



Coastal Protection and
Restoration Authority of Louisiana

Toward Adaptive Management: Monitoring and Decision Making

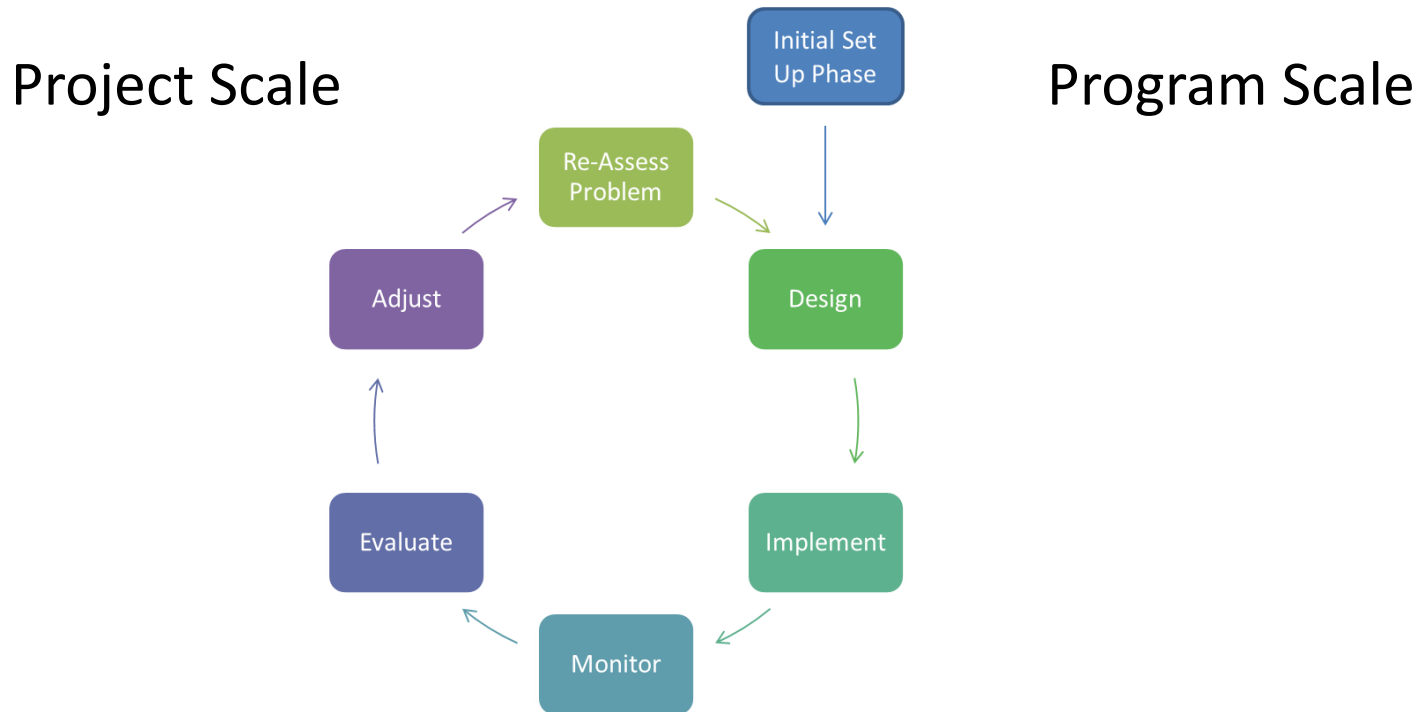
Brian Lezina
Coastal Protection and
Restoration Authority

31 August 2016



committed to our coast

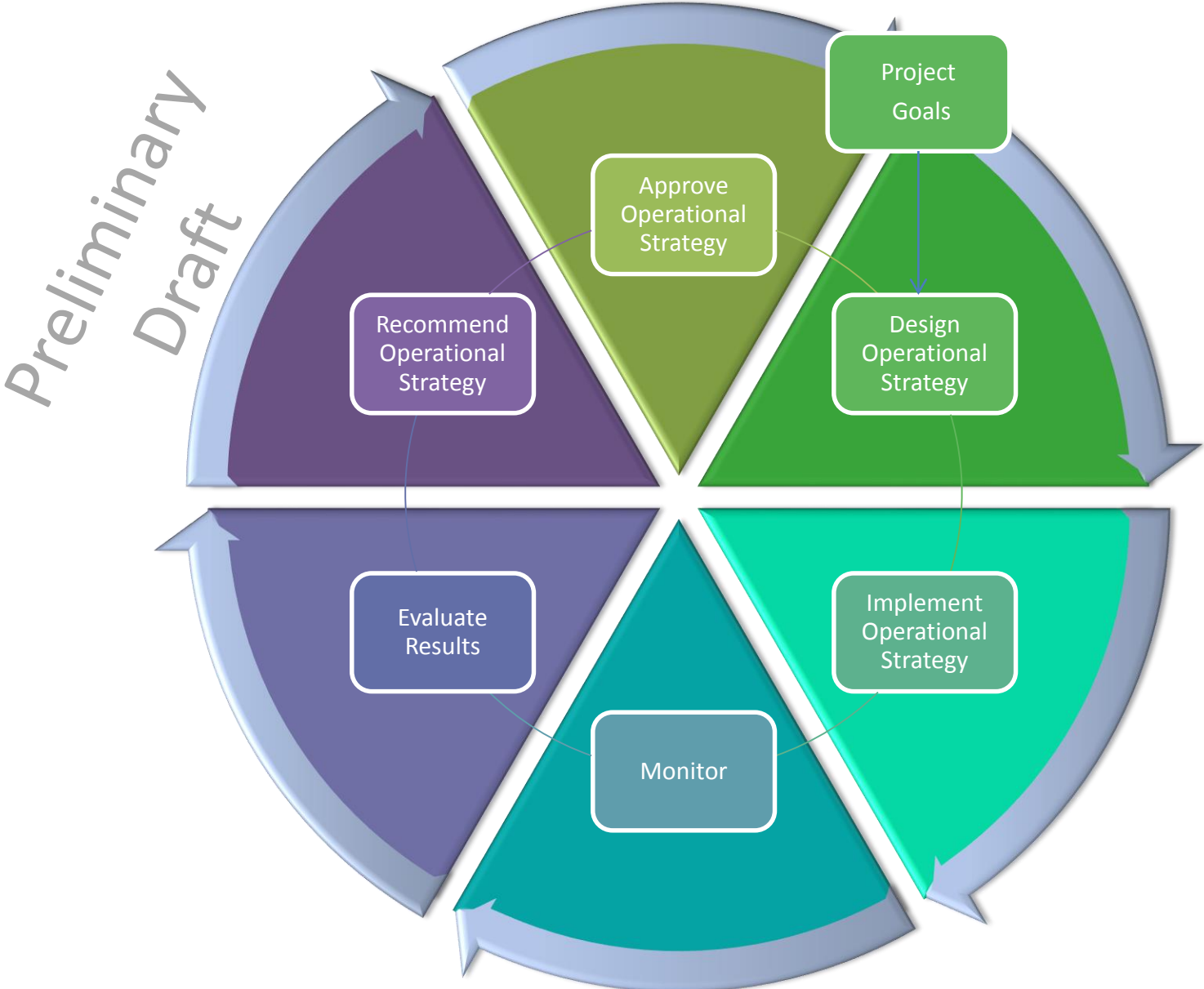
Adaptive Management



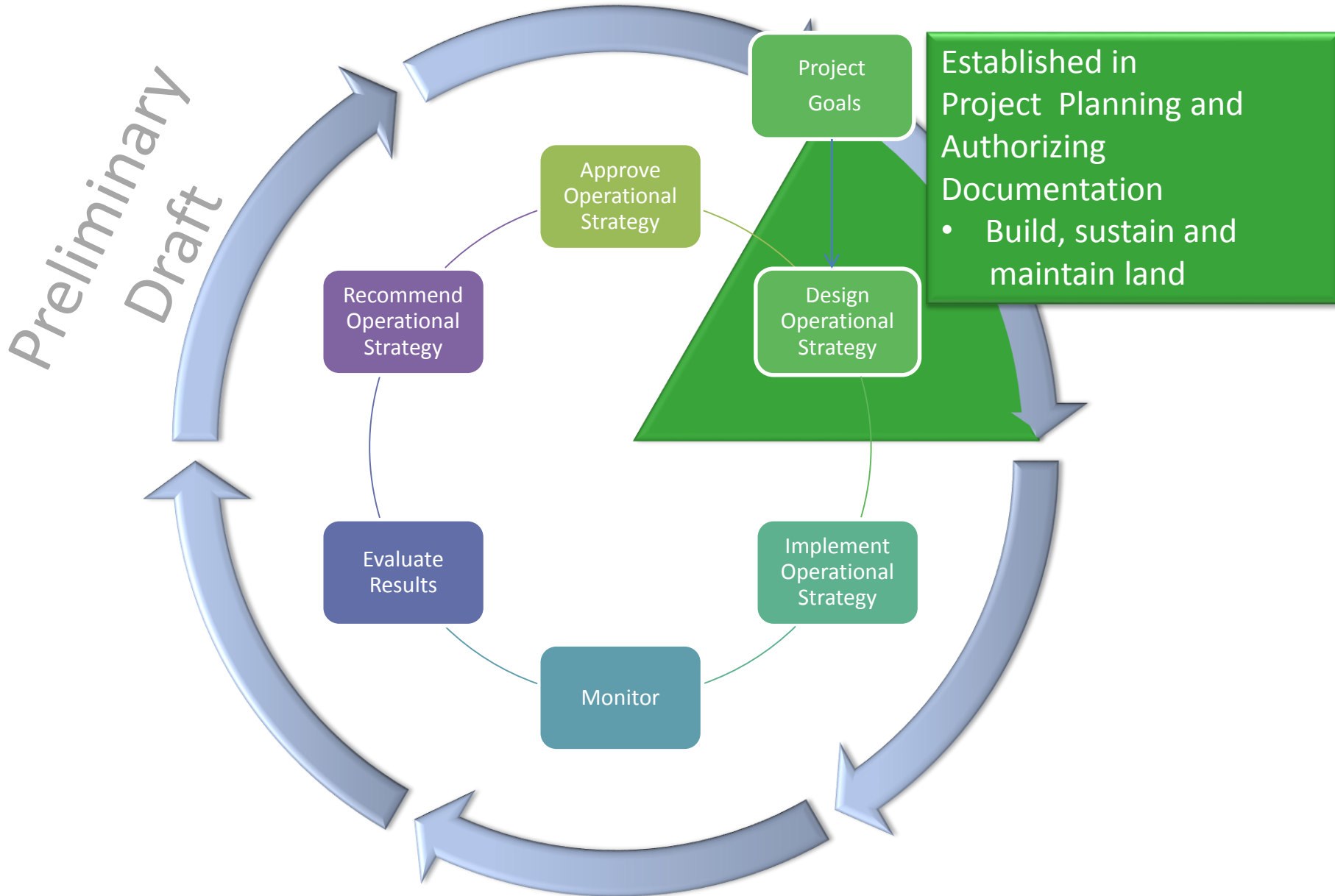
Mid-Basin diversion operation will be adaptive and based on:

- predictive forecasting models to inform operations
- growing knowledge base
- ongoing monitoring and evaluation
- ongoing feedback and communication with stakeholders

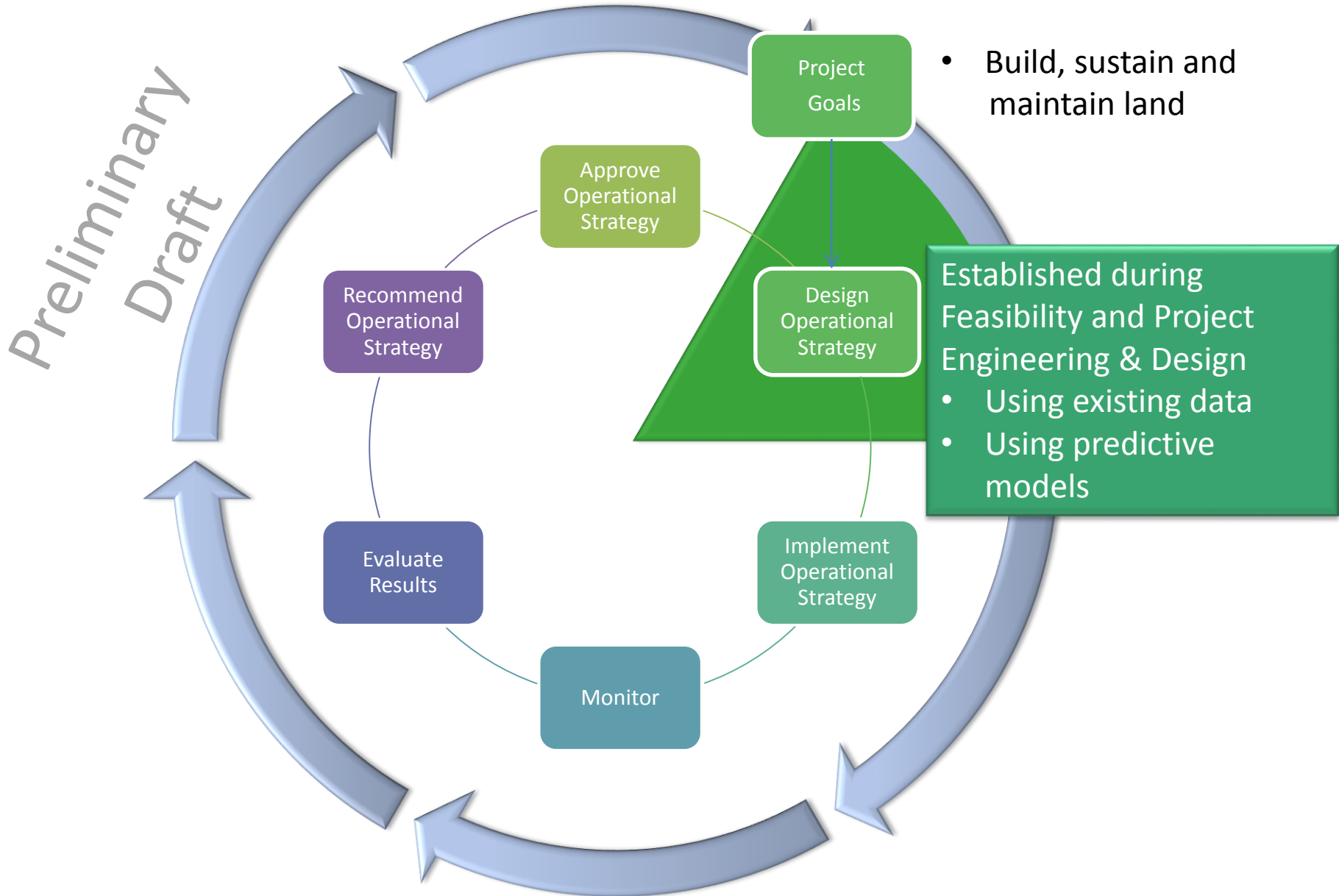
AM for Mid-Basin Diversions



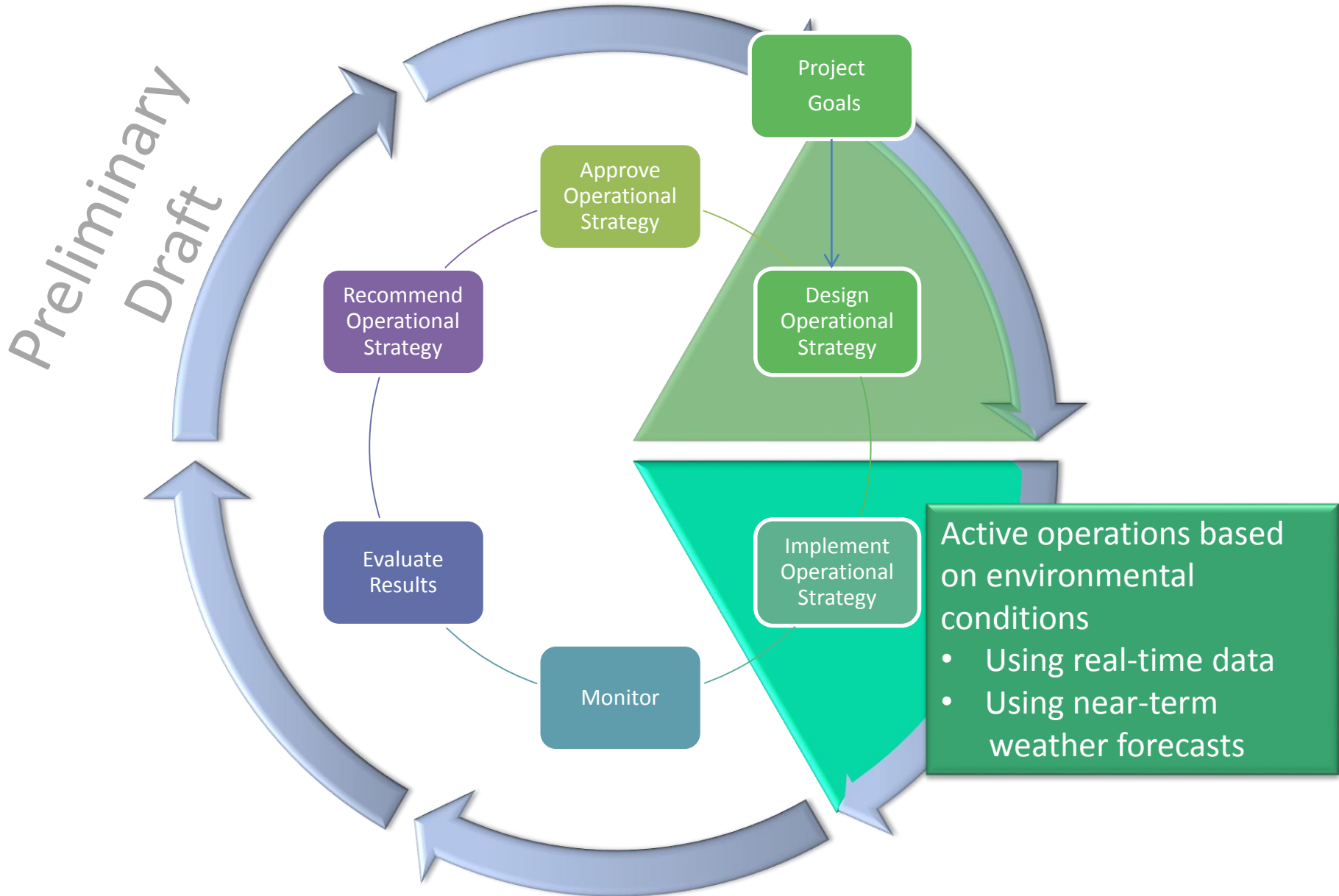
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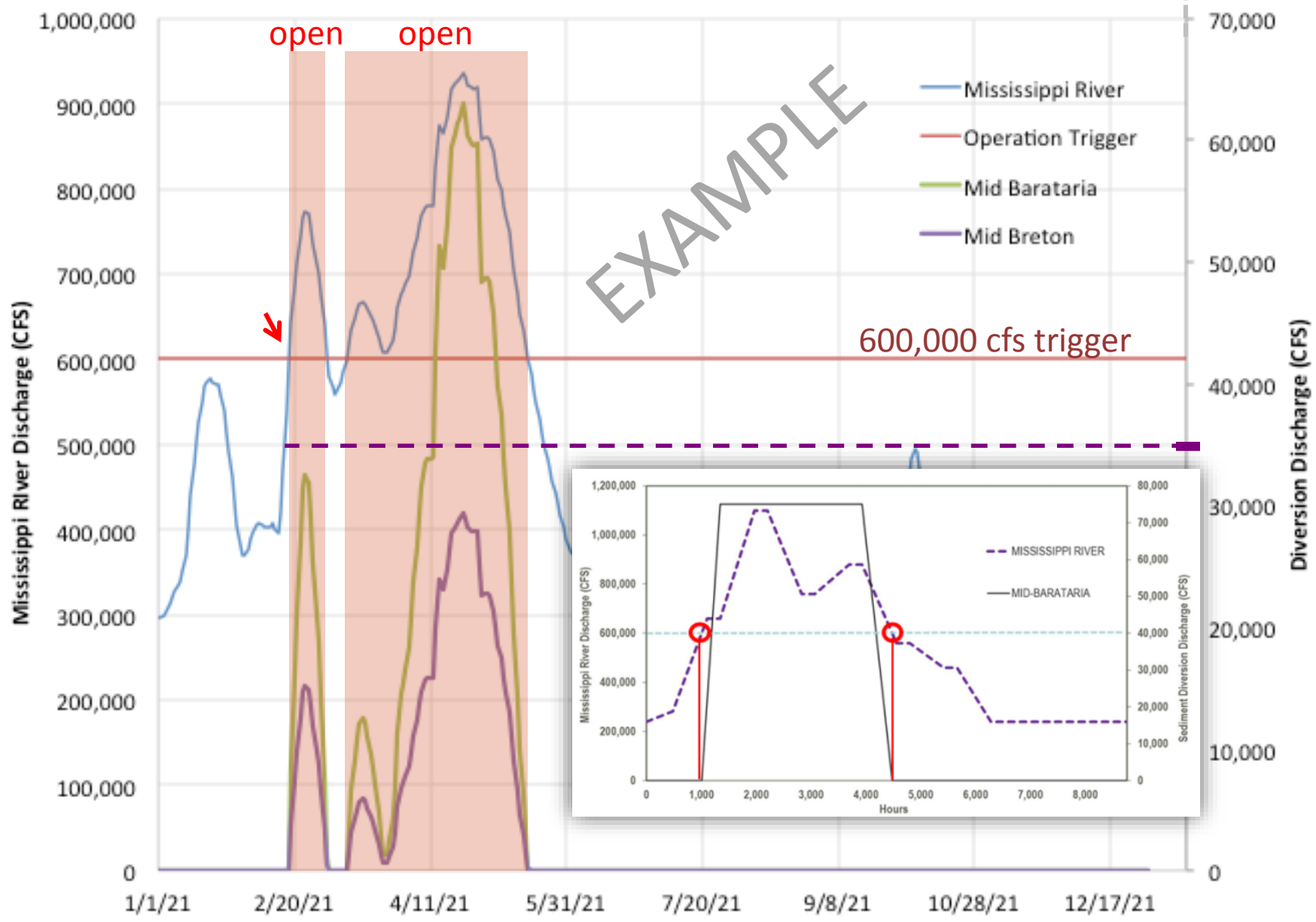
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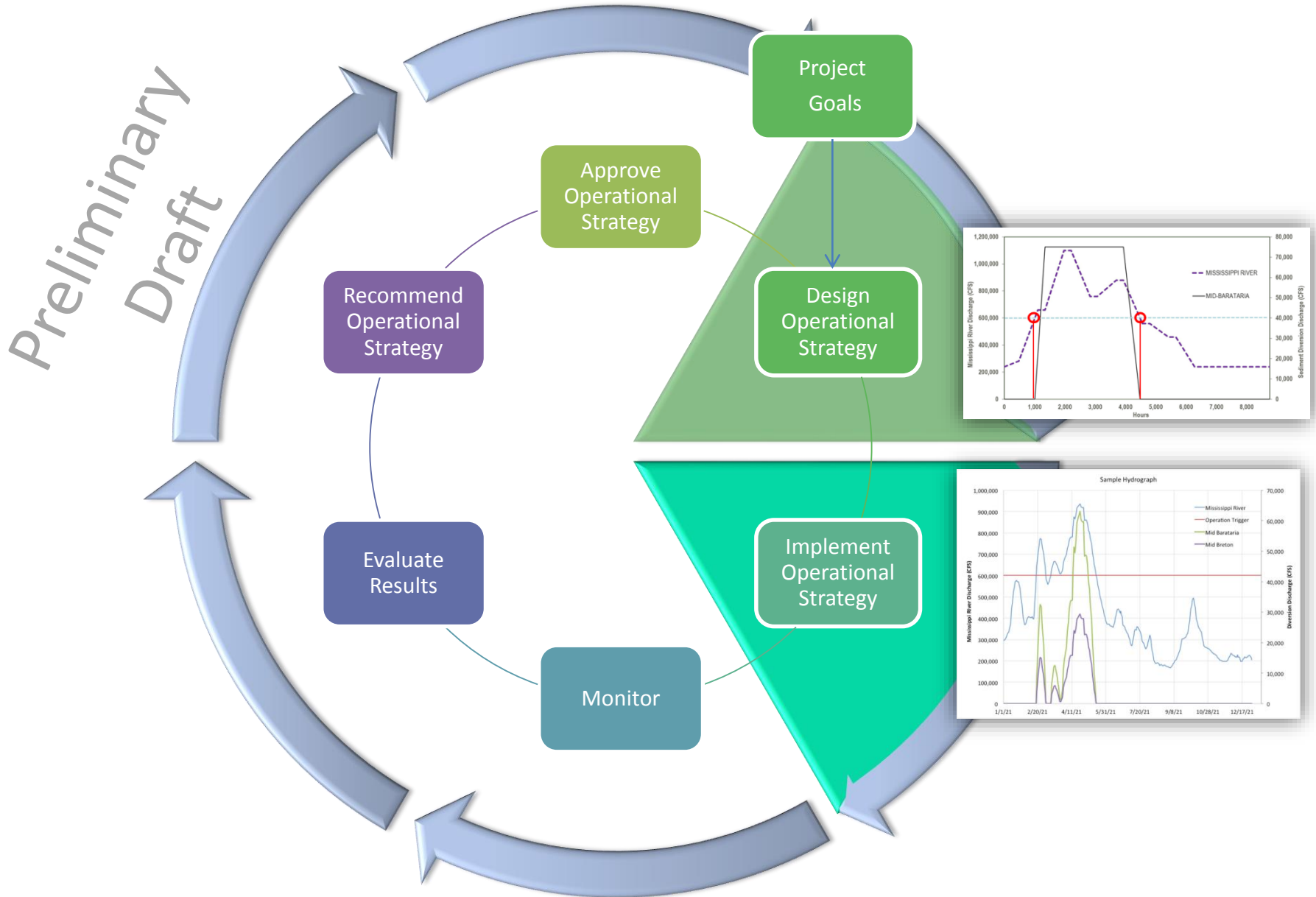
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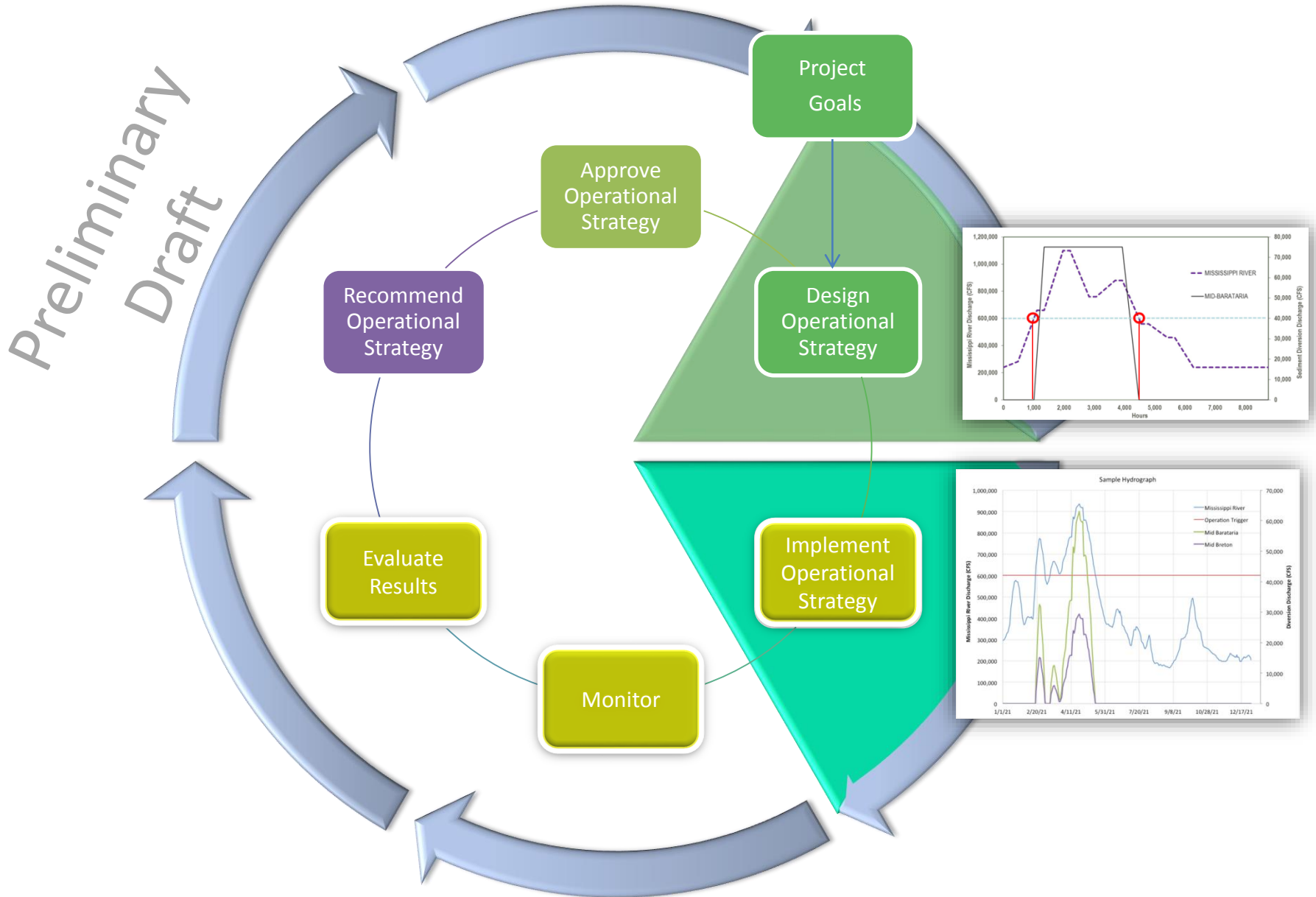
Sample Hydrograph



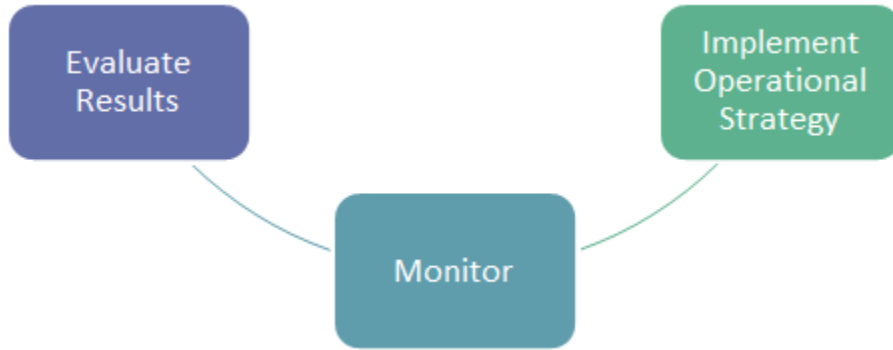
AM for Mid-Basin Diversions



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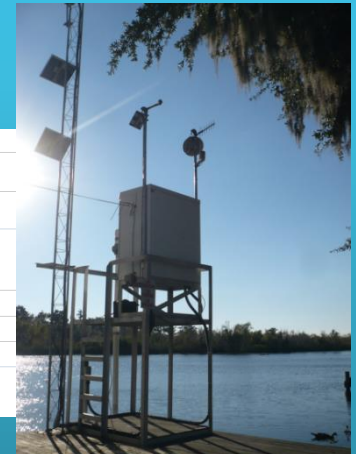
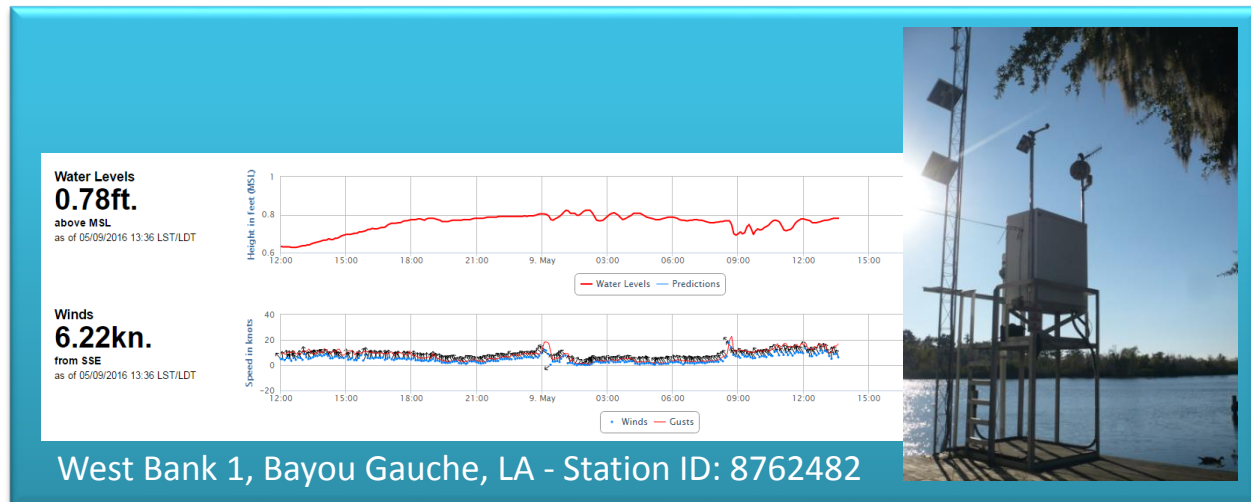
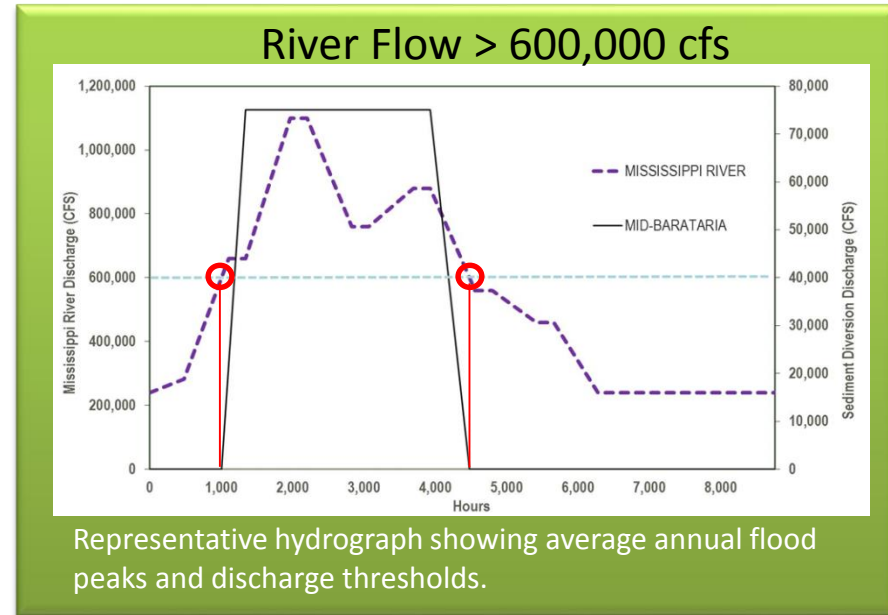


Operations Management Team

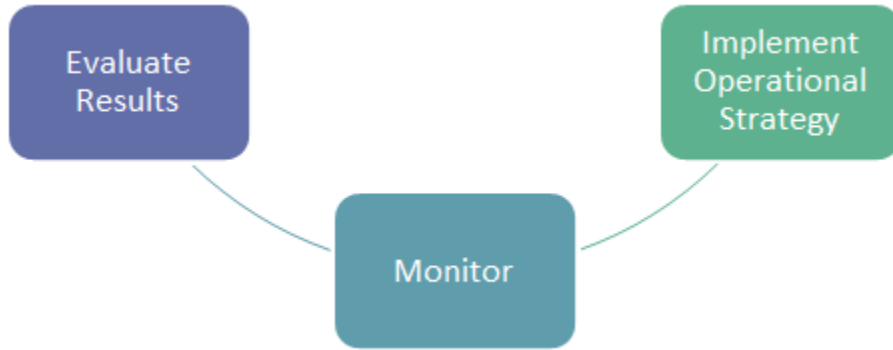


Operations Management Team

- Active, ongoing monitoring
 - Salinity, water levels, discharge, weather conditions, etc.
 - Real-time forecasts
 - Hard stops
- Develop annual operations plan
 - Based on input from Adaptive Management Team



Adaptive Management Team



Adaptive Management Team

- Annual assessment of project performance
- Assessment of monitoring adequacy
- Coordinate DELFT3D model re-run every 5 years



System Wide Assessment and Monitoring Program (SWAMP) data, Project-specific data, external data

Natural System	Human System
Weather and Climate	Population & Demographics
Biotic Integrity	Housing & Community Characteristics
Water Quality	Economy & Employment
Hydrology	Ecosystem Dependency
Physical Terrain	Residential Properties Protection
	Critical Infrastructure & Essential Services Protection

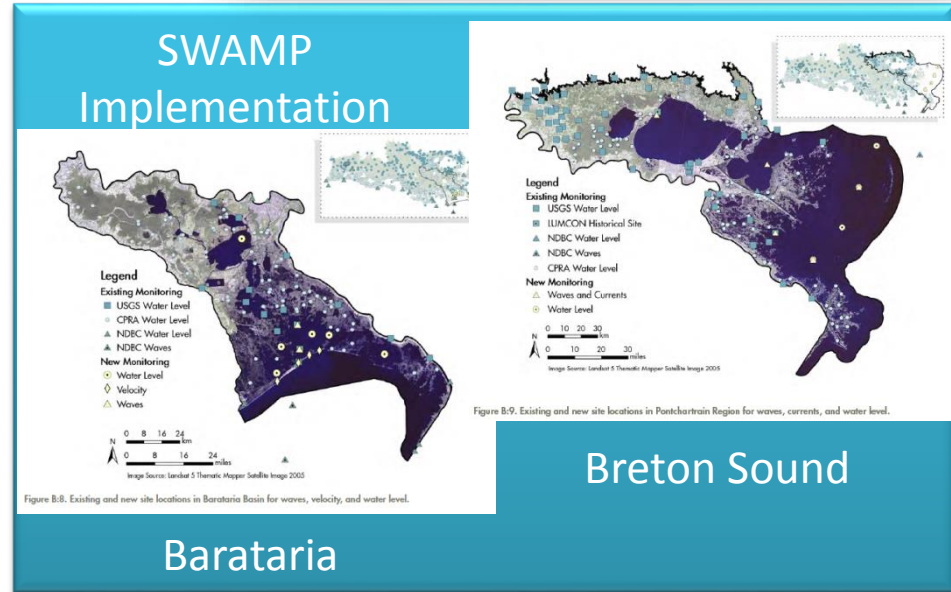


Figure B-8. Existing and new site locations in Barataria Basin for waves, velocity, and water level.

Figure B-9. Existing and new site locations in Pontchartrain Region for waves, currents, and water level.

Data Collectors

Data Users

SWAMP Parameters

CWPPRA



Other Feds



- Physical Terrain
- Bathymetry
 - Surface Elevation
 - Land Area

- Water Quality
- Chl a
 - DO
 - Nutrients
 - Salinity
 - Turbidity
 - TSS

- Weather & Climate
- Evapotranspiration
 - Precipitation
 - Wind

- Biotic Integrity
- Wetland Biomass
 - Nekton
 - Oysters
 - Soil Condition
 - Veg Composition

- Hydrology
- Current Velocity
 - Water Level
 - Waves

- Protection & Socioeconomics
- Population Demographics
 - Housing and Community Characteristics
 - Economy & Employment
 - Ecosystem Dependency
 - Protection of Residential Properties
 - Protection of Critical Infrastructure & Services

Academia



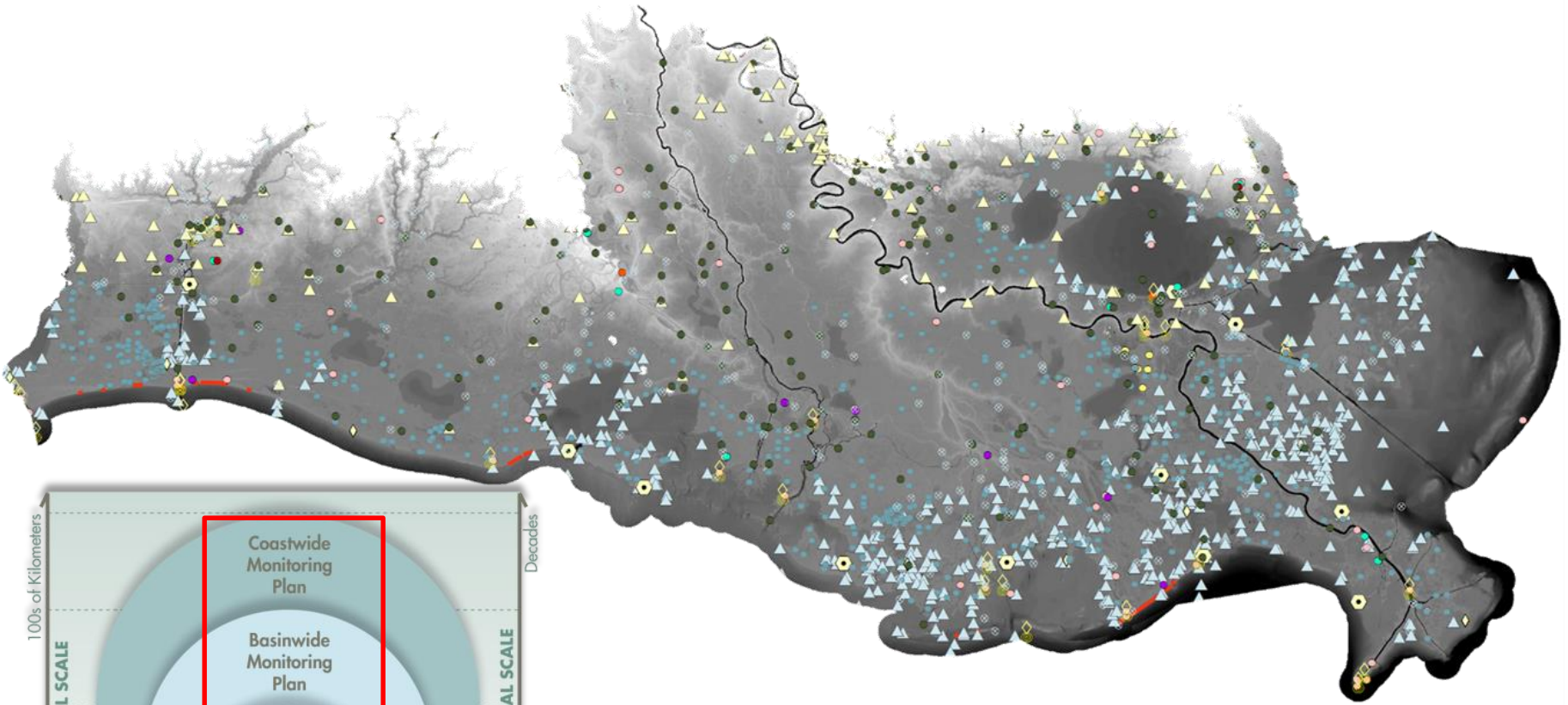
NGOs



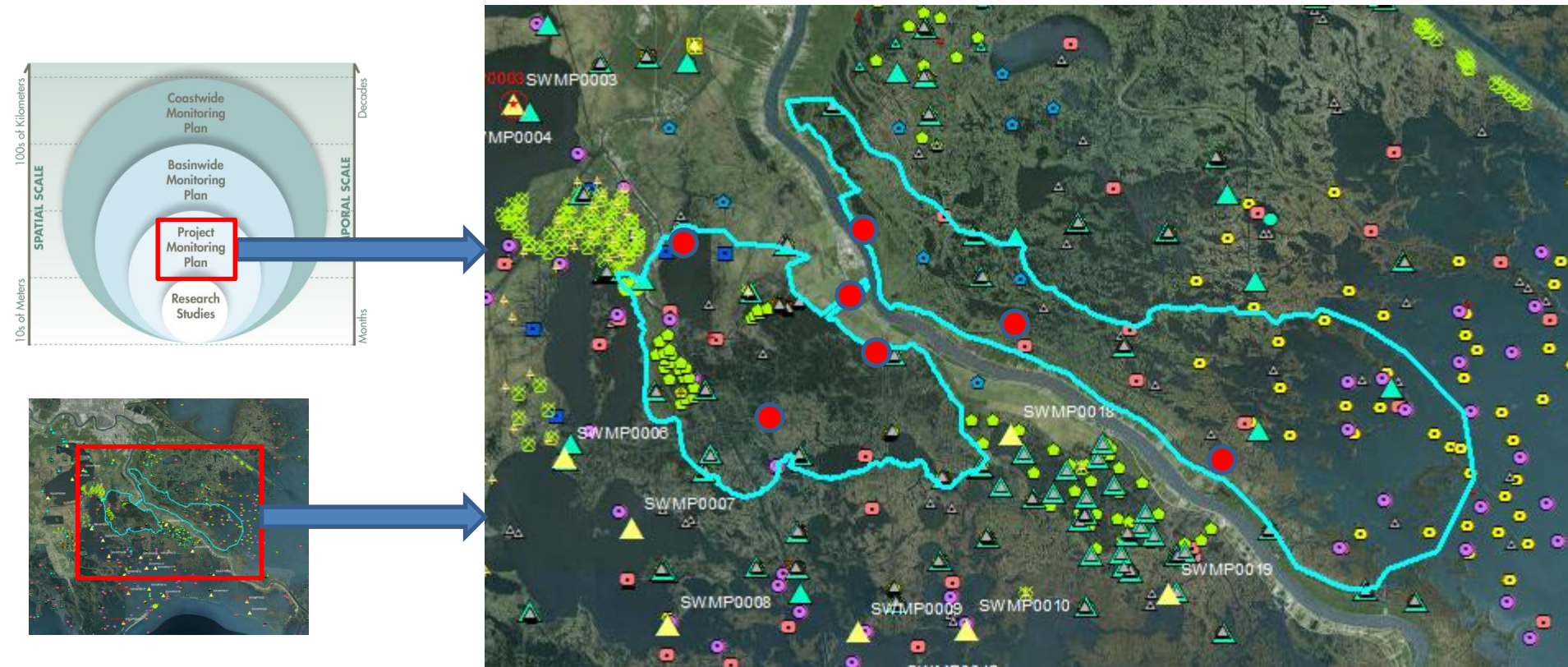
State Agencies



SWAMP Data Inventory

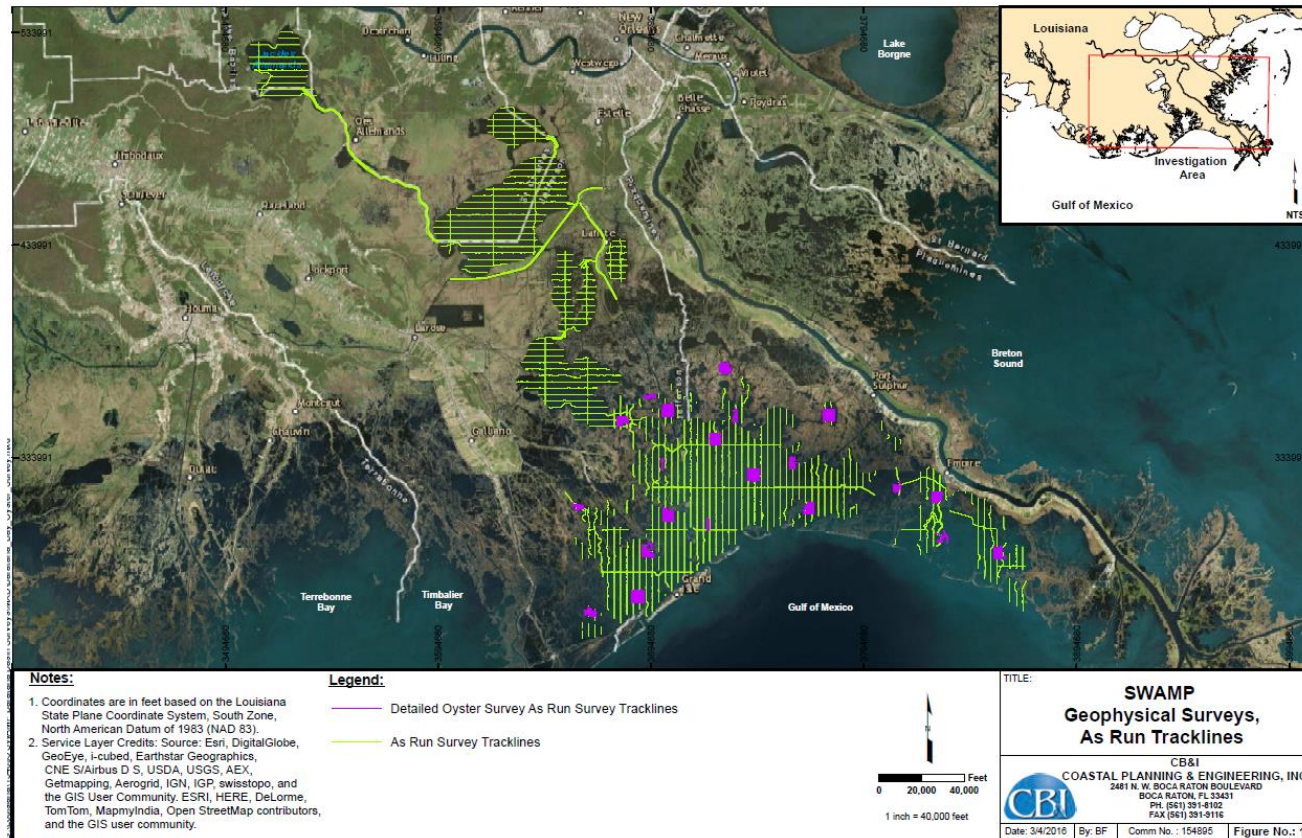


Project Level Monitoring



Addition of project specific monitoring stations
Intensive pre/post construction monitoring
Continuous and discrete biotic / physical data

Geophysical Survey of Barataria Basin



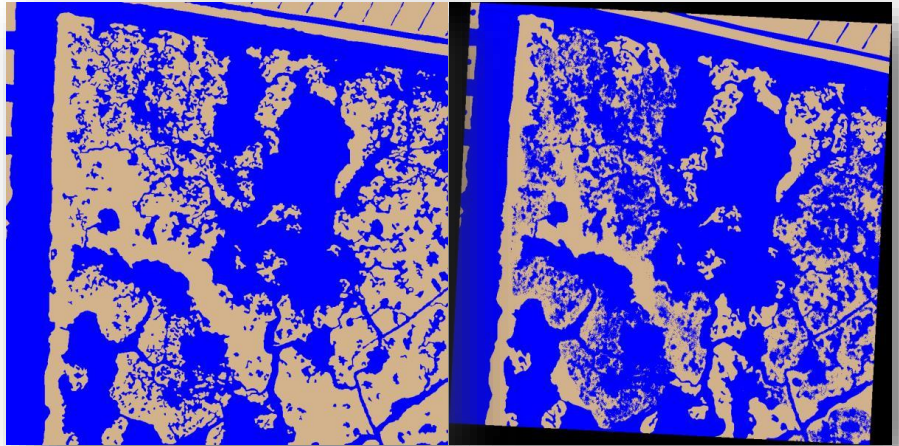
- About 1600 line miles surveyed with an additional 21 square mile grids surveyed for oyster reef delineation
- Includes bathymetry, sub-bottom profile, side-scan sonar and magnetometer

New Approaches

Protected Resources



Land Change



2008

2012

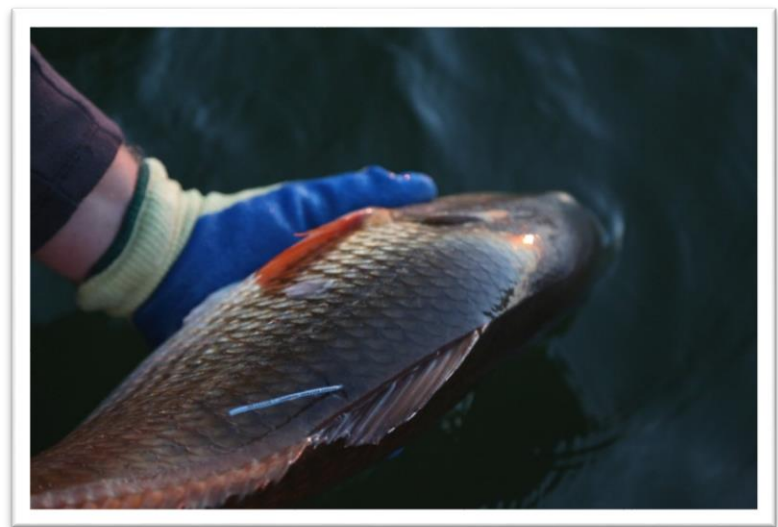
HACKBERRY BAY (10/1/2007-3/28/2016)



Salinity Analysis: Barataria Bay

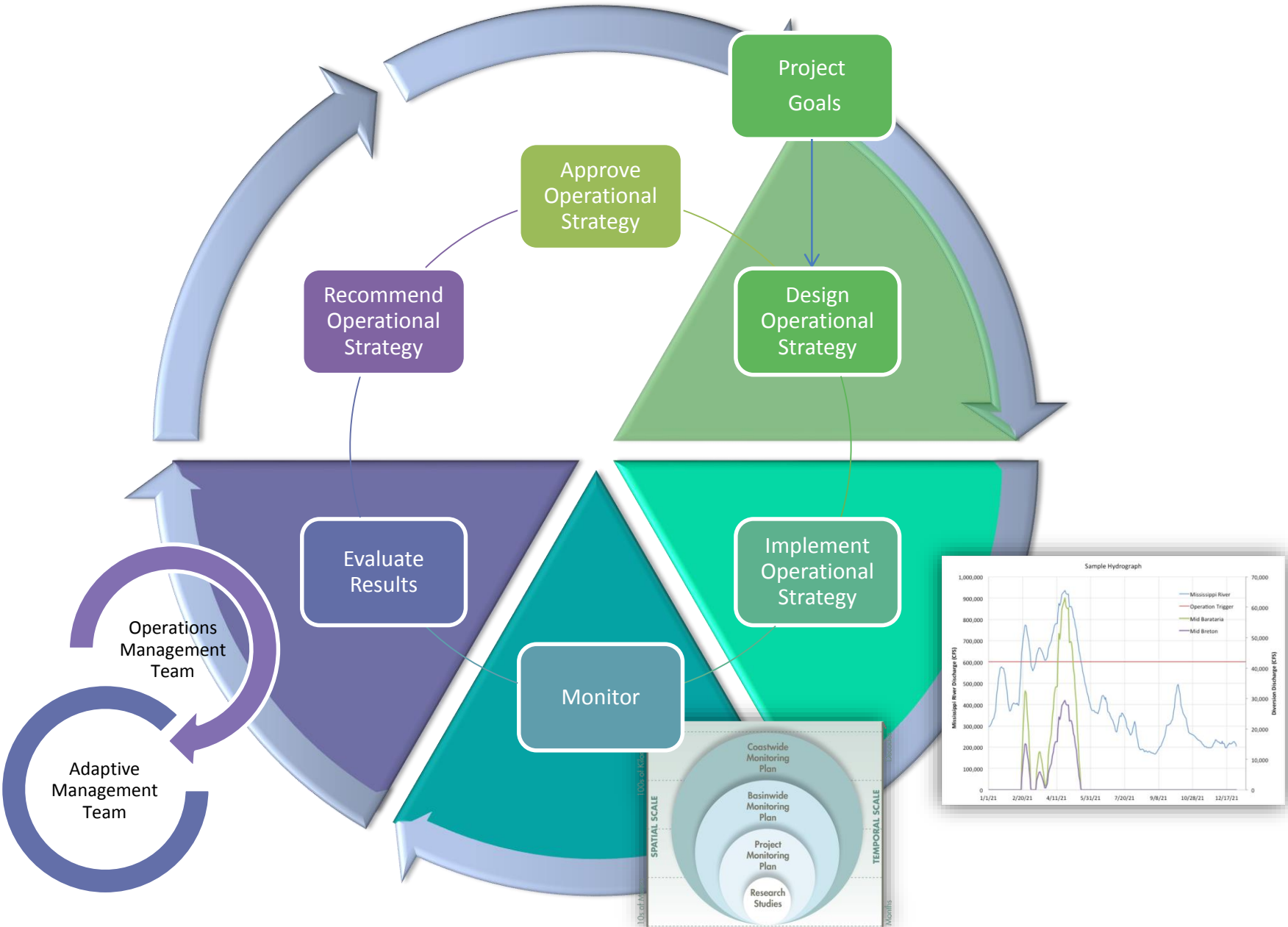


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State/Federal Trust Resources

AM for Mid-Basin Diversions



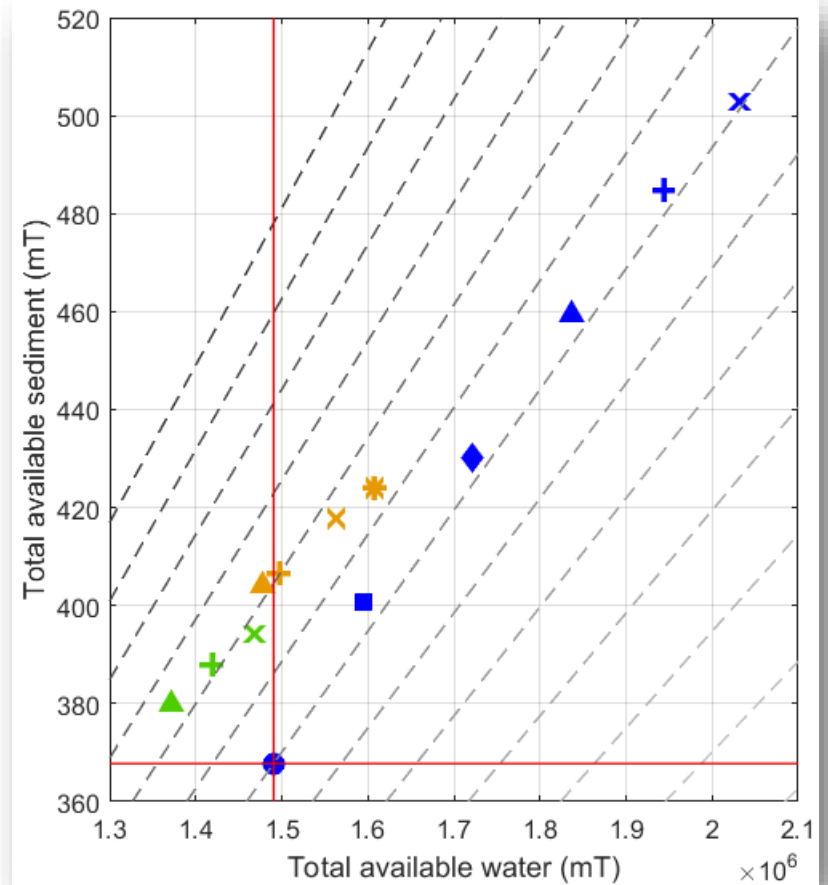
Other Considerations

Optimization

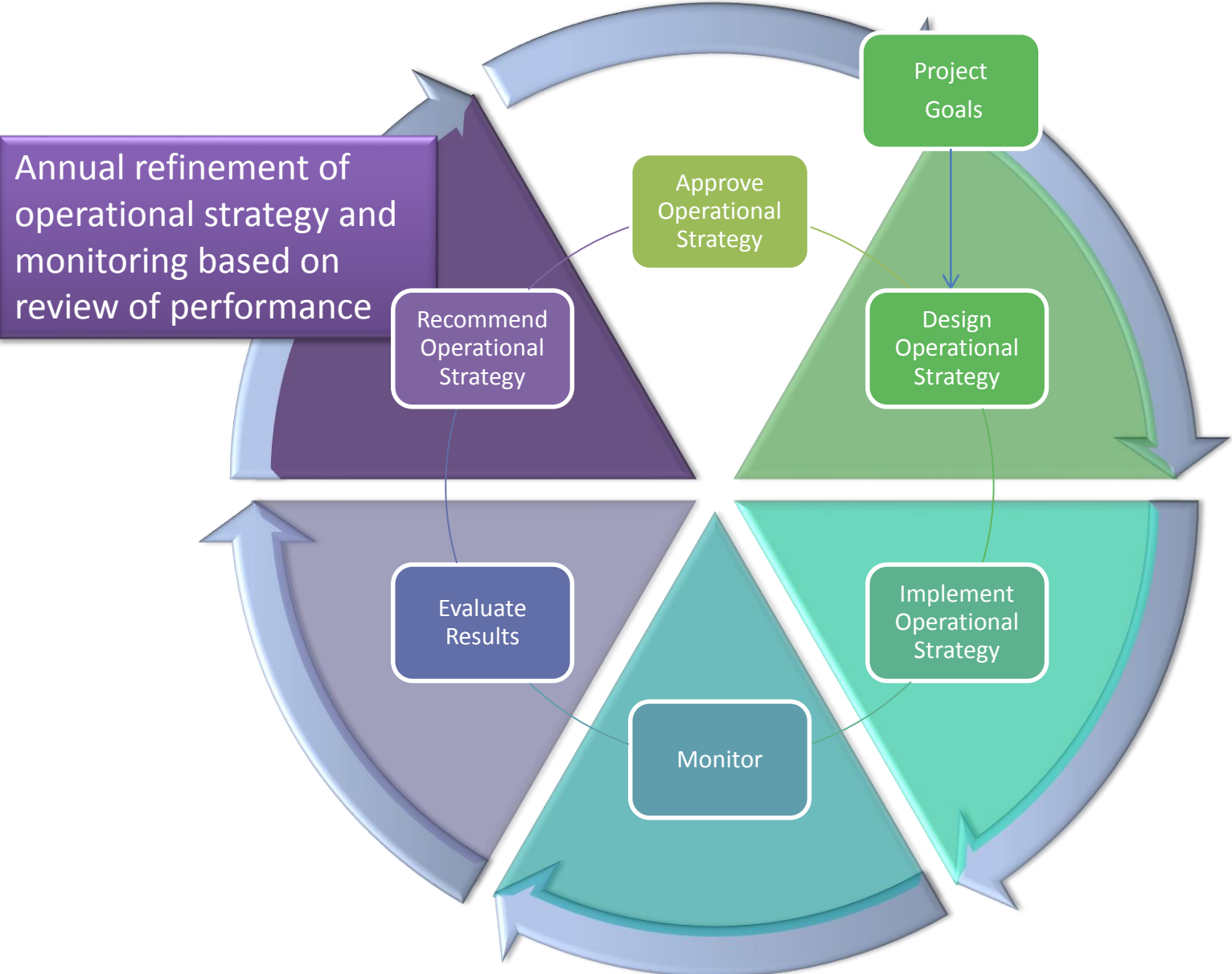
Marsh creation / outfall management



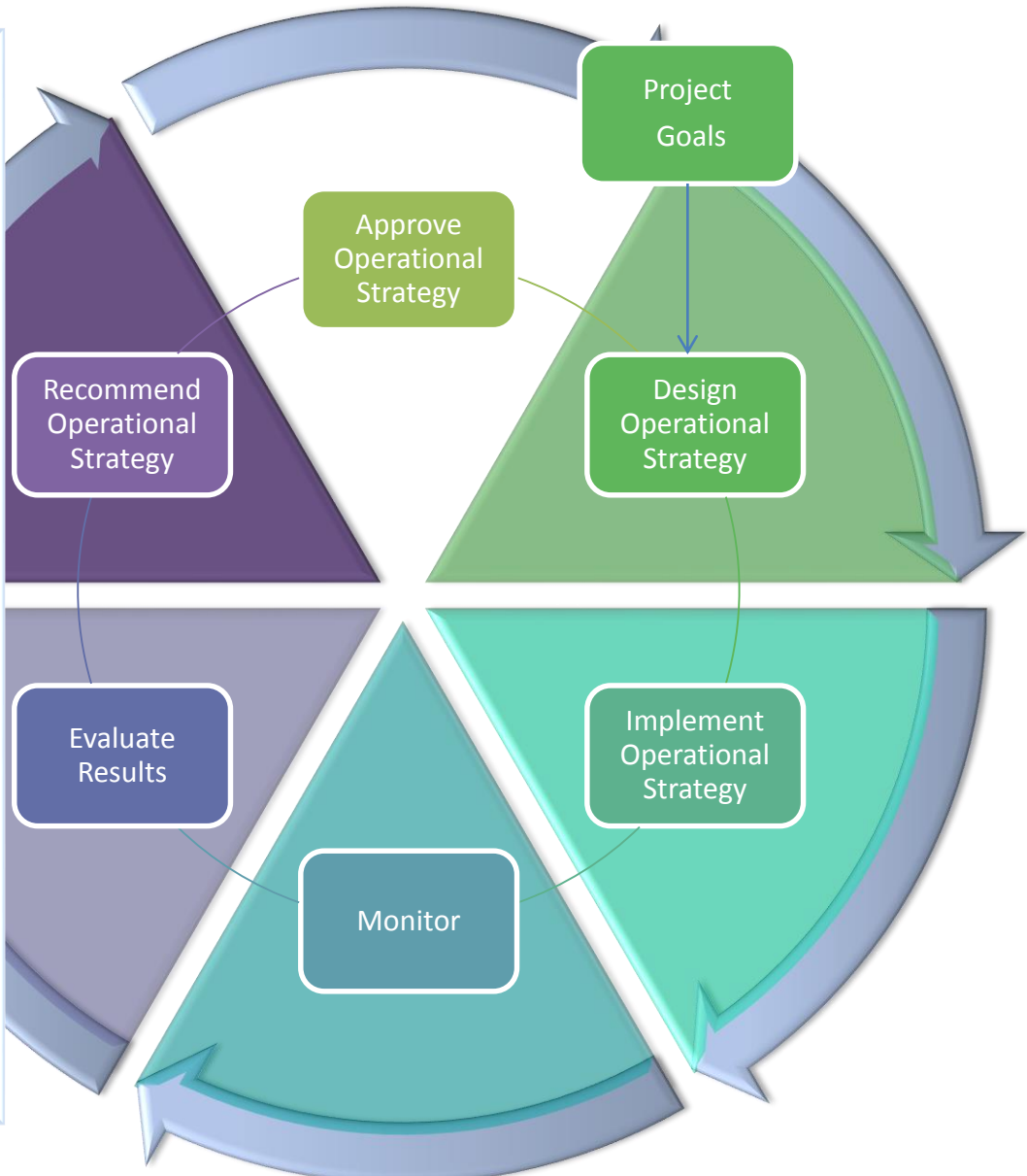
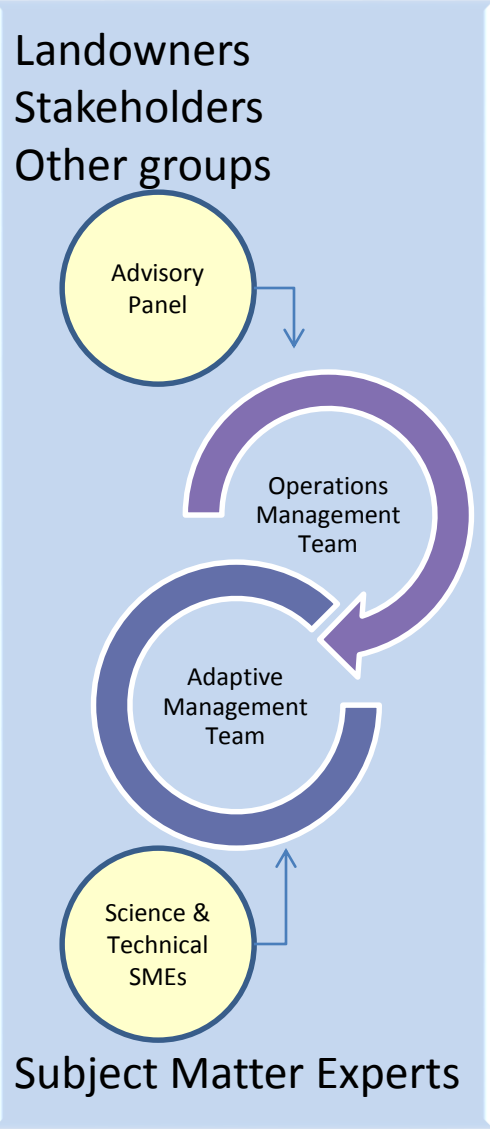
Operations Regime



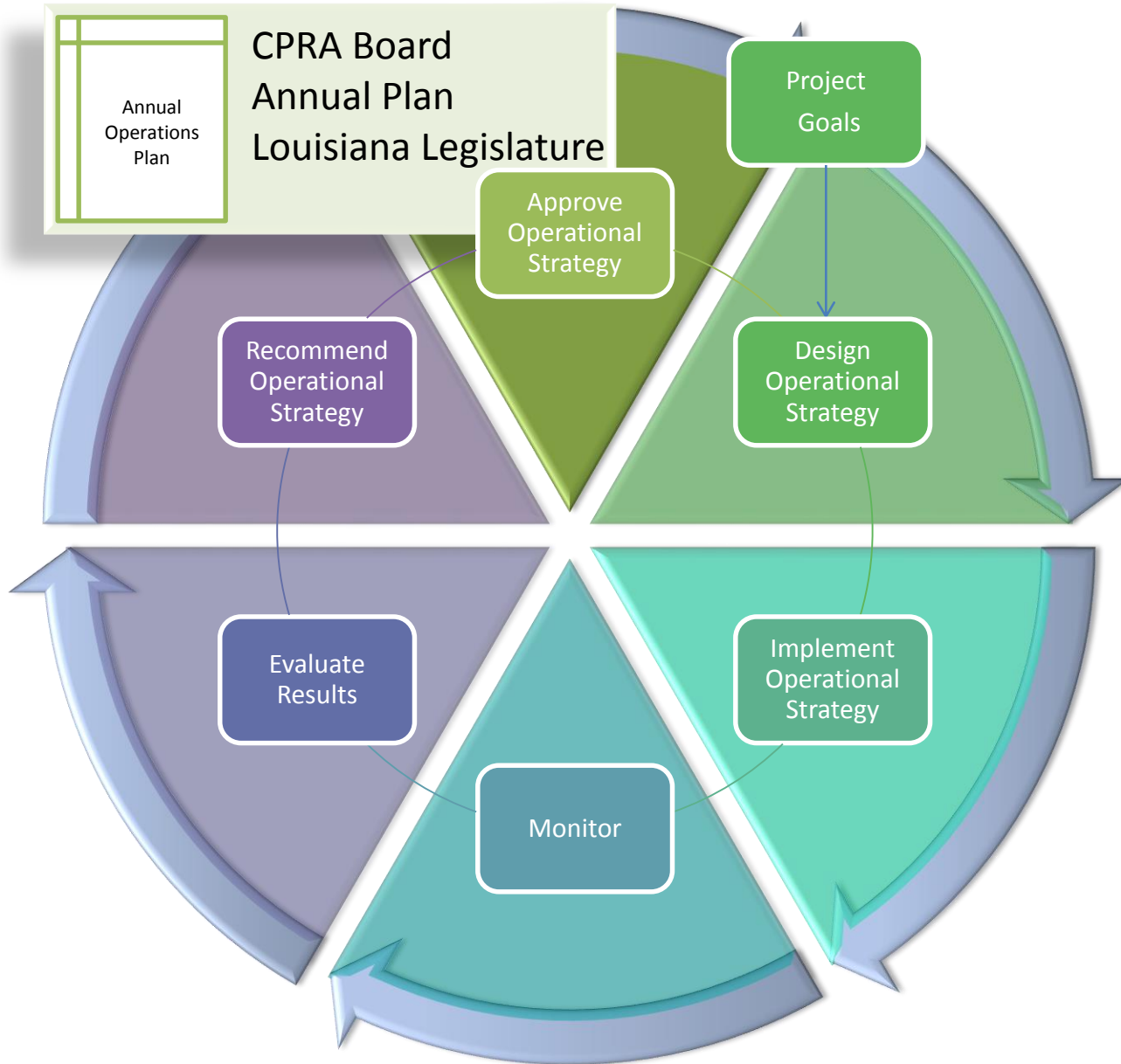
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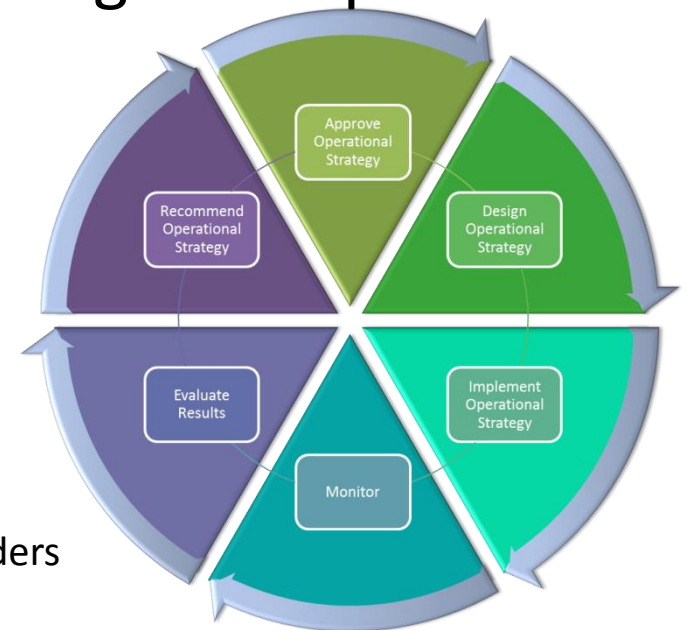


AM for Mid-Basin Diversions



Adaptive Management

- Louisiana has been Adaptively Managing programs and projects for decades
 - **Improved design of barrier island projects** based on performance
 - **Modified diversion operations** to mimic natural pulses of the river
 - **Refined the types of projects** authorized based on performance and improved understanding of the problems
- Now formalizing the Adaptive Management process
 - At Master Plan/Program scale
 - At project scale
- Mid-Basin diversion operation will be adaptive and based on:
 - predictive forecasting models to inform operations
 - growing knowledge base
 - ongoing monitoring and evaluation
 - ongoing feedback and communication with stakeholders





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Questions?

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committed to our coast