Calcasieu Ship Channel Salinity Control Project

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State of the Coast
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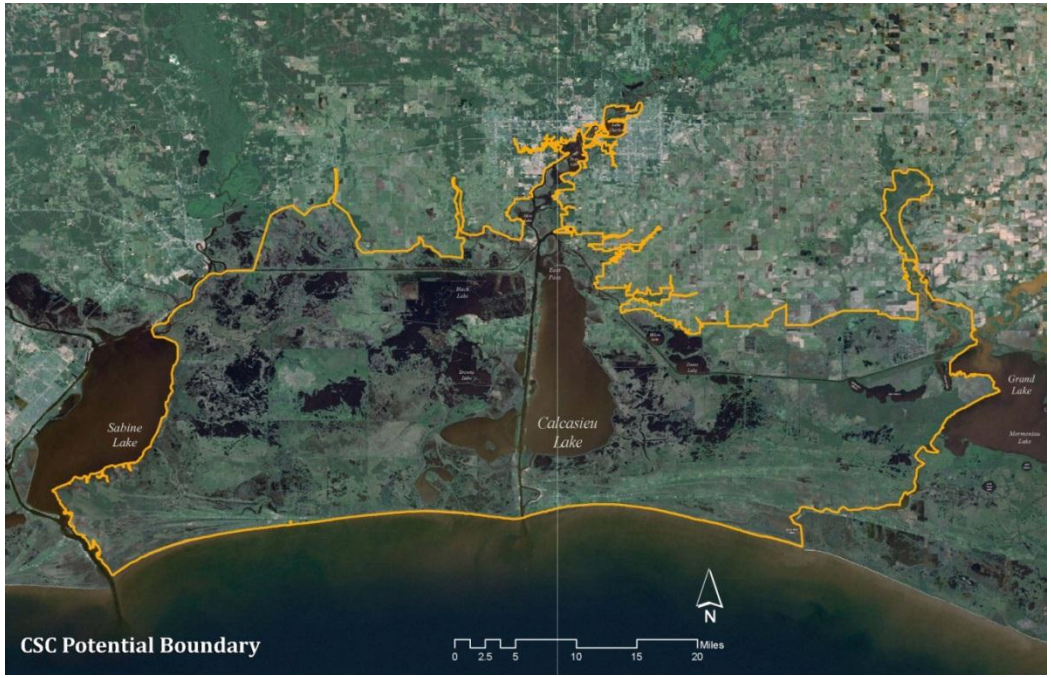
CPRA
Coastal Protection and Restoration Authority of Louisiana

committed to **our coast**

Calcasieu Ship Channel Salinity Control Project (CS-65)

- One of several hydrologic restoration projects recommended in the 2012 Master Plan.

- LCA SW Coastal Louisiana Study showed promising benefits but was not able to investigate in sufficient detail to include it in the TSP.



Calcasieu Ship Channel (CSC)

History

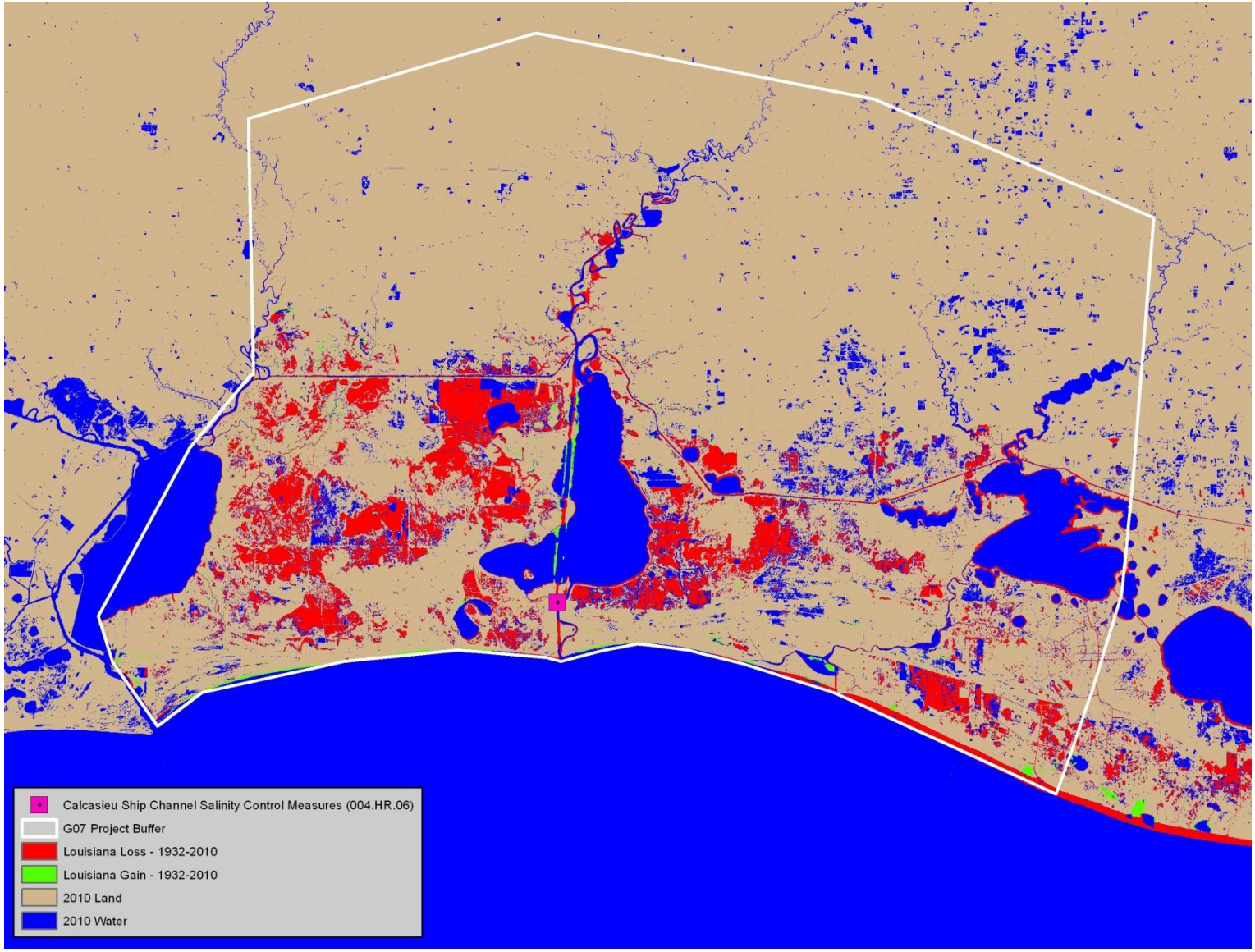
Year	Activity
1874	Dredge channel to 80 feet wide and 5 feet deep
1880's	Re-dredged channel five times because of siltation
1893	Dredged lake bars at head of Calcasieu Pass to 8 feet deep and constructed a revetment on either side of channel
1894-1902	Dredged channel three times
1900	Jetties 1.5 mile in length were placed at the mouth of Calcasieu Pass
1903	Dredged a channel 12 feet deep and 200 feet wide between the jetties
1941	CSC was completed – 30 feet deep and 250 feet wide from Lake Charles to Gulf of Mexico
1951	CSC was enlarged to 35 feet deep and jetties were extended to the 10-foot depth contour (over 8,000 feet long)
1968	CSC was enlarged to a depth of 40 feet and a bottom width of 400 feet

Purpose and Need

- **The purpose of the project is to manage salinities being introduced into adjacent water bodies through the Calcasieu Ship Channel to reduce the rate of wetland loss in the surrounding wetlands.**

- **Needed in order to address modifications to hydrology that have caused an increase in salinity within the project area, resulting in the loss of wetlands.**

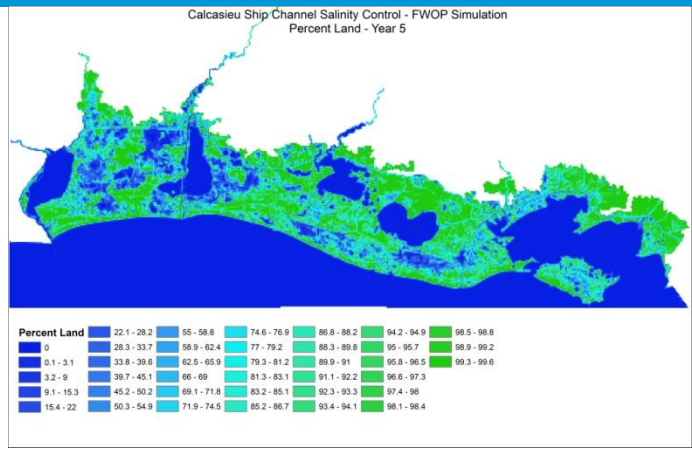
Historic Land Loss

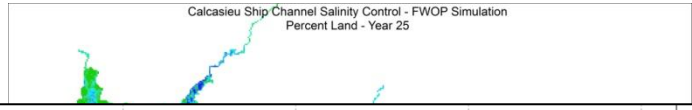


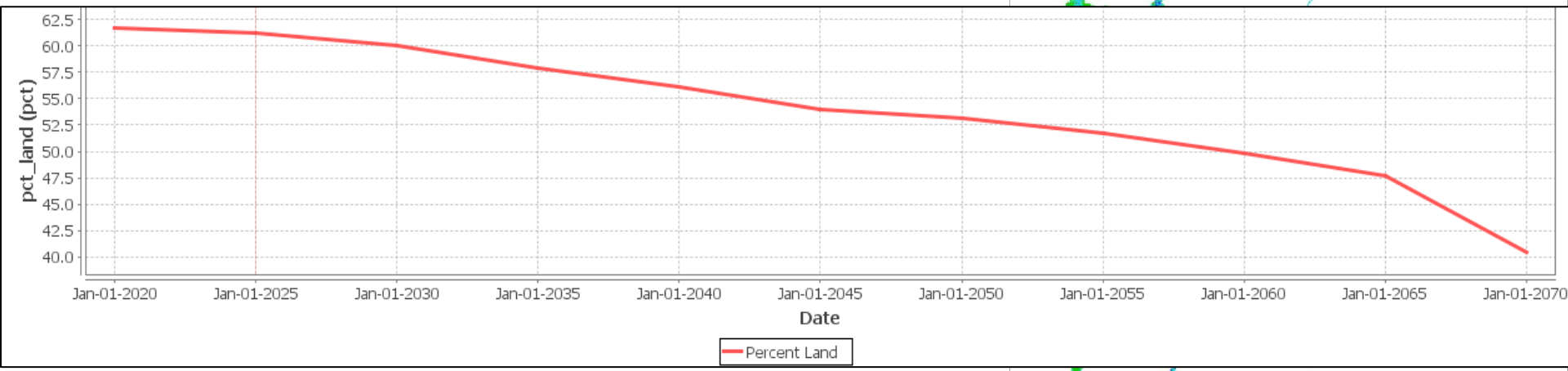
Future Without Action

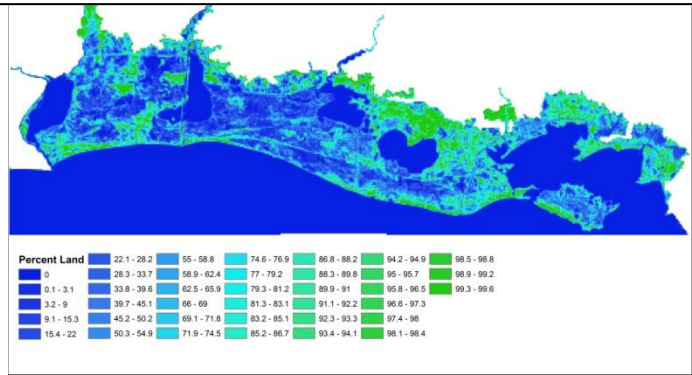
Land Loss

- Approximately 35% landloss predicted for the Cameron/Vermillion area without action.



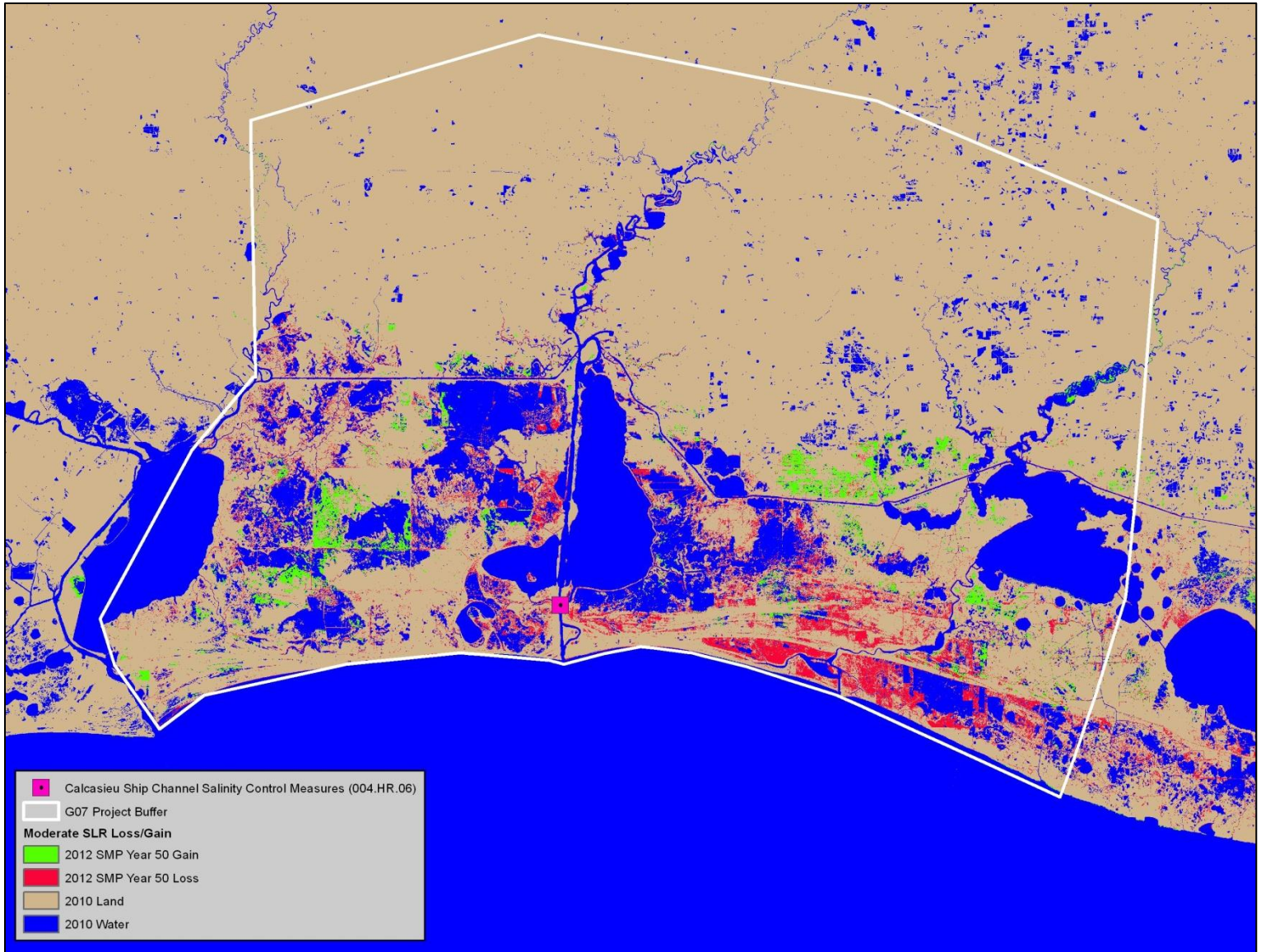






Future With Action

2012 State Master Plan



Goals

CSC Salinity Control

- Control salinity intrusion through Calcasieu Ship Channel into Calcasieu Lake and surrounding wetlands

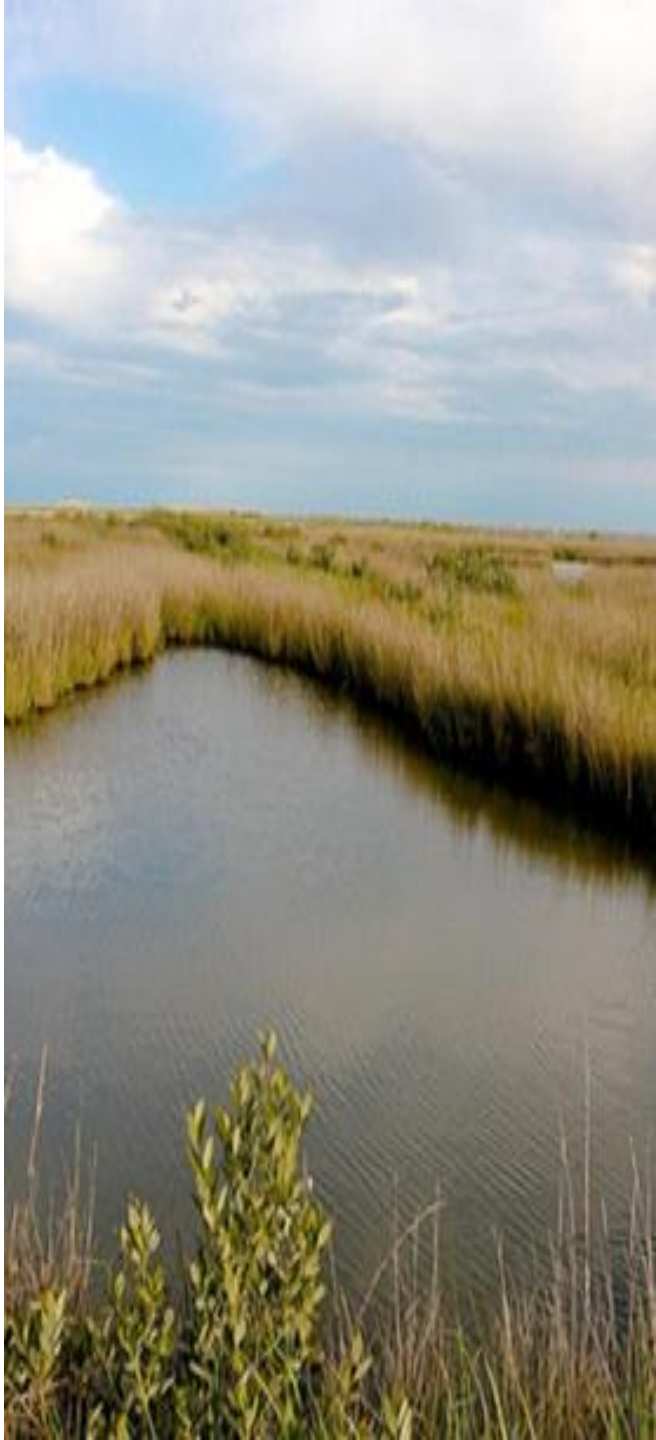
- Preserve natural drainage patterns, do not increase marsh inundation

- Sustain and enhance navigation in CSC and the Port of Lake Charles

Assumptions

- **Used the “moderate” scenario from the 2012 Master Plan for future conditions: ~ 1.5 feet RSLR in 50 years**
- **Assumed river flows to be consistent with historical record**
- **Precipitation and Evapotranspiration were projected using downscaled outputs from USGS REGCM3 Global Climate Models.**
- **Navigation assumed to be current average – We will consider future changes for the final array of plans.**

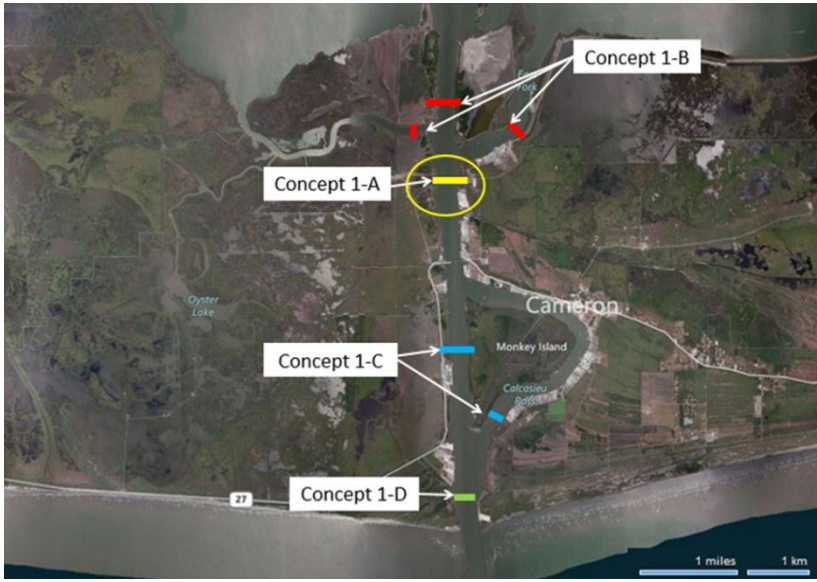
Evaluating Alternative Plans



Concept 1

Gate/Lock system across lower CSC

Combination of gates, locks and sills to limit saltwater exchange while allowing navigation of the channel.



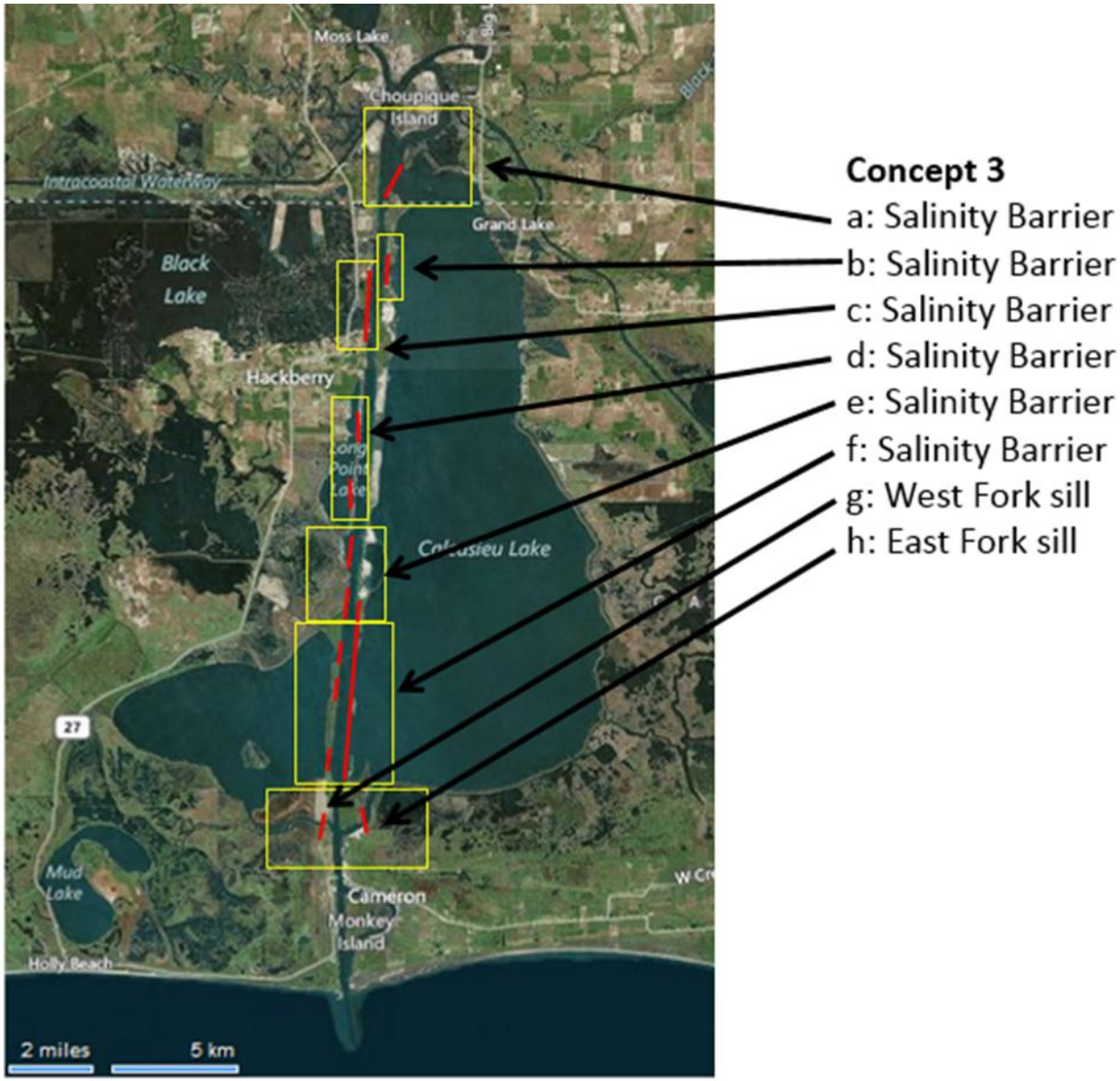
Concept 2

Pass-through gates on lower CSC

- Consists of 2 gates 5 or more miles apart.
- Similar to concept 1 in physically blocking salinity from entering the shipping channel.
- Distance between gates allows vessels to maintain velocities, thus minimizing impact to navigation.

Concept 3
Channelization

- Consists of barriers that line the entire CSC.
- Allows water from the Gulf into the CSC but limits its entry into the lake and adjacent wetlands.
- Includes sills and other structures to allow wildlife and small vessels access between the shipping channel and the lake.

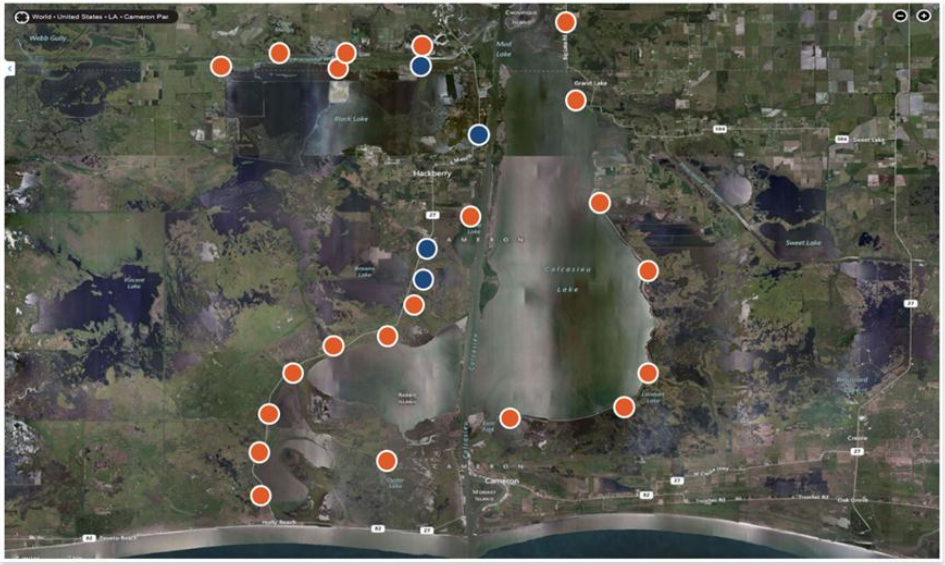


Concept 4

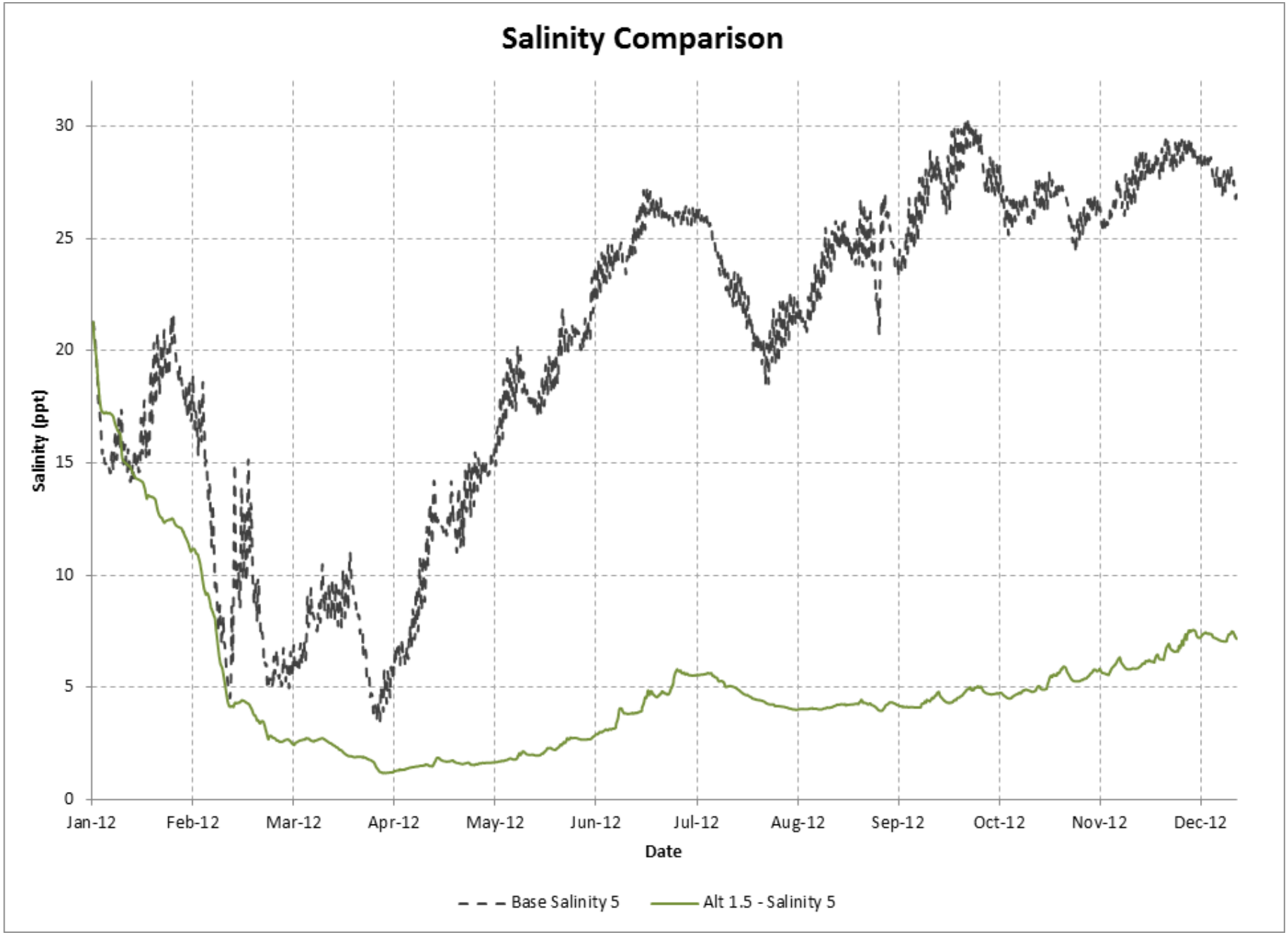
Perimeter Control

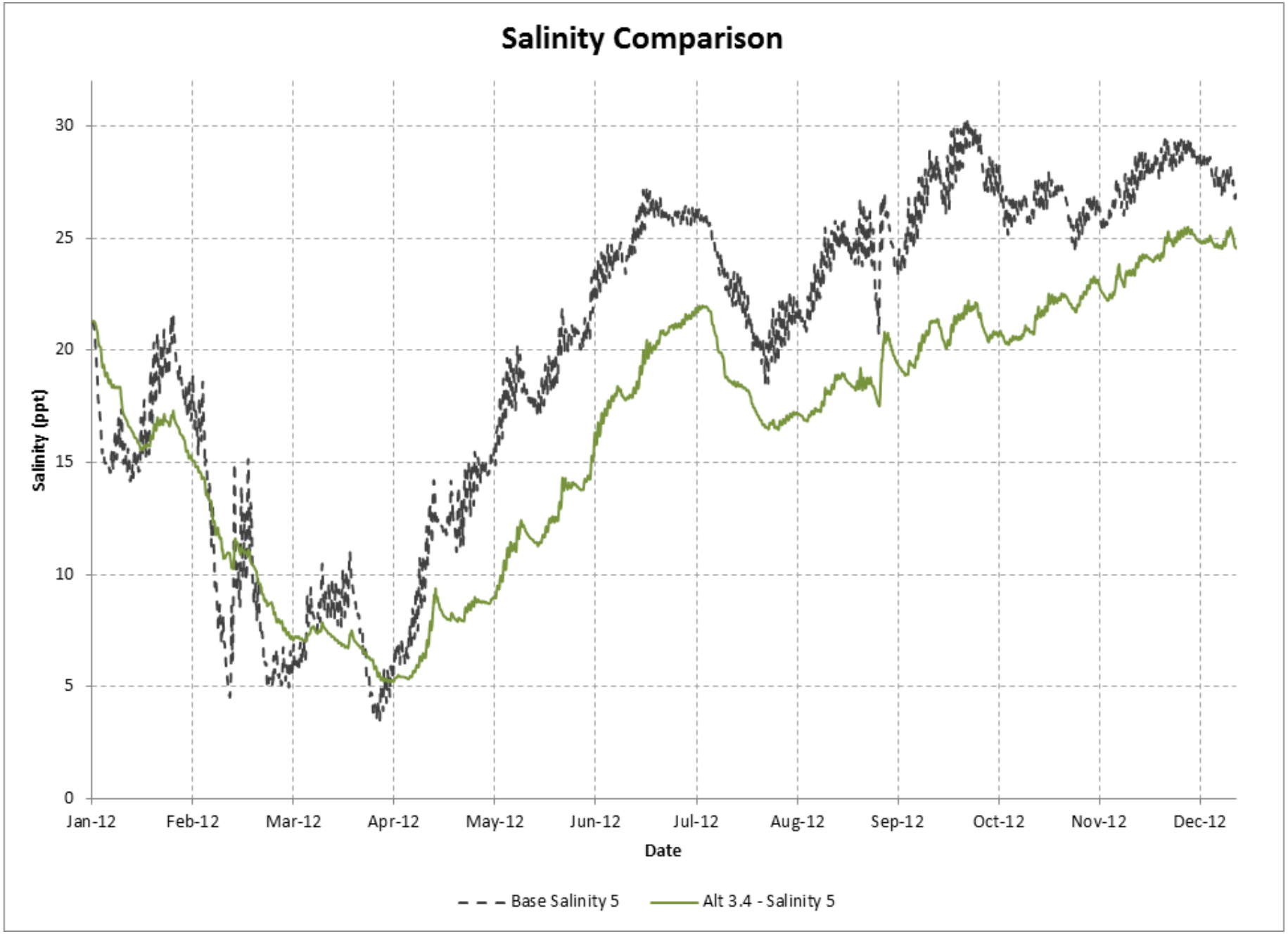
- Barriers along the Calcasieu Lake shoreline that will prevent saltwater from entering the adjacent wetlands.

- Many structures already exist, other open channels would require new structures.



Red dots indicate existing structures, Blue dots indicate new structures


Salinity Comparison
Salinity (ppt)
30
25
20
15
10
5
0
Jan-12
Feb-12
Mar-12
Apr-12
May-12
Jun-12
Jul-12
Aug-12
Sep-12
Oct-12
Nov-12
Dec-12
Date
Base Salinity 5
Alt 1.5 - Salinity 5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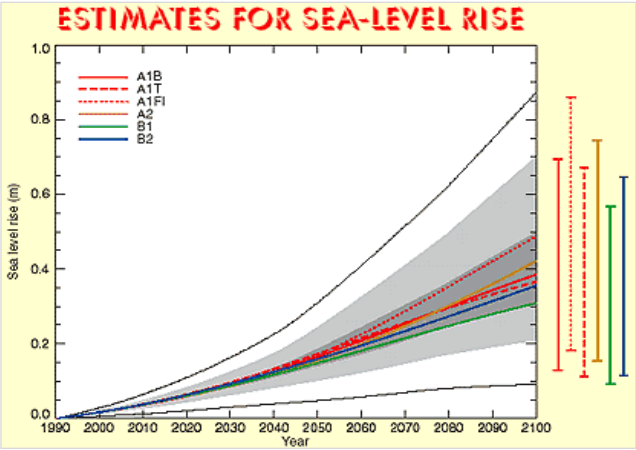
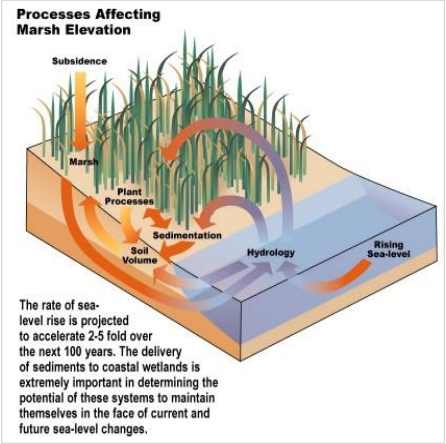
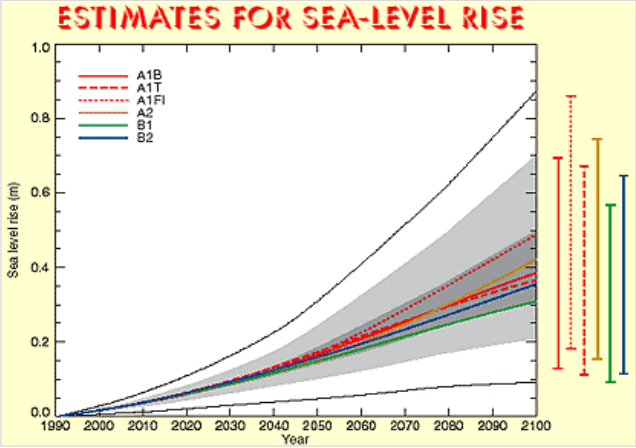
Dec-12
Date
Base Salinity 5
Alt 3.4 - Salinity 5

Synergy with other Regional Projects

- LCA SW Coastal Louisiana Study
- CWPPRA
- Marsh Creation
- Hydrologic Restoration





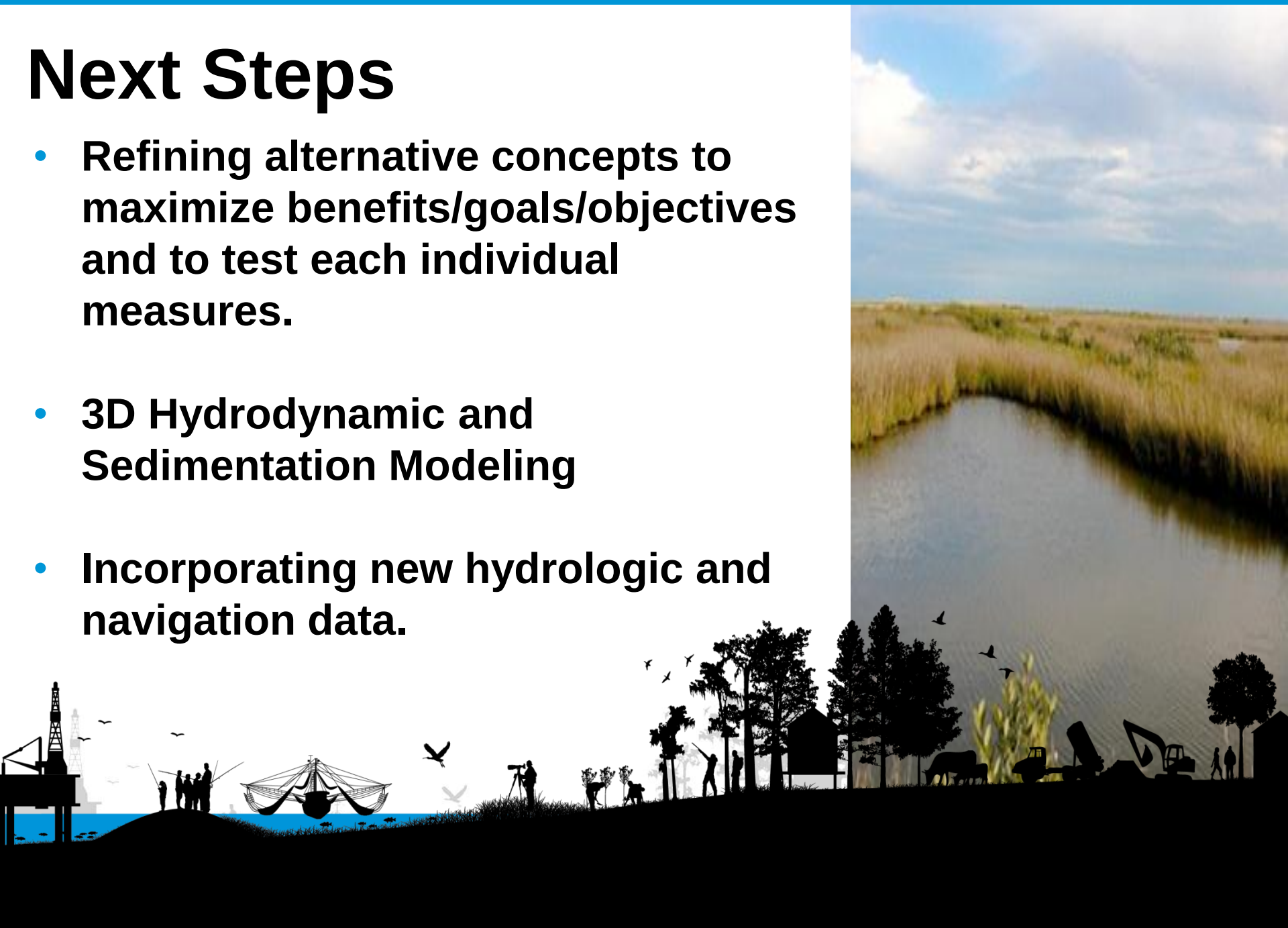


Next Steps

- **Refining alternative concepts to maximize benefits/goals/objectives and to test each individual measures.**

- **3D Hydrodynamic and Sedimentation Modeling**

- **Incorporating new hydrologic and navigation data.**



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Questions?

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