

Lake Huron Water Treatment Plant, Low-Lift, High Lift and Filter Backwash Pumping System

- Innovation
- Water MP Right Sizing
- Reliability/Redundancy
- NEWTP Repurposing

Project Status Future Planned

Lake Huron WTP



CIP Type Project

Project New To CIP

Project Engineer/Manager Eric Kramp

Budget Water

Manager Grant Gartrell

Class Lvl 1 Water

Managing Dept Water Eng

Class Lvl 2 Treatment Plants and Facilities

Date Original Business Case Prepared 3/3/2010

Class Lvl 3 Lake Huron

Year Project Added to CIP 2010

Location Saint Clair County

Fund and Cost Center Water - 5519-882111

Project Significance 111003 RECLASSIFIED INTO THIS PROJECT. Improvements needed to align the existing low lift pumping rate with the Lake Huron WTP production rate per the 2015 WMPU. Currently constant speed pumping forces the WTP to operate in a batch mode. Existing electrical gear for low and high lift pumping units and filter backwash pumps are original to plant, beyond useful service life and need to be replaced to improve reliability, serviceability, maintainability, and efficiency. Replacement of phosphoric acid chemical storage tanks and fill piping. Flocculation moved to new project proposed CIP Project for filter rehabilitation and flocculators.

Scope of Work Currently constant speed pumping forces the Lake Huron WTP to operate in a batch mode as the low lift pump capacities exceed the high lift pump capacities. Improvements needed to align the existing low lift pumping rate with the Lake Huron WTP production rate per the 2015 WMPU. Replace with new:

1. High-voltage electrical system
2. Replace LL Pumps 3 and 4 with new pumps to meet 2015 WMPU
3. Improve HL Pump resilience & flexibility
4. Improve WW Pump capability and update as necessary
4. Phosphoric acid system upgrades

Challenges Coordination between existing pumping unit and motor required during design. Critical speed analysis may show pump improvements needed to operate at reduced speeds. Uncovering an innovative rehabilitation design to minimize maintenance of existing drives.

Lookup Driver 8 - Efficiency

Other Important Info *Innovation note: Ensure energy efficiency.
Updated project expenses to account for inflation, moved contract start back one year, added GLWA costs.

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	Portions of project were identified in the 2015 Master Plan.
Explanation	Not provided.

PM Weighted Score

64.6

Criteria	Score	Comment
Condition	5	
Efficiency and Innovation	4	
Financial	4	
O&M	3	
Performance (Service Level/Reliability)	5	
Public Benefit	1	
Public Health & Safety	1	
Regulatory (Environmental/Legal)	3	

RC Weighted Score

71.6

Criteria	Score	Comment
Condition	5	
Efficiency and Innovation	4	
Financial	4	
O&M	5	
Performance (Service Level/Reliability)	5	
Public Benefit	5	
Public Health & Safety	2	
Regulatory (Environmental/Legal)	1	



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Phase GLWA Employees Project management

Contract NA

Status Future Planned Start

Title GLWA Salaries

Phase Budget

Phase Status

Start Date

End Date

Cost Allocation

Funding Source

Fund

Useful Life >20Yrs?

Tot. Federal Loan Amount

Cost Estimation Information

Cost Est. Class

Cost Est. Date

Cost Est. Source

Cost Est. Prepared By

Program/Allowance Task Information

Project Manager

CIP Number

Description

Cost Type	Fiscal Year	Expense	Fringe Benefit	NonPersonne	Comment
GLWA Salaries CIP2020	FY20	\$18	7	1	
GLWA Salaries CIP2020	FY21	\$42	17	2	
GLWA Salaries CIP2020	FY22	\$42	17	2	
GLWA Salaries CIP2020	FY23	\$42	17	2	
GLWA Salaries CIP2020	FY24	\$42	17	2	
GLWA Salaries CIP2020	FY25+	\$116	46	6	2020CIP

Prior Yr Actuals	FY19	FY20	FY21	FY22	FY23	FY24	FY25+	Total
	0	26	61	61	61	61	168	438

Phase Total Expenses By FY (All figures are in \$1,000's)



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Phase Design & Construction Assistance

Contract NA

Status Future Planned Start

Title LH WTP Low and High Lift Pumping Improvements - Design & Constr Assistance

Existing LL Pumps: 2 - 100 mgd and 2 - 200 mgd; firm = 400 mgd
 Future LL Pumps: 2 - 150 mgd and 2 - 100 mgd; firm = 350 mgd
 Future: LL Pumps 1 - 150 mgd pump will have VFD. 1 - 100 mgd pump will have a VFD by the time this project is started via another contract being executed by plant O&M staff.

Phase Budget

Cost Allocation

Phase Status

Funding Source

Start Date

Fund

End Date

Useful Life >20Yrs?

Tot. Federal Loan Amount

Cost Estimation Information

Cost Est. Class
 Cost Est. Date
 Cost Est. Source
 Cost Est. Prepared By

Program/Allowance Task Information

Project Manager
CIP Number
Description

Cost Type	Fiscal Year	Expense	Fringe Benefit	NonPersonne	Comment
Engineering Services	FY20	\$375			
Engineering Services	FY21	\$1,550			
Engineering Services	FY22	\$3,108			
Engineering Services	FY23	\$352			
Engineering Services	FY24	\$400			
Engineering Services	FY25+	\$2,600			2020CIP
Other	FY20	\$0			2020CIP
Other	FY21	\$0			2020CIP

Task	Start Date	End Date	Duration
Scope Development	12/30/2018	3/30/2019	90
Procurement	3/31/2019	3/30/2020	365



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Task	Start Date	End Date	Duration
Project Execution	3/31/2020	10/26/2026	2400
Project Closeout	10/27/2026	1/25/2027	90

Prior Yr Actuals	FY19	FY20	FY21	FY22	FY23	FY24	FY25+	Total
	0	375	1,550	3,108	352	400	2,600	8,385

Phase Total Expenses By FY (All figures are in \$1,000's)



Lake Huron Water Treatment Plant, Low-Lift, High Lift and Filter Backwash Pumping System

Phase Construction

Contract NA

Status Future Planned Start

Title LH WTP Low and High Lift Pumping Improvements - Construction

Existing LL Pumps: 2 - 100 mgd and 2 - 200 mgd; firm = 400 mgd
 Future LL Pumps: 2 - 150 mgd and 2 - 100 mgd; firm = 350 mgd
 Future: LL Pumps 1 - 150 mgd pump will have VFD. 1 - 100 mgd pump will have a VFD by the time this project is started via another contract being executed by plant O&M staff.

Phase Budget Water

Cost Allocation CTA

Phase Status Future Planned Start

Funding Source Bond Proceeds

Start Date 1/22/2022

Fund Construction Bond Fund

End Date 1/25/2027

Useful Life >20Yrs? Yes

Tot. Federal Loan Amount

Cost Estimation Information

Cost Est. Class
 Cost Est. Date
 Cost Est. Source
 Cost Est. Prepared By

Program/Allowance Task Information

Project Manager
CIP Number
Description

Cost Type	Fiscal Year	Expense	Fringe Benefit	NonPersonne	Comment
Construction	FY23	\$4,037			
Construction	FY24	\$9,539			
Construction	FY25+	\$29,989			2020CIP

Task	Start Date	End Date	Duration
Scope Development	1/25/2022	4/25/2022	90
Procurement	4/26/2022	10/31/2022	188
Project Execution	11/1/2022	10/26/2026	1455
Project Closeout	10/27/2026	1/25/2027	90

Prior Yr Actuals	FY19	FY20	FY21	FY22	FY23	FY24	FY25+	Total
	0	0	0	0	4,037	9,539	29,989	43,565

Phase Total Expenses By FY (All figures are in \$1,000's)



Lake Huron Water Treatment Plant, Low-Lift, High Lift and Filter Backwash Pumping System

Project Total Expenses By FY Compared to Prior CIPs (All figures are in \$1,000's)

CIP	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	Total
2018		200	2,500	3,000					0	0	5,700
2019	0				401	1,611	3,169	4,450	42,757	0	52,388
2020	0	0		0	401	1,611	3,169	4,450	10,000	32,757	52,388