BENEFICIAL USE OF DREDGED MATERIAL

Section 204 of the Water Resources Development Act of 1992

MANTEO, NORTH CAROLINA

OYSTER REEF RESTORATION PROJECT

FEASIBILITY STUDY

COST ENGINEERING

APPENDIX

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SECTION 1. GENERAL

1.1 Guidance

- 1. ER 1110-2-1302, CIVIL WORKS COST ENGINEERING
- 2. ER 1110-2-1150, ENGINEERING AND DESIGN FOR CIVIL WORKS PROJECTS
- 3. ETL 1110-2-573, CONSTRUCTION COST ESTIMATING GUIDE FOR CIVIL WORKS
- 4. ECB 2007-17, APPLICATION OF COST RISK ANALYSIS TO DEVELOP CONTINGENCIES FOR CIVIL WORKS TOTAL PROJECT COSTS

1.2 Computer Aided Software

- 1. Micro-Computer Aided cost Estimating System (MCACES), Second Generation (MII). MII 4.1
- 2. Abbreviated Risk Analysis Spreadsheet maintained by USACE Cost Center of Expertise, Walla Walla, WA.

SECTION 2. THE COST ESTIMATE REPORT

2.1 Report Description

This report is tentative in nature and is intended to be used for planning purposes only.

The estimate reflects the very early stages and concepts of design. This civil works project includes the creation of man-made submerged oyster reefs in Manteo Bay, North Carolina. The site is located approximately 5 miles southwest of Oregon Inlet in the Pamlico Sound in Dare County, North Carolina. The location is approximately 1.7 miles west of the Manteo Old House Range 2 federal navigation channel. Construction measures primarily include the construction of stone sill filled with dredged material and layered with limestone and oyster cultch.

Various alternatives were evaluated to determine the best product. All alternatives involved the construction of a containment structure for dredged materials. Different types of construction were considered in determining the selected plan.

The first construction type included the installation of composite sheetpile wall and stone sill structure. The sheetpile wall would outline the outside perimeter of the containment structure(s) and would be protected with NCDOT Class 2 granite armor stone (9"-23"). NCDOT Class B stone would be used for bedding stone. Dredged material would be hydraulically pumped via pipeline dredge into the containment area. The dredged material would then be covered with NCDOT Class A stone (2" - 6") topped with oyster shell.

The second construction type considered was a stone sill containment structure. This alternative creates an oyster habitat by using NCDOT Class 2 granite armor stone (9"-23") to contain the dredged material. The core of the containment structure would be constructed of NCDOT Class B Stone (5"-12"). Dredged material would be hydraulically pumped via pipeline dredge into the containment area and covered with NCDOT Class A stone (2"-6") and then topped with oyster shell.

The Tentatively Selected Plan (TSP) was chosen based on economic factors indicating the greatest effectiveness. The Cost Estimate supporting the TSP is prepared using the MCACES, Second Generation (MII 4.1).

- MCACES references the MII English Cost Book 2010 as the source library for all construction based activities unless otherwise adjusted by the user.
- Equipment cost is referenced through the MII Equipment Region III 2009 based on the EP 1110-1-8, Construction Equipment and Operation Expense Schedule 2009 version.
- MCACES Labor Defaults to Labor National Seattle 2009. This data has been adjusted by the User to
 reflect region and North Carolina labor rates as illustrated in the Department of Labor Wage Rates with a
 reasonable markup for payroll taxes, insurance, fringes and burdens. DOL Wage Rates are referenced in
 Section 8.

Based on economic evaluation, stone sill construction was the type of construction method chosen for the TSP. The TSP will construct three 5.07 acre sites with a stone sill containment structure. Each of the sites will create an oyster habitat by using NCDOT Class 2 granite armor stone to contain the dredged material. The core of the stone sill will be

constructed of NCDOT Class B limestone. The dredged material will be pumped into the containment area and then topped with NCCDOT Class A limestone followed by oyster shell.

The Current Working Estimate (CWE) for Construction of the TSP is \$5,554,017. These costs have been established to be the Baseline Cost Estimate for August 2012 price levels.

2.2 Estimate Qualifications

- The project construction cost estimate is prepared as though the Government were a prudent and well-equipped contractor estimating the proposed measures based on the current feasibility level design. The estimates are developed in as much detail as can be assumed based on the best information available at this time.
- The estimate adheres to the civil works work breakdown structure and was internally verified for quality control addressing cost, schedule and risk issues as practical. The estimate was developed based on a limited scope of work. Record of assumptions, construction methods, concerns, and unknowns are maintained within the MII estimate for each construction task.
- Parametric estimating techniques were used to develop the estimate. They are based on engineering parameters, historical information, practical construction practices and engineering principles. Project definition characteristics to include physical properties of the project site, functional purpose of the project and methods of construction were considered when developing the estimate.
- The estimated time to construct the project was developed based on the production rates of the largest and most significant features of the project. The project construction schedule was developed using Microsoft Project to substantiate the construction duration assumptions. Often a disconnect with probable durations was noticed when compared to MII durations that don't normally account for multiple crews working jointly. MII durations assume one crew completing a specific construction task, which can lead to large, unrealistic durations. Therefore, the construction schedule shows a realistic duration to reflect the work of a suitable number of crews.
- The structure of the cost estimate is planned so that all tasks are logical and are in accordance with appropriate plan of construction and good understanding of the project scope. A unit cost for each task is developed in an effort to increase the accuracy of the estimate and includes consideration given to site specific conditions as they pertain to constructability, biddability, and operability issues. Lump sum unit cost and unit pricing is used only to report items with limited or no design specified. The assumptions for these allowances are documented in the estimates and are based on experience and consultation with project teammates. As design scope evolves, it is anticipated that these lump sum costs will be better defined.
- The district developed a baseline cost estimate within which the project can be designed and constructed. An MII estimate was prepared with careful analysis of contingencies appropriate for each feature. The proposed project features are comprised largely of rock placement and oyster placement. To compute accurate stone quantities, the district obtained recent contour data from topographic mapping at two-foot intervals from the proposed project location.
- The estimated costs developed for this project are fair and reasonable to a well-equipped and competent contractor and include overhead costs and profit. Actual crew sizes, equipment and production rates that contractors have achieved previously on similar types of projects were implied in developing the unit costs for the work items contained in this project.
- Unit prices for construction features and lump sum costs for structures were developed using parametric estimated from the MII Costbook database and drew from expertise maintained within the Wilmington District.

2.3 Quantities

4 Et Stone Sill					
Typical cross section area for Class B Store	e = 48.5 so ft				
Typical cross section area for Class 2 Stone	<u>e = 17.5 sa ft</u>				
	A rea	Area	Perimeter	Volume	
	(Sq Et)	(Acres)	(Ft)	(tons)	Bushels
	(0910)	(/ 10100)	(1.1)	((0110)	Buonoio
One 900'x900' (18 60 Acres) Site					
Containment capacity = $178,600 \text{ cy}$					
Class B Stone	48.5		3.684	7,705.3	
Class 2 Armor Stone	17.5		3.674	3.713.0	
Surface Area of Class B and Class 2			0,011	0,1 1010	
Stone	77.364	1.78			
Class A Riprap	656,100	15.06		21.651	
Ovster Shell Cultch (500 bushels/acre)				,	7.530
Total bottom footprint		20.37			,
Reef Service Area	1.612.900	37.03			
	, - ,				
One 810'x810' (15.06 Acres) Site					
Containment capacity = 143,290 cy					
Class B Stone	48.5		3.324	6.952.4	
Class 2 Armor Stone	17.5		3,314	3,349.2	
Surface Area of Class B and Class 2					
Stone	69,804	1.60			
Class A Riprap	518,400	11.90		17,107	
Oyster Shell Cultch (500 bushels/acre)					5,950
Total bottom footprint		16.66			
Reef Service Area	1,392,400	31.97			
One 650'x650' (9.70 Acre) Site					
Containment capacity =90,100 cy					
Class B Stone	48.5		2,684	5,613.8	
Class 2 Armor Stone	17.5		2,674	2,702.4	
Surface Area of Class B and Class 2					
Stone	56,364	1.29			
Class A Riprap	313,600	7.20		10,349	
Oyster Shell Cultch (500 bushels/acre)					3,600
Total bottom footprint		10.99			
Reef Service Area	1,040,400	23.88			
One 470'x470' (5.07 Acres) Site					
Containment capacity = 45,000 cy					
Class B Stone	48.5		1,964	4,107.8	
Class 2 Armor Stone	17.5		1,954	1,974.8	
Surface Area of Class B and Class 2					
Stone	41,244	0.95			
Class A Riprap	144,400	3.31		4,765	
Oyster Shell Cultch (500 bushels/acre)					1,660
Total bottom footprint		6.02			
Reef Service Area	705,600	16.20			

2.4 Estimate Assumptions

- Bid Items and Tasks are based on the English 2010 MII Costbook.
- Fuel rates are set at \$3.15 for unleaded gasoline, \$3.19 for Off-Road diesel, and \$3.60 for on-road diesel.
- Prime Contractor's job office overhead is set at 18%; home office overhead is set at 12%, profit is set at 12%.
- Job office overhead is not included for subcontractors as it is assumed temporary job office facilities are not needed by subcontractors for this job.
- It is anticipated that the prime contractor will be a marine construction contractor. The following is a list of anticipated subcontractors used for the estimate: Hauling subcontractor, Stone Subcontractor and Oyster Subcontractor.
- Construction Staging Area has been identified for the project. The state of North Carolina owns property at Wanchese Seafood Industrial Park in Dare County and has offered this site as a construction staging area for a 12 month duration.
- Preconstruction submittals and project closeout administration is anticipated to be included with the contractors HOOH. It is not detailed out in the construction estimate.
- It is not anticipated that a USACE field office will be required; therefore, no costs are included in the estimate for such.
- Construction Duration was estimated at 226 work days roughly 9 months, however additional time may be added for
 preconstruction submittals and closeout procedures as design develops.

SECTION 3. CODE OF ACCOUNTS

3.1 Current Working Estimate (CWE)

The detailed CWE's are shown in the attached MCACES (Microcomputer Aided Cost Engineering System) files. The estimates are formatted into a Code of Accounts framework in compliance with Civil Works Breakdown Structure. The costs included under each Code of Accounts are described below.

3.2 Account 01: Lands and Damages

The estimated costs were furnished by the Real Estate Division, Savannah District and are discussed in the Real Estate Appendix. The estimated real estate costs include the land cost for acquisition of land, relocation costs, and federal and non-federal administrative costs. Administrative costs are those costs incurred for verifying ownership of lands, certification of those lands required for project purposes, legal opinion, analysis or other requirements that may be necessary during Planning, Engineering and Design (PED). A 25% contingency is applied to the estimated costs for these items, separate of the analysis for construction contingencies.

3.3 Account 06: Fish and Wildlife Facilities

The tentatively selected plan consists of the creation of oyster habitat by constructing a stone sill made of NCDOT Class 2 armor stone to create three -5.07 acre containment areas for dredged material. The three areas would contain the dredged materials and constructed within close proximity of each other. The core of each stone sill will be constructed of NCDOT Class B Stone. The Dredged material to fill the area will come from maintenance dredging of the federal navigation channel. The dredged material would then be covered by NCDOT Class A stone followed by oyster shell to provide a habitat for the establishment of oysters. A contingency of **19.9**% was established for this account by the Abbreviated Cost Risk Analysis.

3.4 Account 30: Planning, Engineering, and Design

The costs included in this account were furnished by those responsible for performing each activity during PED> This account includes plans, specifications, cost estimates, field investigations, surveys, engineering during construction, environmental/physical monitoring, and project management. A contingency of 12.4% was established for this account by the Abbreviated Cost Risk Analysis.

3.5 Account 31: Construction Management

This account includes supervision and administration of the contracts by construction management and includes hydrologic surveys during construction and necessary contracting personnel during construction. A contingency of 10% was established for this account by the Abbreviated Cost Risk Analysis.

SECTION 4. CONSTRUCTION SCHEDULE





SECTION 5. TOTAL PROJECT COST

WALLA WALLA COST ENGINEERING MANDATORY CENTER OF EXPERTISE

COST AGENCY TECHNICAL REVIEW

CERTIFICATION STATEMENT

For

SAW - MANTEO 204 ECOSYSTEM RESTORATION – OYSTER REEF CREATION

The Manteo Ecosystem Restoration project, as presented by Wilmington District, has undergone a successful Cost Agency Technical Review (Cost ATR), performed by the Walla Walla District Cost Engineering Mandatory Center of Expertise (Cost MCX) team. The Cost ATR included study of the project scope, report, cost estimates, schedules, escalation, and risk-based contingencies. This certification signifies the products meet the quality standards as prescribed in ER 1110-2-1150 Engineering and Design for Civil Works Projects and ER 1110-2-1302 Civil Works Cost Engineering.

As of August 10, 2012, the Cost MCX certifies the estimated total project cost of:

FY 2013 Price Level: \$6,669,000 Fully Funded Amount: \$7,217,000 including Feasibility costs

It remains the responsibility of the District to correctly reflect these cost values within the Final Report and to implement effective project management controls and implementation procedures including risk management throughout the life of the project.

Muyana icasdo

FOR Glenn R. Matlock, PE, CCE Chief, Cost Engineering Walla Walla District





US Army Corps of Engineers®

**** TOTAL PROJECT COST SUMMARY ****

PROJECT: Manteo 204 - Ecosytem Restoration - Oyster Reef Creation

LOCATION: Manteo Harbor, NC

DISTRICT: SAW Wilmington District PREPARED: 8/2/2012 POC: CHIEF, COST ENGINEERING, Lee Danley

This Estimate reflects the scope and schedule in report;

WBS Structure ESTIMATED COST							PROJECT FIRST COST (Constant Dollar Basis)				TOTAL PROJECT COST (FULLY FUNDED)				
WRS	Civil Works	T200	CNITC	ONITO	TOTAL	Prog	gram Year (B ective Price L	udget EC): evel Date:	2013 1 OCT 12	Spent Thru:		0007	01770		
NUMBER	Feature & Sub-Feature Description	(\$K)	(\$K)	(%)	(\$K)	(%)	(\$K)	(\$K)	(\$K)	28-Jun-12 (\$K)		(SK)	(SK)	(SK)	
A	В	С	D	E	F	G	H	1	J	K	L	M	N	0	
06	FISH & WILDLIFE FACILITIES	\$4,948	\$984	20%	\$5,932	0.9% - - -	\$4,992	\$992	\$5,985			\$5,071	\$1,008	\$6,079	
	CONSTRUCTION ESTIMATE TOTALS:	\$4,948	\$984	-	\$5,932	0.9%	\$4,992	\$992	\$5,985			\$5,071	\$1,008	\$6,079	
01	LANDS AND DAMAGES	\$36	\$9	25%	\$45	0.9%	\$36	\$9	\$45			\$36	\$9	\$45	
22	FEASIBILITY STUDY (CAP studies)									\$453				\$453	
30	PLANNING, ENGINEERING & DESIGN	\$322	\$40	12%	\$362	0.7%	\$324	\$40	\$365			\$324	\$40	\$365	
31	CONSTRUCTION MANAGEMENT	\$248	\$25	10%	\$273	0.7%	\$250	\$25	\$275			\$250	\$25	\$275	
	PROJECT COST TOTALS:	\$5,554	\$1,057	19%	\$6,611		\$5,603	\$1,067	\$6,669	\$453		\$5,681	\$1,082	\$7,217	

Mandatory by Regulation	CHIEF, COST ENGINEERING, Lee Danley
Mandatory by Regulation	PROJECT MANAGER, Jason Glazener
Mandatory by Regulation	CHIEF, REAL ESTATE, Belinda Estabrook
	CHIEF, PLANNING, Elden Gatwood
	CHIEF, ENGINEERING, Greg Williams
	CHIEF, OPERATIONS, Bob Sattin
	CHIEF, CONSTRUCTION, Dennis Lynch
· · · · · · · · · · · · · · · · · · ·	CHIEF, CONTRACTING, John Mayo
	CHIEF, PM-PB, James Medlock
	CHIEF, DPM, Christine Brayman

ESTIMATED FEDERAL COST:	65%	\$4,396
ESTIMATED NON-FEDERAL COST:	35%	\$2,367
FEDERAL FEASIBILITY CAP COSTS:	100%	\$453
ESTIMATED TOTAL PROJECT COST:		\$7,217

O&M OUTSIDE OF TOTAL PROJECT COST:

**** TOTAL PROJECT COST SUMMARY ****

**** CONTRACT COST SUMMARY ****

PROJECT: Manteo 204 - Ecosytem Restoration - Oyster Reef Creation LOCATION: Manteo Harbor, NC This Estimate reflects the scope and schedule in report;

DISTRICT: SAW Wilmington District PREPARED: 8/2/2012 POC: CHIEF, COST ENGINEERING, Lee Danley

	WBS Structure	ESTIMATED COST					PROJECT FIRST COST (Constant Doller Basis)				TOTAL PROJECT COST (FULLY FUNDED)					
		Estin Effect	nate Prepare tive Price Lev	d: rel:	28-Jun-12 28-Jun-12	Program Effectiv	m Year (Bud ve Price Lev	get EC): el Date:	2013 1 OCT 12							
		RISK BASED														
WBS	Civil Works	COST	CNTG	CNTG	TOTAL	ESC	COST	CNTG	TOTAL	Mid-Point	INFLATED	COST	CNTG	FULT		
NUMBER	Feature & Sub-Feature Description	_(\$K)	_(\$K)_	(%)	(\$K)	(%)	(\$K)	(\$K)	(\$K)	Date	(%)	(SK)	(\$K)	(SK)		
A	В	С	D	E	F	G	Н	1	J	P	L	M	N	0		
06	PHASE 1 or CONTRACT 1															
00	FISH & WILDLIFE FACILITIES	\$4,948	\$984	20%	\$5,932	0.9%	\$4,992	\$992	\$5,985	2014Q1	1.6%	\$5,071	\$1,008	\$6,079		
	CONSTRUCTION ESTIMATE TOTALS:	\$4,948	\$984	20%	\$5,932		\$4,992	\$992	\$5.985		2	\$5.071	\$1.008	\$6.079		
								4001	40,000			\$0,071	\$1,000	40,075		
01	LANDS AND DAMAGES	\$36	\$9	25%	\$45	0.9%	\$36	\$9	\$45	2013Q2	0.3%	\$36	\$9	\$45		
30																
0.5%	PLANNING, ENGINEERING & DESIGN															
0.5%	Project Management	\$25	\$3	12%	\$28	0.7%	\$25	\$3	\$28	2013Q1		\$25	\$3	\$28		
2.0%	Engineering & Design	\$25	\$3	12%	\$28	0.7%	\$25	\$3	\$28	2013Q1		\$25	\$3	\$28		
1.0%	Engineering Tech Review ITR & VE	\$99	\$12	12%	\$111	0.7%	\$100	\$12	\$112	2013Q1		\$100	\$12	\$112		
0.5%	Contracting & Reprographics	\$49	\$0 \$0	12%	\$55	0.7%	\$49	\$6	\$55	2013Q1		\$49	\$6	\$55		
1.0%	Engineering During Construction	\$20	\$3 #0	12%	\$28	0.7%	\$25	\$3	\$28	2013Q1		\$25	\$3	\$28		
0.5%	Planning During Construction	\$45 \$25	40 60	1270	\$55	0.7%	\$49	\$6	\$55	2013Q1		\$49	\$6	\$55		
0.5%	Project Operations	\$25	\$3	12%	\$28 \$28	0.7%	\$25	\$3	\$28 \$28	2013Q1 2013Q1		\$25	\$3	\$28		
31							420	40	\$20	201001		φ20	40	420		
1.00/	Construction Management			1000					11.000							
4.0%	Distruction Management	\$198	\$20	10%	\$218	0.7%	\$199	\$20	\$219	2013Q1		\$199	\$20	\$219		
0.5%	Project Operation:	\$25	\$3	10%	\$28	0.7%	\$25	\$3	\$28	2013Q1		\$25	\$3	\$28		
0.5%	Project Management	\$25	\$3	10%	\$28	0.7%	\$25	\$3	\$28	2013Q1		\$25	\$3	\$28		
	CONTRACT COST TOTALS:	\$5,554	\$1,057		\$6,611	=	\$5,603	\$1,067	\$6,669		=	\$5,681	\$1,082	\$6,764		

SECTION 6. TSP DETAIL ESTIMATE

U.S. Army Corps of Engineers Project : Manteo 204 - CWE Manteo 204 TSP Time 15:34:14

Title Page

Manteo 204 - CWE CWE for Construction of Oyster Reef using Dredged material and Stone Sill arond three 5.07 ac sites.

> Estimated by Designed by Wilmington District Prepared by Kristin Olsen

Preparation Date 8/8/2012 Effective Date of Pricing 8/8/2012 Estimated Construction Time 198 Days

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Labor ID: NC50 EQ ID: EP09R03

Currency in US dollars

U.S. Army Corps of Engineers Project : Manteo 204 - CWE Manteo 204 TSP

Time 15:34:14

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Description

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Mobilization/Demobilization	1
Stone Placement	1
Class A Riprap	1
Class B Stone	1
Class 2 Stone	1
Sand Placement	1
Oyster Cultch Placement	1
Place Oyster Cultch (EA = bushel)	1
PLANNING, ENGINEERING & DESIGN	1
CONSTRUCTION MANAGEMENT	1

Contract Cost Page 1

Description	Quantity	UOM	ContractCost	CostToPrime	ProjectCost
Contract Cost			5,554,017	4,012,535	5,554,017
LANDS AND DAMAGES	1	LS	36,000	0	36,000
FISH & WILDLIFE FACILITIES	1	LS	4,948,017	4,012,535	4,948,017
Mobilization/Demobilization	1	EA	322,792	223,575	322,792
Stone Placement	1	LS	4,517,815	3,702,913	4,517,815
Class A Riprap	14,310	TON	1,939,179	1,589,399	1,939,179
Class B Stone	12,330	TON	1,719,242	1,409,133	1,719,242
Class 2 Stone	5,940	TON	859,394	704,381	859,394
Sand Placement	1	LS	3,157	2,186	3,157
Oyster Cultch Placement	1	LS	104,253	83,861	104,253
Place Oyster Cultch (EA = bushel)	4,980	EA	104,253	83,861	104,253
PLANNING, ENGINEERING & DESIGN	1	LS	322,000	0	322,000
CONSTRUCTION MANAGEMENT	1	EA	248,000	0	248,000

SECTION 7. COST RISK ANALYSIS

Abbreviated Risk Analysis

Project (less than \$40M): Manteo 204- Ecosystem Restoration - Oyster Reef Crea Project Development Stage: Reconnaissance Risk Category: Moderate Risk: Typical Project or Possible Life Safety

Total Construction Contract Cost = \$ 4,948,017												
	<u>CWWBS</u>	Feature of Work	<u>Cc</u>	ontract Cost		% Contingency	<u>\$</u>	<u>Contingency</u>		Total		
	01 LANDS AND DAMAGES	Real Estate	\$	36,000		25.00%	\$	9,000	\$	45,000.00		
1	06 FISH AND WILDLIFE FACILITIES	Stone	\$	4,517,815		20.22%	\$	913,643	\$	5,431,457.51		
2	06 FISH AND WILDLIFE FACILITIES	Sand	\$	3,157		22.67%	\$	716	\$	3,872.54		
3	06 FISH AND WILDLIFE FACILITIES	Oyster Cultch	\$	104,253		16.17%	\$	16,854	\$	121,106.91		
4						0.00%	\$	-	\$	-		
5						0.00%	\$	-	\$			
6						0.00%	\$	-	\$			
7						0.00%	\$	-	\$			
8						0.00%	\$	-	\$			
9						0.00%	\$	-	\$	-		
10			\$	-		0.00%	\$	-	\$	-		
11			\$	-		0.00%	\$	-	\$	-		
12		Remaining Construction Items	\$	322,792	7.0%	16.24%	\$	52,413	\$	375,204.57		
13	30 PLANNING, ENGINEERING, AND DESIGN	Planning, Engineering, & Design	\$	322,000		12.37%	\$	39,836	\$	361,836.04		
14	31 CONSTRUCTION MANAGEMENT	Construction Management	\$	248,000		10.00%	\$	24,800	\$	272,800.00		
		Totals Real Estate Total Construction Estimate Total Planning, Engineering & Design Total Construction Management	\$ \$ \$ \$	36,000 4,948,017 322,000 248,000		25.00% 19.88% 12.37% 10.00%	\$ \$ \$	9,000 983,625 39,836 24,800	\$ \$ \$ \$	45,000.00 5,931,642 361,836 272,800		

Total \$

5,554,017

1,057,261 \$

6,611,278

\$

Manteo 204- Ecosystem Restoration - Oyster Reef Creation Reconnaissance Abbreviated Risk Analysis

							Potential	Risk Areas	<u>8</u>					
	Stone	Sand	Oyster Cultch	0	0	0	0	0	0	0	0	Remaining Construction Ito.	Planning, Engineering, Design	Construction Managemen _t
Project Scope Growth	-	1	-	-	-	-	-	-	-	-	-	-	1	-
Acquisition Strategy	-	1	1	-	-	-	-	-	-	-	-	-	-	-
Construction Elements	1	-	-	-	-	-	-	-	-	-	-	-	-	-
Quantities for Current Scope	1	1	1	-	-	-	-	-	-	-	-	-	-	-
Specialty Fabrication or Equipment	1	1	1	-	-	-	-	-	-	-	-	-	-	-
Cost Estimate Assumptions	1	1	-	-	-	-	-	-	-	-	-	2	-	-
External Project Risks	1	1	-	-	-	-	-	-	-	-	-	1	-	-

Manteo 204- Ecosystem Restoration - Oyster Reef Creation

Reconnaissance Abbreviated Risk Analysis

Meeting Date: DATE

Very Likely	2	3	4	5	5
Likely	1	2	3	4	5
Possible	0	1	2	3	4
Unlikely	0	0	1	2	3
	Negligible	Marginal	Significant	Critical	Crisis

Concerns Pull Down Tab (ENABLE MACROS Risk Risk Feature of Work THRU TRUST CENTER) Concerns Likelihood **PDT Discussions & Conclusions** Impact Elemen Level (Choose ALL that apply) (Include logic & justification for choice of Likelihood & Impact) **Project Scope Growth** Max Potential Cost Growth 75% tone was selected from various alternatives and will most economically ccomplish the intent of the project. Potential for scope growth is minimal. here can be no additional features added to the project for any increased penefits. All subsuface investigations have validated the scope of work for Unlikely the project. Design on this project thus far is extremely detailed. We are just Marginal 0 PS-1 Stone Water care and diversion fully understood, planned?
 Project accomplish intent? Potential for scope growth, added features and quantities? shy of cutting plan sheets to begin design. Water care - cost estimator has Investigations sufficient to support design assumptions? cluded turbidity curtains in the estimate to account for turbidity concerns • Design confidence? during the construction /placement of materials. Water diversion is not Water care and diversion fully understood, planned? eeded for this project Sand will come from Manteo Harbor Old House Channel dredging project in he area. The footprint of the reef can be sized to accommodate the vailability of sand, therefore, we do not anticipate project scope creep. Sand ccomplishes our intent of the project - this project offers a much needeed Marginal PS-2 • Water care and diversion fully understood, planned? • Potential for scope growth, added features and quantities? Possible 1 Sand lisposal site for the dredged material. Dredging of Old House Channel has a Project accomplish intent? istorical basis - therefore, design confidence and investigations are well Investigations sufficient to support design assumptions? ocumented. No specific water care or diversion is required under the scope Design confidence? of this project. Any water quality issues will be addressed in the dredging • Water care and diversion fully understood, planned? ontract. Potential for scope growth, added features and quantities? Investigations sufficient to support design assumptions? Oyster Cultch is coming from various vendors in the area. Again, the project PS-3 Oyster Cultch Water care and diversion fully understood, planned? Project accomplish intent? an be sized according to market conditions if needed, when the time comes. Unlikely Negligible 0 herefore, the PDT does not anticipate any growth in the scope of work, no Design confidence? Water care and diversion fully understood, planned? additional features or additional quantities. The remaining Construction items are only real estate and mobilization costs. Because our project is well defined - the team does foresee any potential for Remaining Construction PS-12 Water care and diversion fully understood, planned? Unlikely Negligible 0 cope growth of this project as it relates to these features. There are no Items Potential for scope growth, added features and quantities? ater diversion features required for this work, as such, there is no risk • Water care and diversion fully understood, planned? ssociated with it. ential for scope growth, added features and qua • Project accomplish intent? We do not anticipate any scope growth, added features or additional Planning, Engineering, & quantties during PED. The project has had a significant amount of • Investigations sufficient to support design assumptions? PS-13 Water care and diversion fully understood, planned? Unlikely Significant 1 Design ngineering completed. As such, design confidence is very high. We are just Design confidence? • Water care and diversion fully understood, planned? hy of cutting plan sheets. Project accomplish intent? Construction Management PS-14 Design confidence? Unlikely Negligible 0 Design confidence? Design confidence is high - see note above

Acquisition Strategy

	Max Potential Cost Growth				30%		
AS-1	Stone	Requirement for subcontracting?	Contracting plan firmly established? Requirement for subcontracting?	This project is anticipated to be solicited as unrestricted. It is not reasonable to believe that a small contractor can perform this work. Start-up costs, mobilization and scheduling is such that a large contractor is better suited to perform this owrk. There will be a requirement for subcontracting/supplier for stone. It is anticipated that a hauling subcontractor is needed for delivery of the stone.	Unlikely	Marginal	0
AS-2	Sand	Requirement for subcontracting?	Contracting plan firmly established? Requirement for subcontracting?	This project is anticipated to be solicited as unrestricted. It is not reasonable to believe that a small contractor can perform this work. Start-up costs, mobilization and scheduling is such that a large contractor is better suited to perform this owrk. There will be a requirement for subcontracting/supplier for sand. It is currently anticipated that this 'rock sill enclosure' will serve as alternate disposal area for dredged sand from Manteo -Old House Channel. This new site will be closer than the disposal site currently being used. No special set-up will be required of the dredging contractor. Turbidity curtain has been included in the estimate, however, it is not known if a turbidity curtain will be required.	Unlikely	Significant	1

May Detential Cost Crowth

200/

AS-12	Remaining Construction Items	Contracting plan firmly established?	Contracting plan firmly established?	Again, mobilization is what is left in remaining construction items. The acquisition strategy is to be unrestricted.	Unlikelv	Negliaible	0
40.40	Planning, Engineering, &	Contracting plan firmly established?	Contracting plan firmly established?	PED will continue with design plans for an unrestricted acquisition strategy.	Lalitati	Magliaikia	•
AS-13	Design			i ED win continue with design plans for an unrestricted acquisition strategy.	Unlikely	Negligible	U
AS-14	Construction Management	Contracting plan firmly established?	Contracting plan firmly established?	S&A will continue with an unrestricted acquistion strategy.	Unlikely	Negligible	0
Construe	ction Elements				Max Pot	ential Cost Growth	25%
					Max For	ential Cost Growth	23%
			High risk or complex construction elements, site access, in-water?	Placement of stone & sand is in water. This district has recent history of successfully placing stone in adverse wet environments. Special mobilization includes the mobilization of deck barges, tug boats, barge mounted cranes, etc to place the stone. Access to site is availate through federal lands nd has			
CE-1	Stone	Special mobilization?	Special mobilization?	been used for staging on previous projects in Manteo.	Possible	Marginal	1
			Water care and diversion plan? Special mobilization? Special equipment or subcontractors needed?	Turbidity curtain has been included in the estimate IN CASE it might be needed. No special mobilzation is required, however, it will require coordination with the dredging contractor to dispose in this location. Subcontractor isn't needed, but again - consultation and coordination with dredging contractor is required. Construction modification is possible if			
CE-2	Sand	Potential for construction modification and claims?	Potential for construction modification and claims?	dredging does not occur in the year that this structure will be built.	Possible	Negligible	0
CE-3	Oyster Cultch	Accelerated schedule or harsh weather schedule?		No Concerns regarding the placement of oyster cultch.	Unlikely	Negligible	0
	Densisian Operatoration						
CE-12	Items	Accelerated schedule or harsh weather schedule?		No concerns.	Unlikely	Negligible	0
CE-13	Planning, Engineering, & Design	Accelerated schedule or harsh weather schedule?		No concerns.	Unlikely	Negligible	0
CE-14	Construction Management	Accelerated schedule or harsh weather schedule?		No concerns.	Unlikely	Negligible	0
Quantitie	es for Current Scope				May D-	ontial Cost Crowth	200%
	Max Potential Cost Growth 20%						

NS-3	Oyster Cultch	Limited bid competition anticipated?	Contracting plan firmly established? Requirement for subcontracting? Limited bid competition anticipated?	Again, this will be solicited as an unrestricted bid. Contractor will be required to acquire oyster cultch from various suppliers in the area. The availability of the oyster cultch in the area is reasonable for this project, however, it will take some initiative on the part of the contractor to purchase from various suppliers. Even so, this project will still be successful without the oyster cultch. Biologist on the team ensures that it's not necessary to have the cultch or oysters to form a habitat here.	Likely	Negligible	1
AS-12	Remaining Construction	Contracting plan firmly established?	Contracting plan firmly established?	Again, mobilization is what is left in remaining construction items. The acquisition strategy is to be unrestricted.	Unlikely	Negligible	0
AS-13	Planning, Engineering, & Design	Contracting plan firmly established?	Contracting plan firmly established?	PED will continue with design plans for an unrestricted acquisition strategy.	Unlikely	Negligible	0
AS-14	Construction Management	Contracting plan firmly established?	Contracting plan firmly established?	S&A will continue with an unrestricted acquistion strategy.	Unlikely	Negligible	0

Q-1	Stone	Quality control check applied?	 Level of confidence based on design and assumptions? Possibility for increased quantities due to loss, waste, or subsidence? Appropriate methods applied to calculate quantities? Sufficient investigations to develop quantities? Quality control check applied? 	Stone quantities have been calculated based on the design section. The design section is based on best available survey data and other coastal hydrology criteria. Currently, the confidence in the design is suitable for construction. There will be some quantity that might be lost in transportation, however previous history with similar construction projects do not document any losses. As such, losses due to transportation or weather are considered to be minimal.	Possible	Marginal	1	
Q-2	Sand	Quality control check applied?	 Level of confidence based on design and assumptions? Possibility for increased quantities due to loss, waste, or subsidence? Appropriate methods applied to calculate quantities? Sufficient investigations to develop quantities? Quality control check applied? 	Level of confidence for sand placement is extremely high - suitable for construction at this point - due to the fac that the material is anticipated to come from Old House Channel in Manteo. Our district has dredged this area time and again as part of maintenance dredging program. As such, design confidence is high as is our confidence in the maintenance surveying and investigations to aid in the determination of quantities. Losses do not need to be mitigated for the sand - because we have play of about 3' surface elevation in what will constitute a successful project for the oyseter reef.	Possible	Marginal	1	
Q-3	Oyster Cultch	Quality control check applied?	Level of confidence based on design and assumptions? Possibility for increased quantities due to loss, waste, or subsidence? Appropriate methods applied to calculate quantities? Quality control check applied?	Oyster Cultch quantities are based on histroical data maintained by the state's environmental agencies. No possibility for increase of quantity. Basically, USACE will take what we can get based on market conditions at the time. The project will be successful with or without the cultch.	Possible	Marginal	1	
Q-12	Remaining Construction Items	Quality control check applied?	 Level of confidence based on design and assumptions? Appropriate methods applied to calculate quantities? Quality control check applied? 	Mobilzation of equipment is based on the equipment needed to construct the project.	Possible	Negligible	0	
Q-13	Planning, Engineering, & Design	Quality control check applied?			Unlikely	Negligible	0	
Q-14	Construction Management	Quality control check applied?			Unlikely	Negligible	0	
Specialt	pecialty Fabrication or Equipment							

	Max Potential Cost Growth					75%	
FE-1	Stone	Ability to reasonably transport?	 Confidence in suppliers' ability? Confidence in contractor's ability to install? Ability to reasonably transport? 	Various suppliers have een identified and received quotes for. Quarry near Raleigh has been identified for stone acquistion. Hauling costs for this site have been accounted for. Likely there are various stone yards closer to the site that can provide stone, however, cost engineer thought it prudent to be conservative with the haul distance.	Possible	Marginal	1
FE-2	Sand	Ability to reasonably transport?	Unusual parts, material or equipment manufactured or installed? Confidence in suppliers' ability? Confidence in contractor's ability to install? Ability to reasonably transport?	Sand from dredging contractor indicates different acquisition method than traditional methods of acquiring sand. Confidence in the dredging contractor's ability to install is high. Successful hisotrical dredging indicates high confidence in the contractor's ability to acquire, install, transport, etc.	Possible	Marginal	1
FE-3	Oyster Cultch	Ability to reasonably transport?	 Confidence in suppliers' ability? Confidence in contractor's ability to install? Ability to reasonably transport? 	Again, oyster cultch will need to come from various suppliers in the area - not just one. As such, it will take some effort on the contractor's part to coordinate with these suppliers to acquire the cultch needed. However, because the cultch isn't absolutely necessary for a successful oyster reef, there is a lot of flexibility in the quantitity, or the option not to install cultch at all. Installation and transport/delivery of the cultch the site is not a concern, it will be placed with the same equipment already on site.	Likely	Negligible	1
FE-12	Remaining Construction	Ability to reasonably transport?			Unlikely	Negligible	0
FE-13	Planning, Engineering, & Design	Unusual parts, material or equipment manufactured or installed?			Unlikely	Negligible	0
FE-14	Construction Management	Unusual parts, material or equipment manufactured or installed?			Unlikely	Negligible	0
Cost Estimate Assumptions							
1					Max Pote	ential Cost Growth	35%

CT-1	Stone	Overuse of Cost Book, lump sum, allowances?	 Reliability and number of key quotes? Assumptions related to prime and subcontractor markups/assignments? Assumptions regarding crew, productivity, overtime? Site accessibility, transport delays, congestion? Overuse of Cost Book, lump sum, allowances? 	documented in the estimate. Prime and subcontractors are assigned accordingly and marked up as necessary. Assumptions regarding crew, productivity and overtime have been addressed in the estimate. the productivity and crew size needed for the placement of stone is based on historical data - contracts in the past two years in which we've placed stone in similar environment. Site access has been identified and discussed with the	Possible	Marginal	1
CT-2	Sand	Site accessibility, transport delays, congestion?	 Assumptions regarding crew, productivity, overtime? Site accessibility, transport delays, congestion? 	addtessed in the dredging contract. However, at this time, the team believes this new site to be sued for disposal is closer to the dredged area and should increase productivity and reduce costs for the dredging contractor. Because we can size the footprint of the area according to market conditions, if there are losses or over-dredging, we can accomodate that in our design, if needed.	Possible	Marginal	1
CT-3	Oyster Cultch	Site accessibility, transport delays, congestion?	Reliability and number of key quotes? Assumptions related to prime and subcontractor markups/assignments? Assumptions regarding crew, productivity, overtime? Site accessibility, transport delays, congestion?	Cultch suppliers have been identified and are documented in the estimate. Pricing in the estimate is slightly higher than what the state currently purchases cultch for. There should not be a need for a subcontractor for this work. Placement of the cultch can be almost simultaneous with the placement of the capping stone.	Possible	Negligible	0
CT-12	Remaining Construction	Site accessibility, transport delays, congestion?	Site accessibility, transport delays, congestion?	Site Access has been identified as federal lands. It is sufficient for the contractor to set up/estabilish staging area with ease.	Possible	Significant	2
CT-13	Planning, Engineering, & Design	Reliability and number of key quotes?			Unlikely	Negligible	0
CT-14	Construction Management	Reliability and number of key quotes?			Unlikely	Negligible	0

External Project Risks

	•				Max Pot	tential Cost Growth	40%
EX-1	Stone	Unanticipated inflations in fuel, key materials?	Potential for severe adverse weather? Unanticipated inflations in fuel, key materials?	Adverse weather could impact the placement of stone. Weather delays have been accounted for in the productivity of the project as well as documented in the project schedule. Productivity with weather delays is based on previous contracts that involved placing stone in wet conditions in this area. While the project is anticipated to go to construction next FY, it's unknown if fuel prices will stabilize.	Possible	Marginal	1
EX-2	Sand	Potential for market volatility impacting competition, pricing?	 Potential for severe adverse weather? Political influences, lack of support, obstacles? Unanticipated inflations in fuel, key materials? Potential for market volatility impacting competition, pricing? 	Any delays for adverse weather as it pertains to dredging will be monetarily accounted for in the dredging contract. Sufficient time has been accounted for in the contractor's overheads and project schedule to acocunt for any delays due to adverse weather. No concerns with regard to political obstacles have been identified.	Possible	Marginal	1
EX-3	Oyster Cultch	Potential for market volatility impacting competition, pricing?	Potential for market volatility impacting competition, pricing?	The public has embraced the concept behind this construction in the creation of oyster reefs in the area. Market volatility of oyster cultch in the area is completely dependent on availability of cultch. It is anticipated that the contractor can obtain the amount of cultch needed for the project, however, because it is not a requirement for the project to be successful, the impact is negligent if it is not received.	Unlikely	Negligible	0
EX-12	Remaining Construction Items	Potential for severe adverse weather?	Potential for severe adverse weather?	Adverse weather could impact the mobilization and demobilization of the project. Delays due to weathr have been accounted for in the contractor's overheads and construction schedule.	Possible	Marginal	1
EX-13	Planning, Engineering, & Design	Potential for severe adverse weather?			Unlikely	Negligible	0
EX-14	Construction Management	Potential for severe adverse weather?			Unlikely	Negligible	0

SECTION 8. LABOR RATES

General Decision Number: NC120050 07/20/2012 NC50

Superseded General Decision Number: NC20100087

State: North Carolina

Construction Type: Building

County: Alleghany County in North Carolina.

BUILDING CONSTRUCTION PROJECTS (does not include single family homes or apartments up to and including 4 stories).

Modification	Number	Publication	Date
0		01/06/2012	
1		07/06/2012	
2		07/20/2012	

* PLUM0421-004 07/01/2012

	Rates	Fringes
PIPEFITTER (Excluding HVAC System Installation)	\$ 24.40	9.35
* SUNC2011-031 08/26/2011		
	Rates	Fringes
BRICKLAYER	\$ 18.45	4.18
CARPENTER (Drywall Hanging Only)	\$ 17.59	2.31
CARPENTER (Form Work Only)	\$ 14.28	1.13
CARPENTER, Excludes Drywall Hanging, and Form Work	\$ 15.60	2.25
CEMENT MASON/CONCRETE FINISHER	\$ 14.02	0.00
ELECTRICIAN	\$ 15.37	0.40
HVAC MECHANIC (Installation of HVAC Unit Only, Excludes Installation of HVAC Pipe and		
Duct)	\$ 16.94	3.04
IRONWORKER, STRUCTURAL	\$ 18.75	5.62
LABORER: Common or General	\$ 11.07	1.10
LABORER: Landscape & Irrigation	\$ 10.29	1.82

LABORER: Mason Tender-Brick/Cement/Concrete\$ 10.00	0.00
OPERATOR: Backhoe/Excavator/Trackhoe\$ 18.60	1.41
OPERATOR: Crane\$ 19.25	2.37
OPERATOR: Grader/Blade\$ 15.25	1.52
PAINTER: Brush, Roller and Spray\$ 14.77	1.87
PLUMBER, Excludes HVAC System Installation\$ 17.51	2.33
ROOFER\$ 13.55	0.80
SHEET METAL WORKER (HVAC Duct Installation Only)\$ 15.62	2.09
SHEET METAL WORKER, Excludes HVAC Duct and System	
Installation\$ 13.61	1.10
TRUCK DRIVER: Dump Truck\$ 12.50	1.36

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of "identifiers" that indicate whether the particular rate is union or non-union.

Union Identifiers

An identifier enclosed in dotted lines beginning with characters other than "SU" denotes that the union classification and rate have found to be prevailing for that classification. Example: PLUM0198-005 07/01/2011. The

first four letters , PLUM, indicate the international union and the four-digit number, 0198, that follows indicates the local union number or district council number where applicable , i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. The date, 07/01/2011, following these characters is the effective date of the most current negotiated rate/collective bargaining agreement which would be July 1, 2011 in the above example.

Union prevailing wage rates will be updated to reflect any changes in the collective bargaining agreements governing the rate.

Non-Union Identifiers

Classifications listed under an "SU" identifier were derived from survey data by computing average rates and are not union rates; however, the data used in computing these rates may include both union and non-union data. Example: SULA2004-007 5/13/2010. SU indicates the rates are not union rates, LA indicates the State of Louisiana; 2004 is the year of the survey; and 007 is an internal number used in producing the wage determination. A 1993 or later date, 5/13/2010, indicates the classifications and rates under that identifier were issued as a General Wage Determination on that date.

Survey wage rates will remain in effect and will not change until a new survey is conducted.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

- * an existing published wage determination
- * a survey underlying a wage determination
- * a Wage and Hour Division letter setting forth a position on a wage determination matter
- * a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations

Wage and Hour Division U.S. Department of Labor 200 Constitution Avenue, N.W. Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator U.S. Department of Labor 200 Constitution Avenue, N.W. Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board U.S. Department of Labor 200 Constitution Avenue, N.W. Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

END OF GENERAL DECISION