Project Plan Amendment

FY 2024 Drinking Water Project Plan - Amendment

Prepared for

City of Muskegon

May 2024

2230379

DRAFT

Prein&Newhof

Contents

Tables

Figures

Appendices - Amended

1 Project Background

The City of Muskegon adopted its current DWSRF Project Plan on May 23, 2023. Over the last year, the City continued assessment of its water system. As a result, some additional projects were identified as high priority to the City. This Project Plan Amendment has been prepared on behalf of the City of Muskegon, Muskegon County, Michigan, for the purpose of obtaining a Drinking Water State Revolving Fund (DWSRF) loan from the State of Michigan for the construction of improvements to the City of Muskegon's drinking water system.

This report serves only as an amendment to the current approved City DWSRF Project Plan. The evaluation includes an analysis of cost, technical feasibility, and environmental impacts of the amended projects only.

1.1 Study Area Characteristics – No Revisions

1.2 Summary of Project Need

The City has identified additional improvements required over the next 20 years. These consist of elevated storage tank coating, distribution system looping and lead service line replacements.

1.2.1 Projected Needs for the Next 20 Years

Over the last year additional research, inspections and system modeling have been completed. Based on these results three additional projects have been identified.

1.2.1.1 Elevated Storage Tanks

The City's Marshall Tank wet interior coating was installed in 1991 and has surpassed its expected service life, furthermore damage to the coating has occurred along the water line due to ice. A full blast and recoating of the tank wet interior is recommended. A mixer to improve water quality and reduce ice buildup will also be added.

1.2.1.2 Distribution System

Following additional system assessment during the City's ongoing Drinking Water Asset Management Study two water main dead ends were identified requiring looping. The proposed projects are identified below.

1.2.1.2.1 Wildwood Lane and Dowd Street Dead End

The South Clayhill neighborhood has two significant dead end water mains in close proximity to each other. Wildwood Lane Court extends east from Barclay Street. This street has a 550 ft dead end 8-inch water main which extends from the Barclay 12-inch water main. Dowd Street from Barney Avenue to Pulaski Avenue has a 700 ft long 8-inch dead end water main extending south from Barney Avenue. These are both long dead ends which result in poor water circulation and stagnate water. This project proposes to connect the two dead ends together with a 360 ft long 8-inch water main. This will eliminate both dead ends and provide improved hydraulics within the South Clayhill neighborhood by connecting it to the 12-inch water main on Barclay Street.

1.2.1.2.2 Yuba Street Dead End

Yuba Street between Cross Avenue and Butler is a 400 ft dead end 6-inch water main that extends from Cross Avenue. This main does not have many users which results in little water movement and exchanges within the main. The proposed project would extend an 8-inch water main from the north end of Yuba Street east in Butler Street to the 24-inch transmission main in Erickson Street. The result is a looped water main which will improve circulation of the water system in this area. In addition this will provide better connectivity for the greater neighborhood to the City's transmission network.

2 Analysis of Alternatives

2.1 Identification of Potential Alternatives

2.1.1 No-Action

2.1.1.1 Elevated Storage Tank

Failure to maintain an adequate coating on a steal elevated tank will introduce aggressive corrosion shortening the service life of this critical piece of infrastructure. Failure of the

tank would be catastrophic. Maintaining the interior coating is a cost-effective method to lengthen the service life of the tank. The no-action option is not a viable option.

2.1.1.2 Water Main Looping

If no action is completed, then no improvements to the water age and hydraulics in the system will occur.

2.1.2 Elevated Storage Tank

Recoating of the tank will consist of first removing the existing coating with an abrasive blast. Following removal an epoxy coating will be applied over the entire wet interior. Recoating will provide a long service life for the existing tank. A tank mixer will also be added to this tank to reduce issues due to stagnant water.

2.1.3 Replacement of Water Main

2.1.3.1 Wildwood Lane and Dowd Street Dead End

This project will connect the two dead end water mains together with a 360 ft long 8-inch water main.

Extension of this water main as described will meet all project objectives.

2.1.3.2 Yuba Street Dead End

This project will extend an 8-inch water main from the north end of Yuba Street east in Butler Street to the 24-inch transmission main in Erickson Street.

Extension of this water main as described will meet all project objectives.

2.2 Pipe Material Alternatives – No Revisions

2.3 Analysis of Principal Alternatives

2.3.1 The Monetary Evaluation

Detailed cost estimates are included as well as a present worth analysis as described in the Project Plan.

The cost estimates include all costs associated with engineering, construction, and mitigation cost if necessary. In summary, the monetary evaluation results are as follows:

2.3.1.1 Wildwood Lane Court and Dowd Street Dead End

Replace water main and all lead services as described in Section 1.2.1.2.

The estimated project cost is $163,000.

2.3.1.2 Yuba Street Dead End

Replace water main and all lead services as described in Section 1.2.1.2.

The estimated project cost is $229,000.

2.3.1.3 Marshall Tank Coating

Recoat the wet interior of the Marshall Tank and add a mixer as described in Section 2.1.2.

The estimated project cost is $488,000.

2.3.2 The Environmental Evaluation – No Revisions

3 Selected Alternative

3.1 Description of the Selected Alternative

Figure 2 Amended shows the selected water system improvement location. A summary of the selected alternatives including brief descriptions and cost estimates is included in Table 5 Amended and each added project is described below.

Project 18: Wildwood Lane Court and Dowd Street Dead End (FY2025

Extend 360 ft of 8-inch water main from the dead end on Wildwood Lane Court to the dead end on Dowd Street.

The estimated project cost is $163,000.

Project 19: Yuba Street Dead End (FY2025)

Extend 370 ft of 8-inch water main from the dead end on Yuba Street to the 24-inch transmission main on Erickson Street.

The estimated project cost is $229,000.

Project 20: Marshall Tank Coating (FY2025)

Replace the wet interior coating of the Marshall Elevated Storage Tank and add a tank mixer.

The estimated project cost is $488,000.

3.2 Project Schedule

The table below is a schedule for the proposed water system improvements that are intended to be included as part of the City's FY2025 DWSRF Project. They would be funded under the fourth quarter of fiscal year 2025.

FY 2025 DWSRF Project (4th Quarter 2025)
Proposed Project Schedule

Milestone	Date
Hold Public Hearing	May 28, 2024
Submit Final Project Plan to EGLE	June 2024
Receive Approval of Project Plan	September 2024
Plans and Specifications Approved	May 2025
Receive Construction Permit	May 2025
Receive Construction Bids	June 2025
DWSRF Loan Awarded	August 2025
Begin Construction	April 2026
Construction Completed	November 2028

3.3 Cost Estimates

Appendix I contains cost estimates for the proposed amended water system improvements. The project costs include construction costs and approximately 30% for construction contingencies, legal, administrative, and project engineering costs.

3.4 Authority to Implement the Selected Alternatives

Implementation of the proposed project is based on the assumption that the project will be financed by a low-interest loan from the DWSRF program. The City of Muskegon has the necessary legal, institutional, financial, and managerial resources available to ensure the construction, operation and maintenance of the proposed facilities.

3.4.1 Financials

The City of Muskegon recently developed a financial plan as required by the EGLE as part of its Water Asset Management Program. As a result, the City has continued to implemented rate adjustments in anticipation of future capital improvements. However, the City of Muskegon may not construct all proposed projects without grants and/or loan principal forgiveness in order to have sufficient funds to pay for the proposed bond payments for the bonding period of twenty years.

3.4.2 Design/Permits

All FY2025 projects will be under design in late 2024 and will be submitted for all necessary permits prior to the required deadline.

3.5 User Costs

EGLE requires the applicant to perform a Present Worth analysis of the various options. The Present Worth analysis (Appendix J) uses discount factors that reduce the annual expenses compared to what the annual bond payment would be. Appendix T contains the annual debt service cost summary and provides the worst-case scenario where the proposed bond payment will not be reduced by any anticipated discounts related to salvage value, reduction in OM&R, energy savings, grants, and principal forgiveness. The City of Muskegon is planning on funding the FY2025 projects with an estimated $13,983,000 DWSRF loan at a 2.00% interest rate for a 20-year period. The expected annual debt service for the proposed projects based on the DWSRF loan criteria will be approximately $855,154 per year.

This would represent an approximate increase in user rates of $3.43 per month for FY 2025 projects for the average residential user. This is based on 20,784 meter equivalents. For city customers only. The City will decide on final number of projects to complete and any rate

adjustments once the DWSRF funding levels for FY 2025 are set and opportunities for grants or principal forgiveness are determined.

As of July 1, 2022, water rates for City of Muskegon residents are $2.06 per 100 cubic feet for both City residential and commercial customers. Additionally, a $5.00 lead service line replacement fee and debt service fee based on meter size is added to all water accounts. Based on available water billing data, the average residential customer uses 511 cubic feet per month. This water usage and meter size corresponds to a water bill of $21.61 per month for the typical residential customer.

3.6 Overburdened Community – No Revisions

4 Evaluation of Environmental Impacts – No Revisions

5 Mitigation – No Revisions

6 Public Participation

6.1 Public Meeting

A notice of public meeting was posted on the City of Muskegon Facebook page on May 17, 2024, and published on the website on May 17, 2024, eleven full days prior to the public meeting scheduled for May 28, 2024. A copy of the notice is provided in Appendix L. A copy of the project planning document was available to the public at City Hall during the public comment period. A screenshot of the website posting is provided in Appendix L.

6.2 Adoption of Project Plan

Tables

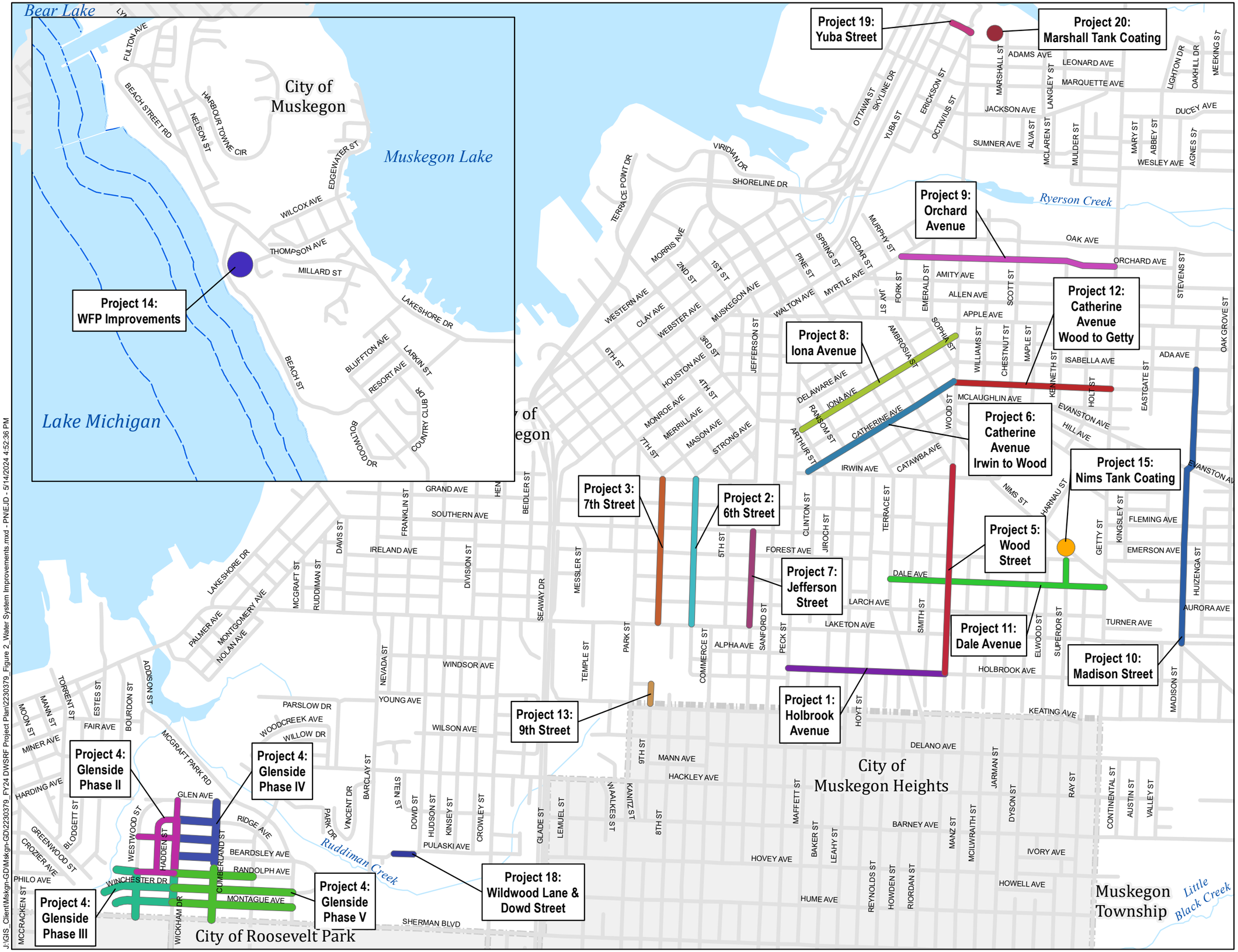
Table 5 Amended: Summary of Selected Alternatives

Table 5 - Summary of Selected Alternatives

Project #	Year	Project Title	Project Description	Water Service Replacements	DWSRF Eligible Cost Estimate	Total Project Cost Estimate
6.	FY25	Catherine Avenue - Irwin Ave. to Wood St.*	Replace existing 4-inch and 6-inch water main with approximately 3,300 feet of 8-inch main from Irwin Ave. to Wood St. Replace water services from the main to the meter in the buildings.	71	$3,103,000	$4,711,000
17.	FY25	Water Service Replacements	Replace 870 galvanized/lead water services per year at various locations throughout the City to be determined after funding is obtained.	870	$10,000,000	$10,000,000
18.	FY25	Wildwood Ln Ct and Dowd St Dead End	Replace existing 4-inch and 6-inch water main with approximately 3,300 feet of 8-inch main from Irwin Ave. to Wood St. Replace water services from the main to the meter in the buildings.	0	$163,000	$163,000
19.	FY25	Yuba Street Dead End	Replace existing 4-inch and 6-inch water main with approximately 3,300 feet of 8-inch main from Irwin Ave. to Wood St. Replace water services from the main to the meter in the buildings.	0	$229,000	$229,000
20.	FY25	Marshall Tank Coating	Recoat the wet interior of the Marshall Tank	0	$488,000	$488,000
				Total FY25 Cost:	**$13,983,000**	**$15,591,000**

Figures

Figure 2 Amended: Selected Water System Improvements Map



CITY OF MUSKEGON
MUSKEGON COUNTY, MI
DWSRF PROJECT PLAN

SELECTED WATER SYSTEM IMPROVEMENTS AMENDMENT

FIGURE 2
MAY 2024
Prein&Newhof
2230379

LEGEND

DWSRF Projects

- Project 1: Holbrook Avenue
- Project 2: 6th Street
- Project 3: 7th Street
- Project 4: Glenside Phase II
- Project 4: Glenside Phase III
- Project 4: Glenside Phase IV
- Project 4: Glenside Phase V
- Project 5: Wood Street
- Project 6: Catherine Avenue
- Project 7: Jefferson Street
- Project 8: Iona Avenue
- Project 9: Orchard Avenue
- Project 10: Madison Street
- Project 11: Dale Avenue
- Project 12: Catherine Avenue
- Project 13: 9th Street
- Project 14: WFP Improvements
- Project 15: Nims Tank Coating
- Project 18: Wildwood Lane & Dowd Street
- Project 19: Yuba Street
- Project 20: Marshall Tank Coating

NOTE: THE LOCATIONS OF THE WATER SERVICE REPLACEMENT PROJECTS (16 & 17) WILL BE WITHIN THE CITY SERVICE AREA AND DETERMINED AFTER FUNDING IS OBTAINED.

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Appendix I

Cost Estimates

Prein&Newhof
Engineers▪Surveyors▪Environmental▪Laboratory

Project 6 Updated — Estimate of Probable Cost

Owner:
City of Muskegon

Project Title:
Catherine Avenue - Irwin Ave. to Wood Ave.

Date: May 10, 2024

Project #: 2230379

Item No.	Description	Quantity	Unit	Unit Price	Total Amount
I. Sanitary Sewer					
1	Sanitary Sewer, 8-inch	2,600	ft.	$130	$338,000
2	Sanitary Manhole	12	ea.	$4,500	$54,000
3	Sanitary Lateral, 6-inch	64	ea.	$4,500	$288,000
II. Water Main					
4	Water Main, 8-inch	3,300	ft	$140	$462,000
5	Water Main, 6-inch	150	ft	$125	$18,750
6	Water Main, Valve and Box, 8-inch	17	ea	$3,000	$51,000
7	Water Main, Valve and Box, 6-inch	10	ea	$2,000	$20,000
8	Water Main, Cross, 8" x 8" x 8" x 8"	3	ea	$2,500	$7,500
9	Water Main, Tee, 8" x 8" x 8"	2	ea	$2,000	$4,000
10	Water Main, Tee, 8" x 8" x 6"	10	ea	$2,000	$20,000
11	Water Main, Tapping Tee & Valve, 10" x 8"	1	ea	$9,000	$9,000
12	Water Main, Reducer, 8" x 6"	6	ea	$1,500	$9,000
13	Water Main, Hydrant	10	ea	$5,000	$50,000
14	Water Main, Connect to Existing	11	ea	$5,000	$55,000
15	Water Main, 1-inch Service	71	ea	$8,000	$568,000
III. Road Reconstruction					
16	Mobilization, Max 10%	1	ls	$362,000	$362,000
17	Catch Basin Replacement	15	ea.	$4,000	$60,000

Item No.	Description	Quantity	Unit	Unit Price	Total Amount
18	Storm Manhole Replacement, 48-inch Dia	10	ea.	$4,500	$45,000
19	Storm Manhole Replacement, 60-inch Dia	2	ea.	$9,000	$18,000
20	Storm Sewer Replacement, 12-inch to 15-inch	2,400	ft.	$90	$216,000
21	Storm Sewer Replacement, 36-inch	60	ft.	$300	$18,000
22	Road Replacement	3,000	ft.	$310	$930,000
23	Traffic Control	1	ls	$20,000	$20,000
				Construction Estimate:	**$3,623,250**
				Construction Contingencies, Legal, Administrative, Engineering Costs (30%):	**$1,087,750**
				Total Estimate:	**$4,711,000**
				Inelgible (1/3 Road Reconstruction):	$1,608,000
				DWSRF Eligible (2/3 Road Reconstruction):	$3,103,000

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Project 17 - Updated — Estimate of Probable Cost

Owner:
City of Muskegon

Project Title:
FY25 Water Service Replacements

Date: May 10, 2024

Project #: 2230379

Item No.	Description	Quantity	Unit	Unit Price	Total Amount
1	Replace Lead/Galvanized Services	870	ea	$10,000	$8,700,000

Construction Estimate:	**$8,700,000**
Construction Contingencies, Legal, Administrative, Engineering Costs (15%):	**$1,300,000**
Total Estimate (DWSRF Eligible):	**$10,000,000**

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Project 18 — Estimate of Probable Cost

Owner:
City of Muskegon

Project Title:
Wildwood Ln Ct and Dowd St Dead End

Date: May 10, 2024

Project #: 2230379

Item No.	Description	Quantity	Unit	Unit Price	Total Amount
1	Mobilization, Max 10%	1	ls	$12,000	$12,000
2	Traffic Control	1	ls	$5,000	$5,000
3	Water Main, 8-inch	360	ft	$150	$54,000
4	Water Main, 45 Bend, 8-inch	2	ea	$2,000	$4,000
5	Water Main, Valve and Box, 8-inch	1	ea	$15,000	$15,000
6	Water Main, Sleeve, 8-inch	1	ea	$2,000	$2,000
7	Machine Grading, Modified	4	sta	$1,000	$4,000
8	Aggregate Surface Course, 6-inch	200	syd	$16	$3,200
9	Bin-Block Barrier	4	ea	$500	$2,000
10	Clearing and Grubbing	1	lsum	$20,000	$20,000
11	Turf Restoration	4.0	sta	$1,000	$4,000

Construction Estimate:	**$125,200**
Construction Contingencies, Legal, Administrative, Engineering Costs (30%):	**$37,800**
Total Estimate (DWSRF Eligible):	**$163,000**

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Project 19 — Estimate of Probable Cost

Owner:
City of Muskegon

Project Title:
Yuba Street Dead End

Date: May 10, 2024

Project #: 2230379

Item No.	Description	Quantity	Unit	Unit Price	Total Amount
1	Mobilization, Max 10%	1	ls	$17,000	$17,000
2	Traffic Control	1	ls	$5,000	$5,000
3	Water Main, 6- inch	20	ea	$110	$2,200
4	Water Main, 8-inch	370	ft	$150	$55,500
5	Water Main, Valve and Box, 6-inch	1	ea	$2,000	$2,000
6	Water Main, Valve and Box, 8-inch	1	ea	$15,000	$15,000
7	Water Main, Tapping Sleeve & Valve, 24" x 24" x 8"	1	ea	$10,000	$10,000
8	Water Main, Sleeve, 6-inch	1	ea	$2,000	$2,000
9	Water Main, Hydrant	1	ea	$5,000	$5,000
10	Machine Grading, Modified	4	sta	$1,000	$4,000
11	Aggregate Surface Course, 6-inch	1000	syd	$16	$16,000
12	HMA, 330 lb/syd	170	ton	$120	$20,400
13	Clearing and Grubbing	1	lsum	$20,000	$20,000
14	Turf Restoration	4.0	sta	$500	$2,000

Construction Estimate:	**$176,100**
Construction Contingencies, Legal, Administrative, Engineering Costs (30%):	**$52,900**
Total Estimate (DWSRF Eligible):	**$229,000**

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Project 20 — Estimate of Probable Cost

Owner:
City of Muskegon

Project Title:
Marshall Tank Coating

Date: May 10, 2024

Project #: 2230379

Item No.	Description	Quantity	Unit	Unit Price	Total Amount
1	Paint Wet Interior of Marshall Tank	1	ls	$300,000	$300,000
2	Tank mixer	1	ls	$75,000	$75,000
				Construction Estimate:	**$375,000**
				Construction Contingencies, Legal, Administrative, Engineering Costs (30%):	**$113,000**
				Total Estimate (DWSRF Eligible):	**$488,000**

Appendix J

Present Worth Analysis

CITY OF MUSKEGON DWRF PROJECT PLAN
PRESENT WORTH ANALYSIS - AMENDMENT

Project Description	***Project 6*** Catherine Avenue - Irwin Ave. to Wood Ave.	***Project 17*** FY25 Water Service Replacements	***Project 18*** Wildwood Ln Ct and Dowd St Dead End	***Project 19*** Yuba Street Dead End	***Project 20*** Marshall Tank Coating
	FY2025	FY2025	FY2025	FY2025	FY2025
Capital Costs (including ELAC)					
Structures (50 yr)	$2,626,000	$8,461,000	$138,000	$194,000	$0
Process Equipment (10 yr)	$0	$0	$0	$0	$413,000
Planning	$48,000	$154,000	$3,000	$4,000	$8,000
Engineering, Legal, and Administrative	$429,000	$1,385,000	$22,000	$31,000	$67,000
Project Cost (DWSRF Eligible)	$3,103,000	$10,000,000	$163,000	$229,000	$488,000
(A) 20-yr Present Worth of Capital Costs [1]	$1,893,671	$6,102,709	$99,474	$139,752	$297,812
Operation, Maintenance & Replacement (OM&R)					
Energy Cost Savings - *Not included/negligible*	$0	$0	$0	$0	$0
Annual OM&R[2] - *Not included/negligible*	$0	$0	$0	$0	$0
Process Equipment Replacement (10 yr)	$0	$0	$0	$0	$596,803
(B) 20-yr Present worth of OM&R [1]	$0	$0	$0	$0	$0
(C) 20-yr Present worth of Energy Cost Savings [3]	$0	$0	$0	$0	$0
Salvage Value of Capital					
Salvage value at 20 years	$1,575,600	$5,076,600	$82,800	$116,400	$0
(D) 20-yr Present worth of Salvage [1]	$961,543	$3,098,101	$50,530	$71,036	$0
Total Present Worth (A + B + C - D)	$932,128	$3,004,608	$48,944	$68,717	$297,812
Equivalent Annual Cost[4]	$59,793	$192,737	$3,140	$4,408	$19,104

Total Existing Residential Equivalent Units (REUs)
City of Muskegon REUs: 20,784

Unit of Government Responsible for Payment for:	Project 6	Project 17	Project 18	Project 19	Project 20
City of Muskegon	100.00%	100.00%	100.00%	100.00%	100.00%
City of Muskegon Annual Cost per REU	$2.88	$9.27	$0.15	$0.21	$0.92
City of Muskegon Monthly Cost per REU	$0.24	$0.77	$0.01	$0.02	$0.08

Total Proposed Project Cost FY2025: **$13,983,000**
Total Present Worth FY2025: **$4,352,208**
Total Equivalent Annual Cost FY2025: **$279,182**

	Annual [4]	**Monthly** [4]
Total City of Muskegon Cost per REU (FY2025 Projects)	$13.43	$1.12

Notes:

[1] U.S. EPA Discount rate for Year 2024 is

[2] Negative value indicates reduction in Annual O&M

[3] Assumed energy cost rate of escalation is

[4] Based on Total Present Worth

Appendix T

Annual Debt Service Cost Summary

CITY OF MUSKEGON
ANNUAL DEBT SERVICE COST SUMMARY - FY 2025 PROJECTS

No.	Project	Project Cost Estimate	Annual Debt Service*	Total Annual Debt Service Cost*
6.	Catherine Avenue - Irwin Ave. to Wood Ave.	$3,103,000	$189,769	$189,769
17.	FY25 Water Service Replacements	$10,000,000	$611,567	$611,567
18.	Wildwood Ln Ct and Dowd St Dead End	$163,000	$9,969	$9,969
19.	Yuba Street Dead End	$229,000	$14,005	$14,005
20.	Marshall Tank Coating	$488,000	$29,844	$29,844
		$13,983,000	**$855,154**	**$855,154**
	Existing REU's			**20,784**
	Annual REU Cost			**$41.14**
	Monthly REU Cost			**$3.43**

* Annual debt service based on 20 year loan with a 2.00% interest rate.

Appendix U

Public Participation Documentation

Summary of Public Meeting and Presentation

City Website Posting

List of Attendees

Appendix V

Signed Resolution of Project Plan Adoption