

ATTACHMENT C – FEASIBILITY STUDY COST ESTIMATES

Byram River Basin Flood Risk Management Feasibility Study Cost Estimate By Phase

Phase 1: Study Initiation Meeting	Sub-task Cost	USACE contribution	ToG contribution
1 Study Initiation Meeting	\$30,000	\$6,000	\$24,000
2.1 a. Surveying and Mapping			
2.1 a.i. Flood Mark Survey	\$10,500	\$1,000	\$9,500
2.1 a.ii Stream Survey	\$40,500	\$1,500	\$39,000
2.2 a Preliminary Hydrology and Hydraulics	\$0	\$0	\$0
2.2 b Existing and Future Project Conditions	\$62,500	\$2,500	\$60,000
2.2 c Existing Conditions Hydraulics	\$71,500	\$2,500	\$69,000
2.8 Engineering Management (30%)	\$15,000	\$15,000	\$0
3.2 h Env. Coordination with PDT (25%)	\$8,750	\$8,750	\$0
3.6 GIS Support (20%)	\$19,000	\$5,700	\$13,300
4.1 a Structure Inventory & Structure Value Survey	\$70,000	\$28,000	\$42,000
4.1 b Flood Damage Analysis without project	\$60,000	\$60,000	\$0
4.1 c Flood Damage - Economic Screening of Alternatives	\$25,000	\$25,000	\$0
5.1 Establish Without Project Conditions	\$20,000	\$10,000	\$10,000
5.7 a. Plan Formulation Management (20%)	\$12,000	\$6,000	\$6,000
6.2 Rights of Entry	\$8,000	\$1,600	\$6,400
7 Life Cycle Project Management (25%)	\$16,250	\$16,250	\$0
Phase Cost	\$469,000	\$189,800	\$279,200

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Phase 2: Formulation Scoping Meeting		Sub-task Cost	USACE contribution	ToG contribution
2.3	Geotechnical Information	\$25,000	\$5,000	\$20,000
2.4	a Conceptual Plan - Dev of Alternatives	\$125,000	\$15,000	\$110,000
2.5	a Cost Engineering (~50%)	\$22,500	\$22,500	\$0
2.7	EN District Quality Control (30%)	\$9,000	\$9,000	\$0
2.8	Engineering Management (25%)	\$12,500	\$12,500	\$0
3.2	a Environmental Resource Inventory report	\$80,000	\$16,000	\$64,000
3.2	b Review and Update Impact Assessment Models	\$40,000	\$20,000	\$20,000
3.2	c Evaluation of Impacts and Mitigation Analysis	\$50,000	\$10,000	\$40,000
3.2	d Threatened & Endangered Species	\$15,000	\$4,500	\$10,500
3.2	h Env. Coordination with PDT (50%)	\$17,500	\$17,500	\$0
3.4	a HTRW Assessment Report	\$23,000	\$23,000	\$0
3.4	b HTRW Data Review	\$22,000	\$22,000	\$0
3.5	a Site Survey Field Report	\$80,000	\$80,000	\$0
3.6	GIS Support (30%)	\$28,500	\$8,550	\$19,950
5.2	Preliminary Formulation and Screening of Alternatives	\$40,000	\$20,000	\$20,000
5.3	Formulation Scoping Meeting - Vertical Team	\$20,000	\$12,000	\$8,000
5.7	a. Plan Formulation Management (20%)	\$12,000	\$6,000	\$6,000
5.9	Agency Technical Review ~(30%)	\$50,000	\$50,000	\$0
7	Life Cycle Project Management (25%)	\$16,250	\$16,250	\$0
	Phase Cost	\$688,250	\$369,800	\$318,450

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Phase 3: Alternatives Formulation Briefing		Sub-task Cost	USACE contribution	ToG contribution
2.2	d Improved Conditions Hydrology	\$25,000	\$2,000	\$23,000
2.2	e Improved Conditions Hydraulics	\$80,000	\$10,000	\$70,000
2.2	f H&H Risk Uncertainty	\$25,000	\$25,000	\$0
2.2	g Non-Structural Plan	\$22,000	\$2,000	\$20,000
2.2	h Interior Drainage Hydrology	\$17,000	\$1,000	\$16,000
2.2	i Interior Drainage Hydraulics	\$26,000	\$2,000	\$24,000
2.4	b Conceptual Design	\$248,000	\$31,500	\$216,500
2.5	a Cost Engineering (~50%)	\$22,500	\$22,500	\$0
2.7	EN District Quality Control (30%)	\$9,000	\$9,000	\$0
2.8	Engineering Management (25%)	\$12,500	\$12,500	\$0
3.2	e Section 404(b)(1) Analysis report	\$5,000	\$0	\$5,000
3.2	f 401 State Water Quality certification	\$5,000	\$0	\$5,000
3.2	g Environmental Assessment (80%)	\$64,000	\$19,200	\$44,800
3.2	h Env. Coordination with PDT (25%)	\$8,750	\$8,750	\$0
3.2	i Coordination Documents with other agencies (50%)	\$15,000	\$15,000	\$0
3.2	j Other Environmental Documents (50%)	\$20,000	\$20,000	\$0
3.3	FWCAR (80%)	\$32,000	\$32,000	\$0
3.5	e All other Cultural resources Studies/Reports	\$20,000	\$20,000	\$0
3.6	GIS Support (30%)	\$28,500	\$8,550	\$19,950
4.1	d Flood Damage Analysis with Project	\$30,000	\$30,000	\$0
4.1	e Internal Technical Review	\$15,000	\$15,000	\$0
5.4	Detailed Evaluation of Alternatives	\$60,000	\$30,000	\$30,000
5.5	AFB Project Documentation	\$20,000	\$10,000	\$10,000
5.7	a. Plan Formulation Management (40%)	\$24,000	\$12,000	\$12,000
5.9	Agency Technical Review ~(40%)	\$60,000	\$60,000	\$0
6.3	Prepare Right of Way Maps	\$10,000	\$5,000	\$5,000
6.4	Gross Appraisal	\$50,000	\$25,000	\$25,000
6.5	Prepare Real Estate Plan	\$35,000	\$8,000	\$27,000
6.7	Local Coordination & Site Visits	\$10,000	\$10,000	\$0
7	Life Cycle Project Management (30%)	\$19,500	\$19,500	\$0
Phase Cost:		\$1,018,750	\$465,500	\$553,250

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Phase 4: Produce Feasibility Report		Sub-task Cost	USACE contribution	ToG contribution
2.4	c Engineering Appendix	\$112,000	\$15,000	\$97,000
2.5	b Cost Risk Analysis	\$20,000	\$20,000	\$0
2.6	Value Engineering	\$18,000	\$18,000	\$0
2.7	EN District Quality Control (40%)	\$12,000	\$12,000	\$0
2.8	Engineering Management (20%)	\$10,000	\$10,000	\$0
3.2	g Environmental Assessment (20%)	\$16,000	\$4,800	\$11,200
3.2	i Coordination Documents with other agencies (50%)	\$15,000	\$15,000	\$0
3.2	j Other Environmental Documents (50%)	\$20,000	\$20,000	\$0
3.3	FWCAR (20%)	\$8,000	\$8,000	\$0
3.6	GIS Support (20%)	\$19,000	\$5,700	\$13,300
3.7	Environmental Technical Review	\$10,000	\$10,000	\$0
4.2	a Draft Economic Appendix	\$50,000	\$50,000	\$0
4.2	b Response to NAD/HQ, QA/QC	\$15,000	\$15,000	\$0
4.2	c Final Economic Appendix	\$10,000	\$10,000	\$0
4.2	Economic Appendix			\$0
4.3	Ability to Pay Analysis	\$4,800	\$4,800	\$0
4.4	Economic Updates (as required)	\$0	\$0	\$0
5.12	Public Review Comments	\$10,000	\$5,000	\$5,000
5.13	Final FR & NEPA documents	\$20,000	\$5,000	\$15,000
5.14	Civil Works Review Board	\$30,000	\$20,100	\$9,900
5.15	Division Commanders notice	GE Appropriations		
5.16	Policy Compliance Review Approval	GE Appropriations		
5.17	Chief of Engineer's Report	GE Appropriations		
5.18	ASA(CW) Transmittal to Congress	By ASA(CW) Appropriations		
5.7	a. Plan Formulation Management and Appendix (20%)	\$12,000	\$6,000	\$6,000
5.8	Report Preparation	\$70,000	\$17,500	\$52,500
5.9	Agency Technical Review (~30%)	\$40,000	\$40,000	\$0
7	Life Cycle Project Management (20%)	\$13,000	\$13,000	\$0
	b. District Quality Control	\$10,800	\$10,800	\$0
	Phase Cost:	\$545,600	\$335,700	\$209,900

Estimated Cost Subtotal to be Shared (not including IEPR)	\$2,721,600	\$1,360,800	\$1,360,800
Estimated Cost including 10% contingency	\$2,993,760	\$1,496,880	\$1,496,880
Town of Greenwich Share			\$1,496,880
USACE Share (not including IEPR)		\$1,496,880	
USACE Share (if IEPR is needed)		\$1,996,880	

Byram River Basin Flood Risk Management Feasibility Study Cost Estimate

Task	Sub-Task	Sub-task Cost	Estimated Cost	Contingency	Estimated Cost + Contingency	ACOE		TOTAL IN-KIND SVC	
						Percent	Cost	Percent	Cost
1	Study Initiation Meeting	\$30,000	\$30,000	\$3,000	\$33,000	20%	\$6,000	80%	\$24,000
2	Engineering		\$1,053,000	\$105,300	\$1,158,300				
2.1	a. Surveying and Mapping		\$51,000	\$5,100	\$56,100				
	a.i. Flood Mark Survey	\$10,500					\$1,000		\$9,500
	a.ii. Stream Survey	\$40,500					\$1,500		\$39,000
2.2	Hydrology & Hydraulics		\$329,000	\$32,900	\$361,900	0%	\$0	100%	\$0
	a. Preliminary Hydrology and Hydraulics	\$0					\$2,500		\$60,000
	b. Existing and Future Project Conditions	\$62,500					\$2,500		\$69,000
	c. Existing Conditions Hydraulics	\$71,500					\$2,000		\$70,000
	d. Improved Conditions Hydrology	\$25,000					\$25,000		\$0
	e. Improved Conditions Hydraulics	\$80,000					\$2,000		\$20,000
	f. H&H Risk Uncertainty	\$25,000					\$1,000		\$16,000
	g. Non-Structural Plan	\$22,000					\$2,000		\$24,000
	h. Interior Drainage Hydrology	\$17,000					\$2,000		\$24,000
	i. Interior Drainage Hydraulics	\$26,000					\$5,000		\$20,000
2.3	Geotechnical Information	\$25,000	\$25,000	\$2,500	\$27,500		\$5,000		\$20,000
2.4	Engineering & Design Analysis		\$485,000	\$48,500	\$533,500				
	a. Conceptual Plan - Dev of Alternatives	\$125,000					\$15,000		\$110,000
	b. Conceptual Design	\$248,000					\$31,500		\$216,500
	c. Engineering Appendix	\$112,000					\$15,000		\$97,000
2.5	Cost Engineering		\$65,000	\$6,500	\$71,500				
	a. Cost Engineering	\$45,000					\$45,000		\$0
	b. Cost Risk Analysis	\$20,000					\$20,000		\$0
2.6	Value Engineering	\$18,000	\$18,000	\$1,800	\$19,800	100%	\$18,000	0%	\$0
2.7	District Quality Control	\$30,000	\$30,000	\$3,000	\$33,000	100%	\$30,000	0%	\$0
2.8	Engineering Management (p. 29) + PDT meetings	\$50,000	\$50,000	\$5,000	\$55,000	100%	\$50,000	0%	\$0
3	Environmental Studies		\$670,000	\$67,000	\$737,000				
3.1	NEPA Scoping Meeting	\$0	\$0	\$0	\$0	0%	\$0	0%	\$0
3.2	Environmental Studies		\$380,000	\$38,000	\$418,000				
	a. Environmental Resource Inventory report	\$80,000				20%	\$16,000	80%	\$64,000
	b. Review and Update Impact Assessment Models	\$40,000				50%	\$20,000	50%	\$20,000
	c. Evaluation of Impacts & Mitigation Analysis Report	\$50,000				20%	\$10,000	80%	\$40,000
	d. Threatened & Endangered Species	\$15,000				30%	\$4,500	70%	\$10,500
	e. Section 404(b)(1) Analysis report	\$5,000				0%	\$0	100%	\$5,000
	f. 401 State Water Quality certification	\$5,000				0%	\$0	100%	\$5,000
	g. Environmental Assessment	\$80,000				30%	\$24,000	70%	\$56,000
	h. Coordination with PDT	\$35,000				100%	\$35,000	0%	\$0
	i. Coordination Documents with other agencies	\$30,000				100%	\$30,000	0%	\$0
	j. Other Environmental Documents	\$40,000				100%	\$40,000	0%	\$0
3.3	FWCAR	\$40,000	\$40,000	\$4,000	\$44,000	100%	\$40,000	0%	\$0
3.4	HTRW Studies/Reports		\$45,000	\$4,500	\$49,500				
	a. HTRW Assessment Report	\$23,000				100%	\$23,000	0%	\$0
	b. HTRW Data Review	\$22,000				100%	\$22,000	0%	\$0
3.5	Cultural resources Studies/Documents		\$100,000	\$10,000	\$110,000				
	a. Site Survey Field Report	\$80,000				100%	\$80,000	0%	\$0
	b. Data Collection and Analysis/Report	\$0				100%	\$0	0%	\$0
	c. Mitigation Plan Report	\$0				100%	\$0	100%	\$0
	d. Memorandum of Agreement	\$0				100%	\$0	0%	\$0
	e. All other Cultural resources Studies/Reports	\$20,000				100%	\$20,000	0%	\$0
3.6	GIS Support	\$95,000	\$95,000	\$9,500	\$104,500	30%	\$28,500	70%	\$66,500
3.7	Technical Review	\$10,000	\$10,000	\$1,000	\$11,000	100%	\$10,000	0%	\$0
4	Economics		\$279,800	\$27,980	\$307,780				
4.1	Socioeconomic Analysis/Report		\$200,000	\$20,000	\$220,000				
	a. Structure Inventory & Structure Value Survey	\$70,000				40%	\$28,000	60%	\$42,000
	b. Flood Damage Analysis without project	\$60,000				100%	\$60,000	0%	\$0
	c. Flood Damage - Economic Screening of Alternatives	\$25,000				100%	\$25,000	0%	\$0
	d. Flood Damage Analysis with Project	\$30,000				100%	\$30,000	0%	\$0
	e. Internal Technical Review	\$15,000				100%	\$15,000	0%	\$0
4.2	Economic Appendix		\$75,000	\$7,500	\$82,500				
	a. Draft Economic Appendix	\$50,000				100%	\$50,000	0%	\$0
	b. Response to NAD/HQ, QA/QC	\$15,000				100%	\$15,000	0%	\$0
	c. Final Economic Appendix	\$10,000				100%	\$10,000	0%	\$0
4.3	Ability to Pay Analysis	\$4,800	\$4,800	\$480	\$5,280	100%	\$4,800	0%	\$0
4.4	Economic Updates (as required)	\$0	\$0	\$0	\$0	100%	\$0	0%	\$0
5	Plan Formulation		\$510,800	\$51,080	\$561,880				
5.1	Establish Without Project Conditions	\$20,000	\$20,000	\$2,000	\$22,000	50%	\$10,000	50%	\$10,000
5.2	Preliminary Formulation and Screening of Alternatives	\$40,000	\$40,000	\$4,000	\$44,000	50%	\$20,000	50%	\$20,000
5.3	Formulation Scoping Meeting - Vertical Team	\$20,000	\$20,000	\$2,000	\$22,000	60%	\$12,000	40%	\$8,000
5.4	Detailed Evaluation of Alternatives	\$60,000	\$60,000	\$6,000	\$66,000	50%	\$30,000	50%	\$30,000
5.5	AFB Project Documentation	\$20,000	\$20,000	\$2,000	\$22,000	50%	\$10,000	50%	\$10,000
5.6	Technical Review of AFB Documents	\$0	\$0	\$0	\$0	100%	\$0	0%	\$0
5.7	a. Plan Formulation Management and Appendix	\$60,000	\$60,000	\$6,000	\$66,000	50%	\$30,000	50%	\$30,000
	b. District Quality Control	\$10,800	\$10,800	\$1,080	\$11,880	100%	\$10,800	0%	\$0
5.8	Report Preparation	\$70,000	\$70,000	\$7,000	\$77,000	25%	\$17,500	75%	\$52,500
5.9	Agency Technical Review	\$150,000	\$150,000	\$15,000	\$165,000	100%	\$150,000	0%	\$0
5.10	External Peer Review	\$500,000	\$500,000	\$50,000	\$550,000	100%	\$500,000	0%	\$0
5.11	Release Draft FR	\$0	\$0	\$0	\$0	0%	\$0	0%	\$0
5.12	Public Review Comments	\$10,000	\$10,000	\$1,000	\$11,000	50%	\$5,000	50%	\$5,000
5.13	Final FR & NEPA documents	\$20,000	\$20,000	\$2,000	\$22,000	25%	\$5,000	75%	\$15,000
5.14	Civil Works Review Board	\$30,000	\$30,000	\$3,000	\$33,000	67%	\$20,100	33%	\$9,900
5.15	Division Commanders notice								
5.16	Policy Compliance Review Approval								
5.17	Chief of Engineer's Report								
5.18	ASA(CW) Transmittal to Congress								
6	Real Estate Studies		\$113,000	\$11,300	\$124,300				
6.1	ID Land Owners	\$0	\$0	\$0	\$0		\$0		\$0
6.2	Rights of Entry	\$8,000	\$8,000	\$800	\$8,800		\$1,600		\$6,400
6.3	Prepare Right of Way Maps	\$10,000	\$10,000	\$1,000	\$11,000		\$5,000		\$5,000
6.4	Gross Appraisal	\$50,000	\$50,000	\$5,000	\$55,000		\$25,000		\$25,000
6.5	Prepare Real Estate Plan	\$35,000	\$30,000	\$3,000	\$33,000		\$8,000		\$27,000
6.6	Review PPA	\$0	\$5,000	\$500	\$5,500		\$0		\$0
6.7	Local Coordination & Site Visits	\$10,000	\$10,000	\$1,000	\$11,000		\$10,000		\$0
6.8	Report Preparation	\$0	\$0	\$0	\$0		\$0	0%	\$0
7	Life Cycle Project Management	\$65,000	\$65,000	\$6,500	\$71,500	100%	\$65,000	0%	\$0
	Estimated Cost Total		\$3,221,600	\$322,160	\$3,543,760				
	Estimated Cost to be Shared (not including IEPR)		\$2,721,600	\$272,160	\$2,993,760				
	USACE Share (not including IEPR)		\$1,360,800	\$136,080	\$1,496,880	50.0%	\$1,360,800		
	Greenwich Share (does not include IEPR)		\$1,360,800	\$136,080	\$1,496,880			50.0%	\$1,360,800