



North Carolina Coastal Federation

CITIZENS WORKING TOGETHER FOR A HEALTHY COAST

Landscape~Scale Hydrologic and Wetlands Restoration: Benefiting Coastal Water Quality and Water Management Needs

Erin Fleckenstein, Coastal Scientist



North Carolina Coastal Federation

Advocacy • Education • Restoration/Preservation



- Founded in 1982
- 10,000 Citizen Members
- 150 Affiliated Groups
- Staff of 19
- 27 Board Members



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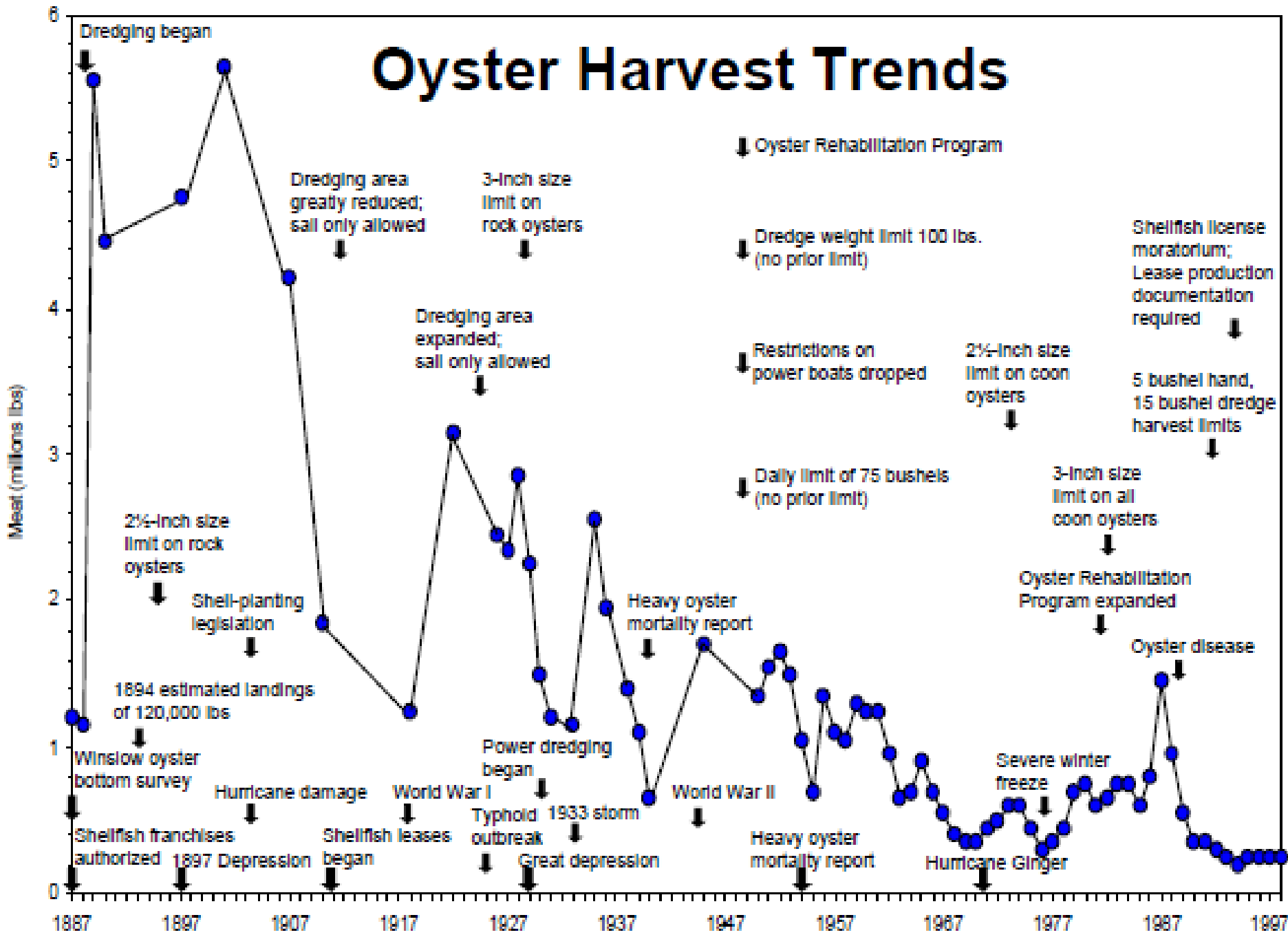
- Legend**
-  managed agriculture
 -  deep pond
 -  deep/shallow pond mix
 -  green reservoir
 -  restored wetlands
 -  pump stations
 -  water control structures
 -  road/levee branches
 -  pond-wetland overflow
 -  phase I
 -  phase II
 -  phase III

0.5 1 Miles

Indian



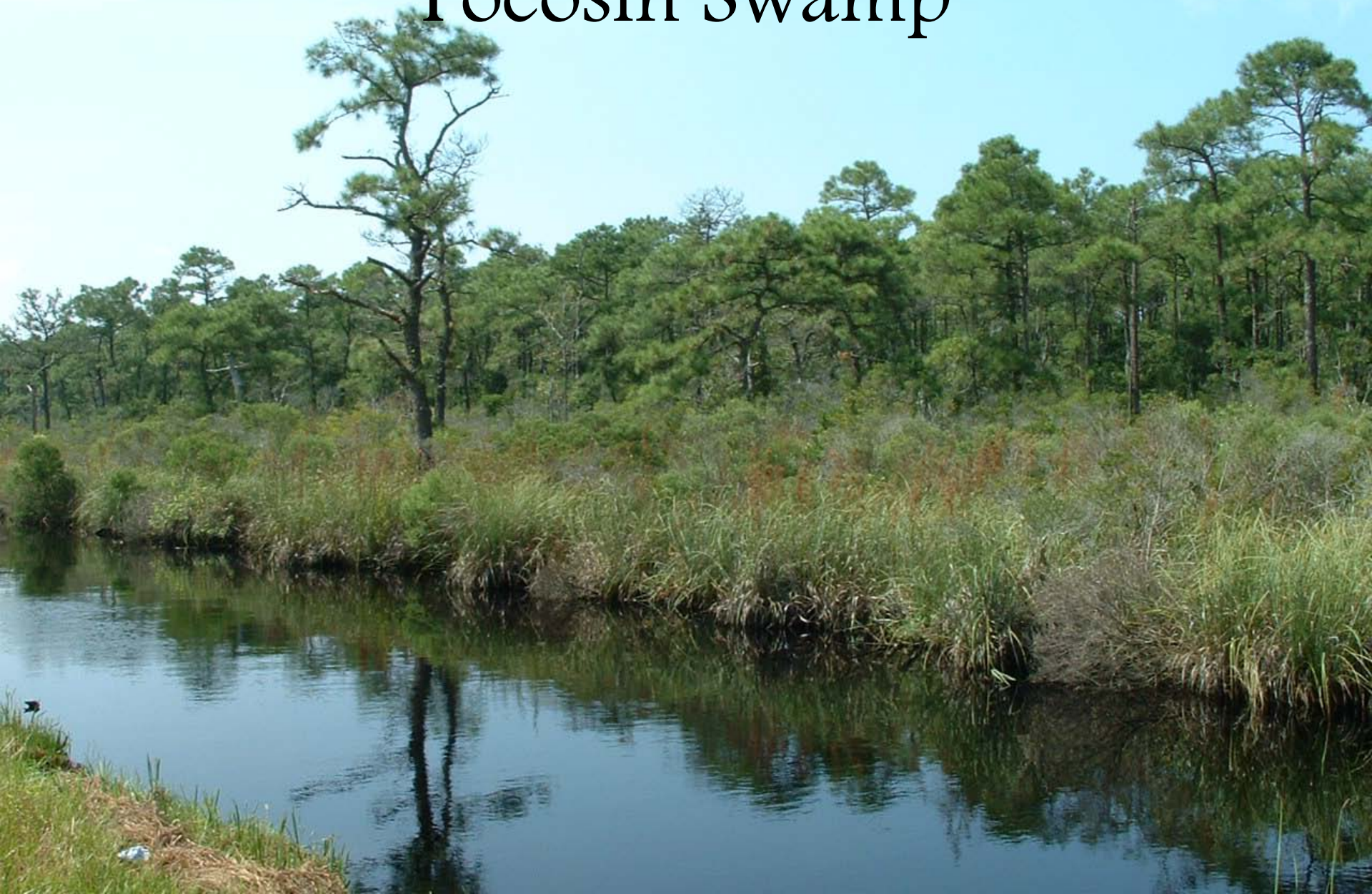
Oyster Harvest Trends



Oyster Restoration and Protection Plan
for North Carolina:
Northern Workgroup



Pocosin Swamp









Wetlands Restoration Group





Alligator River

Intercoastal
Waterway

Swan Lake

Long Shoal
River

5th Avenue
Pump Station

Mattamuskeet Ventures, LLC

Alligator River Growers/
Lux Farm

Otter Creek

2nd Avenue
Pump Station

Pamlico Sound



Swan Lake & Alligator
River NW Refuge



Alligator River Growers/
Lux Farm Property

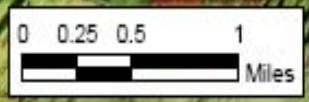
5th Ave Pump

2nd Ave Pump

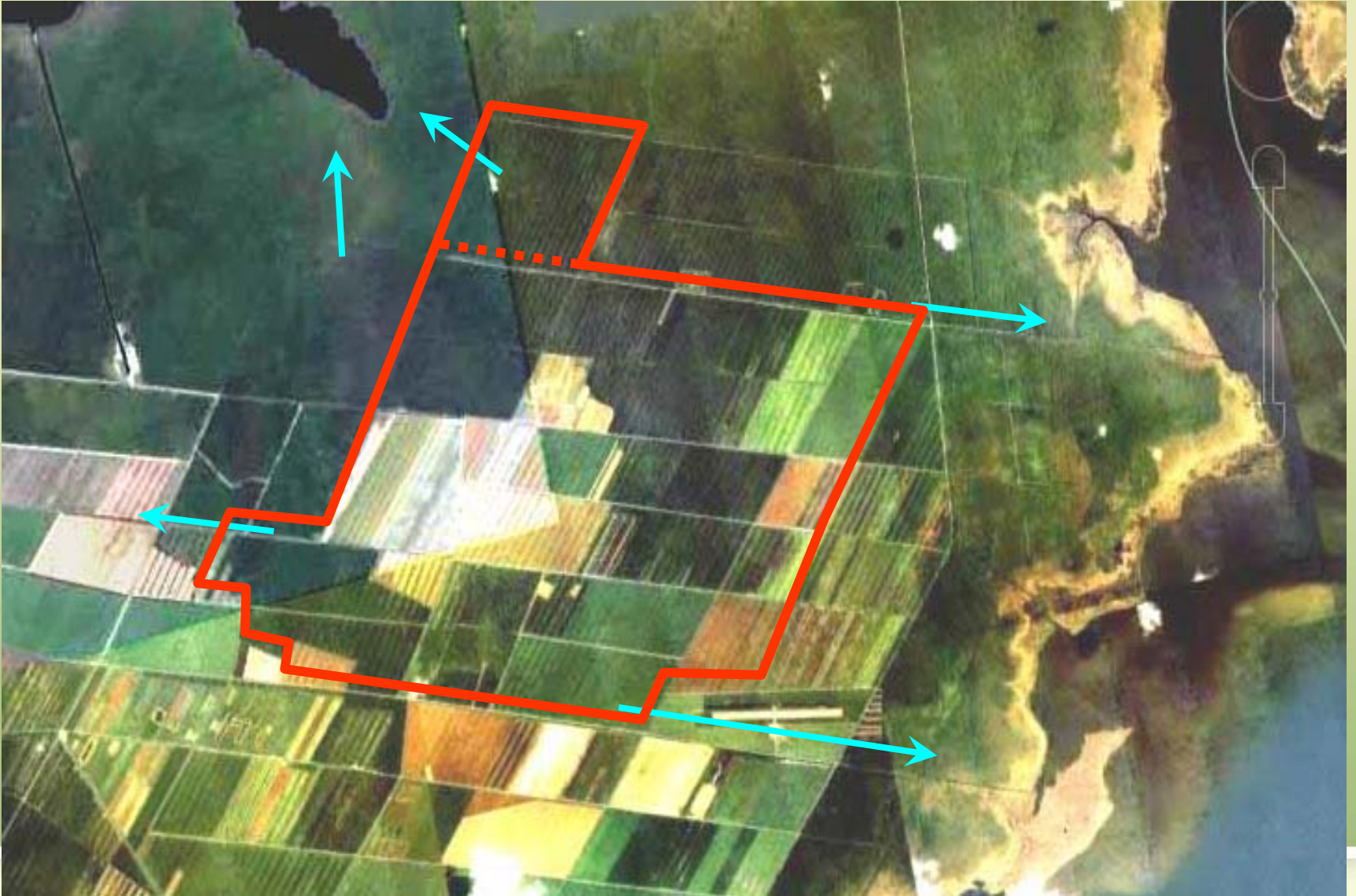
Long
Shoal
River

Pamlico Sound

Otter Creek



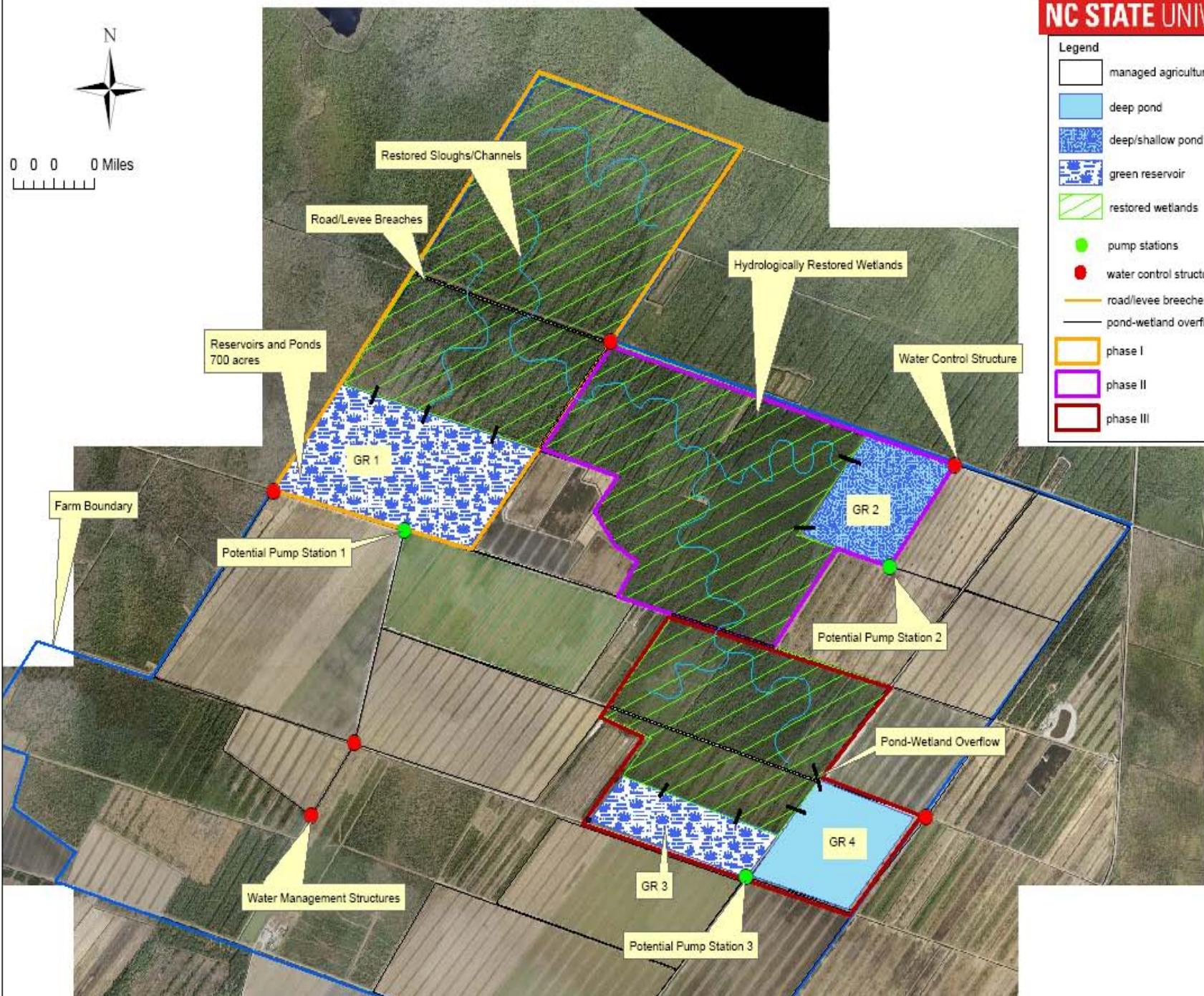
Farm boundaries and current flow patterns



Estimated Historic Drainage Area



Historic Flow Directions



Legend

- managed agriculture
- deep pond
- deep/shallow pond mix
- green reservoir
- restored wetlands
- pump stations
- water control structures
- road/levee breaches
- pond-wetland overflows
- phase I
- phase II
- phase III





Alligator River

Intercoastal
Waterway

Swan Lake

Long Shoal
River

5th Avenue
Pump Station

Mattamuskeet Ventures, LLC

Alligator River Growers/
Lux Farm

Otter Creek

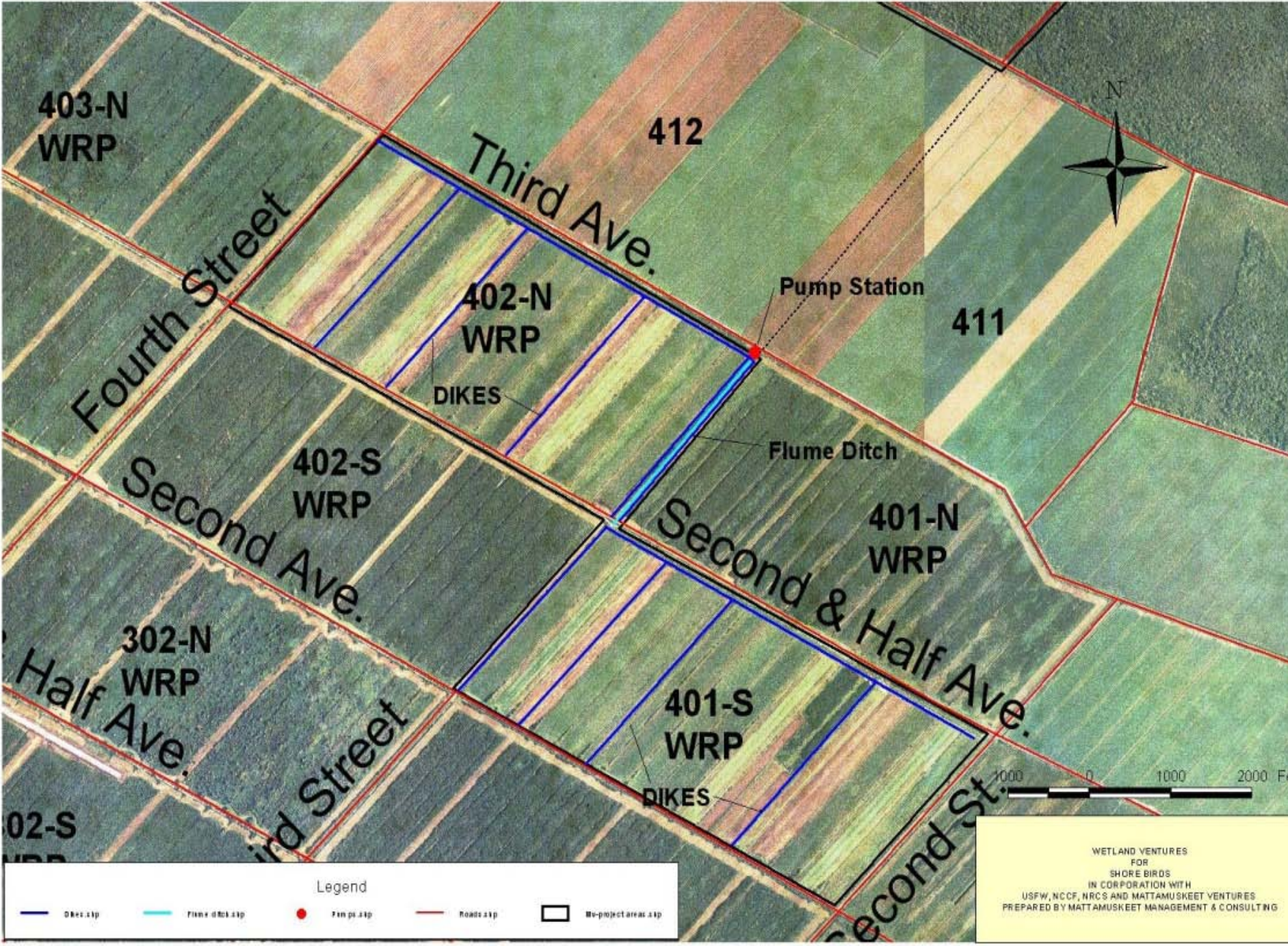
2nd Avenue
Pump Station

Pamlico Sound









403-N
WRP

412

Third Ave.



Pump Station

411

402-N
WRP

DIKES

Flume Ditch

Fourth Street

402-S
WRP

401-N
WRP

Second Ave.

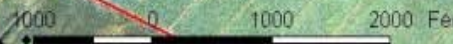
Second & Half Ave.

302-N
WRP

401-S
WRP

Half Ave.

DIKES



02-S
WRP

Third Street

Legend

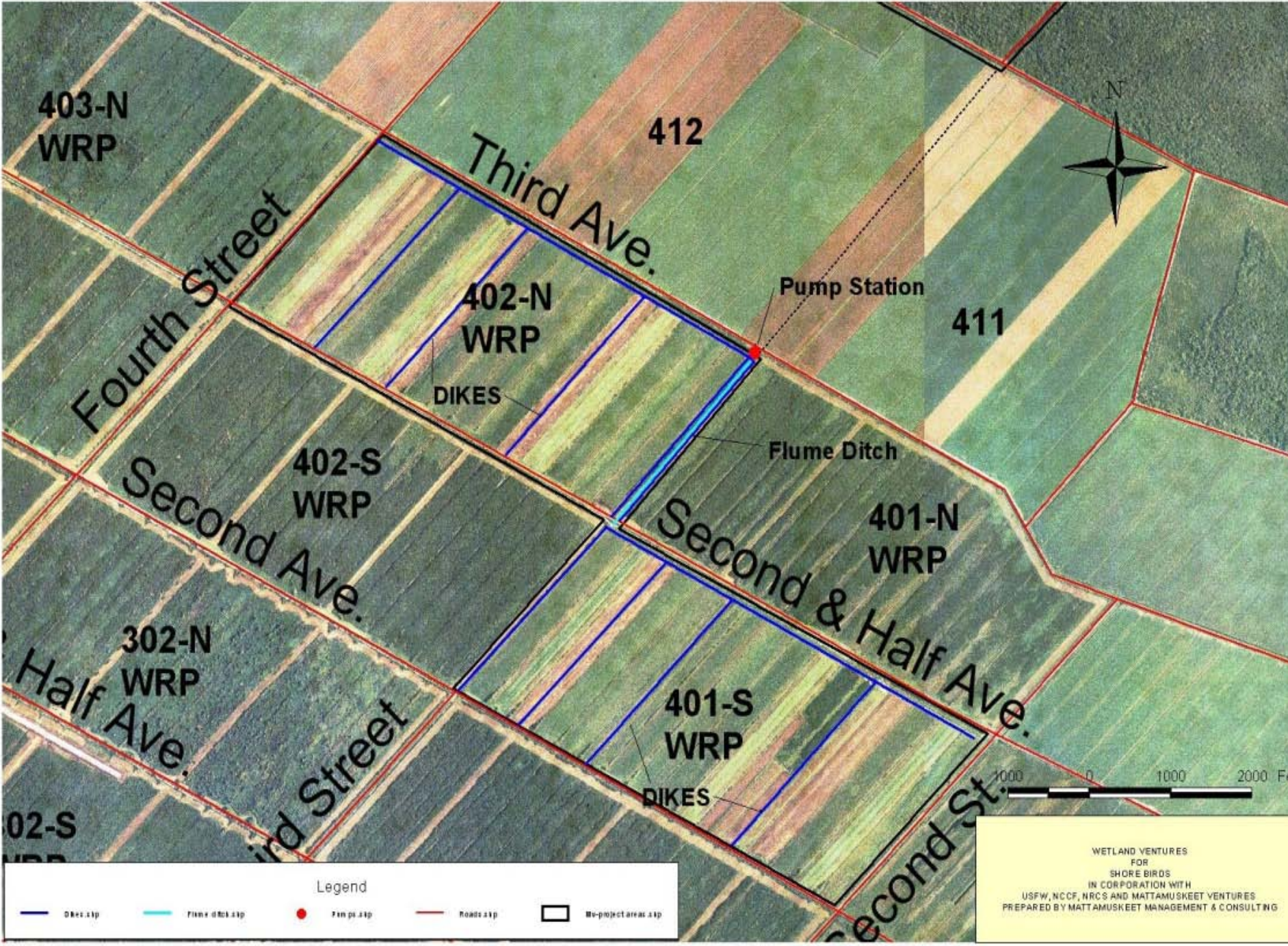
- Dikes .slp
- Flume Ditch .slp
- Pump St. .slp
- Roads .slp
- No-project areas .slp

WETLAND VENTURES
FOR
SHORE BIRDS
IN CORPORATION WITH
USFW, NCCF, NRC S AND MATTAMUSKEET VENTURES
PREPARED BY MATTAMUSKEET MANAGEMENT & CONSULTING



09/23/2009





Legend

- Dikes .xtp
- Flume Ditch .xtp
- Pump Station .xtp
- Roads .xtp
- No-project areas .xtp

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YEAR 1
"A"



Drawdown* April - May → Disk mid June → Re-flood immediately → Drawdown* mid July – mid Sept.

Alternate management approaches each year.

YEAR 1
"B"



Drawdown* April - May → Re-flood June-July → Drawdown* mid July – mid Sept.

Alternate management approaches each year.

YEAR 2
"C"



Maintain max pool thru June → Drawdown* to ditch-top level in July → Maintain ditch-top level for moist-soil plant production

* Drawdowns should be slow and gradual and can often be accomplished through evaporation/transpiration (i.e. not pulling any boards).

YEAR 2
"E"



Drawdown* April - May → Plant hot foods → Flood

* Drawdowns should be slow and gradual and can often be accomplished through evaporation/transpiration (i.e. not pulling any boards).

Project Results

Water Quality Improvements

Redirected >180M gallons of water

No surface discharge from project area

Shorebird Habitat Creation

Low bird counts <100





Alligator River

Intercoastal
Waterway

Swan Lake

Long Shoal
River

5th Avenue
Pump Station

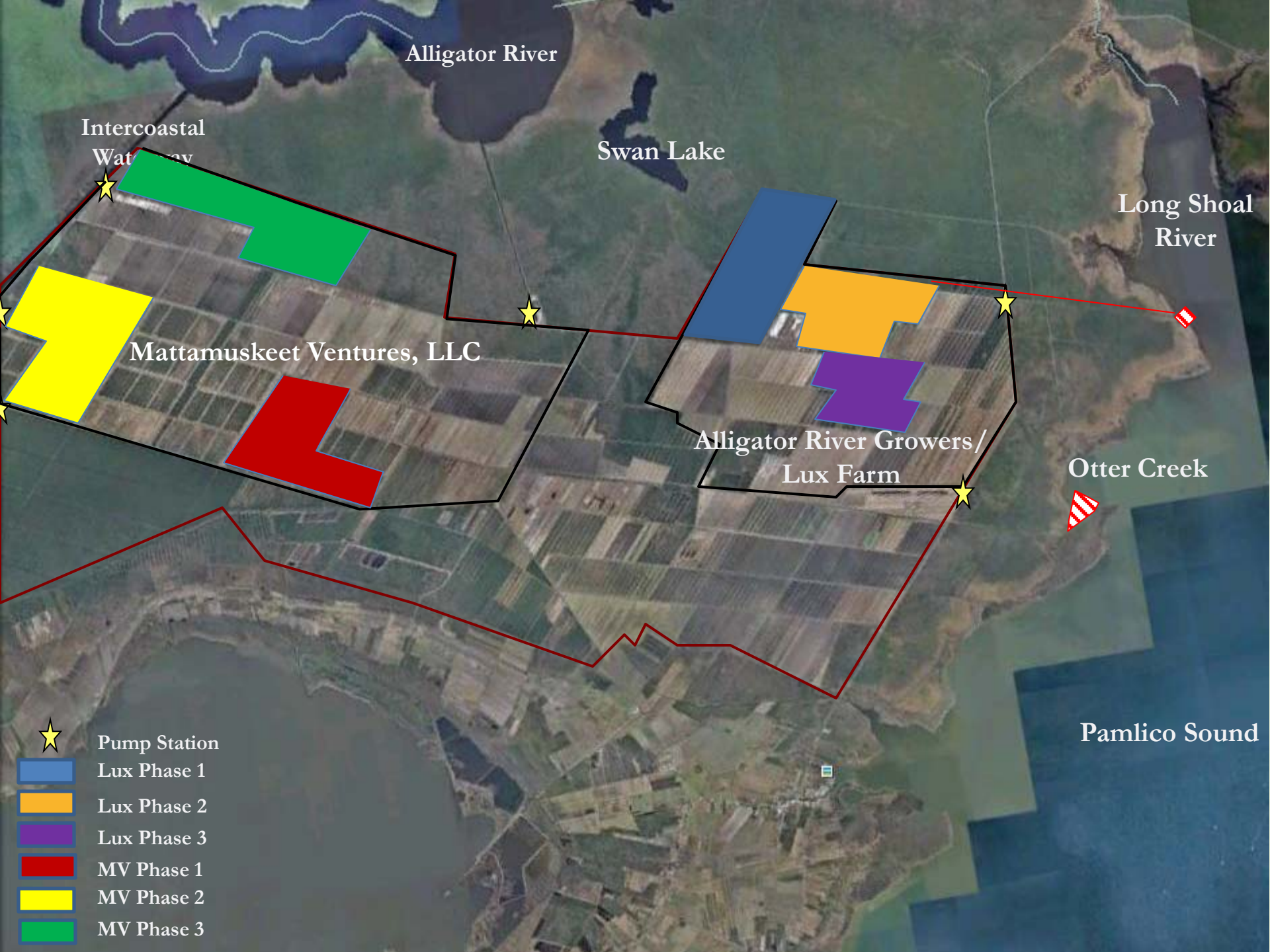
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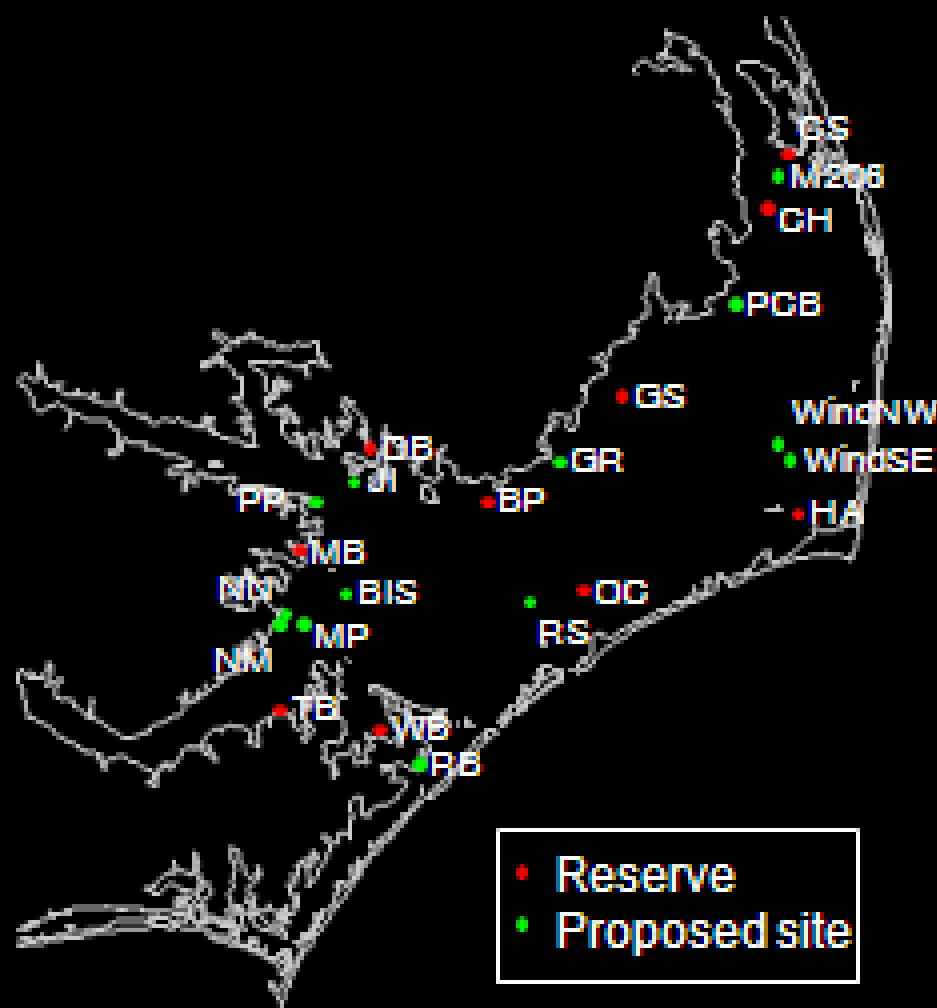
Alligator River Growers/
Lux Farm

Otter Creek

Pamlico Sound

-  Pump Station
-  Lux Phase 1
-  Lux Phase 2
-  Lux Phase 3
-  MV Phase 1
-  MV Phase 2
-  MV Phase 3

Map of 10 reserves and 13 proposed sites



• Reserve
• Proposed site

• Reserves

- CS: Croatan Sound
- CH: Crab Hole
- GS: Gibbs Shoal
- BP: Bluff Pt
- DB: Deep Bay
- MB: Middle Bay
- TB: Turnagain Bay
- WB: West Bay
- OC: Ocracoke
- HA: Hatteras

• Proposed sites

- M206: Manteo 206
- PCB: Parched Corn Bay
- GR: Gull Rock
- JI: Judith Island
- PP: Pamlico Pt
- BIS: Brant Island Shoal
- NN: Neuse north shore
- NM: Neuse mid-river
- MP: Maw Pt
- RB: Rumley Bay
- RS: Royal Shoal
- WindSE: SE corner of wind farm
- WindNW: NW corner of wind farm

Funders and Partners

- National Oceanic and Atmospheric Administration
- U.S. Fish and Wildlife Service
 - Columbia Migratory Field Office
 - Alligator River National Wildlife Refuge
 - Mattamuskeet National Wildlife Refuge
- Albemarle Pamlico National Estuary Program
- Clean Water Management Trust Fund
- Mary Cary Flagler Charitable Trust Fund
- N.C. Department of Environment and Natural Resources
- EPA 319 Program
- Mattamuskeet Drainage Association
 - Lux Farms
 - Mattamuskeet Ventures
- Hyde County Cooperative Extension
- N.C. State University
- Natural Resources Conservation Service
- Northern Oyster Work Group
 - N.C. Division of Marine Fisheries
 - The Nature Conservancy
 - Sea Grant
 - U.S. Army Corps of Engineers
 - N.C. State University



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NORTHEAST REGIONAL OFFICE

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www.nccoast.org

