

Draft Integrated Interim Response
Feasibility Report and Environmental
Assessment for Actionable Elements

**NEW YORK-NEW JERSEY
HARBOR AND TRIBUTARIES
COASTAL STORM RISK MANAGEMENT
FEASIBILITY STUDY**

**APPENDIX C
COST ENGINEERING**

July 2025

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1 INTRODUCTION

The New York District U.S. Army Corps of Engineers (USACE) is conducting a feasibility level study to evaluate coastal storm risk management (CSRM) on the New York-New Jersey Harbor and Tributaries Study (NYNJHAT) area. As the next step, the study will seek construction authorization for limited elements referred to as Actionable Elements. The Actionable Elements included in this report will primarily be comprised of critical infrastructure facilities. This appendix consists of the cost estimate developed for the East Harlem River Actionable Element, which was developed by the Architect/Engineer (A/E), as well as the Oakwood Beach and East Riser Actionable Elements, which were developed by the Sponsors.

The New York-New Jersey Harbor and Tributaries Study has three different actionable elements that are being compared at a Project First Cost basis. Project First Cost is the constant dollar cost at the current price level and is the cost used in the authorizing document for a project. It includes the construction cost as well as added contingency.

The contingency was developed based on the original Alternative 3B contingency developed for the NYNJHAT Study in the feasibility phase, prior to release of the September 2022 Draft Feasibility Report and Tier 1 (Programmatic) Environmental Impact Statement (Draft FR/Tier 1 (Programmatic) EIS), which reflects the TSP. This contingency was applied to the construction cost estimates to develop the Total Project First Cost.

2 BASIS OF COST

2.1 EFFECTIVE PRICE LEVELS

2.1.1 East Riser and Oakwood Beach

For the East Riser and Oakwood Beach actionable elements, the construction cost estimate was developed by the Sponsors. For the Final Report, the A/E will be developing construction cost estimates for all three Actionable Elements. The East Riser Sponsor estimate was developed in 2018Q4, and the Oakwood Beach Sponsor estimate was developed in 2022Q1. Both have been escalated to current day pricing using the CWCCIS pricing index for Civil Works projects. The Alternative 3B contingency from the NYNJHAT Study TSP was applied to the construction costs to develop the Project First Cost.

2.1.2 Harlem River

The price level for the cost estimate is 2025Q2 and has been escalated on the TPCS to current day pricing.

2.2 CONTINGENCIES

Contingencies for each NYNJHAT alternative were developed during the Abbreviated Risk Analysis (ARA). The contingency developed for the Actionable Element, including the Harlem River Actionable Element, was 52.47%. The contingency developed for relocations was 76.33% as developed by the Architect/Engineer.

Contingencies used in this report are based on the New York-New Jersey Harbor and Tributaries (NYNJHAT) Feasibility Study prepared in 2022 and are not indicative of the actual risks associated with the specific actionable element in this report. All costs shown in this report are at a Cost Estimate Classification 4, preliminary technical information as defined in Engineering Regulation 1110-2-1302, Civil Works Cost Estimating. The costs and contingencies shown in this report should not be relied on for budgetary decisions.

2.3 LANDS AND DAMAGES (ACCOUNT 01)

For all three of the Actionable Elements, a placeholder of 10% of the construction cost was used to account for the Real Estate costs. Furthermore, a 30% contingency was applied to the Real Estate costs for each Actionable Element.

2.4 PLANNING, ENGINEERING, AND DESIGN (ACCOUNT 30)

For the Harlem River Actionable Element, the flat rate percentages provided in the TPCS were used to create the costs for the Account 30 Planning, Engineering, and Design costs. For the East Riser and Oakwood Beach Actionable Elements, only 50% of the flat rate percentages for Account 30 were used. This assumption was made because the A/E will be redeveloping the design and costs for these sites, however since we received designs and costs from the Sponsor, they will not be starting from scratch.

Furthermore, for the Monitoring and Adaptive Management costs, we received the following breakdown of costs for Oakwood Beach from the Environmental Branch. These costs were inputted into the TPCS for Oakwood Beach in lieu of the flat percentage rate.

	Monitoring	Invasive Removal	Replanting	Soil Modifications	Hydrologic Alterations
Pre-construction	\$8,000				
Year 1	\$14,000				
Year 2	\$14,000				
Year 3	\$14,000	\$6,000			
Year 4	\$14,000	\$6,000			
Year 5	\$14,000	\$6,000	\$216,955	\$50,000	\$125,000
Total	\$78,000	\$30,000	\$216,955	\$50,000	\$125,000

2.5 CONSTRUCTION MANAGEMENT (ACCOUNT 31)

For all three of the Actionable Elements, the flat rate percentages provided in the TPCS were used to create the costs for the Account 31 Construction Management costs.

3 TOTAL FIRST COSTS

The Total First Cost tables shown an abbreviated version of the Total Project Cost Summary (TPCS) with each account summarized into a single line.

3.1 EAST RISER, MEADOWLANDS, NJ*

	Estimated Cost (FY22)	Contingency	Cost + Contingency	Project First Cost (FY25)	Total Project Cost (Mid. 2031Q3)
Account 01 Lands and Damages	\$ 11,070,000	30%	\$ 14,391,000	\$ 15,590,000	\$ 17,957,000
Account 08 Roads, Railroads, and Bridges (Sponsor)	\$ 110,698,000	52.47%	\$ 168,782,000	\$ 178,640,000	\$ 211,109,000
Account 30 Planning, Engineering, and Design	\$ 16,882,000	52.47%	\$ 25,739,000	\$ 28,150,000	\$ 34,126,000
Account 31 Construction Management	\$ 16,051,000	52.47%	\$ 24,473,000	\$ 26,766,000	\$ 32,791,000
Total:	\$ 154,701,000		\$ 233,385,000	\$ 249,146,000	\$ 295,983,000

3.2 HARLEM RIVER, MANHATTAN, NY

	Estimated Cost (FY25)	Contingency	Cost + Contingency	Project First Cost (FY25)	Total Project Cost (Mid. 2031Q3)
Account 01 Lands and Damages	\$ 31,940,000	30%	\$ 41,523,000	\$ 41,523,000	\$ 47,826,000
Account 02 Relocations (A/E)	\$ 60,009,000	76.33%	\$ 105,814,000	\$105,814,000	\$ 125,047,000
Account 11 Levees and Floodwalls (A/E)	\$ 259,395,000	52.47%	\$ 395,499,000	\$ 395,499,000	\$ 467,387,000
Account 30 Planning, Engineering, and Design	\$ 97,418,000	52.47%	\$ 148,534,000	\$ 148,534,000	\$ 180,065,000
Account 31 Construction Management	\$ 46,314,000	52.47%	\$ 70,614,000	\$ 70,614,000	\$ 86,509,000
Total:	\$ 495,076,000		\$ 761,984,000	\$ 761,984,000	\$ 906,834,000

3.3 OAKWOOD BEACH, STATEN ISLAND, NY*

	Estimated Cost (FY18)	Contingency	Cost + Contingency	Project First Cost (FY25)	Total Project Cost (Mid. 2031Q3)
Account 01 Lands and Damages	\$ 2,066,000	30%	\$ 2,685,000	\$ 3,539,000	\$ 4,077,000
Account 06 Fish and Wildlife (Sponsor)	\$ 20,656,000	52.47%	\$ 31,494,000	\$ 41,702,000	\$ 49,282,000
Account 30 Planning, Engineering, and Design	\$ 2,965,000	52.47%	\$ 4,521,000	\$ 5,032,000	\$ 6,047,000
Account 31 Construction Management	\$ 2,995,000	52.47%	\$ 4,567,000	\$ 5,082,000	\$ 6,226,000
Total:	\$ 28,682,000		\$ 43,267,000	\$ 55,355,000	\$ 65,632,000

*These estimates (East Riser and Oakwood Beach) were provided by the Sponsors and have not been created or fully verified by USACE. For the final report, the estimates will be created by the Architect/Engineer and will be fully reviewed and verified by USACE. The Sponsor estimates have been escalated from the time of creation to current date (FY2025Q3) using the CWCCIS composite index for ALL features, dated March 31, 2025.

4 CONSTRUCTION SCHEDULE

The construction schedule was created by the Architect/Engineer and was parametrically calculated from the schedule from the NYNJHATS Alt 3B schedule. The same overall duration was assumed for all three of the alternatives and will be further developed and revised for the Final Report.

	Total Duration - Microsoft Project Output	Total Duration Impacted by Ews	% Overall Duration Impact	Adjusted new duration	Preconstruction - 4 months	Total	Total
SBM East Harlem River AE	(Weeks) 53	(Weeks) 45	 85%	(Weeks) 70.49	(Weeks) 17	(Weeks) 88	(Years) 1.7

5 TOTAL PROJECT COST SUMMARY

The Total Project Cost Summary (TPCS) for each of the Actionable Elements are shown below. The Estimated Cost shows the cost of the project at the time it was originally estimated (Effective Price Level) with contingency added on. The Effective Price Levels for the Actionable Elements are as follows: East Riser is 2024Q1, Harlem River is 2025Q1, and Oakwood Beach is 2019Q1. Project First Cost shows the cost of the project at the current program year of 2025. Lastly, the Total Project Cost (Fully Funded) shows the project cost inflated to the midpoint of construction. For all three of the Actionable Elements, the midpoint of construction is 2031Q3.

5.1 EAST RISER TOTAL PROJECT COST SUMMARY (TPCS)

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

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Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)				TOTAL PROJECT COST (FULLY FUNDED)				
		Estimate Prepared: Effective Price Level:		24-Jun-25 1-Oct-21		Program Year (Budget EC): Effective Price Level Date:		2025 1 OCT 24						
WBS NUMBER A	Civil Works Feature & Sub-Feature Description B	RISK BASED			TOTAL (\$K) F	ESC (%) G	COST (\$K) H	CNTG (\$K) I	TOTAL (\$K) J	Mid-Point Date P	INFLATED (%) L	COST (\$K) M	CNTG (\$K) N	FULL (\$K) O
		COST (\$K) C	CNTG (\$K) D	CNTG (%) E										
08	East Riser ROADS, RAILROADS & BRIDGES	\$110,698	\$58,083	52.5%	\$168,782	5.8%	\$117,164	\$61,476	\$178,640	2031Q3	18.2%	\$138,460	\$72,650	\$211,109
CONSTRUCTION ESTIMATE TOTALS:		\$110,698	\$58,083	52.5%	\$168,782		\$117,164	\$61,476	\$178,640			\$138,460	\$72,650	\$211,109
01	LANDS AND DAMAGES	\$11,070	\$3,321	30.0%	\$14,391	8.3%	\$11,992	\$3,598	\$15,590	2030Q3	15.2%	\$13,813	\$4,144	\$17,957
10%														
30	PLANNING, ENGINEERING & DESIGN													
1.3%	Project Management	\$1,384	\$726	52.5%	\$2,110	9.4%	\$1,513	\$794	\$2,307	2030Q3	18.7%	\$1,796	\$943	\$2,739
0.5%	Planning & Environmental Compliance	\$553	\$290	52.5%	\$844	9.4%	\$605	\$318	\$923	2030Q3	18.7%	\$719	\$377	\$1,096
7.5%	Engineering & Design	\$8,302	\$4,356	52.5%	\$12,659	9.4%	\$9,080	\$4,764	\$13,844	2030Q3	18.7%	\$10,779	\$5,656	\$16,435
0.5%	Reviews, ATRs, IEPRs, VE	\$553	\$290	52.5%	\$844	9.4%	\$605	\$318	\$923	2030Q3	18.7%	\$719	\$377	\$1,096
0.5%	Life Cycle Updates (cost, schedule, risks)	\$553	\$290	52.5%	\$844	9.4%	\$605	\$318	\$923	2030Q3	18.7%	\$719	\$377	\$1,096
0.5%	Contracting & Reprographics	\$553	\$290	52.5%	\$844	9.4%	\$605	\$318	\$923	2030Q3	18.7%	\$719	\$377	\$1,096
1.5%	Engineering During Construction	\$1,660	\$871	52.5%	\$2,532	9.4%	\$1,816	\$953	\$2,769	2031Q3	22.5%	\$2,225	\$1,167	\$3,392
1.0%	Planning During Construction	\$1,107	\$581	52.5%	\$1,688	9.4%	\$1,211	\$635	\$1,846	2031Q3	22.5%	\$1,483	\$778	\$2,261
1.5%	Adaptive Management & Monitoring	\$1,660	\$871	52.5%	\$2,532	9.4%	\$1,816	\$953	\$2,769	2035Q2	38.0%	\$2,506	\$1,315	\$3,821
0.5%	Project Operations	\$553	\$290	52.5%	\$844	9.4%	\$605	\$318	\$923	2030Q3	18.7%	\$719	\$377	\$1,096
31	CONSTRUCTION MANAGEMENT													
10.0%	Construction Management	\$11,070	\$5,808	52.5%	\$16,878	9.4%	\$12,107	\$6,352	\$18,459	2031Q3	22.5%	\$14,832	\$7,782	\$22,614
2.0%	Project Operation:	\$2,214	\$1,162	52.5%	\$3,376	9.4%	\$2,421	\$1,270	\$3,692	2031Q3	22.5%	\$2,966	\$1,556	\$4,523
2.5%	Project Management	\$2,767	\$1,452	52.5%	\$4,220	9.4%	\$3,027	\$1,588	\$4,615	2031Q3	22.5%	\$3,708	\$1,946	\$5,654
CONTRACT COST TOTALS:		\$154,701	\$78,684		\$233,385		\$165,174	\$83,972	\$249,146			\$196,161	\$99,822	\$295,983

5.2 HARLEM RIVER TOTAL PROJECT COST SUMMARY (TPCS)

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

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Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)				TOTAL PROJECT COST (FULLY FUNDED)				
		Estimate Prepared: Effective Price Level:		24-Jun-25 1-Oct-24		Program Year (Budget EC): Effective Price Level Date:		2025 1 OCT 24						
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	Mid-Point Date P	INFLATED (%) L	COST (\$K) M	CNTG (\$K) N	FULL (\$K) O
02	Harlem River													
11	RELOCATIONS	\$60,009	\$45,805	76.3%	\$105,814	0.0%	\$60,009	\$45,805	\$105,814	2031Q3	18.2%	\$70,916	\$54,130	\$125,047
	LEVEES & FLOODWALLS	\$259,395	\$136,105	52.5%	\$395,499	0.0%	\$259,395	\$136,105	\$395,499	2031Q3	18.2%	\$306,543	\$160,843	\$467,387
CONSTRUCTION ESTIMATE TOTALS:		\$319,404	\$181,909	57.0%	\$501,313		\$319,404	\$181,909	\$501,313			\$377,460	\$214,974	\$592,433
01	LANDS AND DAMAGES	\$31,940	\$9,582	30.0%	\$41,523	0.0%	\$31,940	\$9,582	\$41,523	2030Q3	15.2%	\$36,789	\$11,037	\$47,826
10%														
30	PLANNING, ENGINEERING & DESIGN													
2.5%	Project Management	\$7,985	\$4,190	52.5%	\$12,175	0.0%	\$7,985	\$4,190	\$12,175	2030Q3	18.7%	\$9,479	\$4,974	\$14,453
1.0%	Planning & Environmental Compliance	\$3,194	\$1,676	52.5%	\$4,870	0.0%	\$3,194	\$1,676	\$4,870	2030Q3	18.7%	\$3,792	\$1,989	\$5,781
15.0%	Engineering & Design	\$47,911	\$25,139	52.5%	\$73,049	0.0%	\$47,911	\$25,139	\$73,049	2030Q3	18.7%	\$56,875	\$29,842	\$86,717
1.0%	Reviews, ATRs, IEPs, VE	\$3,194	\$1,676	52.5%	\$4,870	0.0%	\$3,194	\$1,676	\$4,870	2030Q3	18.7%	\$3,792	\$1,989	\$5,781
1.0%	Life Cycle Updates (cost, schedule, risks)	\$3,194	\$1,676	52.5%	\$4,870	0.0%	\$3,194	\$1,676	\$4,870	2030Q3	18.7%	\$3,792	\$1,989	\$5,781
1.0%	Contracting & Reprographics	\$3,194	\$1,676	52.5%	\$4,870	0.0%	\$3,194	\$1,676	\$4,870	2030Q3	18.7%	\$3,792	\$1,989	\$5,781
3.0%	Engineering During Construction	\$9,582	\$5,028	52.5%	\$14,610	0.0%	\$9,582	\$5,028	\$14,610	2031Q3	22.5%	\$11,739	\$6,159	\$17,898
2.0%	Planning During Construction	\$6,388	\$3,352	52.5%	\$9,740	0.0%	\$6,388	\$3,352	\$9,740	2031Q3	22.5%	\$7,826	\$4,106	\$11,932
3.0%	Adaptive Management & Monitoring	\$9,582	\$5,028	52.5%	\$14,610	0.0%	\$9,582	\$5,028	\$14,610	2035Q2	38.0%	\$13,222	\$6,938	\$20,160
1.0%	Project Operations	\$3,194	\$1,676	52.5%	\$4,870	0.0%	\$3,194	\$1,676	\$4,870	2030Q3	18.7%	\$3,792	\$1,989	\$5,781
31	CONSTRUCTION MANAGEMENT													
10.0%	Construction Management	\$31,940	\$16,759	52.5%	\$48,700	0.0%	\$31,940	\$16,759	\$48,700	2031Q3	22.5%	\$39,130	\$20,531	\$59,661
2.0%	Project Operation:	\$6,388	\$3,352	52.5%	\$9,740	0.0%	\$6,388	\$3,352	\$9,740	2031Q3	22.5%	\$7,826	\$4,106	\$11,932
2.5%	Project Management	\$7,985	\$4,190	52.5%	\$12,175	0.0%	\$7,985	\$4,190	\$12,175	2031Q3	22.5%	\$9,782	\$5,133	\$14,915
CONTRACT COST TOTALS:		\$495,076	\$266,908		\$761,984		\$495,076	\$266,908	\$761,984			\$589,086	\$317,748	\$906,834

5.3 OAKWOOD BEACH TOTAL PROJECT COST SUMMARY (TPCS)

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

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Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)				TOTAL PROJECT COST (FULLY FUNDED)				
		Estimate Prepared: Effective Price Level:		24-Jun-25 1-Oct-18		Program Year (Budget EC): Effective Price Level Date:		2025 1 OCT 24						
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	Mid-Point Date P	INFLATED (%) L	COST (\$K) M	CNTG (\$K) N	FULL (\$K) O
06	Oakwood Beach FISH & WILDLIFE FACILITIES	\$20,656	\$10,838	52.5%	\$31,494	32.4%	\$27,351	\$14,351	\$41,702	2031Q3	18.2%	\$32,322	\$16,960	\$49,282
CONSTRUCTION ESTIMATE TOTALS:		\$20,656	\$10,838	52.5%	\$31,494		\$27,351	\$14,351	\$41,702			\$32,322	\$16,960	\$49,282
01	LANDS AND DAMAGES	\$2,066	\$620	30.0%	\$2,685	31.8%	\$2,723	\$817	\$3,539	2030Q3	15.2%	\$3,136	\$941	\$4,077
10%														
30	PLANNING, ENGINEERING & DESIGN													
1.3%	Project Management	\$258	\$135	52.5%	\$394	11.3%	\$287	\$151	\$438	2030Q3	18.7%	\$341	\$179	\$520
0.5%	Planning & Environmental Compliance	\$103	\$54	52.5%	\$157	11.3%	\$115	\$60	\$175	2030Q3	18.7%	\$136	\$72	\$208
7.5%	Engineering & Design	\$1,549	\$813	52.5%	\$2,362	11.3%	\$1,724	\$905	\$2,629	2030Q3	18.7%	\$2,047	\$1,074	\$3,121
0.5%	Reviews, ATRs, IEPs, VE	\$103	\$54	52.5%	\$157	11.3%	\$115	\$60	\$175	2030Q3	18.7%	\$136	\$72	\$208
0.5%	Life Cycle Updates (cost, schedule, risks)	\$103	\$54	52.5%	\$157	11.3%	\$115	\$60	\$175	2030Q3	18.7%	\$136	\$72	\$208
0.5%	Contracting & Reprographics	\$103	\$54	52.5%	\$157	11.3%	\$115	\$60	\$175	2030Q3	18.7%	\$136	\$72	\$208
1.5%	Engineering During Construction	\$310	\$163	52.5%	\$472	11.3%	\$345	\$181	\$526	2031Q3	22.5%	\$422	\$222	\$644
1.0%	Planning During Construction	\$207	\$108	52.5%	\$315	11.3%	\$230	\$121	\$350	2031Q3	22.5%	\$282	\$148	\$429
	Adaptive Management & Monitoring	\$125	\$66	52.5%	\$191	11.3%	\$139	\$73	\$212	2035Q2	38.0%	\$192	\$101	\$293
0.5%	Project Operations	\$103	\$54	52.5%	\$157	11.3%	\$115	\$60	\$175	2030Q3	18.7%	\$136	\$72	\$208
31	CONSTRUCTION MANAGEMENT									0				
10.0%	Construction Management	\$2,066	\$1,084	52.5%	\$3,149	11.3%	\$2,299	\$1,206	\$3,505	2031Q3	22.5%	\$2,816	\$1,478	\$4,294
2.0%	Project Operation:	\$413	\$217	52.5%	\$630	11.3%	\$460	\$241	\$701	2031Q3	22.5%	\$563	\$296	\$859
2.5%	Project Management	\$516	\$271	52.5%	\$787	11.3%	\$575	\$302	\$876	2031Q3	22.5%	\$704	\$369	\$1,073
CONTRACT COST TOTALS:		\$28,682	\$14,585		\$43,267		\$36,707	\$18,648	\$55,355			\$43,508	\$22,124	\$65,632

6 ABBREVIATED RISK ANALYSIS

Contingencies for each of the NYNJHAT Actionable Elements were developed using the Abbreviated Risk Analysis (ARA). The ARA was performed in 2022 during the NYNJHAT Feasibility Study and encompasses the risks of the whole of Alternative 3B, the Tentatively Selected Plan. The contingency developed for the Actionable Element, including the Harlem River Actionable Element, was 52.47%. For the Final Report, ARAs for each of the Actionable Elements will be performed to develop site-specific contingencies.

*Contingencies used in this report are based on the New York-New Jersey Harbor and Tributaries (NYNJHAT) Feasibility Study prepared in 2022 and are not indicative of the specific risks associated with each actionable element in this report.

NY/NJ Harbor & Tributaries Study 3B

Feasibility (Alternatives)

Abbreviated Risk Analysis

Meeting Date: 4/25 - 4/27/2022

Risk Level

Very Likely	2	3	4	5	6
Likely	1	2	3	4	5
Possible	0	1	2	3	4
Unlikely	0	0	1	2	3
	Negligible	Marginal	Moderate	Significant	Critical

Risk Register

Risk Element	Feature of Work	Concerns	PDT Discussion & Conclusions (Include logic & justification for choice of Likelihood & Impact)	Impact	Likelihood	Risk Level
Project Scope Growth				Maximum Project Growth		40%
PS-1	Lands and Damages					FALSE
PS-2	Relocations	<p>Potential for scope growth, added features, and quantities.</p> <p>No field investigations, utility surveys, or desktop reviews of public records completed.</p>	<p>Cost based off linear feet of feature and site specific modifiers. No design completed.</p> <p>Temporary displacements not accounted for?</p> <p>Major pieces of infrastructure (i.e. pipe lines) not accounted for.</p>	Significant	Very LIKELY	5
PS-3	Environmental Mitigation	<p>Sufficient mitigation opportunities exist?</p> <p>Potential for scope growth, added features</p> <p>Limited field investigations to support assumptions.</p>	<p>Smaller but multiple areas to mitigate. May not have the space to mitigate.</p> <p>Scope Growth - Changes in Endangered Species Monitoring Requirements, environmental windows.</p> <p>More certainty in the scope to mitigate compared to Alt. 2</p>	Significant	Likely	4
PS-4	SSB: Arthur Kill	<p>Potential for scope growth, added features, and quantities.</p> <p>Limited field investigations and historical data to support design assumptions.</p> <p>Navigation passage dimensions could increase.</p> <p>Crest elevation changes.</p> <p>Uncertainty on location/alignment.</p> <p>Multi functional infrastructure (bridge)</p>	<p>Multi functional infrastructure (bridge) - less of a concern</p> <p>Nav Pass width - likely to stay within boundaries studied.</p>	Marginal	Possible	1
PS-5	SSB: Kill Van Kull	<p>Potential for scope growth, added features, and quantities.</p> <p>Limited field investigations and historical data to support design assumptions.</p> <p>Uncertainty on location/alignment.</p>	<p>Project Scope Growth - No SBM developed yet for Alignment D.</p> <p>Project Scope Growth - Navigation community had concerns with original alignment. Alignment D used for baseline and could resolve concerns from the Navigation Community. Alignment C could increase cost by ~250%</p> <p>Significant crest elevation changes not expected</p>	Marginal	Possible	1
PS-6	SSB: Jamaica Bay	<p>Potential for scope growth, added features, and quantities.</p> <p>Limited field investigations and historical data to support design assumptions.</p> <p>Crest elevation changes.</p> <p>Multi functional infrastructure (bridge)</p> <p>Design/construction techniques could be impacted by environmental review / visual impacts</p>	<p>Reasonably high level of confidence in geotechnical data - nearby bridge.</p> <p>High confidence in nav pass dimensions - barge traffic.</p> <p>Different gate type might be required due to visual impacts.</p>	Marginal	Possible	1

PS-14	0	Potential for scope growth and added features	Project Scope Growth - PED Contingency should be directly correlated to the construction contingency. Field Investigations, Numerical, and Physical Modeling, Adaptive Management and Monitoring Overall contingency should be 12% of construction contingency plus 3% to cover adaptive management and monitoring.	Significant	Likely	4
PS-15	0	Potential for scope growth and added features	Project Scope Growth - CM Contingency should be directly correlated to the construction contingency. Overall contingency should be 10% of construction contingency.	Significant	Likely	4
Acquisition Strategy					Maximum Project Growth	30%
AS-1	Lands and Damages					FALSE
AS-2	Relocations	Contracting plan is not developed. Many small contracts. SB or 8a Contracting likely.		Marginal	Likely	2
AS-3	Environmental Mitigation	Contracting plan is not developed. Many small contracts.		Marginal	Likely	2
AS-4	SSB: Arthur Kill	Limited bid competition expected for the SSBs. Contracting plan is not developed.	Similar to VN - Floating sector gate.	Marginal	Likely	2
AS-5	SSB: Kill Van Kull	Limited bid competition expected for the SSBs. Contracting plan is not developed.	Similar to VN - Floating sector gate.	Marginal	Likely	2
AS-6	SSB: Jamaica Bay	Limited bid competition expected for the SSBs. Contracting plan is not developed.		Marginal	Likely	2
AS-7	SSBs: Gowanus, Newtown & Flushing	Contracting plan is not developed.	Bid competition is less of a concern	Marginal	Possible	1
AS-8	IFF SSB and RRF Navigable Barriers	Contracting plan is not developed.	Bid competition is less of a concern	Marginal	Possible	1
AS-9	Shoreline Based Measures	Contracting plan is not developed. Lack of Material Suppliers (stone)	Contractors are likely available who can perform the work.	Marginal	Unlikely	0
AS-10	Induced Flooding Features	Contracting plan is not developed. Lack of Material Suppliers (stone)	Contractors are likely available who can perform the work. Limited competition for contractors who can install deployable flood gates, etc.	Marginal	Unlikely	0
AS-11	Residual Risk Features	Contracting plan is not developed. Many small contracts. SB or 8a Contracting likely.	Contractors are likely available who can perform the work. Non federal interests will be interested in constructing local projects.	Moderate	Likely	3
AS-12	Interior Drainage Features	Contracting plan is not developed. Many small contracts. SB or 8a Contracting likely.	Contractors are likely available who can perform the work. Non federal interests will be interested in constructing local projects.	Moderate	Likely	3
AS-12	Cultural Resource Mitigation	no concerns		Negligible	Possible	0

AS-13	Individual Structure Protection / Non-Structural	Contracting plan is not developed. Design-build possible. Many small contracts. SB or 8a Contracting likely.		Moderate	Likely	3
AS-14	0	Contracting plan is not developed. 8a or SB possible	Project will likely be broken up into a few larger projects and many smaller projects.	Marginal	Likely	2
AS-15	0	Contracting plan is not developed. 8a or SB possible	Project will likely be broken up into a few larger projects and many smaller projects.	Marginal	Likely	2
Construction Elements				Maximum Project Growth		15%
CON-1	Lands and Damages					FALSE
CON-2	Relocations	Potential for modifications and claims	**Use a higher impact number for 3B and 4	Negligible	Likely	1
CON-3	Environmental Mitigation	Availability of local plantings Unique construction methods Environmental Windows Marginal site access. Active species monitoring requirements during construction.		Significant	Likely	4
CON-4	SSB: Arthur Kill	Environmental Window restrictions. Standby time due to weather/storm surge delays and site constraints. Navigation impacts.	Weather delays - more sheltered than outer harbor areas. Navigation impacts - More impacts than VN because VN had a temporary navigation channel. Site access - Land based Construction	Moderate	Possible	2
CON-5	SSB: Kill Van Kull	Environmental Window restrictions. Standby time due to weather/storm surge delays and site constraints. Navigation impacts.	Weather delays - more sheltered than outer harbor areas. Navigation impacts - More impacts than VN because VN had a temporary navigation channel. Site access - Land based Construction	Moderate	Possible	2
CON-6	SSB: Jamaica Bay	Environmental Window restrictions. Standby time due to weather/storm surge delays and site constraints.	Site Access - Marine based construction, cofferdams, etc. Repetition in construction elements - benefit.	Moderate	Possible	2
CON-7	SSBs: Gowanus, Newtown & Flushing	Environmental Window restrictions. Standby time due to weather/storm surge delays and site constraints. Navigation impacts. Site access constraints	Weather delays - more sheltered than outer SSBs Site access - urban areas, limited laydown and shore access, marine access is good.	Moderate	Likely	3
CON-8	IFF SSB and RRF Navigable Barriers	Environmental Window restrictions. Standby time due to weather/storm surge delays and site constraints. Navigation impacts. Site access constraints	Weather delays - more sheltered than outer SSBs Site access - urban areas, limited laydown and shore access, marine access is good.	Moderate	Likely	3
CON-9	Shoreline Based Measures	Environmental Windows Marginal site access. More complex construction elements	Recreational windows is not a concern. Construction elements - cofferdams, tide gates, etc.	Marginal	Likely	2

CON-10	Induced Flooding Features	Environmental Windows Marginal site access. More complex construction elements	Recreational windows is not a concern. Construction elements - cofferdams, tide gates, etc.	Marginal	Likely	2
CON-11	Residual Risk Features	Environmental Windows Marginal site access. Tide Gates	Nav gates covered under a separate item.	Negligible	Likely	1
CON-12	Interior Drainage Features	no concerns		Negligible	Likely	1
CON-12	Cultural Resource Mitigation	Site access issues including submerged resources		Negligible	Likely	1
CON-13	Individual Structure Protection / Non-Structural	Potential for modifications or claims is high for modifications to existing structures. Site access.		Moderate	Likely	3
CON-14	0	Complex construction elements. Potential for construction modifications and claims.		Marginal	Likely	2
CON-15	0	Complex construction elements. Potential for construction modifications and claims.		Marginal	Likely	2
Quantities for Current Scope				Maximum Project Growth		20%
Q-1	Lands and Damages					FALSE
Q-2	Relocations	Parametric Cost - No Quantities.		Moderate	Likely	3
Q-3	Environmental Mitigation	Limited physical site data. High uncertainty related to quantities given the level of design	Mitigation recommendations will need to be incorporated into the costs.	Marginal	Likely	2
Q-4	SSB: Arthur Kill	Limited physical site data. Very high uncertainty related to quantities given the level of design.	Quantities - water depth across AK is much less (more variability) that the water depth across VN sector gate. Land based construction of islands should reduce scaled VN qtys. Geotechnical data - better conditions than VN.	Moderate	Possible	2
Q-5	SSB: Kill Van Kull	Limited physical site data. Very high uncertainty related to quantities given the level of design.	Quantities - water depth across AK is much less (more variability) that the water depth across VN sector gate. Land based construction of islands should reduce scaled VN qtys. Geotechnical data - better conditions than VN.	Moderate	Possible	2
Q-6	SSB: Jamaica Bay	Limited physical site data High uncertainty related to quantities given the level of design.		Moderate	Possible	2
Q-7	SSBs: Gowanus, Newtown & Flushing	Limited physical site data. Very high uncertainty related to quantities given the level of design.	Quantities scaled from HR.	Significant	Likely	4
Q-8	IFF SSB and RRF Navigable Barriers	Limited physical site data. Very high uncertainty related to quantities given the level of design.	Quantities scaled from HR.	Significant	Likely	4
Q-9	Shoreline Based Measures	Limited physical site data. High uncertainty related to quantities given the level of design and uncertainty in alignment	Lack of geotech data - uncertainty in foundation costs.	Marginal	Likely	2
Q-10	Induced Flooding Features	Limited physical site data. High uncertainty related to quantities given the level of design and uncertainty in alignment	Lack of geotech data - uncertainty in foundation costs.	Marginal	Likely	2

Q-11	Residual Risk Features	Limited physical site data. High uncertainty related to quantities given the level of design and uncertainty in alignment		Marginal	Likely	2
Q-12	Interior Drainage Features	Parametric design - high uncertainty		Moderate	Likely	3
Q-13	Cultural Resource Mitigation	no concern		Negligible	Possible	0
Q-13	Individual Structure Protection / Non-Structural	High uncertainty in quantities - quantities based off a typical building.	Buildings in high frequency flood plains tend to be older, drive qrys up	Significant	Likely	4
Q-14	0	Level of confidence based on design and assumptions?	Likelihood of quantity changes/updates on the project features will have a marginal cost impact on the PED.	Marginal	Likely	2
Q-15	0	no concerns		Negligible	Possible	0
Specialty Fabrication or Equipment				Maximum Project Growth		50%
FE-1	Lands and Damages					FALSE
FE-2	Relocations	no concerns		Marginal	Possible	1
FE-3	Environmental Mitigation	Risk of specialty feature functioning the first time.		Negligible	Possible	0
FE-4	SSB: Arthur Kill	No design work completed on MEP. Fabrication of sector gates is very complex. Lift gates fabrication in minimally complex.	Similar to VN.	Moderate	Likely	3
FE-5	SSB: Kill Van Kull	No design work completed on MEP. Fabrication of sector gates is very complex. Lift gates fabrication in minimally complex. Confidence in supplier's ability? Difficult material delivery conditions.	Similar to VN. Confidence in Supplier's ability - future outlook is good for more similar structures. Availability of Suppliers should increase. Material Supply - temporary MOF?	Moderate	Likely	3
FE-6	SSB: Jamaica Bay	No design work completed on MEP. Fabrication of sector gates and lift gates minimally complex.		Marginal	Likely	2
FE-7	SSBs: Gowanus, Newtown & Flushing	No design work completed on MEP Conventional gates.		Marginal	Possible	1
FE-8	IFF SSB and RRF Navigable Barriers	No design work completed on MEP Conventional gates.		Marginal	Possible	1
FE-9	Shoreline Based Measures	Equipment for placing stone. Tide Gates		Marginal	Possible	1
FE-10	Induced Flooding Features	Tide Gates		Marginal	Possible	1
FE-11	Residual Risk Features	Tide Gates		Marginal	Possible	1
FE-12	Interior Drainage Features	Large Pump Stations required		Marginal	Likely	2
FE-12	Cultural Resource Mitigation	Unusual parts, materials, and equipment		Negligible	Possible	0
FE-13	Individual Structure Protection / Non-Structural	limited concern - road closure gates		Marginal	Possible	1
FE-14	0	Confidence in Supplier's ability? Confidence in Contractor's ability to install?	Floating Sector Gates - Fabrication of sector gates is very complex.	Marginal	Possible	1
FE-15	0	Confidence in Supplier's ability? Confidence in Contractor's ability to install?	Floating Sector Gates - Fabrication of sector gates is very complex.	Marginal	Possible	1
Cost Estimate Assumptions				Maximum Project Growth		25%

EST-1	Lands and Damages					FALSE
EST-2	Relocations	Parametric Cost		Significant	Likely	4
EST-3	Environmental Mitigation	Costs are based on similar projects. Potential increase due to site specific conditions.		Marginal	Likely	2
EST-4	SSB: Arthur Kill	Hybrid approach - parametric.		Moderate	Likely	3
EST-5	SSB: Kill Van Kull	Hybrid approach - parametric.	Cost scaled from VN Sector Gate.	Moderate	Likely	3
EST-6	SSB: Jamaica Bay	The Mobilization, JOOH, HOOH, Profit, Bonds, and Insurance costs are applied as a percentage of the feature/phase cost. No material supply quotes.		Marginal	Likely	2
EST-7	SSBs: Gowanus, Newtown & Flushing	Hybrid approach - parametric.	Cost scaled from HR Sector Gate.	Moderate	Likely	3
EST-8	IFF SSB and RRF Navigable Barriers	Hybrid approach - parametric.	Cost scaled from HR Sector Gate.	Moderate	Likely	3
EST-9	Shoreline Based Measures	Limited material supply quotes. Mob., JOOH, etc. % based. Some uncertainty in application of site specific modifiers		Moderate	Likely	3
EST-10	Induced Flooding Features	Limited material supply quotes. Mob., JOOH, etc. % based. Some uncertainty in application of site specific modifiers		Moderate	Likely	3
EST-11	Residual Risk Features	Limited material supply quotes. Mob., JOOH, etc. % based. Some uncertainty in application of site specific modifiers		Moderate	Likely	3
EST-12	Interior Drainage Features	Parametric estimate.		Significant	Likely	4
EST-13	Cultural Resource Mitigation	Costs are based on similar projects. Potential increase due to site specific conditions.		Negligible	Very LIKELY	2
EST-13	Individual Structure Protection / Non-Structural	Parametric approach		Moderate	Likely	3
EST-14	0	no concern		Negligible	Unlikely	0
EST-15	0	no concern		Negligible	Unlikely	0
External Project Risks						Maximum Project Growth 20%
EX-1	Lands and Damages					FALSE
EX-2	Relocations	Recent heavy volatility on material supply and fuel costs.	Federal and non-federal funding - higher concern with projects that span multiple political cycles.	Marginal	Likely	2
EX-3	Environmental Mitigation	New rules or regulations. Recent heavy volatility on material supply and fuel costs. Legal action / lawsuits		Significant	Likely	4
EX-4	SSB: Arthur Kill	Bidding competition from other projects / shortage of marine contractors. Federal and non-federal funding sources. Political Influences, lack of support, etc. Recent heavy volatility on material supply and fuel costs.	Bidding competition - are other projects (e.g., HATS, OSW, etc.) being constructed at the same time?	Moderate	Likely	3

EX-5	SSB: Kill Van Kull	Bidding competition from other projects / shortage of marine contractors. Federal and non-federal funding sources. Political Influences, lack of support, etc. Recent heavy volatility on material supply and fuel costs.	Bidding competition - are other projects (e.g., HATS, OSW, etc.) being constructed at the same time?	Moderate	Likely	3
EX-6	SSB: Jamaica Bay	Bidding competition from other projects / shortage of marine contractors. Federal and non-federal funding sources. Political Influences, lack of support, etc. Recent heavy volatility on material supply and fuel costs.	Navigation industry buy-off on this concept - much less of a factor. Bidding competition - are other projects (e.g., HATS, OSW, etc.) being constructed at the same time?	Moderate	Likely	3
EX-7	SSBs: Gowanus, Newtown & Flushing	Bidding competition from other projects / shortage of marine contractors. Federal and non-federal funding sources. Political Influences, lack of support, etc. Recent heavy volatility on material supply and fuel costs.		Significant	Likely	4
EX-8	IFF SSB and RRF Navigable Barriers	Bidding competition from other projects / shortage of marine contractors. Federal and non-federal funding sources. Political Influences, lack of support, etc.		Significant	Likely	4
EX-9	Shoreline Based Measures		Numerous community boards. Risk for public opposition.	Significant	Likely	4
EX-10	Induced Flooding Features	Federal and non-federal funding sources.		Moderate	Likely	3
EX-11	Residual Risk Features			Moderate	Likely	3
EX-12	Interior Drainage Features	Political Influences, lack of support, etc.		Moderate	Likely	3
EX-12	Cultural Resource Mitigation	Lack of agreement with coordinating agencies on execution of programmatic agreement. Public concerns		Marginal	Possible	1
EX-13	Individual Structure Protection / Non-Structural	Recent heavy volatility on material supply and fuel costs.	Compensation could be required if a homeowner loses a lower level apartment. Will apply to a limited number of buildings.	Significant	Very LIKELY	5
EX-14	0	Political Influences, lack of support, etc.		Significant	Likely	4

7 ATTACHMENT A: MII REPORT FOR HARLEM RIVER

Print Date Fri 11 July 2025
Eff. Date 7/10/2025

U.S. Army Corps of Engineers
Project : 13372.106 HATS EAE.OPCC.30PercentDesign
NYNJHAT Harlem River Actionable Element

Time 09:12:41
Overview Page 1

Description	UOM	Quantity	ProjectCost
Overview			319,403,885.68
Base Bid	EA	1.00	<i>319,403,885.6811</i> 319,403,885.68
02 Relocations	EA	1.00	<i>60,008,959.4307</i> 60,008,959.43
Relocations	LF	4,189.00	<i>14,325.3663</i> 60,008,959.43
11 Levees & Floodwalls	EA	1.00	<i>259,394,926.2504</i> 259,394,926.25
Floodwall (south)	LF	80.00	<i>16,879.5851</i> 1,350,366.81
Deployable Flood Barrier - Vehicle Gate (south)	LF	40.00	<i>35,120.0664</i> 1,404,802.66
Anchored Combi Wall	LF	3,636.00	<i>52,180.4759</i> 189,728,210.50
Tunnel Span	LF	155.00	<i>396,705.8218</i> 61,489,402.37
Deployable Flood Barrier - Vehicle Gate (north)	LF	40.00	<i>35,120.0664</i> 1,404,802.66
Floodwall (north)	LF	238.00	<i>16,879.5851</i> 4,017,341.26