



St. Tammany Parish, Louisiana Feasibility Study



**Appendix D – Annex 9 - Cost Engineering Flood
Risk Management**

April 2023

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Cost Estimate

Section 1. Cost estimate development

The project cost estimate was developed in the TRACES MII cost estimating software and used the standard approaches for a feasibility estimate structure regarding labor, equipment, materials, crews, unit prices, quotes, sub- and prime contractor markups. This philosophy was taken wherever practical within the time constraints. It was supplemented with estimating information from other sources where necessary such as quotes, bid data, and A-E estimates. The intent was to provide or convey a “fair and reasonable” estimate that which depicts the local market conditions. The estimates assume a typical application of tiering subcontractors. Given the long time over which this project/program is to be constructed and the unknown economic status during that time, demands from non-governmental civil works projects were not considered to dampen the competition and increase prices.

All the construction work (e.g., Excavation, Clearing and Snagging etc.) except for the bridges are common to the gulf coast region. The construction sites are accessible from land. Access is easily provided from various local highways. The bridges were are DOTD design templates and a template estimate from Comite was used to complete estimate.

Section 2. Estimate Structure:

The estimates are structured to reflect the projects performed. The estimates have been subdivided by USACE feature codes.

Section 3. Bid competition:

It is assumed that there will not be an economically saturated market and that bidding competition will be present.

Section 4. Contract Acquisition Strategy:

There is no declared contract acquisition plan/types at this time. Although it has not been declared, it is anticipated to be Hubzone or 8a small business.

Section 5. Labor Shortages:

It is assumed there will be a normal labor market.

Section 6. Labor Rates:

Local labor market wages are above the local Davis-Bacon Wage Determination and actual rates have been used. This is based upon local information and payroll data received from the New Orleans District Construction Representatives and estimators with experiences in past years.

Section 7. Materials:

Cost quotes are used on major construction items. Material prices quotes were also taken from previous job or historical data.

Section 8. Equipment:

Rates used are based from the latest USACE EP-1110-1-8, Region III. Adjustments are made for fuel and facility capital cost of money (FCCM). Judicious use of owned verses rental rates

was considered based on typical contractor usage and local equipment availability. Only a few select pieces of marine \ marsh equipment are considered rental. Full FCCM/Cost of Money rate is latest available; Mii program takes EP recommended discount, no other adjustments have been made to the FCCM.

Section 9. Fuel:

Fuels (gasoline, on and off-road diesel) were based on local market prices for on-road and off-road for the Gulf Coast area. The Team found that fuels fluctuate irrationally; thus, used the current price and placed a risk on the risk register.

Section 10. Crews:

Major crew and productivity rates were developed and studied by senior USACE estimators familiar with the type of work. All of the work is typical to the New Orleans District. The crews and productivities were checked by local MVN estimators, discussions with contractors and comparisons with historical cost data. Major crews include haul, earthwork, clearing and snagging, piling and concrete.

Most crew work hours are assumed to be 10 hrs 6 days/wk which is typical to the area.

Section 11. Unit Prices:

The unit prices found within the various project estimates will fluctuate within a range between similar construction units such as concrete, earthwork, and piling. Variances are a result of differing haul distances, material inflation, small or large business markups, subcontracted items, designs and estimates by others.

Section 12. Relocation Cost:

Relocation costs are defined as the relocation of public roads, bridges, railroads, and utilities required for project purposes. In cases where potential significant impacts were known, costs were included within the cost estimate.

Section 13. Mobilization:

Contractor mobilization and demobilization are based on the assumption that most of the contractors will be coming from within the Gulf Coast/Southern region. Mob/demob costs are based on historical studies of detailed Government estimate mob/demobs which averaged 5% of the construction costs. With undefined acquisition strategies and assumed individual project limits for the large number of potential contracts in this program, the estimate utilizes a more comprehensive approx. 5% value applied at each contract rather than risking minimizing mob/demob costs by detailing costs based on an assumed number of contracts. The 5% value also matches well with the 5% value previously prescribed by Walla Walla District, which has studied historical rates.

Section 14. Field Office Overhead:

The estimate used a field office overhead rate based on the average of relevant jobs. The reason this was done is because similar work is being done and the job office overhead should also be similar.

Section 15. Overhead assumptions may include:

Superintendent, office manager, pickups, periodic travel, costs, communications, temporary offices (contractor and government), office furniture, office supplies, computers and software, as-built drawings and minor designs, tool trailers, staging setup, camp and kitchen maintenance and utilities, utility service, toilets, safety equipment, security and fencing, small hand and power tools, project signs, traffic control, surveys, temp fuel tank station, generators, compressors, lighting, and minor miscellaneous.

Section 16. Home Office Overhead:

Estimate percentages range based upon consideration of 8(a), small business and unrestricted prime contractors. The rates are based upon estimating and negotiating experience, and consultation with local construction representatives. Different percents are used when considering the contract acquisition strategy regarding small business 8(a), competitive small business and large business, high to low respectively. This project will assume an acquisition strategy of small business and assume a Home Office Overhead of 9%.

Section 17. Taxes:

Local taxes will be applied, using an average between the parishes that contain the work. Reference the LA parish tax rate website: <http://www.laota.com/pta.htm>

Section 18. Bond:

Bond is assumed 1% applied against the prime contractor, assuming large contracts. No differentiation was made between large and small businesses.

Section 19. E&D and S&A:

USACE Costs to manage design (PED) and construction (S&A) are based on New Orleans District Programmatic Cost Estimate guidance:

- i) The PED cost includes such costs as project management, engineering, planning, designs, investigations, studies, reviews, value engineering and engineering during construction (EDC). Historically a rate of approximately 12% for E&D plus small percentages for other support features is applied against the estimated construction costs. Other USACE civil works districts such as St. Paul, Memphis, and St. Louis have reported values ranging from 10-15% for E&D. Additional support features might include project management, engineering, planning, designs, investigations, studies, reviews, and value engineering. A PED rate of 20.5% was applied for this project.
- ii) Supervision & Administration (S&A): Historically, New Orleans District used a range from 5% to 15% depending on project size and type applied against the estimated construction costs. Other USACE civil works districts such as St. Paul, Memphis and St. Louis report values ranging from 7.5-10%. Consideration includes that a portion of the S&A effort could be performed by contractors. Based on discussions with MVN Construction Division, an S&A cost based on contract durations was developed. Specific S&A costs were originally calculated and then that same percentage (11%) was carried forward on all future updates.

Section 20. Contingencies:

Contingencies were developed using the USACE Cost and Schedule Risk Analysis (CSRA) process and the Crystal Ball software that evaluates schedule and cost related risks. The contingency for is 47%. For more information see risk report. See summary in Risk Report.

Section 21. Escalation:

Escalation used in the TPCS is based upon the US Army Corps of Engineers Engineering Manual (EM) 1110-2-1304 Civil Works Construction Cost Index System (CWCCIS) revised 30 Sept 2022.

Section 22. HTRW:

The estimate includes no costs for any potential Hazardous, Toxic, and Radioactive Waste (HTRW) concerns.

Schedule

The project schedule was developed based on the construction of the individual features of work to include the entire Mile Branch alignment which includes construction of excavation, clearing and snagging and Bridges.

Total Project Cost Summary (TPCS)

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

PROJECT: Mile Branch STPFS
PROJECT NO: P2 xxxxxx
LOCATION: Covington, LA

DISTRICT: CEMVN
POC: CHIEF, COST ENGINEERING, Robert Guichet

PREPARED: 4/6/2024

This Estimate reflects the scope and schedule in report;

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Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)					TOTAL PROJECT COST (FULLY FUNDED)				
WBS NUMBER	Civil Works Feature & Sub-Feature Description	COST (\$K)	CNTG (\$K)	CNTG (%)	TOTAL (\$K)	ESC (%)	COST (\$K)	CNTG (\$K)	TOTAL (\$K)	Spent Thru: 1-Oct-22 (\$K)	TOTAL FIRST COST (\$K)	INFLATED (%)	COST (\$K)	CNTG (\$K)	FULL (\$K)
02	RELOCATIONS	\$570	\$268	47.0%	\$839	2.9%	\$587	\$276	\$863	\$0	\$863	8.7%	\$638	\$300	\$938
06	FISH & WILDLIFE FACILITIES	\$101	\$48	47.0%	\$149	2.9%	\$104	\$49	\$153	\$0	\$153	6.0%	\$110	\$52	\$162
08	ROADS, RAILROADS & BRIDGES	\$13,344	\$6,272	47.0%	\$19,616	2.9%	\$13,726	\$6,451	\$20,177	\$0	\$20,177	17.4%	\$16,116	\$7,575	\$23,691
09	CHANNELS & CANALS	\$8,756	\$4,115	47.0%	\$12,871	2.9%	\$9,006	\$4,233	\$13,239	\$0	\$13,239	17.4%	\$10,575	\$4,970	\$15,545
07	POWER PLANT	\$0	\$0	-	\$0	-	\$0	\$0	\$0	\$0	\$0	-	\$0	\$0	\$0
08	ROADS, RAILROADS & BRIDGES	\$0	\$0	-	\$0	-	\$0	\$0	\$0	\$0	\$0	-	\$0	\$0	\$0
09	CHANNELS & CANALS	\$0	\$0	-	\$0	-	\$0	\$0	\$0	\$0	\$0	-	\$0	\$0	\$0
10	BREAKWATER & SEAWALLS	\$0	\$0	-	\$0	-	\$0	\$0	\$0	\$0	\$0	-	\$0	\$0	\$0
	CONSTRUCTION ESTIMATE TOTALS:	\$22,772	\$10,703		\$33,475	2.9%	\$23,423	\$11,009	\$34,432	\$0	\$34,432	17.1%	\$27,439	\$12,896	\$40,336
01	LANDS AND DAMAGES	\$19,945	\$4,986	25.0%	\$24,932	2.9%	\$20,516	\$5,129	\$25,645	\$0	\$25,645	6.0%	\$21,738	\$5,435	\$27,173
30	PLANNING, ENGINEERING & DESIGN	\$4,668	\$2,194	47.0%	\$6,862	2.8%	\$4,800	\$2,256	\$7,056	\$0	\$7,056	6.4%	\$5,108	\$2,401	\$7,509
31	CONSTRUCTION MANAGEMENT	\$2,505	\$1,177	47.0%	\$3,682	2.8%	\$2,576	\$1,211	\$3,786	\$0	\$3,786	14.6%	\$2,951	\$1,387	\$4,338
	PROJECT COST TOTALS:	\$49,891	\$19,061	38.2%	\$68,951		\$51,315	\$19,604	\$70,919	\$0	\$70,919	11.9%	\$57,236	\$22,119	\$79,355

CHIEF, COST ENGINEERING, Robert Guichet

ESTIMATED TOTAL PROJECT COST: \$79,355

PROJECT MANAGER, Amy Dixon

CHIEF, REAL ESTATE, Judith Gutier

CHIEF, PLANNING, Troy Constance

CHIEF, ENGINEERING, Christopher Dunn

CHIEF, OPERATIONS, Mike Park

CHIEF, CONSTRUCTION, Stuart Waits

CHIEF, CONTRACTING, Cynthia Hall

CHIEF, PM-PB, Brad Inman

CHIEF, DPM, Mark Wingate

Mii Cost Estimate

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The proposed work would consist of approximately 21 acres of channel that would be cleared and grubbed prior to mechanical dredging. The mechanical dredging would consist of a maximum of 130,000 cubic yards of fill dredged from the channel. For the channel improvements, approximately 38.8 acres of permanent ROW would be needed. This area would include 25 ft on each side of the Mile Branch channel. Included in the 38.8 acres, there would be 4.8 acres for a staging area that would become a backwater area after construction is complete. Mile Branch improvements would include seven (7) bridge replacements. 1 Pedestrian Bridge

Properties: See property notes for more documentation and quantity take offs used in this estimate.

1. Latest Labor template was used.
2. Latest Equipment template was used. MII Equipment 2022 Region 03.
3. Latest Cost Book was used. 2022 MII English Cost Book
4. Average of Fuel Prices Quotes for the last year.
5. CMR: 4.625
6. Sales Tax: 9.75%

Estimated by Steven

Designed by MVN

Prepared by Steven Lowrie

Preparation Date 3/29/2023

Effective Date of Pricing 3/29/2023

Estimated Construction Time Days

Description	Quantity	UOM	ProjectCost
IGE Format			23,090,867.88
02 Relocation	1	EA	570,499.01 570,499.01
01 W11th Ave	1	EA	30,356.33 30,356.33
02 W15th Ave	1	EA	15,178.17 15,178.17
04 W 19th Ave	1	EA	15,178.17 15,178.17
05 W 21th Ave	1	EA	15,178.17 15,178.17
07 W 23rd Ave	1	EA	108,857.96 108,857.96
08 W 24th Ave	1	EA	30,356.33 30,356.33
09 W 25th Ave	1	EA	30,356.33 30,356.33
11 W 27th Ave	1	EA	178,711.71 178,711.71
12 W28th Ave	1	EA	15,178.17 15,178.17
13 W 29th Ave	1	EA	115,969.52 115,969.52
17 HWY 190	1	EA	15,178.17 15,178.17
08 01 Roads, Railroads& Bridges	1	EA	13,764,476.03 13,764,476.03
1 Bridge Replacement at 19th Avenue	1	JOB	1,796,226.24 1,796,226.24
2 Bridge Replacement at 21th Avenue	1	JOB	2,200,486.64 2,200,486.64
3 Bridge Replacement at 23th Avenue	1	JOB	1,796,226.24 1,796,226.24
4 Bridge Replacement at 25th Avenue	1	JOB	1,796,283.63 1,796,283.63
5 Bridge Replacement at 27th Avenue	1	JOB	1,796,226.24 1,796,226.24
6 Bridge Replacement at 28th Avenue	1	JOB	1,796,226.24 1,796,226.24

Description	Quantity	UOM	ProjectCost
7 Bridge Replacement at 29th Avenue	1	JOB	1,796,226.24
8 Bridge Replacement at Tammany Trace	1	JOB	786,574.57
09 01 Channels and Canals	1	EA	8,755,892.85
09 01 Mile Branch Channel Improvements	130,000	CY	67.35
			8,755,892.85

Cost and Schedule Risk Analysis (CSRA)

The CSRA process for this project includes an analysis on the Relocations, Bridges, and Channels features. The results of the analyses are determined by qualifying and quantifying all potential cost risks and running a Monte Carlo simulation to produce the frequency spectrum and probability range for the applied risk costs. The cost contingency is obtained from the 80-percent contingency as determined by this analysis.

Initial Risk Register considered over 44 risk items. A total of 16 potential risk items for the Relocations, Bridges, and Channels features were developed by the CSRA PDT team and applied to a risk registry for analysis. Assumptions were made for each risk item before running the Monte Carlo simulation. The result of the simulation gave a 46% percent (rounded) contingency respectively at the 80-percent confidence level.

The contingency cost for this project was utilized for a Micro Computer Aided Cost Estimating System (MCACES) estimation of the costs associated with the Mile Branch project. The potential cost risks developed during this analysis also serve as an indicator of how to avoid unforeseen escalation of project costs throughout project implementation and therefore, may be used as a valuable tool in all future aspect of the project study, design, and construction planning and estimation.

The major contributors to the resulting total project cost contingency for the Relocations, Bridges, and Channels Features were:

- Contract Acquisition Impacts
- Civil/Geotechnical uncertainty #2
- Hydraulics Uncertainty #2.

The major contributor to the resulting total project contingency for the Schedule feature was:

- Hydraulics Uncertainty #1.
- Mob/Demob/Submittals
- Civil/Geotechnical uncertainty #4

The corresponding Total Cost including contingency (cost & schedule) for the Relocations, Bridges, and Channels is presented on table 1.

Table 1. Relocations, Bridges, and Channels Features Contingency Analysis Table

**INITIAL CONSTRUCTION
Contingency Analysis**

Base Estimate ->	\$30,497,697	
Confidence Level	Contingency Value	Contingency
0%	914,931	3%
10%	6,404,516	21%
20%	7,929,401	26%
30%	9,149,309	30%
40%	10,064,240	33%
50%	10,979,171	36%
60%	11,894,102	39%
70%	12,809,033	42%
80%	14,028,941	46%
90%	15,553,825	51%
100%	24,093,181	79%

The rounded contingency percentage for **Relocations, Bridges, and Channel Features Features (46.0%)** were transferred to the TPCS for final calculation of total contingency and cost. Lands and Damages cost and contingency are not included in the above. (NOTE: The rounding of the contingencies causes the totals on the TPCS to be slightly higher than and not add up to exactly the costs above.)

Table 3. Risk Register – Modeled Items

1	1 - Project & Program Management (PM)	Project Priority	Project competing with other projects, funding and resources. Experienced staff will not be available for this project because of other higher-priority project requirements. If additional budget is required, additional funds may be difficult to obtain if there are competing project priorities.	\$4 Billion (includes West and South Slidell and Mile Branch) dollar project will have high priority. Since multiple high priority projects are occurring, it is possible that experienced staff will not be available causing delays. It is possible that we can obtain help from others districts and AEs to complete work. It is possible that due to competing high priority projects funding will be difficult to obtain. The engagement of the congressional delegation indicates high priority status for funding. Cost will have a negligible impact. The schedule will possibly be affected but the impact will be negligible due to outsourcing.	Low	Low
2	1 - Project & Program Management (PM)	Project Personnel Resources	Gov't personnel resources for project management and execution may be insufficient during peak periods of PED and Procurement.	Do not feel will be an issue. Personnel turnover and reassignments have been relatively low. Project will be a priority.	Low	Low
3	1 - Project & Program Management (PM)	E&D and S&A costs	Typical E&D and S&A percentages measured against construction were assumed. Actual costs could be different.	Template E&D and S&A percentage used. Actual costs could be vary from the assumed. This would be, in part, due to changed efforts related to project design changes, extended years resulting in more product updates and contracts. Policy are being made in order for less design issue during PED.	Medium	Low
4	1 - Project & Program Management (PM)	Scope Maturity	Based on the current level of design and data available, the project scope/features could vary based upon results of further detailed investigation of the proposed sites.	Multiple discussion have occurred and it is very likely that scope maturity will occur. The risks have been accounted for in individual risk below.	Low	Low
5	1 - Project & Program Management (PM)	Accelerated schedule	Pressure to deliver project on an accelerated schedule	The present program does not have significant pressure to have an accelerated schedule. Risk remains low.	Low	Low
6	4 - External Risks (EX)	Funding Availability	Project has not been authorized but not has been appropriate for construction. Design and construction delays could occur pending funding, resulting in increased escalation costs.	Delay in funding availability is unlikely to affect to program schedule. Assumed that any delays caused by funding issues will be covered under regular annual inflation adjustments.	Low	Low
7	4 - External Risks (EX)	Bid Protest Potential	Bid protests causing issues with award	Large project with significant profit potential may increase likelihood of bid protest. This may result in award to "less than" lowest price and/or impact/delay the schedule. However, given the long duration of the overall project, any 1 contract delay would have little overall impact. Bid protest in LA for civil works projects are unlikely.	Low	Low
8	4 - External Risks (EX)	Market Conditions	Construction Market and bidding competition	To project market conditions 50 years into the future is difficult. Competition of civil works has been robust in recent years. Do not foresee an issue in the future but due to the length of program durations, the project could experience worsening market conditions. Since worsening market conditions could happen, a medium risk was assumed. Low 0% High 5%.	Medium	Low
9	4 - External Risks (EX)	Fuel Cost	Potential for escalating fuel prices	If fuel prices escalate dramatically with global recovery, could increase costs of constructing project	Medium	Low
10	4 - External Risks (EX)	Concrete Piles cost	Potential for escalating steel prices (Concrete Piles)	Concrete prices have fluctuated significantly. Assumed precast concrete piles will also fluctuate. Assume High 25% increase.	Medium	Low

11	4 - External Risks (EX)	Concrete Cost	Potential for escalating Concrete	Concrete Material Prices have increased continuous recently. There is a possibility that it can increase more. Assume a likely 25% increase.	Medium	Low
12	4 - External Risks (EX)	Sponsor Funding	Sponsor is responsible for LERRDS and cost share.	Sponsor funding should not be an issue. Project is a typical cost sharing, sponsor is responsible for LERRDS.	Low	Low
13	4 - External Risks (EX)	Environmental Community	Lawsuits have been filed previously over project impacts.	USACE has successfully defended lawsuits in the past through full disclosure of impacts in the EIS. Future litigation will likely also not result in changes to the project. Project work continued during previous litigation and would likely be able to continue during any future litigations. Louisiana Scenic Rivers Act could be the basis of potential lawsuits, however federal program supersedes state programs. Overall Lawsuit Risk is considered Low.	Low	Low
14	4 - External Risks (EX)	Political factors change at local, state or federal	Gov't Turnover	Turnover at any level government can affect priority of project and potential affect funding stream. Possibly affect authorization date and then we would not be able to enter construction because of lack of funding. Due to the project being high priority it is unlikely that a huge delay in schedule will occur due gov't turnover.	Low	Low
15	4 - External Risks (EX)	Hurricane Risk	Hurricane Effects	Hurricane often occur and a process is already in place. Cost and Schedule changes will be taken into account under the construction risk category item mods.	Low	Low
16	5 - Contract Acquisition Risks (CA)	Contract Acquisition Impacts	Acquisition strategy	Acquisition strategy not yet defined. D/B/B, not in time crunch, could be small business and possibly 8a. Estimate already assumes small business/set-a-side consistent with MVN goals (levees). Estimate assumes typical sub-contracting. If other acquisition strategies are used on any one/or selected projects, would have small impact on overall project cost and little or no impact on overall schedule but since the program is over 50 years, change is possible	Medium	Low
17	7 - General Technical Risk (TR)	Hydraulics Uncertainty #1	Confidence in hydraulic models. HEC-RAS Model - Riverine Modeling	Due to limitations in HEC-RAS 2d modeling at the time of model development and production runs, bridges along the Mile Branch Channel were not built into the 2d mesh. Additionally, the PDT did not have existing bridge dimensions of all crossings along Mile Branch during model development. Currently, the team is accounting for 7 bridge replacements while 2 bridges along Mile Branch are not planned for replacement (W. 15th and W. 11th). When further modeling is completed during the next phase of the study and all bridge crossings are incorporated into the model, it may be identified that W. 15th and W. 11th will require replacement or upgrades and is a potential risk.	Medium	Medium
18	8 - General Technical Risk (TR)	Hydraulics Uncertainty #2	Confidence in hydraulic models. HEC-RAS Model - Riverine Modeling	Due to lack of survey data and understanding of hydraulic performance with bridges in the Mile Branch channel, the with-project channel dimensions may require adjustments (this includes width of the channel) to preserve the structural integrity of the channel banks. It was assume the information provided to civil could increase by 30%. The 30% increase will affect the width of the channel, increasing the length of the bridge and the quantity of excavation. For the bridge risk refer to Ref. 20. Excavation Risk will be account for in this risk item. Since the width of the channel will be affected, the ROW widening will affect Real Estate Cost (2.5 million given by RE) and Mitigation (\$220k given by Environmental).	Medium	Medium
19	7 - General Technical Risk (TR)	Hydraulics Uncertainty #3	Confidence in hydraulic models. HEC-HMS Model - Hydrology Modeling	The HEC-HMS model was used to compute the precipitation boundary condition for the HEC-RAS model. The loss methodology along with the basin model domain used to compute the precipitation boundary condition are both elements of the HMS model that may be overestimating hydrologic runoff in the study area.	Low	Low
20	7 - General Technical Risk (TR)	DESIGN DEVELOPMENT - Structural #1	What level of design? Confidence in scope, investigations, design and critical qtys..	H&H assumed that the channel dimensions provided to civil could increase by 30%. This would cause the bridge to become longer. Assume the girders that are used can take a degree of bridge lengthening due to Carney bridge having a 92' span vs mile branch having a 80' span. Civil have confirmed the assumption of a possible 12' width extension. Therefore, bridge could be extended by 12'.	Medium	Low

21	7 - General Technical Risk (TR)	DESIGN DEVELOPMENT - Structural #2	What level of design? Confidence in scope, investigations, design and critical qts..	Used DOTD Template Design. Due to using DOTD design template and the confidence in the design is high. If bridge design would be out sourced to an A/E, design could change (shorter spans and more piers). Assume that A/E will chose a design with a lower cost, therefore low risk. Pile Capacity design - Ref 24 - Geotech Uncertainty #2	Low	Low
22	7 - General Technical Risk (TR)	Civil / Geotechnical Uncertainty #1	What level of design? Confidence in scope, investigations, design and critical qts..	Cross-section of Channel was provided by Civil using H&H information. Geotech Assumed worst case scenario by assuming weak properties in the soil. Applied channel stability analysis and factor of safety resulted in above criteria. Changes are possible but impact is marginal. Low risk.	Low	Low
23	7 - General Technical Risk (TR)	Civil / Geotechnical Uncertainty #2	What level of design? Confidence in scope, investigations, design and critical qts..	Possible Scope growth could occur based on H&H analysis and possible erodible soil due to boring results. This will be mitigated by adding riprap. Assume 100% of the channel. Quantity Provided by Matt. Size of the Stone Will be provided by Mark.	Medium	Medium
24	7 - General Technical Risk (TR)	Civil / Geotechnical Uncertainty #3	What level of design? Confidence in scope, investigations, design and critical qts..	The pile length were taken from the carney bridge from comite project. The soil conditions were not verified and a pile capacity was not provided by Geotech due to the lack of Geotech information. It assumed that the pile lengths for the bridges will need to increase by 15%. Piles are 130' now. Stephen Borengasser check Covington bridges as-built pile lengths	Medium	Low
25	7 - General Technical Risk (TR)	Civil / Geotechnical Uncertainty #4	What level of design? Confidence in scope, investigations, design and critical qts..	The initial condition used to determine the quantity of excavation was calculated using aerial imagery . It is possible that slopes are different and the depth is deeper. It assumed that that a 30% increase to the excavation quantity could occur due to the lack of surveys.	Medium	Medium
26	9 - Lands and Damages Risk (RE)	Real Estate Plan	Do we have a RE plan?	We have the RE plan. No real property acquisitions have been done or authorized. The number of affected landowners has been estimated. Real estate cost will be very small % of total project cost. Environmental mitigation sites have been identified and acquisition costs of same have been estimated and included. Other mitigation costs included in overall project plan. LERRDs are a Local Sponsor responsibility.	Low	Low
27	9 - Lands and Damages Risk (RE)	Relocation Plan	Do we have a plan? Have the owners been contacted and provided input?	We are using 3 available databases for locating pipelines , utilities, etc. There is a small degree of uncertainty because the city of Covington has provided data of known utilities and most utilities are visible from public rights-of-way. At this point most relocation plans are assumptions. A compensability report will be prepared in PED, however, most will likely be compensable. Area of work is moderately developed and populated. Residential and business relocations are included in the RE plan.	Low	Low
28	9 - Lands and Damages Risk (RE)	Acquisition Costs and Schedule	Acquisition costs and schedule could be impacted if eminent domain proceedings are required.	If it is necessary to acquire through condemnation proceedings, the schedule and costs could be impacted. The project is generally supported by the Non-Federal Sponsors. It is unlikely that the project schedule will be delayed due to condemnation proceedings. The real estate plan includes a contingency for poential condemnations. Several primary residences will need to be acquired.	Low	Low
29	10 - Relocations (RL)	unknown Utilities	Unknown utilities due to lack information	Relocations took worst case scenarios for existing and assumed utilities within the required ROW. Assume it is likely there will be unidentified utilities due to being unable to contact Cleco and underground communication carriers which would case a moderate impact to the relocation cost. Assume 10% to 15% relocation cost impact.	Medium	Low
30	13 - Construction (CO)	Construction Contract Modifications	construction contract modifications can impact construction cost and schedule growth.	Technical complexities and site conditions could result in increased risk of contract modifications. Will impact costs, but little overall impact to larger project timeline. Cost Impact: Best Case - 5%, Likely - 9.8% and Worst Case - 17%. (From Construction Division)	Medium	Low

31	13 - Construction (CO)	Alignment Revisions	Alignment revisions can impact Lands and Damages, Real Estate, Relocations, Environmental Mitigation and Utilities.	Staying on authorized alignment.	Low	Low
32	13 - Construction (CO)	WEATHER	impacts to project	Long overall project schedule so flexibility included. Typical conditions are already included in the schedule and costs. Levee affect by rain only 39% schedule. -Minor delays will not affect the overall program.	Low	Low
33	13 - Construction (CO)	ACCELERATED CONTRACT SCHEDULE	will jobs be rushed	Schedule will be mainly driven by funding.	Low	Low
34	13 - Construction (CO)	Unknown Utilities	Unknown utilities may impact costs.	Investigations done with all available databases. Could Schedule delays if unknown utilities are found. Schedule is on a overall 50 year program. Low Risk Cost would be handle in the modification, see Ref 37.	Low	Low
35	13 - Construction (CO)	Poor Performing Contractor	Poor performing contractors can significantly delay individual contracts.	Individual contracts will be impacted by poor performing contractors. Overall program schedule is not likely to be impacted. Contracts are independent. Program Risk is low and not modeled.	Low	Low
36	13 - Construction (CO)	Site Access and Site Constraints	Access Constraints	A25' access corridor on both sides of mile branch is within the scope that will allow access from most perpendicular roads. Low Risk	Low	Low
37	14 - Estimate and Schedule Risks (ES)	LABOR & equipment AVAILABILITY/PRICING	Labor shortages and increase rates	National economy is in a slump, lots of available local labor	Low	Low
38	14 - Estimate and Schedule Risks (ES)	MATERIAL AVAILABILITY/PRICING	Material shortages and increased cost	Projects are using standard materials, quotes for all major materials, long overall project timeline - no rush.	Medium	Low
39	14 - Estimate and Schedule Risks (ES)	Mob/Demob/Submittals	1 Contract Assumed.	Mile Branch could be split into up to 5 Contracts. This could affect the schedule because 4 extra mob/demob and submittal must occur.	Medium	Medium
40	21 - Environmental & Cultural/Historical Resources (EC)	HAZARDOUS WASTE SITE ANALYSIS	HTRW Phase I site assessment is already completed.	Avoiding all HTRW issues. Nothing in alignment triggered Phase II investigation. As long as alignment doesn't change, there is a low likelihood of triggering HTRW. Without right of entry, a drive by occurred and personnel got as close as possible to assess the area that are in the subject right of way. When right of entry is granted, HTRW assumption can be confirmed.	Low	Low
41	21 - Environmental & Cultural/Historical Resources (EC)	NEPA	more NEPA required?	If there are changes to the project than additional NEPA will be conducted during PED. It is likely based on design changes which are very likely to occur. Any PED increase risk will be taken care of in REF 3.	Low	Low
42	21 - Environmental & Cultural/Historical Resources (EC)	Section 106 (NHPA) Compliance	Study requires the negotiation of a Programmatic Agreement (PA).	CEMNV has initiated Section 106 consultation and has developed a PA in consultation with the NFS, LA SHPO, Advisory Council on Historic Preservation (ACHP), federally-recognized tribes, and other interested parties, that will establish procedures to satisfy the agency's Section 106 responsibilities pursuant to 36 CFR Part 800.14(b). As of October 2022, the final PA is with OC for review. CEMNV may not proceed with issuing a ROD in compliance with NEPA and Section 106 of the NHPA without the successful execution of the PA.	Low	Low
43	21 - Environmental & Cultural/Historical Resources (EC)	Inability to avoid and/or minimize adverse effects to potential historic properties	A significant amount of the study area has not been surveyed for cultural resources. Cultural resources assessment uses existing data and information only since survey will be completed in PED.	CEMNV has developed a Programmatic Agreement (PA) to fulfill its Section 106 procedures. The PA outlines the steps needed to identify and evaluate cultural resources and make determinations of effects. If direct adverse effects to cultural resources are identified and cannot be avoided or minimized, such impacts would be mitigated through the procedures outlined in the PA.	Low	Low
44	21 - Environmental & Cultural/Historical Resources (EC)	Inadvertent discovery of cultural resources during construction	Cultural resources or historic properties may unexpectedly be encountered during project construction based on the project location or type of work. These unforeseen finds are called an inadvertent discovery, which could increase project construction costs, delay construction schedule, or require modifications to the project.	Discoveries of previously unidentified historic properties or unanticipated adverse effects to known historic properties are not anticipated; however, if there is an inadvertent discovery or unanticipated effect, CEMNV will ensure the stipulations in the Programmatic Agreement (PA) will be fulfilled.	Low	Low