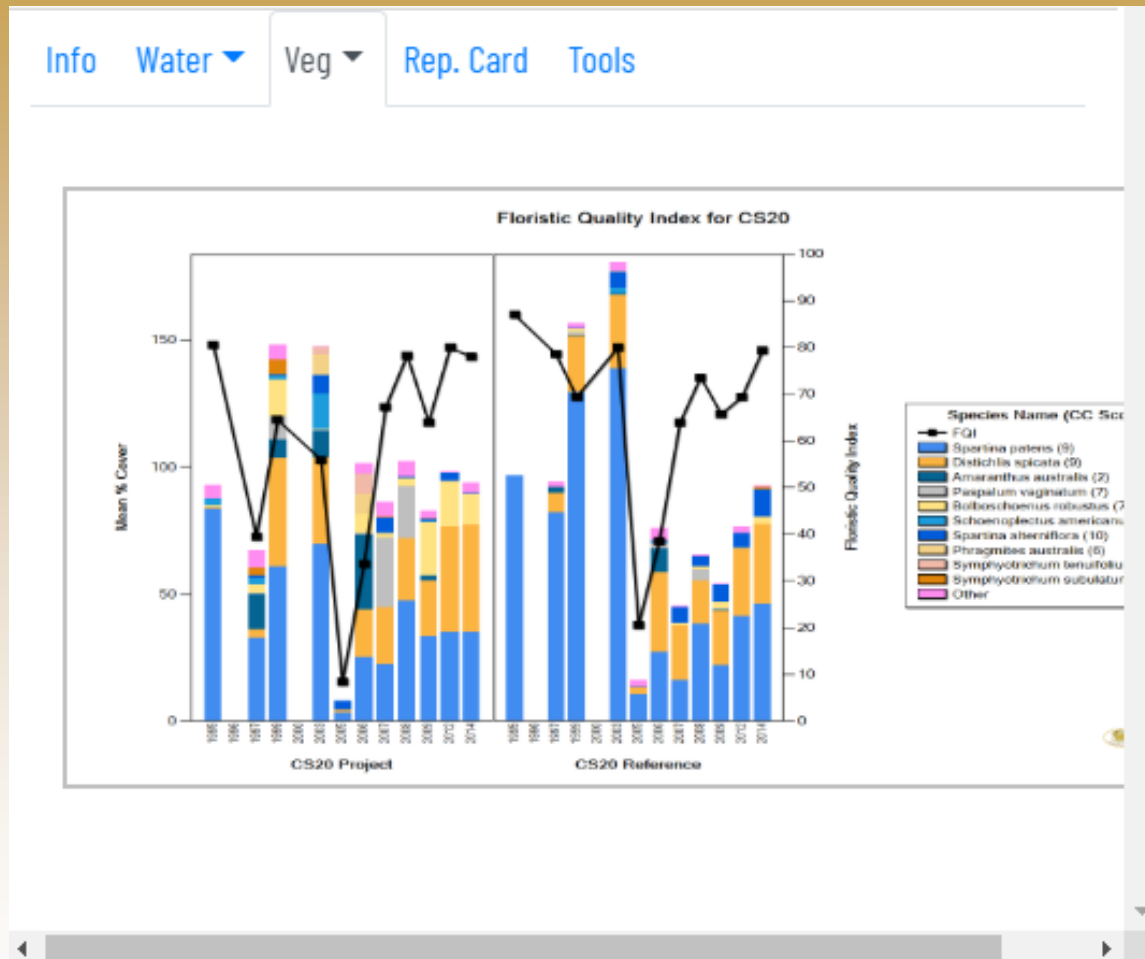


The Vegetation tab contains all vegetation information for the selected project.

**Marsh classification** at project and reference stations over multiple years.

### Project Information Bubble

**Project/Ref FQI**  
– Project Scale  
Floristic Quality  
Index Chart.



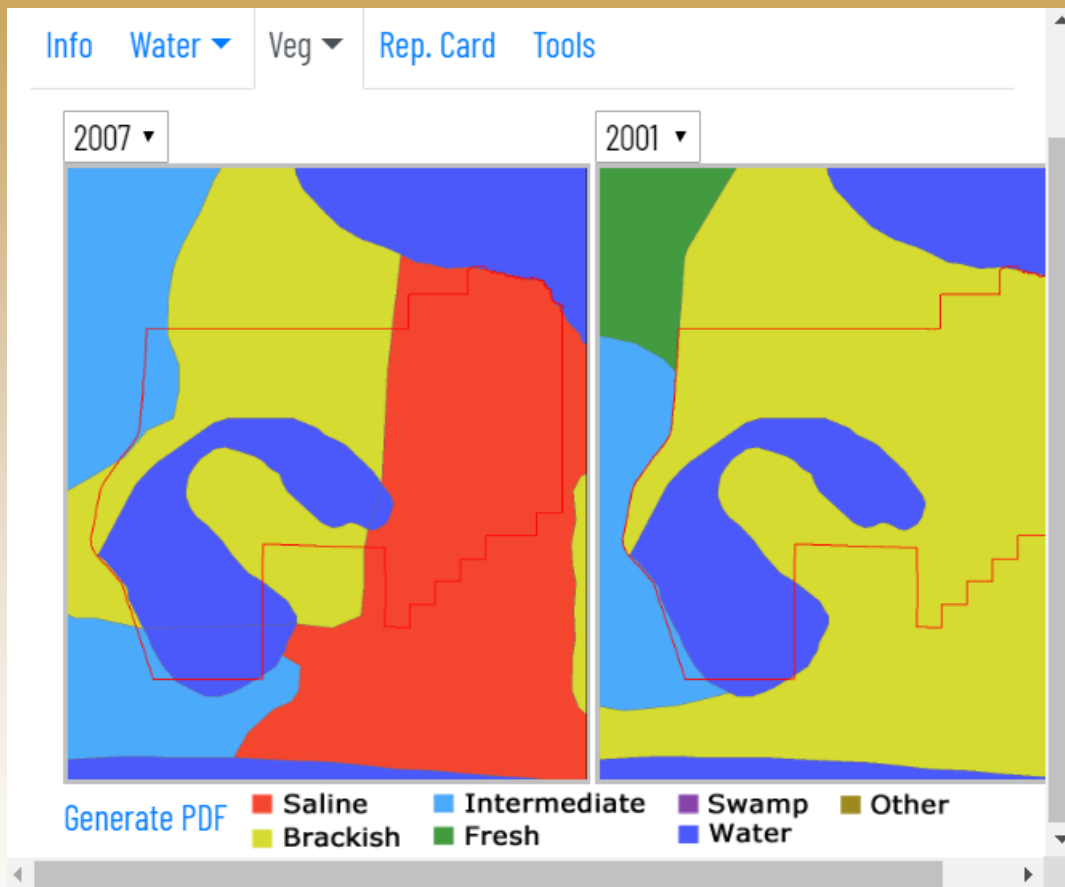
### Project Information Bubble

Veg ▼

Marsh Class

Project/Ref FQI

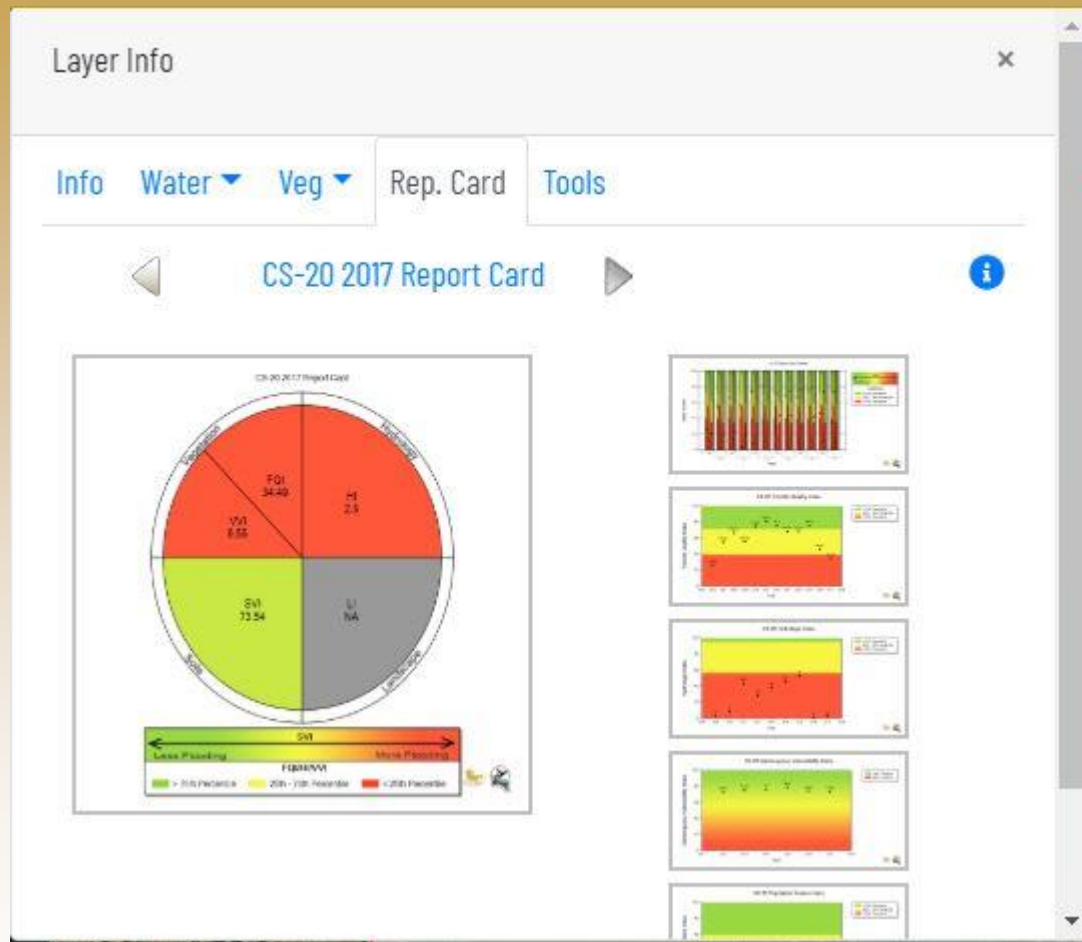
Side by Side



**Side by Side** – comparison of Marsh Class using the raster image created from helicopter surveys.



### Project Information Bubble

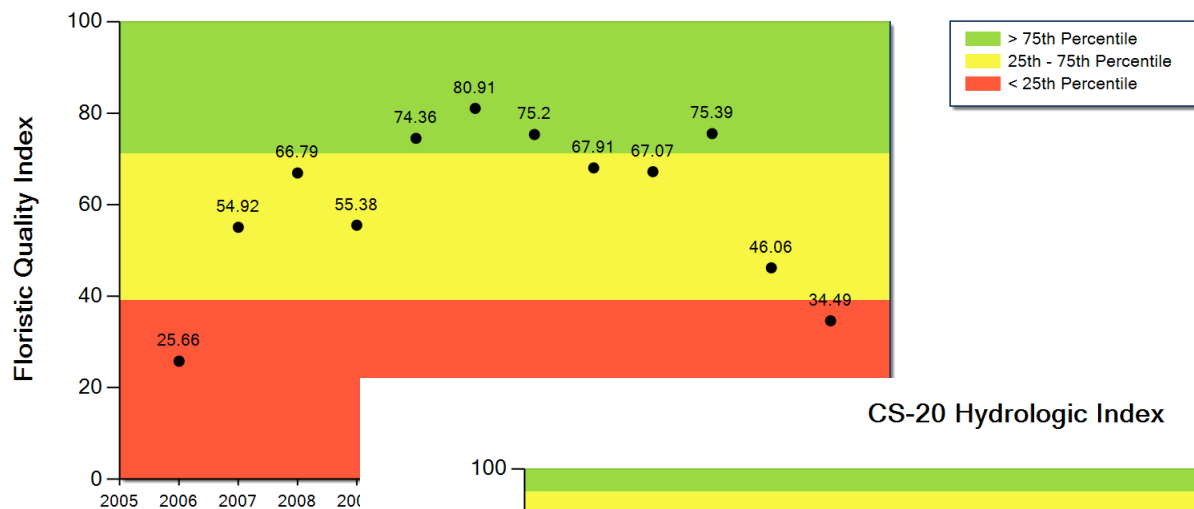


The Report Card tab contains all report card information for the selected project.

**Report Card-Summary** of project scale information compiled into a report card.

### Project Information Bubble

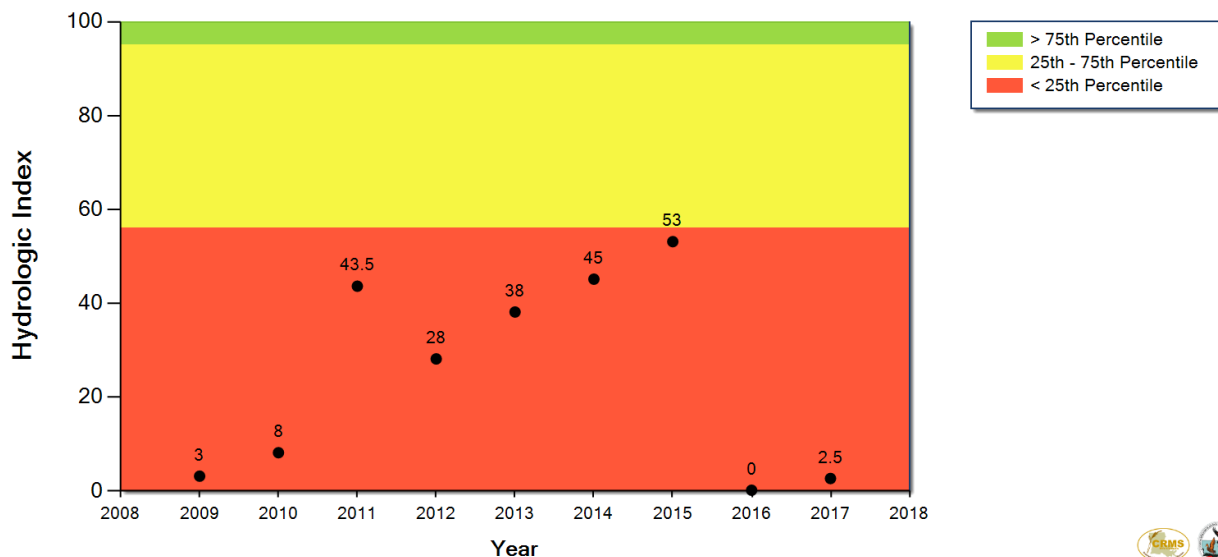
CS-20 Floristic Quality Index



### Report Card-

Charts available for each index showing annual scores throughout the CRMS program period of record.

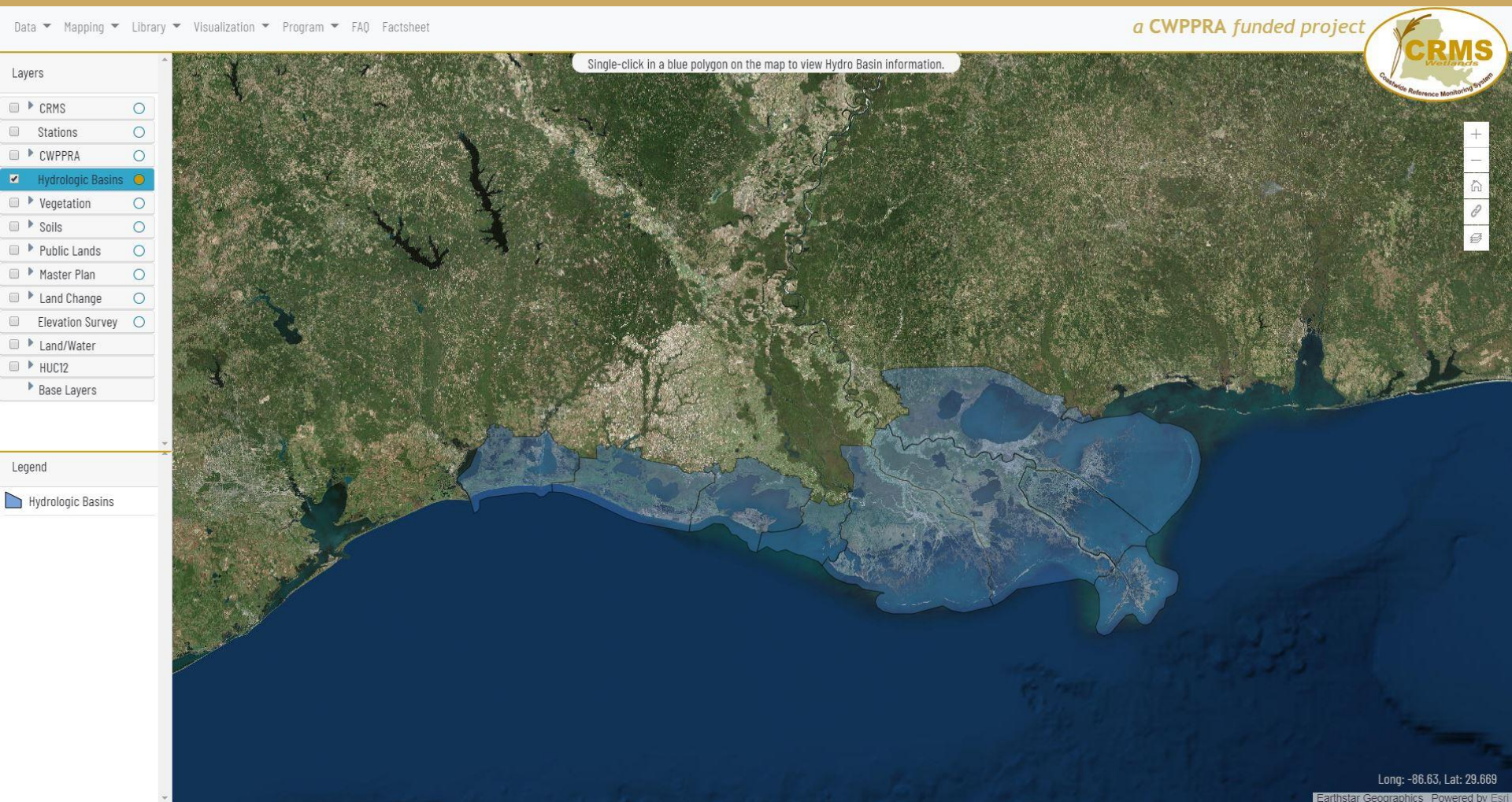
CS-20 Hydrologic Index



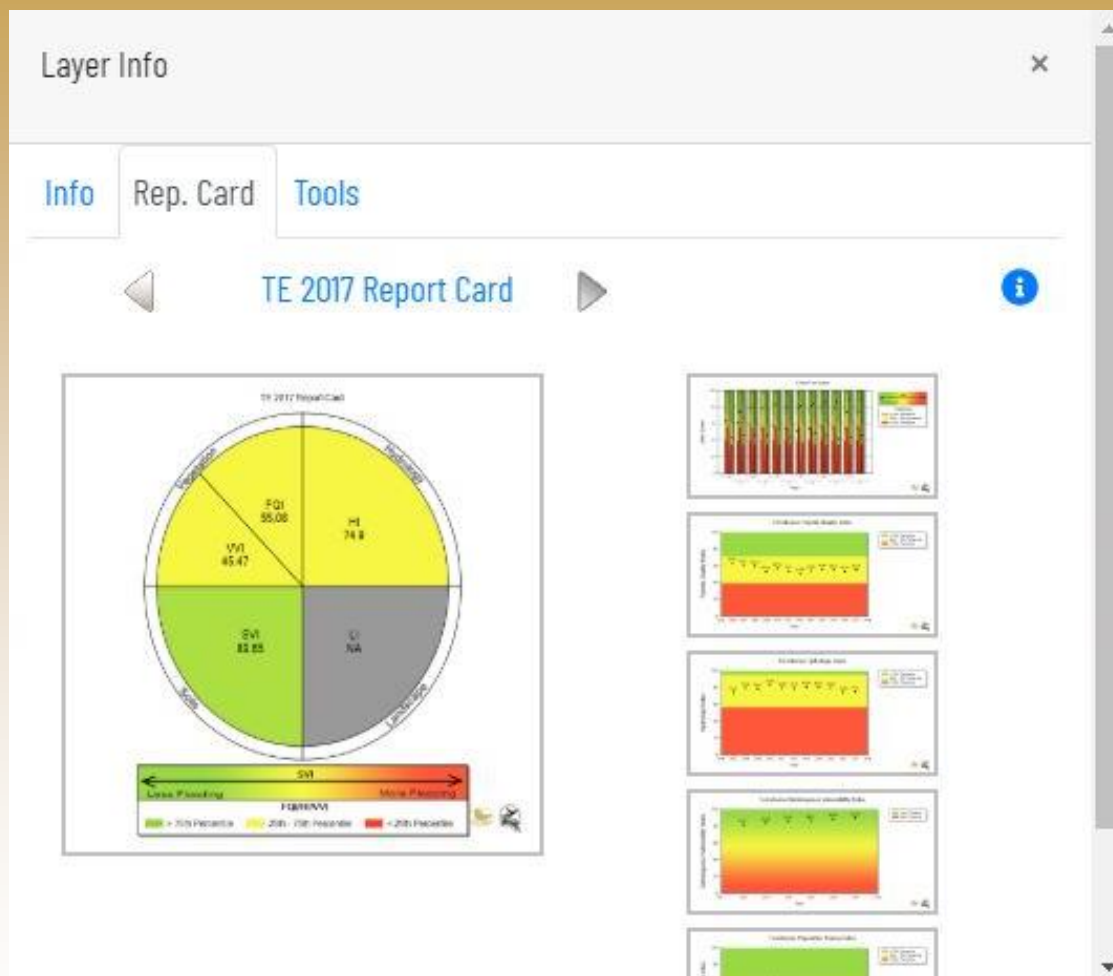


# Coastwide Reference Monitoring System – Wetlands Hydrologic Basin Layer

## Hydrologic basins as defined by CWPPRA



## Basin Information Bubble



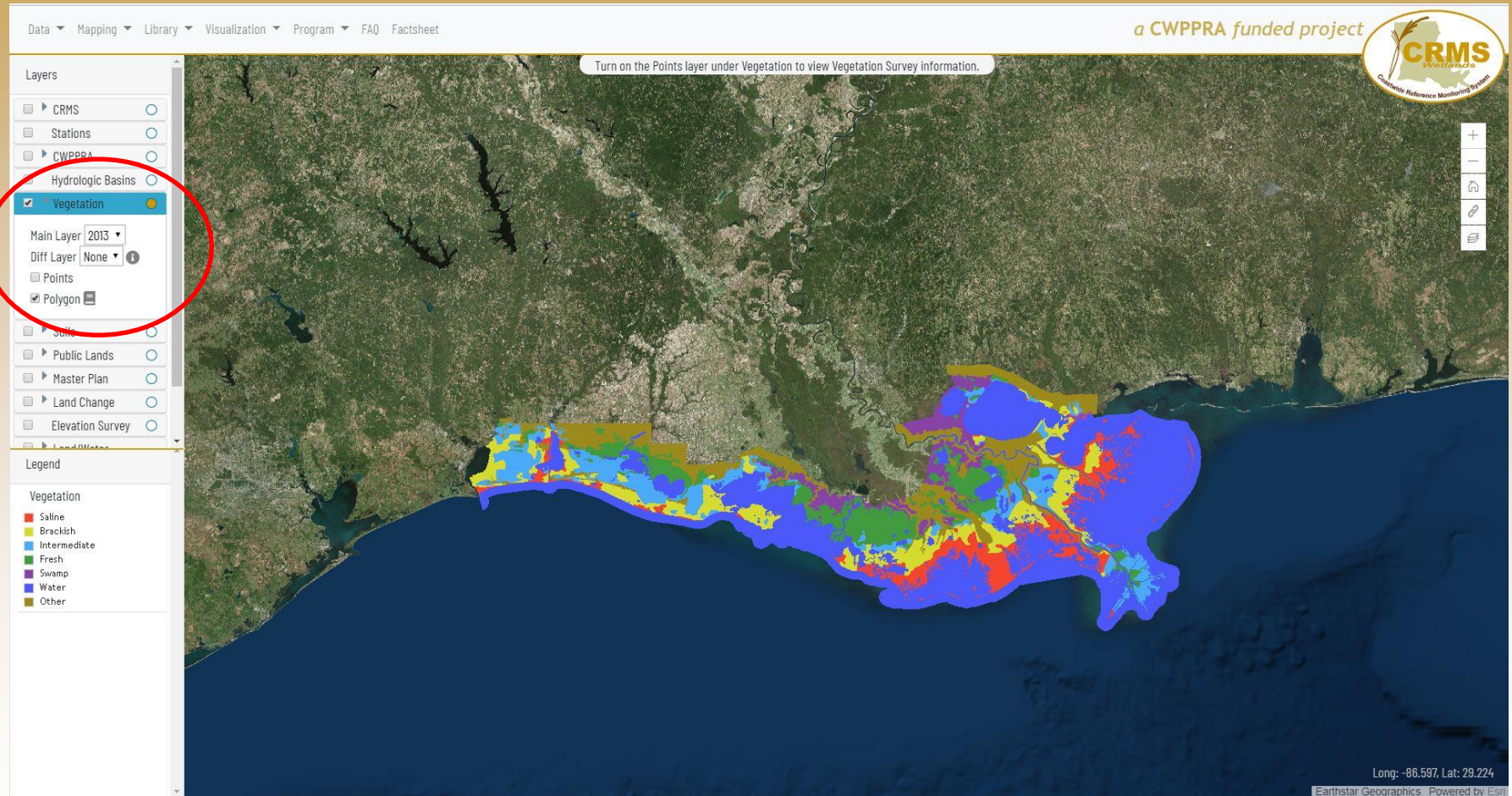
The Report Card tab contains all report card information for the selected basin.

Report Card – Summary of basin scale information compiled into a report card.



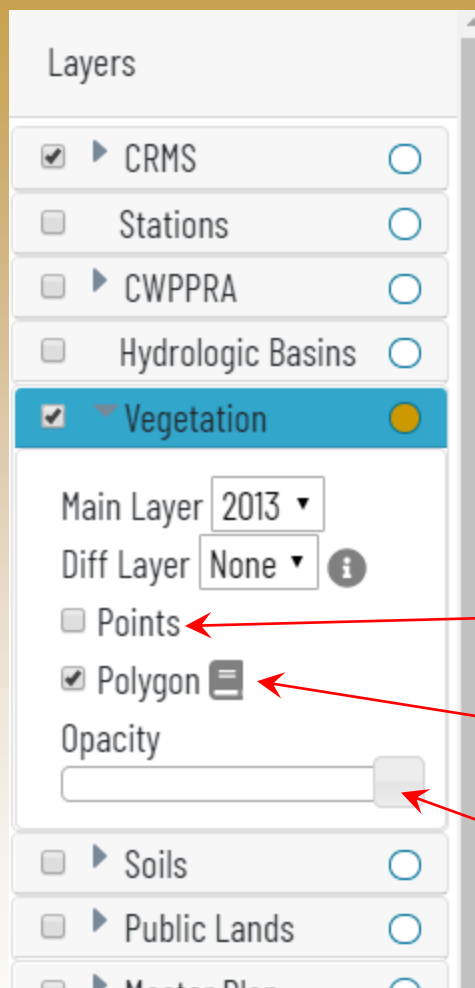


## Vegetation classification based on helicopter surveys, *O'Neil 1949 through Sasser et al. 2013, 8 surveys*





# Coastwide Reference Monitoring System – *Wetlands* Vegetation Layer



## Vegetation Difference Visualization:

Main Year selects the primary polygon layer on the map.

Diff Year selects the secondary polygon layer on the map.

Adds/removes the vegetation data points.

Adds/removes the vegetation polygons layer.

The slider changes the transparency of the layer.



# Coastwide Reference Monitoring System – Wetlands Vegetation Layer

Single-click the white outlined symbology on the map to view Vegetation Survey information.

a CWPRA funded project



Data ▾ Mapping ▾ Library ▾ Visualization ▾ Program ▾ FAQ Factsheet

## Layers

- ☐ CRMS
  - ☐ Stations
  - ☐ CWPRA
  - ☐ Hydrologic Basins
  - ☒ Vegetation
- Main Layer: 2013 ▾  
Diff Layer: None ▾ ⓘ  
☒ Points  
☒ Polygon  
Opacity:

## Legend

### Vegetation

- Saline
- Brackish
- Intermediate
- Fresh
- Swamp
- Water
- Other

## Layer Info

Point ID: 26-29

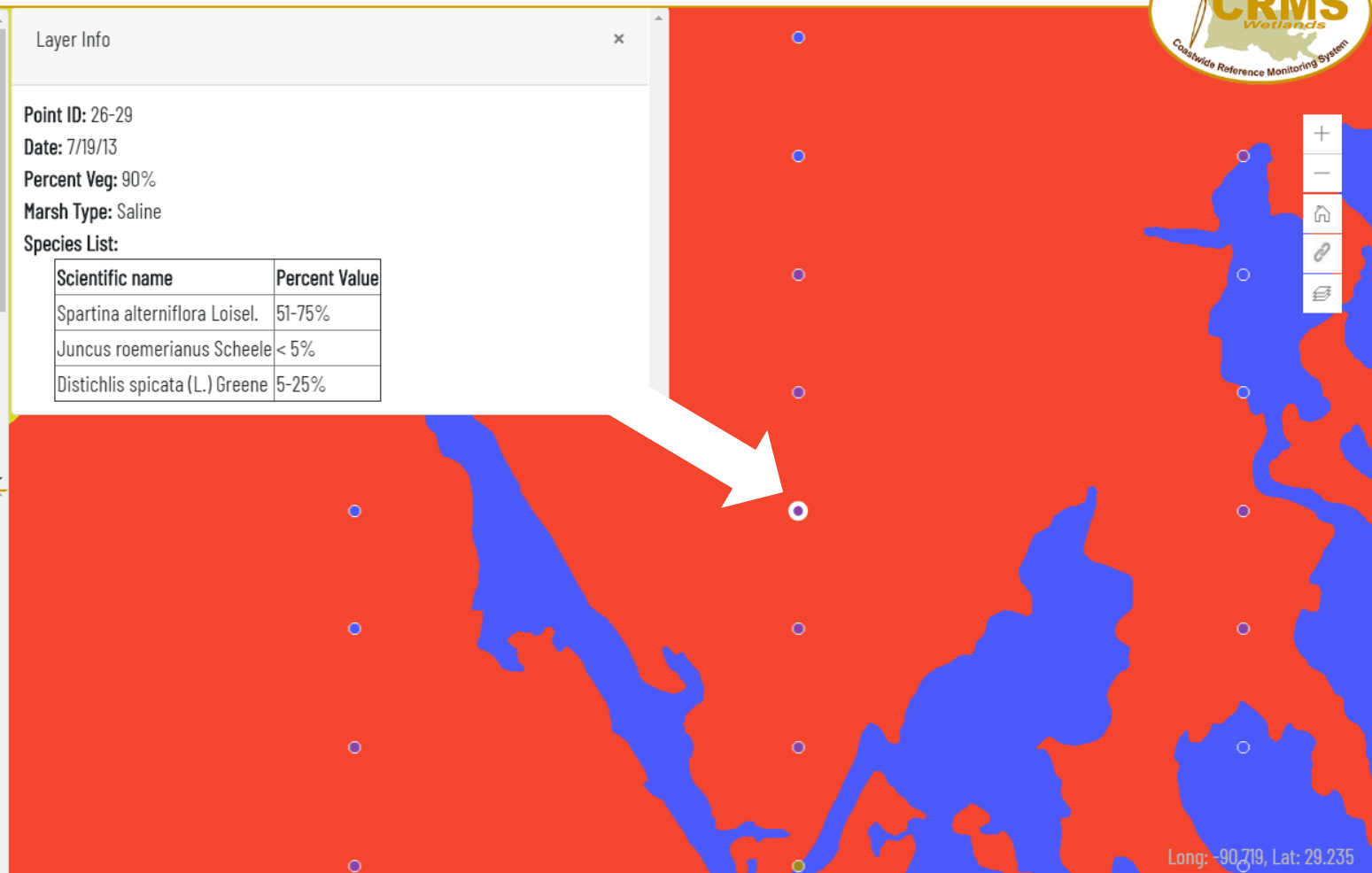
Date: 7/19/13

Percent Veg: 90%

Marsh Type: Saline

### Species List:

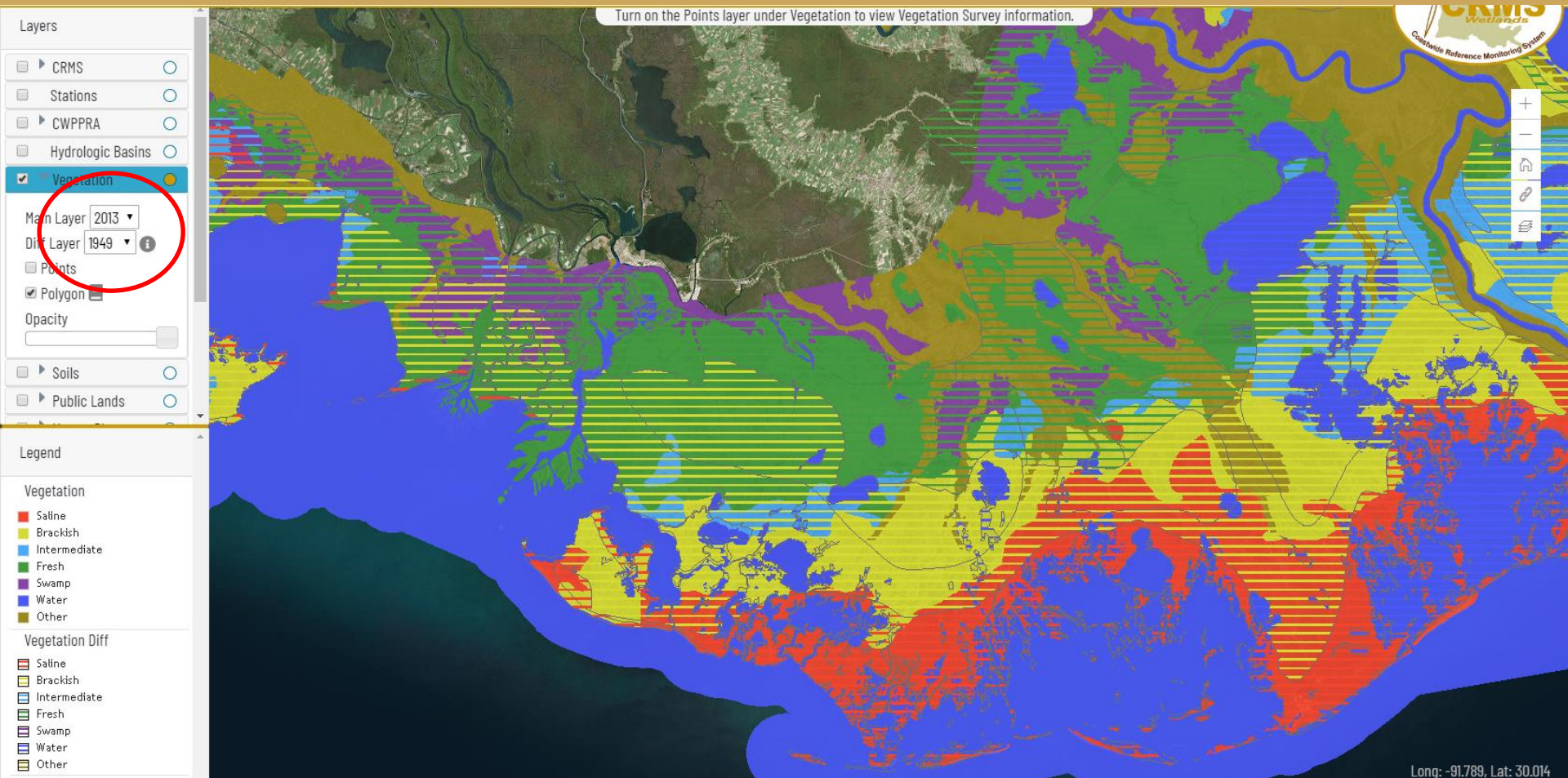
Scientific name	Percent Value
<i>Spartina alterniflora</i> Loisel.	51-75%
<i>Juncus roemerianus</i> Scheele	< 5%
<i>Distichlis spicata</i> (L.) Greene	5-25%



Points display the site specific vegetation data when clicked.



## Vegetation Difference Layer Functionality



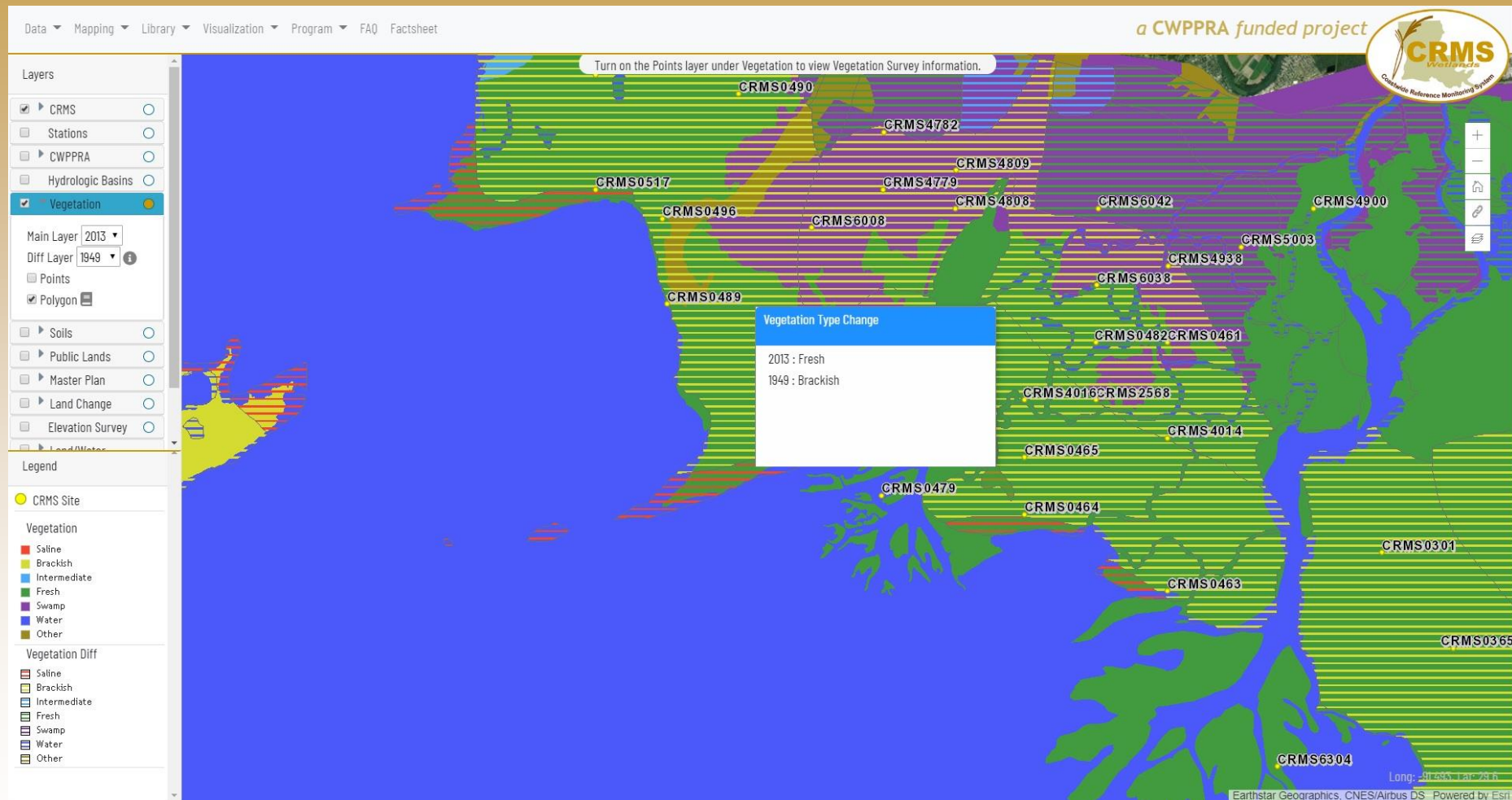
**The “Vegetation Change” is shown when two different years are chosen for the Main Layer and Diff Layer.**





# Coastwide Reference Monitoring System – Wetlands Vegetation Layer

## Vegetation Difference Layer Functionality



Difference areas, represented by lined polygons, are clickable.



## NRCS SSURGO data displayed

Data ▾ Mapping ▾ Library ▾ Visualization ▾ Program ▾ FAQ Factsheet

a CWPPRA funded project

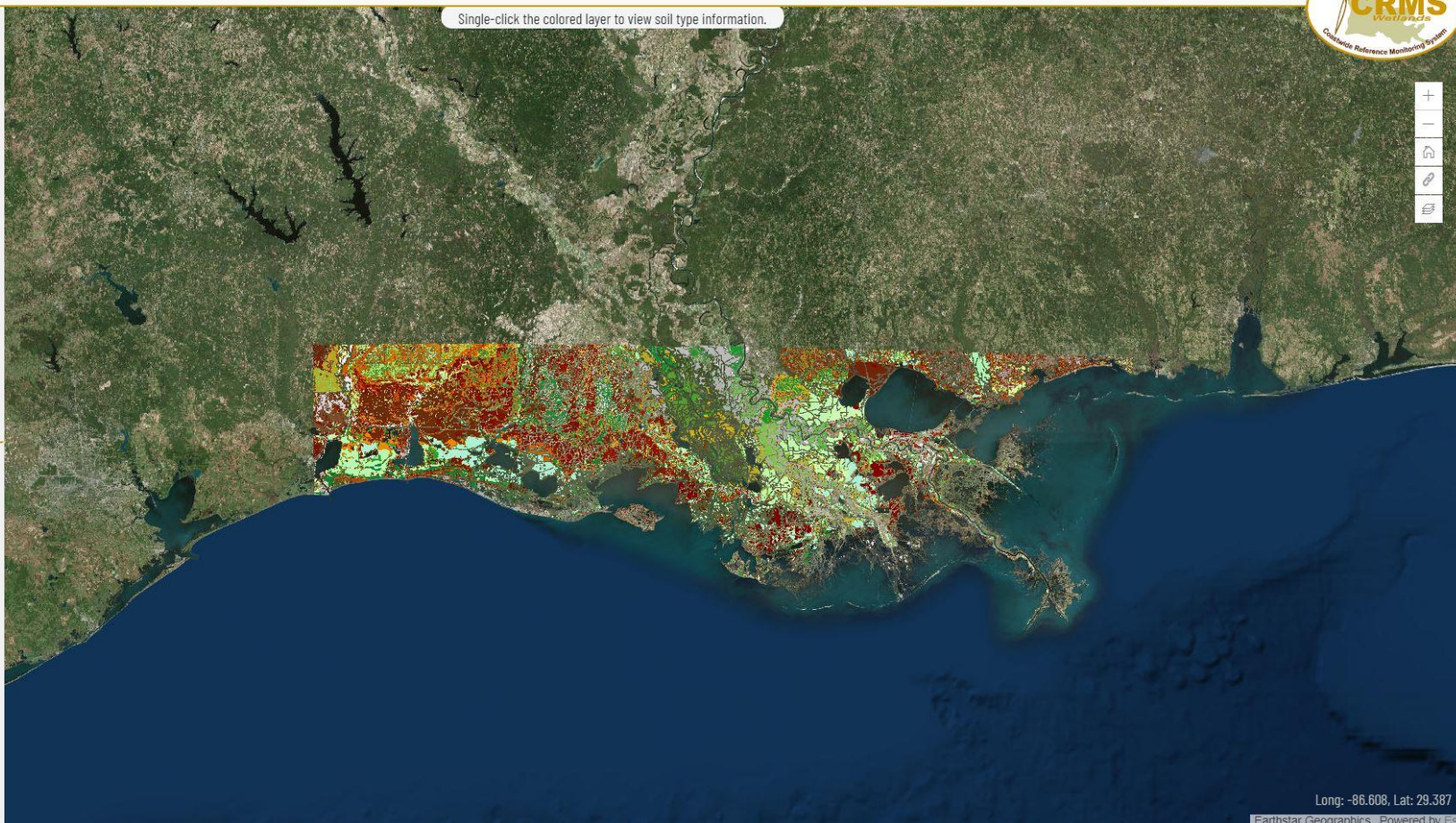


Layers

- ☐ CRMS
- ☐ Stations
- ☐ CWPPRA
- ☐ Hydrologic Basins
- ☐ Vegetation
- ☒ Soils
- ☐ Public Lands
- ☐ Master Plan
- ☐ Land Change
- ☐ Elevation Survey
- ☐ Land/Water
- ☐ HUC12
- ☐ Base Layers

Legend

Single-click the colored layer to view soil type information.

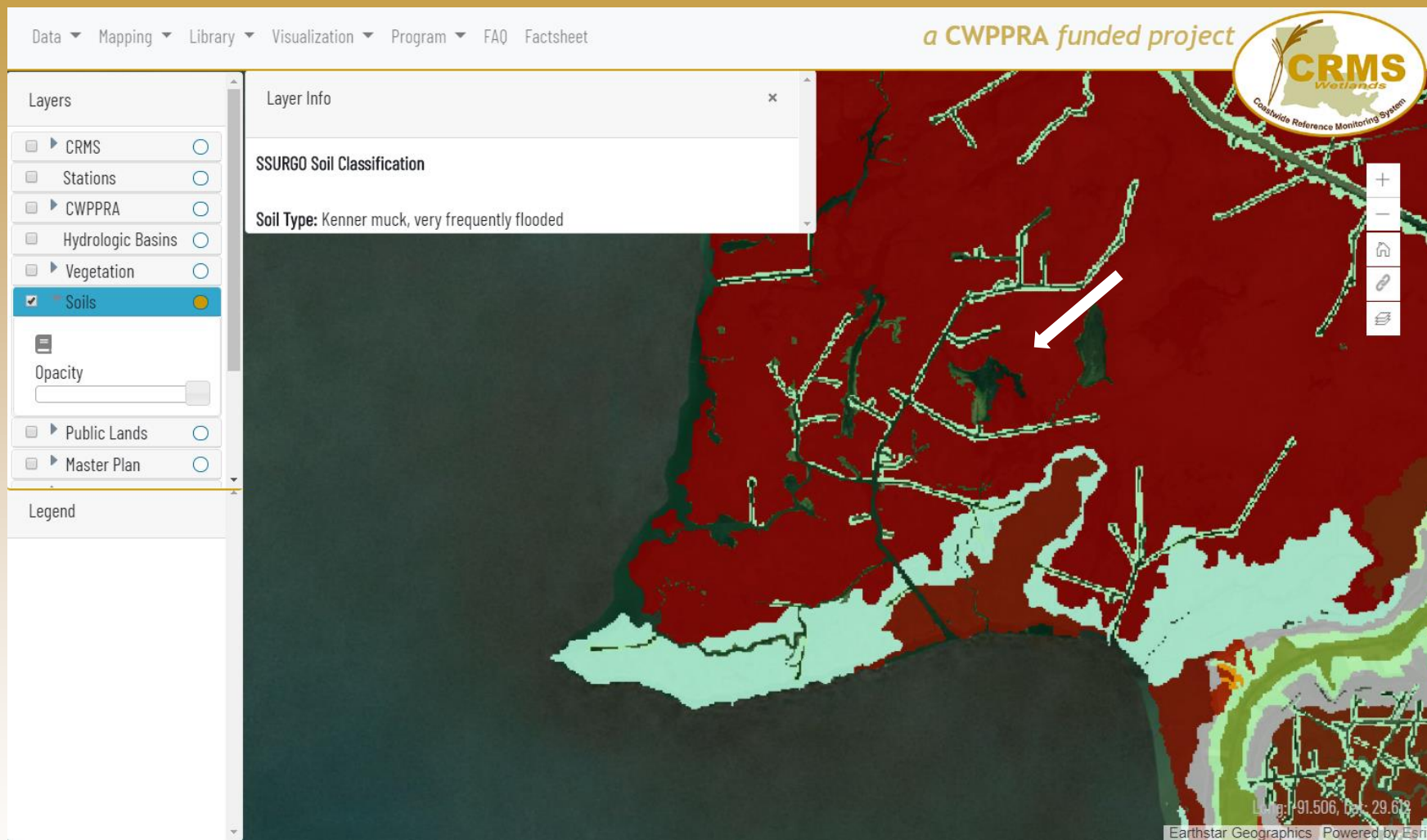


Earthstar Geographics Powered by Esri





# Coastwide Reference Monitoring System – Wetlands Soils Layer



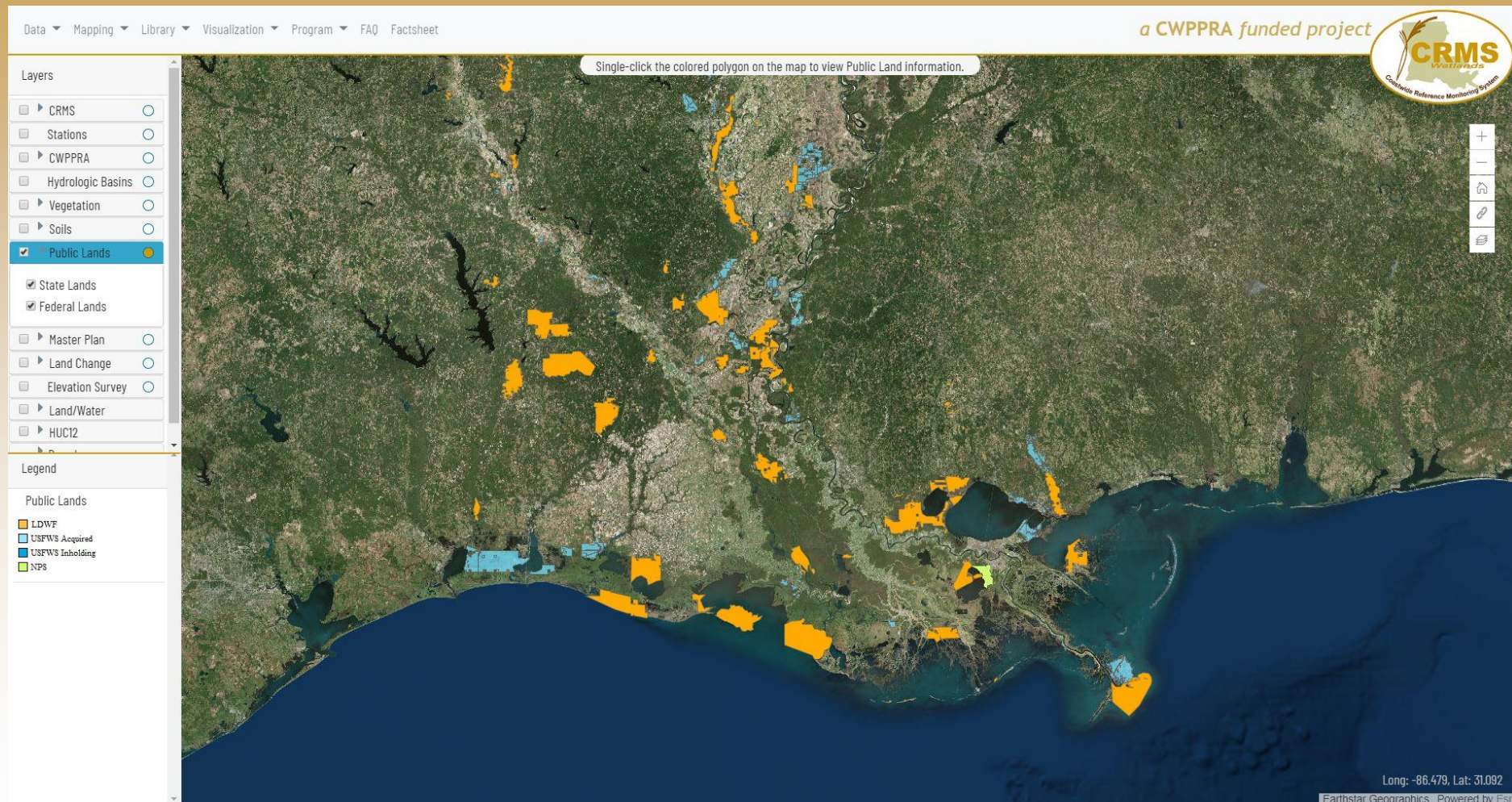
The Soil Type information window pops up when a soil area is clicked.





# Coastwide Reference Monitoring System – Wetlands Public Lands Layer

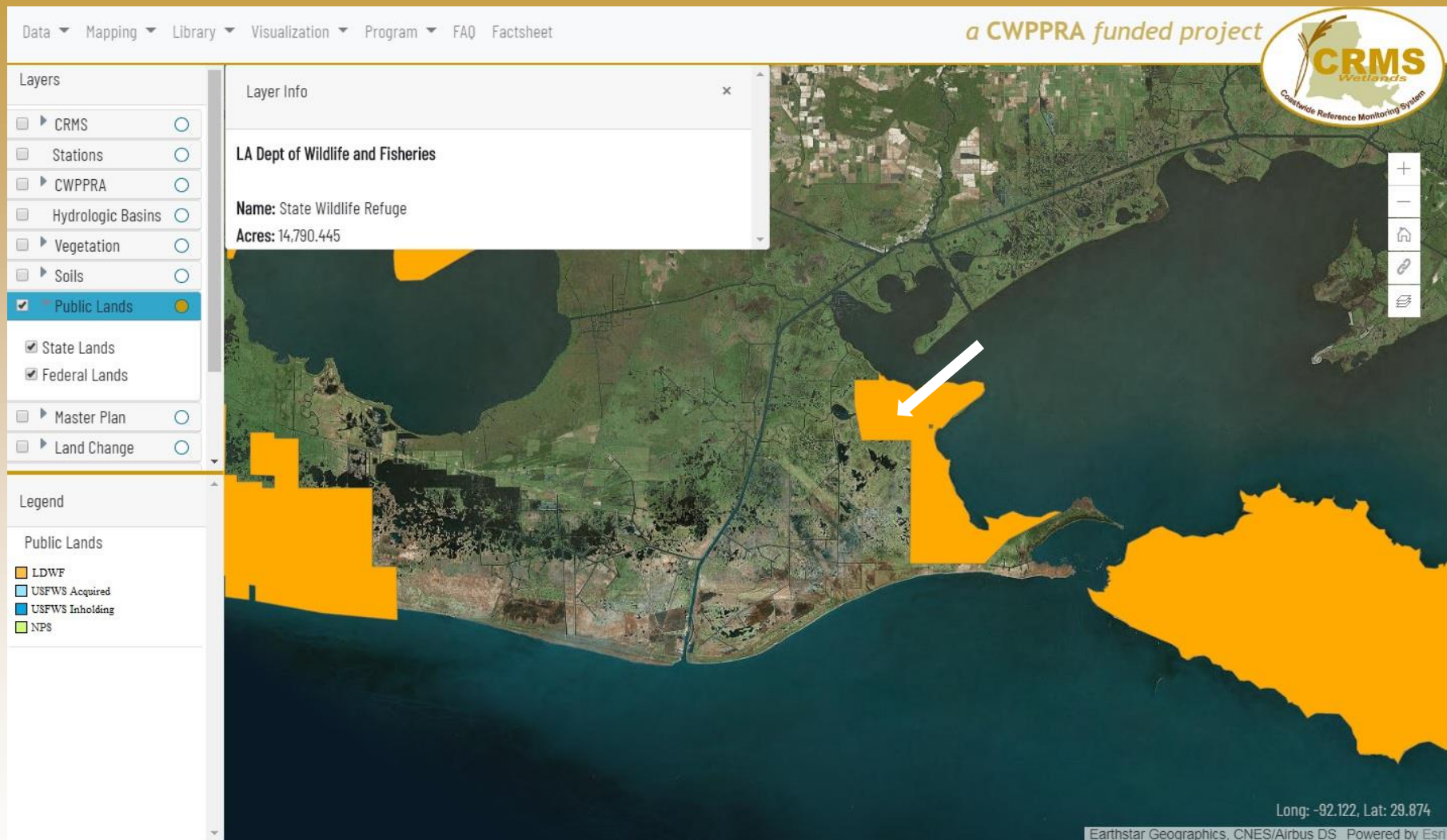
**Displays Federal (USFWS and NPS) and State (LDWF) land holdings.**







# Coastwide Reference Monitoring System – Wetlands Public Lands Layer



The Public Lands information window pops up when a Public Lands polygon is clicked.



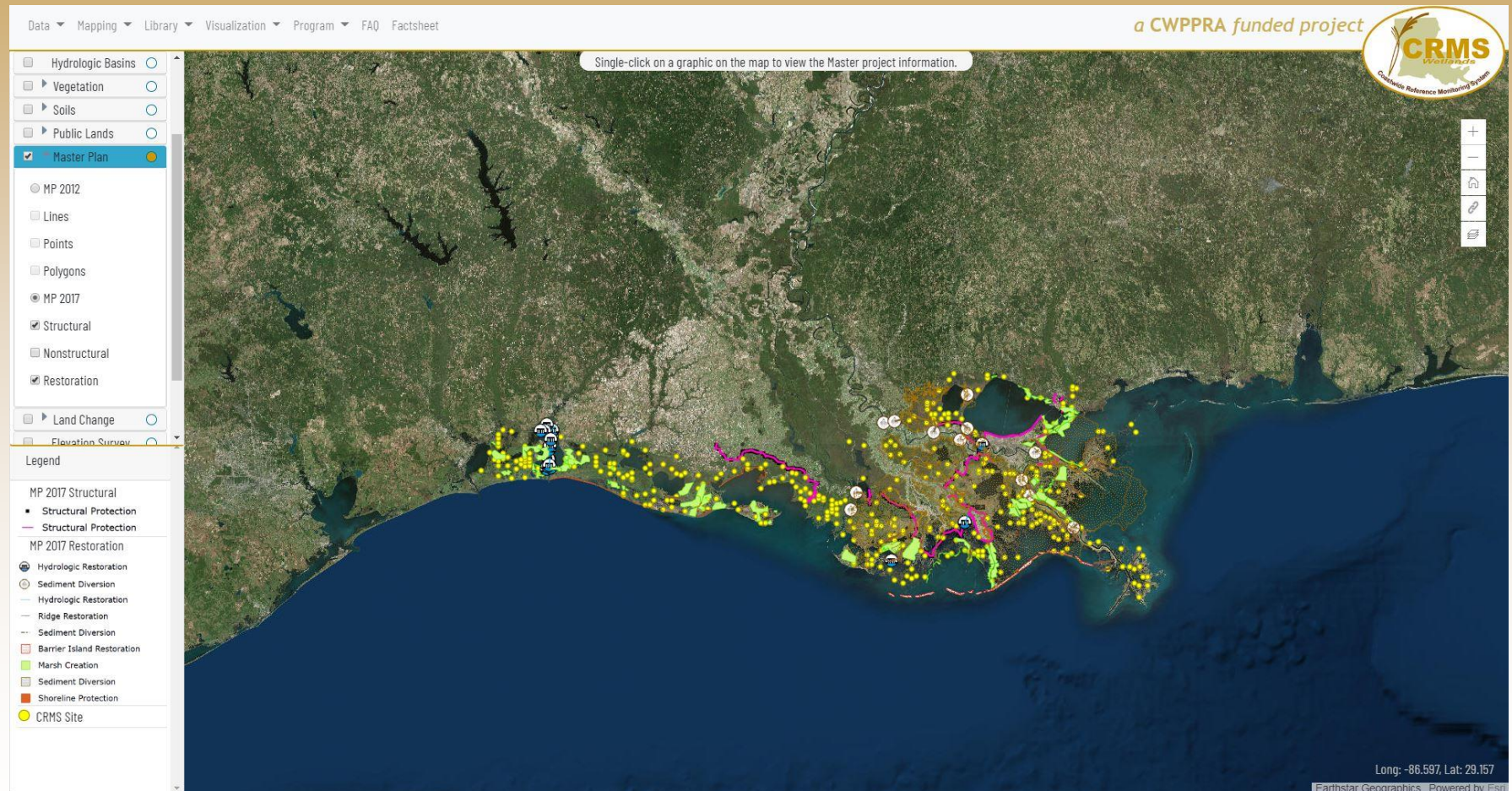
# Coastwide Reference Monitoring System – Wetlands

## Louisiana's Comprehensive Master Plan 2012 & 2017 Layers

### Master Plan project types and general project areas.

Additional visualizations of this information available through CIMS

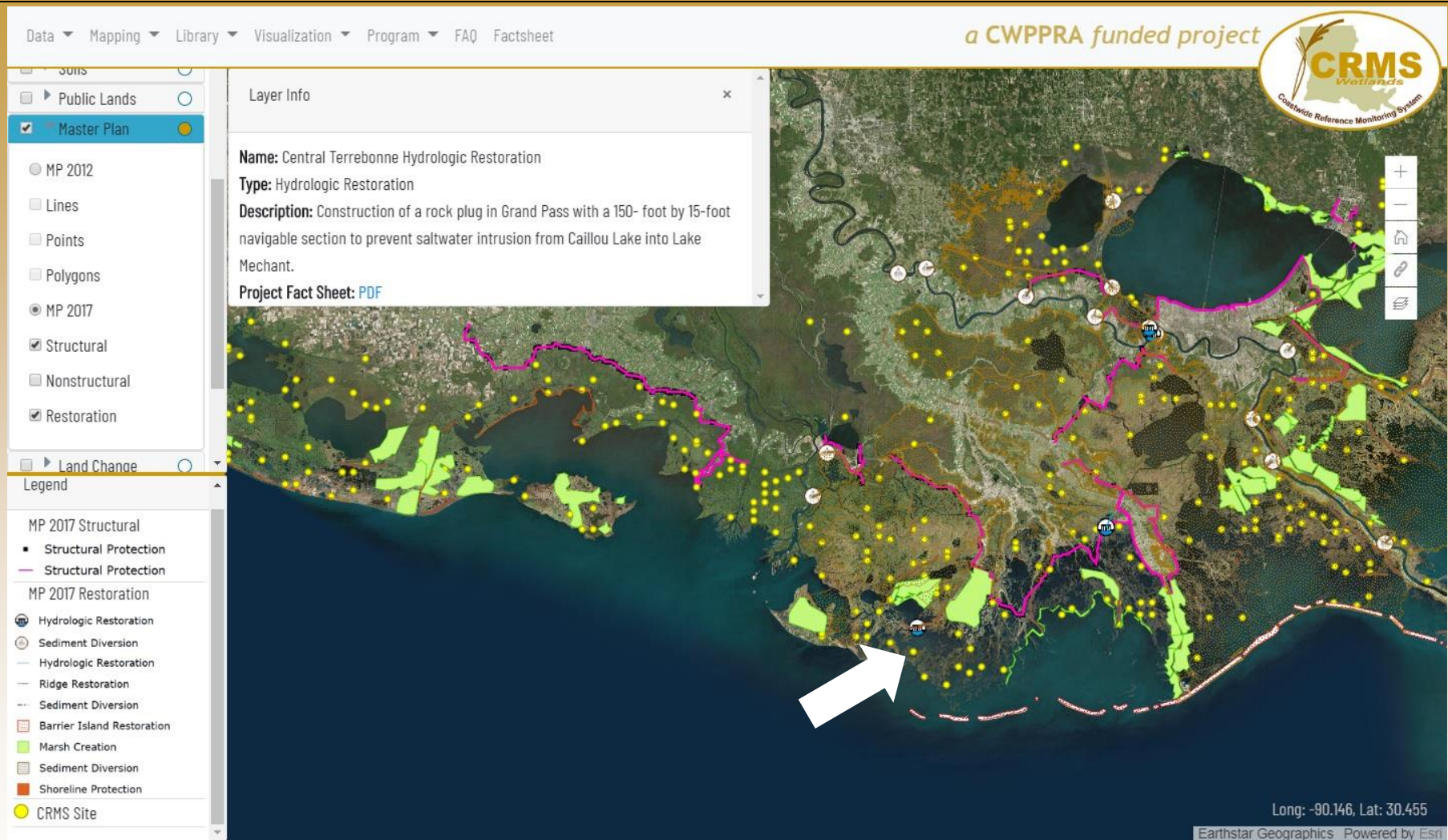
(<https://cims.coastal.louisiana.gov/default.aspx>)







# Coastwide Reference Monitoring System – Wetlands Louisiana's Comprehensive Master Plan 2012 and 2017 Layers



Defaults to 2017 Master Plan layers. Symbology is clickable and will provide basic descriptive information.



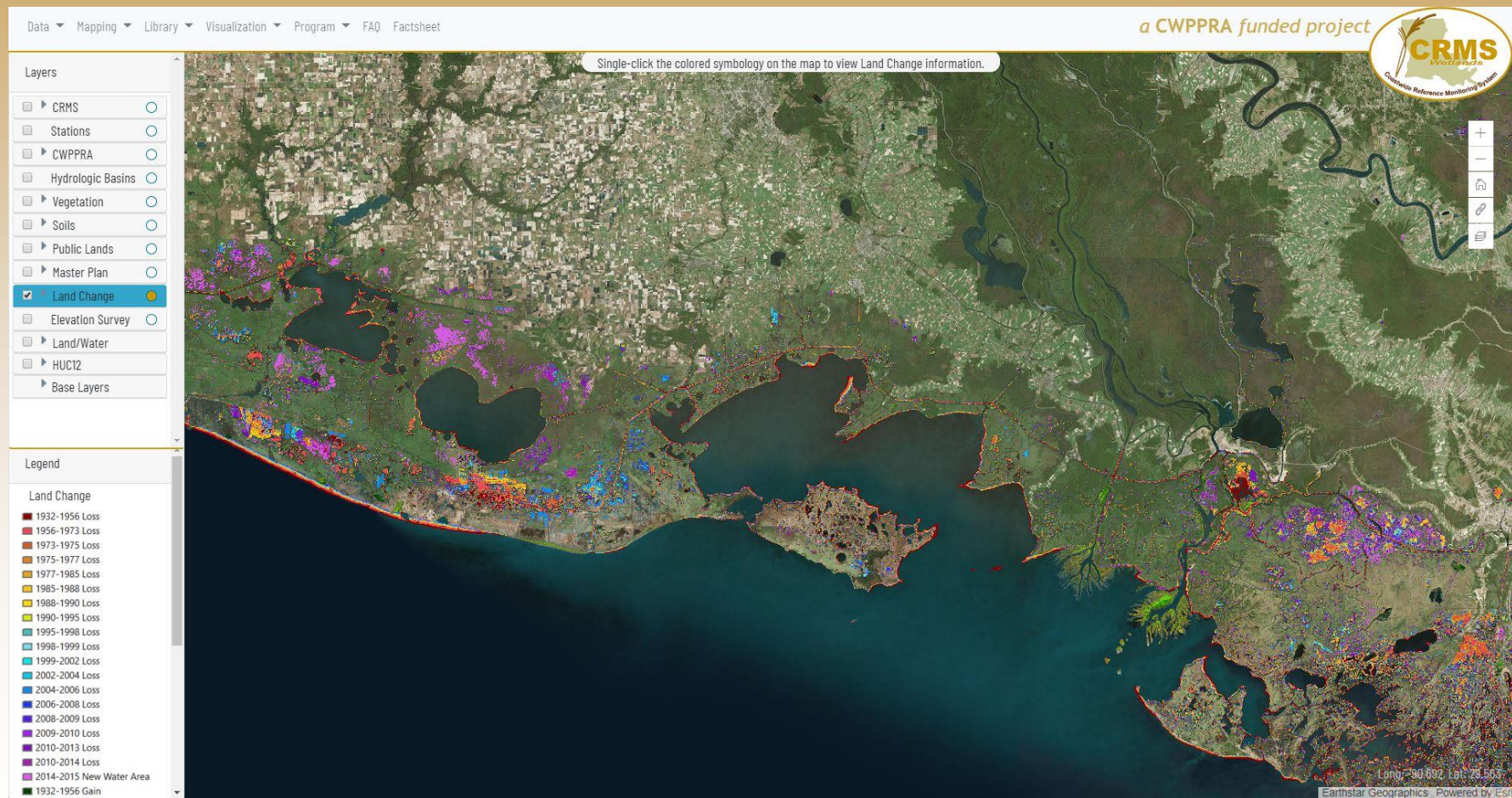


# Coastwide Reference Monitoring System – *Wetlands*

## Land Area Change 1932 to 2016

### Couvillion et al., 2017. Land Area Change in Coastal Louisiana from 1932 to 2016.

Displays land change (both loss and gain) broken down by time intervals.







# Coastwide Reference Monitoring System – Wetlands

## Coastwide Elevation Survey 2014

Data ▾ Mapping ▾ Library ▾ Visualization ▾ Program ▾ FAQ Factsheet

a CWPPRA funded project

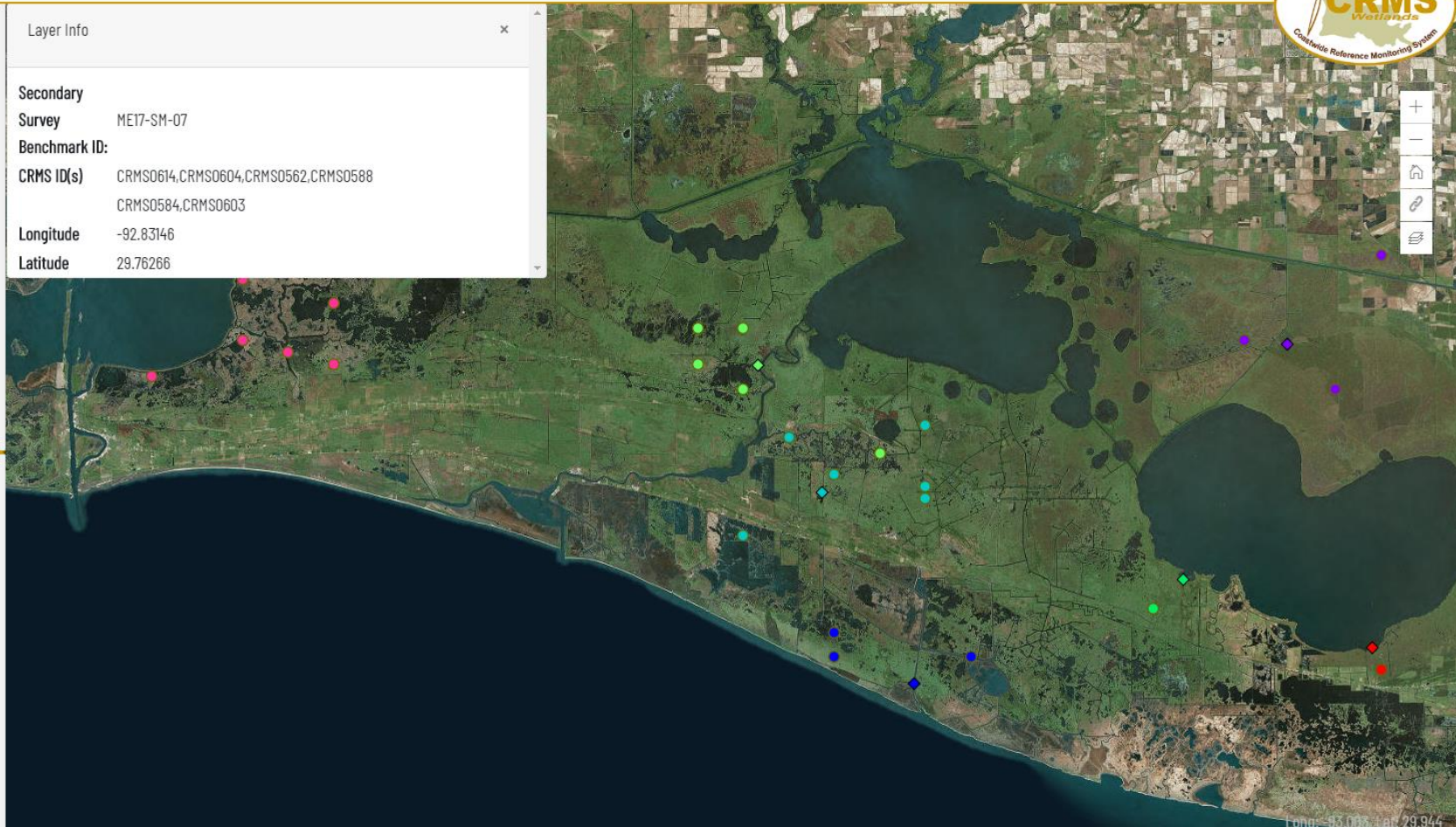


### Layers

- ☐ CRMS
- ☐ Stations
- ☐ CWPPRA
- ☐ Hydrologic Basins
- ☐ Vegetation
- ☐ Soils
- ☐ Public Lands
- ☐ Master Plan
- ☐ Land Change
- ☒ Elevation Survey
- ☐ Land/Water
- ☐ HUC12
- ☐ Base Layers

### Layer Info

**Secondary**  
**Survey** ME17-SM-07  
**Benchmark ID:**  
**CRMS ID(s)** CRMS0614, CRMS0604, CRMS0562, CRMS0588  
CRMS0584, CRMS0603  
**Longitude** -92.83146  
**Latitude** 29.76266



Long: -92.83146 Lat: 29.76266

### Legend

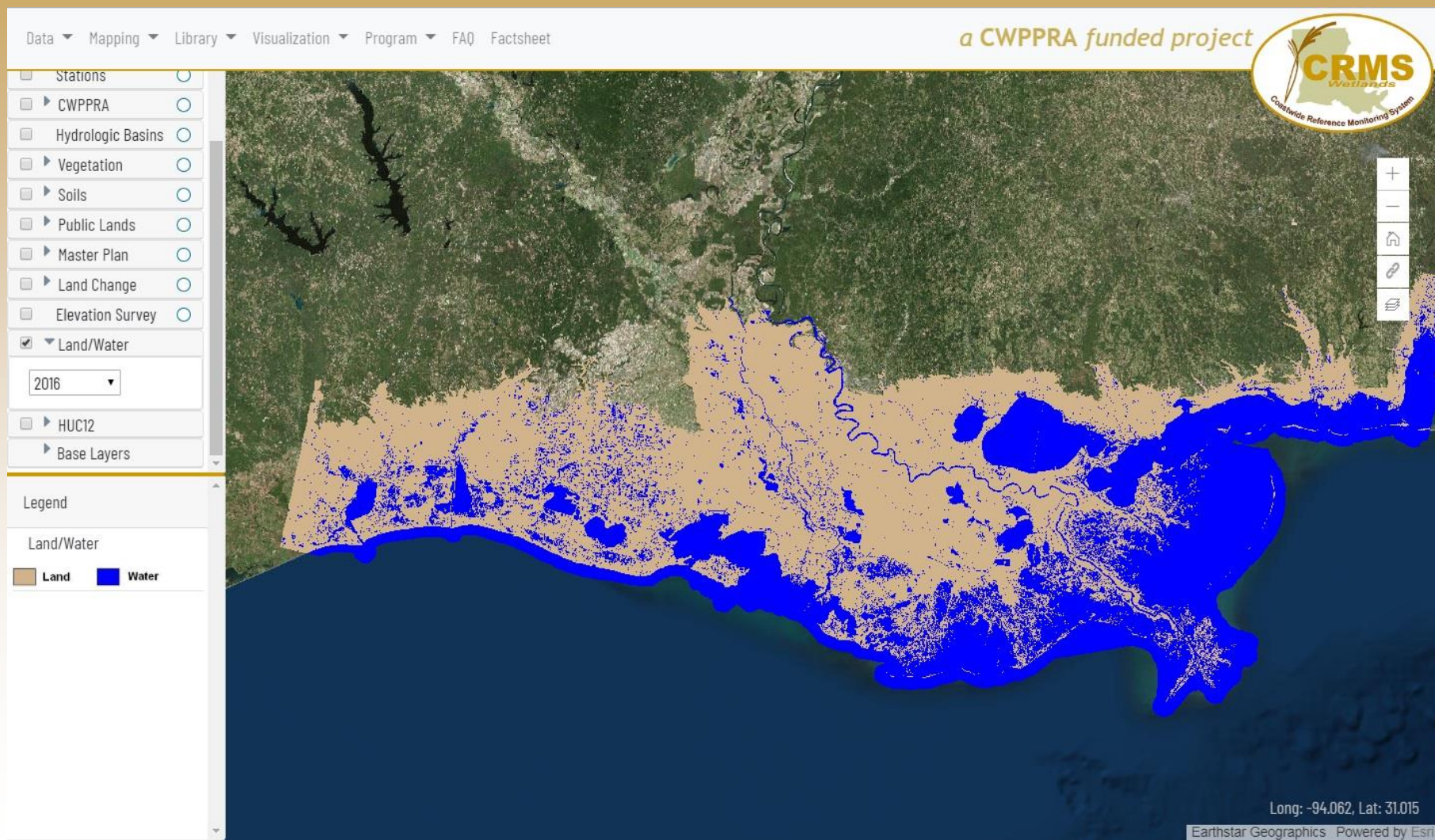




# Coastwide Reference Monitoring System – Wetlands Land/Water Layer

**Land/Water classifications from 1932 to 2016**

**23 classification dates based on satellite imagery, 30m resolution.**

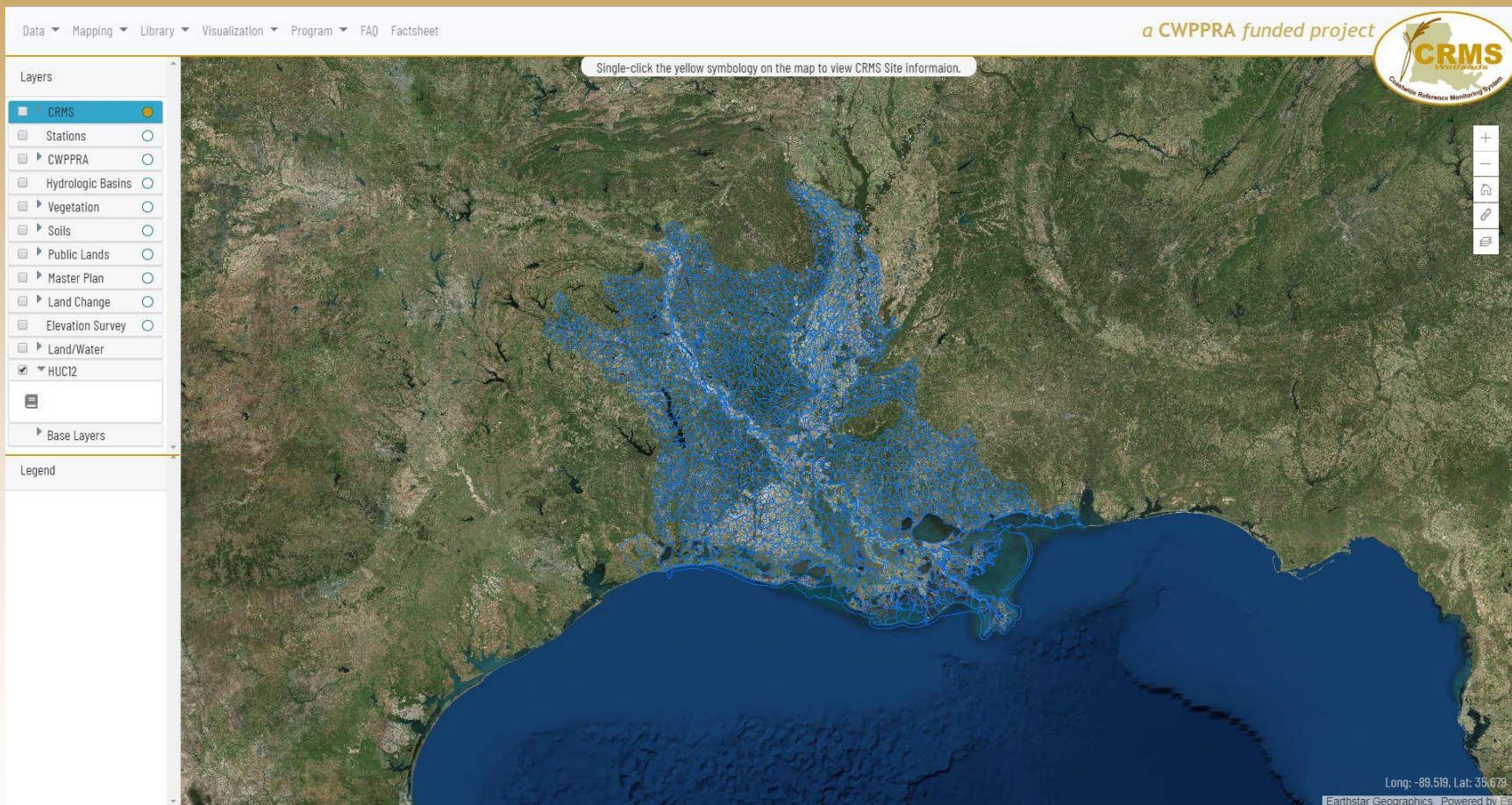






# Coastwide Reference Monitoring System – Wetlands Watershed Boundary Layer

## NRCS's Hydrologic Unit Code (HUC) Boundaries—12 digit subwatershed classification



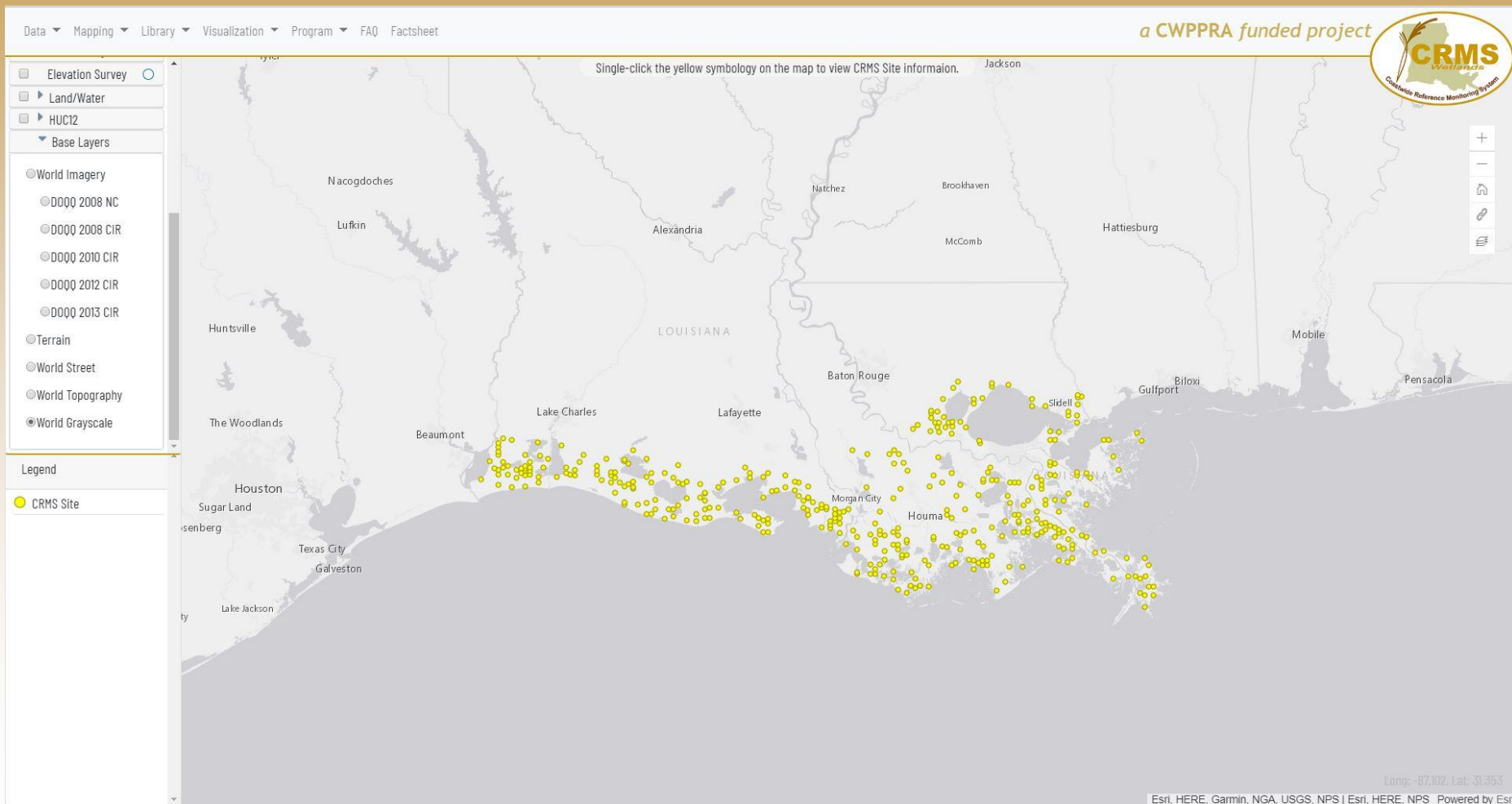




# Coastwide Reference Monitoring System – Wetlands

## Optional Base Layers

Ability to visualize the base map layer as different years of aerial photography or world imagery.

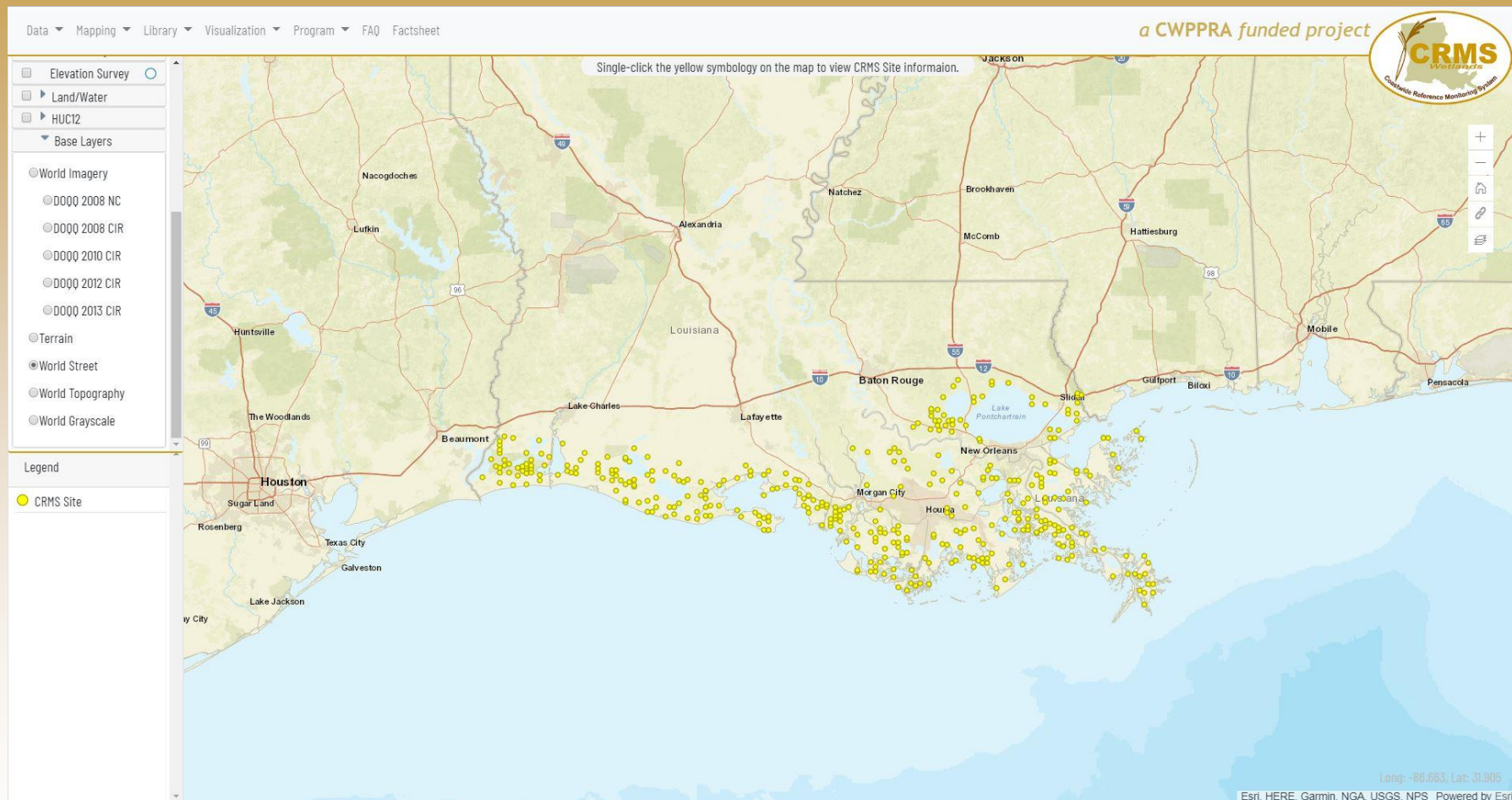




# Coastwide Reference Monitoring System – Wetlands

## Optional Base Layers

## Streets Base Layer







**Questions?**  
**<https://lacoast.gov/crms>**

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