

# 1 Introduction

Cost estimates were developed at the concept screening level (Class 5) for comparison of capital construction costs, Operations and Maintenance (O&M), and production-specific information associated with the different components of the LAND project.

## 2 Uncertainty Associated with Unit Costs

Actual costs are expected to vary on either side of the median estimate. Therefore, high and low bounds were developed for each unit cost item. Variables that introduce a degree of uncertainty into estimated costs for the alternatives identified include but are not limited to the following:

- **Geotechnical Conditions:** Geotechnical conditions are expected to vary along the project features. A high-level assessment has been conducted using available geotechnical and geological data as summarized in Appendix E. In general, poor soils result in deeper required foundations for floodwalls, or more potential settlement in levees requiring overbuilding of the initial levee template. This variable can have large cost implications on multiple items in the cost estimate, and additional geotechnical studies should be prioritized in future phases.
- **Real Estate Coordination:** Provisions have been included for both ROW compensation to landowners and compensation to structures within the flood protection structure ROW that require relocation. Private landowner coordination requires significant outreach and should be prioritized in future phases, as it can have large cost implications on the estimates shown herein.
- **Earthen Material Sources:** Estimates herein assume material from commercial sources based on recent projects in the area. Disposal strategies, availability of material at local aggregate facilities, and potential reuse of excavated material from the conveyance template or other nearby construction projects could affect both the levee and conveyance costs.
- **Inflation:** All costs are in 2025 dollars with no escalation. Inflation to future dollars has not been accounted for and could increase the cost estimates shown herein.
- **Steel and Concrete Pricing:** Variation in steel and concrete pricing could largely affect the closure structure, bridge, and floodwall costs shown herein.

## 3 Construction Cost Estimate Item Summary

Class V level cost estimates were developed for the conceptual design. The estimates include 55 percent contingency (NLSP, 2023) and are in 2025 dollars with no escalation applied. For descriptions of the unit cost development, please see Appendix B. The cost estimate categories include the following items:

- **(1) PED and Environmental:** Includes engineering and design services, survey programs, conduct engineering management during planning, and conduct construction management services throughout the project development and construction. Environmental costs include environmental mitigation and regulatory and permitting efforts.
- **(2) Mobilization and Demobilization:** Includes efforts by the construction contractor to conduct preparatory activities to transport equipment, personnel, and materials to the project site including setting up temporary facilities during mobilization, and to remove all items during demobilization.
- **(3) Levees, (4) Floodwalls, (5) Road Raises:** Includes the labor, material, and equipment for the capital construction of the levees, floodwalls, and road raises, respectively. Additional refinement of the construction unit costs should be conducted in future phases including investigating value engineering opportunities such as reuse of the excavated conveyance material in the levees.
- **(6) Closure Structures:** The cost of closure structures will vary based on the assumed 3 feet of freeboard above the design flood event, the number of locations at railroad and roadway crossings where they are deemed necessary, and the type of structure selected (stoplogs, swing gates, or rolling gates). Cost boundaries will vary depending on the foundation type of the adjacent floodwalls

to the closure structures and will be refined by geotechnical investigations conducted during future phases of LAND.

- **(7) Interior Drainage:** Includes the number and capacity of pump stations needed, determined by a screening-level interior drainage and stormwater analysis using analytical equations and existing data. Future phases should conduct additional internal drainage analyses and numerical modeling that incorporates the existing drainage infrastructure within the levees to site the pump stations. Additionally, upriver improvements like weirs and detention ponds should be investigated and included in the analysis to reduce the potential size of the pump stations.
- **(8) Real Estate:** Real estate costs include compensation for:
  - Land within the Right of Way (ROW) of the project features,
  - Relocations of structures within the project feature ROW,
  - Floodproofing, raises, and relocations of structures adjacent to (within 0.5 miles) but outside of the protected area of the levees and floodwalls,
  - Incremental improvements to structures outside of the levees for any residential or commercial structure that is deemed valuable in the Anchor, 2024 database and is adversely affected by the alternative (i.e., water level is raised at the property due to the LAND Alternative), and
  - Utility relocations.
  - Note that costs to floodproof, raise, or relocate structures outside of these categories are assumed to be covered by other efforts in the basin and are not part of the LAND project costs.
- **(9) Conveyance and Bridges:** The conveyance improvements include excavating for the conveyance footprint and acquiring the necessary real estate within the footprint. They also include estimated costs for demolishing the existing Mellen Street Bridge and constructing a new concrete girder Mellen Street Bridge. Potential bridge improvements to facilitate emergency bypasses, such as the Pearl Street Bridge, are not included in this cost.

**Overall Project Cost Estimate: Class V Including Contingency**

Item No.	Item Description	Quantity	Unit	Unit Cost Range	Total Cost Range [\$]	Subtotal Range [\$]
<b>1 PED, Environmental</b>						<b>\$173,070,000 - \$314,240,000</b>
1.1	PED & CM		Percent	20%	\$133,130,000 - \$241,720,000	
1.2	Environmental		Percent	6%	\$39,940,000 - \$72,520,000	
<b>2 Mobilization &amp; Demobilization</b>						<b>\$60,510,000 - \$109,870,000</b>
2.1	Mobilization & Demobilization		Percent	10%	\$60,510,000 - \$109,870,000	
<b>3 Levee Construction</b>						<b>\$40,650,000 - \$90,490,000</b>
	Total Length	67,715	LF			
3.1	Borrow & Fill	643,057	CY	\$40 - \$90	\$39,870,000 - \$89,710,000	
3.2	Fertilize & Seed	130	AC	\$3,875 - \$3,875	\$780,000 - \$780,000	
<b>4 Floodwalls</b>						<b>\$148,080,000 - \$250,250,000</b>
4.1	Total Length of Floodwall: 0-3'	1,660	LF	\$600 - \$900	\$1,540,000 - \$2,320,000	
4.2	Total Length of Floodwall: 3-6'	7,020	LF	\$1,100 - \$1,800	\$11,970,000 - \$19,590,000	
4.3	Total Length of Floodwall: 6-9'	10,050	LF	\$1,700 - \$2,700	\$26,480,000 - \$42,060,000	
4.4	Total Length of Floodwall: 9-12'	6,920	LF	\$2,200 - \$3,600	\$23,600,000 - \$38,610,000	
4.5	Total Length of Floodwall: 12+''	4,740	LF	\$11,500 - \$20,100	\$84,490,000 - \$147,670,000	
<b>5 Road Raise</b>						<b>\$4,470,000 - \$7,920,000</b>
5.1	Total Length of Road Raise: 0-5'	-	LF	\$600 - \$1,100	\$0 - \$0	
5.2	Total Length of Floodwall: 5-8'	3,280	LF	\$800 - \$1,400	\$4,070,000 - \$7,120,000	
5.3	Total Length of Floodwall: 8+	260	LF	\$1,000 - \$2,000	\$400,000 - \$810,000	
<b>6 Closure Structures</b>						<b>\$11,510,000 - \$112,190,000</b>
6.1	Stoplog Closure(s)	-	SF	\$1,550 - \$4,750	\$0 - \$0	
6.2	Swing Gate Closure(s)	6,097	SF	\$890 - \$7,700	\$8,410,000 - \$72,760,000	
6.3	Rolling Gate Closure(s)	2,000	SF	\$1,000 - \$12,720	\$3,100,000 - \$39,430,000	
<b>7 Pump Stations</b>						<b>\$116,900,000 - \$171,450,000</b>
7.1	Total Pumping Capacity	5,028	CFS	\$15,000 - \$22,000	\$116,900,000 - \$171,450,000	
<b>8 Real Estate - Levees, Floodwalls, Road Raises</b>						<b>\$173,490,000 - \$292,540,000</b>
8.1	ROW Real Estate Compensation	83	AC	Varies	\$16,540,000 - \$18,110,000	
8.2	Relocations (within ROW)	27	No.	Varies	\$19,090,000 - \$20,910,000	
8.3	Adjacent Structure Floodproofing, Raises, Relocations	347	No.	Varies	\$110,190,000 - \$176,810,000	
8.4	Incremental Impacts to Structures Outside Levees	1	LS	Varies	\$17,960,000 - \$32,670,000	
8.5	Utility Relocates		Percent	2%-5%	\$9,710,000 - \$44,040,000	
<b>9 Conveyance &amp; Bridges</b>						<b>\$110,030,000 - \$173,890,000</b>
9.1	Conveyance Excavation	800,000	CY	\$25 - \$45	\$31,000,000 - \$55,800,000	
9.2	Existing Bridge Demolition	1	LS	\$4,000,000 - \$8,000,000	\$6,200,000 - \$12,400,000	
9.3	New Bridge Construction	106,000	SF	\$400 - \$600	\$65,720,000 - \$98,580,000	
9.4	Real Estate Relocations	1	LS	\$4,590,000 - \$4,590,000	\$7,110,000 - \$7,110,000	
<b>Total</b>	<b>Total Capital Cost</b>					<b>\$838,720,000 - \$1,522,860,000</b>
Item No.	Item Description	Quantity	Unit	Unit Cost	Total Range	Subtotal Range
<b>10 Operations &amp; Maintenance</b>						<b>\$2,670,000 - \$4,920,000</b>
10.1	General	Varies	Percent	0.2%	\$400,000 - \$910,000	
10.2	Levees	Varies	Percent	1.2%	\$490,000 - \$1,090,000	
10.3	Floodwalls	Varies	Percent	0.05%	\$70,000 - \$130,000	
10.4	Closure Structures	Varies	Percent	0.20%	\$20,000 - \$220,000	
10.5	Pump Stations	Varies	Percent	0.75%	\$880,000 - \$1,290,000	
10.6	Environmental	Varies	Percent	0.70%	\$280,000 - \$510,000	
10.7	Bridges	Varies	Percent	0.80%	\$530,000 - \$790,000	
<b>Total</b>	<b>Total Yearly O&amp;M</b>					<b>\$2,670,000 - \$4,920,000</b>

**Notes**

- <sup>1</sup> Totals includes 55% contingency, rounded at nearest \$10,000. Quantity estimates based on model results & topography for feasibility level estimates only and should be refined in future phases. Overall costs assume no phasing of construction.
- <sup>2</sup> Costs are presented in 2025 dollars.
- <sup>3</sup> This cost estimate is an opinion of project costs. In providing opinion of construction costs, it is recognized that neither the client nor the consultant has control over the costs of labor, equipment, and materials. This opinion of costs is based on the Consultant's reasonable professional judgment and experience.

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Item No.	Item Description	Quantity	Unit	Unit Cost Range	Total Cost Range [\$]	Subtotal Range [\$]
<b>1 PED, Environmental</b>						<b>\$5,920,000 - \$11,850,000</b>
1.1	PED & CM		Percent	20%	\$4,550,000 - \$9,120,000	
1.2	Environmental		Percent	6%	\$1,370,000 - \$2,740,000	
<b>2 Mobilization &amp; Demobilization</b>						<b>\$2,070,000 - \$4,140,000</b>
2.1	Mobilization & Demobilization		Percent	10%	\$2,070,000 - \$4,140,000	
<b>3 Levee Construction</b>						<b>\$2,280,000 - \$5,050,000</b>
	Total Length	6,178	LF			
3.1	Borrow & Fill	35,781	CY	\$40 - \$90	\$2,220,000 - \$4,990,000	
3.2	Fertilize & Seed	10	AC	\$3,875 - \$3,875	\$60,000 - \$60,000	
<b>4 Floodwalls</b>						<b>\$7,210,000 - \$11,550,000</b>
4.1	Total Length of Floodwall: 0-3'	60	LF	\$600 - \$900	\$60,000 - \$80,000	
4.2	Total Length of Floodwall: 3-6'	680	LF	\$1,100 - \$1,800	\$1,160,000 - \$1,900,000	
4.3	Total Length of Floodwall: 6-9'	1,860	LF	\$1,700 - \$2,700	\$4,900,000 - \$7,780,000	
4.4	Total Length of Floodwall: 9-12'	320	LF	\$2,200 - \$3,600	\$1,090,000 - \$1,790,000	
4.5	Total Length of Floodwall: 12+''	-	LF	\$11,500 - \$20,100	\$0 - \$0	
<b>5 Road Raise</b>						<b>\$0 - \$0</b>
5.1	Total Length of Road Raise: 0-5'	-	LF	\$600 - \$1,100	\$0 - \$0	
5.2	Total Length of Floodwall: 5-8'	-	LF	\$800 - \$1,400	\$0 - \$0	
5.3	Total Length of Floodwall: 8+	-	LF	\$1,000 - \$2,000	\$0 - \$0	
<b>6 Closure Structures</b>						<b>\$800,000 - \$6,930,000</b>
6.1	Stoplog Closure(s)	-	SF	\$1,550 - \$4,750	\$0 - \$0	
6.2	Swing Gate Closure(s)	581	SF	\$890 - \$7,700	\$800,000 - \$6,930,000	
6.3	Rolling Gate Closure(s)	-	SF	\$1,000 - \$12,720	\$0 - \$0	
<b>7 Pump Stations</b>						<b>\$4,650,000 - \$6,820,000</b>
7.1	Total Pumping Capacity	200	CFS	\$15,000 - \$22,000	\$4,650,000 - \$6,820,000	
<b>8 Real Estate - Levees, Floodwalls, Road Raises</b>						<b>\$5,750,000 - \$11,100,000</b>
8.1	ROW Real Estate Compensation	4	AC	Varies	\$160,000 - \$170,000	
8.2	Relocations (within ROW)	-	No.	Varies	\$0 - \$0	
8.3	Adjacent Structure Floodproofing, Raises, Relocations	16	No.	Varies	\$5,180,000 - \$8,950,000	
8.4	Utility Relocates		Percent	2%-5%	\$410,000 - \$1,970,000	
<b>Total</b>	<b>Total Capital Cost</b>					<b>\$28,670,000 - \$57,450,000</b>
Item No.	Item Description	Quantity	Unit	Unit Cost	Total Range	Subtotal Range
<b>10 Operations &amp; Maintenance</b>						<b>\$98,000 - \$198,000</b>
10.1	General	Varies	Percent	0.2%	\$21,000 - \$47,000	
10.2	Levees	Varies	Percent	1.2%	\$27,000 - \$61,000	
10.3	Floodwalls	Varies	Percent	0.05%	\$4,000 - \$6,000	
10.4	Closure Structures	Varies	Percent	0.20%	\$2,000 - \$14,000	
10.5	Pump Stations	Varies	Percent	0.75%	\$35,000 - \$51,000	
10.6	Environmental	Varies	Percent	0.70%	\$10,000 - \$19,000	
<b>Total</b>	<b>Total Yearly O&amp;M</b>					<b>\$98,000 - \$198,000</b>
<b>Notes</b>						
<p><sup>1</sup> Totals includes 55% contingency, rounded ot nearest \$10,000. O&amp;M rounded to nearest \$1,000. Quantity estimates based on model results &amp; topography for feasibility level estimates only and should be refined in future phases.</p> <p><sup>2</sup> Costs are presented in 2025 dollars.</p> <p><sup>3</sup> This cost estimate is an opinion of project costs. In providing opinion of construction costs, it is recognized that neither the client nor the consultant has control over the costs of labor, equipment, and materials. This opinion of costs is based on the Consultant's reasonable professional judgment and experience.</p>						

## Airport

Item No.	Item Description	Quantity	Unit	Unit Cost Range	Total Cost Range [\$]	Subtotal Range [\$]
<b>1</b>	<b>PED, Environmental</b>					<b>\$37,680,000 - \$67,060,000</b>
1.1	PED & CM		Percent	20%	\$28,980,000 - \$51,580,000	
1.2	Environmental		Percent	6%	\$8,700,000 - \$15,470,000	
<b>2</b>	<b>Mobilization &amp; Demobilization</b>					<b>\$13,170,000 - \$23,450,000</b>
2.1	Mobilization & Demobilization		Percent	10%	\$13,170,000 - \$23,450,000	
<b>3</b>	<b>Levee Construction</b>					<b>\$5,430,000 - \$12,060,000</b>
	Total Length	10,581	LF			
3.1	Borrow & Fill	85,620	CY	\$40 - \$90	\$5,310,000 - \$11,940,000	
3.2	Fertilize & Seed	20	AC	\$3,875 - \$3,875	\$120,000 - \$120,000	
<b>4</b>	<b>Floodwalls</b>					<b>\$70,950,000 - \$122,550,000</b>
4.1	Total Length of Floodwall: 0-3'	80	LF	\$600 - \$900	\$70,000 - \$110,000	
4.2	Total Length of Floodwall: 3-6'	660	LF	\$1,100 - \$1,800	\$1,130,000 - \$1,840,000	
4.3	Total Length of Floodwall: 6-9'	1,670	LF	\$1,700 - \$2,700	\$4,400,000 - \$6,990,000	
4.4	Total Length of Floodwall: 9-12'	1,600	LF	\$2,200 - \$3,600	\$5,460,000 - \$8,930,000	
4.5	Total Length of Floodwall: 12+''	3,360	LF	\$11,500 - \$20,100	\$59,890,000 -	
<b>5</b>	<b>Road Raise</b>					<b>\$1,820,000 - \$3,280,000</b>
5.1	Total Length of Road Raise: 0-5'	-	LF	\$600 - \$1,100	\$0 - \$0	
5.2	Total Length of Floodwall: 5-8'	1,140	LF	\$800 - \$1,400	\$1,410,000 - \$2,470,000	
5.3	Total Length of Floodwall: 8+	260	LF	\$1,000 - \$2,000	\$400,000 - \$810,000	
<b>6</b>	<b>Closure Structures</b>					<b>\$1,270,000 - \$10,970,000</b>
6.1	Stoplog Closure(s)	-	SF	\$1,550 - \$4,750	\$0 - \$0	
6.2	Swing Gate Closure(s)	919	SF	\$890 - \$7,700	\$1,270,000 - \$10,970,000	
6.3	Rolling Gate Closure(s)	-	SF	\$1,000 - \$12,720	\$0 - \$0	
<b>7</b>	<b>Pump Stations</b>					<b>\$19,720,000 - \$28,920,000</b>
7.1	Total Pumping Capacity	848	CFS	\$15,000 - \$22,000	\$19,720,000 - \$28,920,000	
<b>8</b>	<b>Real Estate - Levees, Floodwalls, Road Raises</b>					<b>\$32,570,000 - \$56,690,000</b>
8.1	ROW Real Estate Compensation	4	AC	Varies	\$5,610,000 - \$6,150,000	
8.2	Relocations (within ROW)	-	No.	Varies	\$0 - \$0	
8.3	Adjacent Structure Floodproofing, Raises, Relocations	46	No.	Varies	\$24,370,000 - \$39,380,000	
8.4	Utility Relocates		Percent	2%-5%	\$2,580,000 - \$11,170,000	
<b>Total</b>	<b>Total Capital Cost</b>					<b>\$182,600,000 - \$324,970,000</b>
Item No.	Item Description	Quantity	Unit	Unit Cost	Total Range	Subtotal Range
<b>10</b>	<b>Operations &amp; Maintenance</b>					<b>\$467,000 - \$844,000</b>
10.1	General	Varies	Percent	0.2%	\$155,000 - \$291,000	
10.2	Levees	Varies	Percent	1.2%	\$65,000 - \$145,000	
10.3	Floodwalls	Varies	Percent	0.05%	\$35,000 - \$61,000	
10.4	Closure Structures	Varies	Percent	0.20%	\$3,000 - \$22,000	
10.5	Pump Stations	Varies	Percent	0.75%	\$148,000 - \$217,000	
10.6	Environmental	Varies	Percent	0.70%	\$61,000 - \$108,000	
<b>Total</b>	<b>Total Yearly O&amp;M</b>					<b>\$467,000 - \$844,000</b>
<b>Notes</b>						
<p><sup>1</sup> Totals includes 55% contingency, rounded ot nearest \$10,000. O&amp;M rounded to nearest \$1,000. Quantity estimates based on model results &amp; topography for feasibility level estimates only and should be refined in future phases.</p> <p><sup>2</sup> Costs are presented in 2025 dollars.</p> <p><sup>3</sup> This cost estimate is an opinion of project costs. In providing opinion of construction costs, it is recognized that neither the client nor the consultant has control over the costs of labor, equipment, and materials. This opinion of costs is based on the Consultant's reasonable professional judgment and experience.</p>						

## China to Salzer

Item No.	Item Description	Quantity	Unit	Unit Cost Range	Total Cost Range [\$]	Subtotal Range [\$]
<b>1</b>	<b>PED, Environmental</b>					<b>\$27,020,000 - \$53,230,000</b>
1.1	PED & CM		Percent	20%	\$20,780,000 -	
1.2	Environmental		Percent	6%	\$6,240,000 - \$12,280,000	
<b>2</b>	<b>Mobilization &amp; Demobilization</b>					<b>\$9,450,000 - \$18,610,000</b>
2.1	Mobilization & Demobilization		Percent	10%	\$9,450,000 - \$18,610,000	
<b>3</b>	<b>Levee Construction</b>					<b>\$4,100,000 - \$9,150,000</b>
	Total Length	5,134	LF			
3.1	Borrow & Fill	65,142	CY	\$40 - \$90	\$4,040,000 - \$9,090,000	
3.2	Fertilize & Seed	11	AC	\$3,875 - \$3,875	\$60,000 - \$60,000	
<b>4</b>	<b>Floodwalls</b>					<b>\$18,970,000 - \$31,150,000</b>
4.1	Total Length of Floodwall: 0-3'	120	LF	\$600 - \$900	\$110,000 - \$170,000	
4.2	Total Length of Floodwall: 3-6'	2,440	LF	\$1,100 - \$1,800	\$4,160,000 - \$6,810,000	
4.3	Total Length of Floodwall: 6-9'	2,140	LF	\$1,700 - \$2,700	\$5,640,000 - \$8,960,000	
4.4	Total Length of Floodwall: 9-12'	1,610	LF	\$2,200 - \$3,600	\$5,490,000 - \$8,980,000	
4.5	Total Length of Floodwall: 12+''	200	LF	\$11,500 - \$20,100	\$3,570,000 - \$6,230,000	
<b>5</b>	<b>Road Raise</b>					<b>\$2,650,000 - \$4,640,000</b>
5.1	Total Length of Road Raise: 0-5'	-	LF	\$600 - \$1,100	\$0 - \$0	
5.2	Total Length of Floodwall: 5-8'	2,140	LF	\$800 - \$1,400	\$2,650,000 - \$4,640,000	
5.3	Total Length of Floodwall: 8+	-	LF	\$1,000 - \$2,000	\$0 - \$0	
<b>6</b>	<b>Closure Structures</b>					<b>\$4,210,000 - \$39,440,000</b>
6.1	Stoplog Closure(s)	-	SF	\$1,550 - \$4,750	\$0 - \$0	
6.2	Swing Gate Closure(s)	2,505	SF	\$890 - \$7,700	\$3,460,000 - \$29,890,000	
6.3	Rolling Gate Closure(s)	484	SF	\$1,000 - \$12,720	\$750,000 - \$9,540,000	
<b>7</b>	<b>Pump Stations</b>					<b>\$32,250,000 - \$47,300,000</b>
7.1	Total Pumping Capacity	1,387	CFS	\$15,000 - \$22,000	\$32,250,000 -	
<b>8</b>	<b>Real Estate - Levees, Floodwalls, Road Raises</b>					<b>\$32,300,000 - \$54,450,000</b>
8.1	ROW Real Estate Compensation	8	AC	Varies	\$1,400,000 - \$1,530,000	
8.2	Relocations (within ROW)	2	No.	Varies	\$1,890,000 - \$2,080,000	
8.3	Adjacent Structure Floodproofing, Raises, Relocations	105	No.	Varies	\$27,150,000 - \$41,970,000	
8.4	Utility Relocates		Percent	2%-5%	\$1,850,000 - \$8,860,000	
<b>Total</b>	<b>Total Capital Cost</b>					<b>\$130,940,000 - \$257,960,000</b>
Item No.	Item Description	Quantity	Unit	Unit Cost	Total Range	Subtotal Range
<b>10</b>	<b>Operations &amp; Maintenance</b>					<b>\$407,000 - \$804,000</b>
10.1	General	Varies	Percent	0.2%	\$55,000 - \$159,000	
10.2	Levees	Varies	Percent	1.2%	\$49,000 - \$110,000	
10.3	Floodwalls	Varies	Percent	0.05%	\$9,000 - \$16,000	
10.4	Closure Structures	Varies	Percent	0.20%	\$8,000 - \$79,000	
10.5	Pump Stations	Varies	Percent	0.75%	\$242,000 - \$355,000	
10.6	Environmental	Varies	Percent	0.70%	\$44,000 - \$86,000	
<b>Total</b>	<b>Total Yearly O&amp;M</b>					<b>\$407,000 - \$804,000</b>
<b>Notes</b>						
<p><sup>1</sup> Totals includes 55% contingency, rounded ot nearest \$10,000. O&amp;M rounded to nearest \$1,000. Quantity estimates based on model results &amp; topography for feasibility level estimates only and should be refined in future phases.</p> <p><sup>2</sup> Costs are presented in 2025 dollars.</p> <p><sup>3</sup> This cost estimate is an opinion of project costs. In providing opinion of construction costs, it is recognized that neither the client nor the consultant has control over the costs of labor, equipment, and materials. This opinion of costs is based on the Consultant's reasonable professional judgment and experience.</p>						

## Fort Borst

Item No.	Item Description	Quantity	Unit	Unit Cost Range	Total Cost Range [\$]	Subtotal Range [\$]
<b>1 PED, Environmental</b>						<b>\$8,500,000 - \$15,660,000</b>
1.1	PED & CM		Percent	20%	\$6,540,000 - \$12,050,000	
1.2	Environmental		Percent	6%	\$1,960,000 - \$3,610,000	
<b>2 Mobilization &amp; Demobilization</b>						<b>\$2,970,000 - \$5,480,000</b>
2.1	Mobilization & Demobilization		Percent	10%	\$2,970,000 - \$5,480,000	
<b>3 Levee Construction</b>						<b>\$9,360,000 - \$20,840,000</b>
	Total Length	15,772	LF			
3.1	Borrow & Fill	148,098	CY	\$40 - \$90	\$9,180,000 - \$20,660,000	
3.2	Fertilize & Seed	30	AC	\$3,875 - \$3,875	\$180,000 - \$180,000	
<b>4 Floodwalls</b>						<b>\$120,000 - \$200,000</b>
4.1	Total Length of Floodwall: 0-3'	-	LF	\$600 - \$900	\$0 - \$0	
4.2	Total Length of Floodwall: 3-6'	40	LF	\$1,100 - \$1,800	\$70,000 - \$110,000	
4.3	Total Length of Floodwall: 6-9'	20	LF	\$1,700 - \$2,700	\$50,000 - \$80,000	
4.4	Total Length of Floodwall: 9-12'	-	LF	\$2,200 - \$3,600	\$0 - \$0	
4.5	Total Length of Floodwall: 12+''	-	LF	\$11,500 - \$20,100	\$0 - \$0	
<b>5 Road Raise</b>						<b>\$0 - \$0</b>
5.1	Total Length of Road Raise: 0-5'	-	LF	\$600 - \$1,100	\$0 - \$0	
5.2	Total Length of Floodwall: 5-8'	-	LF	\$800 - \$1,400	\$0 - \$0	
5.3	Total Length of Floodwall: 8+	-	LF	\$1,000 - \$2,000	\$0 - \$0	
<b>6 Closure Structures</b>						<b>\$260,000 - \$2,290,000</b>
6.1	Stoplog Closure(s)	-	SF	\$1,550 - \$4,750	\$0 - \$0	
6.2	Swing Gate Closure(s)	192	SF	\$890 - \$7,700	\$260,000 - \$2,290,000	
6.3	Rolling Gate Closure(s)	-	SF	\$1,000 - \$12,720	\$0 - \$0	
<b>7 Pump Stations</b>						<b>\$13,720,000 - \$20,120,000</b>
7.1	Total Pumping Capacity	590	CFS	\$15,000 - \$22,000	\$13,720,000 - \$20,120,000	
<b>8 Real Estate - Levees, Floodwalls, Road Raises</b>						<b>\$6,260,000 - \$11,320,000</b>
8.1	ROW Real Estate Compensation	15	AC	Varies	\$2,140,000 - \$2,350,000	
8.2	Relocations (within ROW)	2	No.	Varies	\$250,000 - \$270,000	
8.3	Adjacent Structure Floodproofing, Raises, Relocations	12	No.	Varies	\$3,290,000 - \$6,100,000	
8.4	Utility Relocates		Percent	2%-5%	\$580,000 - \$2,610,000	
<b>Total</b>	<b>Total Capital Cost</b>					<b>\$41,210,000 - \$75,910,000</b>
Item No.	Item Description	Quantity	Unit	Unit Cost	Total Range	Subtotal Range
<b>10 Operations &amp; Maintenance</b>						<b>\$249,000 - \$478,000</b>
10.1	General	Varies	Percent	0.2%	\$20,000 - \$47,000	
10.2	Levees	Varies	Percent	1.2%	\$112,000 - \$250,000	
10.3	Floodwalls	Varies	Percent	0.05%	\$0 - \$0	
10.4	Closure Structures	Varies	Percent	0.20%	\$1,000 - \$5,000	
10.5	Pump Stations	Varies	Percent	0.75%	\$103,000 - \$151,000	
10.6	Environmental	Varies	Percent	0.70%	\$14,000 - \$25,000	
<b>Total</b>	<b>Total Yearly O&amp;M</b>					<b>\$249,000 - \$478,000</b>
<b>Notes</b>						
<p><sup>1</sup> Totals includes 55% contingency, rounded ot nearest \$10,000. O&amp;M rounded to nearest \$1,000. Quantity estimates based on model results &amp; topography for feasibility level estimates only and should be refined in future phases.</p> <p><sup>2</sup> Costs are presented in 2025 dollars.</p> <p><sup>3</sup> This cost estimate is an opinion of project costs. In providing opinion of construction costs, it is recognized that neither the client nor the consultant has control over the costs of labor, equipment, and materials. This opinion of costs is based on the Consultant's reasonable professional judgment and experience.</p>						

## Newaukum

Item No.	Item Description	Quantity	Unit	Unit Cost Range	Total Cost Range [\$]	Subtotal Range [\$]
<b>1 PED, Environmental</b>						<b>\$19,680,000 - \$39,110,000</b>
1.1	Planning Engineering Design, & CM		Percent	20%	\$15,140,000 - \$30,080,000	
1.2	Environmental		Percent	6%	\$4,540,000 - \$9,020,000	
<b>2 Mobilization &amp; Demobilization</b>						<b>\$6,880,000 - \$13,670,000</b>
2.1	Mobilization & Demobilization		Percent	10%	\$6,880,000 - \$13,670,000	
<b>3 Levee Construction</b>						<b>\$5,220,000 - \$11,680,000</b>
	Total Length	4,575	LF			
3.1	Borrow & Fill	83,243	CY	\$40 - \$90	\$5,160,000 - \$11,610,000	
3.2	Fertilize & Seed	11	AC	\$3,875 - \$3,875	\$60,000 - \$60,000	
<b>4 Floodwalls</b>						<b>\$32,340,000 - \$54,560,000</b>
4.1	Total Length of Floodwall: 0-3'	980	LF	\$600 - \$900	\$910,000 - \$1,370,000	
4.2	Total Length of Floodwall: 3-6'	640	LF	\$1,100 - \$1,800	\$1,090,000 - \$1,790,000	
4.3	Total Length of Floodwall: 6-9'	1,720	LF	\$1,700 - \$2,700	\$4,530,000 - \$7,200,000	
4.4	Total Length of Floodwall: 9-12'	2,340	LF	\$2,200 - \$3,600	\$7,980,000 - \$13,060,000	
4.5	Total Length of Floodwall: 12+''	1,000	LF	\$11,500 - \$20,100	\$17,830,000 - \$31,160,000	
<b>5 Road Raise</b>						<b>\$0 - \$0</b>
5.1	Total Length of Road Raise: 0-5'	-	LF	\$600 - \$1,100	\$0 - \$0	
5.2	Total Length of Floodwall: 5-8'	-	LF	\$800 - \$1,400	\$0 - \$0	
5.3	Total Length of Floodwall: 8+	-	LF	\$1,000 - \$2,000	\$0 - \$0	
<b>6 Closure Structures</b>						<b>\$1,670,000 - \$21,200,000</b>
6.1	Stoplog Closure(s)	-	SF	\$1,550 - \$4,750	\$0 - \$0	
6.2	Swing Gate Closure(s)	-	SF	\$890 - \$7,700	\$0 - \$0	
6.3	Rolling Gate Closure(s)	1,076	SF	\$1,000 - \$12,720	\$1,670,000 - \$21,200,000	
<b>7 Pump Stations</b>						<b>\$9,070,000 - \$13,300,000</b>
7.1	Total Pumping Capacity	390	CFS	\$15,000 - \$22,000	\$9,070,000 - \$13,300,000	
<b>8 Real Estate - Levees, Floodwalls, Road Raises</b>						<b>\$20,500,000 - \$35,990,000</b>
8.1	ROW Real Estate Compensation	7	AC	Varies	\$2,200,000 - \$2,410,000	
8.2	Relocations (within ROW)	-	No.	Varies	\$0 - \$0	
8.3	Adjacent Structure Floodproofing, Raises, Relocations	50	No.	Varies	\$16,950,000 - \$27,070,000	
8.4	Utility Relocates		Percent	2%-5%	\$1,350,000 - \$6,510,000	
<b>Total</b>	<b>Total Capital Cost</b>					<b>\$95,360,000 - \$189,510,000</b>
Item No.	Item Description	Quantity	Unit	Unit Cost	Total Range	Subtotal Range
<b>10 Operations &amp; Maintenance</b>						<b>\$260,000 - \$548,000</b>
10.1	General	Varies	Percent	0.2%	\$78,000 - \$175,000	
10.2	Levees	Varies	Percent	1.2%	\$63,000 - \$140,000	
10.3	Floodwalls	Varies	Percent	0.05%	\$16,000 - \$27,000	
10.4	Closure Structures	Varies	Percent	0.20%	\$3,000 - \$42,000	
10.5	Pump Stations	Varies	Percent	0.75%	\$68,000 - \$100,000	
10.6	Environmental	Varies	Percent	0.70%	\$32,000 - \$63,000	
<b>Total</b>	<b>Total Yearly O&amp;M</b>					<b>\$260,000 - \$548,000</b>
<b>Notes</b>						
<p><sup>1</sup> Totals includes 55% contingency, rounded ot nearest \$10,000. O&amp;M rounded to nearest \$1,000. Quantity estimates based on model results &amp; topography for feasibility level estimates only and should be refined in future phases.</p> <p><sup>2</sup> Costs are presented in 2025 dollars.</p> <p><sup>3</sup> This cost estimate is an opinion of project costs. In providing opinion of construction costs, it is recognized that neither the client nor the consultant has control over the costs of labor, equipment, and materials. This opinion of costs is based on the Consultant's reasonable professional judgment and experience.</p>						

## North Skookumchuck

Item No.	Item Description	Quantity	Unit	Unit Cost Range	Total Cost Range [\$]	Subtotal Range [\$]
<b>1 PED, Environmental</b>						<b>\$10,020,000 - \$20,030,000</b>
1.1	PED & CM		Percent	20%	\$7,710,000 - \$15,410,000	
1.2	Environmental		Percent	6%	\$2,310,000 - \$4,620,000	
<b>2 Mobilization &amp; Demobilization</b>						<b>\$3,500,000 - \$7,000,000</b>
2.1	Mobilization & Demobilization		Percent	10%	\$3,500,000 - \$7,000,000	
<b>3 Levee Construction</b>						<b>\$8,220,000 - \$18,280,000</b>
	Total Length	14,615	LF			
3.1	Borrow & Fill	129,853	CY	\$40 - \$90	\$8,050,000 - \$18,110,000	
3.2	Fertilize & Seed	28	AC	\$3,875 - \$3,875	\$170,000 - \$170,000	
<b>4 Floodwalls</b>						<b>\$690,000 - \$1,120,000</b>
4.1	Total Length of Floodwall: 0-3'	20	LF	\$600 - \$900	\$20,000 - \$30,000	
4.2	Total Length of Floodwall: 3-6'	240	LF	\$1,100 - \$1,800	\$410,000 - \$670,000	
4.3	Total Length of Floodwall: 6-9'	100	LF	\$1,700 - \$2,700	\$260,000 - \$420,000	
4.4	Total Length of Floodwall: 9-12'	-	LF	\$2,200 - \$3,600	\$0 - \$0	
4.5	Total Length of Floodwall: 12+''	-	LF	\$11,500 - \$20,100	\$0 - \$0	
<b>5 Road Raise</b>						<b>\$0 - \$0</b>
5.1	Total Length of Road Raise: 0-5'	-	LF	\$600 - \$1,100	\$0 - \$0	
5.2	Total Length of Floodwall: 5-8'	-	LF	\$800 - \$1,400	\$0 - \$0	
5.3	Total Length of Floodwall: 8+	-	LF	\$1,000 - \$2,000	\$0 - \$0	
<b>6 Closure Structures</b>						<b>\$1,240,000 - \$10,740,000</b>
6.1	Stoplog Closure(s)	-	SF	\$1,550 - \$4,750	\$0 - \$0	
6.2	Swing Gate Closure(s)	900	SF	\$890 - \$7,700	\$1,240,000 - \$10,740,000	
6.3	Rolling Gate Closure(s)	-	SF	\$1,000 - \$12,720	\$0 - \$0	
<b>7 Pump Stations</b>						<b>\$15,790,000 - \$23,150,000</b>
7.1	Total Pumping Capacity	679	CFS	\$15,000 - \$22,000	\$15,790,000 - \$23,150,000	
<b>8 Real Estate - Levees, Floodwalls, Road Raises</b>						<b>\$9,100,000 - \$16,760,000</b>
8.1	ROW Real Estate Compensation	25	AC	Varies	\$2,030,000 - \$2,220,000	
8.2	Relocations (within ROW)	-	No.	Varies	\$0 - \$0	
8.3	Adjacent Structure Floodproofing, Raises, Relocations	32	No.	Varies	\$6,390,000 - \$11,200,000	
8.4	Utility Relocates		Percent	2%-5%	\$690,000 - \$3,340,000	
<b>Total</b>	<b>Total Capital Cost</b>					<b>\$48,570,000 - \$97,080,000</b>
Item No.	Item Description	Quantity	Unit	Unit Cost	Total Range	Subtotal Range
<b>10 Operations &amp; Maintenance</b>						<b>\$256,000 - \$508,000</b>
10.1	General	Varies	Percent	0.2%	\$20,000 - \$60,000	
10.2	Levees	Varies	Percent	1.2%	\$99,000 - \$219,000	
10.3	Floodwalls	Varies	Percent	0.05%	\$0 - \$1,000	
10.4	Closure Structures	Varies	Percent	0.20%	\$2,000 - \$21,000	
10.5	Pump Stations	Varies	Percent	0.75%	\$118,000 - \$174,000	
10.6	Environmental	Varies	Percent	0.70%	\$16,000 - \$32,000	
<b>Total</b>	<b>Total Yearly O&amp;M</b>					<b>\$256,000 - \$508,000</b>
<b>Notes</b>						
<p><sup>1</sup> Totals includes 55% contingency, rounded ot nearest \$10,000. O&amp;M rounded to nearest \$1,000. Quantity estimates based on model results &amp; topography for feasibility level estimates only and should be refined in future phases.</p> <p><sup>2</sup> Costs are presented in 2025 dollars.</p> <p><sup>3</sup> This cost estimate is an opinion of project costs. In providing opinion of construction costs, it is recognized that neither the client nor the consultant has control over the costs of labor, equipment, and materials. This opinion of costs is based on the Consultant's reasonable professional judgment and experience.</p>						

## South Skookumchuck

Item No.	Item Description	Quantity	Unit	Unit Cost Range	Total Cost Range [\$]	Subtotal Range [\$]
<b>1 PED, Environmental</b>						<b>\$22,840,000 - \$37,490,000</b>
1.1	PED & CM		Percent	20%	\$17,570,000 - \$28,840,000	
1.2	Environmental		Percent	6%	\$5,270,000 - \$8,650,000	
<b>2 Mobilization &amp; Demobilization</b>						<b>\$7,990,000 - \$13,110,000</b>
2.1	Mobilization & Demobilization		Percent	10%	\$7,990,000 - \$13,110,000	
<b>3 Levee Construction</b>						<b>\$6,030,000 - \$13,420,000</b>
	Total Length	10,860	LF			
3.1	Borrow & Fill	95,320	CY	\$40 - \$90	\$5,910,000 - \$13,300,000	
3.2	Fertilize & Seed	21	AC	\$3,875 - \$3,875	\$120,000 - \$120,000	
<b>4 Floodwalls</b>						<b>\$17,600,000 - \$28,790,000</b>
4.1	Total Length of Floodwall: 0-3'	380	LF	\$600 - \$900	\$350,000 - \$530,000	
4.2	Total Length of Floodwall: 3-6'	2,240	LF	\$1,100 - \$1,800	\$3,820,000 - \$6,250,000	
4.3	Total Length of Floodwall: 6-9'	2,520	LF	\$1,700 - \$2,700	\$6,640,000 - \$10,550,000	
4.4	Total Length of Floodwall: 9-12'	1,050	LF	\$2,200 - \$3,600	\$3,580,000 - \$5,860,000	
4.5	Total Length of Floodwall: 12+''	180	LF	\$11,500 - \$20,100	\$3,210,000 - \$5,610,000	
<b>5 Road Raise</b>						<b>\$0 - \$0</b>
5.1	Total Length of Road Raise: 0-5'	-	LF	\$600 - \$1,100	\$0 - \$0	
5.2	Total Length of Floodwall: 5-8'	-	LF	\$800 - \$1,400	\$0 - \$0	
5.3	Total Length of Floodwall: 8+	-	LF	\$1,000 - \$2,000	\$0 - \$0	
<b>6 Closure Structures</b>						<b>\$930,000 - \$10,850,000</b>
6.1	Stoplog Closure(s)	-	SF	\$1,550 - \$4,750	\$0 - \$0	
6.2	Swing Gate Closure(s)	182	SF	\$890 - \$7,700	\$250,000 - \$2,170,000	
6.3	Rolling Gate Closure(s)	440	SF	\$1,000 - \$12,720	\$680,000 - \$8,680,000	
<b>7 Pump Stations</b>						<b>\$21,720,000 - \$31,850,000</b>
7.1	Total Pumping Capacity	934	CFS	\$15,000 - \$22,000	\$21,720,000 - \$31,850,000	
<b>8 Real Estate - Levees, Floodwalls, Road Raises</b>						<b>\$33,570,000 - \$46,180,000</b>
8.1	ROW Real Estate Compensation	20	AC	Varies	\$2,990,000 - \$3,280,000	
8.2	Relocations (within ROW)	23	No.	Varies	\$16,940,000 - \$18,560,000	
8.3	Adjacent Structure Floodproofing, Raises, Relocations	41	No.	Varies	\$12,070,000 - \$18,100,000	
8.4	Utility Relocates		Percent	2%-5%	\$1,570,000 - \$6,240,000	
<b>Total</b>	<b>Total Capital Cost</b>					<b>\$110,680,000 - \$181,700,000</b>
Item No.	Item Description	Quantity	Unit	Unit Cost	Total Range	Subtotal Range
<b>10 Operations &amp; Maintenance</b>						<b>\$332,000 - \$603,000</b>
10.1	General	Varies	Percent	0.2%	\$49,000 - \$106,000	
10.2	Levees	Varies	Percent	1.2%	\$72,000 - \$161,000	
10.3	Floodwalls	Varies	Percent	0.05%	\$9,000 - \$14,000	
10.4	Closure Structures	Varies	Percent	0.20%	\$2,000 - \$22,000	
10.5	Pump Stations	Varies	Percent	0.75%	\$163,000 - \$239,000	
10.6	Environmental	Varies	Percent	0.70%	\$37,000 - \$61,000	
<b>Total</b>	<b>Total Yearly O&amp;M</b>					<b>\$332,000 - \$603,000</b>
<b>Notes</b>						
<p><sup>1</sup> Totals includes 55% contingency, rounded ot nearest \$10,000. O&amp;M rounded to nearest \$1,000. Quantity estimates based on model results &amp; topography for feasibility level estimates only and should be refined in future phases.</p> <p><sup>2</sup> Costs are presented in 2025 dollars.</p> <p><sup>3</sup> This cost estimate is an opinion of project costs. In providing opinion of construction costs, it is recognized that neither the client nor the consultant has control over the costs of labor, equipment, and materials. This opinion of costs is based on the Consultant's reasonable professional judgment and experience.</p>						

## West Skookumchuck

Item No.	Item Description	Quantity	Unit	Unit Cost Range	Total Cost Range [\$]	Subtotal Range [\$]
<b>1 PED, Environmental</b>						<b>\$4,700,000 - \$10,250,000</b>
1.1	PED & CM		Percent	20%	\$3,620,000 - \$7,890,000	
1.2	Environmental		Percent	6%	\$1,090,000 - \$2,370,000	
<b>2 Mobilization &amp; Demobilization</b>						<b>\$1,640,000 - \$3,590,000</b>
2.1	Mobilization & Demobilization		Percent	10%	\$1,640,000 - \$3,590,000	
<b>3 Levee Construction</b>						<b>\$0 - \$0</b>
	Total Length	-	LF			
3.1	Borrow & Fill	-	CY	\$40 - \$90	\$0 - \$0	
3.2	Fertilize & Seed	-	AC	\$3,875 - \$3,875	\$0 - \$0	
<b>4 Floodwalls</b>						<b>\$210,000 - \$330,000</b>
4.1	Total Length of Floodwall: 0-3'	20	LF	\$600 - \$900	\$20,000 - \$30,000	
4.2	Total Length of Floodwall: 3-6'	80	LF	\$1,100 - \$1,800	\$140,000 - \$220,000	
4.3	Total Length of Floodwall: 6-9'	20	LF	\$1,700 - \$2,700	\$50,000 - \$80,000	
4.4	Total Length of Floodwall: 9-12'	-	LF	\$2,200 - \$3,600	\$0 - \$0	
4.5	Total Length of Floodwall: 12+''	-	LF	\$11,500 - \$20,100	\$0 - \$0	
<b>5 Road Raise</b>						<b>\$0 - \$0</b>
5.1	Total Length of Road Raise: 0-5'	-	LF	\$600 - \$1,100	\$0 - \$0	
5.2	Total Length of Floodwall: 5-8'	-	LF	\$800 - \$1,400	\$0 - \$0	
5.3	Total Length of Floodwall: 8+	-	LF	\$1,000 - \$2,000	\$0 - \$0	
<b>6 Closure Structures</b>						<b>\$1,130,000 - \$9,770,000</b>
6.1	Stoplog Closure(s)	-	SF	\$1,550 - \$4,750	\$0 - \$0	
6.2	Swing Gate Closure(s)	819	SF	\$890 - \$7,700	\$1,130,000 - \$9,770,000	
6.3	Rolling Gate Closure(s)	-	SF	\$1,000 - \$12,720	\$0 - \$0	
<b>7 Pump Stations</b>						<b>\$0 - \$0</b>
7.1	Total Pumping Capacity	-	CFS	\$15,000 - \$22,000	\$0 - \$0	
<b>8 Real Estate - Levees, Floodwalls, Road Raises</b>						<b>\$15,110,000 - \$25,750,000</b>
8.1	ROW Real Estate Compensation	-	AC	Varies	\$0 - \$0	
8.2	Relocations (within ROW)	-	No.	Varies	\$0 - \$0	
8.3	Adjacent Structure Floodproofing, Raises, Relocations	57	No.	Varies	\$14,790,000 - \$24,040,000	
8.4	Utility Relocates		Percent	2%-5%	\$320,000 - \$1,710,000	
<b>Total</b>	<b>Total Capital Cost</b>					<b>\$22,800,000 - \$49,700,000</b>
Item No.	Item Description	Quantity	Unit	Unit Cost	Total Range	Subtotal Range
<b>10 Operations &amp; Maintenance</b>						<b>\$13,000 - \$57,000</b>
10.1	General	Varies	Percent	0.2%	\$3,000 - \$20,000	
10.2	Levees	Varies	Percent	1.2%	\$0 - \$0	
10.3	Floodwalls	Varies	Percent	0.05%	\$0 - \$0	
10.4	Closure Structures	Varies	Percent	0.20%	\$2,000 - \$20,000	
10.5	Pump Stations	Varies	Percent	0.75%	\$0 - \$0	
10.6	Environmental	Varies	Percent	0.70%	\$8,000 - \$17,000	
<b>Total</b>	<b>Total Yearly O&amp;M</b>					<b>\$13,000 - \$57,000</b>
<b>Notes</b>						
1 Totals includes 55% contingency, rounded ot nearest \$10,000. O&M rounded to nearest \$1,000. Quantity estimates based on model results & topography for feasibility level estimates only and should be refined in future phases.						
2 Costs are presented in 2025 dollars.						
3 This cost estimate is an opinion of project costs. In providing opinion of construction costs, it is recognized that neither the client nor the consultant has control over the costs of labor, equipment, and materials. This opinion of costs is based on the Consultant's reasonable professional judgment and experience.						