FINDING COASTAL RESTORATION OPPORTUNITIES IN LIMITED BUDGET YEARS

COASTAL LOSSES IN LOUISIANA - FACTS AND FIGURES -

- ~ 2000 Square Miles of Land Lost from 1930 to Present
- Expected to Lose Another 700 Square Miles
- Wetlands are Valuable Resources
- Coastal Erosion in Louisiana Impacts Many Sectors of the US Economy

TYPES OF PROJECTS PROPOSED FOR INCREASED USE IN WETLAND RESTORATION

- Use of Treated Municipal Effluent and Drainage
- Beneficial Use of Dredged Material
- Sediment Diversions

USE OF TREATED MUNICIPAL EFFLUENT

ADVANTAGES

1) Share Cost with Municipality / Parish
2) Cost Effective Alternative to Owner
3) Good Source of Valuable Nutrients to Receiving Wetlands
4) Keeps Nutrients out of Receiving Waterways such as Mississippi River – Improves Water Quality

ADVANTAGES (Cont'd.)

5) The addition of freshwater, even in relatively low quantities, significantly lowers salinity and helps prevent salt water intrusion events.
6) The addition of nutrients enhances plant productivity, causing increased organic matter deposition, which helps offset regional subsidence (5-10 mm/yr) and global sea level rise (1 mm/yr).

ACKNOWLEDGEMENT

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MUNICIPALITIES USING WETLAND WASTEWATER ASSIMILATION

BACKGROUND

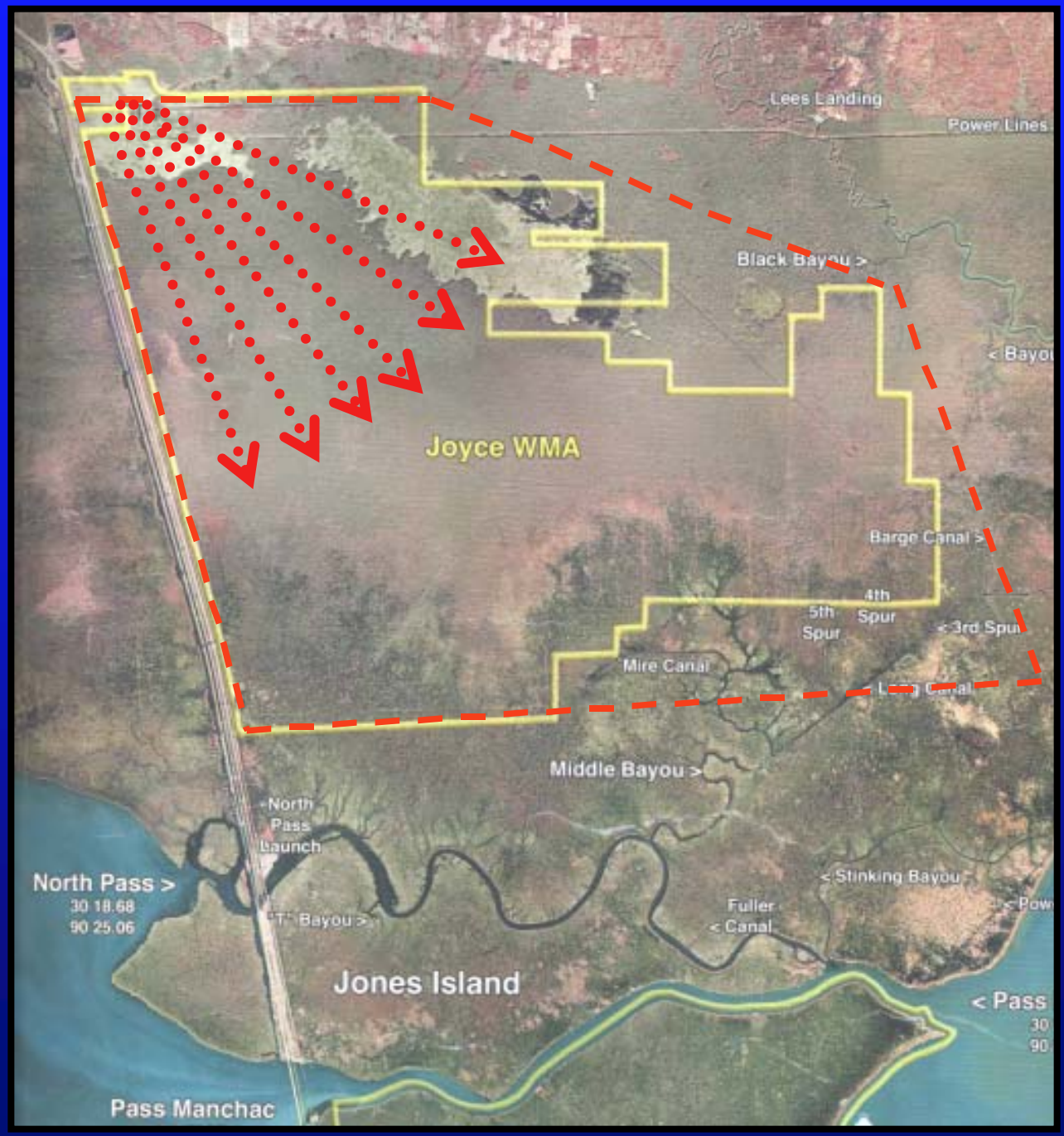
- Not Treatment Wetlands but rather wetland ecosystems that receive treated effluent at low loading rates
- Effluent is disinfected
- Effluent should not have unacceptable levels of toxins

WATER PURIFICATION

- Wetland plants act as natural filters,
- Host to microorganisms which are important in the breakdown and removal of organic carbon from the water

NUTRIENT REMOVAL AT FOUR SITES

- Breaux Bridge (50 years)
  - Nitrate 100%
  - Total nitrogen 80%
  - Total Phosphorus 87%
- Amelia (25 years)
  - Total nitrogen 68%
  - Total phosphorus 95%
- Thibodaux (9 years)
  - Nitrate 100%
  - Total nitrogen 69%
  - Total phosphorus 70%
- St. Bernard (15 years)
  - Total nitrogen 90%
  - Total phosphorus 95%



Discharge

6.8 MGD =

25,700 m^3/day =

9.40×10^6 m^3/yr

Wetland Area

10,000 acres =

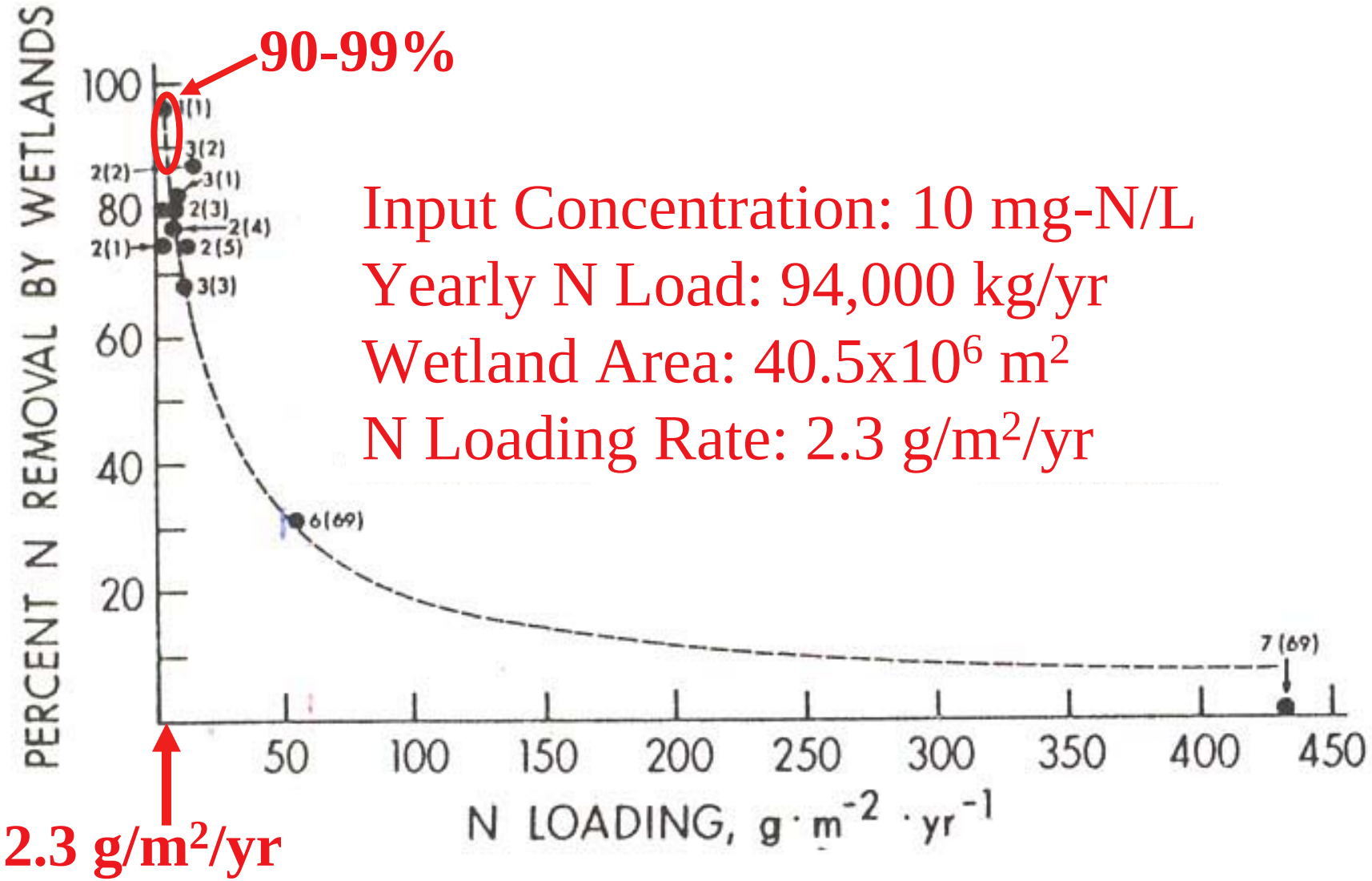
4,050 ha =

40.5×10^6 m^2

RATE OF APPLICATION MUST BALANCE RATE OF DECAY OR IMMOBILIZATION

- *Loading Rate* - one of the most important controls in wetland systems
- *Nutrient and Hydraulic Loading Rates*

NITROGEN REDUCTION



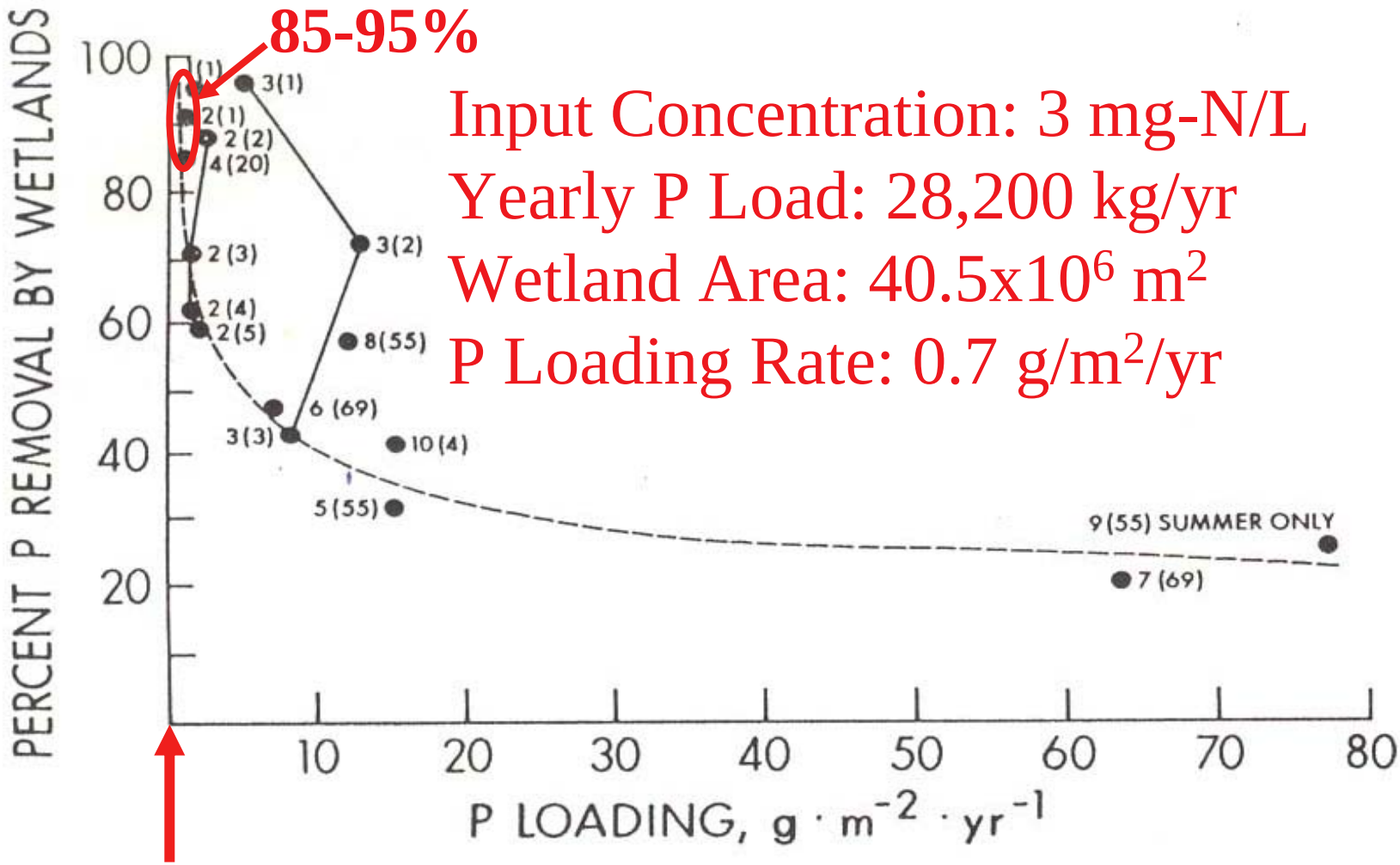
Input Concentration: 10 mg-N/L

Yearly N Load: 94,000 kg/yr

Wetland Area: 40.5×10^6 m^2

N Loading Rate: 2.3 $g/m^2/yr$

PHOSPHORUS REDUCTION



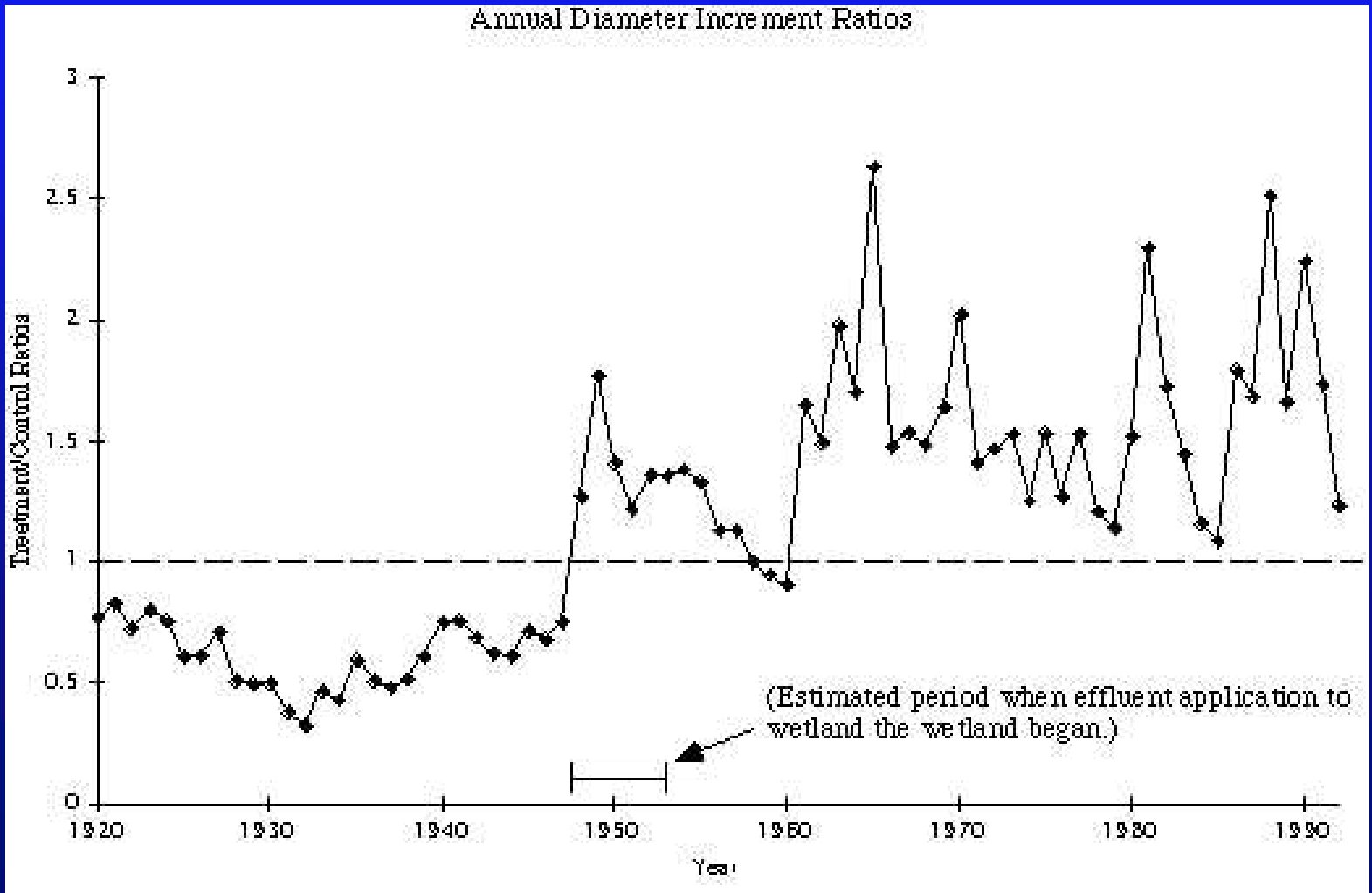
Input Concentration: 3 mg-N/L

Yearly P Load: 28,200 kg/yr

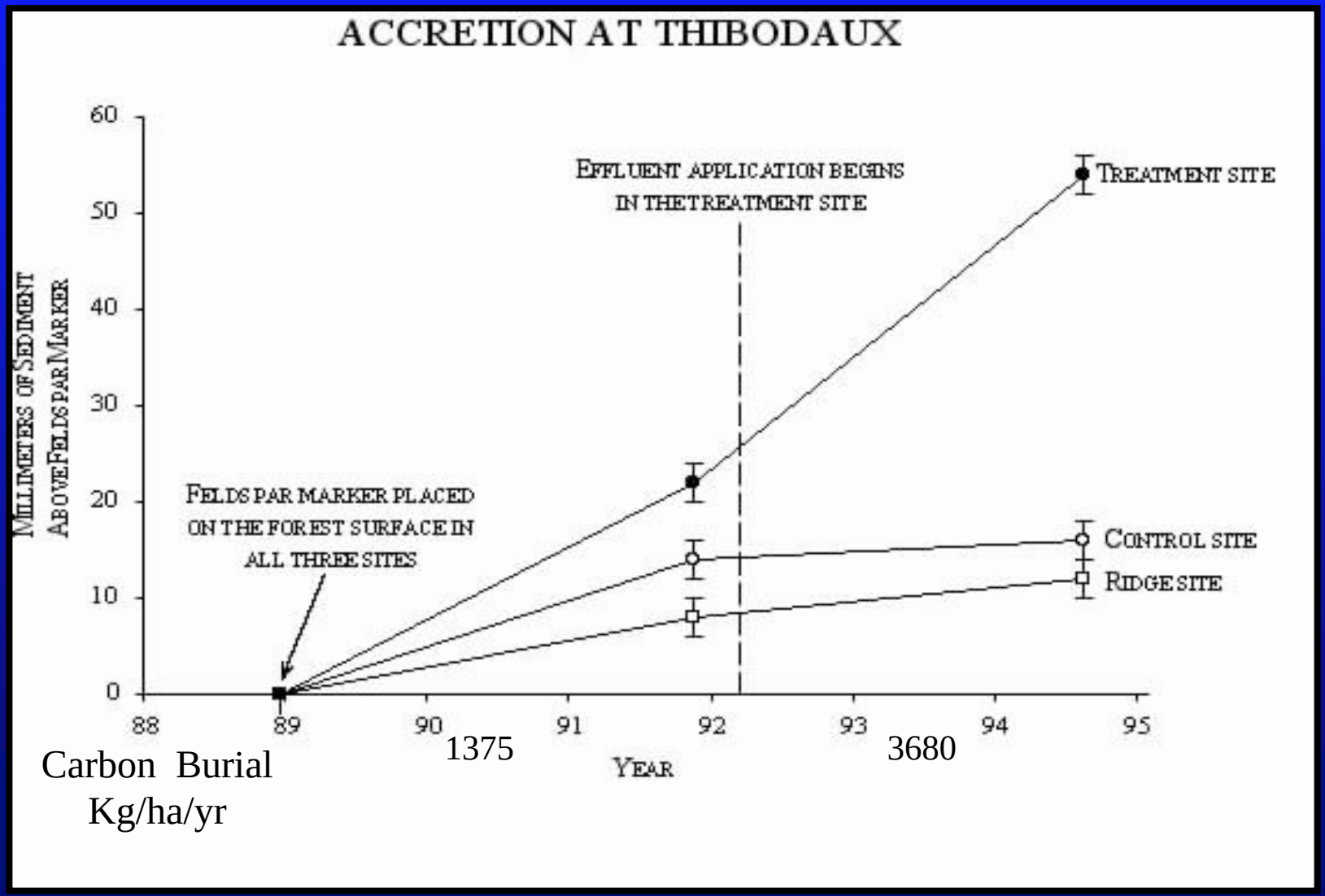
Wetland Area: 40.5×10^6 m^2

P Loading Rate: 0.7 $g/m^2/yr$

EFFECTS OF EFFLUENT DISCHARGE ON LONG TERM GROWTH OF CYPRESS AT BREAUX BRIDGE



INCREASED ACCRETION



Carbon Burial Kg/ha/yr

1375

3680

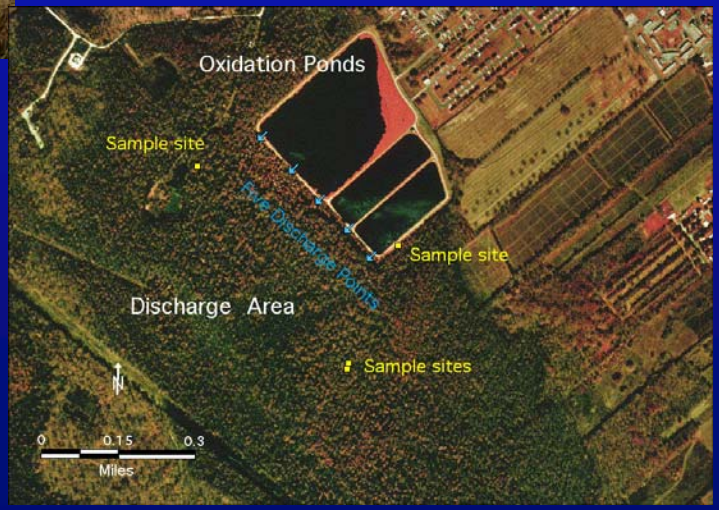
SAVINGS TO COMMUNITIES

Thibodaux

$1.5 million

Breaux Bridge

$2.6 million



BENEFICIAL USE OF DREDGED MATERIAL

- Concept – Use materials from new or maintenance dredging of navigation channels beneficially in wetland restoration
- Shares cost with navigation project
- Builds marsh at lower cost than dedicated marsh building project

GRAND TERRE ISLAND RECONSTRUCTION

ROCK CONTAINMENT DIKE – GRAND TERRE ISLAND

MISSISSIPPI RIVER AT TIGER PASS

MISSISSIPPI RIVER AT SOUTH PASS

SABINE NATIONAL WILDLIFE REFUGE

BENEFICIAL USE

- Corps annually dredges ~ 250 million cubic yards
- New Orleans District does ~ 75 million cubic yards of dredging at 10 navigation channels
- Over last 20 years 8,000 acres created in Louisiana

BENEFICIAL USE (Cont'd.)

- Hampers Increased Beneficial Use of Material
  - Federal Standard or Base Plan (40 CFR 335)
  - Requires Least Costly Means of Disposal coupled with sound engineering and environmental practices
  - Lack of recent funding for Section 204 Projects

BENEFICIAL USE (Cont'd.)

- What will drive more beneficial use
  - ASCE recent policy statement
  - Corps able to accept contributing monies
  - Louisiana RS 49.214

SEDIMENT DIVERSIONS

- Necessarily confined to areas below Mississippi River levees
- Potential for use farther upriver if ring levee concept around towns and developed areas is implemented