



US Army Corps
of Engineers®
Jacksonville District

SAN JUAN METRO AREA, PUERTO RICO

COASTAL STORM RISK MANAGEMENT STUDY DRAFT INTEGRATED FEASIBILITY STUDY AND ENVIRONMENTAL ASSESSMENT

JULY 2020

APPENDIX B: COST ENGINEERING & RISK ANALYSIS



THIS PAGE INTENTIONALLY LEFT BLANK

TABLE OF CONTENTS

B. COST ESTIMATES	B-4
B1. General Information	B-4
B.1.1 Plan Formulation Cost Estimates	B-5
B.1.2. Recommended Plan (TSP)	B-6
B.1.3. Construction Cost	B-7
B.1.4. Non-Construction Cost	B-8
B.1.5. Construction Schedule	B-8
B.1.6. Total Project Cost Summary	B-8
B2. Risk and Uncertainty Analysis	B-9
D.4.1. Risk Analysis Methods	B-9
D.4.2 Risk Analysis Results	B-9
B3. Total Project Cost Summary	B-10
D.5.1 Total Project Cost Summary Spreadsheet	B-10
B4. Cost MCX TPCS Certification	B-10
 ATTACHMENT A - Cost and Schedule Risk Register.....	 B-11
ATTACHMENT B -Total Project Cost Summary.....	B-12

B. COST ESTIMATES

B.1. GENERAL INFORMATION

Corps of Engineers cost estimates for planning purposes are prepared in accordance with the following guidance:

- Engineer Technical Letter (ETL) 1110-2-573, Construction Cost Estimating Guide for Civil Works, 30 September 2008
- Engineer Regulation (ER) 1110-1-1300, Cost Engineering Policy and General Requirements, 26 March 1993
- ER 1110-2-1302, Civil Works Cost Engineering, 30 June 2016
- ER 1110-2-1150, Engineering and Design for Civil Works Projects, 31 August 1999
- ER 1105-2-100, Planning Guidance Notebook, 11 April 2000, as amended
- Engineer Manual (EM) 1110-2-1304, Civil Works Construction Cost Index System, 30 September 2019
- CECW-CP Memorandum for Distribution, Subject: Initiatives to Improve the Accuracy of Total Project Costs in Civil Works Feasibility Studies Requiring Congress Authorization, 19 September 2007
- CECW-CE Memorandum for Distribution, Subject: Application of Cost Risk Analysis Methods to Develop Contingencies for Civil Works Total Project Costs, 3 July 2007
- Methods to Develop Contingencies for Civil Works Total Project Costs, 3 July 2007
- Cost and Schedule Risk Analysis Process, March 2008

The goal of the cost estimate prepared for the San Juan Metro Coastal Storm Risk Management Study is to present a Total Project Cost (construction and non-construction costs) for the Tentatively Selected Plan (TSP) at the current price levels to be used for project justification/authorization and to escalate costs for budgeting purposes. In addition, the costing efforts are intended to produce a final product (cost estimate) that is reliable and accurate, and that supports the definition of the Federal and the Non-Federal Sponsor's obligations.

The cost estimating effort for the study produced a series of alternative plan formulation cost estimates for decision making and selection of the TSP. The final set of plan formulation cost estimates used for plan selection will rely on construction feature unit pricing and are prepared in Civil Works Work Breakdown Structure (CWWBS) format to the sub-feature level. The cost estimate supporting the National Economic Development (NED) plan (Recommended Plan) is prepared in Micro-computer Aided Cost Estimating System (MCACES) Second Generation (MII) to the CWWBS sub-feature level. This estimate is supported by the preferred labor, equipment, materials, and crew/production breakdown. A fully funded (escalated for inflation through project completion) cost estimate in the form of a Total Project Cost Summary has also been developed.

A contingency of 40% was applied to the TSP Estimates based on the ER 1110-2-1302 from 30 June 2016, page 18, for a Class 4 project with early concept technical design information. This applied contingency is supported by an Abbreviated Risk Analysis (ARA) for each study reach. The

contingency output from those ARAs range in the mid-30 percentiles to low 40 percentiles. As a result an aggregate of 40% was assumed for the TSP. All major risk components were similar between reaches and alternatives with little to no definable difference in the level of risk between one alternative and another.

B.1.1 Plan Formulation Cost Estimates

For the plan formulation cost estimates, unit prices for the construction features were developed based on historical pricing data from previously studies and/or constructed projects in Florida and Puerto Rico, and escalated to FY20 dollars using the current version of the Civil Works Construction Cost Index System (CWCCIS). Below see a list of the reference projects and the respective features used for pricing.

- St Johns County Feasibility Study (FL, FY15)
 - Sheetpile Seawalls
 - Geotubes
 - Breakwaters
- Port Everglades Harbor FY21 Budget (FL, FY19)
 - King pile walls
- Rio Grande de Arecibo (PR, FY18)
 - Levee
 - T-Walls
- CAP_14 Loiza Shoreline Protection (PR, FY19)
 - Armor Stone
 - Marine Mattresses
- Pahokee Feasibility Study (FL, FY18)
 - Island Construction
 - Sand placement
- Lake Worth Lagoon Feasibility Study (FL, FY18)
 - Mangrove/Seagrass planting
- Port Monmouth Flood Control & SPP (NJ, FY16)
 - Sluice / Vertical Lift Gates
- Advances in Planning and Conceptual Design of Storm Surge Barriers - Application to the New York Metropolitan Area (USA & Europe)
 - Large Storm Surge Gates
- Rio de La Plata Phase 1 Flood Damage Reduction (PR, FY10)
 - RCP Culverts

The final alternatives considered for the project were:

Model Reach	Alt	Measure
CL	Alt 1	Seawall
	Alt 2	Recreational Seawall
	Alt 3	Recreational Seawall + Vegetation
	Alt 4	Elevated Living Shoreline
	Alt 5	Seawall North + Elevated Living Shoreline South
	Alt 6	Recreational Seawall North + Elevated Living Shoreline South
WSJB_1	Alt 1	Seawall + Levee + Elevated Living Shoreline
	Alt 2	Storm Gate + Seawall + Levee + Elevated Living Shoreline
	Alt 3	Seawall + Levee
WSJB_2	Alt 1	Levee + Seawall
	Alt 2	Horizontal Levee + Seawall
	Alt 3	Small Storm Surge Gate + Partial Levee + Seawall
	Alt 4	Small Storm Surge Gate + Partial Horizontal Levee + Seawall
	Alt 5	Buyout in low lying elevations
WSJB_3	Alt 1	Seawall + T-Wall
	Alt 2	Seawall + Breakwater
	Alt 3	Seawall + Spoil Island
	Alt 4	Seawall + Recreational Seawall + Breakwater
	Alt 5	Seawall + Living Shoreline + 1.83m Breakwater
	Alt 6	Optimized seawall + Optimized T-Wall
WSJB_4	Alt 1	Seawall
	Alt 2	Levee + Seawall
	Alt 3	Optimized Seawall
All Model Reaches	Alt 1	Two Storm Surge Gates + Seawall

B.1.2 Tentatively Selected Plan (TSP)

The Tentative Selected Plan (TSP) was chosen by the Project Delivery Team (PDT) according to the plan formulation described above and includes:

Model Reach	Alt	Measure
CL	Alt 4	Elevated Living Shoreline
WSJB_1B	Alt 1	Seawall + Levee + Elevated Living Shoreline
WSJB_2	Alt 3	Small Storm Surge Gate + Partial Levee + Seawall
WSJB_3	Alt 5	Seawall + Living Shoreline + 1.83m Breakwater
WSJB_4	Alt 2	Levee + Seawall

The Economics Appendix fully describes the plan selection. The scope of work for the TSP is found in Appendix A, Engineering.

B.1.3 Estimating Methodology

The Micro-Computer Aided Cost Estimating System (MCACES) Second Generation (MII) Cost Estimate for this plan was based on the scope and was formatted based upon the Civil Works Work Breakdown Structure (CWWBS) in accordance with Cost Engineering Regulations. For project justification purposes, the estimated costs are categorized under the appropriate CWWBS code and include both construction and non-construction costs.

The construction costs fall under the following feature code:

- 06 - Fish & Wildlife Facilities
 - Mangrove Mitigation
 - Wetland Mitigation
 - Seagrass Mitigation
- 10 - Breakwaters and Seawalls
 - Cantilever Sheetpile Walls
 - Breakwaters
- 11 - Levees & Floodwalls
 - Levees
 - Living Shorelines
- 13 - Pumping Plant
 - 50 cfs Pump Stations
 - 100 cfs Pump Stations
- 15 - Floodway Control & Diversion Structures
 - RCP Culverts
 - Sluice Gates

The non-construction costs fall under the following feature codes:

- 01 - Lands and Damages
- 30 - Planning, Engineering and Design
- 31 - Construction Management

B.1.4 Construction Cost

As the Project Delivery Team quickly transition from an array of alternatives to a TSP, the construction costs are still based upon historical pricing data from previously studies and/or constructed projects in Florida and Puerto Rico, escalated to FY20 dollars, and then entered into MCACES/MII. These costs include all major project components categorized under the appropriate CWWBS to the sub-feature level. Further refinements of these costs, to transition from a Class 4 to a Class 3 Level of Estimate will be completed as the study progress through the various stages of review. As part of that process more refined costs, in the format of labor,

equipment and materials will be developed in accordance with Cost Engineering Regulations. The Total Project Cost Summary (TPCS) on the TSP contains contingencies as noted in the estimate (below) and were determined based on ER 1110-2-1302 from 30 June 2016. Based upon the total project cost magnitude a full Cost and Schedule Risk Analysis (CSRA) will be performed to establish the project contingency. Oracle Crystal Ball Software will be utilized to perform the CSRA. Risk assumptions will be based upon a PDT brainstorming meeting to be held later on in the study process taking into consideration subsequent information provided during the planning process.

B.1.5 Non-Construction Cost

Non-construction costs typically include Lands and Damages (Real Estate), Planning, Engineering and Design (PED), and Construction Management (S&A). These costs are provided by the PDT either as a lump sum cost or as a percentage of the total construction contract cost. Lands and Damages are provided by Real Estate and are best described in the Real Estate Appendix. PED costs are for the preparation of contract plans and specifications (P&S) and include itemized costs that were provided by the PDT, as well as costs for Post-Construction Monitoring costs and percentages for Engineering During Construction (EDC) that were provided by the project manager. Construction Management costs are for the supervision and administration of a contract and include Project Management and Contract Admin costs. These costs were provided by the project manager and are included as a percentage of the total construction contract cost.

The main report details both allocations and cost apportionment for the Federal Government and the non-Federal sponsor. Also included in the main report are the non-Federal sponsor's obligations (items of local cooperation).

B.1.6 Construction Schedule

The project schedule was prepared by the cost engineer in collaboration with Project Management. The construction duration and sequence were established based on Historical Data. The construction schedule will be changed as the design of the project proceeds into plans and specifications phase. Once the contract is awarded, the contractor will provide a construction schedule which may differ from this draft schedule based on Historical data.

B.1.7 Total Project Cost Summary

The cost estimate for the Tentative Selected Plan (TSP) is prepared with an identified price level date and inflation factors are used to adjust the pricing to the project schedule. This estimate is known as the Fully Funded Cost Estimate or Total Project Cost Summary. It includes all Federal and non-Federal costs: Lands, Easements, Rights of Way and Relocations, construction features, Planning Engineering and Design, Construction Management, Contingency, and Escalation.

B.2 RISK AND UNCERTAINTY ANALYSIS (to be completed in the following weeks)

The CSRA will be developed according to the procedures outlined in the following documents and sources:

- Cost and Schedule Risk Analysis Process guidance prepared by the USACE Cost Engineering MCX.
- Engineer Regulation (ER) 1110-2-1302 CIVIL WORKS COST ENGINEERING, dated June 30, 2016.
- Engineer Technical Letter (ETL) CONSTRUCTION COST ESTIMATING GUIDE FOR CIVIL WORKS, dated September 30, 2008.

B.2.1 Risk Analysis Methods

The risk analysis process for this study is intended to determine the probability of various cost outcomes and quantify the required contingency needed in the cost estimate to achieve the desired level of cost confidence.

The entire PDT will be engaged to participate in a risk analysis brainstorming session to identify risks associated with the Recommended Plan. The risks are to be documented on the risk register, which is a tool commonly used in project planning and risk analysis, and evaluated by the PDT. Assumptions are made as to the likelihood and impact of each risk item, as well as the probability of occurrence and magnitude of the impact if it were to occur. A risk model is then developed to establish contingencies to be applied to the project cost. Risks to be evaluated for the following features of work:

- 01 - Lands and Damages
- 06 - Fish & Wildlife Facilities
- 10 - Breakwaters and Seawalls
- 11 - Levees & Floodwalls
- 13 - Pumping Plant
- 15 - Floodway Control & Diversion Structures
- 30 - Planning, Engineering & Design
- 31 - Construction Management

The results will then be reviewed and all parameters re-evaluated by the PDT as a sanity check of assumptions and inputs. Adjustments will be made to the analysis accordingly and the final contingency will be established. The contingency is to be applied to the Recommended Plan Estimate in the Total Project Cost Summary (TPCS) in order to obtain the Fully Funded Cost.

B.2.2 Risk Analysis Results

Risk analysis results are intended to provide project leadership with contingency information for scheduling, budgeting, and project control purposes, as well as to provide tools to support decision making and risk management as projects progress through planning and implementation.

B.3 TOTAL PROJECT COST SUMMARY

The TPCS addresses inflation through project completion (accomplished by escalation to mid-point of construction per ER 1110-2-1302, Appendix C, Page C-2). It is based on the scope of the Tentative Selected Plan (TSP) and the Recommended Plan (depending on the stage of the study) and the official project schedule. The TPCS includes Federal and Non-Federal costs for Lands and Damages, all construction features, PED, S&A, along with the appropriate contingencies and escalation associated with each of these activities. The TPCS is formatted according to the CWWBS and uses CWCCIS factors for escalation (EM 1110-2-1304) of construction costs and Office of Management and Budget (EC 11-2-18X, 20 Feb 2008) factors for escalation of PED and S&A costs.

The Total Project Cost Summary was prepared using the MCACES/MII cost estimate on the Recommended Plan, as well as the contingencies set by the risk analysis and the official project schedule.

B.3.1 Total Project Cost Summary Spreadsheet

Refer to the Total Project Cost Summary Spreadsheet on the next page.

B.4 COST MCX TPCS CERTIFICATION

The Recommended Plan estimate, formal cost and schedule risk analysis and total project cost summary spreadsheet will be reviewed by the Walla Walla Mandatory Center of Expertise in conjunction with the Recommended Plan Draft Report Agency Technical Review. This review serves as Cost Agency Technical Review in order to obtain cost certification by the Cost MCX in support of this feasibility study in accordance with Cost Engineering Regulations and Smart Planning Guidelines.

ATTACHMENT A – COST & SCHEDULE RISK REGISTER (to be completed in the following weeks)

ATTACHMENT B – TOTAL PROJECT COST SUMMARY

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

Printed: 7/23/2020
Page 1 of 8

PROJECT: San Juan Metro/Back Bay Coastal Storm Risk Management Study
PROJECT NO: P2 469423
LOCATION: San Juan, Puerto Rico

DISTRICT: SAJ Jacksonville
POC: CHIEF, COST ENGINEERING, Matthew Cunningham
PREPARED: 7/22/2020

This Estimate reflects the scope and schedule in report;

Draft TSP Cost Appendix

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	Program Year (Budget EC): Effective Price Level Date:				Spent Thru: 1 OCT 19 (\$K) K	TOTAL FIRST COST (\$K) K	INFLATED (%) L	COST (\$K) M	CNTG (\$K) N	FULL (\$K) O
						ESC (%) G	COST (\$K) H	CNTG (\$K) I	TOTAL (\$K) J						
06	FISH & WILDLIFE FACILITIES	\$5,565	\$2,226	40.0%	\$7,791	0.0%	\$5,565	\$2,226	\$7,791	\$0	\$7,791	17.4%	\$6,533	\$2,613	\$9,146
10	BREAKWATER & SEAWALLS	\$116,916	\$46,766	40.0%	\$163,682	0.0%	\$116,916	\$46,766	\$163,682	\$0	\$163,682	18.1%	\$138,080	\$55,232	\$193,313
11	LEVEES & FLOODWALLS	\$9,473	\$3,789	40.0%	\$13,262	0.0%	\$9,473	\$3,789	\$13,262	\$0	\$13,262	17.0%	\$11,088	\$4,435	\$15,523
13	PUMPING PLANT	\$28,800	\$11,520	40.0%	\$40,320	0.0%	\$28,800	\$11,520	\$40,320	\$0	\$40,320	18.1%	\$34,002	\$13,601	\$47,603
14	RECREATION FACILITIES	\$7,220	\$2,888	40.0%	\$10,108	0.0%	\$7,220	\$2,888	\$10,108	\$0	\$10,108	16.3%	\$8,394	\$3,358	\$11,752
15	FLOODWAY CONTROL & DIVERSION STRUCTURE	\$5,982	\$2,393	40.0%	\$8,375	0.0%	\$5,982	\$2,393	\$8,375	\$0	\$8,375	15.9%	\$6,934	\$2,774	\$9,708
CONSTRUCTION ESTIMATE TOTALS:		\$173,957	\$69,583		\$243,539	0.0%	\$173,957	\$69,583	\$243,539	\$0	\$243,539	17.9%	\$205,032	\$82,013	\$287,044
01	LANDS AND DAMAGES	\$26,302	\$7,891	30.0%	\$34,192	0.0%	\$26,302	\$7,890	\$34,192	\$0	\$34,192	10.6%	\$29,089	\$8,727	\$37,816
30	PLANNING, ENGINEERING & DESIGN	\$24,677	\$9,871	40.0%	\$34,548	0.0%	\$24,677	\$9,871	\$34,548	\$0	\$34,548	18.2%	\$29,162	\$11,665	\$40,827
30	Real Estate Admin Costs (Fed)	\$150	\$45	30.0%	\$195	0.0%	\$150	\$45	\$195	\$0	\$195	23.1%	\$185	\$55	\$240
30	Real Estate Admin Costs (Non-Fed)	\$350	\$105	30.0%	\$455	0.0%	\$350	\$105	\$455	\$0	\$455	23.1%	\$431	\$129	\$560
31	CONSTRUCTION MANAGEMENT	\$13,339	\$5,336	40.0%	\$18,674	0.0%	\$13,339	\$5,336	\$18,674	\$0	\$18,674	24.7%	\$16,627	\$6,651	\$23,278
PROJECT COST TOTALS:		\$238,774	\$92,830	38.9%	\$331,604		\$238,774	\$92,829	\$331,604	\$0	\$331,604	17.5%	\$280,525	\$109,240	\$389,765

CHIEF, COST ENGINEERING, Matthew Cunningham

ESTIMATED TOTAL PROJECT COST: \$389,765

PROJECT MANAGER, Sheila Hint

CHIEF, REAL ESTATE, Timothy McQuillen

CHIEF, PLANNING, Eric Summa

CHIEF, ENGINEERING, Laureen Borocharner

CHIEF, OPERATIONS, Carol Bernstein

CHIEF, CONSTRUCTION, Jim Jeffords

CHIEF, CONTRACTING, Ronnell Booker

CHIEF, PM-PB, Karen Smith

CHIEF, DPM, Tim Murphy

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

Printed: 7/23/2020
Page 2 of 8

**** CONTRACT COST SUMMARY ****

PROJECT: San Juan Metro/Back Bay Coastal Storm Risk Management Study
LOCATION: San Juan, Puerto Rico
This Estimate reflects the scope and schedule in report; Draft TSP Cost Appendix

DISTRICT: SAJ Jacksonville
POC: CHIEF, COST ENGINEERING, Matthew Cunningham
PREPARED: 7/22/2020

Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)				TOTAL PROJECT COST (FULLY FUNDED)				
		Estimate Prepared: Effective Price Level: 22-Jul-20 1-Oct-19				Program Year (Budget EC): 2020 Effective Price Level Date: 1 OCT 19								
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
	CONDADO LAGOON (CNT.1)													
06	FISH & WILDLIFE FACILITIES (Mitigation)	\$2,114	\$845	40.0%	\$2,959	0.0%	\$2,114	\$845	\$2,959	2025Q3	17.1%	\$2,475	\$990	\$3,465
11	LEVEES & FLOODWALLS (Levee)	\$4,254	\$1,701	40.0%	\$5,955	0.0%	\$4,254	\$1,701	\$5,955	2025Q3	17.1%	\$4,981	\$1,992	\$6,974
13	PUMPING PLANT	\$7,200	\$2,880	40.0%	\$10,080	0.0%	\$7,200	\$2,880	\$10,080	2025Q3	17.1%	\$8,432	\$3,373	\$11,804
15	FLOODWAY CONTROL & DIVERSION STRUCTURE (Culverts)	\$512	\$205	40.0%	\$717	0.0%	\$512	\$205	\$717	2025Q3	17.1%	\$600	\$240	\$839
	CONSTRUCTION ESTIMATE TOTALS:	\$14,079	\$5,632	40.0%	\$19,711		\$14,079	\$5,632	\$19,711			\$16,487	\$6,595	\$23,082
01	LANDS AND DAMAGES	\$7,210	\$2,163	30.0%	\$9,373	0.0%	\$7,210	\$2,163	\$9,373	2023Q3	10.6%	\$7,974	\$2,392	\$10,366
30	PLANNING, ENGINEERING & DESIGN													
0.5%	Project Management	\$70	\$28	40.0%	\$99	0.0%	\$70	\$28	\$99	2023Q3	14.9%	\$81	\$32	\$113
0.5%	Planning & Environmental Compliance	\$70	\$28	40.0%	\$99	0.0%	\$70	\$28	\$99	2023Q3	14.9%	\$81	\$32	\$113
4.0%	Engineering & Design	\$563	\$225	40.0%	\$788	0.0%	\$563	\$225	\$788	2023Q3	14.9%	\$647	\$259	\$906
1.0%	Reviews, ATRs, IEPs, VE	\$141	\$56	40.0%	\$197	0.0%	\$141	\$56	\$197	2023Q3	14.9%	\$162	\$65	\$226
0.3%	Life Cycle Updates (cost, schedule, risks)	\$42	\$17	40.0%	\$59	0.0%	\$42	\$17	\$59	2023Q3	14.9%	\$49	\$19	\$68
0.2%	Contracting & Reprographics	\$28	\$11	40.0%	\$39	0.0%	\$28	\$11	\$39	2023Q3	14.9%	\$32	\$13	\$45
4.0%	Engineering During Construction	\$563	\$225	40.0%	\$788	0.0%	\$563	\$225	\$788	2025Q3	23.5%	\$696	\$278	\$974
1.0%	Planning During Construction	\$141	\$56	40.0%	\$197	0.0%	\$141	\$56	\$197	2025Q3	23.5%	\$174	\$70	\$243
3.0%	Adaptive Management & Monitoring	\$422	\$169	40.0%	\$591	0.0%	\$422	\$169	\$591	2023Q3	14.9%	\$485	\$194	\$679
0.3%	Project Operations	\$42	\$17	40.0%	\$59	0.0%	\$42	\$17	\$59	2023Q3	14.9%	\$49	\$19	\$68
	RE Admin Costs (Federal)	\$41	\$12	30.0%	\$53	0.0%	\$41	\$12	\$53	2023Q3	23.5%	\$51	\$15	\$66
	RE Admin Costs (Non-Federal)	\$96	\$29	30.0%	\$125	0.0%	\$96	\$29	\$125	2023Q3	23.5%	\$119	\$36	\$154
31	CONSTRUCTION MANAGEMENT													
8.0%	Construction Management	\$1,126	\$451	40.0%	\$1,577	0.0%	\$1,126	\$451	\$1,577	2025Q3	23.5%	\$1,391	\$557	\$1,948
	CONTRACT COST TOTALS:	\$24,636	\$9,120		\$33,756		\$24,636	\$9,120	\$33,756			\$28,476	\$10,576	\$39,052

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

Printed: 7/23/2020
Page 3 of 8

**** CONTRACT COST SUMMARY ****

PROJECT: San Juan Metro/Back Bay Coastal Storm Risk Management Study
LOCATION: San Juan, Puerto Rico
This Estimate reflects the scope and schedule in report; Draft TSP Cost Appendix

DISTRICT: SAJ Jacksonville
POC: CHIEF, COST ENGINEERING, Matthew Cunningham
PREPARED: 7/22/2020

CIVIL WORKS WORK BREAKDOWN STRUCTURE		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)				TOTAL PROJECT COST (FULLY FUNDED)				
		Estimate Prepared: Effective Price Level:		22-Jul-20 1-Oct-19		Program Year (Budget EC): Effective Price Level Date:		2020 1 OCT 19						
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
06	WEST SAN JUAN BAY - 1B (CNT. 2)													
	FISH & WILDLIFE FACILITIES (Mitigation)	\$2,225	\$890	40.0%	\$3,116	0.0%	\$2,225	\$890	\$3,116	2025Q2	16.3%	\$2,587	\$1,035	\$3,622
10	BREAKWATER & SEAWALLS (Seawall)	\$15,061	\$6,025	40.0%	\$21,086	0.0%	\$15,061	\$6,025	\$21,086	2025Q2	16.3%	\$17,510	\$7,004	\$24,514
11	LEVEES & FLOODWALLS (Levee & Living Shoreline)	\$3,135	\$1,254	40.0%	\$4,389	0.0%	\$3,135	\$1,254	\$4,389	2025Q2	16.3%	\$3,645	\$1,458	\$5,103
15	FLOODWAY CONTROL & DIVERSION STRUCTURE (Culverts)	\$449	\$180	40.0%	\$629	0.0%	\$449	\$180	\$629	2025Q2	16.3%	\$522	\$209	\$731
CONSTRUCTION ESTIMATE TOTALS:		\$20,871	\$8,349	40.0%	\$29,220		\$20,871	\$8,349	\$29,220			\$24,265	\$9,706	\$33,971
01	LANDS AND DAMAGES	\$9,131	\$2,739	30.0%	\$11,871	0.0%	\$9,131	\$2,739	\$11,871	2023Q3	10.6%	\$10,099	\$3,030	\$13,128
30	PLANNING, ENGINEERING & DESIGN													
0.5%	Project Management	\$104	\$42	40.0%	\$146	0.0%	\$104	\$42	\$146	2023Q3	14.9%	\$120	\$48	\$168
0.5%	Planning & Environmental Compliance	\$104	\$42	40.0%	\$146	0.0%	\$104	\$42	\$146	2023Q3	14.9%	\$120	\$48	\$168
4.0%	Engineering & Design	\$835	\$334	40.0%	\$1,169	0.0%	\$835	\$334	\$1,169	2023Q3	14.9%	\$959	\$384	\$1,343
1.0%	Reviews, ATRs, IEPs, VE	\$209	\$83	40.0%	\$292	0.0%	\$209	\$83	\$292	2023Q3	14.9%	\$240	\$96	\$336
0.3%	Life Cycle Updates (cost, schedule, risks)	\$63	\$25	40.0%	\$88	0.0%	\$63	\$25	\$88	2023Q3	14.9%	\$72	\$29	\$101
0.2%	Contracting & Reprographics	\$42	\$17	40.0%	\$58	0.0%	\$42	\$17	\$58	2023Q3	14.9%	\$48	\$19	\$67
4.0%	Engineering During Construction	\$835	\$334	40.0%	\$1,169	0.0%	\$835	\$334	\$1,169	2025Q2	22.4%	\$1,022	\$409	\$1,431
1.0%	Planning During Construction	\$209	\$83	40.0%	\$292	0.0%	\$209	\$83	\$292	2025Q2	22.4%	\$255	\$102	\$358
3.0%	Adaptive Management & Monitoring	\$626	\$250	40.0%	\$877	0.0%	\$626	\$250	\$877	2023Q3	14.9%	\$719	\$288	\$1,007
0.3%	Project Operations	\$63	\$25	40.0%	\$88	0.0%	\$63	\$25	\$88	2023Q3	14.9%	\$72	\$29	\$101
	RE Admin Costs (Federal)	\$52	\$16	30.0%	\$68	0.0%	\$52	\$16	\$68	2023Q3	22.4%	\$64	\$19	\$83
	RE Admin Costs (Non-Federal)	\$122	\$36	30.0%	\$158	0.0%	\$122	\$36	\$158	2023Q3	22.4%	\$149	\$45	\$193
31	CONSTRUCTION MANAGEMENT													
8.0%	Construction Management	\$1,670	\$668	40.0%	\$2,338	0.0%	\$1,670	\$668	\$2,338	2025Q2	22.4%	\$2,044	\$817	\$2,861
CONTRACT COST TOTALS:		\$34,935	\$13,043		\$47,978		\$34,935	\$13,043	\$47,978			\$40,247	\$15,068	\$55,314

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

Printed:7/23/2020
Page 4 of 8

**** CONTRACT COST SUMMARY ****

PROJECT: San Juan Metro/Back Bay Coastal Storm Risk Management Study
LOCATION: San Juan, Puerto Rico
This Estimate reflects the scope and schedule in report; Draft TSP Cost Appendix

DISTRICT: SAJ Jacksonville
POC: CHIEF, COST ENGINEERING, Matthew Cunningham
PREPARED: 7/22/2020

Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Base)				TOTAL PROJECT COST (FULLY FUNDED)				
		Estimate Prepared: Effective Price Level: 22-Jul-20 1-Oct-19				Program Year (Budget EC): 2020 Effective Price Level Date: 1 OCT 19				FULLY FUNDED PROJECT ESTIMATE				
WBS NUMBER	Civil Works Feature & Sub-Feature Description	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
WEST SAN JUAN BAY - 2 (CNT.3)														
06	FISH & WILDLIFE FACILITIES (Mitigation)	\$57	\$23	40.0%	\$79	0.0%	\$57	\$23	\$79	2025Q1	15.4%	\$65	\$26	\$92
10	BREAKWATER & SEAWALLS (Seawall)	\$3,161	\$1,264	40.0%	\$4,425	0.0%	\$3,161	\$1,264	\$4,425	2025Q1	15.4%	\$3,648	\$1,459	\$5,107
11	LEVEES & FLOODWALLS (Levee)	\$642	\$257	40.0%	\$899	0.0%	\$642	\$257	\$899	2025Q1	15.4%	\$741	\$296	\$1,037
13	PUMPING PLANT	\$9,000	\$3,600	40.0%	\$12,600	0.0%	\$9,000	\$3,600	\$12,600	2025Q1	15.4%	\$10,387	\$4,155	\$14,542
15	FLOODWAY CONTROL & DIVERSION STRUCTURE (Sluice Gate)	\$4,279	\$1,711	40.0%	\$5,990	0.0%	\$4,279	\$1,711	\$5,990	2025Q1	15.4%	\$4,938	\$1,975	\$6,913
CONSTRUCTION ESTIMATE TOTALS:		\$17,138	\$6,855	40.0%	\$23,993		\$17,138	\$6,855	\$23,993			\$19,779	\$7,912	\$27,691
01	LANDS AND DAMAGES	\$439	\$132	30.0%	\$571	0.0%	\$439	\$132	\$571	2023Q3	10.6%	\$486	\$146	\$632
30	PLANNING, ENGINEERING & DESIGN													
0.5%	Project Management	\$86	\$34	40.0%	\$120	0.0%	\$86	\$34	\$120	2023Q3	14.9%	\$98	\$39	\$138
0.5%	Planning & Environmental Compliance	\$86	\$34	40.0%	\$120	0.0%	\$86	\$34	\$120	2023Q3	14.9%	\$98	\$39	\$138
4.0%	Engineering & Design	\$686	\$274	40.0%	\$960	0.0%	\$686	\$274	\$960	2023Q3	14.9%	\$787	\$315	\$1,102
1.0%	Reviews, ATRs, IEPs, VE	\$171	\$69	40.0%	\$240	0.0%	\$171	\$69	\$240	2023Q3	14.9%	\$197	\$79	\$276
0.3%	Life Cycle Updates (cost, schedule, risks)	\$51	\$21	40.0%	\$72	0.0%	\$51	\$21	\$72	2023Q3	14.9%	\$59	\$24	\$83
0.2%	Contracting & Reprographics	\$34	\$14	40.0%	\$48	0.0%	\$34	\$14	\$48	2023Q3	14.9%	\$39	\$16	\$55
4.0%	Engineering During Construction	\$686	\$274	40.0%	\$960	0.0%	\$686	\$274	\$960	2025Q1	21.3%	\$832	\$333	\$1,164
1.0%	Planning During Construction	\$171	\$69	40.0%	\$240	0.0%	\$171	\$69	\$240	2025Q1	21.3%	\$208	\$83	\$291
3.0%	Adaptive Management & Monitoring	\$514	\$206	40.0%	\$720	0.0%	\$514	\$206	\$720	2023Q3	14.9%	\$591	\$236	\$827
0.3%	Project Operations	\$51	\$21	40.0%	\$72	0.0%	\$51	\$21	\$72	2023Q3	14.9%	\$59	\$24	\$83
	RE Admin Costs (Federal)	\$3	\$1	30.0%	\$3	0.0%	\$3	\$1	\$3	2023Q3	21.3%	\$3	\$1	\$4
	RE Admin Costs (Non-Federal)	\$6	\$2	30.0%	\$8	0.0%	\$6	\$2	\$8	2023Q3	21.3%	\$7	\$2	\$9
31	CONSTRUCTION MANAGEMENT													
8.0%	Construction Management	\$1,371	\$548	40.0%	\$1,919	0.0%	\$1,371	\$548	\$1,919	2025Q1	21.3%	\$1,663	\$665	\$2,328
CONTRACT COST TOTALS:		\$21,493	\$8,552		\$30,046		\$21,493	\$8,552	\$30,046			\$24,907	\$9,913	\$34,821

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

Printed: 7/23/2020
Page 5 of 8

**** CONTRACT COST SUMMARY ****

PROJECT: San Juan Metro/Back Bay Coastal Storm Risk Management Study
LOCATION: San Juan, Puerto Rico
This Estimate reflects the scope and schedule in report; Draft TSP Cost Appendix

DISTRICT: SAJ Jacksonville
POC: CHIEF, COST ENGINEERING, Matthew Cunningham
PREPARED: 7/22/2020

Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)				TOTAL PROJECT COST (FULLY FUNDED)				
		Estimate Prepared: 22-Jul-20 Effective Price Level: 1-Oct-19				Program Year (Budget EC): 2020 Effective Price Level Date: 1 OCT 19				FULLY FUNDED PROJECT ESTIMATE				
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
	WEST SAN JUAN BAY - 3 (CNT.4)													
06	FISH & WILDLIFE FACILITIES (Mitigation)	\$1,099	\$440	40.0%	\$1,539	0.0%	\$1,099	\$440	\$1,539	2026Q3	20.5%	\$1,325	\$530	\$1,855
10	BREAKWATER & SEAWALLS (Seawall)	\$57,823	\$23,129	40.0%	\$80,952	0.0%	\$57,823	\$23,129	\$80,952	2026Q3	20.5%	\$69,677	\$27,871	\$97,548
11	LEVEES & FLOODWALLS (Living Shoreline)	\$1,144	\$458	40.0%	\$1,602	0.0%	\$1,144	\$458	\$1,602	2026Q3	20.5%	\$1,379	\$551	\$1,930
13	PUMPING PLANT	\$12,600	\$5,040	40.0%	\$17,640	0.0%	\$12,600	\$5,040	\$17,640	2026Q3	20.5%	\$15,183	\$6,073	\$21,256
15	FLOODWAY CONTROL & DIVERSION STRUCTURE (Culverts)	\$406	\$163	40.0%	\$569	0.0%	\$406	\$163	\$569	2026Q3	20.5%	\$490	\$196	\$686
	CONSTRUCTION ESTIMATE TOTALS:	\$73,073	\$29,229	40.0%	\$102,302		\$73,073	\$29,229	\$102,302			\$88,054	\$35,221	\$123,275
01	LANDS AND DAMAGES	\$3,959	\$1,188	30.0%	\$5,147	0.0%	\$3,959	\$1,188	\$5,147	2023Q3	10.6%	\$4,378	\$1,314	\$5,692
30	PLANNING, ENGINEERING & DESIGN													
0.5%	Project Management	\$365	\$146	40.0%	\$512	0.0%	\$365	\$146	\$512	2023Q3	14.9%	\$420	\$168	\$588
0.5%	Planning & Environmental Compliance	\$365	\$146	40.0%	\$512	0.0%	\$365	\$146	\$512	2023Q3	14.9%	\$420	\$168	\$588
4.0%	Engineering & Design	\$2,923	\$1,169	40.0%	\$4,092	0.0%	\$2,923	\$1,169	\$4,092	2023Q3	14.9%	\$3,358	\$1,343	\$4,701
1.0%	Reviews, ATRs, IEPs, VE	\$731	\$292	40.0%	\$1,023	0.0%	\$731	\$292	\$1,023	2023Q3	14.9%	\$839	\$336	\$1,175
0.3%	Life Cycle Updates (cost, schedule, risks)	\$219	\$88	40.0%	\$307	0.0%	\$219	\$88	\$307	2023Q3	14.9%	\$252	\$101	\$353
0.2%	Contracting & Reprographics	\$146	\$58	40.0%	\$205	0.0%	\$146	\$58	\$205	2023Q3	14.9%	\$168	\$67	\$235
4.0%	Engineering During Construction	\$2,923	\$1,169	40.0%	\$4,092	0.0%	\$2,923	\$1,169	\$4,092	2026Q3	28.1%	\$3,744	\$1,498	\$5,242
1.0%	Planning During Construction	\$731	\$292	40.0%	\$1,023	0.0%	\$731	\$292	\$1,023	2026Q3	28.1%	\$936	\$374	\$1,310
3.0%	Adaptive Management & Monitoring	\$2,192	\$877	40.0%	\$3,069	0.0%	\$2,192	\$877	\$3,069	2023Q3	14.9%	\$2,518	\$1,007	\$3,525
0.3%	Project Operations	\$219	\$88	40.0%	\$307	0.0%	\$219	\$88	\$307	2023Q3	14.9%	\$252	\$101	\$353
	RE Admin Costs (Federal)	\$23	\$7	30.0%	\$29	0.0%	\$23	\$7	\$29	2023Q3	28.1%	\$29	\$9	\$38
	RE Admin Costs (Non-Federal)	\$53	\$16	30.0%	\$68	0.0%	\$53	\$16	\$68	2023Q3	28.1%	\$67	\$20	\$88
31	CONSTRUCTION MANAGEMENT													
8.0%	Construction Management	\$5,846	\$2,338	40.0%	\$8,184	0.0%	\$5,846	\$2,338	\$8,184	2026Q3	28.1%	\$7,488	\$2,995	\$10,484
	CONTRACT COST TOTALS:	\$93,768	\$37,104		\$130,871		\$93,768	\$37,104	\$130,871			\$112,923	\$44,722	\$157,645

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

Printed: 7/23/2020
Page 6 of 8

**** CONTRACT COST SUMMARY ****

PROJECT: San Juan Metro/Back Bay Coastal Storm Risk Management Study
LOCATION: San Juan, Puerto Rico
This Estimate reflects the scope and schedule in report; Draft TSP Cost Appendix

DISTRICT: SAJ Jacksonville
POC: CHIEF, COST ENGINEERING, Matthew Cunningham
PREPARED: 7/22/2020

Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)				TOTAL PROJECT COST (FULLY FUNDED)				
		Estimate Prepared: Effective Price Level:		22-Jul-20 1-Oct-19		Program Year (Budget EC): 2020 Effective Price Level Date: 1 OCT 19				FULLY FUNDED PROJECT ESTIMATE				
WBS NUMBER	Civil Works Feature & Sub-Feature Description	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
10	WEST SAN JUAN BAY - 3 (CNT.S) BREAKWATER & SEAWALLS (Breakwaters)	\$24,271	\$9,708	40.0%	\$33,979	0.0%	\$24,271	\$9,708	\$33,979	2025Q2	16.3%	\$28,217	\$11,287	\$39,504
CONSTRUCTION ESTIMATE TOTALS:		\$24,271	\$9,708	40.0%	\$33,979		\$24,271	\$9,708	\$33,979			\$28,217	\$11,287	\$39,504
01	LANDS AND DAMAGES	\$0	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
30	PLANNING, ENGINEERING & DESIGN													
0.5%	Project Management	\$121	\$49	40.0%	\$170	0.0%	\$121	\$49	\$170	2023Q3	14.9%	\$139	\$56	\$195
0.5%	Planning & Environmental Compliance	\$121	\$49	40.0%	\$170	0.0%	\$121	\$49	\$170	2023Q3	14.9%	\$139	\$56	\$195
4.0%	Engineering & Design	\$971	\$388	40.0%	\$1,359	0.0%	\$971	\$388	\$1,359	2023Q3	14.9%	\$1,115	\$446	\$1,561
1.0%	Reviews, ATRs, IEPs, VE	\$243	\$97	40.0%	\$340	0.0%	\$243	\$97	\$340	2023Q3	14.9%	\$279	\$112	\$390
0.3%	Life Cycle Updates (cost, schedule, risks)	\$73	\$29	40.0%	\$102	0.0%	\$73	\$29	\$102	2023Q3	14.9%	\$84	\$33	\$117
0.2%	Contracting & Reprographics	\$49	\$19	40.0%	\$68	0.0%	\$49	\$19	\$68	2023Q3	14.9%	\$56	\$22	\$78
4.0%	Engineering During Construction	\$971	\$388	40.0%	\$1,359	0.0%	\$971	\$388	\$1,359	2025Q2	22.4%	\$1,188	\$475	\$1,664
1.0%	Planning During Construction	\$243	\$97	40.0%	\$340	0.0%	\$243	\$97	\$340	2025Q2	22.4%	\$297	\$119	\$416
3.0%	Adaptive Management & Monitoring	\$728	\$291	40.0%	\$1,019	0.0%	\$728	\$291	\$1,019	2023Q3	14.9%	\$836	\$335	\$1,171
0.3%	Project Operations	\$73	\$29	40.0%	\$102	0.0%	\$73	\$29	\$102	2023Q3	14.9%	\$84	\$33	\$117
31	CONSTRUCTION MANAGEMENT													
8.0%	Construction Management	\$1,942	\$777	40.0%	\$2,718	0.0%	\$1,942	\$777	\$2,718	2025Q2	22.4%	\$2,377	\$951	\$3,327
CONTRACT COST TOTALS:		\$29,804	\$11,922		\$41,726		\$29,804	\$11,922	\$41,726			\$34,811	\$13,924	\$48,735

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

Printed: 7/23/2020
Page 7 of 8

**** CONTRACT COST SUMMARY ****

PROJECT: San Juan Metro/Back Bay Coastal Storm Risk Management Study
LOCATION: San Juan, Puerto Rico
This Estimate reflects the scope and schedule in report; Draft TSP Cost Appendix

DISTRICT: SAJ Jacksonville
POC: CHIEF, COST ENGINEERING, Matthew Cunningham
PREPARED: 7/22/2020

Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)				TOTAL PROJECT COST (FULLY FUNDED)				
		Estimate Prepared: Effective Price Level:		22-Jul-20 1-Oct-19		Program Year (Budget EC): Effective Price Level Date:		2020 1 OCT 19		FULLY FUNDED PROJECT ESTIMATE				
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
WEST SAN JUAN RAY - 4 (CNT 6)														
06	FISH & WILDLIFE FACILITIES (Mitigation)	\$70	\$28	40.0%	\$98	0.0%	\$70	\$28	\$98	2024Q4	14.6%	\$80	\$32	\$112
10	BREAKWATER & SEAWALLS (Seawall)	\$16,600	\$6,640	40.0%	\$23,240	0.0%	\$16,600	\$6,640	\$23,240	2024Q4	14.6%	\$19,028	\$7,611	\$26,640
11	LEVEES & FLOODWALLS (Levee)	\$298	\$119	40.0%	\$418	0.0%	\$298	\$119	\$418	2024Q4	14.6%	\$342	\$137	\$479
15	FLOODWAY CONTROL & DIVERSION STRUCTURE (Culverts)	\$336	\$134	40.0%	\$470	0.0%	\$336	\$134	\$470	2024Q4	14.6%	\$385	\$154	\$538
CONSTRUCTION ESTIMATE TOTALS:		\$17,304	\$6,922	40.0%	\$24,226		\$17,304	\$6,922	\$24,226			\$19,835	\$7,934	\$27,769
01	LANDS AND DAMAGES	\$5,562	\$1,669	30.0%	\$7,231	0.0%	\$5,562	\$1,669	\$7,231	2023Q3	10.6%	\$6,152	\$1,846	\$7,998
30	PLANNING, ENGINEERING & DESIGN													
0.5%	Project Management	\$87	\$35	40.0%	\$121	0.0%	\$87	\$35	\$121	2023Q3	14.9%	\$99	\$40	\$139
0.5%	Planning & Environmental Compliance	\$87	\$35	40.0%	\$121	0.0%	\$87	\$35	\$121	2023Q3	14.9%	\$99	\$40	\$139
4.0%	Engineering & Design	\$692	\$277	40.0%	\$969	0.0%	\$692	\$277	\$969	2023Q3	14.9%	\$795	\$318	\$1,113
1.0%	Reviews, ATRs, IEPs, VE	\$173	\$69	40.0%	\$242	0.0%	\$173	\$69	\$242	2023Q3	14.9%	\$199	\$80	\$278
0.3%	Life Cycle Updates (cost, schedule, risks)	\$52	\$21	40.0%	\$73	0.0%	\$52	\$21	\$73	2023Q3	14.9%	\$60	\$24	\$83
0.2%	Contracting & Reprographics	\$35	\$14	40.0%	\$48	0.0%	\$35	\$14	\$48	2023Q3	14.9%	\$40	\$16	\$56
4.0%	Engineering During Construction	\$692	\$277	40.0%	\$969	0.0%	\$692	\$277	\$969	2024Q4	20.2%	\$832	\$333	\$1,165
1.0%	Planning During Construction	\$173	\$69	40.0%	\$242	0.0%	\$173	\$69	\$242	2024Q4	20.2%	\$208	\$83	\$291
3.0%	Adaptive Management & Monitoring	\$519	\$208	40.0%	\$727	0.0%	\$519	\$208	\$727	2023Q3	14.9%	\$596	\$239	\$835
0.3%	Project Operations	\$52	\$21	40.0%	\$73	0.0%	\$52	\$21	\$73	2023Q3	14.9%	\$60	\$24	\$83
	RE Admin Costs (Federal)	\$32	\$10	30.0%	\$41	0.0%	\$32	\$10	\$41	2023Q3	20.2%	\$38	\$11	\$50
	RE Admin Costs (Non-Federal)	\$74	\$22	30.0%	\$96	0.0%	\$74	\$22	\$96	2023Q3	20.2%	\$89	\$27	\$116
31	CONSTRUCTION MANAGEMENT													
8.0%	Construction Management	\$1,384	\$554	40.0%	\$1,938	0.0%	\$1,384	\$554	\$1,938	2024Q4	20.2%	\$1,664	\$666	\$2,330
CONTRACT COST TOTALS:		\$26,918	\$10,200		\$37,118		\$26,918	\$10,200	\$37,118			\$30,766	\$11,679	\$42,445

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

Printed: 7/23/2020
Page 8 of 8

**** CONTRACT COST SUMMARY ****

PROJECT: San Juan Metro/Back Bay Coastal Storm Risk Management Study
LOCATION: San Juan, Puerto Rico
This Estimate reflects the scope and schedule in report; Draft TSP Cost Appendix

DISTRICT: SAJ Jacksonville
POC: CHIEF, COST ENGINEERING, Matthew Cunningham
PREPARED: 7/22/2020

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	Estimate Prepared: Effective Price Level:		22-Jul-20 1-Oct-19		Program Year (Budget EC): 2020 Effective Price Level Date: 1 OCT 19					FULLY FUNDED PROJECT ESTIMATE			
		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
14	RECREATIONAL FEATURES RECREATION FACILITIES	\$7,220	\$2,888	40.0%	\$10,108	0.0%	\$7,220	\$2,888	\$10,108	2025Q2	16.3%	\$8,394	\$3,358	\$11,752
CONSTRUCTION ESTIMATE TOTALS:		\$7,220	\$2,888	40.0%	\$10,108		\$7,220	\$2,888	\$10,108			\$8,394	\$3,358	\$11,752
01	LANDS AND DAMAGES	\$0	\$0	30.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
30	PED (Assumed to be designed with contracts above)													
0.0%	Project Management	\$0	\$0	40.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.0%	Planning & Environmental Compliance	\$0	\$0	40.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.0%	Engineering & Design	\$0	\$0	40.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.0%	Reviews, ATRs, IEPs, VE	\$0	\$0	40.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.0%	Life Cycle Updates (cost, schedule, risks)	\$0	\$0	40.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.0%	Contracting & Reprographics	\$0	\$0	40.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.0%	Engineering During Construction	\$0	\$0	40.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.0%	Planning During Construction	\$0	\$0	40.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.0%	Adaptive Management & Monitoring	\$0	\$0	40.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
0.0%	Project Operations	\$0	\$0	40.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
31	CONSTRUCTION MANAGEMENT (Assumed to be designed with contracts above)													
0.0%	Construction Management	\$0	\$0	40.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0	\$0
CONTRACT COST TOTALS:		\$7,220	\$2,888		\$10,108		\$7,220	\$2,888	\$10,108			\$8,394	\$3,358	\$11,752