UPPER MISSISSIPPI RIVER RESTORATION FEASIBILITY REPORT WITH INTEGRATED ENVIRONMENTAL ASSESSMENT

GREEN ISLAND
HABITAT REHABILITATION AND ENHANCEMENT PROJECT

POOL 13, UPPER MISSISSIPPI RIVER
RIVER MILES 545.9 THROUGH 548.7
JACKSON COUNTY, IOWA

APPENDIX F
COST ENGINEERING

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APPENDIX F
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FIGURES

TABLES

UPPER MISSISSIPPI RIVER RESTORATION FEASIBILITY REPORT WITH INTEGRATED ENVIRONMENTAL ASSESSMENT

GREEN ISLAND HABITAT REHABILITATION AND ENHANCEMENT PROJECT

APPENDIX F COST ENGINEERING

1. BASIS OF ESTIMATE

The cost estimates for the Alternatives based on features developed by the PDT and quantity computations developed by EC-DN.

The quantities for the design of Alternatives 2 through 6 and the Tentative Selected Plan (TSP) were developed and checked by United States Army Corps of Engineers, Rock Island District, Engineering and Construction Branch, Civil and Environmental Engineering Section (EC-DN). Alternative 1 is the “No Action” alternative; and all quantities and costs are zero for Alternative 1.

2. PROJECT SCHEDULE

The Green Island Habitat Rehabilitation and Enhancement Project (HREP; Project) is currently in the feasibility phase. The planned start of pre-construction engineering and design is FY24 with construction starting in FY27 and completion of all construction stages in FY35.

3. ACQUISITION STRATEGY

The acquisition strategy has yet to be determined. Based on previous HREPs, the Forest Management features are assumed to be executed on Multiple Award Task Order Contract (MATOC) Task Orders. The rest of the features will be constructed on separated contracts, those are assumed to be Small Business Invitation for Bid (IFB). The cost estimate assumes that the prime contractor would perform most of the non-forestry work. The risks of awarding to a Small Business not capable of self-performing or not familiar with USACE processes are captured in the Abbreviated Risk Analysis (ARA).

4. COST METHODOLOGY

4.1. General. The cost estimate was prepared to 2024 Q1 price levels. The costs are fair and reasonable to a well-equipped and capable contractor and include overhead and profit. The estimate was prepared in accordance with Engineering Regulation (ER) 110-1-1300*, Cost Engineering Policy and General Requirements* (26 March 1993) and ER 1110-2-1302, *Civil Works Cost Engineering* (30 June 2016).

The estimate was developed using Micro Computer Aided Cost Estimate System MII v4.4.4 cost estimating software. Applicable crews and equipment were applied in the estimate to correspond with the work being performed. Material prices were developed using the MII Cost Book, R.S. Means references, and quotes obtained from suppliers.

4.2. Direct Cost. Direct costs are based on the anticipated material, equipment and labor

needed to construct the Project based on the current scope of work. Forestry costs were updated to account for the development of a new cost book. Forestry costs were taken from parametric estimates based on previously awarded contracts to estimates that include labor, equipment, and material. Most of the work is assumed to be done by an earthwork contractor, with the remaining specialized work being performed by several subcontractors. It is assumed the prime contractor will perform Project coordination and oversight with construction work.

- **Labor-Rate Determination.** Labor Rates are based on 2023 Davis-Bacon Wage Rates General Decision Heavy River Work IA20230002 dated Jun 16, 2023, for Jackson County, IA.

- **Equipment Rates.** All equipment costs are from MII Equipment Region 5 2022 and MII English Cost Book 2022. Cost of money has been set at 4.875%, per https://fiscal.treasury.gov/prompt-payment/rates.html.

- **Fuel Rates.** Rates have been updated as of July 2023. Current fuel prices are based on Midwest averages from www.eia.gov/petroleum/gasdiese and includes gasoline, on-road diesel, and off-road diesel. Iowa Diesel Tax 56.90cent/gal.

- **Sales Tax.** Sales tax has not been included or applied to material costs. Sales tax is not applicable in the cost estimate for the States of Iowa. The contractors will likely receive reimbursement for construction materials from these states.

- **Productivity.** Production rates were created based on historical rates used in the Cost Engineering Section in Rock Island District and on what was determined reasonable by the Cost Estimator. In addition, user crews were created using the Estimator's judgment. Overall productivity set at 90% due to adverse weather days, stand by time, instruction time and or poor site conditions.

4.3. Indirect Costs. Contractor assignments were determined after the formulation of the direct costs. Each of the contracts were assigned a Prime Contractor with the associated subcontractors. Due to different construction schedules and scopes of work, the percentages for the markups may vary among the contracts.

- **Prime Contractor.** Will perform construction of pump station and water control structures, mechanical dredging operations, placement, and pushing/shaping.

- **Tree and Shrub Planting Subcontractor.** Will perform tree and shrub cutting and clearing, processing, and hauling of tree/shrub debris, and deliver and plant containerized grass forbs, bare root seedling and rooted cuttings, trees, and shrubs for dredge placement sites. Will also perform tree cutting and clearing, processing, and hauling of tree/shrub debris, and deliver and plant containerized trees for Timber Stand Improvement (TSI) sites, and native species establishment seeding.

- **Surveying Subcontractor.** Will perform all Surveying Work.

- **QC Subcontractor.** Will perform all Quality Control Work.

- **Dredging Subcontractor.** Will perform all the dredging work.

- **Earthwork Subcontractor.** Will perform all the earthwork, shaping etc.

Prime Contractor Markups

- **Job Office Overhead (JOOH).** The overhead rate for JOOH was calculated with itemized costs, based on the developed construction schedule. In this case, a value of 13% was calculated for the Prime Contractors. This is higher than the recommended rate of 9% for a job this size, but the costs associated with a field office environment that is in a remote backwater area is assumed to call for a somewhat higher percentage.

- **Home Office Overhead (HOOH).** The overhead rate for HOOH was applied as a running percentage. In this case, a value of 10% was applied for the Prime Contractor. Home Office Overhead includes items such as office rental/ownership costs, utilities, office equipment ownership/maintenance, office staff (managers, accountants, clerical, etc.), insurance, and miscellaneous costs. The range of HOOH can be quite broad and depends largely on the contractor's annual volume of work and the type of work that is generally performed by the contractor (own work and subcontracted work).

- **Profit.** Profit has been included and was applied using the profit weighted guidelines. In this case, a value of 6.38% was calculated for the Prime Contractor (own work and subcontracted work).

- **Bond.** Bond was included based on the Bond Table as class A. In this case, a value of 0.60% was calculated for the Prime Contractor (own work and subcontracted work).

- **Insurance.** Insurance was included and applied as a running percentage. A value of 3% was applied for the Prime Contractor.

Subcontractor Markups

- **Job Office Overhead.** Overhead rates for JOOH were applied as a running percentage. In this case, a value of 10% was applied to subcontractors (for items without a historical cost).

- **Home Office Overhead.** Overhead rates for HOOH were applied as a running percentage. In this case, a value of 10% was applied to Subcontractors (for items without a historical cost).

- **Profit.** Profit has been included and was applied as a running percentage. In this case, a value of 8% was assumed for Subcontractors (for items without a historical cost).

4.4. Escalation. In the Total Project Cost Summary (TPCS) Reports, the Project costs have been escalated to the midpoint of construction.

4.5. Other Assumptions.

4.5.1. Mobilization. Was parametrically determined as 5% of the construction cost.

Calculated manually using MII.

4.5.2. Government Furnished Materials. The estimate is based on no government furnished materials.

4.5.3. Site Access. It is assumed that the site can be accessible from March 15 to December 5 of each year for most construction, except in the event of a flood. However, clearing work will take place between October 1 and March 31. Equipment is assumed to be mobilized via land transportation.

4.5.4. Construction Restraints. There is to be no work performed during the period of December 5 through March 31, except tree clearing. There is to be no tree clearing during the period of April 1 through September 30 due to the federally-endangered Indiana bat and northern long-eared bat maternity season of April 1 to September 30. In the event an eagle's nest s found, no forestry work can occur within 660 ft. The following are restricted time periods for tree and shrub planting:

- Containerized trees planting season would be from mid-October to December 5 (prior to frozen ground conditions).
- Bare root seedlings planting season would be April 1 to May 20.
- Native direct seeding would be April 1 to May 20.

4.5.5. Construction Methodology. Dredging work is assumed to be done mechanically. Work performed by a three-man, excavator (swamp buggy) crew.

Forestry work is assumed to be accessible via land. Thinning, slash handling and marking is assumed to be performed using small crews using small equipment. Planting is assumed to be performed using a skid steer loader with a tree spade. Trees are assumed to be delivered via truck from a nursery within a 30 mile radius of the site.

5. PROJECT MEASURE ACCOUNTS

5.1. (01) Lands and Damages. The estimated lands and damages is $0 (typically includes contingency factor added during real estate appraisal process). This figure represents what the USFWS will have to pay for the necessary real estate interest (Permanent Flowage Easement). Incidental USFWS costs associated with acquiring real estate interest (survey, title, appraisal, negotiations, etc.) is $0.

5.2. (06) Fish and Wildlife Facilities. The items included in this account are mechanical dredging operations, placement, pushing/shaping and Topographic Diversity. Also included are adaptive management and monitoring and TSI measures to include tree clearing, processing and hauling of tree debris, native species establishment seeding, and bare root seedling and rooted cuttings, grass forb, tree, and shrub planting over a period of eight years. Other items in this account are miscellaneous tasks such as, staking out tree locations and tree clearing limits.

5.3. (09) Channels. The items included in this account dredging operations, sediment management and potholes. Other items in this account are miscellaneous tasks such as, some excavation for key trenches and pre- and post-surveys.

5.4. (13) Pumping Plant. The items included in this account is everything related to the pump station.

5.5. (15) Floodway Control and Diversion Structures. The items included in this account are all the water control structures.

5.6. (30) Planning, Engineering, and Design. The work covered under this account includes the Project Management and the Planning, Engineering, and Design (PED) costs spent to date as well as the remaining estimated costs that will be associated with the engineering and design for this Project. The Project Manager determined the percentages for PED.

5.7. (31) Construction Management. The work covered under this account includes the expected costs for contract supervision, contract and construction administration, technical management activities, district office supervision, and administration costs. The Project Engineer and Project Manager determined the percentages for Construction Management.

6. ABBREVIATED RISK ANALYSIS

An Abbreviate Risk Assessment meeting was held on June 28, 2022, to discuss the Alternative 2, which was at the time the most comprehensive of all the alternatives. The PDT assessed the risks associated with the Alternative 2 and developed a composite contingency. The risks are assumed to be the same for all three alternatives.

The overall contingency for the TSP is 30%, used in the TPCS calculation.

Abbreviated Risk Analysis

Project (less than $40M): Green Island HREP — Alternative: TSP
Project Development Stage/Alternative: Feasibility (Recommended Plan)
Risk Category: Low Risk: Typical Construction, Simple — Meeting Date: 6/28/2022

Total Estimated Construction Contract Cost = $ 23,052,000

	CWWBS	Feature of Work	Estimated Cost		% Contingency	$ Contingency	Total
	01 LANDS AND DAMAGES	Real Estate	$ -		25%	$ -	$ -
1	06 FISH AND WILDLIFE FACILITIES	Forest Management	$ 1,962,000		31%	$ 602,796	$ 2,564,796
2	09 01 CHANNELS	Access Dredging (Dredging Conveyance)	$ 6,431,000		26%	$ 1,693,967	$ 8,124,967
4	06 FISH AND WILDLIFE FACILITIES	Topographic Diversity	$ 3,235,000		23%	$ 729,964	$ 3,964,964
5	13 PUMPING PLANT	Pump Station (Water Level Management)	$ 9,887,000		36%	$ 3,587,218	$ 13,474,218
6	15 FLOODWAY CONTROL AND DIVERSION STRUCTURES	Ditch Structures (Water Level Management)	$ 911,000		18%	$ 162,066	$ 1,073,066
12	All Other	Remaining Construction Items	$ 626,000	2.8%	10%	$ 62,600	$ 688,600
13	30 PLANNING, ENGINEERING, AND DESIGN	Planning, Engineering, & Design	$ 2,644,000		32%	$ 839,010	$ 3,483,010
14	31 CONSTRUCTION MANAGEMENT	Construction Management	$ 2,401,000		27%	$ 636,613	$ 3,037,613
XX	FIXED DOLLAR RISK ADD (EQUALLY DISPERSED TO ALL, MUST INCLUDE JUSTIFICATION SEE BELOW)					$ -	

Totals					
Real Estate	$ -	0%	$ -	$ -
Total Construction Estimate	$ 23,052,000	30%	$ 6,838,611	$ 29,890,611
Total Planning, Engineering & Design	$ 2,644,000	32%	$ 839,010	$ 3,483,010
Total Construction Management	$ 2,401,000	27%	$ 636,613	$ 3,037,613
Total Excluding Real Estate	$ 28,097,000	30%	$ 8,314,233	$ 36,411,233
		Base	50%	80%
Confidence Level Range Estimate ($000's)		$28,097k	$33,085k	$36,411k

* 50% based on base is at 5%CL

Fixed Dollar Risk Add: (Allows for additional risk to be added to the risk analsyis. Must include justification. Does not allocate to Real Estate.

Figure F-1. Abbreviated Risk Analysis Summary

Major Risk Items. The pump station is considered to have a higher risk associated with it since it is a large portion of the TSP, approximately $9.8M, more than 40% of the total estimated construction costs. The pump station is not only a major risk to the project due to its sheer cost

but also due to the lack of design to date, as there are no borings that could inform a foundation design, or a hydraulic analysis that could inform the pump sizes required to achieve the Project's water management goals. Based on the ARA, the pump station has computed 38% contingency.

7. OTHER COSTS

Operations and Maintenance (O&M) costs were developed by SMEs based on similar past projects (Table F-1).

Table F-1. Operation and Maintenance Costs

O&M Component	Frequency	Total Costs
Inspection of All Features	Yearly	$4,000
Water Quality Survey	Yearly	$7,500
Bathymetric Survey	Every 5 Years	$1,400
Reporting	Every 5 Years	$3,000
Forestry Survey	Every 10 Years	$1,500
Total Annual Costs – Inspections and Surveys: $12,530		

Table F-2: Annual Operation and Maintenance Costs

Name	Code	Size	Unit	Unit Price	Feature Price
Water Level Management					
Pump Station	PS-01	1	EA	$14,000.00	$14,000.00
Pump Station	WCS-01	1	EA	$ 3,480.00	$ 3,480.00
4th Ditch Road Densmore North	WCS-02	1	EA	$ 3,480.00	$ 3,480.00
4th Ditch Road Densmore Upper	WCS-03	1	EA	$ 3,480.00	$ 3,480.00
Brown's Lake Outlet	WCS-06	1	EA	$ 3,480.00	$ 3,480.00
4th Ditch Structure Replacement Parking Lot	WCS-07	1	EA	$ 3,480.00	$ 3,480.00
Murphy's Cell	WCS-08	1	EA	$ 3,480.00	$ 3,480.00
Murphy's Cell	WCS-09	1	EA	$3,480.00	$ 3,480.00
Topographic Diversity					
Blake's Lake to Browns Berm DNR	BRM-B-06 DNR	2573	LF	$ 0.24	$ 617.52
Blake's Lake Lower Berm	BRM-B-07	3641	LF	$ 0.24	$ 873.89
5th Ditch Berm	BRM-B-08	6302	LF	$ 0.24	$1,512.52
Southeast Berm DNR	BRM-B-09 DNR	1557	LF	$ 0.24	$ 373.68
4th Ditch Berm	BRM-B-10	9385	LF	$ 0.24	$2,252.41
McGann's to Miss Berm	BRM-B-11	2081	LF	$ 0.24	$ 499.37
Fish Lake Berm DNR	BRM-A-01 DNR	5486	LF	$ 0.24	$1,316.64
Murphys Cell	BRM-A-02	3634	LF	$ 0.24	$ 872.25
Sawmill Berm	BRM-B-01	2475	LF	$ 0.24	$ 594.007
McGann's Berm	BRM-B-02	2356	LF	$ 0.24	$ 565.39
Densmore Upper Berm DNR	BRM-B-03 DNR	1677	LF	$ 0.24	$ 402.48
Densmore Lower Berm DNR	BRM-B-04 DNR	2239	LF	$ 0.24	$ 537.36
Densmore Horseshoe	BRM-B-12	1508	LF	$ 0.24	$ 361.92
3rd Ditch Berm	BRM-A-13	5384	LF	$ 0.24	$1,292.17
Forestry					
Snider Lake DNR Thinning and Planting	TSI-01	34	Acres	$ 3.24	$ 110.16
Snider Lake USFW Thinning and Planting	TSI-02	27	Acres	$ 3.24	$ 87.48
Sawmill Lake Upper Thinning and Planting	TSI-03	25	Acres	$ 3.24	$ 81.00
Sawmill Lake Lower Thinning and Planting	TSI-04	26	Acres	$ 3.24	$ 84.24
McGanns Lake Lower Thinning and Planting	TSI-06	36	Acres	$ 3.24	$ 116.64
Fish Lake East Thinning and Planting	TSI-08	4	Acres	$ 3.24	$ 12.96
Fish Lake East Thinning and Planting	TSI-08	20	Acres	$ 3.24	$ 64.80

Name	Code	Size	Unit	Unit Price	Feature Price
North Central Thinning and Planting	TSI-09	40	Acres	$ 3.24	$ 129.60
North Central Lower Thinning and Planting	TSI-09 Lower	20	Acres	$ 3.24	$ 64.80
All Berms	TSI for Berms	62	Acres	$ 3.24	$200.88
All R&S	TSI for Berms	25	Acres	$ 3.24	$ 81.00
Sediment Management					
Moony Hollow Inlet by Fish Lake	ST-01	1	EA	$4,200.00	$ 4,200.00
Total Annual Costs – Measure Maintenance:					**$55,666.00**

Table F-3: Pump Operation and Maintenance Costs

Frequency	Repair	Cost Estimate
Submersible Pump		
Every 3 Months	Exercise pump for 3 minutes (if water available)	$500
	Perform visual condition assessment	
Annually	Check ground conductor	$1,000
	Check insulation resistance	
	Exercise pump for 3 minutes (if water available)	
	Perform visual condition assessment	
Every 3 Years	Check ground conductor	$2,500
	Check insulation resistance	
	Exercise pump for 3 minutes (if water available)	
	Perform visual condition assessment	
	Cable inspection	
	Sensor inspection	
	Mechanical seal check	
	Change lubricant	
	Flow test	
Every 5 Years	General overhaul and lube	$10,000-40,000
	Total Annual Costs – Submersible Pump Maintenance:	**$5,833 – $11,833**

8. CONSTRUCTION SCHEDULE FOR TSP

A construction schedule(Table F-2) was created following the durations for equipment in the MII estimate. Based on the schedule, construction activities for the TSP would start May 1, 2027, and end on September 25, 2035.

Table F-4. Construction Schedule for TSP.

Stage	Pool	Item	Measure Name
I	A/B	**Start Date: 2027**	**End Date: 2029**
		Build Pump Station	WCS-01
		Water Control Structures	WCS-02, WCS-03, WCS-06, WCS-07, WCS-08, WCS-09
II	A	**Start Date: 2029**	**End Date: 2031**
		Dredging – Over Wintering	CHN-A-01
		Dredging - Conveyance	CHN-A-02
		Construct Topographic Diversity Berms	BRM-A-01, BRM-A-02
		Construct Ridge and Swale	RS-01
		Create Sediment Trap	ST-01
		Timber Stand Improvement (TSI)	TSI-01, TSI-02, TSI-09
III	B	**Start Date: 2031**	**End Date: 2033**
		Dredging – Over Wintering	CHN-B-01, CHN-B-02
		Dredging - Conveyance	CHN-B-03, CHN-B-04, CHN-B-06, CHN-B-07, CHN-B-08, CHN-B-09, CHN-B-10, CHN-B-11, CHN-B-12, CHN-B-13
		Construct Topographic Diversity Berms	BRM-B-03 thru BRM-B-13 (excluding #5)
		Timber Stand Improvement (TSI)	TSI-03, TSI-04, TSI-06
IV	A/B	**Start Date: 2033**	**End Date: 2035**
		Timber Stand Improvement (TSI)	TSI-08(Ridge and Swale), TSI (All Berms)

9. TOTAL PROJECT COST FOR ALTERNATIVES

Figures F-1 through F-6 are Total Project Costs Summary sheets for the Alternatives Phase.

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

Printed:8/25/2023
Page 1 of 1

PROJECT: Green Island HREP, Alt 2
PROJECT NO: 0
LOCATION: Jackson County, Iowa

DISTRICT: Rock Island District (MVR) PREPARED: 11/29/2022
POC: CHIEF, COST ENGINEERING, AUVENSHINE

This Estimate reflects the scope and schedule in report; Feasability Level Plans and GIS Mapping

Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)						TOTAL PROJECT COST (FULLY FUNDED)			
						Program Year (Budget EC): 2023; Effective Price Level Date: 1 OCT 22									
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	Spent Thru: 1-Oct-22 ($K)	TOTAL FIRST COST ($K) K	INFLATED (%) L	COST ($K) M	CNTG ($K) N	FULL ($K) O
06	FISH & WILDLIFE FACILITIES	$3,189	$989	31.0%	$4,177	0.0%	$3,189	$989	$4,177	$0	$4,177	5.4%	$3,361	$1,042	$4,403
09	CHANNELS & CANALS	$6,693	$2,075	31.0%	$8,767	0.0%	$6,693	$2,075	$8,767	$0	$8,767	5.4%	$7,054	$2,187	$9,241
13	PUMPING PLANT	$8,576	$2,659	31.0%	$11,235	0.0%	$8,576	$2,659	$11,235	$0	$11,235	5.4%	$9,040	$2,802	$11,842
15	FLOODWAY CONTROL & DIVERSION STRU	$768	$238	31.0%	$1,005	0.0%	$768	$238	$1,005	$0	$1,005	5.4%	$809	$251	$1,060
ALL	COMPOSITE INDEX (WEIGHTED AVERAGE	$0	$0	-	$0	-	$0	$0	$0	$0	$0	-	$0	$0	$0
ALL	COMPOSITE INDEX (WEIGHTED AVERAGE	$0	$0	-	$0	-	$0	$0	$0	$0	$0	-	$0	$0	$0
ALL	COMPOSITE INDEX (WEIGHTED AVERAGE	$0	$0	-	$0	-	$0	$0	$0	$0	$0	-	$0	$0	$0
ALL	COMPOSITE INDEX (WEIGHTED AVERAGE	$0	$0	-	$0	-	$0	$0	$0	$0	$0	-	$0	$0	$0
	CONSTRUCTION ESTIMATE TOTALS:	$19,225	$5,960		$25,185	0.0%	$19,225	$5,960	$25,185	$0	$25,185	5.4%	$20,265	$6,282	$26,547
01	LANDS AND DAMAGES	$0	$0	-	$0	-	$0	$0	$0	$0	$0	-	$0	$0	$0
30	PLANNING, ENGINEERING & DESIGN	$2,762	$856	31.0%	$3,618	0.0%	$2,762	$856	$3,618	$0	$3,618	4.3%	$2,881	$893	$3,774
31	CONSTRUCTION MANAGEMENT	$2,529	$784	31.0%	$3,313	0.0%	$2,529	$784	$3,313	$0	$3,313	5.7%	$2,674	$829	$3,502
	PROJECT COST TOTALS:	$24,516	$7,600	31.0%	$32,116		$24,516	$7,600	**$32,116**	$0	**$32,116**	5.3%	$25,820	$8,004	$33,824

CHIEF, COST ENGINEERING, AUVENSHINE

ESTIMATED TOTAL PROJECT COST: $33,824

________________ **PROJECT MANAGER, MILLHOLLIN**

________________ **CHIEF, REAL ESTATE, ST. LOUIS**

________________ **CHIEF, PLANNING, xxx**

________________ **CHIEF, ENGINEERING, STEWART**

________________ **CHIEF, OPERATIONS, xxx**

________________ **CHIEF, CONSTRUCTION, xxx**

________________ **CHIEF, CONTRACTING,xxx**

________________ **CHIEF, PM-PB, xxxx**

________________ **CHIEF, DPM, xxx**

Filename: TPCS GREEN ISLAND ALT 2 20221219
TPCS

Figure F-2. Total Project Costs Summary Sheets for the Alternative 2.

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

Printed:8/25/2023
Page 1 of 1

PROJECT: **Green Island HREP, Alt 3**
PROJECT NO: 0
LOCATION: Jackson County, Iowa

DISTRICT: Rock Island District (MVR) **PREPARED: 11/29/2022**
POC: CHIEF, COST ENGINEERING, AUVENSHINE

This Estimate reflects the scope and schedule in report; Feasability Level Plans and GIS Mapping

Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)						TOTAL PROJECT COST (FULLY FUNDED)			
						Program Year (Budget EC): 2023 Effective Price Level Date: 1 OCT 22									
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	Spent Thru: 1-Oct-22 ($K)	TOTAL FIRST COST ($K) K	INFLATED (%) L	COST ($K) M	CNTG ($K) N	FULL ($K) O
06	FISH & WILDLIFE FACILITIES	$2,270	$726	32.0%	$2,996	0.0%	$2,270	$726	$2,996	$0	$2,996	5.4%	$2,393	$766	$3,158
09	CHANNELS & CANALS	$4,362	$1,396	32.0%	$5,758	0.0%	$4,362	$1,396	$5,758	$0	$5,758	5.4%	$4,598	$1,471	$6,070
13	PUMPING PLANT	$8,577	$2,745	32.0%	$11,321	0.0%	$8,577	$2,745	$11,321	$0	$11,321	5.4%	$9,041	$2,893	$11,934
15	FLOODWAY CONTROL & DIVERSION STRU	$606	$194	32.0%	$800	0.0%	$606	$194	$800	$0	$800	5.4%	$639	$204	$843
ALL	COMPOSITE INDEX (WEIGHTED AVERAGE	$0	$0	-	$0	-	$0	$0	$0	$0	$0	-	$0	$0	$0
ALL	COMPOSITE INDEX (WEIGHTED AVERAGE	$0	$0	-	$0	-	$0	$0	$0	$0	$0	-	$0	$0	$0
ALL	COMPOSITE INDEX (WEIGHTED AVERAGE	$0	$0	-	$0	-	$0	$0	$0	$0	$0	-	$0	$0	$0
ALL	COMPOSITE INDEX (WEIGHTED AVERAGE	$0	$0	-	$0	-	$0	$0	$0	$0	$0	-	$0	$0	$0
	CONSTRUCTION ESTIMATE TOTALS:	$15,815	$5,061		$20,876	0.0%	$15,815	$5,061	$20,876	$0	$20,876	5.4%	$16,670	$5,334	$22,005
01	LANDS AND DAMAGES	$0	$0	-	$0	-	$0	$0	$0	$0	$0	-	$0	$0	$0
30	PLANNING, ENGINEERING & DESIGN	$2,353	$753	32.0%	$3,106	0.0%	$2,353	$753	$3,106	$0	$3,106	4.3%	$2,454	$785	$3,239
31	CONSTRUCTION MANAGEMENT	$2,086	$668	32.0%	$2,753	0.0%	$2,086	$668	$2,753	$0	$2,753	5.7%	$2,205	$706	$2,911
	PROJECT COST TOTALS:	$20,254	$6,481	32.0%	$26,735		$20,254	$6,481	$26,735	$0	$26,735	5.3%	$21,329	$6,825	$28,154

CHIEF, COST ENGINEERING, AUVENSHINE

ESTIMATED TOTAL PROJECT COST: $28,154

______________________ **PROJECT MANAGER, MILLHOLLIN**

______________________ **CHIEF, REAL ESTATE, ST. LOUIS**

______________________ **CHIEF, PLANNING, xxx**

______________________ **CHIEF, ENGINEERING, STEWART**

______________________ **CHIEF, OPERATIONS, xxx**

______________________ **CHIEF, CONSTRUCTION, xxx**

______________________ **CHIEF, CONTRACTING,xxx**

______________________ **CHIEF, PM-PB, xxxx**

______________________ **CHIEF, DPM, xxx**

Filename: TPCS GREEN ISLAND ALT 3 20221219
TPCS

Figure F-3. Total Project Costs Summary Sheets for the Alternative 3.

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

Printed:8/25/2023
Page 1 of 1

PROJECT: **Green Island HREP, Alt 4**
PROJECT NO: 0
LOCATION: Jackson County, Iowa

DISTRICT: Rock Island District (MVR) **PREPARED: 11/29/2022**
POC: CHIEF, COST ENGINEERING, AUVENSHINE

This Estimate reflects the scope and schedule in report; Feasability Level Plans and GIS Mapping

Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)						TOTAL PROJECT COST (FULLY FUNDED)			
						Program Year (Budget EC): 2023; Effective Price Level Date: 1 OCT 22									
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	Spent Thru: 1-Oct-22 ($K)	TOTAL FIRST COST ($K) K	INFLATED (%) L	COST ($K) M	CNTG ($K) N	FULL ($K) O
06	FISH & WILDLIFE FACILITIES	$1,834	$495	27.0%	$2,330	0.0%	$1,834	$495	$2,330	$0	$2,330	5.4%	$1,934	$522	$2,456
09	CHANNELS & CANALS	$4,106	$1,109	27.0%	$5,214	0.0%	$4,106	$1,109	$5,214	$0	$5,214	5.4%	$4,328	$1,168	$5,496
13	PUMPING PLANT	$0	$0	-	$0	-	$0	$0	$0	$0	$0	-	$0	$0	$0
15	FLOODWAY CONTROL & DIVERSION STRU	$606	$164	27.0%	$769	0.0%	$606	$164	$769	$0	$769	5.4%	$639	$172	$811
ALL	COMPOSITE INDEX (WEIGHTED AVERAGE	$0	$0	-	$0	-	$0	$0	$0	$0	$0	-	$0	$0	$0
ALL	COMPOSITE INDEX (WEIGHTED AVERAGE	$0	$0	-	$0	-	$0	$0	$0	$0	$0	-	$0	$0	$0
ALL	COMPOSITE INDEX (WEIGHTED AVERAGE	$0	$0	-	$0	-	$0	$0	$0	$0	$0	-	$0	$0	$0
ALL	COMPOSITE INDEX (WEIGHTED AVERAGE	$0	$0	-	$0	-	$0	$0	$0	$0	$0	-	$0	$0	$0
	CONSTRUCTION ESTIMATE TOTALS:	$6,546	$1,767		$8,313	0.0%	$6,546	$1,767	$8,313	$0	$8,313	5.4%	$6,900	$1,863	$8,763
01	LANDS AND DAMAGES	$0	$0	-	$0	-	$0	$0	$0	$0	$0	-	$0	$0	$0
30	PLANNING, ENGINEERING & DESIGN	$1,241	$335	27.0%	$1,575	0.0%	$1,241	$335	$1,575	$0	$1,575	4.1%	$1,291	$349	$1,640
31	CONSTRUCTION MANAGEMENT	$881	$238	27.0%	$1,119	0.0%	$881	$238	$1,119	$0	$1,119	5.7%	$931	$251	$1,183
	PROJECT COST TOTALS:	$8,668	$2,340	27.0%	$11,008		$8,668	$2,340	**$11,008**	$0	**$11,008**	5.2%	$9,122	$2,463	$11,585

CHIEF, COST ENGINEERING, AUVENSHINE

ESTIMATED TOTAL PROJECT COST: **$11,585**

______________________ **PROJECT MANAGER, MILLHOLLIN**

______________________ **CHIEF, REAL ESTATE, ST. LOUIS**

______________________ **CHIEF, PLANNING, xxx**

______________________ **CHIEF, ENGINEERING, STEWART**

______________________ **CHIEF, OPERATIONS, xxx**

______________________ **CHIEF, CONSTRUCTION, xxx**

______________________ **CHIEF, CONTRACTING,xxx**

______________________ **CHIEF, PM-PB, xxxx**

______________________ **CHIEF, DPM, xxx**

Filename: TPCS GREEN ISLAND ALT 4 20221219
TPCS

Figure F-4. Total Project Costs Summary Sheets for the Alternative 4.

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

Printed:8/25/2023
Page 1 of 1

PROJECT: Green Island HREP, Alt 5
PROJECT NO: 0
LOCATION: Jackson County, Iowa

DISTRICT: Rock Island District (MVR) **PREPARED:** 11/29/2022
POC: CHIEF, COST ENGINEERING, AUVENSHINE

This Estimate reflects the scope and schedule in report; Feasability Level Plans and GIS Mapping

Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)						TOTAL PROJECT COST (FULLY FUNDED)			
						Program Year (Budget EC): 2023	Effective Price Level Date: 1 OCT 22								
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	Spent Thru: 1-Oct-22 ($K)	TOTAL FIRST COST ($K) K	INFLATED (%) L	COST ($K) M	CNTG ($K) N	FULL ($K) O
06	FISH & WILDLIFE FACILITIES	$1,599	$448	28.0%	$2,047	0.0%	$1,599	$448	$2,047	$0	$2,047	5.4%	$1,685	$472	$2,157
09	CHANNELS & CANALS	$3,301	$924	28.0%	$4,225	0.0%	$3,301	$924	$4,225	$0	$4,225	5.4%	$3,479	$974	$4,454
13	PUMPING PLANT	$0	$0	-	$0	-	$0	$0	$0	$0	$0	-	$0	$0	$0
15	FLOODWAY CONTROL & DIVERSION STRU	$215	$60	28.0%	$275	0.0%	$215	$60	$275	$0	$275	5.4%	$227	$64	$290
ALL	COMPOSITE INDEX (WEIGHTED AVERAGE	$0	$0	-	$0	-	$0	$0	$0	$0	$0	-	$0	$0	$0
ALL	COMPOSITE INDEX (WEIGHTED AVERAGE	$0	$0	-	$0	-	$0	$0	$0	$0	$0	-	$0	$0	$0
ALL	COMPOSITE INDEX (WEIGHTED AVERAGE	$0	$0	-	$0	-	$0	$0	$0	$0	$0	-	$0	$0	$0
ALL	COMPOSITE INDEX (WEIGHTED AVERAGE	$0	$0	-	$0	-	$0	$0	$0	$0	$0	-	$0	$0	$0
	CONSTRUCTION ESTIMATE TOTALS:	$5,115	$1,432		$6,547	0.0%	$5,115	$1,432	$6,547	$0	$6,547	5.4%	$5,392	$1,510	$6,901
01	LANDS AND DAMAGES	$0	$0	-	$0	-	$0	$0	$0	$0	$0	-	$0	$0	$0
30	PLANNING, ENGINEERING & DESIGN	$1,069	$299	28.0%	$1,368	0.0%	$1,069	$299	$1,368	$0	$1,368	4.0%	$1,111	$311	$1,423
31	CONSTRUCTION MANAGEMENT	$695	$195	28.0%	$890	0.0%	$695	$195	$890	$0	$890	5.7%	$735	$206	$940
	PROJECT COST TOTALS:	$6,879	$1,926	28.0%	$8,805		$6,879	$1,926	**$8,805**	$0	**$8,805**	5.2%	$7,238	$2,027	$9,264

CHIEF, COST ENGINEERING, AUVENSHINE

ESTIMATED TOTAL PROJECT COST: $9,264

______________________ **PROJECT MANAGER, MILLHOLLIN**

______________________ **CHIEF, REAL ESTATE, ST. LOUIS**

______________________ **CHIEF, PLANNING, xxx**

______________________ **CHIEF, ENGINEERING, STEWART**

______________________ **CHIEF, OPERATIONS, xxx**

______________________ **CHIEF, CONSTRUCTION, xxx**

______________________ **CHIEF, CONTRACTING,xxx**

______________________ **CHIEF, PM-PB, xxxx**

______________________ **CHIEF, DPM, xxx**

Filename: TPCS GREEN ISLAND ALT 5 20221219
TPCS

Figure F-5. Total Project Costs Summary Sheets for the Alternative 5.

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

Printed:8/25/2023
Page 1 of 1

PROJECT: Green Island HREP, Alt 6
PROJECT NO: 0
LOCATION: Jackson County, Iowa

DISTRICT: Rock Island District (MVR) **PREPARED: 11/29/2022**
POC: CHIEF, COST ENGINEERING, AUVENSHINE

This Estimate reflects the scope and schedule in report; Feasability Level Plans and GIS Mapping

Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)						TOTAL PROJECT COST (FULLY FUNDED)			
						Program Year (Budget EC): 2023 Effective Price Level Date: 1 OCT22									
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*	Spent Thru: 1-Oct-22 ($K)	TOTAL FIRST COST ($K) *K*	INFLATED (%) *L*	COST ($K) *M*	CNTG ($K) *N*	FULL ($K) *O*
06	FISH & WILDLIFE FACILITIES	$3,029	$939	31.0%	$3,968	0.0%	$3,029	$939	$3,968	$0	$3,968	5.4%	$3,193	$990	$4,183
09	CHANNELS & CANALS	$5,975	$1,852	31.0%	$7,827	0.0%	$5,975	$1,852	$7,827	$0	$7,827	5.4%	$6,298	$1,952	$8,250
13	PUMPING PLANT	$8,577	$2,659	31.0%	$11,235	0.0%	$8,577	$2,659	$11,235	$0	$11,235	5.4%	$9,040	$2,803	$11,843
15	FLOODWAY CONTROL & DIVERSION STRU	$659	$204	31.0%	$864	0.0%	$659	$204	$864	$0	$864	5.4%	$695	$215	$911
ALL	COMPOSITE INDEX (WEIGHTED AVERAGE)	$0	$0	-	$0	-	$0	$0	$0	$0	$0	-	$0	$0	$0
ALL	COMPOSITE INDEX (WEIGHTED AVERAGE)	$0	$0	-	$0	-	$0	$0	$0	$0	$0	-	$0	$0	$0
ALL	COMPOSITE INDEX (WEIGHTED AVERAGE)	$0	$0	-	$0	-	$0	$0	$0	$0	$0	-	$0	$0	$0
ALL	COMPOSITE INDEX (WEIGHTED AVERAGE)	$0	$0	-	$0	-	$0	$0	$0	$0	$0	-	$0	$0	$0
	CONSTRUCTION ESTIMATE TOTALS:	$18,240	$5,654		$23,894	0.0%	$18,240	$5,654	$23,894	$0	$23,894	5.4%	$19,226	$5,960	$25,187
01	LANDS AND DAMAGES	$0	$0	-	$0	-	$0	$0	$0	$0	$0	-	$0	$0	$0
30	PLANNING, ENGINEERING & DESIGN	$2,644	$820	31.0%	$3,463	0.0%	$2,644	$820	$3,463	$0	$3,463	4.3%	$2,758	$855	$3,613
31	CONSTRUCTION MANAGEMENT	$2,401	$744	31.0%	$3,146	0.0%	$2,401	$744	$3,146	$0	$3,146	5.7%	$2,538	$787	$3,325
	PROJECT COST TOTALS:	$23,285	$7,218	31.0%	$30,503		$23,285	$7,218	**$30,503**	$0	**$30,503**	5.3%	$24,522	$7,802	$32,124

ESTIMATED TOTAL PROJECT COST: $32,124

______________________ **CHIEF, COST ENGINEERING, AUVENSHINE**

______________________ **PROJECT MANAGER, MILLHOLLIN**

______________________ **CHIEF, REAL ESTATE, ST. LOUIS**

______________________ **CHIEF, PLANNING, xxx**

______________________ **CHIEF, ENGINEERING, STEWART**

______________________ **CHIEF, OPERATIONS, xxx**

______________________ **CHIEF, CONSTRUCTION, xxx**

______________________ **CHIEF, CONTRACTING,xxx**

______________________ **CHIEF, PM-PB, xxxx**

______________________ **CHIEF, DPM, xxx**

**** CONTRACT COST SUMMARY ****

PROJECT: Green Island HREP, Alt 6
LOCATION: Jackson County, Iowa

DISTRICT: Rock Island District (MVR) PREPARED: 11/29/2022
POC: CHIEF, COST ENGINEERING, AUVENSHINE

Figure F-6. Total Project Costs Summary Sheets for the Alternative 6.

10. MII COST REPORT FOR THE TSP

Figure F-7 through F-9 are Total Project Costs Summary sheets for the TSP.

Print Date Fri 25 August 2023 | U.S. Army Corps of Engineers | Time 14:03:58
Eff. Date 10/1/2023 | Project EP22R05: Green Island TSP POST-DQCR
Standard Report for Rock Island | Title Page
Scope of Work

The Green Island project is located in Pool 13 of the Upper Mississippi River (UMR) between river miles (RMs) 548.5 and 546.0 just south of the confluence with the Maquoketa River. The study area is located in Jackson County, IA, approximately 3 miles upstream of Clinton, IA. The project features would be located entirely in the Green Island Wildlife Management Area (GIWMA), managed by the Iowa Department of Natural Resources (IADNR). Project Consist of:

Dredged Material Topographic Diversity Berms
Timber Stand Improvements (TSI)
Ephemeral Wetland Features (Ridge & Swale)
Aquatic Habitat Restoration (09 Channels)
Water Control Structures (13 PUMPING PLANT & 15 FLOODWAY CONTROL AND DIVERSION STRUCTURES)
Sediment Trap

Acquisition strategy is assumed to be a Small Business IFB and MATOC for Forestry items.

Pumping Plant has been identified as a higher risk item identified on the ARA due to its design not being complete.

Access. The Project is located behind a levee along the Mississippi River. All work will have to be conducted from the landside. There are several parking lots in the Project area that will be utilized as staging areas.

Environmental Concerns: During the period between January 1 and July 15, if there is a bald eagle nest present within or outside the construction work limits all construction activities, including tree clearing, are prohibited within 660 feet of the nest.

Cost of Money = 4.875%

JOOH = 13% (10% for Subcontractors)

HOOH = 10%

Bond = 0.60%

Estimated by USACE MVR EC-TE
Designed by USACE MVR EC-DN
Prepared by Felix Castro
Preparation Date 8/25/2023
Effective Date of Pricing 10/1/2023
Estimated Construction Time Days

Labor ID: IA20230002 EQ ID: EP22R05 | Currency in US dollars | TRACES MII Version 4.4

Figure F-7. MII Cost Report for the TSP (Page 1 of 3)

Insurance = 3%

Profit = 6.38%

Productivity = 90% (Due to adverse weather days, stand by time, instruction time and or poor site conditions)

Cost Book Update applied to material from the 2022 Cost Book:
Using CWCCIS (31 MAR 2023) Composite Index from 2Q22 to 4Q23: 1,197.24/1,049.85 = 14.04%

Estimated by USACE MVR EC-TE
Designed by USACE MVR EC-DN
Prepared by Felix Castro
Preparation Date 8/25/2023
Effective Date of Pricing 10/1/2023
Estimated Construction Time Days

Labor ID: IA20230002 EQ ID: EP22R05 Currency in US dollars TRACES MII Version 4.4

Figure F-8. MII Cost Report for the TSP (Page 2 of 3)

Print Date Fri 25 August 2023 — U.S. Army Corps of Engineers — Time 14:03:58
Eff. Date 10/1/2023 — Project EP22R05: Green Island TSP POST-DQCR
Standard Report for Rock Island — Project Owner Summary Page 1

Description	UOM	Quantity	ContractCost	Escalation	Contingency	ProjectCost
Project Owner Summary			23,051,459	0	0	23,051,459
Stage I	EA	1	10,961,189	0	0	10,961,189
Stage II	EA	1	3,128,684	0	0	3,128,684
Stage III	EA	1	7,564,430	0	0	7,564,430
Stage IV	EA	1	1,397,157	0	0	1,397,157

Labor ID: IA20230002 EQ ID: EP22R05 — Currency in US dollars — TRACES MII Version 4.4

Figure F-9. MII Cost Report for the TSP (Page 3 of 3)

11. COST SHARE

Section 906I of WRDA 1986 states that first cost funding for enhancement measures will be 100% Federal cost because the Project measures will be on federally owned land.