

TOWN OF SUNSET BEACH
2016 SHORELINE MANAGEMENT AND PRE-DREDGE ANALYSIS
PHASE 2 - DESIGN

PROGRESS REPORT DATE
NOVEMBER 1, 2016

Report Period: October 01 thru October 31, 2016

The items below provide a description of key elements related to the current progress, including outstanding items and anticipated resolutions, for completing the work known as Town of Sunset Beach, 2016 Shoreline Management and Pre-Dredge Analysis, Phase 2 - Design.

Acronyms: M&N – Moffatt & Nichol
NCDEQ – North Carolina Department of Environmental Quality
NOAA – National Oceanic & Atmospheric Administration
USACE – US Army Corps of Engineers (Wilmington District)
USFWS – U.S. Fish & Wildlife Service.

Phase 1 – Feasibility Analysis (100% complete)

Items Previously Completed: (100%)

The Town of Sunset Beach (Town) and M&N initiated a contract on February 19th to study the feasibility of conducting approximately 3.5 miles of navigation dredging within the Town limits. The work areas include Mary's Creek, Turtle Creek, Jinks Creek, the North Shore Drive feeder and adjoining finger canals and the Canal Drive bay area. The results of the analysis were positive and the Town elected to move forward with the design and modeling of the proposed work on June 7th. The design work was authorized to begin July 1, 2016.

Phase 2 –Design (78.40 % complete)

Items Previously Completed (60.74 %)

1.0 Project Coordination

- The Town of Sunset Beach authorized M&N to begin the design work on July 1, 2016. The first priority was to secure a Water Resource Development Grant through the State's Shallow Draft Navigation Fund. The grant was secured on August 1 and reimburses the Town 2/3's of the project cost up to \$2,779,327.
- The Town is considering available alternatives for beneficial reuse of any dredge material. This includes beach placement for cost share potential with Ocean Isle or dune restoration adjacent to Bird Island for storm protection and habitat restoration. In addition, the dredge material may also be used for a possible living shorelines project to restore marsh or intertidal habitat for invertebrates and shorebirds.

2.0 Refined Design

- M&N initiated design work to refine the proposed dredge alignment in July to provide adequate vessel access while avoiding impacts to the adjacent environmentally sensitive lands. The initial analysis of the hydraulic changes expected for Jinks Creek as a result of the project was completed on September 27th. The analysis incorporated the hydraulic survey data collect by Geodynamics throughout the project area and Tubbs Inlet to help describe the current conditions. The analysis assumed a worst case or maximum dredge footprint of 100 ft. wide a 7 ft deep throughout Jinks Creek and evaluated the project's potential to alter the existing tidal velocities and sediment transport trends. The analysis concentrates on the trends

expected near the AIWW confluence with Jinks Creek, the ‘S’ curve within Jinks Creek, and Tubbs Inlet. . The results indicated no significant change should occur in the tidal velocities, or sediment transport as a result of the worst case dredging scenario. An additional analysis will be conducted to show the recommended alignment after the Town and residents review the proposed alternative. A modeling report will then be prepared to summarize the results for the Town and resource agencies.

3.0 Sediment Testing

Catlin Engineers completed the initial field work for the sediment testing on August 25th. Catlin collected approximately 26 core samples and 2 grab samples from the project area. The samples will be tested for grain size, chemical composition, and silt content to define if the proposed dredge material is beach compatible in accordance with state and federal guidelines. Compatible material may be beneficially reused for habitat restoration or storm protection projects, while non-compatible material may have to be placed in an upland management facility, such as a USACE material placement island.

Progress this Period: (17.66 % of total task)

1.0 Project Coordination

- M&N conducted a site visit on Oct. 5th to identify feasible locations for a marsh or dune restoration project. The most viable locations were identified between Mary’s and Turtle Creek and along the causeway entering the island of Sunset Beach. The option will be discussed at the next agency coordination meeting and then with the Town to decide a path forward. The figure below outlines the marsh restoration sites identified during the October 5th site visit.

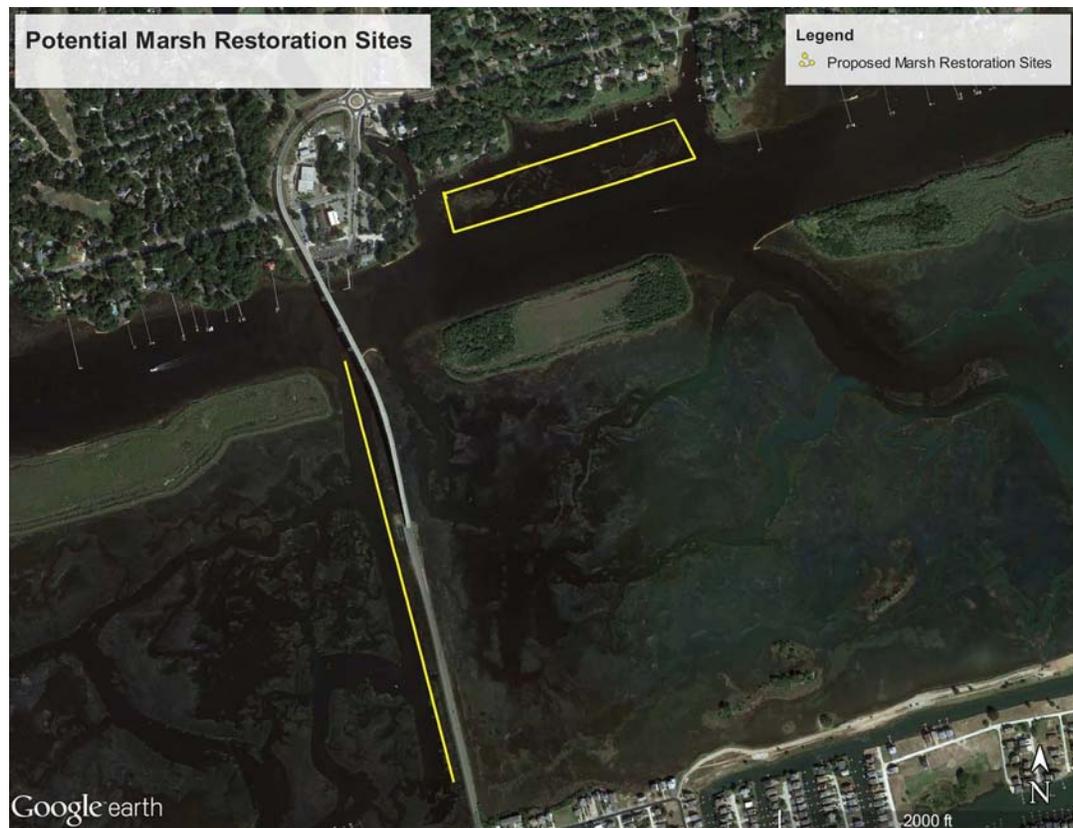


Figure 1. Proposed Marsh Restoration Sites

2.0 Refined Design

- M&N provided a ‘proposed’ channel alignment for each work area within the project along with a dredge volume estimate on October 24th. The list below identifies the work areas and the necessary volume of material that would need to be dredged from each, based on the ‘proposed’ alignments.

➤ Jinks Creek:	115,000 CY
➤ Bay Area:	26,000 CY
➤ Feeder Channel & Finger Canals:	35,000 CY
➤ Mary’s Creek:	8,000 CY*
➤ Turtle Creek:	8,000 CY*

(The volume estimate for Mary’s & Turtle Creek comes from a revised alignment provided to the Town on October 31st.)

The alignments concentrate on providing adequate navigation access for the residents of Sunset Beach while also minimizing potential impacts to environmentally sensitive lands. The alignments also focus on maintaining a 5 ~ 10 ft clearance from any existing piling or seawall. The clearance will help the Town establish a pier head alignment for future development (where applicable) and also help avoid any potential damage to the structures as a result of the construction process.

The alignments will be discussed at a November 12th public meeting with the residents and stakeholders of the project. Pending the discussion, the alignments will then be shared with the state and federal resource agencies for their review.

3.0 Sediment Testing

- Catlin Engineers provided an initial report on the sediment analysis required to help define ‘compatible’ and ‘non-compatible’ material on October 3rd. The report will be used to classify the sediment characteristics of the dredge material and help determine how to best handle the dredge material.

Review of the report suggested that additional sediment samples would be necessary to complete the analysis. As a result, Catlin reinitiated efforts to collect the samples and completed the additional field work on October 26th. A laboratory analysis must still be conducted on the samples, and is expected to be completed by late November.

Based on initial review of the sediment data approximately half of the dredge material classifies as non-compatible material. The table below shows the compatible and non-compatible material for each dredge area. The results may be revised base on the additional sediment analysis currently being conducted.

Dredge Area	Compatible (CY)	Non-Compatible (CY)	Total (CY)
Jinks Creek	100,000	15,000	115,000
Bay Area	-	26,000	26,000
Feeder Channel & Finger Canals	-	35,000	35,000
Mary’s Creek	-	8,000	8,000
Turtle Creek	-	8,000	8,000

5.0 Oyster Survey

- M&N completed the field work required for the Oyster Survey of Mary’s & Turtle Creek on October 19th. The initial results indicate minimum presence of oysters within the ‘proposed’ dredge alignments for both creeks. However, significant resources are present outside of the dredge alignment within the intertidal areas of each creek. Once the data has been reviewed

a final report will be provided to the Town and resource agencies for additional discussion. The Town may be required to relocate any oyster resource identified within the dredge alignment.

Outstanding Items and Anticipated Completion Dates:

1.0 Project Coordination

- A public meeting has been scheduled for Saturday, November 12th to provide an opportunity for residents and interested parties to review / discuss the proposed dredge alignments and the anticipated project schedule through construction. The project goals and potential impacts will also be discussed. (The November 12th meeting was originally proposed for October 8th, however, the meeting was delayed due to Hurricane Matthew.)
- The feasibility and permitting constraints of constructing a marsh restoration project along the island between Mary's & Turtle Creek will be discussed with the Town and the resource agencies. Based on the resulting comments, the marsh restoration project may be incorporated into the sediment management plan.

2.0 Refined Design

- After the Town and residents have an opportunity to review and discuss the proposed dredge alignments M&N will revise the alignments as appropriate and provide them for review by the resource agencies. The Jinks Creek modeling analysis report will also be provided for review to the Town and resource agencies. The information will be discussed at the next agency coordination meeting anticipated in December 2016.

3.0 Sediment Testing

- The additional sediment analysis is anticipated to be complete by late November. The data will be reviewed to confirm the initial estimates of compatible and non-compatible material. At that point, based on recommendations received from the property owners the dredge alignments may be revised to further reduce the volume of non-compatible material proposed to be dredged.

4.0 USACE Disposal Locations

- The inspection of the USACE material confinement islands has been delayed to review the volume of non-compatible material that may be needed to be requiring placement on the islands. Inspection of the potential placement islands will occur after review of the sediment analysis report. The inspection results are anticipated to be provided to the Town in November 2016.

5.0 Oyster Survey

- The field work for the Oyster survey for Mary's and Turtle Creek completed on October 19th. The final report summarizing the survey work will be provided in November to the Town and resource agencies. The initial results indicate minimum presence of oysters within the 'proposed' dredge alignments for both creeks. However, significant resources are present outside of the dredge alignments within the intertidal areas of each creek. M&N will coordinate with the appropriate resource agencies to identify if and what type of mitigation options may be required due to the survey results. This information will be discussed at the next agency coordination meeting anticipated in December 2016.

6.0 Agency Coordination Meeting

- M&N will request a second Agency Coordination Meeting to present and discuss the dredge alignments, modeling results, and any potential mitigation requirements with the state and

federal agencies in December 2016. Based in-part on the results of this meeting, the Town will determine if moving forward with the project is appropriate.

7.0 Conceptual Cost Estimate

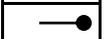
- M&N will provide an updated construction cost estimate for the proposed dredging based on the accepted design of the project. The cost estimate will be provided as the final task for the design phase and is anticipated in December 2016.

**TOWN OF SUNSET BEACH
2016 SHORELINE MANAGEMENT & PRE-DREDGE ANALYSIS - DESIGN PHASE**

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Progress Schedule

Tasks	2016																																				2017												2018											
	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept																								
Pre-Dredge Analysis Design Phase																																																												
Project Coordination				→																																																								
Public Meeting				→	■																																																							
Refined Design				→																																																								
Modeling Analysis				→	■																																																							
Sediment Testing				→	■																																																							
Hydrographic Survey		●																																																										
USACE Disposal Locations				■	■	■																																																						
Oyster Survey				→																																																								
Agency Coordination Meeting																																																												
Conceptual Cost Estimate																																																												

	Primary Task		Sub-Task
	Anticipated timeframe to complete task.		Work in progress (WIP) for task.
	Anticipated overrun in task.		Actual timeframe to complete task.