Basin-Wide Socio-Economic Analysis of Four Proposed Sediment Diversions

Status Update

October 27, 2015
We have begun producing draft outputs, which are currently undergoing internal review and QA/QC.
Outline of Presentation

• Overview of Socio-Economic Analysis
  o Scenarios & Objectives
  o Framework & Methodology

• Draft Outputs
  o Commercial Fisheries
  o Ecosystem Service Valuation
  o Storm Protection

• Timeline of Remaining Activities
Proposed Sediment Diversions

- Mid-Breton
- Mid-Barataria
- Lower Barataria
- Lower Breton
Six Scenarios Being Analyzed

Scenario 1: Future without diversion action
Scenario 2: Future with only Lower Breton Diversion
Scenario 3: Future with only Lower Barataria Diversion
Scenario 4: Future with only Mid Breton Diversion
Scenario 5: Future with only Mid Barataria Diversion
Scenario 6: Future with all 4 diversions operating simultaneously

An Analysis of Mid Breton + Mid Barataria is Anticipated.
Socio-Economic Analysis Area

Legend
- Socio-Economic Analysis Area
- Parish Boundaries
Overview of Methodology

Scope of Analysis

Fisheries:
• **46,800** catch files (10 species)
• **720** individual IMPLAN model runs

ESV:
• **144** shapefiles (vegetation, salinity, water quality, marsh type)
• **10** parish analysis for all 144 shapefiles

Storm Protection:
• Analysis of **72** shapefiles from ESV (vegetation & marsh type)

Recreation:
• **1,440** individual IMPLAN model runs

Social:
• **34** papers, includes **14** regional economic development plans

Navigation & Water Supply:
• Data processing and coordination currently underway
Commercial Fisheries Economic Impact Analysis

Simulated by EwE Model

Fishing Area Harvested

Harvest Trends From LDWF

Harvest Sold at Market Price

Intermediate Calculation

Price Trends From NMFS

IMPLAN Inputs

IMPLAN Analyses

Income
Jobs
GDP
Tax Revenue

Fisher $$

Dealer $$

$$ in Fisher Parish of Residence

$$ in Dealer Parish of Business

Income
Jobs
GDP
Tax Revenue
Fisher Harvest by Parish
All 4 Diversions Scenario: Change from Initial Conditions (Year 50)

<table>
<thead>
<tr>
<th>Legend</th>
<th>Blue Crab</th>
<th>Brown Shrimp</th>
<th>Oyster</th>
<th>White Shrimp</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Positive Change</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.01% - 5.00%</td>
<td>+11%</td>
<td>+16%</td>
<td>+4%</td>
<td>+3%</td>
</tr>
<tr>
<td>5.00% - 10.00%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10.00% - 15.00%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15.00% - 20.00%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20.00% - 25.00%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No Percent Change</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-25.00% - -20.00%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-20.00% - -15.00%</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>-15.00% - -10.00%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-10.00% - -5.00%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-5.00% - -0.01%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Socio-Economic Analysis Area</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Dealer Landings by Parish
All 4 Diversions Scenario: Change from Initial Conditions (Year 50)

Legend
Percent Positive Change
- 0.01% - 5.00%
- 5.00% - 10.00%
- 10.00% - 15.00%
- 15.00% - 20.00%
- 20.00% - 25.00%
- 25.00% - 30.00%
- 30.00% - 35.00%
No Percent Change
- 0.00%
Percent Negative Change
- -35.00% - -30.00%
- -30.00% - -25.00%
- -25.00% - -20.00%
- -20.00% - -15.00%
- -15.00% - -10.00%
- -10.00% - -5.00%
- -5.00% - 0.01%

Socio-Economic Analysis Area

Blue Crab: +11%
Brown Shrimp: +16%
Oyster: +4%
White Shrimp: +3%
Fisher Harvest: White Shrimp
All 4 Diversions Scenario: Change from Initial Conditions (Years 1-50)
## Fisher Harvest by Parish

### All 4 Diversions Scenario: Change from Initial Conditions (Year 50)

<table>
<thead>
<tr>
<th>Parish/Species</th>
<th>Brown Shrimp (lbs)</th>
<th>White Shrimp (lbs)</th>
<th>Blue Crab (lbs)</th>
<th>Oyster (lbs)</th>
<th>Jobs*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jefferson</td>
<td>8%</td>
<td>-7%</td>
<td>19%</td>
<td>0%</td>
<td>71%</td>
</tr>
<tr>
<td>Lafourche</td>
<td>11%</td>
<td>-5%</td>
<td>15%</td>
<td>-7%</td>
<td>80%</td>
</tr>
<tr>
<td>Orleans</td>
<td>23%</td>
<td>19%</td>
<td>12%</td>
<td>9%</td>
<td>92%</td>
</tr>
<tr>
<td>Plaquemines</td>
<td>15%</td>
<td>1%</td>
<td>8%</td>
<td>1%</td>
<td>80%</td>
</tr>
<tr>
<td>St. Bernard</td>
<td>23%</td>
<td>10%</td>
<td>9%</td>
<td>9%</td>
<td>95%</td>
</tr>
<tr>
<td>St. Charles</td>
<td>14%</td>
<td>5%</td>
<td>9%</td>
<td>9%</td>
<td>98%</td>
</tr>
<tr>
<td>St. James</td>
<td>23%</td>
<td>8%</td>
<td>7%</td>
<td>0%</td>
<td>84%</td>
</tr>
<tr>
<td>St. John the Baptist</td>
<td>22%</td>
<td>4%</td>
<td>12%</td>
<td>0%</td>
<td>90%</td>
</tr>
<tr>
<td>St. Tammany</td>
<td>24%</td>
<td>19%</td>
<td>12%</td>
<td>2%</td>
<td>98%</td>
</tr>
<tr>
<td>Tangipahoa</td>
<td>22%</td>
<td>15%</td>
<td>9%</td>
<td>2%</td>
<td>0%</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td><strong>16%</strong></td>
<td><strong>3%</strong></td>
<td><strong>11%</strong></td>
<td><strong>4%</strong></td>
<td><strong>86%</strong></td>
</tr>
</tbody>
</table>

*Including black drum, blue crab, brown shrimp, flounder, menhaden, oyster, white trout, striped mullet, and white shrimp*
## Dealer Landings by Parish

### All 4 Diversions Scenario: Change from Initial Conditions (Year 50)

<table>
<thead>
<tr>
<th>Parish/Species</th>
<th>Brown Shrimp (lbs)</th>
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<th>Blue Crab (lbs)</th>
<th>Oyster (lbs)</th>
<th>Jobs*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jefferson</td>
<td>3%</td>
<td>-18%</td>
<td>19%</td>
<td>-3%</td>
<td>62%</td>
</tr>
<tr>
<td>Lafourche</td>
<td>14%</td>
<td>-7%</td>
<td>14%</td>
<td>-2%</td>
<td>86%</td>
</tr>
<tr>
<td>Orleans</td>
<td>28%</td>
<td>23%</td>
<td>13%</td>
<td>-1%</td>
<td>91%</td>
</tr>
<tr>
<td>Plaquemines</td>
<td>18%</td>
<td>8%</td>
<td>8%</td>
<td>3%</td>
<td>83%</td>
</tr>
<tr>
<td>St. Bernard</td>
<td>23%</td>
<td>10%</td>
<td>7%</td>
<td>10%</td>
<td>96%</td>
</tr>
<tr>
<td>St. Charles</td>
<td>1%</td>
<td>8%</td>
<td>10%</td>
<td>3%</td>
<td>93%</td>
</tr>
<tr>
<td>St. James</td>
<td>19%</td>
<td>-1%</td>
<td>3%</td>
<td>0%</td>
<td>84%</td>
</tr>
<tr>
<td>St. John the Baptist</td>
<td>34%</td>
<td>22%</td>
<td>12%</td>
<td>14%</td>
<td>114%</td>
</tr>
<tr>
<td>St. Tammany</td>
<td>28%</td>
<td>25%</td>
<td>13%</td>
<td>-2%</td>
<td>100%</td>
</tr>
<tr>
<td>Tangipahoa</td>
<td>27%</td>
<td>19%</td>
<td>10%</td>
<td>10%</td>
<td>99%</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td><strong>16%</strong></td>
<td><strong>3%</strong></td>
<td><strong>11%</strong></td>
<td><strong>4%</strong></td>
<td><strong>85%</strong></td>
</tr>
</tbody>
</table>

*Including black drum, blue crab, brown shrimp, flounder, menhaden, oyster, white trout, striped mullet, and white shrimp*
Historic Statewide Shrimp Harvest (lbs)

- Δ = 78% / 10 Years
- Δ = -48% / 10 Years
Historic Statewide Crab Harvest (lbs)

$\Delta = 221\% / 6$ Years

$\Delta = -29\% / 2$ Years
Historic Statewide Oyster Harvest (lbs)

Year


Oyster Harvest (lbs)

$\Delta = 175\% / 2 \text{ Years}$

$\Delta = -49\% / 6 \text{ Years}$
Ecosystem Service Valuation

Simulated by Delft3D Model

Biophysical Parameter Inputs

Marsh Type Gain/Loss

Ecosystem Service Values

Database of Louisiana ES Values

Per Acre Value Calc.

Per Acre

Real Estate Value
Habitat Value
Flood Risk Reduction
Recreation
Water Supply
Soil Quality
Water Quality
Water Storage
Climate Stability

Economic Benefits

$
## Ecosystem Services Provided by the Delta’s Wetlands

<table>
<thead>
<tr>
<th>Ecosystem Service</th>
<th>Fresh Wetlands</th>
<th>Brackish Wetlands</th>
<th>Saline Wetlands</th>
<th>SAV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flood regulation</td>
<td>High</td>
<td>Medium</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>Habitat</td>
<td>High</td>
<td>High</td>
<td>Medium</td>
<td>Medium</td>
</tr>
<tr>
<td>Real Estate Value</td>
<td>Medium</td>
<td>Medium</td>
<td>Medium</td>
<td>N/A</td>
</tr>
<tr>
<td>Recreation</td>
<td>High</td>
<td>Medium</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>Soil Quality</td>
<td>High</td>
<td>Medium</td>
<td>Medium</td>
<td>High</td>
</tr>
<tr>
<td>Water Supply</td>
<td>High</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Water Quality</td>
<td>High</td>
<td>Medium</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>Water Storage</td>
<td>High</td>
<td>Medium</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>Climate Stability</td>
<td>Medium</td>
<td>High</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>Storm Buffering</td>
<td>High</td>
<td>High</td>
<td>High</td>
<td>Medium</td>
</tr>
</tbody>
</table>

Values taken from peer-reviewed literature
Storm Protection Impact Category

**Land building/land loss**

*Historic Costs 9 LA Hurricanes*

- Wetland Hurricane Buffering Value $\rightarrow$ Per Acre

- **Avoided (Per Year):**
  - Damages
  - Lost Revenue

*Land Cover Simulated by Delft3D*

*Standardized GDP*  

*Per Acre Value Calculations*

*Marsh Density Adjusted*

**Economic Benefits**
Remaining Work

• Results for Commercial Fisheries, Storm Protection, and Ecosystem Service Valuation Impact Categories will be finalized.
• Assessment of Water Supply, Recreation, and Navigation, Impact Categories will be performed.
• Social interpretations for all Impact Categories

Potential for analysis of Mid Breton + Mid Barataria as an additional scenario.
Timeline

December 2014: Project Kickoff

January 2015: Literature Review Complete

January - July 2015: Framing of Socio-Economic Analysis Methods

August - December 2015: Perform Socio-Economic Analysis of Six Diversion Scenarios

October 2015: Preliminary Outputs

December 2015: Final Report