

Reply to All2-15-17
Agenda 4.A.

Project Name: 2016 Shore Mgt & Pre-Dredge Ph 01 & 02
Project Number: 9269

From: Robert Neal
To: Susan Parker
CC: Robert Neal
Subject: Sunset Beach Sediment Analysis
Sent via: < span style="font-size:11.0pt;font-family:"Calibri", "sans-serif" >Info Exchange
Expiration Date: 3/31/2017
Remarks: Susan,

Please find attached the sediment analysis for the dredging study. The analysis builds from the Catlin report and provides an estimate of the compatible and non-compatible material volumes. Although the report is rather large (59 pages), page 2 and 3 illustrate the main points. These pages show the locations, volume, and characteristics of the compatible and non-compatible material. The remaining pages are meant to show the process of how the final designations were determined.

I've tried to separate the dredge areas into sub-areas by the sediment characteristics. This way, during construction the material can be designated for final placement by the respective subarea. I was a little surprised to see in Jinks Creek near the Feeder Canal there is an area of non-compatible material (Subarea 4). A rather large tributary connects to Jinks Creek at this location that I assume produced the non-compatible material.

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Also, in subarea 2 (Jinks Creek) the material is borderline compatible. I will be talking with DCM to see if we can get any leniency for beach placement here or if the material may be used for the marsh restoration project. However, I expect we will need to sample the beach in order to confirm if this material really qualifies as compatible. DCM regulations allow up to 5% more fines in the dredge material as compared to the beach. I'm not sure we will qualify based on test results from eastern Ocean Isle Beach (OIB). The fine content for OIB was around 2% and Subarea 2 has almost 13%. However, I think it is worth the conversation and we can see where it goes.

Otherwise, the characteristics are pretty defined. Please let me know if there are any questions.

Best Regards,

Robert Neal, P.E.

Moffatt & Nichol

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2 MB

Costs

2-15-17
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Some additional questions on cost analysis of dredging of Jinx Creek

The US Army Corps of Engineers (ACOE) states that the fee assessed for application to use an USACOE disposal area is \$5,850. This fee is good for 1 dredge cycle or 1 calendar year.

There is a \$5.00 per cubic yard charge for disposal of dredge material based on the hydrographic surveys.

Moffatt and Nichols original proposal estimated 92,000 cubic yards non-compatible material from Jinx Creek, Mary's Creek and Turtle Creek. We now know that according to an email dated Jan. 16, 2017, the estimate of incompatible material in Jinx Creek may be significantly more.

The incompatible material for Mary's and Turtle Creek is estimated at 16,000 CY.

It is still unclear what Moffatt and Nichols mean by improvements to the USACE disposal islands that will be necessary for material placement and cost for such.

Clarification is needed on using a small contractor to extend the project for 2 dredging seasons. Would this not also include having to make application to use an USACOE disposal area again, since this contract is only good for 1 dredge cycle?

Reference:

<http://www.saw.usace.army.mil/Missions/Navigation/Easements/Disposal-Areas/>

http://www.sunsetbeachnc.gov/index.asp?Type=B_BASIC&SEC={E07B8E3F-A6F8-4015-8D04-9D4A9E554BF4}



Permitting & Construction 'Conceptual' Cost Estimate

Task	State Grant	Town of Sunset Beach	Total
Permitting	\$143,405	\$71,595	\$215,000
Construction	\$2,680,000	\$1,320,000	\$4,000,000
Total	\$2,823,405	\$1,391,595	\$4,215,000

Schedule

Design: Complete in January.
 Permitting : Completed by July 2017.
 Construction: Nov. 16, 2017 – March 31, 2018
 Nov. 16, 2018 – March 31, 2019

Note:

1. The permitting estimate assumes a shellfish survey of northern Jinks Creek will be required by NCDCM.
2. The construction estimate does not account for any cost share potential with the Town of Ocean Isle Beach for beneficial use of the beach compatible material.
3. Permitting cost do not account for any improvements to the USACE disposal islands necessary for material placement.
4. Allowing construction to extend over 2 dredge seasons may allow a local 'small contractor' to complete the work at a significant cost savings.
5. The estimate does not account for a potential marsh restoration project or mitigation / relocation efforts potentially required for the existing shellfish in the dredge area.



Volume Estimate

Site	Design Depth (MLW)	Length (ft)	Volume (CY)	
			Compatible	Non-Compatible
Jinks Creek	-5 ~ -7	6,825	100,000	15,000*
North Shore Drive Feeder Canal	-6 ~ -4	3,500	0	24,000
Finger Canals (A, B, C, & D)	-4	3,200	0	11,000
Canal Drive Bay Area	-7 tapering to -5	2,200	0	26,000
Mary's Creek	-5 tapering to -3	1,075	0	8,000
Turtle Creek	-5 tapering to -3	1,100	0	8,000
Total		17,900	100,00 CY	92,00 CY

* Assumes all material between Sta. 0+00 & 25+00 is considered non-compatible.

SEDIMENT ANALYSIS SUMMARY TABLE

Work Area	Sub-Area	Stations		Volume (CY)		Composite Summary (% By Wt. Passing)					Mean (mm)	Sorting (σ)	Skewness (α)	Kurtosis (β)
		Start	Stop	Compatible	Non-Compatible	Fines	Sand	Granular	Gravel	Total				
Jinks Creek	1	0+00	12+25	6,975		6.33%	72.69%	4.20%	16.76%	100%	0.44	2.77	-0.45	0.66
	2	12+25	25+00	8,342		12.80%	73.72%	2.46%	11.02%	100%	0.21	1.68	-0.28	2.30
	3	25+00	45+00	17,005		2.64%	85.25%	3.03%	9.09%	100%	0.26	1.23	-0.32	1.77
	4	45+00	51+00		13,246	51.88%	47.92%	0.05%	0.15%	100%	0.05	2.21	0.14	0.33
	5	51+00	68+50	68,660		3.29%	96.71%	0.00%	0.00%	100%	0.17	0.46	0.03	0.81
	SubTotal	0+00	68+50	100,982	13,246	9.71%	86.20%	0.89%	3.20%	100%	0.19	1.01	-0.06	0.99
Feeder Canal														
	1	Finger Canals			10,659	65.27%	34.54%	0.07%	0.12%	100%	0.04	2.30	-0.05	0.24
	2	8+00	21+50		6,672	50.34%	49.63%	0.03%	0.00%	100%	0.07	1.59	-0.05	0.23
	3	21+50	40+00		11,944	33.34%	66.48%	0.09%	0.09%	100%	0.11	1.16	0.29	0.24
	4	40+00	42+00	3,585		4.40%	95.60%	0.00%	0.00%	100%	0.15	0.57	0.12	0.51
	SubTotal	0+00	42+00	3,585	29,275	44%	56%	0%	0%	100%	0.08	1.55	0.09	0.27
Bay Area														
	1	-0+50	20+50		17,555	87.08%	12.67%	0.09%	0.17%	100%	0.00	5.92	0.00	0.33
	2	20+50	21+00	645		2.40%	97.60%	0.00%	0.00%	100%	0.17	0.42	0.00	1.27
	SubTotal	-0+50	21+00	645	17,555	84.08%	15.68%	0.08%	0.16%	100%	0.01	5.72	0.00	0.36
Mary's Creek														
	m/a	0+00	10+75		8,066	-	-	-	-	-	-	-	-	-
Turtle Creek														
	m/a	0+00	11+00		7,830	-	-	-	-	-	-	-	-	-

Notes:

- Composite values determined by weighted averages.
- Mary's & Turtle Creek were only tested for chemical analysis. Historically the material from these systems has been placed in an USACE material placement site. Therefore, a grain size analysis was not conducted as the material is assumed to be fine grained and not beach compatible.
- Conceptual plans include utilizing material from Jinks Creek Subarea 1 & 2 for a marsh restoration project between Mary's & Turtle Creek adjacent to the AIWW.
- Total volumetric quantities equal 105,212 CY for compatible material and 75,972 CY for non-compatible material.
- Compatible & non-compatible volumes are estimated and the qualifying statistics must be confirmed with NCTDCM. Additional testing of the recipient beach or placement area may be required to confirm the compatibility designations.

