



# Construction Cost Increase Summary

## October 2023

### Background and Purpose

In May 2021, Four Lakes Task Force (FLTF) released a range of cost estimates for dam restoration as part of its feasibility study<sup>1</sup>. The restoration estimate for all dams was \$215 million, with a sensitivity of +/- 25%, and a planning estimate was set at \$250 million. The planning was based on the 30% dam designs at Sanford, Edenville, Secord and Smallwood.

In April 2022, FLTF released an updated financial plan<sup>2</sup> with new cost estimates for the dams to include the obtainment of a \$200 million State of Michigan grant. The Secord and Smallwood dams were at 60% design and Sanford and Edenville were at 30% design, with alternatives narrowed based on the design and capacities set at the two northern dams. The sum of the estimates at this time for all four dams was \$214 to \$275 million. Given the market volatility and unknowns, it was stated the lower limit was not likely to be achieved. Therefore, the financing plan remained set at \$250 million assuming a total project cost estimate between \$230 and \$270 million.

In October 2023, FLTF updated its planning range to reflect the reality of the market and the project's updated cost. This resulted in an updated cost planning range of \$330 million to \$380 million with a \$350 million planning estimate. There is greater certainty in these numbers, given they are based on bid projects at Secord, Smallwood, and Sanford. The Edenville estimate is now based on 100% design and has been updated to reflect the pricing received for the other three projects.

This paper will summarize the market conditions and major factors driving the price increase across each of the Four Lakes Projects.

### Construction Increases

There are a few key factors driving price increases across the Four Lakes Task Force projects.

#### **Heavy Civil Construction Market is Volatile**

The projects are occurring during a volatile market period in the heavy civil construction industry where skilled labor is difficult to find, steel and concrete prices fluctuate daily, and subcontractor and material quotes are valid for short periods of time, often expiring before contracts are even awarded, forcing general contractors to take additional risk on pricing. General contractors evaluate the risk of a project and cover the risk by adding money to labor rates to attract resources. Profit

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<sup>1</sup> [https://www.four-lakes-taskforce-mi.com/uploads/1/2/3/1/123199575/restoration\\_path\\_forward\\_final\\_5.17.21.pdf](https://www.four-lakes-taskforce-mi.com/uploads/1/2/3/1/123199575/restoration_path_forward_final_5.17.21.pdf)  
<sup>2</sup> [restoration\\_and\\_financing\\_plan\\_update\\_final\\_3.pdf\(four-lakes-taskforce-mi.com\)](#)



margins increase on high-risk jobs. Companies reduce production rates to build contingency for anticipated skilled labor shortages.

The skilled labor shortage and degradation of historical production rates over the last several years has recently been documented by contractors. Research shows the construction cost index has increased an average of 15% year-over-year since 2021. This is due to a combination of inflation, higher wages needed to attract talent, and materials cost increases. FLTF has experienced the 15% year-over-year increases which can be seen by comparing the 2021 cost estimates to the updated 2023 estimates following bid-receipt on three projects. To put this into perspective, this increase alone on an indexed basis moves a \$250 million estimate to \$330 million.

### **Size and Timing of Projects**

Another contributing factor to cost increases is the size and timing of the Four Lakes projects. The projects have not attracted large companies with more resources, which would also bring highly competitive bids. This is due to the increase planned large infrastructure project investments driven by available funding post-COVID. The Four Lakes projects, while large, do not compare in size to many substantial projects currently underway that attract larger companies, and thus receive less desirable bidding from companies.

Alternatively, given that the projects are multi-million-dollar complex infrastructure projects, they are too large for small companies. This leaves a limited number of bidders. Fewer bidders often results in higher bids with larger profits and decreased production rates. FLTF experienced higher bids due to limited bidders at Sanford Dam. This led to FLTF seeking an updated bid approach with Spence Brothers acting as the construction manager. The project was divided into several smaller bids to leverage the local labor market and alleviate some of the cost overruns. This approach of utilizing local labor markets resulted in cost savings from the prior rejected bids of approximately \$10 million. A similar approach will be used at Edenville to ideally leverage the local labor market.

Below is a summary by dam of the major increases that factored into the escalation of costs from the 2021 and 2022 estimates to the recent bids.

## **Increases Summaries for Each Dam**

### **Secord Dam**

Labor costs related to structural concrete increased from the original cost estimate by ~\$3 million due to a shortage of skilled workers, both carpenters and laborers, qualified for structural concrete work. Subcontractor costs further increased from the original RCC quote for the spillway basin by \$4 million. Only one subcontractor would quote the project – a clear indication of the aforementioned tightness in the market. Material costs increased in alignment with the construction cost index, showing a trending increase of 15% year-over-year. Further cost increases were reflected by a \$1 million increase in aggregates, specifically, steel sheet pile. Site restoration and Architectural,



Mechanical, Electrical and Plumbing (AMEP) work was bid and resulted in a \$2 million increase from the 2021 estimate due to a required expansion in scope.

There were further increases in construction administration and oversight costs. These labor rates appear to follow the same 15% year-over-year increase as the construction labor rates. Further, quality assurance work is labor intensive and specialized, resulting in an additional increase from the 2021 estimate of \$4 million.

Item	Description	Amount
1	Structural Improvements	\$ 27,300,000
2	Embankment Dam Earthwork	\$ 4,300,000
	General Site Conditions, Access, General Site Improvements, Site	
3	Utilities	\$ 9,800,000
	Architectural, Mechanical,	
4	Electrical, Plumbing (AMEP)	\$ 2,300,000
	Owner Furnished Equipment- Gates,	
4	Generator, Steel Sheet Pile	\$ 4,000,000
5	Quality Assurance	\$ 4,400,000
6	Construction Administration	\$ 5,500,000
7	Site Restoration	\$ 1,000,000
	Steel Sheet Pile and Low Level	
8	Outlet Pull-ahead	\$ 8,500,000
<b>Second Dam Construction Estimate (+/- 5%)</b>		<b>\$ 67,100,000</b>



## Smallwood Dam

Labor costs related to structural concrete increased from the original cost estimate by ~\$4 million due to the shortage of skilled workers, both carpenters and laborers, qualified for structural concrete work. Material costs increased in alignment with the construction cost index, showing a trending increase of 15% year-over-year. Further cost increases were reflected by a \$1 million increase in aggregates, specifically, steel sheet pile. Site restoration and AMEP work was bid and resulted in a \$1.5 million increase from the 2021 estimate due to a required expansion in scope.

Further, there was an additional increase from subcontractors as compared to the 2021 estimate specifically in the steel sheet pile quote. There was also an increase in margin of \$4 million from the previous estimate, due to the tightness in the market.

There were further increases in Construction Administration and oversight costs. These labor rates appear to follow the same 15% year-over-year increase as the construction labor rates.

Further, quality assurance work is labor intensive and specialized and resulted in an additional increase from the 2021 estimate of \$3 million.

Item	Description	Amount
1	Structural Improvements	\$ 17,890,000
2	Embankment Dam Earthwork	\$ 8,000,000
	General Site Conditions, Access, General Site Improvements, Site	
3	Utilities	\$ 8,700,000
	Architectural, Mechanical,	
4	Electrical, Plumbing (AMEP)	\$ 2,300,000
	Owner Furnished Equipment- Gates,	
4	Generator, Steel Sheet Pile	\$ 5,000,000
5	Quality Assurance	\$ 3,000,000
6	Construction Administration	\$ 4,500,000
7	Site Restoration	\$ 500,000
8	Low Level Outlet Pull-ahead	\$ 200,000
<b>Smallwood Dam Construction Estimate</b>		<b>\$ 50,090,000</b>
<b>(+/- 5%)</b>		



## Sanford Dam

The 2021 Sanford estimate was based off 30% design. Design maturity, increased quantities, and altered methods all contributed to the cost increase. The current Sanford estimate is based off bids received and provides significantly improved certainty from the early estimates in 2021.

As it relates to earthwork, the existing dam embankment soils were not suitable for proposed improvements which required importing materials not previously accounted for. This caused a \$7 million increase from the 2021 estimate. Further, the RCC spillway design was altered to improve flow capacity to protect the dam embankment. The final design also included additional rip rap armoring. These changes resulted in a \$5 million increase from the 2021 30% design estimate.

Materials costs increased according to the index, and additional quantities of structural concrete were included in the final permitted design. Additional concrete was added for the low-level outlet on the primary spillway. Further, dewatering protocol was required due to ground water encountered at Sanford. This dewatering effort requires a specialized dewatering system to manage and resulted in a \$2 million cost increase.

Item	Description	Amount
1	Dam Construction: Excavation	\$ 27,100,000
2	Dam Construction: Dewatering	\$ 2,500,000
	Dam Construction: Site Access, General Conditions, Utilities, CM	
3	Fee, Demolition	\$ 14,200,000
	Dam Construction: Structural Steel, Roller Compacted Concrete RCC,	
4	Cast in Place Concrete	\$ 22,000,000
	Architectural, Mechanical,	
5	Electrical, Plumbing (AMEP)	\$ 1,500,000
6	Owner Furnished Equipment- Gates,	\$ 7,000,000
7	Quality Assurance	\$ 4,200,000
8	Construction Administration	\$ 9,000,000
9	Site Restoration	\$ 500,000
10	Sanford Village Park Embankment Pr	\$ 1,000,000
11	Insurance	\$ 1,200,000
<b>Sanford Dam Construction Estimate (+/- 5%)</b>		<b>\$ 90,200,000</b>



## Edenville Dam

The 2021 Sanford estimate was based off 30% design. Design maturity increased quantities and altered methods which contributed to the cost increase. Edenville bids have not been received, however, the updated project cost is forecasted from bid results from the three previous dam projects and is now based on a complete design. Edenville experienced the same 15% year-over-year increases as was seen in the other dams. Particular line-item increases will be defined following bid receipt in mid-January 2024.

Item	Description	Amount
1	Edenville Dam Cutoff Wall	\$ 7,000,000
	Edenville Dam Embankment	
2	Restoration	\$ 14,000,000
	Edenville Dam Restoration	
3	Construction	\$ 95,000,000
	Architectural, Mechanical,	
4	Electrical, Plumbing (AMEP)	\$ 3,000,000
	Owner Furnished Equipment- Gates,	
4	Generator, Steel Sheet Pile	\$ 6,000,000
5	Quality Assurance	\$ 6,000,000
6	Construction Administration	\$ 9,000,000
7	Site Restoration	\$ 1,000,000
8	Insurance	\$ 1,200,000
<b>Edenville Dam Construction Estimate (+/- 10%)</b>		<b>\$ 142,200,000</b>

## Summary

In summary, the current project estimate for the restoration of the four dams and lakes is between \$330 and 380 Million. Approximately 25% of the increase from the 2002 estimate of \$230 to \$270 million can be attributed to the fact that the project came in at the high end of the estimate. The remaining cost increases can be attributed to material and labor escalation and a very tight labor market driven by significant government funds targeting infrastructure investments.

With Secord, Smallwood and Sanford costs based on a fixed bid, the costs likely have little room for change. The final phases of the Edenville project will be out to bid in December 2023 and will result in the final computation of costs that will be used for FLTF financing.

There is a focus on improving aspects of the design, methods of construction and improving timelines to reduce cost. However, the studies and engineering of these dams have undergone a two-year robust design and permitting process including third party review and significant state and



federal agency engagement to establish the design and constructability of the dams so there is likely not room for significant change in total cost estimates.

The Four Lakes Task Force is focused on getting the lowest cost financing and will continue to seek other revenue sources such as public and private grants to lower the burden of costs on the community.

A hearing will be scheduled in January of 2024, please follow the four lakes task force for updated information at <https://www.four-lakes-taskforce-mi.com/>