

APPENDIX F
OPINION OF PROBABLE COST

OPINION OF PROBABLE COST

DATE PREPARED 12/06/11

SHEET 1 OF 1

ACTIVITY AND LOCATION Willoughby Spit Norfolk, Virginia	CONSTRUCTION CONTRACT NO.	IDENTIFICATION NUMBER
PROJECT TITLE Willoughby Spit Study - Alternative #1 Remove Existing Groins/Improve Terminal Groin	ESTIMATED BY Moffatt & Nichol	CATEGORY CODE NUMBER
	STATUS OF DESIGN Opinion of Probable Cost Alternative #1	JOB ORDER NUMBER 6998-10

ITEM DESCRIPTION	QUANTITY		MATERIAL COST		LABOR COST		ENGINEERING ESTIMATE	
	NUMBER	UNIT	UNIT COST	TOTAL	UNIT COST	TOTAL	UNIT COST	TOTAL
REMOVE EXISTING GROINS								
Removal of Groins	7	EA	\$5,000.00	\$35,000.00	\$30,000.00	\$210,000.00	\$35,000.00	\$245,000.00
IMPROVE TERMINAL GROIN								
Improve Terminal Groin	500	LF	\$250.00	\$125,000.00	\$250.00	\$125,000.00	\$500.00	\$250,000.00
							SUBTOTAL	\$495,000.00
PROJECT SUBTOTAL								\$495,000.00
Contingency		20%						\$99,000.00
Design/P&S/Construction Admin		12%						\$59,400.00
							GRAND TOTAL	\$653,400.00
							INITIAL CONSTRUCTION	\$660,000
O&M								
Assume Nourishment Every 0 Years		3%						\$0.00
							30-YR TOTAL COST (PRESENT WORTH)	\$660,000

OPINION OF PROBABLE COST	DATE PREPARED 12/06/11	SHEET 1 OF 1
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ACTIVITY AND LOCATION Willoughby Spit Norfolk, Virginia	CONSTRUCTION CONTRACT NO.	IDENTIFICATION NUMBER
	ESTIMATED BY Moffatt & Nichol	CATEGORY CODE NUMBER
PROJECT TITLE AND DESCRIPTION Willoughby Spit Study - Alternative #2 Remove Offshore Groins/Improve Terminal Groin/Beach Nourishment	STATUS OF DESIGN Opinion of Probable Cost Alternative #2	JOB ORDER NUMBER 6998-10

ITEM DESCRIPTION	QUANTITY		MATERIAL COST		LABOR COST		ENGINEERING ESTIMATE	
	NUMBER	UNIT	UNIT COST	TOTAL	UNIT COST	TOTAL	UNIT COST	TOTAL
GROIN REMOVAL								
Removal of Offshore Groins	7	EA	\$5,000.00	\$35,000.00	\$30,000.00	\$210,000.00	\$35,000.00	\$245,000.00
IMPROVE TERMINAL GROIN								
Improve Terminal Groin	500	LF	\$250.00	\$125,000.00	\$250.00	\$125,000.00	\$500.00	\$250,000.00
BEACH NOURISHMENT								
Beach Nourishment	45,000	CY	\$7.00	\$315,000.00	\$8.00	\$360,000.00	\$15.00	\$675,000.00
SUBTOTAL								\$1,170,000.00

PROJECT SUBTOTAL								\$1,170,000.00
Contingency	20%							\$234,000.00
Design/P&S/Construction Admin	12%							\$140,400.00
GRAND TOTAL								\$1,544,400.00

INITIAL CONSTRUCTION	\$1,550,000
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Nourishment Yr 4	\$599,729
Nourishment Yr 8	\$532,851
Nourishment Yr 12	\$473,431
Nourishment Yr 16	\$420,638
Nourishment Yr 20	\$373,731
Nourishment Yr 24	\$332,055
Nourishment Yr 28	\$295,027
Nourishment Yr 32	\$262,127

O&M								
Assume Nourishment Every 4 Years	3%							
O&M Present Value								\$3,289,590

30-YR TOTAL COST (PRESENT WORTH)	\$4,840,000
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OPINION OF PROBABLE COST				DATE PREPARED 12/06/11		SHEET 1 OF 1		
ACTIVITY AND LOCATION Willoughby Spit Norfolk, Virginia			CONSTRUCTION CONTRACT NO.			IDENTIFICATION NUMBER		
PROJECT TITLE AND DESCRIPTION Willoughby Spit Study - Alternative #3 Remove Existing Groins/Improve Terminal Groin/Beach Nourishment/3 Breakwaters			ESTIMATED BY Moffatt & Nichol			CATEGORY CODE NUMBER		
			STATUS OF DESIGN Opinion of Probable Cost Alternative #3			JOB ORDER NUMBER 6998-10		
ITEM DESCRIPTION	QUANTITY		MATERIAL COST		LABOR COST		ENGINEERING ESTIMATE	
	NUMBER	UNIT	UNIT COST	TOTAL	UNIT COST	TOTAL	UNIT COST	TOTAL
GROIN REMOVAL								
Removal of Groins	7	EA	\$5,000.00	\$35,000.00	\$30,000.00	\$210,000.00	\$35,000.00	\$245,000.00
IMPROVE TERMINAL GROIN								
Improve Terminal Groin	500	LF	\$250.00	\$125,000.00	\$250.00	\$125,000.00	\$500.00	\$250,000.00
BEACH NOURISHMENT								
Beach Nourishment	45,000	CY	\$7.00	\$315,000.00	\$8.00	\$360,000.00	\$15.00	\$675,000.00
BREAKWATERS								
Breakwaters	360	LF	\$1,250.00	\$450,000.00	\$250.00	\$90,000.00	\$1,500.00	\$540,000.00
SUBTOTAL								\$1,710,000.00
PROJECT SUBTOTAL								
Contingency	20%							\$342,000.00
Design/P&S/Construction Admin	12%							\$205,200.00
GRAND TOTAL								\$2,257,200.00
INITIAL CONSTRUCTION								\$2,260,000
Nourishment Yr 8								\$532,851
Nourishment Yr 16								\$420,638
Nourishment Yr 24								\$332,055
Nourishment Yr 32								\$262,127
O&M								
Assume Nourishment Every 8 Years	3%							O&M Present Value \$1,547,672
30-YR TOTAL COST (PRESENT WORTH)								\$3,810,000

OPINION OF PROBABLE COST					DATE PREPARED 12/06/11		SHEET 1 OF 1	
ACTIVITY AND LOCATION Willoughby Spit Norfolk, Virginia			CONSTRUCTION CONTRACT NO.			IDENTIFICATION NUMBER		
PROJECT TITLE AND DESCRIPTION Willoughby Spit Study - Alternative #4a Improve Terminal Groin/Beach Nourishment/3 Breakwaters/Remove 3 Existing Groins			ESTIMATED BY Moffatt & Nichol			CATEGORY CODE NUMBER		
			STATUS OF DESIGN Opinion of Probable Cost Alternative #4a			JOB ORDER NUMBER 6998-10		
ITEM DESCRIPTION	QUANTITY		MATERIAL COST		LABOR COST		ENGINEERING ESTIMATE	
	NUMBER	UNIT	UNIT COST	TOTAL	UNIT COST	TOTAL	UNIT COST	TOTAL
GROIN REMOVAL								
Removal of Groins	3	EA	\$5,000.00	\$15,000.00	\$30,000.00	\$90,000.00	\$35,000.00	\$105,000.00
IMPROVE TERMINAL GROIN								
Improve Terminal Groin	500	LF	\$250.00	\$125,000.00	\$250.00	\$125,000.00	\$500.00	\$250,000.00
BEACH NOURISHMENT								
Beach Nourishment	45,000	CY	\$7.00	\$315,000.00	\$8.00	\$360,000.00	\$15.00	\$675,000.00
BREAKWATERS								
Breakwaters	360	LF	\$1,250.00	\$450,000.00	\$250.00	\$90,000.00	\$1,500.00	\$540,000.00
SUBTOTAL								\$1,570,000.00
PROJECT SUBTOTAL								
Contingency	20%							\$314,000.00
Design/P&S/Construction Admin	12%							\$188,400.00
GRAND TOTAL								\$2,072,400.00
INITIAL CONSTRUCTION								\$2,080,000
Nourishment Yr 8								\$532,851
Nourishment Yr 16								\$420,638
Nourishment Yr 24								\$332,055
Nourishment Yr 32								\$262,127
O&M								
Assume Nourishment Every 8 Years	3%							O&M Present Value \$1,547,672
30-YR TOTAL COST (PRESENT WORTH)								\$3,630,000

OPINION OF PROBABLE COST					DATE PREPARED	12/06/11		SHEET	1 OF 1			
ACTIVITY AND LOCATION Willoughby Spit Norfolk, Virginia			CONSTRUCTION CONTRACT NO.				IDENTIFICATION NUMBER					
PROJECT TITLE AND DESCRIPTION Willoughby Spit Study - Alternative #4b Improve Terminal Groin/Beach Nourishment/4 Breakwaters/Remove 4 Existing Groins			ESTIMATED BY Moffatt & Nichol				CATEGORY CODE NUMBER					
			STATUS OF DESIGN Opinion of Probable Cost Alternative #4b				JOB ORDER NUMBER 6998-10					
ITEM DESCRIPTION	QUANTITY		MATERIAL COST		LABOR COST		ENGINEERING ESTIMATE					
	NUMBER	UNIT	UNIT COST	TOTAL	UNIT COST	TOTAL	UNIT COST	TOTAL				
GROIN REMOVAL												
Removal of Groins	4	EA	\$5,000.00	\$20,000.00	\$30,000.00	\$120,000.00	\$35,000.00	\$140,000.00				
IMPROVE TERMINAL GROIN												
Improve Terminal Groin	500	LF	\$250.00	\$125,000.00	\$250.00	\$125,000.00	\$500.00	\$250,000.00				
BEACH NOURISHMENT												
Beach Nourishment	45,000	CY	\$7.00	\$315,000.00	\$8.00	\$360,000.00	\$15.00	\$675,000.00				
BREAKWATERS												
Breakwaters	480	LF	\$1,250.00	\$600,000.00	\$250.00	\$120,000.00	\$1,500.00	\$720,000.00				
								SUBTOTAL		\$1,785,000.00		
PROJECT SUBTOTAL												
Contingency	20%										\$357,000.00	
Design/P&S/Construction Admin	12%										\$214,200.00	
								GRAND TOTAL		\$2,356,200.00		
										INITIAL CONSTRUCTION		\$2,360,000
										Nourishment Yr 8	\$532,851	
										Nourishment Yr 16	\$420,638	
										Nourishment Yr 24	\$332,055	
										Nourishment Yr 32	\$262,127	
O&M												
Assume Nourishment Every 8 Years	3%										O&M Present Value	\$1,547,672
										30-YR TOTAL COST (PRESENT WORTH)		\$3,910,000

OPINION OF PROBABLE COST				DATE PREPARED 12/06/11		SHEET 1 OF 1		
ACTIVITY AND LOCATION Willoughby Spit Norfolk, Virginia			CONSTRUCTION CONTRACT NO.			IDENTIFICATION NUMBER		
PROJECT TITLE AND DESCRIPTION Willoughby Spit Study - Alternative #4c Improve Terminal Groin/Beach Nourishment/5 Breakwaters/Remove 5 Existing Groins			ESTIMATED BY Moffatt & Nichol			CATEGORY CODE NUMBER		
			STATUS OF DESIGN Opinion of Probable Cost Alternative #4c			JOB ORDER NUMBER 6998-10		
ITEM DESCRIPTION	QUANTITY		MATERIAL COST		LABOR COST		ENGINEERING ESTIMATE	
	NUMBER	UNIT	UNIT COST	TOTAL	UNIT COST	TOTAL	UNIT COST	TOTAL
GROIN REMOVAL								
Removal of Groins	5	EA	\$5,000.00	\$25,000.00	\$30,000.00	\$150,000.00	\$35,000.00	\$175,000.00
IMPROVE TERMINAL GROIN								
Improve Terminal Groin	500	LF	\$250.00	\$125,000.00	\$250.00	\$125,000.00	\$500.00	\$250,000.00
BEACH NOURISHMENT								
Beach Nourishment	45,000	CY	\$7.00	\$315,000.00	\$8.00	\$360,000.00	\$15.00	\$675,000.00
BREAKWATERS								
Breakwaters	600	LF	\$1,250.00	\$750,000.00	\$250.00	\$150,000.00	\$1,500.00	\$900,000.00
SUBTOTAL								\$2,000,000.00
PROJECT SUBTOTAL								
Contingency	20%							\$400,000.00
Design/P&S/Construction Admin	12%							\$240,000.00
GRAND TOTAL								\$2,640,000.00
INITIAL CONSTRUCTION								\$2,640,000
								Nourishment Yr 8 \$532,851
								Nourishment Yr 16 \$420,638
								Nourishment Yr 24 \$332,055
								Nourishment Yr 32 \$262,127
O&M								
Assume Nourishment Every 8 Years	3%						O&M Present Value	\$1,547,672
30-YR TOTAL COST (PRESENT WORTH)								\$4,190,000

OPINION OF PROBABLE COST				DATE PREPARED 12/06/11		SHEET 1 OF 1		
ACTIVITY AND LOCATION Willoughby Spit Norfolk, Virginia			CONSTRUCTION CONTRACT NO.			IDENTIFICATION NUMBER		
PROJECT TITLE AND DESCRIPTION Willoughby Spit Study - Alternative #5 Remove Existing Groins/Improve Terminal Groin/Beach Nourishment/6 Breakwaters			ESTIMATED BY Moffatt & Nichol			CATEGORY CODE NUMBER		
			STATUS OF DESIGN Opinion of Probable Cost Alternative #5			JOB ORDER NUMBER 6998-10		
ITEM DESCRIPTION	QUANTITY		MATERIAL COST		LABOR COST		ENGINEERING ESTIMATE	
	NUMBER	UNIT	UNIT COST	TOTAL	UNIT COST	TOTAL	UNIT COST	TOTAL
GROIN REMOVAL								
Removal of Groins	7	EA	\$5,000.00	\$35,000.00	\$30,000.00	\$210,000.00	\$35,000.00	\$245,000.00
IMPROVE TERMINAL GROIN								
Improve Terminal Groin	500	LF	\$250.00	\$125,000.00	\$250.00	\$125,000.00	\$500.00	\$250,000.00
BEACH NOURISHMENT								
Beach Nourishment	45,000	CY	\$7.00	\$315,000.00	\$8.00	\$360,000.00	\$15.00	\$675,000.00
BREAKWATERS								
Breakwaters	1,080	LF	\$1,250.00	\$1,350,000.00	\$250.00	\$270,000.00	\$1,500.00	\$1,620,000.00
SUBTOTAL								\$2,790,000.00
PROJECT SUBTOTAL								
Contingency	20%							\$558,000.00
Design/P&S/Construction Admin	12%							\$334,800.00
GRAND TOTAL								\$3,682,800.00
INITIAL CONSTRUCTION								\$3,690,000
								Nourishment Yr 8 \$532,851
								Nourishment Yr 16 \$420,638
								Nourishment Yr 24 \$332,055
								Nourishment Yr 32 \$262,127
O&M								
Assume Nourishment Every 8 Years	3%							O&M Present Value \$1,547,672
30-YR TOTAL COST (PRESENT WORTH)								\$5,240,000

OPINION OF PROBABLE COST				DATE PREPARED 12/06/11		SHEET 1 OF 1		
ACTIVITY AND LOCATION Willoughby Spit Norfolk, Virginia			CONSTRUCTION CONTRACT NO.			IDENTIFICATION NUMBER		
PROJECT TITLE AND DESCRIPTION Willoughby Spit Study - Alternative #6 Remove Existing Groins/Improve Terminal Groin/Beach Nourishment/7 Breakwaters			ESTIMATED BY Moffatt & Nichol			CATEGORY CODE NUMBER		
			STATUS OF DESIGN Opinion of Probable Cost Alternative #6			JOB ORDER NUMBER 6998-10		
ITEM DESCRIPTION	QUANTITY		MATERIAL COST		LABOR COST		ENGINEERING ESTIMATE	
	NUMBER	UNIT	UNIT COST	TOTAL	UNIT COST	TOTAL	UNIT COST	TOTAL
GROIN REMOVAL								
Removal of Groins	7	EA	\$5,000.00	\$35,000.00	\$30,000.00	\$210,000.00	\$35,000.00	\$245,000.00
IMPROVE TERMINAL GROIN								
Improve Terminal Groin	500	LF	\$250.00	\$125,000.00	\$250.00	\$125,000.00	\$500.00	\$250,000.00
BEACH NOURISHMENT								
Beach Nourishment	35,000	CY	\$7.00	\$245,000.00	\$8.00	\$280,000.00	\$15.00	\$525,000.00
BREAKWATERS								
Breakwaters	1,160	LF	\$1,250.00	\$1,450,000.00	\$250.00	\$290,000.00	\$1,500.00	\$1,740,000.00
SUBTOTAL								\$2,760,000.00
PROJECT SUBTOTAL								
Contingency	20%							\$552,000.00
Design/P&S/Construction Admin	12%							\$331,200.00
GRAND TOTAL								\$3,643,200.00
INITIAL CONSTRUCTION								\$3,650,000
								Nourishment Yr 8 \$355,234
								Nourishment Yr 16 \$280,425
								Nourishment Yr 24 \$221,370
								Nourishment Yr 32 \$174,752
O&M								
Assume Nourishment Every 8 Years	3%							O&M Present Value \$1,031,781
30-YR TOTAL COST (PRESENT WORTH)								\$4,690,000