

Appendix H

Detailed Cost Estimate and Cost Analysis

Project Goals and Objectives

Mitchell Lake, TX is a single-purpose, ecosystem restoration, general investigation feasibility study. The study officially started with the signing of the Feasibility Cost Share Agreement between the US Army Corps of Engineers (USACE) and the San Antonio Water System (SAWS) on 05 September 2018. A combination Charette and Alternatives Milestone Meeting (AMM) was successfully conducted on 16 January 2019. The study is currently at the Tentatively Selected Plan (TSP) Milestone.

This is an interim response to the study authority. Broadly, the problem is the loss of both habitat structure and function of the aquatic and riparian habitats of Mitchell Lake. Although the lake no longer serves a wastewater function, the degradation from that function is still evident. The waters of Mitchell Lake are highly eutrophic causing unstable dissolved oxygen and pH levels, and therefore the current conditions no longer support the biodiversity of the historic wetland vegetation community or other aquatic life.

SPECIFIC PLANNING OBJECTIVES

1. Increase the areal extent and quality of fish and wildlife habitat in the study area for the life of the project.
2. Increase the floral and faunal species diversity and richness in the study area for the life of the project.
3. Manage and control invasive species in the study area for the life of the project.

Methodology

To arrive at the current costs for each of the alternative, the MII V 4.4 software and 2016 cost books (latest available versions) were used for plan formulation and then the final numbers for the Tentatively Selected Plan (TSP) were updated to the newer MII V 4.4.2 and 2016 cost books, and escalated to current pricing. This is the most current version of the MCACES software. The remaining measures in the estimate are broken out based on the Civil Works Work Breakdown Structure (CWWBS). The project had multiple flood risk management and mitigation options. After going through all of them the final options for the Tentatively Selected Plan were developed. There were three measures and broken out into options with different environmental alternatives. The costs for each were developed and the most cost effective for this project was deemed to be the TSP. The estimate currently includes construction, relocations, plantings, recreation features, PED and Construction Management costs, and contingency.

Attached supporting documents are the MII estimate, the ARA (Abbreviated Risk Analysis) which includes the risks that went into determining the project contingency and the TPCS (Total Project Cost Summary). This shows the progression between the estimated cost, the First cost and the fully funded project cost.

Assumptions and Constraints

Changes in, and around, Mitchell Lake have caused the historic tule (tall emergent wetland vegetation) wetland system to degrade resulting in hyper-eutrophic waters, reductions in habitat quality and quantity, and reductions in wildlife diversity.

1. Loss of fish and wildlife habitat quality and diversity, particularly for migratory birds.
2. There is little aquatic connectivity between the upstream and downstream habitats. Salinity and nutrient loading will continue to increase.
3. There are invasive species on site that out-compete native flora. These invasive species will continue to spread.
4. There is high nutrient loading and extreme daily variation in pH and O₂ levels leading to hypereutrophic conditions.

Opportunities exist to:

1. Reconnect the upstream and downstream hydrologies.
2. Improve water quality through ecosystem restoration.
3. Provide additional recreation and ecotourism benefits to the community.

Alternatives

For each area remaining, the final array of management measures was combined into individual alternatives. Each of these alternatives could be a standalone plan, or combined with other alternatives to form a suite of alternative plans.

In addition, several scales of most alternatives were developed for each area in order to achieve differing levels of captured and uncaptured benefits (Table 1 and Table 2).

Area 1 – Bird Pond Wetland Alternatives

- Alternative 1a - Enhancing the footprint of the existing 3.17-acre wetland -
- Alternative 1b - Increasing the footprint to form a 6.42-acre wetland -

Area 2 – Central Wetland Alternatives

- Alternative 2a - Enhancing the footprint of the existing 10.46-acre wetland
- Alternative 2b - Increasing the footprint to form a 18.37-acre wetland

Area 3 – Skip's Pond Alternative

- Alternative 3 - Enhancing the footprint of the existing 2.18-acre wetland

Area 6 – Polders Alternative

- Alternative 6 - Management/Modification of Existing 49.52 Polders/Basins

Area 7 – Fringe Wetlands / Coves 1 – 3 Alternatives

- Alternative 7a – Enhancing 53.68 acre Cove 1 alone -
- Alternative 7b – Enhancing 11.84 acre Cove 2 alone
- Alternative 7c – Enhancing 6.84 acre Cove 3 alone
- Alternative 7d – Enhancing 65.52 acres of Coves 1 & 2
- Alternative 7e – Enhancing 60.52 acres of Coves 1 & 3
- Alternative 7f – Enhancing 18.68 acres of Coves 2 & 3
- Alternative 7g – Enhancing 72.36 acres of Coves 1 - 3

Area 9 – Dam Forested Wetland Alternatives

- Alternative 9a - Enhancement of the existing 2.55-acre wetland footprint, no dam modification
- Alternative 9b - Expanding the existing wetland to form a 4.48-acre wetland, no dam modification

Area 10 – Downstream Wetlands Alternative

Alternative 10 – Creation of 51.32 acres of wetlands

CE/ICA Table of Best Value Plans

Plan	Output (AAHU)	Annual Cost (\$1000)	Average Annual Cost (\$1000/AAHU)	Incremental Cost (\$1000)	Incremental Output (AAHU)	Incremental Cost per Output	Plan First Cost
1: No Action	0	0	-	-	-	-	-
2: Polders	18.140	14.190	0.782	14.190	18.140	0.782	\$222,922
3: Polders + Coves 1 & 2	54.640	89.700	1.642	75.510	36.500	2.069	\$1,430,962
4: Polders + Coves 1, 2 & 3	58.450	97.590	1.670	7.890	3.810	2.071	\$1,557,381
5: Polders + Coves 1, 2 & 3 + Central Wetlands + Skip's Pond	70.190	161.310	2.298	63.720	11.740	5.428	\$3,372,217
6: Polders + Coves 1, 2 & 3 + Central Wetlands + Skip's Pond + Bird Pond	74.040	192.910	2.605	31.600	3.850	8.208	\$4,355,847
7: Polders + Coves 1, 2 & 3 + Central Wetlands + Bird Pond + Skip's Pond + Downstream Wetlands	87.640	595.860	6.799	402.950	13.600	29.629	\$18,388,829
8: + Coves 1, 2 & 3 + Central Wetlands + Bird Pond + Skip's Pond + Downstream Wetlands + Dam Forested Wetlands	88.470	622.530	7.037	26.670	0.830	32.133	\$19,244,926

Risks

The abbreviated Cost Risk Analysis was completed on 31 Jan 2020. The risk analysis was based on the TSP only. It was broken down by the individual areas with a combined contingency of 18% for the construction pieces and 10% for the PED and 14% for Construction Management. Recreation features were not included at time of Risk Analysis but based on the content, utilizing the 18% average established for the other elements appears reasonable.

Recommended Plan

The Recommended Plan is Plan 6: Polders + Coves 1, 2 & 3 + Central Wetlands (2B) + Skip's Pond + Bird Pond (1B); recreational features are also recommended for incorporation. The Plan is detailed in the Report at section 4.13.

Habitat Features

1. Bird Pond Wetland, scale 1B (6.42 acres)
 - a. Creates 6.42 acres of emergent wetlands
 - b. 17,000 CY cut, 12,000 CY fill
 - c. Drainage channel and water control structure (south) to connect to Central Wetlands
2. Central Wetland, scale 2B (18.37 acres)
 - d. Creates 18.37 acres of emergent / submergent wetlands
 - e. 29,600 CY cut, 26,000 CY fill
 - f. Water control structure in the middle to connect to Bird Pond and Skip's Pond
3. Skip's Pond (2.18 acres)
 - g. Creates 2.18 acres of emergent wetland
 - h. 9,350 CY estimated excavation
4. Polders (49.52 acres)
 - i. Creates 49.52 acres of mudflat habitat
 - j. Construction of four berms (two in West Polder, one in East Polder and one with Basin 1). Total volume of fill for berms is 16,800 CY.
 - k. Water control structures in East and West polders and Basin 1
5. Coves 1, 2 and 3, scale 7G (72.36 acres)
 - l. Creates 72.36 acres of emergent / submergent wetlands
 - m. Construction features are native plantings.
6. A 2-mile long, 10-inch pipeline is proposed to supply water from Mitchell Lake Polders to the upperchain of wetlands (Bird Pond, Central Wetlands and Skip's Pond).
7. Bird Blinds are added throughout the project area to add habitat value at low cost. Total count is six.

Recreation Features

1. Additional trails from Bird Pond to Skip's Pond – 2 miles
2. Boardwalks at Polders and Downstream Wetlands
3. Trailheads near new Bird Pond
4. Trailhead near Downstream Wetlands and Skip's Pond
5. Bird Blinds near Polders and Northern Chain of improved wetlands

Mitchell Lake
Area for consideration

Notes/ Assumptions:

1. CWE Expresses Contingency Factors based on Abbreviated Risk Analysis..
2. CWE Expresses 1.52 % Escalation to Midpoint of Construction - Factored at .5 years, anticipating a \pm 1 year Total Contract P.O.P. (Period Of Performance).

Estimated by CESWF
Designed by CESWF
Prepared by CESWF

Preparation Date 10/15/2020
Effective Date of Pricing 10/15/2020
Estimated Construction Time 365 Days

Description	Quantity	UOM	ProjectCost
PROJECT INDIRECT SUMMARY - Scope			6,656,141
1 01 - Real Estate.	1.00	LS	420,135
			11,500.00
1.1 Real Estate Acquisition Documents	1.00	EA	11,500
			59,000.00
1.2 Real Estate Appraisal Documents	1.00	EA	59,000
			344,135.00
1.3 Real Estate Payment Documents	1.00	EA	344,135
			5,500.00
1.4 Real Estate LERRD Credit Documents	1.00	EA	5,500
2 06 - Fish and Wildlife	1.00	LS	3,811,980
			1,166,806.97
2.1 AREA 1	1.00	EA	1,166,807
			865,874.04
2.2 AREA 2	1.00	EA	865,874
2.3 Area 3- Skip's Pond	1.00	LS	252,798
			221,747.75
2.4 Area 6 - Polders	1.00	EA	221,748
			727,252.73
2.5 Area 7 - Fringe Wetlands	1.00	EA	727,253
			3,554.06
2.6 Adaptive Management costs	162.49	ACR	577,500
			268,096.92
3 14 - Recreation Features	1.00	EA	268,097
			3.71
3.1 Natural Base Walking Trail	63,360.00	SF	234,780
			1,293.31
3.2 Picnic Tables	8.00	EA	10,347
			215.88
3.3 Bird Blinds	6.00	EA	1,295
			364.89
3.4 Trail Heads	2.00	EA	730
			10,472.44
3.5 Lookout Point	2.00	EA	20,945
			1,305,710.23

<u>Description</u>	<u>Quantity</u>	<u>UOM</u>	<u>ProjectCost</u>
4 30 - PED	1.00	EA	1,305,710
5 31 - CM	1.00	LS	850,219

Description	Quantity	UOM	ContractCost	Contingency	ProjectCost
PROJECT INDIRECT SUMMARY - System			6,571,420	0	6,656,141
1 01 - Real Estate.	1.00	LS	420,135	0	420,135
1.1 Real Estate Acquisition Documents	1.00	EA	11,500	0	11,500
1.2 Real Estate Appraisal Documents	1.00	EA	59,000	0	59,000
1.3 Real Estate Payment Documents	1.00	EA	344,135	0	344,135
1.4 Real Estate LERRD Credit Documents	1.00	EA	5,500	0	5,500
2 06 - Fish and Wildlife	1.00	LS	3,763,552	0	3,811,980
2.1 AREA 1	1.00	EA	1,149,337	0	1,166,807
2.1.1 Area 1B - Adjacent to Bird Pond Expanded Limits	1.00	LS	1,149,337	0	1,166,807
2.1.1.1 Wetland Cell Excavation	17,000.00	CY	274,508	0	278,681
2.1.1.2 10" PVC Pipeline from Lake Mitchell Pumps	9,843.00	LF	668,495	0	678,656
2.1.1.3 Trench Excavation	876.00	CY	18,170	0	18,446
2.1.1.4 Gravel bedding backfill	150.00	CY	10,873	0	11,038
2.1.1.5 Trench Backfill	12,200.00	CY	101,232	0	102,770
2.1.1.6 Water Control Stop Log Structure	1.00	EA	5,974	0	6,065
2.1.1.7 Trench Area Turfing	801.00	SY	1,337	0	1,357
2.1.1.8 Planting Costs per Acre	6.42	ACR	57,780	0	58,658
2.1.1.9 Concrete structure	1.00	EA	10,968	0	11,135
2.2 AREA 2	1.00	EA	852,910	0	865,874
2.2.1 Area 2B - Central Wetlands Limits if bird pond used	1.00	LS	852,910	0	865,874

Description	Quantity	UOM	ContractCost	Contingency	ProjectCost
			13.79		14.00
2.2.1.1 Wetland Cell Excavation	29,600.00	CY	408,211	0	414,416
			7.64		7.75
2.2.1.2 Connector Ditch from Birds Pond	591.00	LF	4,514	0	4,583
			27.83		28.26
2.2.1.3 Ditch Excavation	1,046.00	CY	29,113	0	29,556
			1.67		1.69
2.2.1.4 Trench Area Turfing	1,340.00	SY	2,237	0	2,271
			9,000.00		9,136.80
2.2.1.5 Planting Costs per Acre	18.37	ACR	165,330	0	167,843
			5,974.43		6,065.24
2.2.1.6 Water Control Stop Log Structure	2.00	EA	11,949	0	12,130
			15,816.08		16,056.49
2.2.1.7 100' Culvert	1.00	EA	15,816	0	16,056
			8.30		8.42
2.2.1.8 Trench Backfill	26,000.00	CY	215,740	0	219,019
2.3 Area 3- Skip's Pond	1.00	LS	249,013	0	252,798
			18.76		19.05
2.3.1 Wetland Cell Excavation	9,350.00	CY	175,441	0	178,108
			18.76		19.05
2.3.1.1 Earthwork	9,350.00	CY	175,441	0	178,108
			7.64		7.75
2.3.2 Connector Ditch from Birds Pond	98.00	LF	749	0	760
			18.00		18.27
2.3.3 Ditch Excavation	177.00	CY	3,186	0	3,234
			2.04		2.07
2.3.4 Trench Area Turfing	227.00	SY	462	0	469
			1.67		1.69
2.3.4.1 Native Seeding	277.00	SY	462	0	469
			1,068.05		1,084.28
2.3.5 Planting Costs per Acre	18.37	ACR	19,620	0	19,918
			5,974.43		6,065.24
2.3.6 Water Control Stop Log Structure	3.00	EA	17,923	0	18,196
			15,816.08		16,056.49
2.3.7 100' Culvert	2.00	EA	31,632	0	32,113

Description	Quantity	UOM	ContractCost	Contingency	ProjectCost
2.4 Area 6 - Polders	1.00	EA	218,427.65 218,428	0	221,747.75 221,748
2.4.1 Berms Fill Material	16,800.00	CY	8.63 145,040	0	8.76 147,245
2.4.2 Trench Area Turfing	503.00	SY	3.43 1,728	0	3.49 1,754
2.4.2.1 Native Seeding	1,035.00	SY	1.67 1,728	0	1.69 1,754
2.4.3 Temporary Pump	1.00	EA	71,659.65 71,660	0	72,748.88 72,749
2.5 Area 7 - Fringe Wetlands	1.00	EA	716,364.00 716,364	0	727,252.73 727,253
2.6 Adaptive Management costs	162.49	ACR	3,554.06 577,500	0	3,554.06 577,500
3 14 - Recreation Features	1.00	EA	264,082.86 264,083	0	268,096.92 268,097
3.1 Natural Base Walking Trail	63,360.00	SF	3.65 231,265	0	3.71 234,780
3.2 Picnic Tables	8.00	EA	1,273.95 10,192	0	1,293.31 10,347
3.3 Bird Blinds	6.00	EA	212.65 1,276	0	215.88 1,295
3.4 Trail Heads	2.00	EA	359.43 719	0	364.89 730
3.5 Lookout Point	2.00	EA	10,315.64 20,631	0	10,472.44 20,945
4 30 - PED	1.00	EA	1,286,160.59 1,286,161	0	1,305,710.23 1,305,710
5 31 - CM	1.00	LS	837,489	0	850,219

Abbreviated Risk Analysis

Project (less than \$40M): **Mitchell Lake**
 Project Development Stage/Alternative: **Feasibility (Recommended Plan)**
 Risk Category: **Low Risk: Typical Construction, Simple**

Alternative: Recommended Plan

Meeting Date: 1/31/2020

Total Estimated Construction Contract Cost = \$ **3,234,480**

	<u>CWWBS</u>	<u>Feature of Work</u>	<u>Estimated Cost</u>	<u>% Contingency</u>	<u>\$ Contingency</u>	<u>Total</u>
	01 LANDS AND DAMAGES	Real Estate	\$ 420,135	19%	\$ 79,931	\$ 500,066
1	06 FISH AND WILDLIFE FACILITIES	Area 1B	\$ 1,166,807	22%	\$ 252,087	\$ 1,418,894
2	06 FISH AND WILDLIFE FACILITIES	Area 2B	\$ 865,874	20%	\$ 171,307	\$ 1,037,181
3	06 FISH AND WILDLIFE FACILITIES	Skip's Pond	\$ 252,798	20%	\$ 50,014	\$ 302,812
4	06 FISH AND WILDLIFE FACILITIES	Polders	\$ 221,748	23%	\$ 50,145	\$ 271,893
5	06 FISH AND WILDLIFE FACILITIES	Fringe Wetlands	\$ 727,253	12%	\$ 87,934	\$ 815,187
6	06 FISH AND WILDLIFE FACILITIES	Downstream Wetlands	\$ -	0%	\$ -	\$ -
7				0%	\$ -	\$ -
8			\$ -	0%	\$ -	\$ -
9			\$ -	0%	\$ -	\$ -
10			\$ -	0%	\$ -	\$ -
11			\$ -	0%	\$ -	\$ -
12	All Other	Remaining Construction Items	\$ -	0.0%	\$ -	\$ -
13	30 PLANNING, ENGINEERING, AND DESIGN	Planning, Engineering, & Design	\$ 1,305,710	10%	\$ 130,571	\$ 1,436,281
14	31 CONSTRUCTION MANAGEMENT	Construction Management	\$ 850,219	14%	\$ 116,686	\$ 966,905
XX	FIXED DOLLAR RISK ADD (EQUALLY DISPERSED TO ALL, MUST INCLUDE JUSTIFICATION SEE BELOW)				\$	-

Totals						
	Real Estate	\$	420,135	19%	\$ 79,931	\$ 500,065.68
	Total Construction Estimate	\$	3,234,480	19%	\$ 611,486	\$ 3,845,966
	Total Planning, Engineering & Design	\$	1,305,710	10%	\$ 130,571	\$ 1,436,281
	Total Construction Management	\$	850,219	14%	\$ 116,686	\$ 966,905
	Total Excluding Real Estate	\$	5,390,409	16%	\$ 858,743	\$ 6,249,152
					Base	50%
					\$5,390k	\$5,905k
						80%
						\$6,249k

* 50% based on base is at 5% CL.

<p>Fixed Dollar Risk Add: (Allows for additional risk to be added to the risk analysis. Must include justification. Does not allocate to Real Estate.</p>	
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Mitchell Lake Recommended Plan

Feasibility (Recommended Plan)
Abbreviated Risk Analysis

Meeting Date: 31-Jan-20

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

Risk Register

Risk Element	Feature of Work	Concerns	PDT Discussions & Conclusions (Include logic & justification for choice of Likelihood & Impact)	Impact	Likelihood	Risk Level
Project Management & Scope Growth						40%
PS-1	Area 1B	Non-federal sponsor and Corps may not be willing to fund this portion	SAWS is looking for additional agencies to participate in the cost share but have not been successful. Without additional agencies there is a possibility of this portion not being included.	Marginal	Possible	1
PS-2	Area 2B	Non-federal sponsor and Corps may not be willing to fund this portion	SAWS is looking for additional agencies to participate in the cost share but have not been successful. Without additional agencies there is a possibility of this portion not being included.	Marginal	Possible	1
PS-3	Skip's Pond	Non-federal sponsor and Corps may not be willing to fund this portion	SAWS is looking for additional agencies to participate in the cost share but have not been successful. Without additional agencies there is a possibility of this portion not being included.	Marginal	Possible	1
PS-4	Polders	Non-federal sponsor and Corps may not be willing to fund this portion	SAWS is looking for additional agencies to participate in the cost share but have not been successful. Without additional agencies there is a possibility of this portion not being included.	Marginal	Possible	1
PS-5	Fringe Wetlands	Non-federal sponsor and Corps may not be willing to fund this portion	SAWS is looking for additional agencies to participate in the cost share but have not been successful. Without additional agencies there is a possibility of this portion not being included.	Marginal	Possible	1
PS-6	Downstream Wetlands	The PDT feels the risk of not getting funding is not an issue for this piece.	This section of the project is a must for the project to move forward, without it there would be no project.	Negligible	Unlikely	0
PS-13	Planning, Engineering, & Design	No concerns for this section.	No concerns for this section	Negligible	Unlikely	0
PS-14	Construction Management	No concerns for this section.	No concerns for this section	Negligible	Unlikely	0
Acquisition Strategy						30%
AS-1	Area 1B	3 Assumption is the project would go small business and probably be multiple contracts based on funding availability.	The baseline cost includes these assumptions, if funding was staggered significantly costs may increase due to inflation.	Marginal	Likely	2
AS-2	Area 2B	3 Assumption is the project would go small business and probably be multiple contracts based on funding availability.	The baseline cost includes these assumptions, if funding was staggered significantly costs may increase due to inflation.	Marginal	Likely	2
AS-3	Skip's Pond	3 Assumption is the project would go small business and probably be multiple contracts based on funding availability.	The baseline cost includes these assumptions, if funding was staggered significantly costs may increase due to inflation.	Marginal	Likely	2

AS-4	Polders	1 Assumption is the project would go small business and probably be multiple contracts based on funding availability.	PDT feels the sponsor is willing to fund this piece, so no concern with this method.	Negligible	Unlikely	0	
AS-5	Fringe Wetlands	2 Assumption is the project would go small business and probably be multiple contracts based on funding availability.	LAERF would be completing this portion, no concerns with this piece.	Negligible	Unlikely	0	
AS-6	Downstream Wetlands	1 Assumption is the project would go small business and probably be multiple contracts based on funding availability.	PDT feels the sponsor is willing to fund this piece, so no concern with this method.	Negligible	Unlikely	0	
AS-13	Planning, Engineering, & Design	Most likely the construction piece would go AE contract, the plantings would go LAERF.	PDT feels it will not be an issue putting an AE contract in place.	Negligible	Unlikely	0	
AS-14	Construction Management	No concerns for this section.	No concerns for this section	Negligible	Unlikely	0	
Construction Elements						Maximum Project Growth	15%
CON-1	Area 1B	The PDT feels the risk of not getting funding is not an issue for this piece.	The PDT changed the pipe size for the pump from 6" to 10" to capture more accurate costs.	Negligible	Unlikely	0	
CE-2	Area 2B	The PDT feels the risk of not getting funding is not an issue for this piece.	No concerns for this section	Negligible	Unlikely	0	
CE-3	Skip's Pond	The PDT feels the risk of not getting funding is not an issue for this piece.	No concerns for this section	Negligible	Unlikely	0	
CE-4	Polders	Constructing the berms in the Polder area.	The soft sediments may cause an issue to getting equipment out to be able to form the berms.	Moderate	Likely	3	
CE-5	Fringe Wetlands	The PDT feels the risk of not getting funding is not an issue for this piece.	No concerns for this section	Negligible	Unlikely	0	
CE-6	Downstream Wetlands	Constructing wetlands within the the Downstream Wetland area.	Soils may not be appropriate to hold water within the wetland cells. May have to acquire outside bentonite clay liner to ensure waters do not drain out of the cells	Moderate	Unlikely	1	
CE-13	Planning, Engineering, & Design	The PDT feels the risk of not getting funding is not an issue for this piece.	No concerns for this section	Negligible	Unlikely	0	
CE-14	Construction Management	The PDT feels the risk of not getting funding is not an issue for this piece.	No concerns for this section	Negligible	Unlikely	0	
Specialty Construction or Fabrication						Maximum Project Growth	50%
SC-1	Area 1B	The PDT feels the risk of not getting funding is not an issue for this piece.	There are no specialty construction of fabrication	Negligible	Unlikely	0	
SC-2	Area 2B	The PDT feels the risk of not getting funding is not an issue for this piece.	There are no specialty construction of fabrication	Negligible	Unlikely	0	
SC-3	Skip's Pond	The PDT feels the risk of not getting funding is not an issue for this piece.	There are no specialty construction of fabrication	Negligible	Unlikely	0	
SC-4	Polders	The PDT feels the risk of not getting funding is not an issue for this piece.	There are no specialty construction of fabrication	Negligible	Unlikely	0	
SC-5	Fringe Wetlands	The PDT feels the risk of not getting funding is not an issue for this piece.	There are no specialty construction of fabrication	Negligible	Unlikely	0	
SC-6	Downstream Wetlands	Soil types within the area of the Downstream Wetlands	Would require specialty soil liners if existing soils types are considered infeasible based on wetland design	Marginal	Unlikely	0	

SC-13	Planning, Engineering, & Design	The PDT feels the risk of not getting funding is not an issue for this piece.	There are no specialty construction of fabrication	Negligible	Unlikely	0	
SC-14	Construction Management	The PDT feels the risk of not getting funding is not an issue for this piece.	There are no specialty construction of fabrication	Negligible	Unlikely	0	
Technical Design & Quantities						Maximum Project Growth	20%
T-1	Area 1B	Possible change to the Pipe line size, based on civil concerns.	Will determine before design what size is most suitable. May also need a pump to pump water to the upper wetlands to get them wet.(Pipe size was updated since this meeting)	Marginal	Possible	1	
T-2	Area 2B	The PDT feels the risk of not getting funding is not an issue for this piece.	Civil has updated their quantities and added in previously missing features.	Negligible	Unlikely	0	
T-3	Skip's Pond	The PDT feels the risk of not getting funding is not an issue for this piece.	Civil has updated their quantities and added in previously missing features.	Negligible	Unlikely	0	
T-4	Polders	Assuming Temporary pump to remove water from polders to be able to complete work.	If pump is needed longer than the expected could increase cost marginally.	Marginal	Possible	1	
T-5	Fringe Wetlands	The PDT feels the risk of not getting funding is not an issue for this piece.	No concerns for this section	Negligible	Unlikely	0	
T-6	Downstream Wetlands	Assuming soils within this area will be appropriate for wetland creation based on NRCS Web Soil Survey	Inappropriate soils could lead to increased design schedule in order to determine which types of liners to use for wetland cells and how to obtain the materials	Moderate	Unlikely	1	
T-13	Planning, Engineering, & Design	The PDT feels the risk of not getting funding is not an issue for this piece.	No concerns for this section	Negligible	Unlikely	0	
T-14	Construction Management	The PDT feels the risk of not getting funding is not an issue for this piece.	No concerns for this section	Negligible	Unlikely	0	
Cost Estimate Assumptions						Maximum Project Growth	25%
EST-1	Area 1B	Do not have a quote for the Stop log features, is a pump required.	The stop log was built in the estimate to match similar stop log features in the area. It is unlikely that the cost would increase, if it did it would be a negligible amount. Pump is included in the estimate.	Negligible	Unlikely	0	
EST-2	Area 2B	Do not have a quote for the Stop log features.	The stop log was built in the estimate to match similar stop log features in the area. It is unlikely that the cost would increase, if it did it would be a negligible amount.	Negligible	Unlikely	0	
EST-3	Skip's Pond	Do not have a quote for the Stop log features.	The stop log was built in the estimate to match similar stop log features in the area. It is unlikely that the cost would increase, if it did it would be a negligible amount.	Negligible	Unlikely	0	
EST-4	Polders	Possible need for specialty floatable tires	There is a possibility that float tires will be required if they are there could be marginal increase in the cost.	Moderate	Possible	2	
EST-5	Fringe Wetlands	Qtys were provided from Civil and Environmental	Changes to placement or design during PED could add marginal costs	Marginal	Unlikely	0	
EST-6	Downstream Wetlands	Possible need for bentonite clay liner if existing soils are not suitable for wetland creation	Unlikely based on NRCS Web Soil Survey, but is a risk to costs if clay liner is needed	Moderate	Unlikely	1	
EST-13	Planning, Engineering, & Design	Currently based on 15% of the construction cost	Based on similar projects, this appears reasonable.	Negligible	Unlikely	0	
EST-14	Construction Management	Currently based on a 12% of the construction cost	This could be higher based on level of effort but it would marginal.	Marginal	Possible	1	

External Project Risks					Maximum Project Growth		20%
EX-1	Area 1B	TCEQ, water permitting and water rights.	Existing waste water treatment plant, may need special permits to pump water out into an existing biological wetlands.	Marginal	Possible	1	
EX-2	Area 2B	TCEQ, water permitting and water rights.	Existing waste water treatment plant, may need special permits to pump water out into an existing biological wetlands.	Marginal	Possible	1	
EX-3	Skip's Pond	TCEQ, water permitting and water rights.	Existing waste water treatment plant, may need special permits to pump water out into an existing biological wetlands.	Marginal	Possible	1	
EX-4	Polders	Concerns captured in above sections	No additional concerns	Negligible	Unlikely	0	
EX-5	Fringe Wetlands	Concerns captured in above sections	No additional concerns	Negligible	Unlikely	0	
EX-6	Downstream Wetlands	Concerns captured in above sections	No additional concerns	Negligible	Unlikely	0	
EX-13	Planning, Engineering, & Design	Concerns captured in above sections	No additional concerns	Negligible	Unlikely	0	
EX-14	Construction Management	Having resources to be able to manage project due to the amount of USACE projects currently in the queue.	If more resources are required than what is available in the district, this could cause a marginal increase.	Marginal	Possible	1	

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

PROJECT: Mitchell Lake
PROJECT NO: P2 xxxxxx
LOCATION: Mitchell Lak, TX

DISTRICT: Ft Worth District
POC: CHIEF, COST ENGINEERING, Ninfa Taggart

PREPARED: 5/24/2021

This Estimate reflects the scope and schedule in report;

Mitchell Lake Feasability Report

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	ESC (%) G	COST (\$K) H	CNTG (\$K) I	TOTAL (\$K) J	Program Year (Budget EC): 2021 Effective Price Level Date: 1 OCT 20		TOTAL FIRST COST (\$K) K	INFLATED (%) L	COST (\$K) M	CNTG (\$K) N	FULL (\$K) O
										Spent Thru: 1-Oct-18 (\$K)						
06	FISH & WILDLIFE FACILITIES	\$3,812	\$686	18.0%	\$4,498	4.8%	\$3,996	\$719	\$4,715		\$0	\$4,715	8.5%	\$4,335	\$780	\$5,116
14	RECREATION FACILITIES	\$268	\$48	18.0%	\$316	3.5%	\$277	\$50	\$327		\$0	\$327	8.5%	\$301	\$54	\$355
	CONSTRUCTION ESTIMATE TOTALS:	\$4,080	\$734		\$4,814	4.7%	\$4,273	\$769	\$5,042		\$0	\$5,042	8.5%	\$4,636	\$835	\$5,471
01	LANDS AND DAMAGES	\$420	\$80	19.0%	\$500	5.0%	\$441	\$84	\$525		\$0	\$525	4.6%	\$461	\$88	\$549
30	PLANNING, ENGINEERING & DESIGN	\$1,306	\$131	10.0%	\$1,436	7.4%	\$1,402	\$140	\$1,542		\$0	\$1,542	11.0%	\$1,555	\$156	\$1,711
31	CONSTRUCTION MANAGEMENT	\$850	\$119	14.0%	\$969	7.4%	\$912	\$128	\$1,040		\$0	\$1,040	15.2%	\$1,051	\$147	\$1,198
PROJECT COST TOTALS:		\$6,656	\$1,064	16.0%	\$7,720		\$7,028	\$1,121	\$8,149		\$0	\$8,149	9.6%	\$7,704	\$1,225	\$8,929

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PROJECT MANAGER, Zia Burns

ESTIMATED TOTAL PROJECT COST:

\$8,929

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CHIEF, REAL ESTATE, Rocky Lee

CHIEF, PLANNING, xxx

CHIEF, ENGINEERING, Mark Black

CHIEF, OPERATIONS, Timothy Macallister

CHIEF, CONSTRUCTION

CHIEF, CONTRACTING, Jeff Niel

CHIEF, PM-PB, xxx

CHIEF, DPM, xxx

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

**** CONTRACT COST SUMMARY ****

PROJECT: Mitchell Lake
LOCATION: Mitchell Lak, TX
This Estimate reflects the scope and schedule in report;

Mitchell Lake Feasability Report

DISTRICT: Ft Worth District
POC: CHIEF, COST ENGINEERING, Ninfa Taggart

PREPARED: 5/24/2021

Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)				TOTAL PROJECT COST (FULLY FUNDED)				
		Estimate Prepared: 1-Oct-19		Effective Price Level: 1-Oct-18		Program Year (Budget EC): 2021		Effective Price Level Date: 1 OCT 20						
WBS NUMBER	Civil Works Feature & Sub-Feature Description	RISK BASED			TOTAL (\$K)	ESC (%)	COST (\$K)	CNTG (\$K)	TOTAL (\$K)	Mid-Point Date	INFLATED (%)	COST (\$K)	CNTG (\$K)	FULL (\$K)
		COST (\$K)	CNTG (\$K)	CNTG (%)										
A	B	C	D	E	F	G	H	I	J					
	Tentatively Selected Plan													
06	FISH & WILDLIFE FACILITIES	\$3,812	\$686	18.0%	\$4,498	4.8%	\$3,996	\$719	\$4,715	2023Q4	8.5%	\$4,335	\$780	\$5,116
14	RECREATION FACILITIES	\$268	\$48	18.0%	\$316	3.5%	\$277	\$50	\$327	2023Q4	8.5%	\$301	\$54	\$355
	CONSTRUCTION ESTIMATE TOTALS:	\$4,080	\$734	18.0%	\$4,814		\$4,273	\$769	\$5,042			\$4,636	\$835	\$5,471
01	LANDS AND DAMAGES	\$420	\$80	19.0%	\$500	5.0%	\$441	\$84	\$525	2022Q3	4.6%	\$461	\$88	\$549
30	PLANNING, ENGINEERING & DESIGN													
5.0%	Project Management	\$204	\$20	10.0%	\$224	7.4%	\$219	\$22	\$241	2023Q3	9.9%	\$241	\$24	\$265
1.5%	Planning & Environmental Compliance	\$61	\$6	10.0%	\$67	7.4%	\$66	\$7	\$72	2023Q3	9.9%	\$72	\$7	\$79
15.0%	Engineering & Design	\$612	\$61	10.0%	\$673	7.4%	\$657	\$66	\$723	2023Q3	9.9%	\$722	\$72	\$794
1.0%	Reviews, ATRs, IEPRs, VE	\$41	\$4	10.0%	\$45	7.4%	\$44	\$4	\$48	2023Q3	9.9%	\$48	\$5	\$53
1.0%	Life Cycle Updates (cost, schedule, risks)	\$41	\$4	10.0%	\$45	7.4%	\$44	\$4	\$48	2023Q3	9.9%	\$48	\$5	\$53
1.0%	Contracting & Reprographics	\$41	\$4	10.0%	\$45	7.4%	\$44	\$4	\$48	2023Q3	9.9%	\$48	\$5	\$53
3.0%	Engineering During Construction	\$122	\$12	10.0%	\$135	7.4%	\$131	\$13	\$145	2024Q4	15.2%	\$151	\$15	\$167
2.5%	Planning During Construction	\$102	\$10	10.0%	\$112	7.4%	\$110	\$11	\$120	2024Q4	15.2%	\$126	\$13	\$139
1.0%	Adaptive Management & Monitoring	\$41	\$4	10.0%	\$45	7.4%	\$44	\$4	\$48	2024Q4	15.2%	\$50	\$5	\$56
1.0%	Project Operations	\$41	\$4	10.0%	\$45	7.4%	\$44	\$4	\$48	2023Q3	9.9%	\$48	\$5	\$53
31	CONSTRUCTION MANAGEMENT													
15.3%	Construction Management	\$625	\$88	14.0%	\$713	7.4%	\$672	\$94	\$766	2024Q4	15.2%	\$773	\$108	\$882
2.0%	Project Operation:	\$82	\$11	14.0%	\$93	7.4%	\$88	\$12	\$100	2024Q4	15.2%	\$101	\$14	\$115
3.5%	Project Management	\$143	\$20	14.0%	\$163	7.4%	\$153	\$21	\$175	2024Q4	15.2%	\$177	\$25	\$201
	CONTRACT COST TOTALS:	\$6,656	\$1,064		\$7,720		\$7,028	\$1,121	\$8,149			\$7,704	\$1,225	\$8,929