



Lake Adger Maintenance Dredging: Beneficial Use of Dredged Material for Wetland Creation



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Agenda

- Navigation channel maintenance dredging project background and objectives
- Dredge plan overview
- Comparison of various dredged material management approaches and selection of best approach
- Dredging and material placement
- Planting plan overview



Maintenance Dredging Project Background and Objectives



Conceptual location of dredged channel, shown when lake was drawn down 5 feet below normal

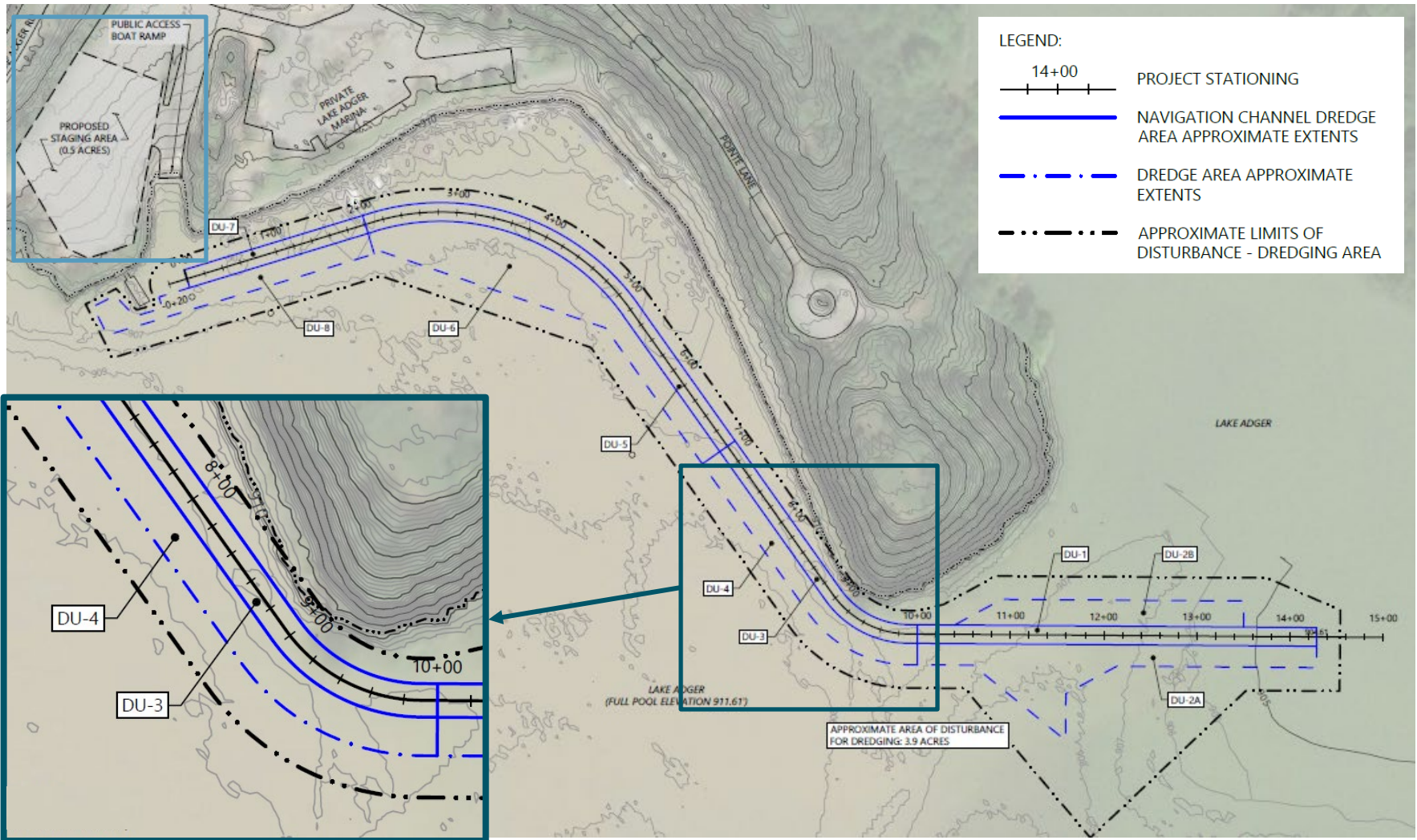
- North Carolina Wildlife Resources Commission is responsible for maintaining adequate water depths for public boat ramp and marina under agreement with Polk County and several local stakeholders
- Over time, sedimentation restricted channel access
- Primary objective: remove sediment from the navigation channel for public access
- **Key question: what to do with the dredged material?**

Project Owner: North Carolina Wildlife Resources Commission

Engineer: Anchor QEA

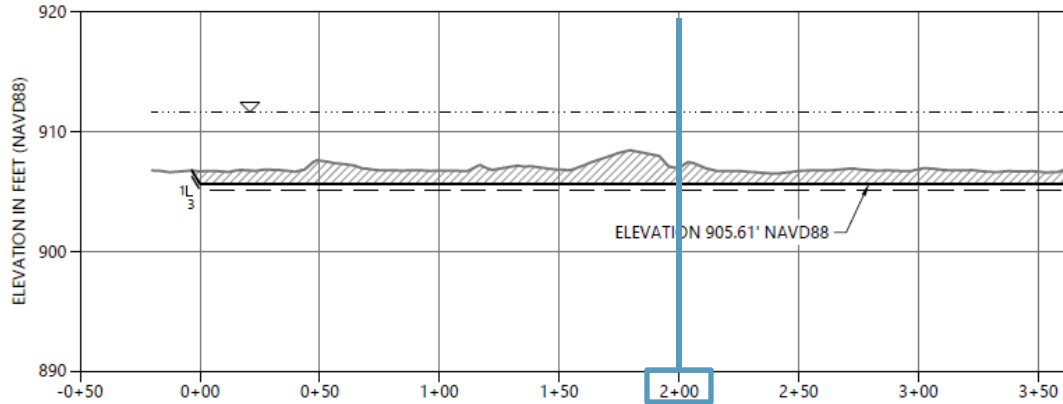
Contractor: Michels Construction, Inc.

Navigation Channel Dredging Plan

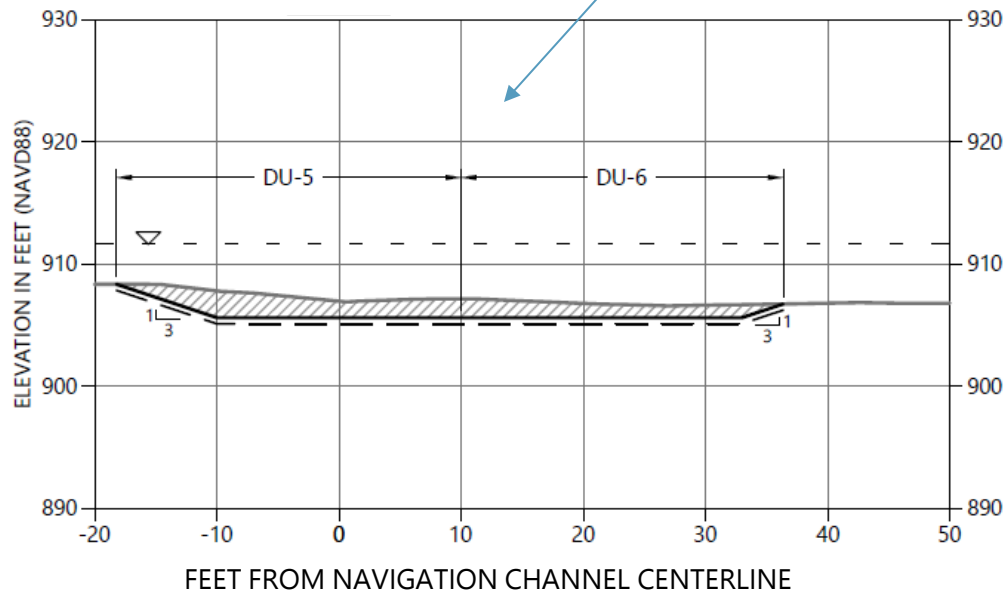


Navigation Channel Dredging Profiles

NAVIGATION
CHANNEL
CENTERLINE



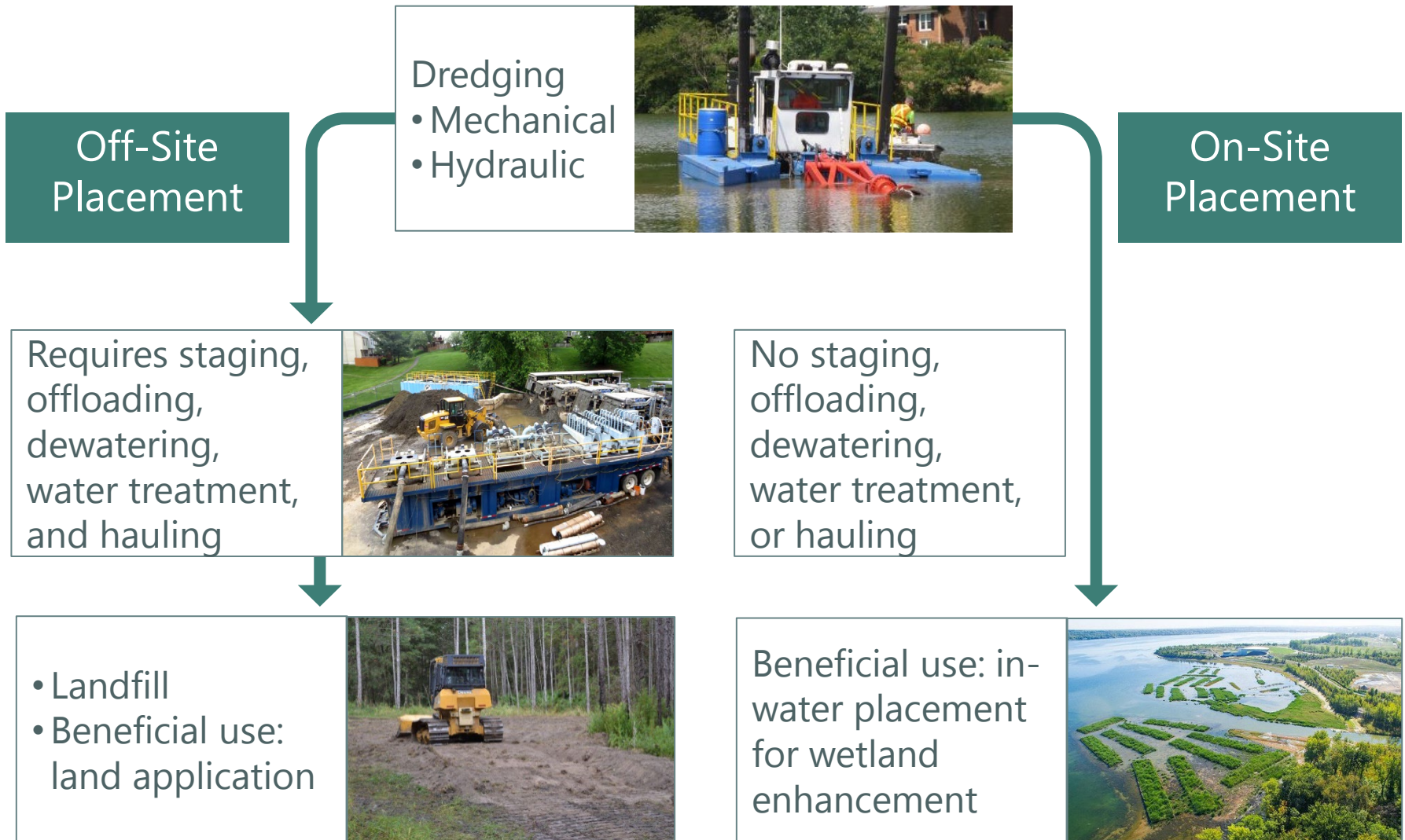
EXAMPLE
CROSS SECTION



Dredged Material Management Goals

- Select cost-effective approach
- Minimize impacts to public
- Consider ecological benefits and sustainability
- Consider public benefits
- Facilitate future dredging

Dredged Material Management Options Considered



Landfill

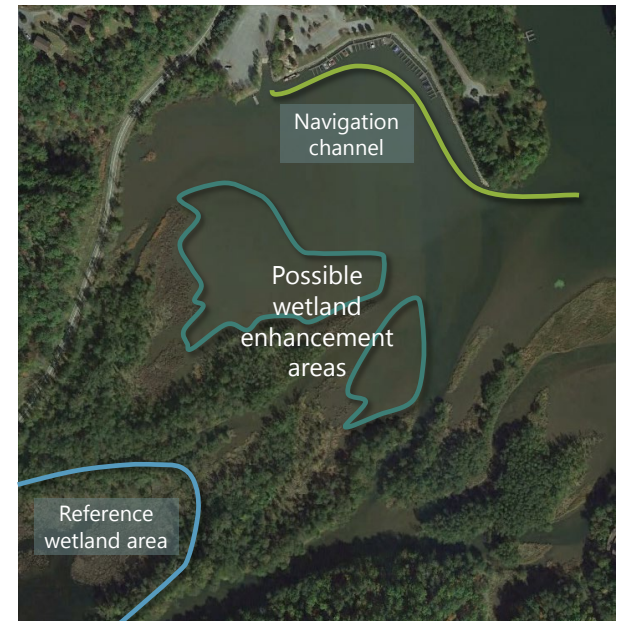
- Benefits
 - Can be a cost-efficient option if disposed of at a sanitary landfill
 - Straightforward permitting process
- Challenges for Lake Adger
 - No operating landfills within cost-effective transport distance
 - Sediment takes up limited local landfill capacity and wasn't suitable for use as landfill cover

Beneficial Use: Land Application

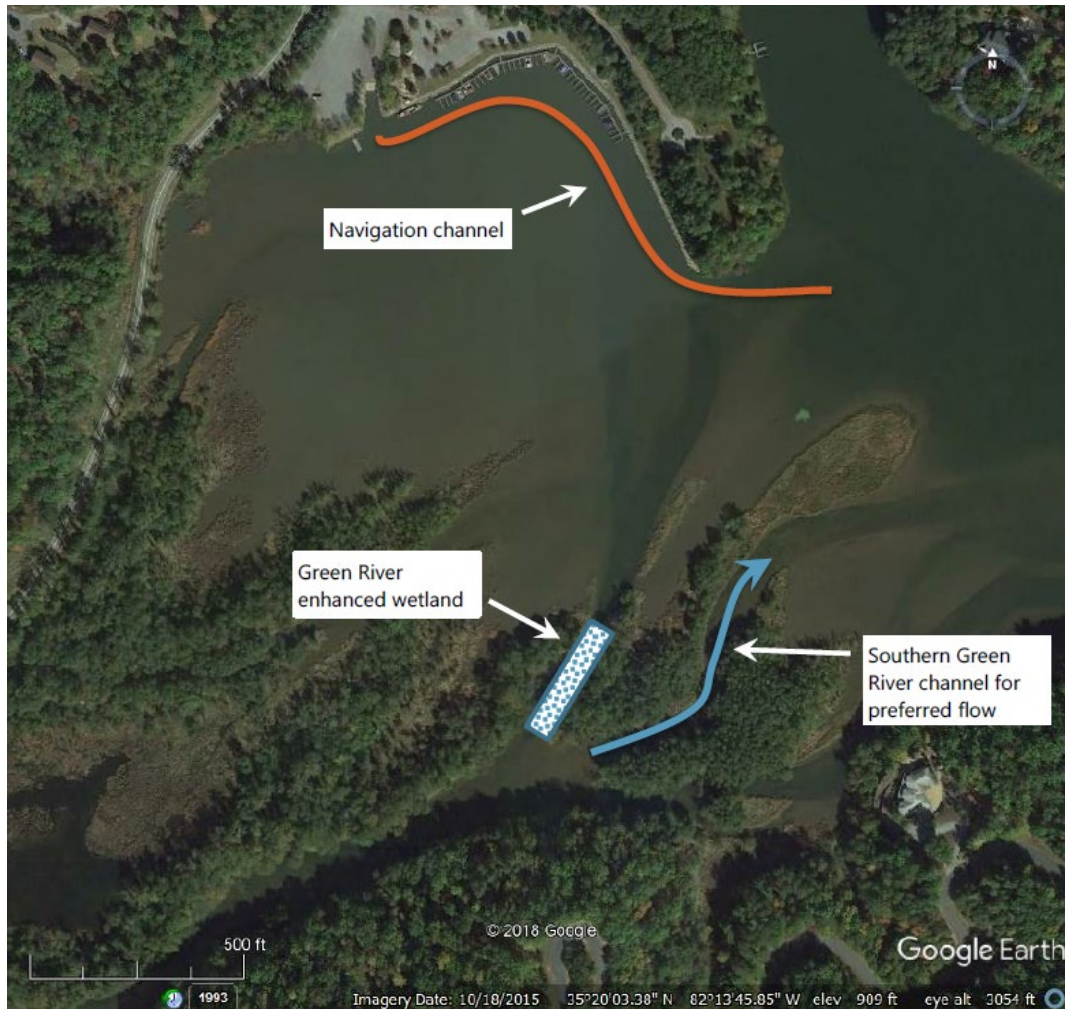
- Multiple options included in initial analysis
 - Game lands managed by NCWRC
 - Placement at a parcel owned by Polk County landfill
 - Erosion rehabilitation to fill gullies
 - Private lands, including thin layer farm or pasture application
- Land that is available is generally unsuitable
 - Steep slopes with exposed rocks and poor soils
 - Restricted site access would require substantial clearing and access road construction
 - Gullies where stabilization can be difficult
- Would require staging, offloading, dewatering, water treatment, and hauling

Beneficial Use: In-Water Placement for Wetland Enhancement

- Multiple possible wetland enhancement areas identified near the navigation channel
 - Cost-effective
 - Minimize impacts to public
- Eliminates need for staging, offloading, dewatering, and hauling
- Opportunity for habitat enhancements
 - Ecological benefits and sustainable approach
 - Public benefits
- USACE 404 permit valid for 25 years
 - Framework for future dredging



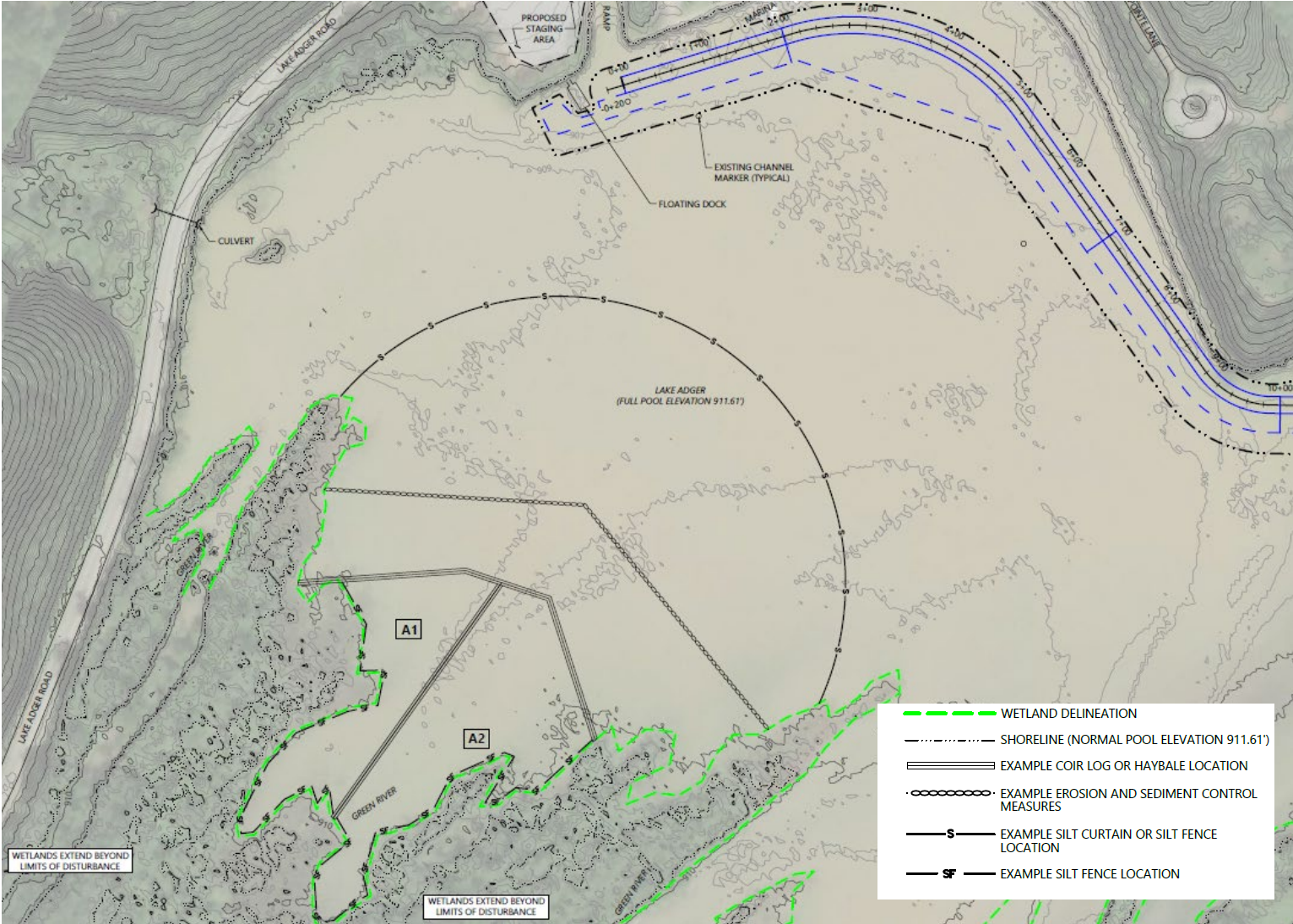
Beneficial Use: In-Water Placement for Hydrology Control



- Considered as a possibility to reduce long-term accretion
- HEC-RAS 2D modeling showed minimal benefits during high flow events
- Limited capacity for dredged material placement
- Permitting, design, and construction challenges

Selected Option: In-Water Placement for Wetland Enhancement

Beneficial Use Project Design



Navigation Channel Dredging



Image courtesy of Michels Corporation

Turbidity Controls and Containment Features



Image courtesy of Michels Corporation

Dredged Material Placement



Image courtesy of Michels Corporation

Placement Area At Completion of Dredging

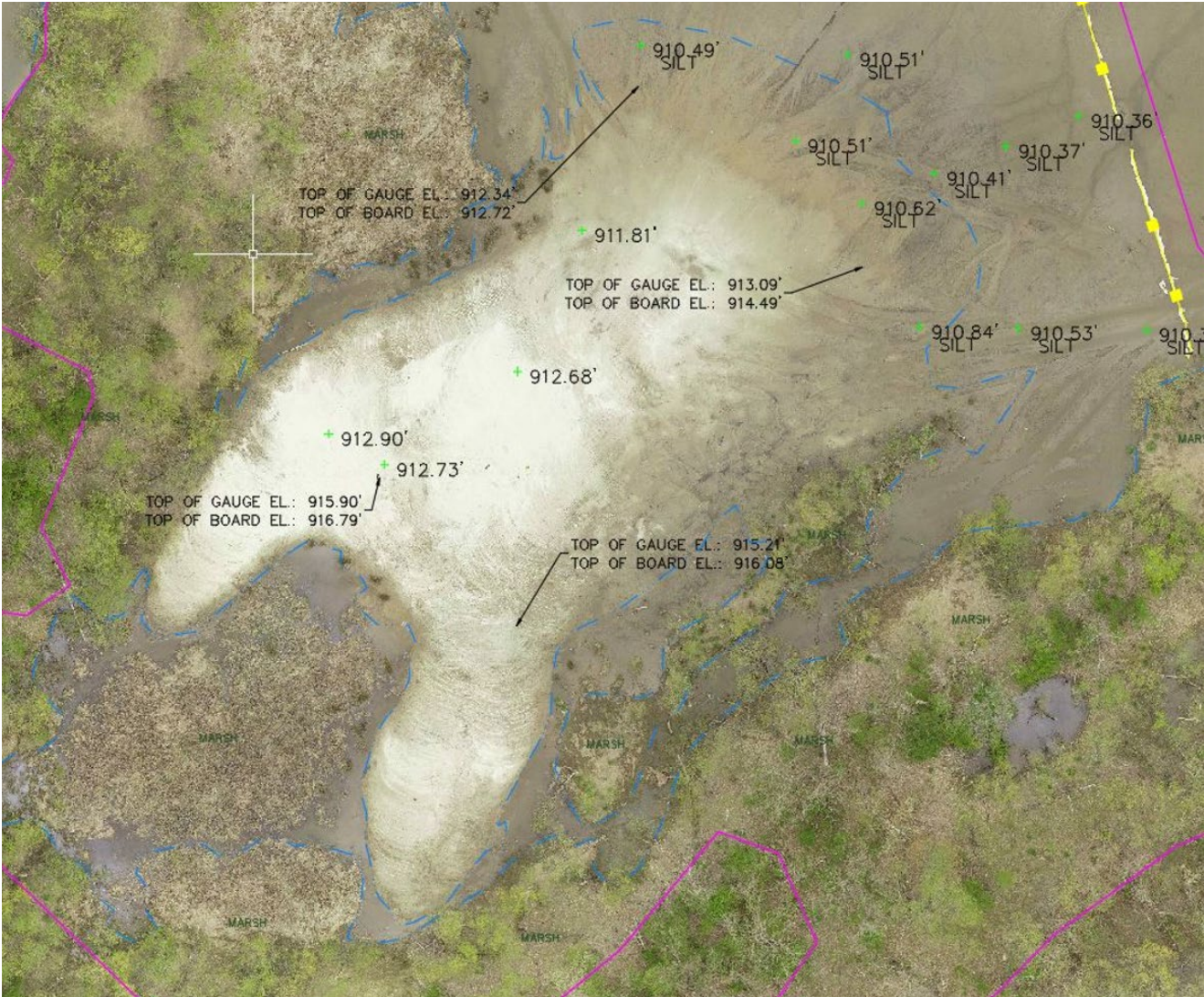


Image courtesy of Michels Corporation

Planting Plan

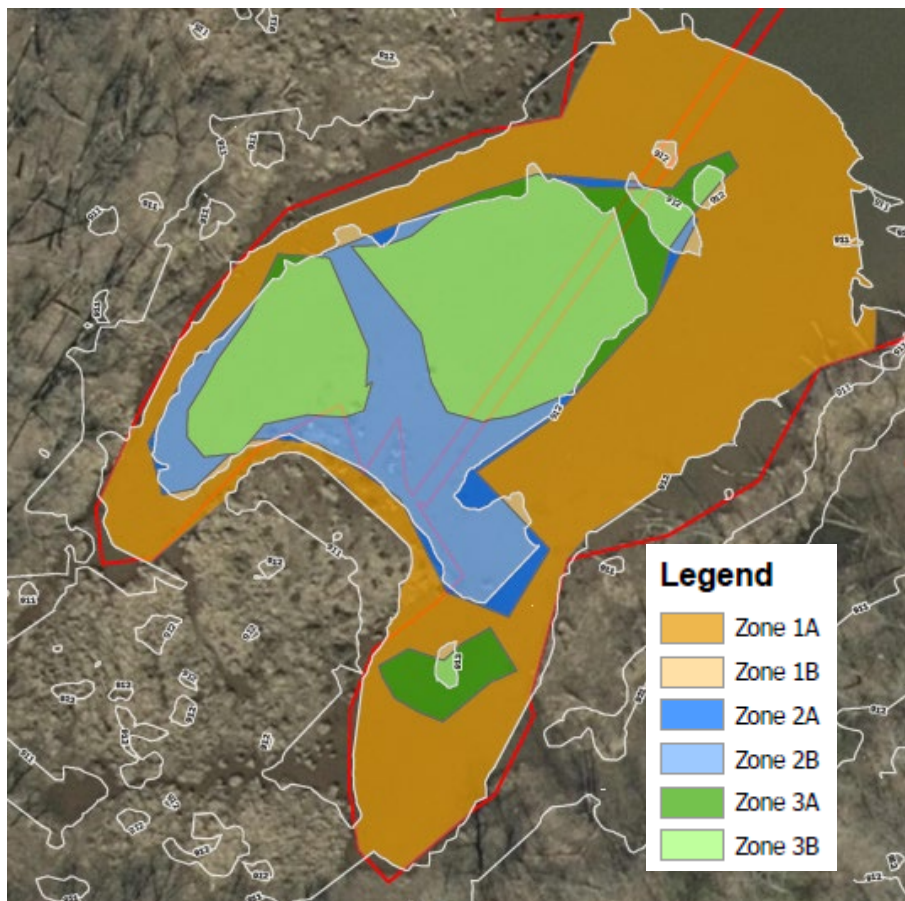


Image courtesy of Merjent, Inc.

- Planting zones based on elevation and substrate
- Plant species within each zone based on reference wetland survey
 - Emergents, trees/shrubs, and wetland seed mix
- Planting performed October 2022

Conclusions

- Dredging in early 2022 successfully achieved the primary objective of removing accumulated sediment from the navigation channel to allow continued public boating and fishing access to the lake
- Several off-site and on-site placement options were considered for the management of approximately 9,300 cubic yards of dredged material
- In-lake dredged material placement for wetland creation reduced project costs and provided environmental and recreational benefits

Questions/Discussion
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