

# **COASTAL STORM RISK MANAGEMENT**

## **HASHAMOMUCK COVE SOUTHOLD, NEW YORK**

### **APPENDIX E – COST APPENDIX**



**US Army Corps of Engineers  
New York District**

**SEPTEMBER 2019**

HASHAMOMUCK COVE  
COASTAL STORM RISK MANAGEMENT  
SOUTHOLD, NY  
APPENDIX E - COST ESTIMATES

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## INTRODUCTION

This Appendix presents the detailed cost estimates for Hashamomuck Cove, Southold, New York in Suffolk County, Coastal Storm Risk Management Feasibility Study. This area includes several businesses and private homes and is subjected to substantial over-washing and erosion during coastal storm and erosion risk to critical infrastructure, including County Road 48. This project consist of the initial placement of 216,000 CY, rounded from 215,600 CY (94,400 CY in the West Cove, 83,000 CY in the Central Cove and 38,200 CY in the East Cove) of beachfill via trucking for the construction of 25-foot berm. The beach renourishment consist of 78,300 CY of beachfill every 5 years for a total of 9 cycles via trucking. The Total First Cost for the initial placement is presented in Table E1 below.

**Table E1 –First Cost**  
**Hashamomuck Coastal Storm Risk Management Feasibility Study**  
 October 2018 Price Level

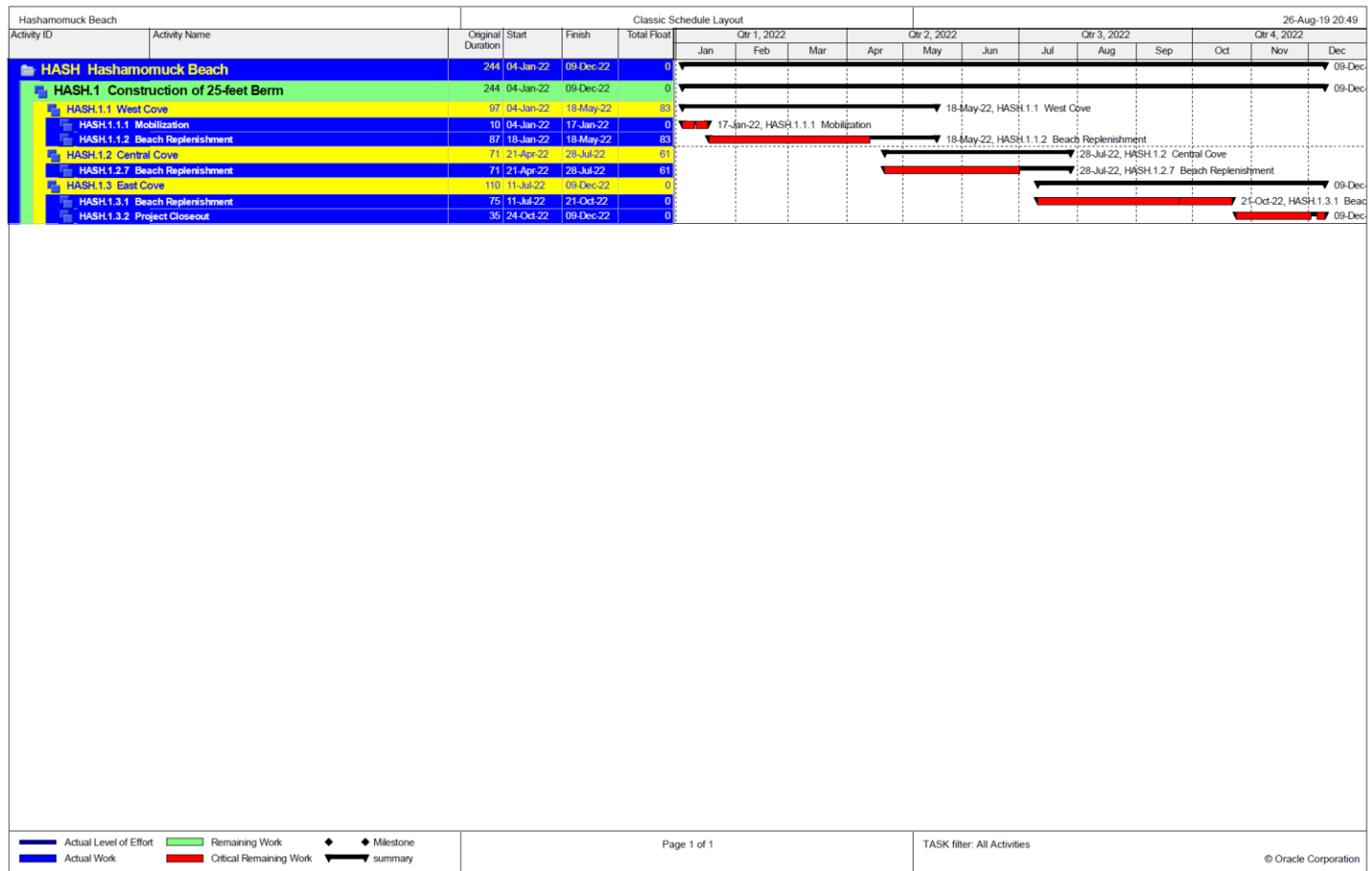
Feasibility Cost Estimate Summary							
Feat. Acct.	Description	Qty	UoM	Subtotal	Cont. %	Cont \$\$	Total Cost
<b>Alternative 2</b>							
01	Lands & Damages	1	LS	\$ 2,206,118	10.82%	\$ 238,739	\$ 2,444,857
	<b>Total Lands &amp; Damages</b>	<b>1</b>	<b>LS</b>	<b>\$ 2,206,118</b>	<b>10.82%</b>	<b>\$ 238,739</b>	<b>\$ 2,444,857</b>
17	<b>Beach Replenishment</b>						
	Beach Replenishment	1	LS	\$ 10,556,556	18.40%	\$ 1,942,263	\$ 12,498,819
	<b>Total Beach Replenishment</b>	<b>1</b>	<b>LS</b>	<b>\$ 10,556,556</b>	<b>18.40%</b>	<b>\$ 1,942,263</b>	<b>\$ 12,498,819</b>
30	Planning, Engineering, and Design	1	LS	\$ 1,244,525	13.31%	\$ 165,702	\$ 1,410,226
31	Construction Management	1	LS	\$ 897,307	12.95%	\$ 116,239	\$ 1,013,546
	<b>Total Alternative 2</b>			<b>\$ 14,904,506</b>		<b>\$ 2,462,942</b>	<b>\$ 17,367,000</b>

## BASIS OF COST

The construction cost estimate was developed in MCACES, Second Generation (MII) using the appropriate Work Breakdown Structure (WBS) and based on current estimated quantities developed using the Beach-FX analysis model by the Coastal Engineers. TSP quantities for initial placement and renourishment were taken only from the Beach-FX output base on the 2014 survey. As part of optimization, a newer and more accurate version of Beach-FX has been used, including recalibrating the model. These quantities were independently analyzed and provided by the Coastal Engineer. Different sea level rise impact were considered. For high level sea rise, the loss of beach width is more prevalent over time and such requires higher nourishment quantities and thus higher cost. Impacts to plan selection were also considered, and extensive consideration of both a 25-ft and 50-ft berm are detailed in the main report. The cost estimate was developed from the current optimized quantities using cost resources such as RSMeans, historical data from similar construction features, and MII Cost Libraries. Since the project cost for the initial placement is under

\$40M and the project cost for each renourishment event is also under \$40M, Abbreviated Risk Analysis (ARA) tool provided by the Cost MCX was used to develop the project contingencies. These contingencies were applied to the construction cost estimates to develop the Total Project First Cost. The construction duration for the initial placement was estimated at 11 months, as shown in Figure E1 below. The construction schedule assumes the delivery of sand at the rate of 8 trucks per hour starting from the west cove moving onto the central cove and finish in the east cove.

**Figure E1 – Construction Schedule**



## CONTINGENCIES

As stated in ER 1110-2-1302, the goal in contingency development is to identify the uncertainty associated with an item of work or task to an acceptable degree of confidence. Consideration must be given to the detail available at each stage of planning, design, or construction for which a cost estimate is being prepared. Contingency may vary throughout the cost estimate and could constitute a significant portion of the overall costs when data or design details are unavailable. Final contingency development and assessment of the potential for cost growth is included in this cost estimate. To develop the Total Project First Cost, contingencies developed in the ARA were applied to the initial placement and the renourishment cost along with the Real Estate contingency provided by “Exhibit D – Baseline Cost Estimate for Real Estate” of the Real Estate Appendix. Exhibit D of the Real Estate Appendix shows a total incidental

plus acquisition cost of \$2.2M and with contingency, a total cost of \$2.4M which is about 10.82% in contingency. The construction cost contingency for the Hashamomuck Cove is shown in Table E2 below.

**Table E2 – Contingencies**

<b>Element</b>	<b>Contingency Factor</b>
Beach Replenishment – Initial Placement	18.40%
Beach Replenishment - Renourishment	13.62%
Lands & Damages	10.82%
Planning, Engineering, and Design	13.31%
Construction Management	12.95%

### **LANDS AND DAMAGES**

To construct the proposed plan, local stakeholders are required to provide certain lands and easements. Studies were conducted by the Real Estate Division to determine the estimated value of lands and easements needed for the construction of the 25 feet berm.

### **PLANNING, ENGINEERING AND DESIGN**

The cost was developed for all activities associated with the planning, engineering and design effort. The cost for this account includes the preparation of Design Documentation Reports, plans, and specifications for the Hashamomuck Cove project and engineering support during construction through project completion. It includes all the in-house labor based upon work-hour requirements, material and facility costs, travel, and overhead. The percentage breakdown in the Total Project Cost Summary (TPCS), as shown in Figure E2 on page E5, was developed based on input from respective offices in accordance with the CWBS.

### **CONSTRUCTION MANAGEMENT**

The cost was developed for all construction management activities from pre-award requirements through final contract closeout. This cost includes the in-house labor based upon work-hour requirements, materials, facility costs, support contracts, travel and overhead. The cost was developed based on the input from the construction division in accordance with the Civil Works Breakdown Structure (CWBS) and includes, but is not limited to, anticipated items such as the salaries of the resident engineer and staff, surveyors, inspectors, drafters, clerical, and custodial personnel; operation, maintenance and fixed charges for transportation and for other field equipment; field supplies; construction management, general construction supervision; and project office administration, distributive cost of area office and general overhead charged to the project.

## INTEREST DURING CONSTRUCTION

Interest during construction (IDC) is the amount of interest the construction cost would earn were it invested from the beginning of construction until the accumulation of benefits begins. IDC cost has been added to the project cost to determine investment cost. Average annual cost was determined based on investment cost, which includes IDC. The pre-base year costs were estimated using the Federal interest rate of 2.875 percent (FY19).

## ESTIMATED ANNUAL COST

Annual costs are based on an economic period of analysis of 50 years and an interest rate of 2.875%. The annual costs include the annualized investment cost along with periodic renourishment every 5 years, coastal monitoring for piping plover and berm maintenance. A detailed breakdown of annual costs for the Hashamomuck Cove is presented in Table E3 below.

**Table E3 – Annualized Cost**

Total First Cost	\$	17,367,449
Interest During Construction	\$	206,814
<b>Total Investment Cost:</b>	<b>\$</b>	<b>17,574,262</b>
<b>Annual Costs</b>		
Annualized Investment Cost (a)	\$	666,910
Annualized Beach Nourishment Cost (b)	\$	956,000
Annualized Monitoring Cost (c)	\$	4,000
Berm Maintenance (d)	\$	11,754
<b>TOTAL ANNUAL COST:</b>	<b>\$</b>	<b>1,638,664</b>
	<b>ROUNDED:</b>	<b>\$ 1,638,700</b>

Notes:

\* OCT 2018 PL

a.  $i = 0.02875$        $n = 50$  yrs

b. From Annualized Renourishment Table

c. Coastal Monitoring and Environmental for piping plover

d. Based on 2 equipment operators to move sand around 6 times a year with 2 each 140 hp dozer

## COST SUMMARY

The Total Fully Funded Project cost is \$142,264,600, rounded to the nearest thousand and includes the initial first cost for construction, along with the land & damages, design (E&D), supervision and administration (S&A) associated cost. In addition, the escalation to midpoint of construction and the continuing construction costs which include the beach nourishment (which occurs once every 5 years), berm maintenance and coastal monitoring for piping plover. These costs include the S&A and E&D associated with them and the midpoint of construction for each nourishment year. The initial cost will be cost shared 65% federal and 35% non-federal. The nourishment costs will be cost shared 50% federal and 50% non-federal. The estimated total fully funded project cost for both the initial placement and the nourishment can be found on Figure E2 on page E5.

## Figure E2 – Total Project Cost Summary for Initial Placement and Renourishment

PROJECT: Hashamomuck Coastal Storm Risk Management Feasibility Study  
 PROJECT NO: P2 403349  
 LOCATION: Southold, NY

DISTRICT: NAN New York  
 POC: CHIEF, COST ENGINEERING, Mukesh Kumar  
 PREPARED: 12/18/2018

This Estimate reflects the scope and schedule in report: Hashamomuck Feasibility Southold, NY

Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)					TOTAL PROJECT COST (FULLY FUNDED)					
WBS NUMBER A	Civil Works Feature & Sub-Feature Description B	COST (\$K) C	CNTG (\$K) D	CNTG (%) E	TOTAL (\$K) F	ESC (%) G	COST (\$K) H	CNTG (\$K) I	TOTAL (\$K) J	Program Year (Budget EC): Effective Price Level Date: 2019 1 OCT 18		TOTAL FIRST COST (\$K) K	INFLATED (%) L	COST (\$K) M	CNTG (\$K) N	FULL (\$K) O
										Spent Thru: 1-Oct-18 (\$K)						
17	BEACH REPLENISHMENT	\$10,557	\$1,942	18.4%	\$12,499	0.0%	\$10,557	\$1,942	\$12,499		\$0	\$12,499	11.3%	\$11,754	\$2,163	\$13,916
CONSTRUCTION ESTIMATE TOTALS:		\$10,557	\$1,942		\$12,499	0.0%	\$10,557	\$1,942	\$12,499		\$0	\$12,499	11.3%	\$11,754	\$2,163	\$13,916
01	LANDS AND DAMAGES	\$2,206	\$239	10.8%	\$2,445	0.0%	\$2,206	\$239	\$2,445		\$0	\$2,445	9.7%	\$2,420	\$262	\$2,682
30	PLANNING, ENGINEERING & DESIGN	\$1,245	\$166	13.3%	\$1,410	0.0%	\$1,245	\$166	\$1,410		\$0	\$1,410	12.8%	\$1,404	\$187	\$1,591
31	CONSTRUCTION MANAGEMENT	\$897	\$116	13.0%	\$1,014	0.0%	\$897	\$116	\$1,014		\$0	\$1,014	14.7%	\$1,029	\$133	\$1,163
PROJECT COST TOTALS:		\$14,905	\$2,463	16.5%	\$17,367		\$14,905	\$2,463	\$17,367		\$0	\$17,367	11.4%	\$16,607	\$2,745	\$19,352
Renourishment Costs																
17	BEACH REPLENISHMENT	\$35,216	\$4,798	13.6%	\$40,014	0.0%	\$35,216	\$4,798	\$40,014		\$0	\$40,014	154.2%	\$89,507	\$12,194	\$101,701
CONSTRUCTION ESTIMATE TOTALS:		\$35,216	\$4,798		\$40,014		\$35,216	\$4,798	\$40,014		\$0	\$40,014	154.2%	\$89,507	\$12,194	\$101,701
30	E&D and S&A (Includes Monitoring) PLANNING, ENGINEERING & DESIGN	\$2,813	\$375	13.3%	\$3,187	0.0%	\$2,813	\$375	\$3,187		\$0	\$3,187	180.3%	\$7,886	\$1,050	\$8,936
31	CONSTRUCTION MANAGEMENT	\$2,989	\$389	13.0%	\$3,377	0.0%	\$2,989	\$389	\$3,377		\$0	\$3,377	263.5%	\$10,864	\$1,412	\$12,276
RENOURISHMENT COST TOTALS:		\$41,018	\$5,561		\$46,578		\$41,018	\$5,561	\$46,578		\$0	\$46,578		\$108,256	\$13,607	\$122,913

CHIEF, COST ENGINEERING, Mukesh Kumar

ESTIMATED TOTAL PROJECT COST: \$19,352

PROJECT MANAGER, Dan Falt

CHIEF, REAL ESTATE, xxx

ESTIMATED RENOURISHMENT TOTAL PROJECT COST: \$122,913

PROJECT: Hashamomuck Coastal Storm Risk Management Feasibility Study  
 LOCATION: Southold, NY  
 This Estimate reflects the scope and schedule in report: Hashamomuck Feasibility Southold, NY

DISTRICT: NAN New York  
 POC: CHIEF, COST ENGINEERING, Mukesh Kumar  
 PREPARED: 12/18/2018

Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)				TOTAL PROJECT COST (FULLY FUNDED)				
WBS NUMBER A	Civil Works Feature & Sub-Feature Description B	COST (\$K) C	CNTG (\$K) D	CNTG (%) E	TOTAL (\$K) F	ESC (%) G	COST (\$K) H	CNTG (\$K) I	TOTAL (\$K) J	Estimate Prepared: 18-Dec-18 Effective Price Level: 1-Oct-18 Program Year (Budget EC): 2019 Effective Price Level Date: 1 OCT 18 Mid-Point Date P INFLATED (%) L COST (\$K) M CNTG (\$K) N FULL (\$K) O				
17	PHASE 1 or CONTRACT 1 BEACH REPLENISHMENT	\$10,557	\$1,942	18.4%	\$12,499	0.0%	\$10,557	\$1,942	\$12,499	2022Q4	11.3%	\$11,754	\$2,163	\$13,916
CONSTRUCTION ESTIMATE TOTALS:		\$10,557	\$1,942	18.4%	\$12,499		\$10,557	\$1,942	\$12,499			\$11,754	\$2,163	\$13,916
01	LANDS AND DAMAGES	\$2,206	\$239	10.8%	\$2,445	0.0%	\$2,206	\$239	\$2,445	2022Q2	9.7%	\$2,420	\$262	\$2,682
30	PLANNING, ENGINEERING & DESIGN													
0.5%	Project Management	\$53	\$7	13.3%	\$60	0.0%	\$53	\$7	\$60	2022Q2	12.6%	\$59	\$8	\$67
0.5%	Planning & Environmental Compliance	\$53	\$7	13.3%	\$60	0.0%	\$53	\$7	\$60	2022Q2	12.6%	\$59	\$8	\$67
4.0%	Engineering & Design	\$422	\$56	13.3%	\$478	0.0%	\$422	\$56	\$478	2022Q2	12.6%	\$475	\$63	\$539
0.5%	Reviews, ATRs, IEPs, VE	\$53	\$7	13.3%	\$60	0.0%	\$53	\$7	\$60	2022Q2	12.6%	\$59	\$8	\$67
0.3%	Life Cycle Updates (cost, schedule, risks)	\$26	\$4	13.3%	\$30	0.0%	\$26	\$4	\$30	2022Q2	12.6%	\$30	\$4	\$34
1.0%	Contracting & Reprographics	\$106	\$14	13.3%	\$120	0.0%	\$106	\$14	\$120	2022Q2	12.6%	\$119	\$16	\$135
1.0%	Engineering During Construction	\$106	\$14	13.3%	\$120	0.0%	\$106	\$14	\$120	2022Q4	14.7%	\$121	\$16	\$137
0.3%	Planning During Construction	\$26	\$4	13.3%	\$30	0.0%	\$26	\$4	\$30	2022Q4	14.7%	\$30	\$4	\$34
0.0%	Adaptive Management & Monitoring	\$400	\$53	13.3%	\$453	0.0%	\$400	\$53	\$453	2022Q2	12.6%	\$450	\$60	\$510
0.0%	Project Operations	\$0	\$0	13.3%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
31	CONSTRUCTION MANAGEMENT													
7.5%	Construction Management	\$792	\$103	13.0%	\$894	0.0%	\$792	\$103	\$894	2022Q4	14.7%	\$908	\$118	\$1,026
0.0%	Project Operation:	\$0	\$0	13.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
1.0%	Project Management	\$106	\$14	13.0%	\$119	0.0%	\$106	\$14	\$119	2022Q4	14.7%	\$121	\$16	\$137
CONTRACT COST TOTALS:		\$14,905	\$2,463		\$17,367		\$14,905	\$2,463	\$17,367			\$16,607	\$2,745	\$19,352

PROJECT: Hashamomuck Coastal Storm Risk Management Feasibility Study  
LOCATION: Southold, NY  
This Estimate reflects the scope and schedule in report; Hashamomuck Feasibility Southold, NY

DISTRICT: NAN New York  
POC: CHIEF, COST ENGINEERING, Mukesh Kumar  
PREPARED: 12/18/2018

Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)				TOTAL PROJECT COST (FULLY FUNDED)				
		Estimate Prepared: 18-Dec-18 Effective Price Level: 1-Oct-18				Program Year (Budget EC): 2019 Effective Price Level Date: 1 OCT 18								
WBS NUMBER	Civil Works Feature & Sub-Feature Description	COST (\$K)	CNTG (\$K)	CNTG (%)	TOTAL (\$K)	ESC (%)	COST (\$K)	CNTG (\$K)	TOTAL (\$K)	Mid-Point Date	INFLATED (%)	COST (\$K)	CNTG (\$K)	FULL (\$K)
A	B	C	D	E	F	G	H	I	J	P	L	M	N	O
<b>PHASE 2 or CONTRACT 2</b>														
17	BEACH REPLENISHMENT	\$3,912	\$533	13.6%	\$4,445	0.0%	\$3,912	\$533	\$4,445	2028Q2	31.0%	\$5,124	\$698	\$5,822
17	BEACH REPLENISHMENT	\$3,912	\$533	13.6%	\$4,445	0.0%	\$3,912	\$533	\$4,445	2033Q2	51.8%	\$5,940	\$809	\$6,750
17	BEACH REPLENISHMENT	\$3,913	\$533	13.6%	\$4,446	0.0%	\$3,913	\$533	\$4,446	2038Q2	76.0%	\$6,887	\$938	\$7,825
17	BEACH REPLENISHMENT	\$3,913	\$533	13.6%	\$4,446	0.0%	\$3,913	\$533	\$4,446	2043Q2	104.1%	\$7,984	\$1,088	\$9,072
17	BEACH REPLENISHMENT	\$3,913	\$533	13.6%	\$4,446	0.0%	\$3,913	\$533	\$4,446	2048Q2	136.6%	\$9,256	\$1,261	\$10,517
17	BEACH REPLENISHMENT	\$3,913	\$533	13.6%	\$4,446	0.0%	\$3,913	\$533	\$4,446	2053Q2	174.2%	\$10,731	\$1,462	\$12,193
17	BEACH REPLENISHMENT	\$3,913	\$533	13.6%	\$4,446	0.0%	\$3,913	\$533	\$4,446	2058Q2	217.9%	\$12,441	\$1,695	\$14,136
17	BEACH REPLENISHMENT	\$3,913	\$533	13.6%	\$4,447	0.0%	\$3,913	\$533	\$4,447	2063Q2	268.5%	\$14,423	\$1,965	\$16,388
17	BEACH REPLENISHMENT	\$3,914	\$533	13.6%	\$4,447	0.0%	\$3,914	\$533	\$4,447	2068Q2	327.2%	\$16,721	\$2,278	\$18,999
<b>CONSTRUCTION ESTIMATE TOTALS:</b>		\$35,216	\$4,798	13.6%	\$40,014		\$35,216	\$4,798	\$40,014			\$89,507	\$12,194	\$101,701
PLANNING, ENGINEERING & DESIGN		\$313	\$42	13.3%	\$354	0.0%	\$313	\$42	\$354	2028Q2	41.1%	\$441	\$59	\$500
PLANNING, ENGINEERING & DESIGN		\$313	\$42	13.3%	\$354	0.0%	\$313	\$42	\$354	2033Q2	41.1%	\$441	\$59	\$500
PLANNING, ENGINEERING & DESIGN		\$313	\$42	13.3%	\$354	0.0%	\$313	\$42	\$354	2038Q2	41.1%	\$441	\$59	\$500
PLANNING, ENGINEERING & DESIGN		\$313	\$42	13.3%	\$354	0.0%	\$313	\$42	\$354	2043Q2	41.1%	\$441	\$59	\$500
PLANNING, ENGINEERING & DESIGN		\$313	\$42	13.3%	\$354	0.0%	\$313	\$42	\$354	2048Q2	41.1%	\$441	\$59	\$500
PLANNING, ENGINEERING & DESIGN		\$313	\$42	13.3%	\$354	0.0%	\$313	\$42	\$354	2053Q2	41.1%	\$441	\$59	\$500
PLANNING, ENGINEERING & DESIGN		\$313	\$42	13.3%	\$354	0.0%	\$313	\$42	\$354	2058Q2	377.8%	\$1,493	\$199	\$1,692
PLANNING, ENGINEERING & DESIGN		\$313	\$42	13.3%	\$354	0.0%	\$313	\$42	\$354	2063Q2	377.8%	\$1,493	\$199	\$1,692
PLANNING, ENGINEERING & DESIGN		\$313	\$42	13.3%	\$354	0.0%	\$313	\$42	\$354	2068Q2	621.0%	\$2,253	\$300	\$2,553
31 CONSTRUCTION MANAGEMENT		\$332	\$43	13.0%	\$375	0.0%	\$332	\$43	\$375	2028Q2	41.1%	\$469	\$61	\$529
CONSTRUCTION MANAGEMENT		\$332	\$43	13.0%	\$375	0.0%	\$332	\$43	\$375	2033Q2	71.5%	\$569	\$74	\$643
CONSTRUCTION MANAGEMENT		\$332	\$43	13.0%	\$375	0.0%	\$332	\$43	\$375	2038Q2	109.8%	\$697	\$91	\$787
CONSTRUCTION MANAGEMENT		\$332	\$43	13.0%	\$375	0.0%	\$332	\$43	\$375	2043Q2	157.8%	\$856	\$111	\$967
CONSTRUCTION MANAGEMENT		\$332	\$43	13.0%	\$375	0.0%	\$332	\$43	\$375	2048Q2	216.6%	\$1,052	\$137	\$1,188
CONSTRUCTION MANAGEMENT		\$332	\$43	13.0%	\$375	0.0%	\$332	\$43	\$375	2053Q2	289.0%	\$1,292	\$168	\$1,460
CONSTRUCTION MANAGEMENT		\$332	\$43	13.0%	\$375	0.0%	\$332	\$43	\$375	2058Q2	377.8%	\$1,587	\$206	\$1,793
CONSTRUCTION MANAGEMENT		\$332	\$43	13.0%	\$375	0.0%	\$332	\$43	\$375	2063Q2	486.9%	\$1,949	\$253	\$2,202
CONSTRUCTION MANAGEMENT		\$332	\$43	13.0%	\$375	0.0%	\$332	\$43	\$375	2068Q2	621.0%	\$2,394	\$311	\$2,705
<b>CONTRACT COST TOTALS:</b>		\$41,018	\$5,561		\$46,578		\$41,018	\$5,561	\$46,578			\$108,256	\$14,657	\$122,913



**Figure E3 – Abbreviated Risk Analysis for Initial Placement**

**Abbreviated Risk Analysis**

Project (less than \$40M): **Hashamomuck Coastal Risk Management**  
 Project Development Stage/Alternative: **Feasibility (Recommended Plan)**  
 Risk Category: **Low Risk: Typical Construction, Simple**

Alternative: **NAN - NYD**

Meeting Date: **12/19/2018**

Total Estimated Construction Contract Cost = **\$ 45,772,562**

	CWWBS	Feature of Work	Estimated Cost	% Contingency	\$ Contingency	Total
	01 LANDS AND DAMAGES	Real Estate	\$ -	0%	\$ -	\$ -
1	17 BEACH REPLENISHMENT	25-ft Berm	\$ 10,556,566	18%	\$ 1,942,263	\$ 12,498,819
2	17 BEACH REPLENISHMENT	Renourishment	\$ 35,216,005	14%	\$ 4,797,793	\$ 40,013,798
3			\$ -	0%	\$ -	\$ -
4			\$ -	0%	\$ -	\$ -
5			\$ -	0%	\$ -	\$ -
6			\$ -	0%	\$ -	\$ -
7			\$ -	0%	\$ -	\$ -
8			\$ -	0%	\$ -	\$ -
9			\$ -	0%	\$ -	\$ -
10			\$ -	0%	\$ -	\$ -
11			\$ -	0%	\$ -	\$ -
12	All Other	Remaining Construction Items	\$ -	0.0%	\$ -	\$ -
13	30 PLANNING, ENGINEERING, AND DESIGN	Planning, Engineering, & Design	\$ 3,661,805	13%	\$ 487,549	\$ 4,149,354
14	31 CONSTRUCTION MANAGEMENT	Construction Management	\$ 3,890,668	13%	\$ 504,004	\$ 4,394,672
XX	FIXED DOLLAR RISK ADD (EQUALLY DISPERSED TO ALL, MUST INCLUDE JUSTIFICATION SEE BELOW)				\$ -	\$ -

Totals					
	Real Estate	\$ -	0%	\$ -	\$ -
	Total Construction Estimate	\$ 45,772,562	15%	\$ 6,740,056	\$ 52,512,617
	Total Planning, Engineering & Design	\$ 3,661,805	13%	\$ 487,549	\$ 4,149,354
	Total Construction Management	\$ 3,890,668	13%	\$ 504,004	\$ 4,394,672
	Total Excluding Real Estate	\$ 53,325,034	14%	\$ 7,731,609	\$ 61,056,643

Confidence Level Range Estimate (\$000's)		Base	50%	80%
		\$53,325k	\$57,964k	\$61,057k

# Hashamomuck Coastal Risk Management NAN - NYD

Feasibility (Recommended Plan)

Abbreviated Risk Analysis

Meeting Date: 19-Dec-18

Risk Level				
Very Likely	2	3	4	5
Likely	1	2	3	4
Possible	0	1	2	3
Unlikely	0	0	1	2
	Negligible	Marginal	Moderate	Significant

## Risk Register

Risk Element	Feature of Work	Concerns	PDT Discussions & Conclusions (Include logic & justification for choice of Likelihood & Impact)	Impact	Likelihood	Risk Level
<b>Project Management &amp; Scope Growth</b>					Maximum Project Growth	<b>40%</b>
PS-1	25-ft Berm	Potential for scope growth, added features and quantities.	There's no possibility of berms being longer because it is limited by the size of the cove. The factor for the width and the length is well known and we have confidence in the design and scope.	Negligible	Unlikely	0
PS-2	Renourishment	Potential for scope growth, added features and quantities. Investigations sufficient to support design assumptions	Scope of the renourishment is defined and it is based on historical and modelling results.	Negligible	Unlikely	0
PS-3	0			Negligible	Unlikely	0
PS-4	0			Negligible	Unlikely	0
PS-5	0			Negligible	Unlikely	0
PS-6	0			Negligible	Unlikely	0
PS-7	0			Negligible	Unlikely	0
PS-8	0			Negligible	Unlikely	0
PS-9	0			Negligible	Unlikely	0
PS-10	0			Negligible	Unlikely	0
PS-11	0			Negligible	Unlikely	0
PS-12	Remaining Construction Items			Negligible	Unlikely	0
PS-13	Planning, Engineering, & Design	N/A	Straight forward, typical coastal project that USACE have a lot of experience on. Therefore, no concerns are foreseen.	Negligible	Unlikely	0
PS-14	Construction Management	N/A	Straight forward, typical coastal project that USACE have a lot of experience on. Therefore, no concerns are foreseen.	Negligible	Unlikely	0
<b>Acquisition Strategy</b>					Maximum Project Growth	<b>30%</b>

CE-3	0			Negligible	Unlikely	0
CE-4	0			Negligible	Unlikely	0
CE-5	0			Negligible	Unlikely	0
CE-6	0			Negligible	Unlikely	0
CE-7	0			Negligible	Unlikely	0
CE-8	0			Negligible	Unlikely	0
CE-9	0			Negligible	Unlikely	0
CE-10	0			Negligible	Unlikely	0
CE-11	0			Negligible	Unlikely	0
CE-12	Remaining Construction Items			Negligible	Unlikely	0
CE-13	Planning, Engineering, & Design	Potential for construction modification and claims.	If's a known construction. The corps have a lot of expereince and therefore, a reasonable amount of cost allocated to consider for the potential modification and claims.	Negligible	Unlikely	0
CE-14	Construction Management	Accelerate schedule or harsh weather schedule. Potential for construction modificationand claims.	Construction modification and claims and unforeseen weather condition is typical on a project.	Marginal	Likely	2
<b>Specialty Construction or Fabrication</b>					<b>Maximum Project Growth</b>	<b>50%</b>
SC-1	25-ft Berm	N/A	N/A	Negligible	Unlikely	0
SC-2	Renourishment	N/A	N/A	Negligible	Unlikely	0
SC-3	0			Negligible	Unlikely	0
SC-4	0			Negligible	Unlikely	0
SC-5	0			Negligible	Unlikely	0
SC-6	0			Negligible	Unlikely	0
SC-7	0			Negligible	Unlikely	0
SC-8	0			Negligible	Unlikely	0

CE-3	0			Negligible	Unlikely	0
CE-4	0			Negligible	Unlikely	0
CE-5	0			Negligible	Unlikely	0
CE-6	0			Negligible	Unlikely	0
CE-7	0			Negligible	Unlikely	0
CE-8	0			Negligible	Unlikely	0
CE-9	0			Negligible	Unlikely	0
CE-10	0			Negligible	Unlikely	0
CE-11	0			Negligible	Unlikely	0
CE-12	Remaining Construction Items			Negligible	Unlikely	0
CE-13	Planning, Engineering, & Design	Potential for construction modification and claims.	It's a known construction. The corps have a lot of experience and therefore, a reasonable amount of cost allocated to consider for the potential modification and claims.	Negligible	Unlikely	0
CE-14	Construction Management	Accelerate schedule or harsh weather schedule. Potential for construction modification and claims.	Construction modification and claims and unforeseen weather condition is typical on a project.	Marginal	Likely	2
<b>Specialty Construction or Fabrication</b>				<b>Maximum Project Growth</b>		<b>50%</b>
SC-1	25-ft Berm	N/A	N/A	Negligible	Unlikely	0
SC-2	Renourishment	N/A	N/A	Negligible	Unlikely	0
SC-3	0			Negligible	Unlikely	0
SC-4	0			Negligible	Unlikely	0
SC-5	0			Negligible	Unlikely	0
SC-6	0			Negligible	Unlikely	0
SC-7	0			Negligible	Unlikely	0
SC-8	0			Negligible	Unlikely	0

SC-9	0			Negligible	Unlikely	0
SC-10	0			Negligible	Unlikely	0
SC-11	0			Negligible	Unlikely	0
SC-12	Remaining Construction Items			Negligible	Unlikely	0
SC-13	Planning, Engineering, & Design	N/A	N/A	Negligible	Unlikely	0
SC-14	Construction Management	N/A	N/A	Negligible	Unlikely	0
<b>Technical Design &amp; Quantities</b>				<b>Maximum Project Growth</b>		<b>20%</b>
T-1	25-ft Berm	Sufficient investigations to develop quantities. Level of confidence based on design and assumptions.	Additional work still needs to be done during PED on grain size. Conservative approach currently used in modeling so it is unlikely the quantity of sand will go up.	Marginal	Unlikely	0
T-2	Renourishment	Possibility for increased quantities due to loss, waste, or subsidence. Level of confidence based on design and assumptions. Appropriate methods applied to calculated quantities.	We don't anticipate changes in quantities base on historical and modelling data.	Marginal	Unlikely	0
T-3	0			Negligible	Unlikely	0
T-4	0			Negligible	Unlikely	0
T-5	0			Negligible	Unlikely	0
T-6	0			Negligible	Unlikely	0
T-7	0			Negligible	Unlikely	0
T-8	0			Negligible	Unlikely	0
T-9	0			Negligible	Unlikely	0
T-10	0			Negligible	Unlikely	0
T-11	0			Negligible	Unlikely	0
T-12	Remaining Construction Items			Negligible	Unlikely	0
T-13	Planning, Engineering, & Design	N/A	N/A	Negligible	Unlikely	0
T-14	Construction Management	N/A	N/A	Negligible	Unlikely	0

Cost Estimate Assumptions				Maximum Project Growth		25%
EST-1	25-ft Berm	Reliability and number of key quotes. Assumptions regarding crew productivity and overtime.	Standard cost estimate procedure are being used while developing the project cost. Vendor quote from local source obtained for material cost however sand cost (\$/cy) might go up by the time of the bid.	Marginal	Likely	2
EST-2	Renourishment	Sand cost (\$/cy) for future re-nourishment events.	Cost per cubic yard of sand is subject to change. Depending on where and when we obtain the sand as well as how the project is further developed down the road, the method of sand placement could either be via trucking, barge or dredging. Trucking is currently assumed for renourishment since it's the most cost effective at this point in time.	Marginal	Likely	2
EST-3	0			Negligible	Unlikely	0
EST-4	0			Negligible	Unlikely	0
EST-5	0			Negligible	Unlikely	0
EST-6	0			Negligible	Unlikely	0
EST-7	0			Negligible	Unlikely	0
EST-8	0			Negligible	Unlikely	0
EST-9	0			Negligible	Unlikely	0
EST-10	0			Negligible	Unlikely	0
EST-11	0			Negligible	Unlikely	0
EST-12	Remaining Construction Items			Negligible	Unlikely	0
EST-13	Planning, Engineering, & Design	N/A	N/A	Negligible	Unlikely	0
EST-14	Construction Management	N/A	N/A	Negligible	Unlikely	0
External Project Risks				Maximum Project Growth		20%
EX-1	25-ft Berm	Political influence, lack of support, obstacles. Act of God.	Very unlikely we would have external obstacles that would impact the project except that weather delays are normally a risk when constructing during winter months.	Marginal	Possible	1
EX-2	Renourishment	Political influence, lack of support, obstacles. Act of God.	Very unlikely we would have external obstacles that would impact the project. The weather delays will not be a concern since this renourishment happens every 5 years.	Negligible	Unlikely	0
EX-3	0			Negligible	Unlikely	0
EX-4	0			Negligible	Unlikely	0
EX-5	0			Negligible	Unlikely	0
EX-6	0			Negligible	Unlikely	0
EX-7	0			Negligible	Unlikely	0
EX-8	0			Negligible	Unlikely	0
EX-9	0			Negligible	Unlikely	0
EX-10	0			Negligible	Unlikely	0
EX-11	0			Negligible	Unlikely	0
EX-12	Remaining Construction Items			Negligible	Unlikely	0
EX-13	Planning, Engineering, & Design	Political influence, lack of support, obstacles.	Public access debate might delay the start of P&S and construction.	Marginal	Likely	2
EX-14	Construction Management	N/A	N/A	Negligible	Unlikely	0

## MII Reports

Print Date Fri 15 February 2019  
Eff. Date 10/1/2017

U.S. Army Corps of Engineers  
Project LI, NY: Hashamomuck  
Hashamomuck Cove

Time 18:19:43  
Project Cost Page 1

<u>Description</u>	<u>Quantity</u>	<u>UOM</u>	<u>ProjectCost</u>
<b>Project Cost</b>			<b>10,556,556.35</b>
<b>25-feet berm</b>	1.0000	EA	<b>10,556,556.35</b>
<b>Beach Renourishment - Trucking</b>	215,600.0000	CY	<b>10,556,556.35</b>



## DQC Comments

# Hashamomuck Coastal Storm Risk Management Feasibility Study

## CEB Internal Review

May 2018

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Update the MII estimate using version 4.3 MII software

**Concurred. MII estimate has been updated using version 4.3 MII software**

Change the effective pricing date on MII to October 2017

**Concurred. Effective pricing date on MII has been changed to October 2018**

Change the Estimated Duration on MII to match the duration show on P6

**Concurred. Estimated duration on MII has been changed to match the duration show on P6**

Delete the zero cost folder on MII

**Concurred. The zero cost folders have been deleted.**

Mobilization and Demobilization: Please break out this cost into detail, i.e. equipment & laborers. The current LS cost is not sufficient.

**Concurred. Done**

Update the TPCS using the September 2017 version

(<http://www.nwww.usace.army.mil/Missions/Cost-Engineering/>)

**Concurred. TPCS has been updated using the September 2017 version**

Type in the Scope of Work on the MII project property note section as well as the productivity factor (80%) used

**Concurred. Done**

Update the cost appendix to reflect these changes.

**Concurred. Done**