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City of Sault Ste. Marie
225 E. Portage Avenue | Sault Ste. Marie, MI 49783

Clean Water State Revolving Fund (CWSRF)

Wet Weather Flow Program and Wastewater Treatment Plant Improvements

Project Planning Document [DRAFT]

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APPENDICES

Appendix A – NPDES Permit (Includes Section 9 - Schedule for Compliance with Wet Weather Flow Program)

Appendix B – Asset Management Plan

Appendix C – Cost Worksheets

Appendix D – Environmental Notifications

Appendix E – Public Hearing and Resolution Information

Appendix F – Adopted Resolution

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ABBREVIATIONS

BFP	Belt Filter Press
BOD	Biochemical Oxygen Demand
CAP	Corrective Action Plan
CBOD	Carbonaceous Biochemical Oxygen Demand
CSO	Combined Sewer Overflow
CWSRF	Clean Water State Revolving Fund
EGLE	Michigan Department of Environment, Great Lakes, and Energy
FEMA	Federal Emergency Management Agency
FY	Fiscal Year
GIS	Geographic Information System
I/I	Inflow & Infiltration
MDARD	Michigan Department of Agriculture and Rural Development
MDOT	Michigan Department of Transportation
MGD	Million Gallons per Day
MI	Michigan
MSU	Michigan State University
NASSCO	National Association of Sewer Service Companies
NFPA	National Fire Protection Association
NPDES	National Pollutant Discharge Elimination System
PACP	Pipeline Assessment Certification Program
PPC	Project Performance Certification
PPD	Pounds Per Day
RBC	Rotating Biological Contactor
RWW	Raw Wastewater
SBOD	Soluble Biochemical Oxygen Demand
SCADA	Supervisory Control and Data Acquisition
SHPO	State Historic Preservation Office
SRF	State Revolving Fund
SSES	Sanitary Sewer Evaluation Survey
SSO	Sanitary Sewer Overflow
TP	Total Phosphorus
TSS	Total Suspended Solids
USEPA	United States Environmental Protection Agency
U.S.	United States
WWCP	Wet Weather Control Plan
WWTP	Wastewater Treatment Plant

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1. EXECUTIVE SUMMARY

1.1 PURPOSE

The 2023 Project Planning Document for the City of Sault Ste. Marie Wet Weather Flow Program and Wastewater Treatment Plant Improvements follows the Michigan Department of Environment, Great Lakes and Energy's (EGLE's) Clean Water State Revolving Fund (CWSRF) Project Planning Document Guidance Manual. The CWSRF provides low-interest loans for qualifying communities. The Project Planning Document provides the starting point for EGLE project prioritization. The City has submitted an Intent to Apply for fiscal year (FY) 2024. The Project Planning document identifies the project needs and details the projects and costs to achieve both regulatory requirements and community objectives for water quality.

The City's plans for infrastructure improvements align with EGLE's project priority objectives for the CWSRF program.

Achieve compliance with the City's Schedule of Compliance for Wet Weather Flow Removal – The City has an enforceable schedule of compliance for their wet weather flow removal program as part of their National Pollution Discharge Elimination System (NPDES) permit obligations. The projects included in the planning document are necessary to achieve compliance.

Improve Public Health and Water Quality in the regions waterways – One of the City's most important assets are the local water systems. The goal for improvements in this project planning document are to eliminate combined sewer and sanitary sewer overflows to the community's surface water is critical. Eliminating combined and sanitary overflows and secondary treatment diversions at the wastewater treatment plant will reduce pollutants discharged to the waterways and improve water quality. The improvements will also reduce the risk of basement backups particularly in combined sewer areas.

Improve aging infrastructure – The City has an approved asset management plant. The City's wastewater treatment plant has not had significant upgrades since the 1980s. Recent failures of rotary biological contactors and final settling tank mechanisms present a risk for the system to maintain capacity and reliable treatment performance. Repair and replacements will address the areas of risk and sustain compliance.

Manage affordability for the City's customers – Preliminary analysis of EGLE's affordability criteria indicate the City meets the overburdened status.

1.2 PROJECT NEED

The City is continuing progress on their Wet Weather Flow Program. This includes separating storm sewer and sanitary sewer connections and eliminating combined and sanitary sewer overflows. The proposed collection system and wastewater treatment plant improvement projects increase treatment reliability and position the City to achieve Sanitary Sewer Project Performance Certification (PPC). The future certification requires:

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- the collection system's sanitary sewers and interceptors have adequate capacity to transport peak flows generated by the 25-year, 24-hour storm event to the wastewater treatment plant for full treatment,
- the collection system's sanitary sewers and interceptors have adequate volume to "store" flows generated by the 25-year, 24-hour storm event without sanitary sewer overflows from the collection system, and
- there are no unauthorized sanitary sewer connections to the storm sewer system.

1.3 REFERENCE DOCUMENTS

Appendix A includes the City's NPDES permit. The NPDES permit details the schedule of compliance with wet weather removal. The schedule of compliance identifies completion of high priority I/I projects, projects in the Corrective Action Plan and I/I and Sewer System Evaluation Studies.

1.4 ALTERNATIVES, SCHEDULE, AND COSTS

Figure 1-1 illustrates the City's phased approach to the planned investments. Priority 1 projects are required as part of the NPDES permit and to sustain reliable operation of the Wastewater Treatment Plant. Subsequent projects also address regulatory compliance and asset improvements.

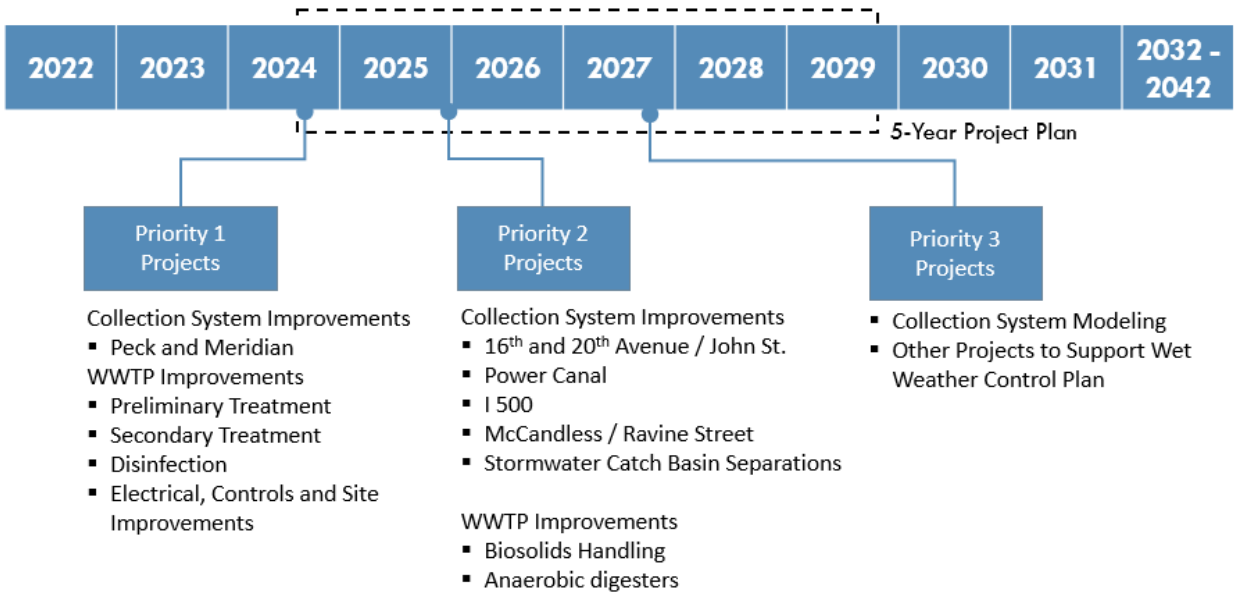

Figure 1-1 Phased Approach to Planned Investments

Table 1-1 summarizes customer impacts resulting from the planned improvements. The customer impacts for the 2025 planned improvements rely on possible principal forgiveness. The investments may be updated based on bonding capacity, grants, principal forgiveness, and other funding sources to support the City's goals, objectives, and regulatory obligations.

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Table 1-1 Customer Impact Summary

Project	Fiscal Year	
	2024	**2025 - 2029**
WWTP Improvements	**$29,500,000**	**$23,900,000**
Collection System Improvements	**$5,500,000**	**$4,600,000**
Total Improvements	**$35,000,000**	**$28,500,000**
Estimated Principal Forgiveness	$20,000,000	$14,250,000
Total Amount borrowed SRF	$15,000,000	$14,250,000
Interest Rate	1.875%	1.875%
Number of payments in years	20	20
Computed Principal & Interest for Repayment of SRF loan	$906,300	$861,000
Annual Estimated Revenue	$0	$0
City's project Annual Debt payment	**$906,300**	**$861,000**
Impact of Debt Repayment on Customers Annual debt		
City's Debt Payment - SRF only =	**$906,300**	**$861,000**
Number of Sewer Customers	**5,195**	**5,195**
Average Debt Retirement Cost Per Customer/year	**$174.46**	**$165.74**
Average Debt Retirement Cost Per Customer/month	$14.54	$13.81

1.5 TECHNICAL CONSIDERATIONS

The City is executing a Wet Weather Flow Removal Program to remove excess inflow and infiltration (I/I) from the collection system and eliminate collection system overflows and WWTP bypasses resulting from wet weather events up to the remedial design standard.

The capital investments considered as part of this planning document are a continuation of investments made over the past 10 – 20 years. These investments have closed seven of the ten previously existing combined sewer overflow locations. The City has also invested in asset management planning, collection system flow monitoring, and inflow and collection system pipe assessments.

As the remaining storm water connections to the sanitary sewer are closed, additional investments in inflow and infiltration studies, sanitary sewer evaluations, and collection system modeling will be completed to ensure the City meets their regulatory obligations and achieves improved water quality.

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2. BACKGROUND

2.1 STUDY AND SERVICE AREA

The WWTP service area generally aligns with the City's corporate limits, plus some of the surrounding region. Figure 2-1 illustrates the area served by the City, including the location of the wastewater treatment plant for reference.

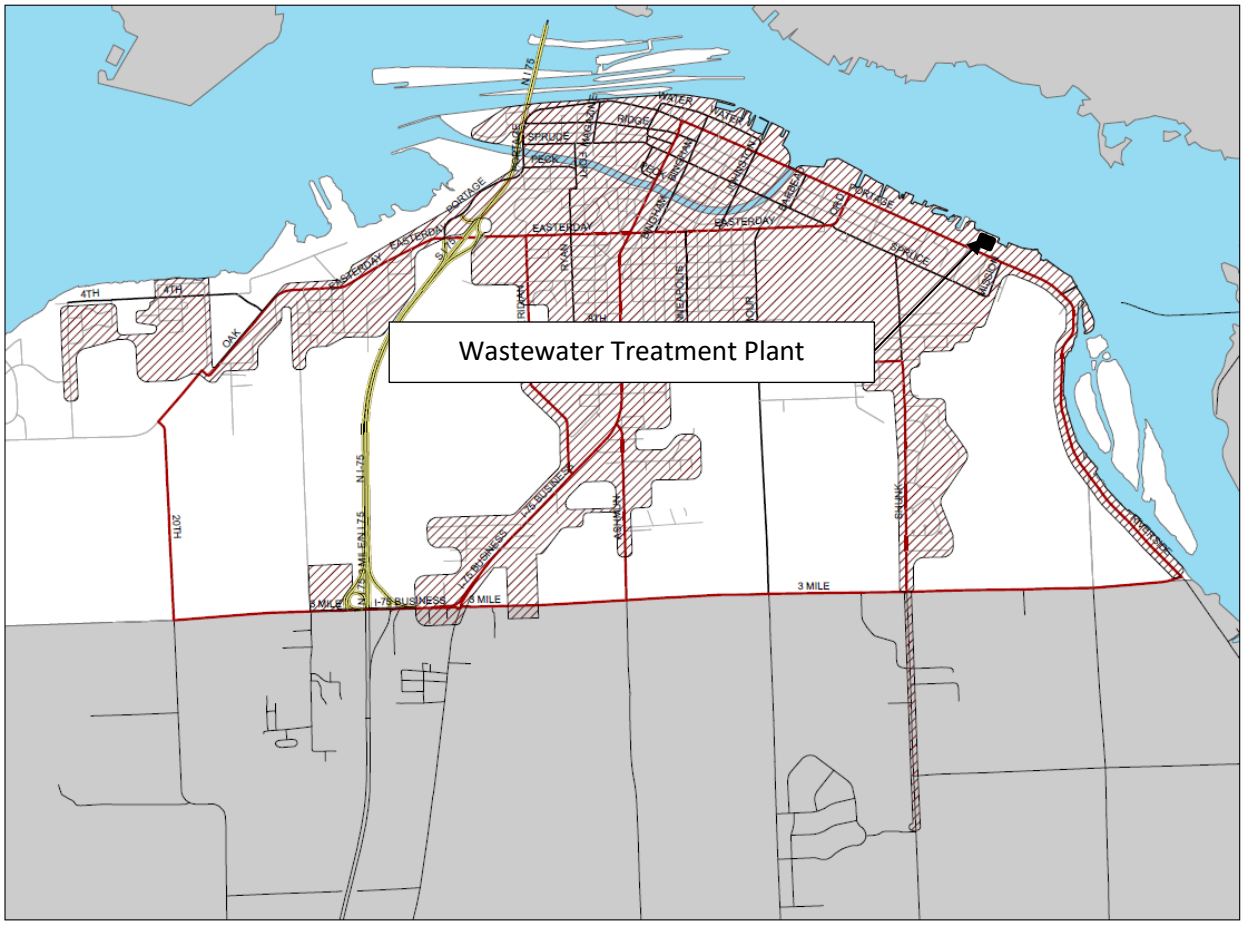

Figure 2-1 Service Area

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2.2 POPULATION DATA

Table 2-1 portrays the United States Census Bureau statistics for the City's population. The City's population decreased by 5.2% from 2010 to 2020. Future planning estimates assume the population is maintained over the planning period.

Table 2-1 Sault Ste. Marie Census Population

US. Census	Population
1940	15,847
1950	17,912
1960	18,722
1970	15,136
1980	14,448
1990	14,689
2000	14,324
2010	14,144
2020	13,410

2.3 EXISTING ENVIRONMENTAL EVALUATION

2.3.1 CULTURAL AND HISTORIC RESOURCES

The City has worked closely with the State Historic Preservation Office (SHPO) and the Registry of National and State to identify and preserve culturally significant sites. The United States Department of the Interior has designated parts of the Sault Ste. Marie commercial district in the National Register of Historic Places. The general boundaries are illustrated in Figure 2-2.

Sault Ste. Marie Historic Commercial District

Sault Ste. Marie, Chippewa County, Michigan
Ashmun Street between Water and Easterday Streets and
Portage Avenue between Brady and Ferris Streets, and
Ashmun Street cross street blocks of Ridge, Maple, Arlington,
Ann, and Spruce Streets

1. (NW) Latitude: 46.501900 Longitude: -84.353834
2. (NE) Latitude: 46.501900 Longitude: -84.341104
3. (SE) Latitude: 46.492252 Longitude: -84.341104
4. (SW) Latitude: 46.492252 Longitude: -84.353834

Figure 2-2 Sault Ste. Marie Historic Commercial District Boundaries

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The City has approximately 150 addresses logged to the National Register of Historic Places. No sites of historical or cultural significance are located at the WWTP. The collection system work is generally located in the street or other City or State right of way and should not affect the historical sites.

The City follows guidance from the Michigan Department of Transportation and the State Historic Preservation Office regarding streetscape improvements for downtown historic districts.

2.3.2 NATURAL ENVIRONMENT

Climate

The proposed work will not significantly affect the climate and will be designed for operation and maintenance in the prevailing climate.

Air Quality

The improvements are confined to process, electrical, mechanical, and structural improvements at the wastewater treatment plant or collection system pipes. These projects are not expected to have significant adverse effects on air quality.

Wetlands

No wetlands have been identified in the proposed work areas at the WWTP or collection system.

Great Lakes Shorelands, Coastal Zones, and Coastal Management Areas

The WWTP is located adjacent to the St Mary's River that connects Lake Superior with Lake Huron.

Floodplains

Figure 2-3 and Figure 2-4 illustrate flood maps for the City and the WWTP, respectively. The flood map number is 26033C0501D, effective on October 16, 2014.

The map can be accessed by following this web address and searching for Sault Ste Marie, MI: https://msc.fema.gov/portal/search#searchresultsanchor. No flood prone areas are part of the facilities considered as part of the WWTP or collection system improvements.

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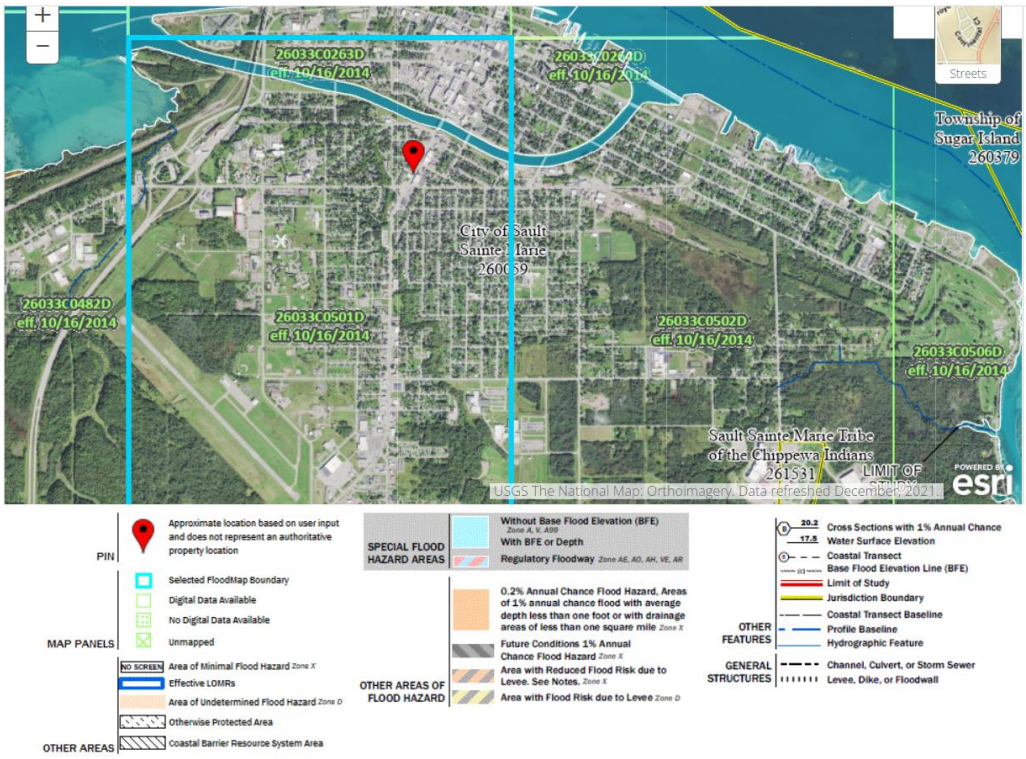

Figure 2-3 FEMA 100-Year Floodplain (City Overview)

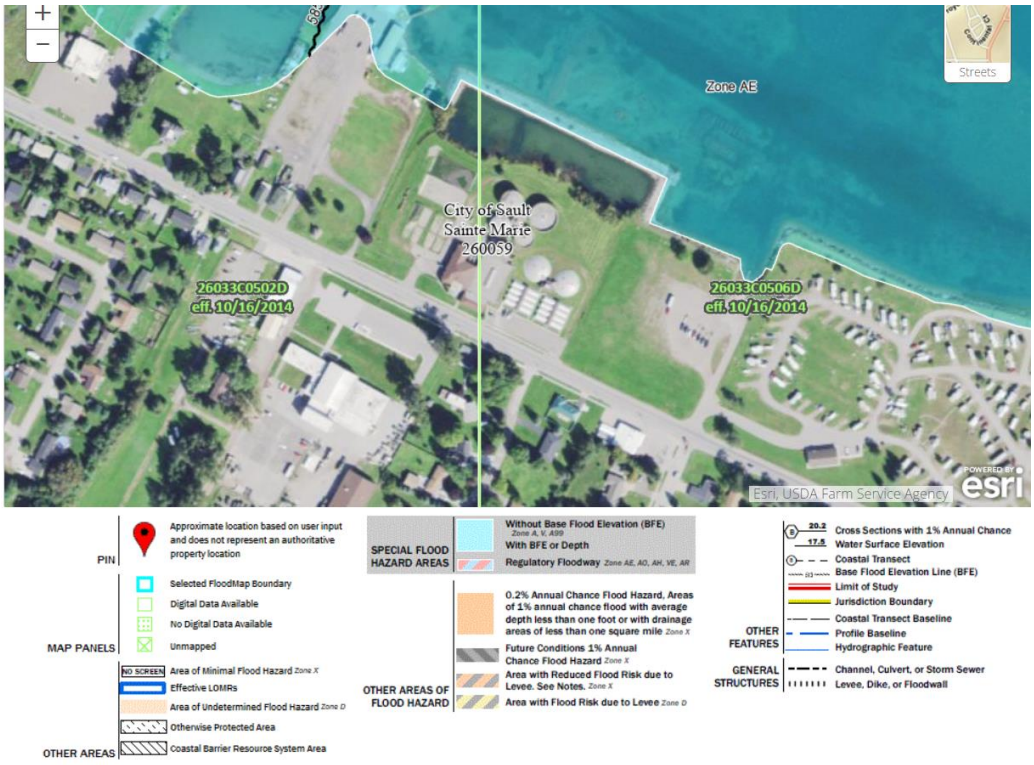

Figure 2-4 FEMA 100-Year Floodplain (WWTP Site)

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Natural or Wild and Scenic Rivers

Michigan has designated 16 Natural River systems in Michigan. None of the rivers is in the project area.

Major Surface Waters

The project area includes the St. Mary's River, Lake Nicolet, Lake Superior, Mission Creek, and Ashmun Creek.

Topography

The project improvements are not anticipated to change City's topography.

Geology

The City is on a rocky shoreline near Lake Superior and Lake Huron. It has rocks such as granite, quartzite, limestone, and dolomite that formed over billions of years. It also has soil and stones pushed and scraped by glaciers that shaped the landscape. None of the improvements considered under this project are expected to directly or indirectly affect the area's geologic characteristics, groundwater, or surface water resources.

Soils

Soils will be evaluated at the project sites as part of the design process. Facilities at the wastewater treatment plant are installed on piles. Similar pile foundations are anticipated for structures.

Agricultural Resources

The WWTP improvements are all located in a developed area. The project should not affect the region's prime, unique, or highly productive farmlands.

Flora and Fauna

MDARD (Endangered Species by County at Michigan.gov) maintains a list of endangered species by county for the State of Michigan, which the Michigan Natural Features Inventory MSU Extension supports. For Chippewa County, the gray wolf and the piping plover. The gray wolf's status is "Special Concern" but not legally protected, while the piping plover's status is "Endangered" and legally protected.

The gray wolf is a habitat generalist that can live in various environments, including temperate forests, mountains, tundra, taiga, grasslands, and deserts. The gray wolf's extensive geographic range covers most of the Northern Hemisphere, but its human activities have reduced its distribution. The gray wolf migrates seasonally with its prey, mainly ungulates such as deer and elk. The gray wolf was last observed in Chippewa County in 1981.

The piping plover is a small migratory shorebird that nests and feeds along North America's coastal sand and gravel beaches. There are three populations of piping plovers: one on the Atlantic Coast of the U.S. and Canada, one on the Great Lakes shores, and one along rivers and lakes in the Northern Great Plains. The piping plover migrates from its northern breeding range in the summer to its southern wintering

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range along the Gulf of Mexico, the south Atlantic coast of the United States, and the Caribbean. The piping plover was last observed in Chippewa County in 2019.

The proposed projects are generally improvements to existing facilities at the WWTP or selected improvements to the existing collection system.

The project should not affect endangered species, significant plant communities, natural features, coastal zones, or prime and unique agricultural land. Mitigation measures will be coordinated with EGLE during the design process, and permits will be needed in these areas.

2.4 EXISTING SYSTEM

2.4.1 WASTEWATER COLLECTION SYSTEM

Sault Ste. Marie's collection system includes a sanitary collection system, collection system pump stations, a storm water system, and a wastewater treatment plant. Historically several connections existed between the storm sewer and sanitary sewer with combined sewer relief to the St. Mary's River. Through continued investment, the City has closed seven of the ten combined sewer overflow locations. The system currently includes four open connections between the storm sewer system and the sanitary sewer system:

- 001 Greenough Street @ East Portage Avenue
- 002 Elm Street @ East Portage Avenue
- 007 Bingham Ave and E Water St
- 010 Meridian Street, Eureka Street and Peck Street service area

Figure 2-5 illustrates the general service area and location of combined sewer overflows (CSOs). The black stars represent CSO locations that have been closed by the City. Red stars highlight open CSOs that the City is planning to address as part of their Wet Weather Flow Program.

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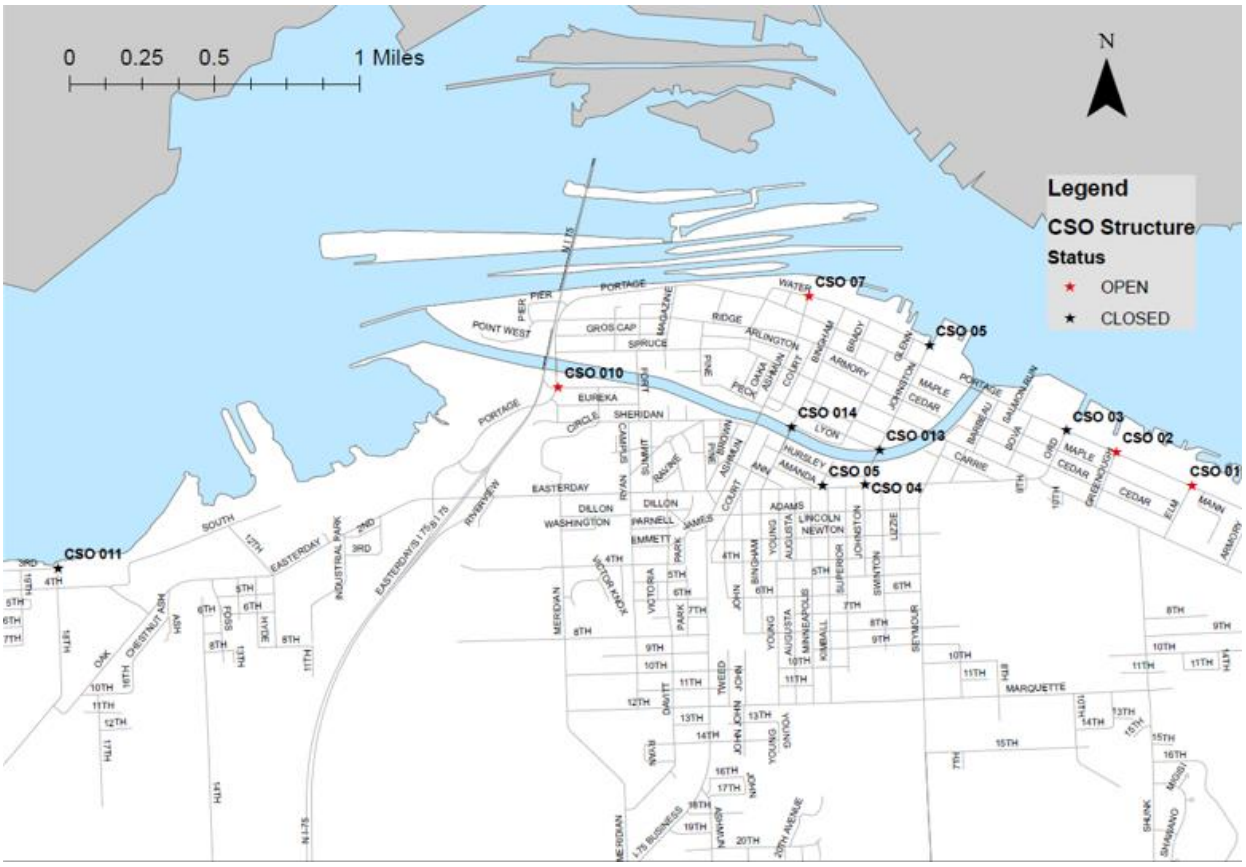

Figure 2-5 Combined System Overflow Locations and Status

2.4.2 WASTEWATER TREATMENT PLANT

The facility includes the following treatment systems:

- Preliminary treatment
- Primary treatment
- Secondary treatment with rotating biological contactors (RBC's)
- Chlorine disinfection
- Anaerobic digestion
- Dewatering and landfilling
- Drying Beds

Figure 2-6 illustrates the WWTP site layout.

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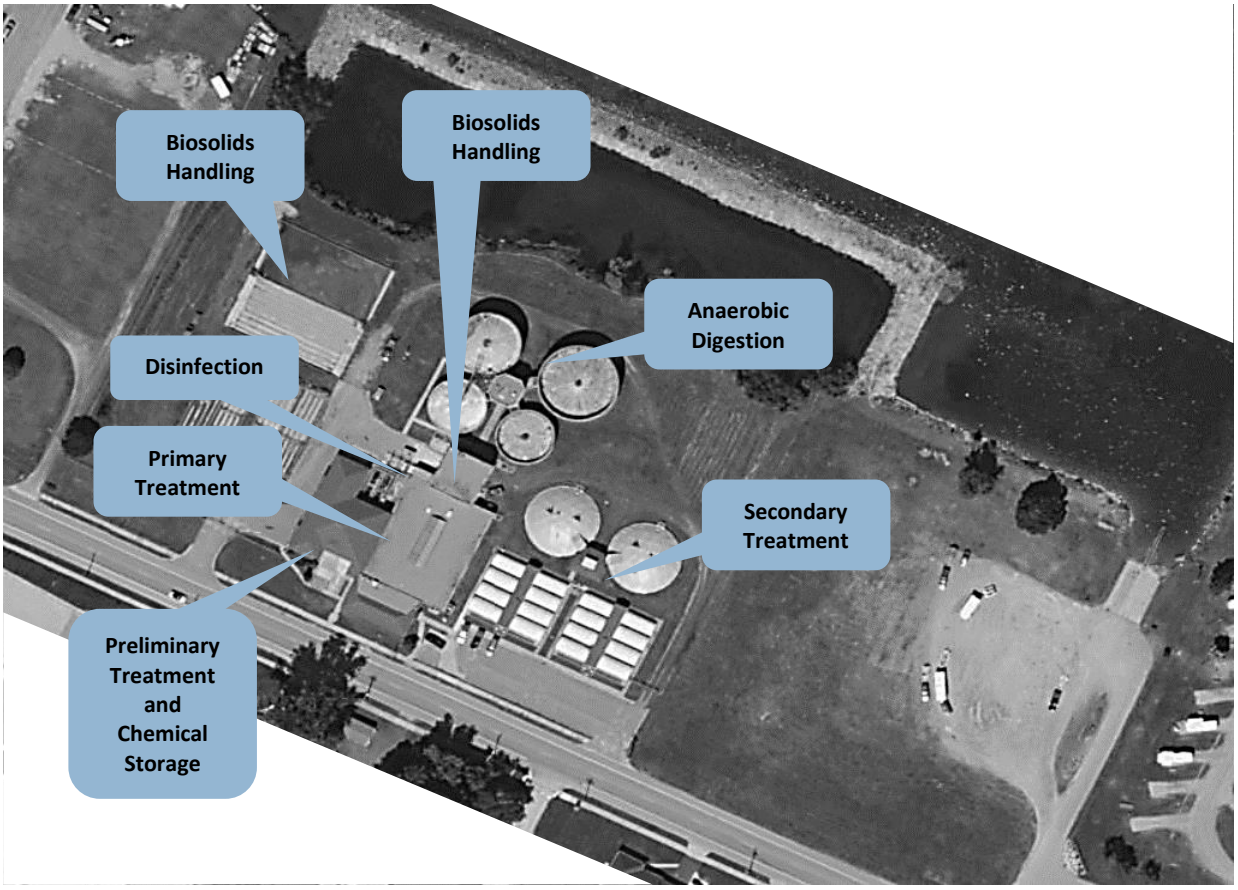

Figure 2-6 Wastewater Treatment Plant Site Layout

2.5 WASTEWATER TREATMENT PROCESSES

Preliminary Treatment

Preliminary treatment includes influent pumping, screening, grit removal, and flow monitoring. All pumping, screening, and grit removal systems have reached the end of their useful life and require replacement.

The pumping, screening, and grit removal processes can process peak flows through the facility documented at approximately 14.0 million gallons per day. The average flow through the facility is 2.8 million gallons per day. The dry weather flow is something less than the average flow. Ten States Standards includes a peak flow multiplier of approximately 2.9 for communities with a population similar to Sault Ste. Marie. Using the multiplier, the facility's peak flow with a separate system is 8.1 million gallons per day. The capacity of the existing pumping and preliminary treatment system is sufficient, particularly with the focus on separating the remaining storm connections and reducing inflow and infiltration.

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Primary Treatment

Primary treatment includes four rectangular primary clarifiers with solids removal mechanisms. The primary clarifiers have recently been rehabilitated and are generally in good condition.

Secondary Treatment

The secondary treatment system includes 16 rotary biological contractors (RBCs) followed by secondary clarifiers. The RBCs were installed in the late 1980s and are nearly 40 years old. The City has invested in bearing replacements and media refurbishments; however, the RBCs are in very poor condition with several failed systems not providing treatment.

The total RBC surface area is 1.8 million square feet distributed across four equivalent channels. The average biological oxygen concentration is less than 100 mg/l, and the facility does not have ammonium removal requirements. The existing system has met current NPDES requirements. Reducing flows and improving the system's reliability should sustain the current performance.

The system includes 2 – 65 foot secondary clarifiers. Recommended Standards for Wastewater Treatment Systems (2014) limits the secondary clarifier overflow rate to 1,200 gallons per day per square foot for rotary biological contactors. Secondary treatment flows must be limited to 8.0 million gallons per day to manage this requirement.

Disinfection

Secondary effluent is disinfected by gaseous chlorine prior to discharge. The effluent chlorine limits generally do not require dechlorination. Sodium bisulfite is available for dechlorination if necessary.

The existing chlorine contact zone does not provide 15 minutes of detention time at the current peak flows. The City is planning to transition away from gaseous chlorine disinfection.

Phosphorus Removal

Phosphorus is removed chemically by adding ferric chloride to the secondary treatment system. The iron–phosphorus precipitant is settled out in the final settling tanks. The existing system has reached its useful life and requires improvements.

Solids Processing

Primary sludge from primary treatment and waste activated biological sludge from secondary treatment are stabilized in anaerobic digesters. Anaerobically digested sludge is stored in secondary digesters before dewatering and landfill disposal. Drying beds are also available for disposal.

The anaerobic digesters have sufficient capacity. The anaerobic digesters are more than 60 years old, and related mechanical and process systems; including digester feed/withdrawal, gas handling, gas safety, mixing, and heating have reached their useful life.

The belt filter presses, and related systems have also reached their useful life and require replacement.

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The City does not use the drying beds currently, as the dewatering and digestion performance has improved due to recent cleaning and maintenance of the digesters.

2.5.1 WASTEWATER TREATMENT FLOWS AND LOADINGS

Table 2-2 summarizes available influent and effluent data from 2018 - 2022. Figure 2-2 illustrates cumulative distributions of influent 5-day carbonaceous biochemical oxygen demand (CBOD5) and total suspended solids (TSS).

Table 2-2 WWTP Influent Flow and Loadings

Parameter		Average	30-Day Max	7-Day Max	Max Day	Data Range
Influent	Flow, MGD	2.8	8.0	10.9	13.9	Oct-18 – July 22
	TSS, mg/L	56	92	99	131	Oct-21 – July 22
	TSS, lb/d	1,209	6,284	3,245	10,040	
	CBOD, mg/L	86	125	125	158	
	CBOD, lb/d	1,871	6,547	5,045	11,646	

The WWTP raw influent wastewater flows and influent concentrations from 2018 – 2022 are shown in Figure 2-1. Figure 2-2 illustrates cumulative distributions of influent 5-day carbonaceous biochemical oxygen demand (CBOD5) and total suspended solids (TSS).

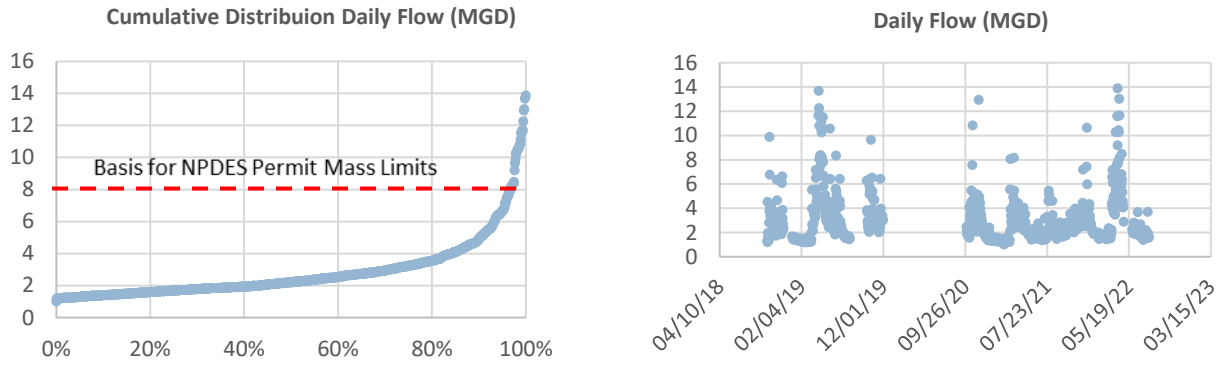

Figure 2-7 WWTP Daily Influent Flow 2018 – 2022 (MGD)

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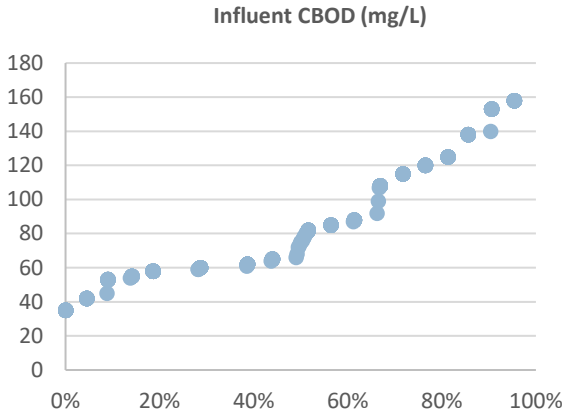

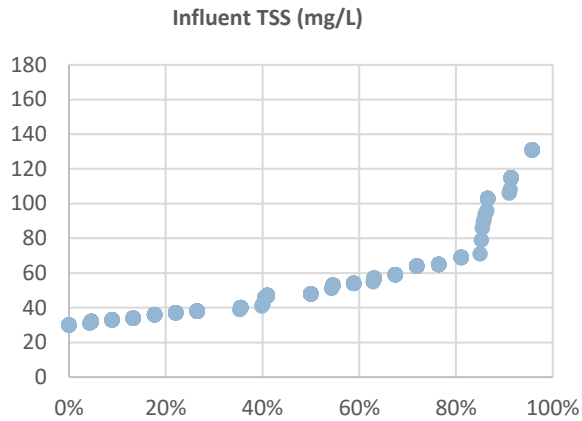

Figure 2-8 WWTP Daily Influent CBOD5 and TSS Concentration Cumulative Distributions (mg/l)

2.5.2 WASTEWATER TREATMENT EFFLUENT

Table 2-3 summarizes WWTP effluent performance from 2018 - 2022. The NPDES permit and associated effluent limits are included in Appendix A. The facility reliably meets the effluent requirements. During periods of wet weather, portions of flow may be diverted around secondary treatment to manage performance. All combined flows are disinfected prior to discharge to surface water.

Table 2-3 WWTP Effluent Performance

Parameter		Average	30-Day Max	7-Day Max	Max Day	Data Range
Effluent	TSS, mg/L	10	16	20	56	Oct-18 – July 22
	CBOD, mg/L	9	16	18	31	
	NH3-N, mg/L	12			32	
	TP, mg/L	0.7	1.2	1.7	1.9	

2.6 NEED FOR PROJECT

The City has certain obligations to close the remaining three combined sewer overflows in the collection system, eliminate the secondary treatment bypasses at the WWTP and certify the Sewer System Project Performance Certification (PPC) by 2029. The proposed projects improve the reliability of the WWTP and position the City to meet both the interim EGLE Corrective Action Plan (CAP) requirements and the requirements included in the City's Wet Weather Control Plan (WWCP).

2.6.1 WASTEWATER TREATMENT PLANT IMPROVEMENTS

National Pollution Discharge Elimination System (NPDES) Permit No. MI0024058 regulates the facility's operation. The wastewater treatment plant was originally constructed in 1959 and included primary treatment and anaerobic digestion. The secondary treatment RBCs and secondary clarifiers were built in 1986. Many systems have experienced failure, most recently including a final settling tank mechanism and

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rotary biological contacts. Most systems at the treatment plant have reached their service life and require repair or replacement.

2.6.2 COLLECTION SYSTEM IMPROVEMENTS

The City had developed a Wet Weather Flow Removal Program to remove excessive Inflow and Infiltration (I&I) from the collection system and eliminate all SSOs and secondary treatment bypasses. The City's program includes the following long-term requirements:

- On or Before January 1, 2027 – Complete all Sanitary Sewer Improvement Projects identified in Sewer System Evaluation Survey (SSES) report
- On or Before November 1, 2027 – Submit Sewer System PPC work plan to certify collection system can transport and treatment plant can treat 25-year, 24-hour storm event
- On or Before February 1, 2029, certify PPC

The City and EGLE have developed a Corrective Action Plan that includes steps toward certifying the PPC. Near term actions that have been completed or are in progress include the following:

- Identify Collection system districts and a flow metering work plan by August 31, 2021. Repeat annually until PPC is met.
- Generate a work plan by district moving forward for the following known sources of Infiltration and Inflow (I/I) including:
    - Submit a work plan, including a schedule to resolve the Bingham & Water project by December 1, 2021.
    - Submit a work plan, including a schedule to resolve roof drain connection contributions by December 1, 2021.
    - Submit a work plan including a schedule to resolve Michigan Department of Transportation catch basins entering the sanitary sewer system by December 1, 2022.

- Analyze flow data to establish a prioritized task list for each district toward the passing criteria of the PPC. Submit a flow metering report for each district by December 31 annually until PPC is met. The report shall include the tasks and projects necessary to remove cost effective I/I for the following calendar year.
- Make necessary improvements to remove Infiltration and Inflow (I/I) to meet PPC by December 31, 2026.

The City's NPDES permit includes additional details relating to the requirements. Many of these actions, including flow monitoring and work plan development, have been routinely communicated to EGLE. These requirements are the foundational elements for the projects proposed as part of this planning document.

2.7 PROJECTED FUTURE NEEDS

The Wet Weather Flow Removal Plan and PPC certification goals are to separate stormwater flows from the sanitary sewer system, eliminate CSOs and SSOs and eliminate secondary treatment bypasses at the WWTP. The City has invested significant resources toward achieving these goals. Projects in this planning

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document are intended to further the City towards PPC certification by reducing the volume of wet weather flows transported by the collection system to the WWTP. As improvements are made and flows are monitored in the collection system, additional enhancements such as wet weather storage may be necessary to achieve wet weather goals and PPC certification. The proposed improvements also assume NPDES effluent requirements remain similar to the existing permit. The City will continue to work with EGLE and other regulatory authorities to meet water quality objectives.

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3. ANALYSIS OF ALTERNATIVES

This section identifies and evaluates various alternatives to replace equipment and improve the WWTP and collection systems. The improvements include a basis of design for each alternative and a present worth economic analysis of the alternatives. Detailed cost estimates for all alternatives can be found in Appendix B.

3.1 WWTP IMPROVEMENTS

Figure 3-1 illustrates the general areas for improvements at the WWTP. The City's updated Asset Management Planning document is used as a source for repair and replacement recommendations. This document is included as Appendix B.

Figure 3-1 WWTP Improvements

3.1.1 ALTERNATIVE 1 – IMPROVE WASTEWATER TREATMENT PLANT FACILITIES

1 Preliminary Treatment Improvements

Preliminary treatment equipment will be replaced or upgraded to improve reliability and efficiency.

Influent Pumping System – Refurbish/replace existing screw pumps including isolation gates, pumps, motors, gearboxes, bearings, and greasing system.

Influent Screening System – Replace the existing screening system and sluice gates with new isolation gates and screening system. Consider modifications to the structure, including finer screening and updates to manual bypass.

Grit removal – Improve grit removal and grit washing system, including modifications to the structure.

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Scum Handling – Coordinate scum-handling improvements with the dewatering system, including a concentration tank in preliminary treatment. Consider pumping scum to anaerobic digestion if screening is improved.

Facility improvements including instrumentation, controls, electrical and National Fire Protection Association (NFPA) 820 compliance, including room separations and ventilation.

2 Secondary Treatment Improvements

Secondary treatment equipment will be replaced or upgraded to improve reliability and efficiency.

Rotary Biological Contactors (RBC) – Refurbish/replace existing rotary biological contactors.

RBC Blowers – Replace existing RBC blower systems.

Secondary Clarifiers – Replace existing final settling tank mechanisms.

Waste Sludge Pumps – Replace existing waste sludge pumps.

Facility improvements including instrumentation, controls, electrical and National Fire Protection Association (NFPA) 820 compliance, including room separations and ventilation.

Certifying the PPC requires eliminating the in-plant diversion around secondary treatment. Collection system improvements are planned to reduce flows received at the WWTP to the point where all flows can reliably be processed through secondary treatment.

The project does not anticipate future effluent limits for ammonia or modified effluent limits for biological oxygen demand and total suspended solids over the 20-year planning period. If effluent limits become more stringent at some point in the future, an alternate secondary treatment technology (oxidation ditch and secondary clarifiers, for example) could be provided. The City owns property adjacent to the existing RBC system with space for improvements.

3 Disinfection System Improvements

Provide a new disinfection system to treat plant effluent prior to discharge.

Existing electrical equipment could be relocated to the current disinfection room once the disinfection equipment has been cleared out. This electrical room would not be a classified space per NFPA 820.

4 Anaerobic Digestion System Improvements

Replace or update anaerobic digestion systems to improve reliability and efficiency.

Anaerobic digester structures – Clean the tanks and refurbish or replace fixed and floating covers.

Digester gas utilization - Consider replacing a floating cover with a gasholder cover for gas storage. Replace the boiler system to utilize digester gas. Update campus wide heating system to improve performance and efficiency.

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Digester gas safety – Replace/refurbish digester gas safety systems, including pressure relief/vacuum valves, digester pressure monitoring and management, gas piping, and digester gas flare system.

Digester gas feed and withdrawal – Replace and automate digester feed and withdrawal pumping systems.

Digester mixing system – Replace digester gas mixing systems in primary digesters

Facility improvements including instrumentation, controls, electrical and National Fire Protection Association (NFPA) 820 compliance including room separations and ventilation. Refurbish digester structures, including the digester facade and coping.

5 Biosolids Improvements

Replace or update existing dewatering, polymer feed, and material handling equipment. Remove the elevator and improve maintenance access. Replace scum handling, including concentration tank in preliminary treatment. Consider pumping scum to anaerobic digestion if screening is improved. Provide facility improvements including instrumentation, controls, electrical and National Fire Protection Association (NFPA) 820 compliance including room separations and ventilation and replace electrical distribution.

6 Site Improvements

Provide site improvements including electrical distribution, new SCADA system, and network and general facility improvements.

Electrical distribution – Replace existing electrical distribution and relocate to address building classification issues and improve reliability. Coordinate improvements with generator and automatic transfer.

SCADA – Provide fiber communications backbone and new SCADA system to coordinate with individual unit process SCADA improvements and future connection to remote sites.

General Facility Improvements – Replace doors, repair brick facades, and address deteriorating buildings around the site.

Monetary Evaluation

Table 3-1 summarizes costs for improvements considered as part of Alternative 1. The improvements are not anticipated to significantly affect the current operations costs associated with the facility. Detailed costs are included in Appendix C.

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Table 3-1 WWTP Improvement Cost Summary

Alternative	Initial Capital Cost	Total Annual Cost	Present Worth of Annual O&M	Salvage Value	Total Present Worth
Preliminary Treatment	$8,885,000	$77,300	$1,467,700	$408,000	**$9,945,000**
Secondary Treatment Improvements	$7,918,000	$225,200	$4,276,000	$0	**$12,194,000**
Disinfection System	$7,276,000	$9,500	$180,400	$1,377,000	**$6,079,000**
Electrical, I&C and Site Improvements	$3,680,000	$0	$0	$175,000	**$3,505,000**
Biosolids Handling	$4,279,000	$31,700	$601,900	$0	**$4,881,000**
Anaerobic Digester	$18,183,000	$0	$0	$292,000	**$17,891,000**

3.1.2 ALTERNATIVE 2 – OPTIMIZING PERFORMANCE OF EXISTING SYSTEM

The City has optimized the performance of the existing systems to the extent possible. The system reliably treats up to the facility's capacity and meets NPDES requirements. Aging infrastructure and equipment failures present the greatest need. This alternative is not viable.

3.1.3 ALTERNATIVE 3 – NO ACTION

No action results in the continued deterioration of the existing equipment and structures. No action may result in the following:

- Excursions and violations of the NPDES permit
- Continued sanitary and combined sewer impacts to the environment and water quality
- Increased risk of customer basement backups
- Inability to meet the City's Wet Weather Control Plan
- Increased costs to operate and maintain the facilities
- Increased safety risks to City staff.

No action is not a viable alternative.

3.1.4 ALTERNATIVE 4 – REGIONALIZATION

Sault Ste. Marie collects and treats wastewater for the City and surrounding areas. The closest municipal treatment plant is Kinross Charter Township more than 10 miles away. Kinross has trickling filters and limited capacity to treat additional flows. Regionalization is not a viable alternative.

3.1.5 WWTP IMPROVEMENTS ALTERNATIVES ANALYSIS

No action and regionalization are not viable alternatives. Improvements to the WWTP are recommended as the selected alternative. Capital costs and environmental impacts for the WWTP improvements were evaluated as part of the project planning.

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3.1.6 ENVIRONMENTAL EVALUATION

The environmental impacts for each alternative were considered in Table 3-2.

Table 3-2 Environmental Impacts of Alternatives

Alternative		Description
1	Improve Wastewater Treatment Facility	Improving the existing wastewater treatment facility has limited impact on the environment as improvements are either contained to the existing facilities and/or wastewater treatment site.
2	Optimizing Performance of Existing System	These alternatives have the least environmental impact but are not feasible to address both needs for aging infrastructure, reliable NPDES compliance, and future certifications.
3	No Action	
4	Regionalization	This alternative is the least feasible and has the most significant environmental impact, requiring long pipelines and additional pumping.

3.2 COLLECTION SYSTEM IMPROVEMENTS

The City is planning collection system improvements to close the remaining storm sewer connections to the sanitary sewer system and achieve PPC certification. The work plan to address the storm connections and known sources of inflow and infiltration are as follows. Figure 3-2illustrates the general location of the improvements. The City plans to monitor the flow and collection system performance following the closures and plan future improvements accordingly, future and current projects are as follows.

3.2.1 PLANNED PROJECTS

1. Meridian Street, Eureka Street and Peck Street- This separation is included in the Peck and Meridian improvements that are part of the proposed CWSRF project improvements. The project will eliminate sanitary and storm sewer cross connections on Meridian/Portage at Eureka and Peck and eliminate the sanitary sewer overflow (CSO 010).
2. Power Canal – Replace the 24-inch main sewer through town that services the West side of town. The pipeline offers a potential location for sanitary overflow storage to alleviate SSO's and the burden on WWTP.
3. I-500 Sewer – Replace 500 linear feet of 12-inch sanitary sewer from the I-500 track to Blair Hastings Trailer Park. The improvements will reduce known sources of inflow and infiltration.
4. McCandless/Ravine Street Sewer – Replace 550 linear feet of 15-inch sanitary sewer. This project addresses known areas of inflow & infiltration and collection system backups.
5. E 20TH Ave / Minneapolis Woods Sewer – Replace 850 linear feet of 12-inch sanitary sewer. This project addresses capacity and age issues.
6. Catch basin connections – The proposed catch basin separations are at Gros Cap Ave, Magazine St/W Spruce St, and Seymour St.

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3.2.2 CURRENT PROJECTS

Bingham and Water CSO – The city currently has a project under design development, projected construction 2024 to address needs in this area and separate the storm sewer from the sanitary sewer. The improvements are coordinated with the Army Corps of Engineers. This will allow the closure of one of three CSO's.

Catch basin connections – The City is coordinating separations with Michigan Department of Transportation (MDOT) that are not part of the CWSRF project planning. These separations are on E. Portage Ave @ Elm St & Greenough St, M-129(Ashmun St) 20th Ave intersection, BS-I 75 (Ashmun St) Power Canal Bridge.

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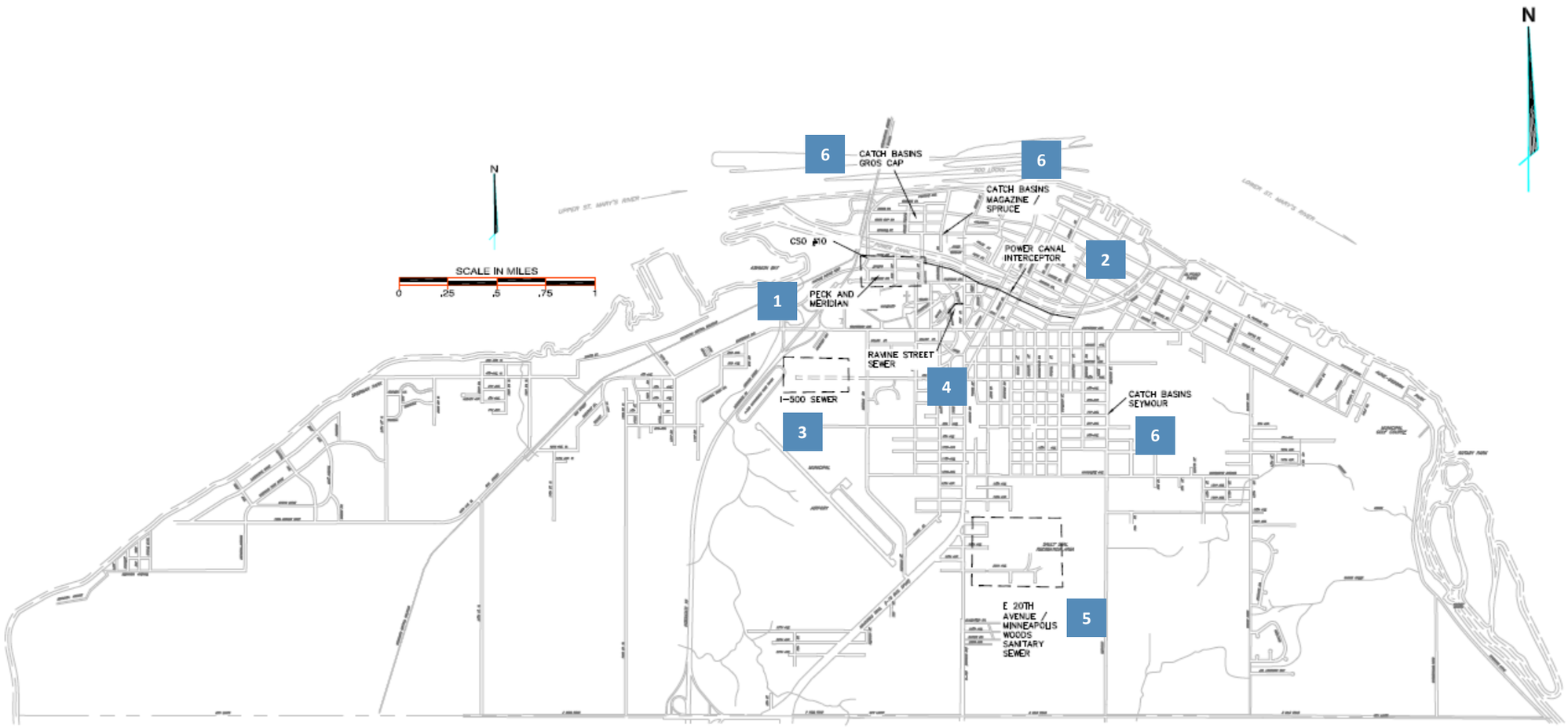

Figure 3-2 Collection System Improvements Site Overview

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3.2.3 ALTERNATIVE 1 – COLLECTION SYSTEM CORRECTIVE ACTION PLAN IMPROVEMENTS

1 **Peck and Meridian**

The intersection at Peck and Meridian has an active sanitary sewer overflow. The project will replace approximately 3,000 linear feet of 24-inch sanitary sewer and increase the size of the storm sewer to meet 10-year storm capacity requirements. Water mains will be replaced and the street will be reconstructed. The project will eliminate sanitary and storm sewer cross connections on Meridian/Portage at Eureka and Peck and eliminate the sanitary sewer overflow (CSO 010). Figure 3-3 illustrates the proposed improvements.

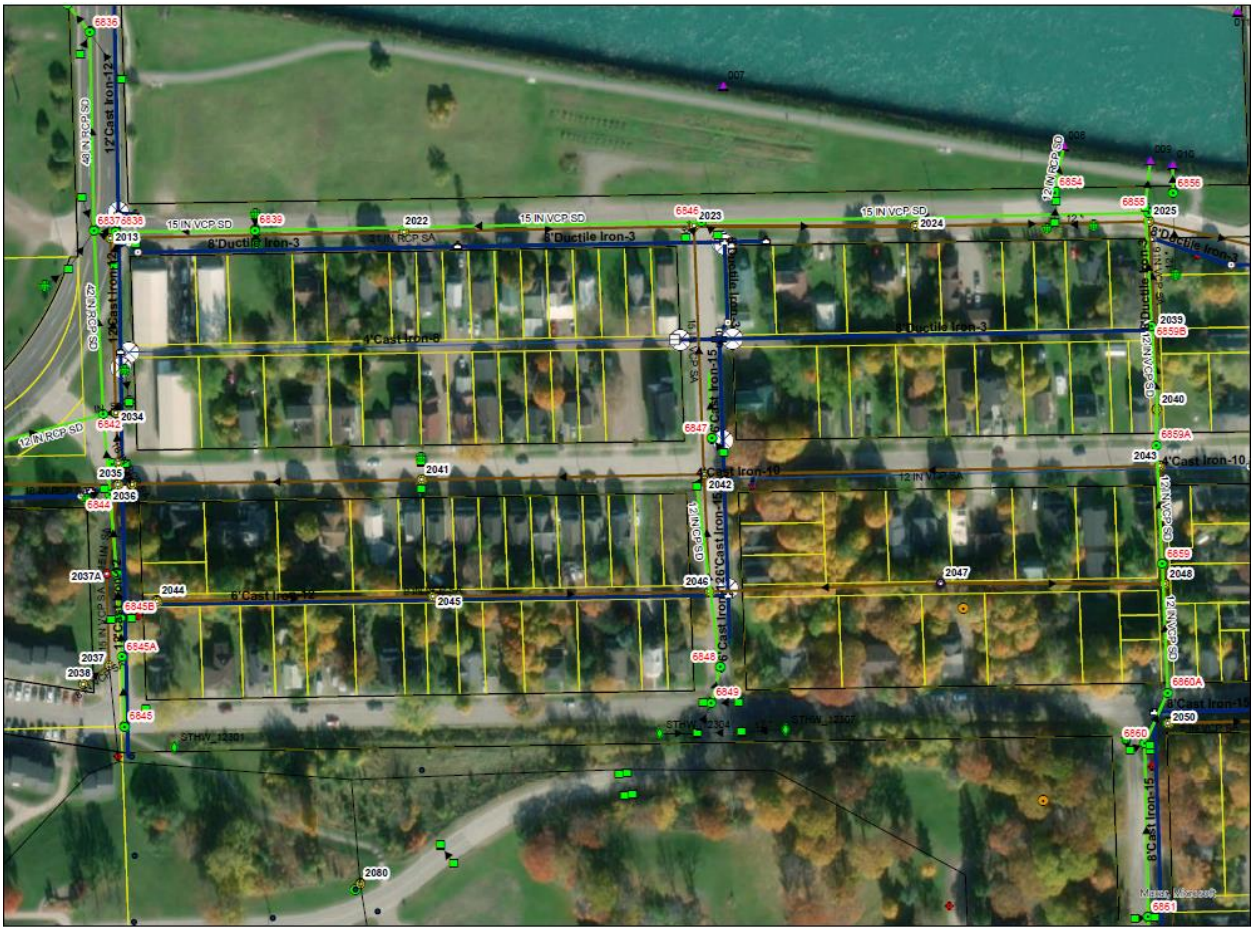

Figure 3-3 Peck and Meridian Improvements Site Map

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2 Power Canal

Replace the 24-inch main sewer through town that services the West side of town. The piping has had numerous collapses and experiences large flows during wet weather. The pipeline offers a potential location for sanitary overflow storage to alleviate SSO's and the burden on WWTP contingent on the impact of other projects towards the PPC certification. The proposed improvements are illustrated in Figure 3-4.

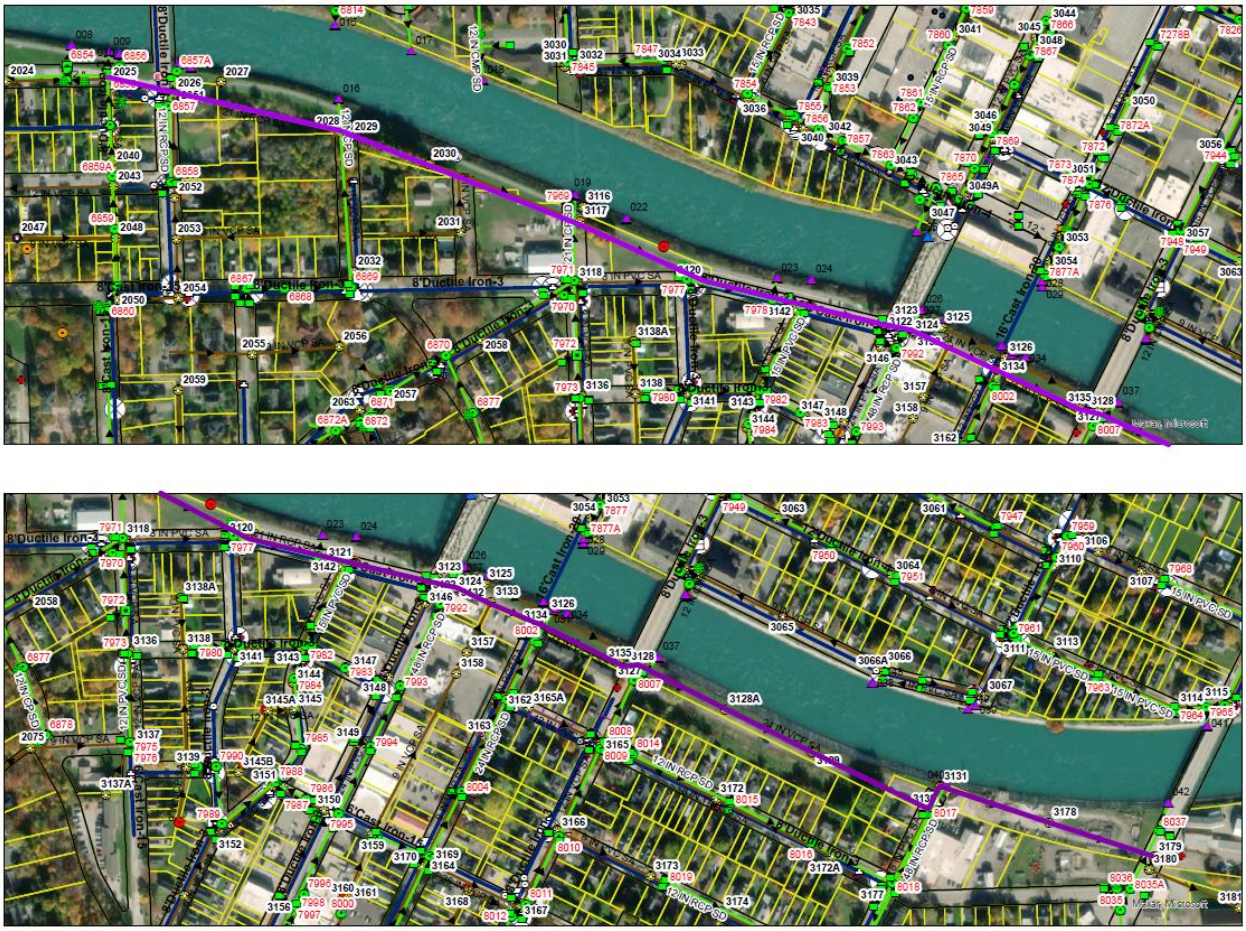

Figure 3-4 Power Canal Improvements Site Map

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3 **I-500** Raceway

Replace 500 linear feet of 12-inch sanitary sewer from the I-500 track to Blair Hastings Trailer park. The sewer pipe was installed in the 1960's. The stretch is being abandoned with the 8th Ave project. The improvements will reduce known sources of inflow and infiltration and service the I-500 track and Holiday Inn. Figure 3-5 illustrates the proposed improvements.

Figure 3-5 I-500 Raceway Improvements Site Map

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4 McCandless / Ravine Street

Replace 550 linear feet of 15-inch sanitary sewer. Upsize the water main from 4-inch to 8-inch (part of alternate funding). This project connects recent improvements to the East and the West, addressing known areas of inflow and infiltration collection system backups. Figure 3-6 illustrates the proposed improvements.

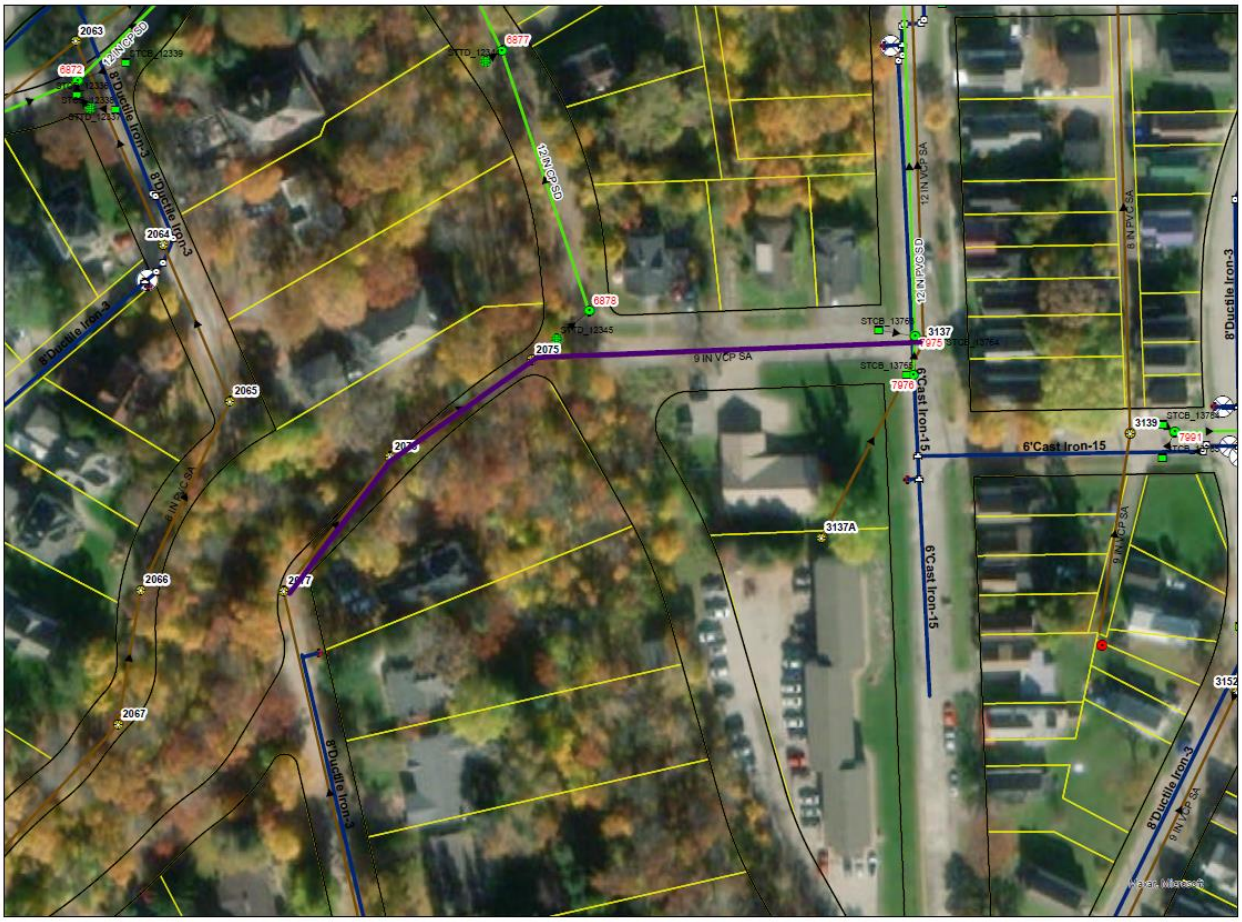

Figure 3-6 McCandless / Ravine Street Improvements Site Map

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5 16th and 20th Avenue / St. John

Replace 850 linear feet of 12-inch sanitary sewer.

Figure 3-7 16th and 20th Avenue / St. John Improvements Site Map

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6 Stormwater Catch Basin Separations

The proposed catch basin separations are at Magazine/Spruce, Gros Cap Avenue and Seymour.

Figure 3-8 Stormwater Catch Basin Separations Site Map

Collection System Modeling - The project planning process also provides additional steps to achieve PPC certification, including additional flow monitoring and comprehensive modeling of the sanitary sewer system.

3.2.3.1 Monetary Evaluation

Table 3-3 summarizes costs for improvements considered as part of Alternative 1. Because there are no operational costs, present worth was not calculated. Detailed costs are included in Appendix C.

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Table 3-3 Collection System Improvements Cost Summary

Name	Description	Initial Cost
Peck and Meridian	Replace 3000 linear feet of 24-inch sanitary sewer pipe and increase the size of the stormwater pipe. This project will close sanitary sewer connections with the storm sewer.	$5,180,000
Power Canal	5000 linear feet of 24-inch Main sewer through town that services the west side of town is in rough shape. Dates to 1950's has had numerous collapses and large flows. Potential to add overflow storage to alleviate SSO's and burden on WWTP. Address sanitary sewer capacity issues in the area and reduce known inflow and infiltration.	$975,000
I-500 Raceway Sewer	Replace 500 linear feet of 12-inch sanitary sewer from I-500 track to Blair Hastings Trailer park. Project addresses sanitary sewer collapse and reduces known sources of inflow and infiltration.	$790,000
McCandless / Ravine Street	Replace 550 linear feet of 15-inch sanitary sewer pipe. This project connects previous projects to the East and West and addresses known capacity and inflow and infiltration issues.	$830,000
6th and 20th Avenue / St. John	Replace 850 linear feet of 12-inch sanitary sewer.	$831,000
Stormwater Catch Basin Separations	The proposed catch basin separations are at Magazine/Spruce, Gros Cap Avenue and Seymour.	$572,000
Collection System Modeling	Following improvements, the City is planning additional collection system flow monitoring and modeling of the collection system to consider the impact of the modifications and the potential for additional needs to support PPC.	$300,000

3.2.4 ALTERNATIVE 2 – OPTIMIZING PERFORMANCE OF EXISTING SYSTEM

The improvements address storm sewer connections with the sanitary sewer and areas of limited capacity and high volumes of infiltration and inflow. The needs for the collection system are not address through optimizing therefore this alternative is not considered viable.

3.2.5 ALTERNATIVE 3 – NO ACTION

No action limits the City's ability to comply with their Wet Weather Control Plan and PPC. No action also means that the collection system will continue to deteriorate, and CSOs and SSOs will continue to flow into surface water, negatively affecting water quality. This alternative also results in a higher probability of basement backups.

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3.2.6 ALTERNATIVE 4 – REGIONALIZATION

Regionalization is not a viable alternative. The closest municipal treatment plant is Kinross Charter Township, more than 10 miles away. Pumping to an alternative location does not address the sewer separations and related work necessary to eliminate SSOs and certify PPC.

3.2.7 ENVIRONMENTAL EVALUATION

The environmental impacts for each alternative were considered in Table 3-4.

Table 3-4 Environmental Impacts of Alternatives

Alternative		Description
1	Collection System Corrective Action Plan Improvements	Proposed improvements to the collection system are generally limited to improvements to existing pipes in existing streets and right of ways owned by the City or other agencies.
2	Optimizing Performance of Existing System	These alternatives have the least environmental impact but are not feasible to address the City's Corrective Action Plan and PPC.
3	No Action	
4	Regionalization	This alternative does not address the collection system needs.

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4. SELECTED ALTERNATIVES

4.1 DESCRIPTION OF SELECTED ALTERNATIVES

The following projects are recommended for construction based on a review of both economic and non-economic factors. The project considers a 20-year planning horizon. The City recognizes that EGLE approval of this report will be valid for five years. The City will re-evaluate this Plan on a year-by-year basis during the annual budgeting process.

4.1.1 WWTP IMPROVEMENTS – ALTERNATIVE NO. 1

The selected project improvements are described in Section 3.1 WWTP Improvements Alternative 1 and summarized in Table 4-1. The table identifies specific improvement elements.

Table 4-1 WWTP Alternative No. 1 Improvements

Name	Description
Preliminary Treatment	▪ Five screw pump rehabilitations ▪ Influent screens ▪ Gates and valves ▪ Influent grit removal ▪ Scum removal ▪ Structure and other related improvements to accommodate processes ▪ NFPA compliance
Secondary Treatment Improvements	▪ Secondary clarifier mechanism replacements ▪ RBC replacements (shafts, media, blowers, etc.) ▪ Pumps and systems ▪ NFPA compliance
Disinfection System	▪ New disinfection system ▪ Remove gaseous chlorine disinfection
Electrical, I&C and Site Improvements	▪ Site electrical improvements ▪ New electrical distribution ▪ Site I&C communications and control distribution ▪ Building structural repairs (doors, brick improvements, etc.) ▪ NFPA compliance (not covered in individual projects)
Biosolids Handling	▪ Replace two BFPs with a single BFP ▪ Polymer makeup system ▪ Scum processing system improvements ▪ Pump system replacement
Anaerobic Digester	▪ Replace/rehabilitate covers ▪ Improve mixing ▪ Improve digester feed and withdrawal ▪ Improve heating and gas safety and utilization

4.1.2 DESIGN PARAMETERS

The general design parameters for the proposed improvements are summarized in Table 4-2. The design parameters align with Recommended Standards for Wastewater Treatment Systems (2014). The general

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areas for wastewater treatment processing improvements are illustrated in Figure 4.1 and Figure 4-2. The improvements are designed to achieve compliance with the current NPDES requirements.

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Table 4-2 WWTP Improvements Design Parameters

Unit Process	Unit	Criteria	Existing Capacity			Proposed Design Capacity			Notes
			Installed	Unit Capacity	Firm Capacity	Installed	Unit Capacity	Firm Capacity	
RWW Pumps	mgd	Peak	5	4.0	16.0	4	4.0	16.0	Refurbish existing pumping systems
Influent Screens	mgd	Peak	1	16.0	16.0	1	16.0	16.0	Replace existing screening systems and channels
Grit Removal	mgd	Peak	2	6.0	8.0	1	16.0	16.0	Replace existing grit removal and washing systems
Rotary Biological Contactor	ppd SBOD	Average Day							Refurbish existing systems including 1,800,000 square feet of surface area and blowers
Final Settling Tanks	mgd	Peak	2	4.0	8.0	2	4.0	8.0	Peak flow based on clarifier overflow rate = 1,200 gallons/day/square feet
Anaerobic Digester	lb/d	Average Day	2	6,280	6280	2	6,280	6280	Volatile solids loading rate = 80 lb vs/1,000 cubic feet
Dewatering	lb solids/ hour	Maximum Month	2	1,500	3,000	1	1,500	1,500	Replace existing dewatering and material handling systems

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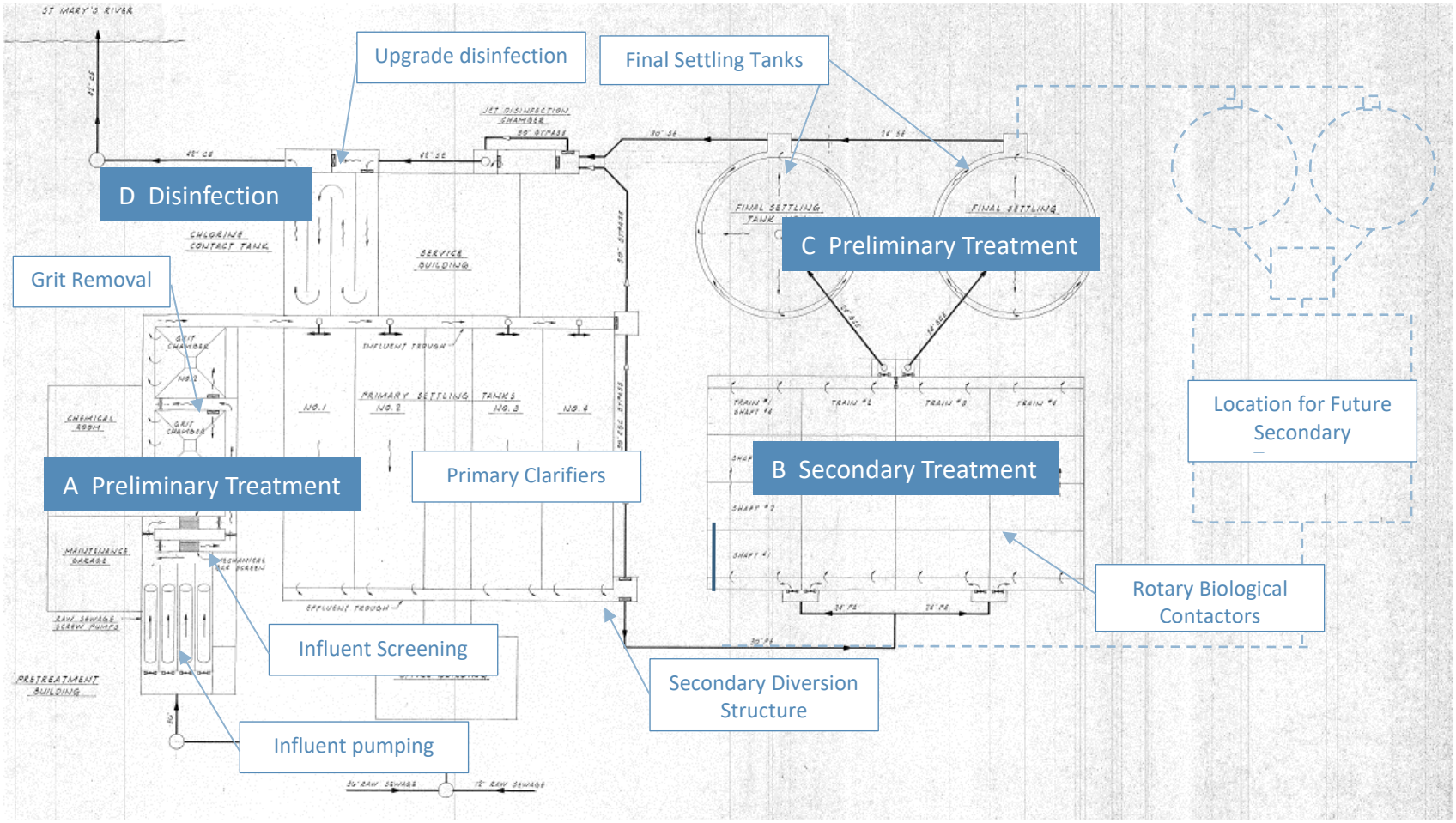

Figure 4-1 WWTP Proposed Improvements – Liquids Treatment

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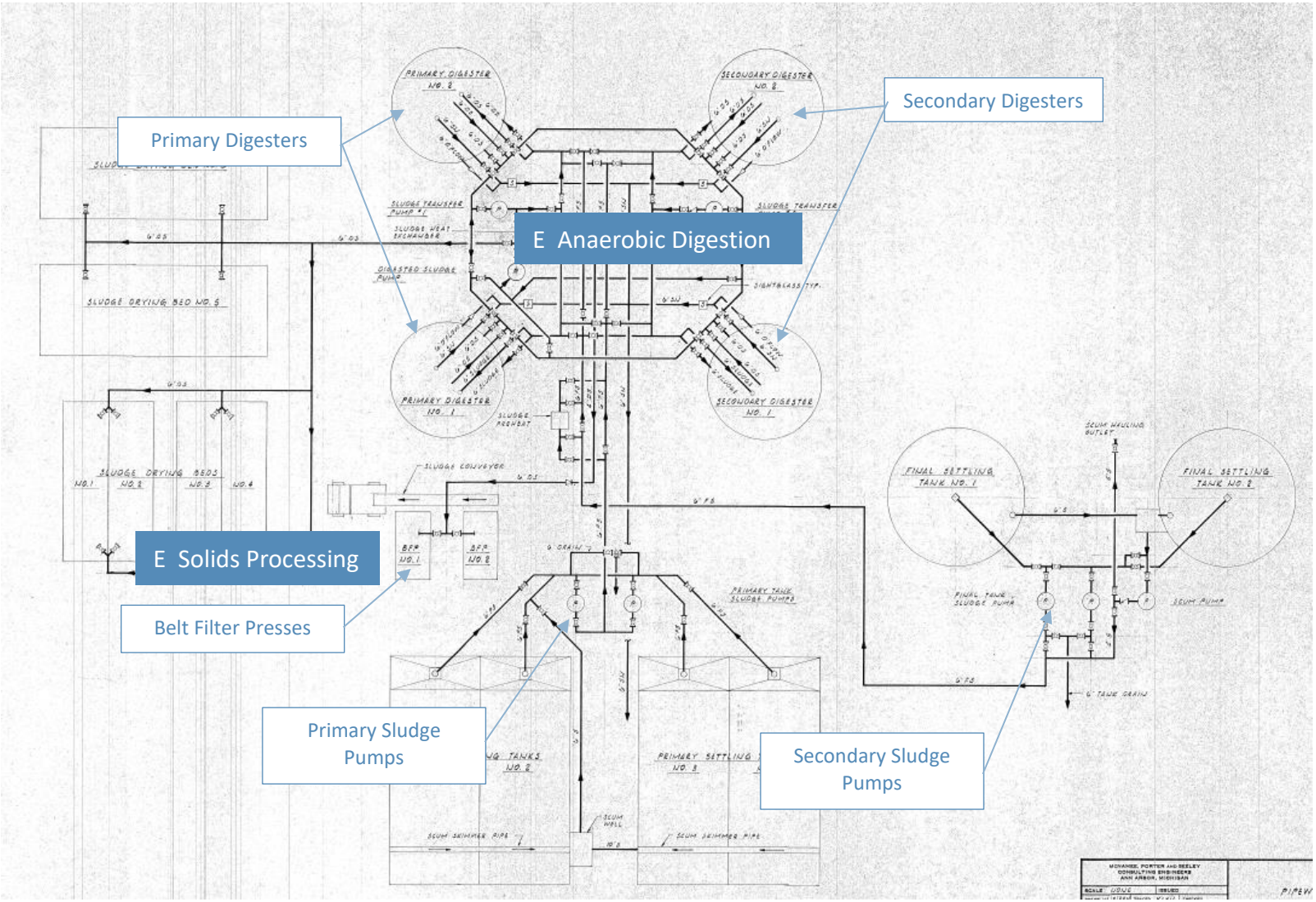

Figure 4-2 WWTP Proposed Improvements – Solids Treatment

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4.1.3 USEFUL LIFE

Mechanical and electrical equipment will have a 20-year replacement life when brand new or refurbished. Structural improvements will have an 80-year useful life. Instrumentation and control equipment's useful life generally ranges from 5 – 15 years. These systems are a relatively small part of the overall planned project.

4.1.4 PROJECT MAPS

General unit process locations are included in Figure 4.1 and Figure 4-2.

4.1.5 WATER AND ENERGY EFFICIENCY

Water and energy conservation efforts were evaluated as part of the project. Most mechanical systems will specify variable frequency drives to align energy use with process requirements. Motors will be specified for premium efficiency. Mechanical systems will be automated to conserve water use to the extent practical. Future anaerobic digester improvements plan for utilizing digester gas for digester heating.

4.1.6 SCHEDULE FOR DESIGN AND CONSTRUCTION

Table 4-3 summarizes a preliminary schedule for CWSRF 2024 (quarter 4) financing including design, EGLE coordination, and construction. The City does not anticipate permitting, seasonal restrictions, mitigation of environmental impacts, or intergovernmental coordination to materially affect the schedule.

Table 4-3 Proposed Schedule for Design and Construction (Assuming 4th Quarter Loan Closing)

Task No.	Description	Schedule
1	CWSRF Project Plan Submittal	May 1, 2023
2	Preliminary Design	March – August, 2023
3	EGLE Priority List	September 2023
4	Detailed Design	September – May, 2024
5	Draft Bid Plans and Specifications to EGLE	January 2024
6	Bid Ad Published	May 2024
7	Loan Closing	August 2024
8	Notice to Proceed	September 2024
9	Construction	September 2024 – March, 2026

Figure 4-3 illustrates the initial planning concept for project priorities for the City. The priorities are mostly driven by the ability of the City to fund the improvements and are likely to evolve as the planning progresses.

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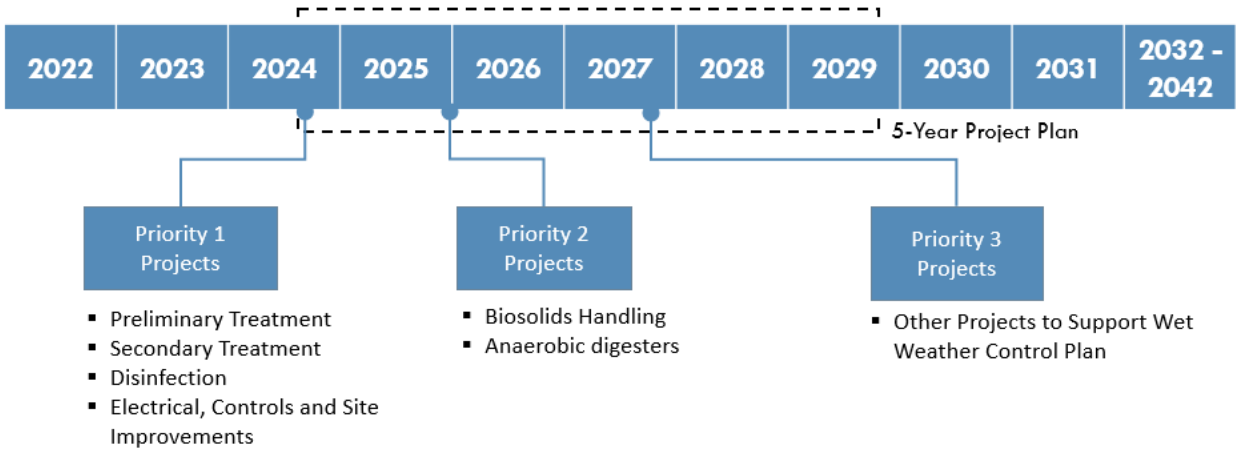

Figure 4-3 WWTP Five Year Project Plan Priorities

4.1.7 COST SUMMARY

Planned WWTP improvements for the fiscal year 2024 and future years are summarized in Table 4-4.

Table 4-4 Planned WWTP Improvements Cost Summary

Project		Fiscal Year	
No.	**Name**	**2024**	**2025 - 2029**
1	Preliminary Treatment	$8,885,000	
2	Secondary Treatment	$7,918,000	
3	Disinfection System	$7,276,000	
4	Electrical, I&C and Building Improvements	$3,680,000	
5	Biosolids Handling		$4,279,000
6	Anaerobic Digester		$18,183,000
	Bonding and Administration	$100,000	$100,000
	Contingency (6%)	$1,672,000	$1,354,000
Total Estimated Cost for Improvements		**$29,531,000**	**$23,916,000**

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The modeled customer impact relating to the proposed improvements are summarized in Table 4-5.

Table 4-5 Selected WWTP Improvements Cost Summary

Project		Fiscal Year	
No.	**Name**	**2024**	**2025 - 2029**
1	Preliminary Treatment	$8,885,000	
2	Secondary Treatment	$7,918,000	
3	Disinfection System	$7,276,000	
4	Electrical, I&C and Building Improvements	$3,680,000	
5	Biosolids Handling		$4,279,000
6	Anaerobic Digester		$18,183,000
Bonding and Administration		$100,000	$100,000
Contingency (6%)		$1,672,000	$1,354,000
Total Improvements		**$29,531,000**	**$23,916,000**

4.1.8 IMPLEMENTABILITY

The City project does not require acceptance or agreement by neighboring communities or inter-jurisdictional agreements.

4.2 COLLECTION SYSTEM IMPROVEMENTS

The selected project consists of improvements described in Section 3.2 Collection System Improvements Alternative 1.

4.2.1 DESIGN PARAMETERS

Water and energy conservation efforts were evaluated as part of the project. Water and energy conservation efforts will be developed and submitted with the Part III application.

4.2.2 USEFUL LIFE

Mechanical and electrical equipment will have a 20-year replacement life when brand new or refurbished. Structural improvements will have an 80-year useful life. Instrumentation and control equipment's useful life generally ranges from 5 – 15 years. These systems are a relatively small part of the overall planned project.

4.2.3 PROJECT MAPS

Figure 3-2 illustrates the general locations of the improvements. Section 3 provides site maps of the proposed improvements.

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4.2.4 WATER AND ENERGY EFFICIENCY

The collection system improvements have limited opportunities for water and energy conservation.

4.2.5 SCHEDULE FOR DESIGN AND CONSTRUCTION

The schedule for collection system improvements is anticipated to follow the schedule outlined in Table 4-3.

The projects planned for fiscal year 2025, along with future projects, are illustrated in Figure 4-4.

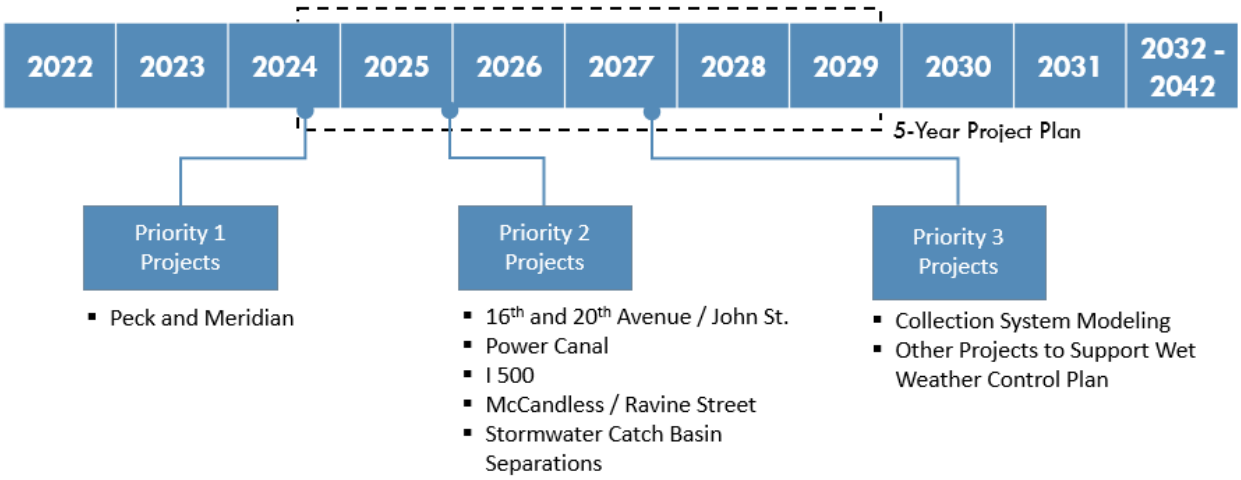

Figure 4-4 Collection System Five Year Project Plan Priorities

4.2.6 COST SUMMARY

Planned collection system improvements for the fiscal year 2024 and future years are summarized in Table 4-6. The costs include the sanitary and storm sewer repair/replacement costs.

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Table 4-6 Selected Collection System Improvements Cost Summary

Project		Fiscal Year	
No.	**Name**	**2024**	**2025 - 2029**
1	Peck and Meridian	$5,180,000	
2	Power Canal		$975,000
3	I-500 Sewer		$790,000
4	McCandless/Ravine St		$830,000
5	16th and 20th Avenue/John St		$831,000
6	Stormwater Catch Basin Separations		$572,000
7	Collection System Modeling		$300,000
Bonding and Administration			
Contingency (6%)		$311,000	$227,000
Total Improvements		**$5,491,000**	**$4,005,000**

4.2.7 IMPLEMENTABILITY

The City project does not require acceptance or agreement by neighboring communities or inter-jurisdictional agreements.

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5. ENVIRONMENTAL AND PUBLIC HEALTH IMPACTS

5.1 GENERAL

The proposed WWTP projects take place inside the existing treatment facility area. Planned collection system improvement projects generally occur in existing streets and the current City right-of-way.

Implementation of the recommended improvements will produce beneficial as well as adverse effects on the environment in the Sault Ste Marie area. These impacts are discussed in the following sections. Consistent with Appendix 1 of the Project Planning Document Preparation Guidance for projects that take place within the existing treatment facility or existing streets, only impacted resources are included in the environmental evaluation and environmental impact sections.

5.1.1 AGENCY NOTIFICATIONS

The agencies listed below have been notified of this project for the appropriate sign-off.

- State Historic Preservation Office (SHPO)
- Tribal Historic Preservation Officers (THPO)
- U. S. Fish & Wildlife Services
- Michigan Natural Features Inventory (MNFI)
- Michigan Dept. of Environmental Quality (Water Resources Division) – Land Water Interfaces

Appendix D provides copies of the transmittal information sent to these agencies and the responses received.

These requests are in progress. Responses will be added to the document as received.

5.2 DIRECT IMPACTS

Construction Impacts

Construction activities result in certain short-term impacts, which cannot be avoided. The existing vegetation along the street reconstruction routes and at the WWTP will be disturbed by excavation, grading, and trenching. The potential of runoff pollution to adjacent water bodies, although controllable, is not entirely avoidable. The potential for runoff will not affect the drinking water supply due to the size of the St. Mary's River and the distance between the drinking water intake and the proposed construction locations.

This project will not affect the community's archaeological, historical, or cultural resources. In addition, no change in wildlife species and population at the treatment facility site are anticipated since no additional land space is being used for the water and wastewater treatment facility upgrades.

Dewatering activities may be necessary for certain construction activities at the WWTP and collection system. The City's relative location to the St. Mary's river requires dewatering on many construction projects. Proposed improvements in this document will be managed consistent with the City's requirements and standard industry practice.

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To mitigate any reasonable environmental concerns, the City requires the construction contractors to implement proper soil erosion control measures and be diligent in controlling dust along the water and sewer main routes. These controls will be specified in the contract documents and enforced by the City's on-site construction inspection personnel.

Operational Impacts

Trucks and other construction equipment contribute to noise, dust, and emissions to the air. Such adverse effects are unavoidable if the improvements are to be made and would be present only during the project's construction phase. Residents of the area should not experience any major traffic inconveniences. There should not be any major blockage of arterial roads. Delivery of construction equipment and material may result in minor traffic inconveniences for short periods.

Social Impacts

The projects will increase costs to users. The proposed projects are generally related to meeting regulatory requirements, eliminating sanitary sewer overflows, and improving water quality. Traffic and other related impacts are short term. The City will work with local residents to manage the construction impacts.

5.2.1 INDIRECT IMPACTS

The improvements generally occur within the existing streets and facilities, resulting in limited indirect impacts. Future indirect environmental effects of this project include encouraging population, economic, and industrial growth in the Sault Ste. Marie area due to reduced combined and sanitary sewer overflows and improved water quality. These indirect impacts benefit the community.

5.2.2 CUMULATIVE IMPACTS

In considering the project's environmental effects on the planning area, increased development may result from the construction of these facilities. The development would spread to lands that previously had been undisturbed. This would produce additional non-point source runoff. Additional services such as solids waste removal, sewer, water, and street pavement and maintenance will have to be extended into developing areas.

5.3 MITIGATION

Implementing the proposed wastewater treatment plant improvements will result in many beneficial environmental impacts. The wastewater treatment facility effluent will better meet the NPDES permit effluent limitations and reduce the risk of future non-compliance.

Construction activities associated with the proposed improvements near the existing water and wastewater treatment plant sites will result in minimal inconveniences to the public. All work at the wastewater treatment plant will be completed inside the plant. Most persons near the plant will not even realize that modifications are being made to the plant. Noise pollution will not be a major issue during construction. In addition, some minor inconveniences during construction could occur due to trucks entering the highway.

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A small amount of erosion and sedimentation may be expected at the street projects and the wastewater facility during the construction of the treatment plant improvements. There will also be an increase in noise and dust levels in construction areas. The contractor will be required to take steps to minimize all the short-term impacts mentioned above. The contractor will also be required to take special precautions to protect life and property during construction.

The construction of the proposed facilities will not require the condemnation of property or relocation of any residences or businesses.

5.3.1 MITIGATION OF SHORT-TERM IMPACTS

Construction is not anticipated to affect wetlands, floodplains, or other sensitive areas.

Several steps can be taken to minimize adverse environmental impacts during the construction and operation of the proposed facilities upgrades.

The construction and operation of the proposed facility upgrades would constitute a short-term use of the area's resources. The construction should not affect the discharge of the treated effluent.

Erosion and sedimentation during construction will be minimized by requiring the various contractors to exercise specific controls. Additional remedies will also be taken to protect the St. Mary's River during the construction of the WWTP improvements. Recommendations and regulations from EGLE and USEPA will be followed to minimize erosion and sedimentation.

5.4 MITIGATION OF LONG-TERM IMPACTS

Where vegetation is removed, there is a potential for long-term soil erosion and sedimentation. The disturbed areas will be seeded to restore a vegetative cover. Any road surfaces or other areas disturbed during construction will also be restored to their original state.

5.5 MITIGATION OF INDIRECT IMPACTS

The improvements generally occur within the existing streets and facilities, resulting in limited indirect impacts.

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6. PUBLIC PARTICIPATION

6.1.1 PUBLIC MEETING AND ADVERTISEMENT

The formal public hearing for the projects is planned for 7:00 PM local time on April 17, 2023. A copy of the following documents is included in Appendix E.

Notice of Project Planning Public Meeting - issued at least 15 days prior to meeting with Draft Project Planning Document available for viewing

Public Hearing – The following items will be discussed during the public meeting:

- Description of water quality problems addressed by the principle alternatives
- Description of recommended alternatives, including cost breakdowns for project components.
- Discussion of project financing and costs to users, including the proposed method of project financing and estimated monthly debt retirement; proposed annual, quarterly, or monthly charge to the typical customer and any special fees that will be assessed.

Public Hearing Summary – summary of the meeting including presentation, list of attendees and contact information, specific concerns raised, written comments and responses during the public notice period, and any changes to the project because of public comment. Adoption of Project Planning Document

The City resolution adopting the final Project Planning Document is included in Appendix F.

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7. TECHNICAL CONSIDERATIONS

The City is executing a Wet Weather Flow Removal Program to remove excess inflow and infiltration (I/I) from the collection system and eliminate collection system overflows and WWTP bypasses resulting from wet weather events up to the remedial design standard.

7.1 INFILTRATION AND INFLOW PROJECTS

The City identified high priority (I/I) projects as part of a corrective action plan. This includes separating stormwater catch basins and other cross connections to the sanitary sewer. These projects either have been completed or are included in the SRF Project Planning document.

The City installed flow metering in the collection system at various locations to consider dry and wet weather flows in multiple areas. The data will inform flow reductions resulting from improvements made over time. The City plans to model collection system performance once improvements are completed to evaluate flows and prepare for compliance with the PPC. The City is undertaking the following actions related to I/I:

- Identify Collection system districts and a flow metering work plan by 8/31/2021. Repeat annually until PPC is met.
- Analyze flow data to establish a prioritized task list for each district toward passing the criteria of the PPC. Submit a flow metering report for each district by 12/31 annually until PPC is met. The report shall include the tasks and projects necessary to remove cost effective I/I for the next calendar year.
- Generate a work plan by district moving forward for the following known sources of I/I:
    - Submit a work plan including a schedule to resolve the Bingham & Water project by December 1, 2021.
    - Submit a work plan including a schedule to resolve roof drain connection contributions by December 1, 2021.
    - Submit a work plan including schedule to resolve MDOT catch basins entering the sanitary sewer system by December 1, 2022.
- Make necessary improvements to remove I/I to meet PPC by December 31, 2026.

7.1.1 STRUCTURAL INTEGRITY

The City has assessed parts of the sanitary sewer system in accordance with the National Association of Sewer Service Companies (NASSCO) Pipeline Assessment Certification Program (PACP). The City's priorities associated with SRF project planning are addressing storm and sanitary sewer cross connections, areas with known capacity issues, and areas with high I/I contributions.

7.2 FISCAL SUSTAINABILITY PLAN

The project plan includes improvements to the WWTP. Appendix G includes an updated Asset Management Plan for the WWTP. The Asset Management Plan meets the fiscal sustainability plan requirements for the Project Plan.

- Provides an inventory of critical assets – An asset registry of WWTP assets was developed

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- Assesses condition of critical assets – Assets were evaluated for condition, likelihood, and consequence of failure
- Certifies that the recipient has evaluated and will be implementing water and energy conservation as part of the Project Plan
- Provides a plan for asset repair, replacement, and funding.

The proposed improvements at the WWTP repair or replace critical performance risk areas. The City has worked closely with EGLE to address recent failures associated with the secondary treatment process that present capacity and performance risks.

7.2.1 INVENTORY OF CRITICAL ASSETS

Treatment facility assets are managed with a computerized maintenance management system. The inventory includes multiple attributes used to locate, identify and manage the individual assets as part of the system. The collections and distribution system assets are managed in GIS. Software is used to manage the City's finances, including purchasing and inventory.

7.2.2 ASSET ASSESSMENTS

The asset management plan incorporates a fixed asset assessment based on a business risk evaluation. By assessing an asset's criticality and probability of failure, a business risk factor is calculated to identify asset risks.

7.2.3 SPECIAL ASSESSMENT DISTRICT PROJECTS

No special assessments are planned for the project.

7.3 LOCATION AND DESCRIPTION OF MAJOR INDUSTRIAL DISCHARGERS

The City has limited significant industrial users discharging to the system.

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Appendix A

CWSRF Project Planning Document:

NPDES Permit

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PERMIT NO. MI0024058

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY

AUTHORIZATION TO DISCHARGE UNDER THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the federal Clean Water Act (federal Water Pollution Control Act, 33 U.S.C., Section 1251 *et seq*., as amended); Part 31, Water Resources Protection, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA); Part 41, Sewerage Systems, of the NREPA; and Michigan Executive Order 2019-06,

City of Sault Ste. Marie
225 East Portage Avenue
Sault Sainte Marie, MI 49783-0317

is authorized to discharge from the **Sault Ste. Marie Wastewater Treatment Plant,** located at

1171 East Portage Ave
Sault Ste Marie, MI 49783

designated as **Sault Ste Marie WWTP**

to the receiving water named the St. Marys River in accordance with effluent limitations, monitoring requirements, and other conditions set forth in this permit.

This permit is based on a complete application submitted on April 21, 2021 and amended through April 29, 2021.

This permit takes effect on December 1, 2021. The provisions of this permit are severable. After notice and opportunity for a hearing, this permit may be modified, suspended, or revoked in whole or in part during its term in accordance with applicable laws and rules. On its effective date, this permit shall supersede National Pollutant Discharge Elimination System (NPDES) Permit No. MI0024058 (expiring October 1, 2020).

This permit and the authorization to discharge shall expire at midnight on **October 1, 2025**. In order to receive authorization to discharge beyond the date of expiration, the permittee shall submit an application that contains such information, forms, and fees as are required by the Michigan Department of Environment, Great Lakes, and Energy (Department) by **April 4, 2025**.

Issued: September 30, 2021.

Original signed by Christine Alexander
Christine Alexander, Manager
Permits Section
Water Resources Division

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PERMIT FEE REQUIREMENTS

In accordance with Section 324.3120 of the NREPA, the permittee shall make payment of an annual permit fee to the Department for each October 1 the permit is in effect regardless of occurrence of discharge. The permittee shall submit the fee in response to the Department's annual notice. Payment may be made electronically via the Department's MiWaters system. The MiWaters website is located at https://miwaters.deq.state.mi.us. Payment shall be submitted or postmarked by January 15 for notices mailed by December 1. Payment shall be submitted or postmarked no later than 45 days after receiving the notice for notices mailed after December 1.

Annual Permit Fee Classification: Municipal Major, less than 10 MGD (Individual Permit)

In accordance with Section 324.3132 of the NREPA, the permittee shall make payment of an annual biosolids land application fee to the Department if the permittee land applies biosolids. The permittee shall submit the fee in response to the Department's annual notice. Payment may be made electronically via the Department's MiWaters system. The MiWaters website is located at https://miwaters.deq.state.mi.us. Payment shall be submitted or postmarked no later than January 31 of each year for notices mailed by December 15. Payment shall be submitted or postmarked no later than 45 days after receiving the notice for notices mailed after December 15.

CONTACT INFORMATION

Unless specified otherwise, all contact with the Department required by this permit shall be made to the Marquette District Office of the Water Resources Division. The Marquette District Office is located at 1504 West Washington Street, Marquette, MI 49855, Telephone: 906-228-4853, Fax: 906-228-4940.

CONTESTED CASE INFORMATION

Any person who is aggrieved by this permit may file a sworn petition with the Michigan Administrative Hearing System within the Michigan Department of Licensing and Regulatory Affairs, c/o the Michigan Department of Environment, Great Lakes, and Energy, setting forth the conditions of the permit which are being challenged and specifying the grounds for the challenge. The Department of Licensing and Regulatory Affairs may reject any petition filed more than 60 days after issuance as being untimely.

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PART I

Section A. Limitations and Monitoring Requirements

1. Final Effluent Limitations, Monitoring Point 001A

During the period beginning on the effective date of this permit and lasting until the expiration date of this permit, the permittee is authorized to discharge treated municipal wastewater from Monitoring Point 001A through Outfall 001. Outfall 001 discharges to the St. Marys River at Latitude 46.49099, Longitude -84.30759. Such discharge shall be limited and monitored by the permittee as specified below.

	Maximum Limits for Quantity or Loading				Maximum Limits for Quality or Concentration				Monitoring Frequency	Sample Type
Parameter	**Monthly**	**7-Day**	**Daily**	**Units**	**Monthly**	**7-Day**	**Daily**	**Units**		
Flow	(report)	---	(report)	MGD	---		---	---	Daily	Report Total Daily Flow
Carbonaceous Biochemical Oxygen Demand (CBOD5)										
	1700	2700	(report)	lbs/day	25	40	(report)	mg/l	5x Weekly	24-Hr Composite
Total Suspended Solids (TSS)										
	2000	3000	(report)	lbs/day	30	45	(report)	mg/l	5x Weekly	24-Hr Composite
Ammonia Nitrogen (as N)	---	---	(report)	lbs/day	---	---	(report)	mg/l	Monthly	24-Hr Composite
Fecal Coliform Bacteria	---	---	---	---	200	400	(report)	cts/100 ml	5x Weekly	Grab
Total Residual Chlorine										
see Part I.A.1.d.	---	---	---	---	---	---	0.3	mg/l	5x Weekly	Grab
Chloride	---	---	---	---	(report)	---	(report)	mg/l	Monthly	24-Hr Composite
Sulfate	---	---	---	---	(report)	---	(report)	mg/l	Monthly	24-Hr Composite
Total Phosphorus (as P)										
	67	---	(report)	lbs/day	1.0	---	(report)	mg/l	5x Weekly	24-Hr Composite
Total Copper	---	---	1.3	lbs/day	--	---	20	ug/l	Monthly	24-Hr Composite
Acute Toxicity	---	---	---	---	---	---	1.0	TU_A	Quarterly	24-Hr Composite
Total Mercury										
Corrected	(report)	---	(report)	lbs/day	(report)	---	(report)	ng/l	Quarterly	Calculation
Uncorrected	---	---	---	---	---	---	(report)	ng/l	Quarterly	Grab
Field Duplicate	---	---	---	---	---	---	(report)	ng/l	Quarterly	Grab
Field Blank	---	---	---	---	---	---	(report)	ng/l	Quarterly	Preparation
Laboratory Method Blank	---	---	---	---	---	---	(report)	ng/l	Quarterly	Preparation
	12-Month Rolling Avg				**12-Month Rolling Avg**					
Total Mercury	0.0002		---	lbs/day	4.0		---	ng/l	Quarterly	Calculation

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PART I

Section A. Limitations and Monitoring Requirements

	Maximum Limits for Quantity or Loading				Maximum Limits for Quality or Concentration				Monitoring Frequency	Sample Type
Parameter	**Monthly**	**7-Day**	**Daily**	**Units**	**Monthly**	**7-Day**	**Daily**	**Units**		
					Minimum % Monthly		**Minimum % Daily**			
CBOD5 Minimum % Removal										
March – May	---	---	---	---	65	---	(report)	%	Monthly	Calculation
June – February	---	---	---	---	75	---	(report)	%	Monthly	Calculation
TSS Minimum % Removal										
March – May	---	---	---	---	65	---	(report)	%	Monthly	Calculation
June – February	---	---	---	---	75	---	(report)	%	Monthly	Calculation
					Minimum Daily		**Maximum Daily**			
pH	---	---	---	---	6.5	---	9.0	S.U.	5x Weekly	Grab
Dissolved Oxygen	---	---	---	---	4.0	---	---	mg/l	5x Weekly	Grab

The following design flow was used in determining the above limitations, but is not to be considered a limitation or actual capacity: 8.0 MGD

a. Narrative Standard
The receiving water shall contain no turbidity, color, oil films, floating solids, foams, settleable solids, or deposits as a result of this discharge in unnatural quantities which are or may become injurious to any designated use.

b. Sampling Locations
Samples for Carbonaceous Biochemical Oxygen Demand (CBOD5), Total Suspended Solids (TSS), Ammonia Nitrogen (as N), Chloride, Sulfate, Total Copper, Total Phosphorus (as P), and Acute Toxicity shall be taken prior to disinfection. Samples for Fecal Coliform, Total Residual Chlorine, Total Mercury, pH, and Dissolved Oxygen shall be taken after disinfection. The Department may approve alternate sampling locations that are demonstrated by the permittee to be representative of the effluent.

c. Quarterly Monitoring
Quarterly samples shall be taken during the months of January, April, July, and October. If the facility does not discharge during these months, the permittee shall sample the next discharge occurring during the period in question. If the facility does not discharge during the period in question, a sample is not required for that period. For any month in which a sample is not taken, the permittee shall enter "*G" on the Discharge Monitoring Report (DMR). (For purposes of reporting on the Daily tab of the DMR, the permittee shall enter “*G” on the first day of the month only).

d. Total Residual Chlorine (TRC)
Effluent samples that are taken at the exit of the chlorine contact chamber and have values for Total Residual Chlorine that do not exceed the daily maximum effluent concentration limitation of 0.3 mg/l have been demonstrated to meet the water quality-based concentration value of 0.038 mg/l at the point where the effluent discharges into the St. Mary’s River.

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Section A. Limitations and Monitoring Requirements

e. Percent Removal Requirements
Monthly percent removal shall be calculated based on the monthly average effluent CBOD5 and TSS concentrations and the monthly average influent concentrations for approximately the same period. Daily percent removal shall be calculated based on the daily effluent CBOD5 and TSS concentrations and the daily influent concentrations for the same day. Reporting of Daily percent removal is only required on days on which an influent sample is obtained.

f. Final Effluent Limitation for Total Mercury
The final limit for total mercury is the Discharge Specific Level Currently Achievable (LCA) based on a multiple discharger variance from the WQBEL of 1.3 ng/l, pursuant to Rule 1103(9) of the Water Quality Standards. Compliance with the LCA shall be determined as a 12-month rolling average, the calculation of which may be done using blank-corrected sample results. The 12-month rolling average shall be determined by adding the present monthly average result to the preceding 11 monthly average results then dividing the sum by 12. For facilities with quarterly monitoring requirements for total mercury, quarterly monitoring shall be equivalent to three (3) months of monitoring in calculating the 12-month rolling average. Facilities that monitor more frequently than monthly for total mercury must determine the monthly average result, which is the sum of the results of all data obtained in a given month divided by the total number of samples taken, in order to calculate the 12-month rolling average. If the 12-month rolling average for any quarter is less than or equal to the LCA, the permittee will be considered to be in compliance for total mercury for that quarter, provided the permittee is also in full compliance with the Pollutant Minimization Program for Total Mercury, set forth in Part I.A.4. of this permit.

After a minimum of 10 quarterly data points have been collected, the permittee may request a reduction in the monitoring frequency for total mercury. This request shall contain an explanation as to why the reduced monitoring is appropriate and shall be submitted to the Department. Upon receipt of written approval and consistent with such approval, the permittee may reduce the monitoring frequency for total mercury indicated in Part I.A.1. of this permit. The monitoring frequency shall not be reduced to less than annually. The Department may revoke the approval for reduced monitoring at any time upon notification to the permittee.

g. Total Mercury Testing and Additional Reporting Requirements
The analytical protocol for total mercury shall be in accordance with EPA Method 1631, Revision E, "Mercury in Water by Oxidation, Purge and Trap, and Cold Vapor Atomic Fluorescence Spectrometry," EPA-821-R-02-019, August 2002. The quantification level for total mercury shall be 0.5 ng/l, unless a higher level is appropriate because of sample matrix interference. Justification for higher quantification levels shall be submitted to the Department <u>within 30 days</u> of such determination.

The use of clean technique sampling procedures is required unless the permittee can demonstrate to the Department that an alternate sampling procedure is representative of the discharge. Guidance for clean technique sampling is contained in EPA Method 1669, “Sampling Ambient Water for Trace Metals at EPA Water Quality Criteria Levels (Sampling Guidance),” EPA-821-R96-001, July 1996. Information and data documenting the permittee's sampling and analytical protocols and data acceptability shall be submitted to the Department upon request.

In order to demonstrate compliance with EPA Method 1631E and EPA Method 1669, the permittee shall report, on the daily sheet, the analytical results of all field blanks and field duplicates collected in conjunction with each sampling event, as well as laboratory method blanks when used for blank correction. The permittee shall collect at least one (1) field blank and at least one (1) field duplicate per sampling event. If more than ten (10) samples are collected during a sampling event, the permittee shall collect at least one (1) additional field blank AND field duplicate for every ten (10) samples collected. Only field blanks or laboratory method blanks may be used to calculate a concentration lower than the actual sample analytical results (i.e., a blank correction). Only one (1) blank (field OR

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PART I

Section A. Limitations and Monitoring Requirements

laboratory method) may be used for blank correction of a given sample result, and only if the blank meets the quality control acceptance criteria. If blank correction is not performed on a given sample analytical result, the permittee shall report under "Total Mercury – Corrected" the same value reported under "Total Mercury – Uncorrected." The field duplicate is for quality control purposes only; its analytical result shall not be averaged with the sample result.

h. Acute Toxicity Final Requirements

Test species shall include fathead minnow **and** either *Daphnia magna, Daphnia pulex, or Ceriodaphnia dubia*. Testing and reporting procedures shall follow procedures contained in EPA-821-R-02-012, "Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms" (Fifth Edition). When the effluent ammonia nitrogen (as N) concentration is greater than 5 mg/l, the pH of the toxicity test shall be maintained at the pH of the effluent at the time of sample collection. The acute toxic unit (TU_A) value for **each species tested** shall be reported on the DMR. For **each species not tested**, the permittee shall enter **"*W"** on the DMR. (For purposes of reporting on the Daily tab of the DMR, the permittee shall enter "*W" on the first day of the month only). Completed toxicity test reports for each test conducted shall be retained by the permittee in accordance with the requirements of Part II.B.5. of this permit and shall be available for review by the Department upon request. After two years of toxicity testing and upon approval from the Department, the monitoring frequency may be reduced if the test data indicate that the toxicity requirements of R 323.1219 of the Michigan Administrative Code are consistently being met. After one (1) year of toxicity testing and upon approval from the Department, the acute toxicity tests may be performed using the more sensitive species selected from the acute toxicity results collected to date. If a more sensitive species cannot be identified, the acute toxicity tests shall be performed with both species. Toxicity test data acceptability is contingent upon the validation of the test method by the testing laboratory. Such validation shall be submitted to the Department upon request.

1) When monitoring shows persistent exceedance of the 1.0 TU_A limit for effluent toxicity, the Department will determine whether the permittee must implement the toxicity control program requirements specified in 2), below.

2) Upon written notification by the Department, the following conditions apply. Within 90 days of the notification, the permittee shall implement a Toxicity Reduction Evaluation (TRE). The objective of the TRE shall be to reduce the toxicity of the final effluent from Monitoring Point 001A to <1.0 TU_A. The following documents are available as guidance to reduce toxicity to acceptable levels: Phase I, EPA/600/6-91/003; Phase II, EPA/600/R-92/080; Phase III, EPA/600/R-92/081; and Publicly Owned Treatment Works, EPA/833B-99/002. Annual progress reports shall be submitted to the Department within 30 days of the completion of the last test of each annual cycle.

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PART I

Section A. Limitations and Monitoring Requirements

2. Quantification Levels and Analytical Methods for Selected Parameters

Maximum acceptable quantification levels (QLs) are specified for selected parameters in the table below. These QLs shall be considered the maximum acceptable unless a higher QL is appropriate because of sample matrix interference. Justification for higher QLs shall be submitted to the Department within 30 days of such determination. Where necessary to help ensure that the QLs specified herein can be achieved, analytical methods may also be specified in the table below. The sampling procedures, preservation and handling, and analytical protocol for all monitoring conducted in compliance with this permit, including monitoring conducted to meet the requirements of the application for permit reissuance, shall be in accordance with the methods specified herein, or in accordance with Part II.B.2. of this permit if no method is specified herein, unless an alternate method is approved by the Department. The Department will consider only alternate methods that meet the requirements of Part II.B.2. and whose QLs are at least as sensitive (i.e., low) as those specified herein. **Not all QLs are expressed in the same units in the table below**. The table is continued on the following page:

Parameter	QL	Units	Analytical Method
1,2-Diphenylhydrazine (as Azobenzene)	3.0	ug/l	
2,4,6-Trichlorophenol	5.0	ug/l	
2,4-Dinitrophenol	19	ug/l	
3,3'-Dichlorobenzidine	1.5	ug/l	
4-Chloro-3-Methylphenol	7.0	ug/l	
4,4'-DDD	0.01	ug/l	
4,4'-DDE	0.01	ug/l	
4,4'-DDT	0.01	ug/l	
Acrylonitrile	1.0	ug/l	
Aldrin	0.01	ug/l	
Alpha-Endosulfan	0.01	ug/l	
Alpha-Hexachlorocyclohexane	0.01	ug/l	
Antimony, Total	1	ug/l	
Arsenic, Total	1	ug/l	
Barium, Total	5	ug/l	
Benzidine	0.1	ug/l	
Beryllium, Total	1	ug/l	
Beta-Endosulfan	0.01	ug/l	
Beta-Hexachlorocyclohexane	0.01	ug/l	
Bis (2-Chloroethyl) Ether	1.0	ug/l	
Bis (2-Ethylhexyl) Phthalate	5.0	ug/l	
Boron, Total	20	ug/l	
Cadmium, Total	0.2	ug/l	
Chlordane	0.01	ug/l	
Chloride	1.0	mg/l	
Chromium, Hexavalent	5	ug/l	
Chromium, Total	10	ug/l	
Copper, Total	1	ug/l	
Cyanide, Available	2	ug/l	EPA Method OIA 1677
Cyanide, Total	5	ug/l	
Delta-Hexachlorocyclohexane	0.01	ug/l	

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Section A. Limitations and Monitoring Requirements

Parameter	QL	Units	Analytical Method
Dieldrin	0.01	ug/l	
Di-N-Butyl Phthalate	9.0	ug/l	
Endosulfan Sulfate	0.01	ug/l	
Endrin	0.01	ug/l	
Endrin Aldehyde	0.01	ug/l	
Fluoranthene	1.0	ug/l	
Heptachlor	0.01	ug/l	
Heptachlor Epoxide	0.01	ug/l	
Hexachlorobenzene	0.01	ug/l	
Hexachlorobutadiene	0.01	ug/l	
Hexachlorocyclopentadiene	0.01	ug/l	
Hexachloroethane	5.0	ug/l	
Lead, Total	1	ug/l	
Lindane	0.01	ug/l	
Lithium, Total	10	ug/l	
Mercury, Total	0.5	ng/l	EPA Method 1631E
Nickel, Total	5	ug/l	
PCB-1016	0.1	ug/l	
PCB-1221	0.1	ug/l	
PCB-1232	0.1	ug/l	
PCB-1242	0.1	ug/l	
PCB-1248	0.1	ug/l	
PCB-1254	0.1	ug/l	
PCB-1260	0.1	ug/l	
Pentachlorophenol	1.8	ug/l	
Perfluorooctane sulfonate (PFOS)	2.0	ng/l	ASTM D7979 or an isotope dilution method (sometimes referred to as Method 537 modified)
Perfluorooctanoic acid (PFOA)	0.002	ug/l	ASTM D7979 or an isotope dilution method (sometimes referred to as Method 537 modified)
Phenanthrene	1.0	ug/l	
Phosphorus (as P), Total	10	ug/l	
Selenium, Total	1.0	ug/l	
Silver, Total	0.5	ug/l	
Strontium, Total	1000	ug/l	
Sulfate	2.0	mg/l	
Sulfides, Dissolved	20	ug/l	
Thallium, Total	1	ug/l	
Toxaphene	0.1	ug/l	
Vinyl Chloride	1.0	ug/l	
Zinc, Total	10	ug/l	

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3. Additional Monitoring Requirements

As a condition of this permit, the permittee shall monitor the discharge from monitoring point 001A for the constituents listed below. This monitoring is an application requirement of 40 CFR 122.21(j), effective December 2, 1999. Testing shall be conducted in August 2022, May 2023, March 2024, and October 2024. Grab samples shall be collected for available cyanide, total phenols, and the Perfluoroalkyl and Polyfluoroalkyl Substances and Volatile Organic Compounds identified below. For all other parameters, 24-hour composite samples shall be collected.

The results of such additional monitoring shall be submitted with the application for reissuance (see the cover page of this permit for the application due date). The permittee shall notify the Department within 14 days of completing the monitoring for each month specified above in accordance with Part II.C.5. Additional reporting requirements are specified in Part II.C.11. If, upon review of the analysis, it is determined that additional requirements are needed to protect the receiving waters in accordance with applicable water quality standards, the permit may then be modified by the Department in accordance with applicable laws and rules.

Hardness
calcium carbonate

Perfluoroalkyl and Polyfluoroalkyl Substances

Perfluorooctane Sulfonate (PFOS)	Perfluorooctanoic Acid (PFOA)

Metals (Total Recoverable), Cyanide and Total Phenols

antimony	arsenic	available cyanide	nickel
beryllium	cadmium	chromium	zinc
lead	thallium		
selenium	silver	total phenolic compounds	

Volatile Organic Compounds

acrolein	acrylonitrile	benzene	bromoform
carbon tetrachloride	chlorobenzene	chlorodibromomethane	chloroethane
2-chloroethylvinyl ether	chloroform	dichlorobromomethane	1,1-dichloroethane
1,2-dichloroethane	trans-1,2-dichloroethylene	1,1-dichloroethylene	1,2-dichloropropane
1,3-dichloropropylene	ethylbenzene	methyl bromide	methyl chloride
methylene chloride	1,1,2,2-tetrachloroethane	tetrachloroethylene	toluene
1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethylene	vinyl chloride

Acid-Extractable Compounds

4-chloro-3-methylphenol	2-chlorophenol	2,4-dichlorophenol	2,4-dimethylphenol
4,6-dinitro-o-cresol	2,4-dinitrophenol	2-nitrophenol	4-nitrophenol
Pentachlorophenol	phenol	2,4,6-trichlorophenol	

Base/Neutral Compounds

acenaphthene	acenaphthylene	anthracene	benzidine
benzo(a)anthracene	benzo(a)pyrene	3,4-benzofluoranthene	benzo(ghi)perylene
benzo(k)fluoranthene	bis(2-chloroethoxy)methane	bis(2-chloroethyl)ether	bis(2-chloroisopropyl)ether
bis(2-ethylhexyl)phthalate	4-bromophenyl phenyl ether	butyl benzyl phthalate	2-chloronaphthalene
4-chlorophenyl phenyl ether	chrysene	di-n-butyl phthalate	di-n-octyl phthalate
dibenzo(a,h)anthracene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
3,3'-dichlorobenzidine	diethyl phthalate	dimethyl phthalate	2,4-dinitrotoluene
2,6-dinitrotoluene	1,2-diphenylhydrazine	fluoranthene	fluorene
Hexachlorobenzene	hexachlorobutadiene	hexachlorocyclo-pentadiene	hexachloroethane

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indeno(1,2,3-cd)pyrene	isophorone	naphthalene	nitrobenzene
n-nitrosodi-n-propylamine	n-nitrosodimethylamine	n-nitrosodiphenylamine	phenanthrene
pyrene	1,2,4-trichlorobenzene		

4. Pollutant Minimization Program for Total Mercury

The goal of the Pollutant Minimization Program is to maintain the effluent concentration of total mercury at or below 1.3 ng/l. The permittee shall continue to implement the Pollutant Minimization Program approved on June 19, 2007, and modifications thereto, to proceed toward the goal. The Pollutant Minimization Program includes the following:

a. an annual review and semi-annual monitoring of potential sources of mercury entering the wastewater collection system;

b. a program for quarterly monitoring of influent periodic monitoring of sludge for mercury; and

c. implementation of reasonable cost-effective control measures when sources of mercury are discovered. Factors to be considered include significance of sources, economic considerations, and technical and treatability considerations.

On or before March 31 of each year, the permittee shall submit a status report to the Department for the previous calendar year that includes 1) the monitoring results for the previous year, 2) an updated list of potential mercury sources, and 3) a summary of all actions taken to reduce or eliminate identified sources of mercury.

Any information generated as a result of the Pollutant Minimization Program set forth in this permit may be used to support a request to modify the approved program or to demonstrate that the Pollutant Minimization Program requirement has been completed satisfactorily.

A request for modification of the approved program and supporting documentation shall be submitted in writing to the Department for review and approval. The Department may approve modifications to the approved program (approval of a program modification does not require a permit modification), including a reduction in the frequency of the requirements under items a. and b. above.

This permit may be modified in accordance with applicable laws and rules to include additional mercury conditions and/or limitations as necessary.

5. Untreated or Partially Treated Sewage Discharge Reporting and Testing Requirements

In accordance with Section 324.3112a of the NREPA, if untreated or partially treated sewage is directly or indirectly discharged from a sewer system onto land or into the waters of the state, the permittee shall immediately, but not more than 24 hours after the discharge begins, notify local health departments, a daily newspaper of general circulation in the county in which the permittee is located, and a daily newspaper of general circulation in the county or counties in which the municipalities whose waters may be affected by the discharge are located, that the discharge is occurring. The permittee shall also notify the Department via its MiWaters system on the form entitled “Report of Discharge (CSO\SSO\RTB).” The MiWaters website is located at https://miwaters.deq.state.mi.us. At the conclusion of the discharge, the permittee shall make all such notifications specified in, and in accordance with, Section 324.3112a of the NREPA, and shall notify the Department via its MiWaters system on the form entitled “Report of Discharge (CSO\SSO\RTB).”

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The permittee shall also annually contact municipalities, including the superintendent of a public drinking water supply with potentially affected intakes, whose waters may be affected by the permittee's discharge of untreated or partially treated sewage, and if those municipalities wish to be notified in the same manner as specified above, the permittee shall provide such notification.

Additionally, in accordance with Section 324.3112a of the NREPA, each time a discharge of untreated or partially treated sewage occurs, the permittee shall test the affected waters for *Escherichia coli* to assess the risk to the public health as a result of the discharge and shall provide the test results to the affected local county health departments and to the Department. The results of this testing shall be submitted to the Department via MiWaters as part of the notification specified above, or, if the results are not yet available, submitted as soon as they become available. This testing is not required if it has been waived by the local health department, or if the discharge(s) did not affect surface waters. The testing shall be done at locations specified by each affected local county health department but shall not exceed 10 tests for each separate discharge event. The affected local county health department may waive this testing requirement if it determines that such testing is not needed to assess the risk to the public health as a result of the discharge event.

Permittees accepting sanitary or municipal sewage from other sewage collection systems are encouraged to notify the owners of those systems of the above reporting and testing requirements.

6. Facility Contact

The “Facility Contact” was specified in the application. The permittee may replace the facility contact at any time, and shall notify the Department in writing <u>within 10 days</u> after replacement (including the name, address and telephone number of the new facility contact).

a. The facility contact shall be (or a duly authorized representative of this person):
   - for a corporation, a principal executive officer of at least the level of vice president; or a designated representative if the representative is responsible for the overall operation of the facility from which the discharge originates, as described in the permit application or other NPDES form,
   - for a partnership, a general partner,
   - for a sole proprietorship, the proprietor, or
   - for a municipal, state, or other public facility, either a principal executive officer, the mayor, village president, city or village manager or other duly authorized employee.

b. A person is a duly authorized representative only if:
   - the authorization is made in writing to the Department by a person described in paragraph a. of this section; and
   - the authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the facility (a duly authorized representative may thus be either a named individual or any individual occupying a named position).

Nothing in this section releases the permittee from properly submitting reports and forms as required by law.

7. Monthly Operating Reports

Part 41 of Act 451 of 1994 as amended, specifically Section 324.4106 and associated R 299.2953, requires that the permittee file with the Department, on forms prescribed by the Department, operating reports showing the effectiveness of the treatment facility operation and the quantity and quality of liquid wastes discharged into waters of the state.

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Within 30 days of the effective date of this permit, the permittee shall submit to the Department a revised treatment facility monitoring program to address monitoring requirement changes reflected in this permit, or submit justification explaining why monitoring requirement changes reflected in this permit do not necessitate revisions to the treatment facility monitoring program. The permittee shall implement the revised treatment facility monitoring program upon approval from the Department. Applicable forms and guidance are available on the Department's web site at https://www.michigan.gov/egle/0,9429,7-135-3313_71618_44117---,00.html. The permittee may use alternate forms if they are consistent with the approved treatment facility monitoring program. Unless the Department provides written notification to the permittee that monthly submittal of operating reports is required, operating reports that result from implementation of the approved treatment facility monitoring program shall be maintained on site for a minimum of three (3) years and shall be made available to the Department for review upon request.

8. Asset Management

The permittee shall at all times properly operate and maintain all facilities (i.e., the sewer system and treatment works as defined in Part 41 of the NREPA), and control systems installed or used by the permittee to operate the sewer system and treatment works and achieve and maintain compliance with the conditions of this permit (also see Part II.D.3 of this permit). The requirements of an Asset Management Program function to achieve the goals of effective performance, adequate funding, and adequate operator staffing and training. Asset management is a planning process for ensuring that optimum value is gained for each asset and that financial resources are available to rehabilitate and replace those assets when necessary. Asset management is centered on a framework of five (5) core elements: the current state of the assets; the required sustainable level of service; the assets critical to sustained performance; the minimum life-cycle costs; and the best long-term funding strategy.

a. Asset Management Program Requirements

The permittee shall continue to implement the Asset Management Plan approved on February 25, 2020, and approved modifications thereto. The Asset Management Plan contains a schedule for the development and implementation of an Asset Management Program that meets the requirements outlined below in 1) – 4):

1) *Maintenance Staff.* The permittee shall provide an adequate staff to carry out the operation, maintenance, repair, and testing functions required to ensure compliance with the terms and conditions of this permit. The level of staffing needed shall be determined by taking into account the work involved in operating the sewer system and treatment works, planning for and conducting maintenance, and complying with this permit.

2) *Collection System Map.* The permittee shall complete a map of the sewer collection system it owns and operates. The map shall be of sufficient detail and at a scale to allow easy l interpretation. The collection system information shown on the map shall be based on current conditions and shall be kept up-to-date and available for review by the Department. **Note: Items below referencing combined sewer systems are not applicable to separate sewer systems.** Such map(s) shall include but not be limited to the following:

a) all sanitary sewer lines and related manholes;

b) all combined sewer lines, related manholes, catch basins and CSO regulators;

c) all known or suspected connections between the sanitary sewer or combined sewer and storm drain systems;

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d) all outfalls, including the treatment plant outfall(s), combined sewer treatment facility outfalls, untreated CSOs, and any known SSOs;

e) all pump stations and force mains;

f) the wastewater treatment facility(ies), including all treatment processes;

g) all surface waters (labeled);

h) other major appurtenances such as inverted siphons and air release valves;

i) a numbering system which uniquely identifies manholes, catch basins, overflow points, regulators and outfalls;

j) the scale and a north arrow;

k) the pipe diameter, date of installation, type of material, distance between manholes, and the direction of flow; and

l) the manhole interior material, rim elevation (optional), and invert elevations.

3) *Inventory and assessment of fixed assets.* The permittee shall complete an inventory and assessment of operations-related fixed assets including portions of the collection system owned and operated by the permittee. Fixed assets are assets that are normally stationary (e.g., pumps, blowers, buildings, manholes, and sewer lines). The inventory and assessment shall be based on current conditions and shall be kept up-to-date and available for review by the Department.

a) The fixed asset inventory shall include the following:

(1) a brief description of the fixed asset, its design capacity (e.g., pump: 120 gallons per minute), its level of redundancy, and its tag number if applicable;

(2) the location of the fixed asset;

(3) the year the fixed asset was installed;

(4) the present condition of the fixed asset (e.g., excellent, good, fair, poor); and

(5) the current fixed asset (replacement) cost in dollars for year specified in accordance with approved schedules;

b) The fixed asset assessment shall include a “Business Risk Evaluation” that combines the probability of failure of the fixed asset and the criticality of the fixed asset, as follows:

(1) Rate the probability of failure of the fixed asset on a scale of 1-5 (low to high) using criteria such as maintenance history, failure history, and remaining percentage of useful life (or years remaining);

(2) Rate the criticality of the fixed asset on a scale of 1-5 (low to high) based on the consequence of failure versus the desired level of service for the facility; and

(3) Compute the Business Risk Factor of the fixed asset by multiplying the failure rating from (1) by the criticality rating from (2).

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4) *Operation, Maintenance & Replacement (OM&R) Budget and Rate Sufficiency for the Sewer System and Treatment Works.* The permittee shall complete an assessment of its user rates and replacement fund, including the following:

a) beginning and end dates of fiscal year;

b) name of the department, committee, board, or other organization that sets rates for the operation of the sewer system and treatment works;

c) amount in the permittee's replacement fund in dollars for year specified in accordance with approved schedules;

d) replacement fund strategy of all assets with a useful life of 20 years or less;

e) expenditures for maintenance, corrective action and capital improvement taken during the fiscal year;

f) OM&R budget for the fiscal year; and

g) rate calculation demonstrating sufficient revenues to cover OM&R expenses. If the rate calculation shows there are insufficient revenues to cover OM&R expenses, the permittee shall document, within three (3) fiscal years after submittal of the Asset Management Plan, that there is at least one rate adjustment that reduces the revenue gap by at least 10 percent. The permittee may prepare and submit an alternate plan, subject to Department approval, for addressing the revenue gap. The ultimate goal of the Asset Management Program is to ensure sufficient revenues to cover OM&R expenses.

b. Annual Reporting

The permittee shall develop a written report that summarizes asset management activities completed during the previous year and planned for the upcoming year. The written report shall be submitted to the Department on or before August 1of each year. The written report shall include:

1) a description of the staffing levels maintained during the year;

2) a description of inspections and maintenance activities conducted and corrective actions taken during the previous year;

3) expenditures for collection system maintenance activities, treatment works maintenance activities, corrective actions, and capital improvement during the previous year;

4) a summary of assets/areas identified for inspection/action (including capital improvement) in the upcoming year based on the five (5) core elements and the Business Risk Factors computed in accordance with condition a.3)b)(3) above;

5) a maintenance budget and capital improvement budget for the upcoming year that take into account implementation of an effective Asset Management Program that meets the five (5) core elements;

6) an updated asset inventory based on the original submission; and

7) an updated OM&R budget with an updated rate schedule that includes the amount of insufficient revenues, if any.

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9. Schedule of Compliance for Wet Weather Flow Removal

The permittee shall complete a Wet Weather Flow Removal Program (Program) to remove excessive infiltration/inflow (I/I) from the collection system and will eliminate collection system overflows and wastewater treatment plant bypasses resulting from wet-weather events up to the remedial design standard (RDS). The Program shall meet the following RDS: Discharge shall be eliminated to the 25-year, 24-hour event (3.9 inches in 24 hours), in the growth season (April through October), using normal soil moisture, a rainfall hyetograph based on Natural Resources Conservation Service (NRCS) Type II, Bratter-Sherrill, or equivalent for total amount and peak hour amount, and /or may result in a discharge no more often than once per 10-year period on average (April through October).

High Priority I/I Removal Projects

The permittee shall complete the following high priority I/I projects that were identified in the corrective action plan (CAP) submitted on May 26, 2021:

- Storm water catch basins connected to the sanitary sewer system in the Bingham & Water area;
- Roof drains connected to the sanitary sewer system in the downtown area;
- Storm water catch basins connected to the sanitary sewer system from Portage Avenue.

a. On or before January 1, 2022. the permittee shall submit to the Department for review and approval a work plan with schedule for completing the high priority I/I removal projects.

b. On or before January 1, 2025, the permittee shall complete the high priority I/I removal projects that were previously identified in the CAP. The Permittee may submit to the Department for review and approval, a cost-effective analysis evaluating the removal of the roof drains identified in the CAP. If the the Department determines that it is not cost-effective to remove these roof drains, these roof drains may be moved to the System Wide I/I Projects below or removed from the CAP.

System Wide I/I Identification and Removal Projects

c. On or before January 1, 2022. the permittee shall submit to the Department for review and approval, a workplan to conduct an I/I study of the sanitary sewer system. The permittee shall review existing flow monitoring data and determine where additional flow monitoring data is necessary. The I/I study shall include a description and a schedule for conducting flow monitoring and analyzing the flow data of the sanitary sewer system. The schedule shall include dates for the start and end of flow monitoring.

d. On or before January 1, 2023. the permittee shall submit to the Department for review and approval, an I/I Study Report that identified the areas of the sewer system that experiencing excessive I/I.

e. On or before March 1, 2023, the permittee shall submit to the Department for review and approval, a workplan for conducting a Sewer System Evaluation Study (SSES), that addresses, at a minimum, areas with excessive I/I, as identified in the I/I Study Report. The SSES shall include but not be limited to description of activities and a schedule for conducting a SSES study to identify and quantify sources of I/I and a description for performing a cost-effective analysis.to determine which I/I sources are cost effective to remove.

f. On or before March 1, 2024, the permittee shall submit to the Department for review and approval, a SSES Report that summarizing the findings of the SSES. The report shall identify and quantify the I/I sources discovered and include a cost-effective analysis for elimination of I/I sources. Additionally, the SSES Report shall include the proposed sanitary sewer improvements needed to bring the permittee in compliance with the RDS.

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g. On or before November 1st of each year, the permittee shall submit to the Department for review and approval annual I/I status reports.

1) A description of I/I reduction activities and investigations conducted in the prior year;

2) Results of the prior years' activities in reducing I/I to the sewer collection system;

3) I/I reduction activities planned for the current year.

h. On or before January 1, 2027, the permittee shall complete all sanitary sewer improvements projects identified in the approved SSES Report. Also, on or before this date, all SSOs within the collection system and secondary treatment bypasses from the facility shall be eliminated in accordance with the RDS.

i. On or before November 1, 2027, the permittee shall submit a PPC work plan to the Department for review and approval to certify that the sanitary sewer collection system can adequately transport, and the wastewater treatment plant can adequately treat, sanitary wastewater flows, in accordance with EGLE's SSO Policy and Clarification Statement.

j. On or before March 1, 2028, the permittee shall commence flow monitoring as specified in the approved PPC work plan.

k. On or before November 1, 2028, the permittee shall complete flow monitoring as specified in the approved PPC work plan.

l. On or before February 1, 2029, the permittee shall submit to the Department for review and approval a PPC report that determines if the PPC has been successfully certified. If the permittee is unable to certify that the project meets the performance requirements as identified in Part I.A.9., then the permittee shall submit a Corrective Action Plan (CAP) work plan with implementation schedule for Department review and approval.

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Section A. Limitations and Monitoring Requirements

10. Discharge Monitoring Report – Quality Assurance Study Program

The permittee shall participate in the Discharge Monitoring Report – Quality Assurance (DMR-QA) Study Program. The purpose of the DMR-QA Study Program is to annually evaluate the proficiency of all in-house and/or contract laboratory(ies) that perform, on behalf of the facility authorized to discharge under this permit, the analytical testing required under this permit. In accordance with Section 308 of the Clean Water Act (33 U.S.C. § 1318); and R 323.2138 and R 323.2154 of Part 21, Wastewater Discharge Permits, promulgated under Part 31 of the NREPA, participation in the DMR-QA Study Program is required for all major facilities, and for minor facilities selected for participation by the Department.

Annually and in accordance with DMR-QA Study Program requirements and submittal due dates, the permittee shall submit to the Michigan DMR-QA Study Program state coordinator all documentation required by the DMR-QA Study. DMR-QA Study Program participation is required only for the analytes required under this permit and only when those analytes are also identified in the DMR-QA Study.

If the permitted facility's status as a major facility should change, participation in the DMR-QA Study Program may be reevaluated. Questions concerning participation in the DMR-QA Study Program should be directed to the Michigan DMR-QA Study Program state coordinator.

All forms and instructions required for participation in the DMR-QA Study Program, including submittal due dates and state coordinator contact information, can be found at http://www.epa.gov/compliance/discharge-monitoring-report-quality-assurance-study-program.

11. Continuous Monitoring

If continuous monitoring equipment is used and becomes temporarily inoperable, the permittee shall manually obtain a minimum of three (3) equally spaced grab samples/readings within each 24-hour period for the affected parameter(s). On such days, in the comment field on the Daily tab of the DMR, the permittee shall indicate "continuous monitoring system inoperable," the date on which the system is expected to become operable again, and the number of samples/readings obtained during each 24-hour period.

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Section B. Storm Water Pollution Prevention

Section B. Storm Water Pollution Prevention is not required for this permit.

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Section C. Industrial Waste Pretreatment Program

1. Industrial Waste Pretreatment Program

It is understood that the permittee does not receive the discharge of any type or quantity of substance which may cause interference with the operation of the treatment works; and, therefore, the permittee is not required to immediately develop an industrial pretreatment program in accordance with Section 307 of the Federal Water Pollution Control Act. The permittee is required to comply with Section 307 of the Federal Water Pollution Control Act upon accepting any such discharge for treatment. The permittee is required to notify the Department within 30 days if any user discharges or proposes to discharge such wastes to the permittee for treatment.

Under no circumstances shall the permittee allow introduction of the following wastes into the waste treatment system:

a. pollutants which cause pass-through or interference;

b. pollutants which create a fire hazard or explosion hazard in the sewerage system, including, but not limited to waste streams with a closed cup flashpoint of less than 140 degrees Fahrenheit or 60 degrees Centigrade using the test methods specified in 40 CFR 261.21;

c. pollutants which will cause corrosive structural damage to the sewerage system; but in no case, discharges with pH less than 5.0, unless the works is specifically designed to accommodate such discharges;

d. solid or viscous pollutants in amounts which will cause obstruction to the flow in the sewerage system resulting in interference;

e. any pollutant, including oxygen demanding pollutants (BOD, etc.) released in a discharge at a flow rate and/or pollutant concentration which will cause interference with the treatment plant;

f. heat in amounts which will inhibit biological activity in the treatment plant resulting in interference; but in no case, heat in such quantities that the temperature at the treatment plant exceeds 40 degrees Centigrade (104 degrees Fahrenheit) unless the Department, upon request of the permittee, approves alternate temperature limits;

g. pollutants which result in the presence of toxic gases, vapors or fumes within the sewerage system in a quantity that may cause acute worker health and safety problems; and

h. any trucked or hauled pollutants, except at discharge points designated by the permittee.

If information is gained by the Department that the permittee receives or is about to receive industrial wastes, then this permit may be modified in accordance with applicable laws and rules to incorporate the requirements of Section 307 of the Federal Water Pollution Control Act.

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PART I

Section D. Residuals Management Program

1. Residuals Management Program for Land Application of Biosolids

A permittee seeking authorization to land-apply bulk biosolids or prepare bulk biosolids for land application shall develop and submit a Residuals Management Program (RMP) to the Department for approval. Effective upon Department approval of the permittee's RMP, the permittee is authorized to land-apply bulk biosolids or prepare bulk biosolids for land application in accordance with the approved RMP and the requirements established in R 323.2401 through R 323.2418 of the Michigan Administrative Code (Part 24 Rules). The permittee's approved RMP, and any approved modifications thereto, are enforceable requirements of this permit. Incineration, landfilling and other residual disposal activities shall be conducted in accordance with Part II.D.7. of this permit. The Part 24 Rules can be obtained via the internet (http://www.michigan.gov/egle/ and near the top of the screen click on Water, then towards the bottom right of the screen click on Permits, Wastewater, Biosolids, then click on Biosolids Laws and Rules Information which is under the Laws & Rules banner in the center of the screen).

a. RMP Approval and Implementation
A permittee seeking approval of an RMP shall submit the RMP to the Department at least 180 days prior to the land application of biosolids. The permittee may utilize the Biosolids Residuals Management Program (RMP) Form which can be obtained via the internet (http://www.michigan.gov/biosolids then click on the Biosolids Residuals Management Program (RMP) Form, which is under the Downloads banner in the center of the screen), or obtain detailed requirements from the Department. The RMP shall become effective and shall be implemented by the permittee upon written approval from the Department.

b. Annual Report
On or before October 30 of each year,]the permittee shall submit an annual report to the Department for the previous fiscal year of October 1 through September 30. The report shall be submitted electronically via the Department's MiWaters system at https://miwaters.deq.state.mi.us. At a minimum, the report shall contain:

1) a certification that current residuals management practices are in accordance with the approved RMP, or a proposal for modification to the approved RMP; and

2) a completed Annual Report Form for Reporting Biosolids, available at https://miwaters.deq.state.mi.us.

c. Modifications to the Approved RMP
Prior to implementation of modifications to the RMP, the permittee shall submit proposed modifications to the Department for approval. The approved modification shall become effective upon the date of approval. Upon written notification, the Department may impose additional requirements and/or limitations to the approved RMP as necessary to protect public health and the environment from any adverse effect of a pollutant in the biosolids.

d. Record Keeping
Records required by the Part 24 Rules shall be kept for a minimum of five (5) years. However, the records documenting cumulative loading for sites subject to cumulative pollutant loading rates shall be kept as long as the site receives biosolids.

e. Contact Information
RMP-related submittals shall be made to the Department.

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PART II

Part II may include terms and /or conditions not applicable to discharges covered under this permit.

Section A. Definitions

Acute toxic unit (TU_A) means $100/LC_{50}$ where the LC_{50} is determined from a whole effluent toxicity (WET) test which produces a result that is statistically or graphically estimated to be lethal to 50% of the test organisms.

Annual monitoring frequency refers to a calendar year beginning on January 1 and ending on December 31. When required by this permit, an analytical result, reading, value or observation shall be reported for that period if a discharge occurs during that period.

Authorized public agency means a state, local, or county agency that is designated pursuant to the provisions of Section 9110 of Part 91, Soil and Sedimentation Control, of the NREPA, to implement soil erosion and sedimentation control requirements with regard to construction activities undertaken by that agency.

Best management practices (BMPs) means structural devices or nonstructural practices that are designed to prevent pollutants from entering into storm water, to direct the flow of storm water, or to treat polluted storm water.

Bioaccumulative chemical of concern (BCC) means a chemical which, upon entering the surface waters, by itself or as its toxic transformation product, accumulates in aquatic organisms by a human health bioaccumulation factor of more than 1000 after considering metabolism and other physiochemical properties that might enhance or inhibit bioaccumulation. The human health bioaccumulation factor shall be derived according to R 323.1057(5). Chemicals with half-lives of less than 8 weeks in the water column, sediment, and biota are not BCCs. The minimum bioaccumulation concentration factor (BAF) information needed to define an organic chemical as a BCC is either a field-measured BAF or a BAF derived using the biota-sediment accumulation factor (BSAF) methodology. The minimum BAF information needed to define an inorganic chemical as a BCC, including an organometal, is either a field-measured BAF or a laboratory-measured bioconcentration factor (BCF). The BCCs to which these rules apply are identified in Table 5 of R 323.1057 of the Water Quality Standards.

Biosolids are the solid, semisolid, or liquid residues generated during the treatment of sanitary sewage or domestic sewage in a treatment works. This includes, but is not limited to, scum or solids removed in primary, secondary, or advanced wastewater treatment processes and a derivative of the removed scum or solids.

Bulk biosolids means biosolids that are not sold or given away in a bag or other container for application to a lawn or home garden.

CAFO means concentrated animal feeding operation.

Certificate of Coverage (COC) is a document, issued by the Department, which authorizes a discharge under a general permit.

Chronic toxic unit (TU_C) means 100/MATC or $100/IC_{25}$, where the maximum acceptable toxicant concentration (MATC) and IC_{25} are expressed as a percent effluent in the test medium.

Class B biosolids refers to material that has met the Class B pathogen reduction requirements or equivalent treatment by a Process to Significantly Reduce Pathogens (PSRP) in accordance with the Part 24 Rules, Land Application of Biosolids, promulgated under Part 31 of the NREPA. Processes include aerobic digestion, composting, anaerobic digestion, lime stabilization and air drying.

Combined sewer system is a sewer system in which storm water runoff is combined with sanitary wastes.

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PART II

Section A. Definitions

Composite sample is a sample collected over time, either by continuous sampling or by mixing discrete samples. A composite sample represents the average wastewater characteristics during the compositing period. Various methods for compositing are available and are based on either time or flow-proportioning, the choice of which will depend on the permit requirements.
Continuous monitoring refers to sampling/readings that occur at regular and consistent intervals throughout a 24-hour period and at a frequency sufficient to capture data that are representative of the discharge. The maximum acceptable interval between samples/readings shall be one (1) hour.

Daily concentration
FOR PARAMETERS OTHER THAN pH, DISSOLVED OXYGEN, TEMPERATURE, AND CONDUCTIVITY – Daily concentration is the sum of the concentrations of the individual samples of a parameter taken within a calendar day divided by the number of samples taken within that calendar day. The daily concentration will be used to determine compliance with any maximum and minimum daily concentration limitations. For guidance and examples showing how to perform calculations using results below quantification levels, see the document entitled "Reporting Results Below Quantification," available at https://www.michigan.gov/documents/deq/wrd-npdes-results-quantification_620791_7.pdf.

FOR pH, DISSOLVED OXYGEN, TEMPERATURE, AND CONDUCTIVITY – The daily concentration used to determine compliance with maximum daily pH, temperature, and conductivity limitations is the highest pH, temperature, and conductivity readings obtained within a calendar day. The daily concentration used to determine compliance with minimum daily pH and dissolved oxygen limitations is the lowest pH and dissolved oxygen readings obtained within a calendar day.

Daily loading is the total discharge by weight of a parameter discharged during any calendar day. This value is calculated by multiplying the daily concentration by the total daily flow and by the appropriate conversion factor. The daily loading will be used to determine compliance with any maximum daily loading limitations. When required by the permit, report the maximum calculated daily loading for the month in the "MAXIMUM" column under "QUANTITY OR LOADING" on the DMRs.

Daily monitoring frequency refers to a 24-hour day. When required by this permit, an analytical result, reading, value or observation shall be reported for that period if a discharge occurs during that period.

Department means the Michigan Department of Environment, Great Lakes, and Energy.

Detection level means the lowest concentration or amount of the target analyte that can be determined to be different from zero by a single measurement at a stated level of probability.

Discharge means the addition of any waste, waste effluent, wastewater, pollutant, or any combination thereof to any surface water of the state.

EC_{50} means a statistically or graphically estimated concentration that is expected to cause 1 or more specified effects in 50% of a group of organisms under specified conditions.

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PART II

Section A. Definitions

Fecal coliform bacteria monthly
FOR WWSLs THAT COLLECT AND STORE WASTEWATER AND ARE AUTHORIZED TO DISCHARGE ONLY IN THE SPRING AND/OR FALL ON AN INTERMITTENT BASIS – Fecal coliform bacteria monthly is the geometric mean of all daily concentrations determined during a discharge event. Days on which no daily concentration is determined shall not be used to determine the calculated monthly value. The calculated monthly value will be used to determine compliance with the maximum monthly fecal coliform bacteria limitations. When required by the permit, report the calculated monthly value in the "AVERAGE" column under "QUALITY OR CONCENTRATION" on the DMR. If the period in which the discharge event occurred was partially in each of two months, the calculated monthly value shall be reported on the DMR of the month in which the last day of discharge occurred.

FOR ALL OTHER DISCHARGES – Fecal coliform bacteria monthly is the geometric mean of all daily concentrations determined during a reporting month. Days on which no daily concentration is determined shall not be used to determine the calculated monthly value. The calculated monthly value will be used to determine compliance with the maximum monthly fecal coliform bacteria limitations. When required by the permit, report the calculated monthly value in the "AVERAGE" column under "QUALITY OR CONCENTRATION" on the DMR.

Fecal coliform bacteria 7-day
FOR WWSLs THAT COLLECT AND STORE WASTEWATER AND ARE AUTHORIZED TO DISCHARGE ONLY IN THE SPRING AND/OR FALL ON AN INTERMITTENT BASIS – Fecal coliform bacteria 7-day is the geometric mean of the daily concentrations determined during any 7 consecutive days of discharge during a discharge event. If the number of daily concentrations determined during the discharge event is less than 7 days, the number of actual daily concentrations determined shall be used for the calculation. Days on which no daily concentration is determined shall not be used to determine the value. The calculated 7-day value will be used to determine compliance with the maximum 7-day fecal coliform bacteria limitations. When required by the permit, report the maximum calculated 7-day geometric mean value for the month in the "MAXIMUM" column under "QUALITY OR CONCENTRATION" on the DMRs. If the 7-day period was partially in each of two months, the value shall be reported on the DMR of the month in which the last day of discharge occurred.

FOR ALL OTHER DISCHARGES – Fecal coliform bacteria 7-day is the geometric mean of the daily concentrations determined during any 7 consecutive days in a reporting month. If the number of daily concentrations determined is less than 7, the actual number of daily concentrations determined shall be used for the calculation. Days on which no daily concentration is determined shall not be used to determine the value. The calculated 7-day value will be used to determine compliance with the maximum 7-day fecal coliform bacteria limitations. When required by the permit, report the maximum calculated 7-day geometric mean for the month in the "MAXIMUM" column under "QUALITY OR CONCENTRATION" on the DMRs. The first calculation shall be made on day 7 of the reporting month, and the last calculation shall be made on the last day of the reporting month.

Flow-proportioned composite sample is a composite sample in which either a) the volume of each portion of the composite is proportional to the effluent flow rate at the time that portion is obtained, or b) a constant sample volume is obtained at varying time intervals proportional to the effluent flow rate.

General permit means an NPDES permit authorizing a category of similar discharges.

Geometric mean is the average of the logarithmic values of a base 10 data set, converted back to a base 10 number.

Grab sample is a single sample taken at neither a set time nor flow.

IC_{25} means the toxicant concentration that would cause a 25% reduction in a nonquantal biological measurement for the test population.

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Section A. Definitions

Illicit connection means a physical connection to a municipal separate storm sewer system that primarily conveys non-storm water discharges other than uncontaminated groundwater into the storm sewer; or a physical connection not authorized or permitted by the local authority, where a local authority requires authorization or a permit for physical connections.

Illicit discharge means any discharge to, or seepage into, a municipal separate storm sewer system that is not composed entirely of storm water or uncontaminated groundwater. Illicit discharges include non-storm water discharges through pipes or other physical connections; dumping of motor vehicle fluids, household hazardous wastes, domestic animal wastes, or litter; collection and intentional dumping of grass clippings or leaf litter; or unauthorized discharges of sewage, industrial waste, restaurant wastes, or any other non-storm water waste directly into a separate storm sewer.

Individual permit means a site-specific NPDES permit.

Inlet means a catch basin, roof drain, conduit, drain tile, retention pond riser pipe, sump pump, or other point where storm water or wastewater enters into a closed conveyance system prior to discharge off site or into waters of the state.

Interference is a discharge which, alone or in conjunction with a discharge or discharges from other sources, both: 1) inhibits or disrupts a POTW, its treatment processes or operations, or its sludge processes, use or disposal; and 2) therefore, is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation) or, of the prevention of sewage sludge use or disposal in compliance with the following statutory provisions and regulations or permits issued thereunder (or more stringent state or local regulations): Section 405 of the Clean Water Act, the Solid Waste Disposal Act (SWDA) (including Title II, more commonly referred to as the Resource Conservation and Recovery Act (RCRA), and including state regulations contained in any state sludge management plan prepared pursuant to Subtitle D of the SWDA), the Clean Air Act, the Toxic Substances Control Act, and the Marine Protection, Research and Sanctuaries Act. [This definition does not apply to sample matrix interference].

Land application means spraying or spreading biosolids or a biosolids derivative onto the land surface, injecting below the land surface, or incorporating into the soil so that the biosolids or biosolids derivative can either condition the soil or fertilize crops or vegetation grown in the soil.

LC_{50} means a statistically or graphically estimated concentration that is expected to be lethal to 50% of a group of organisms under specified conditions.

Maximum acceptable toxicant concentration (MATC) means the concentration obtained by calculating the geometric mean of the lower and upper chronic limits from a chronic test. A lower chronic limit is the highest tested concentration that did not cause the occurrence of a specific adverse effect. An upper chronic limit is the lowest tested concentration which did cause the occurrence of a specific adverse effect and above which all tested concentrations caused such an occurrence.

Maximum extent practicable means implementation of best management practices by a public body to comply with an approved storm water management program as required by a national permit for a municipal separate storm sewer system, in a manner that is environmentally beneficial, technically feasible, and within the public body's legal authority.

MBTU/hr means million British Thermal Units per hour.

MGD means million gallons per day.

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PART II

Section A. Definitions

Monthly concentration is the sum of the daily concentrations determined during a reporting period divided by the number of daily concentrations determined. The calculated monthly concentration will be used to determine compliance with any maximum monthly concentration limitations. Days with no discharge shall not be used to determine the value. When required by the permit, report the calculated monthly concentration in the "AVERAGE" column under "QUALITY OR CONCENTRATION" on the DMR.

For minimum percent removal requirements, the monthly influent concentration and the monthly effluent concentration shall be determined. The calculated monthly percent removal, which is equal to 100 times the quantity [1 minus the quantity (monthly effluent concentration divided by the monthly influent concentration)], shall be reported in the "MINIMUM" column under "QUALITY OR CONCENTRATION" on the DMRs.

Monthly loading is the sum of the daily loadings of a parameter divided by the number of daily loadings determined during a reporting period. The calculated monthly loading will be used to determine compliance with any maximum monthly loading limitations. Days with no discharge shall not be used to determine the value. When required by the permit, report the calculated monthly loading in the "AVERAGE" column under "QUANTITY OR LOADING" on the DMR.

Monthly monitoring frequency refers to a calendar month. When required by this permit, an analytical result, reading, value or observation shall be reported for that period if a discharge occurs during that period.

Municipal separate storm sewer means a conveyance or system of conveyances designed or used for collecting or conveying storm water which is not a combined sewer and which is not part of a POTW as defined in the Code of Federal Regulations at 40 CFR 122.2.

Municipal separate storm sewer system (MS4) means all separate storm sewers that are owned or operated by the United States, a state, city, village, township, county, district, association, or other public body created by or pursuant to state law, having jurisdiction over disposal of sewage, industrial wastes, storm water, or other wastes, including special districts under state law, such as a sewer district, flood control district, or drainage district, or similar entity, or a designated or approved management agency under Section 208 of the Clean Water Act that discharges to the waters of the state. This term includes systems similar to separate storm sewer systems in municipalities, such as systems at military bases, large hospital or prison complexes, and highways and other thoroughfares. The term does not include separate storm sewers in very discrete areas, such as individual buildings.

National Pretreatment Standards are the regulations promulgated by or to be promulgated by the Federal Environmental Protection Agency pursuant to Section 307(b) and (c) of the Clean Water Act. The standards establish nationwide limits for specific industrial categories for discharge to a POTW.

No observed adverse effect level (NOAEL) means the highest tested dose or concentration of a substance which results in no observed adverse effect in exposed test organisms where higher doses or concentrations result in an adverse effect.

Noncontact cooling water is water used for cooling which does not come into direct contact with any raw material, intermediate product, by-product, waste product or finished product.

Nondomestic user is any discharger to a POTW that discharges wastes other than or in addition to water-carried wastes from toilet, kitchen, laundry, bathing or other facilities used for household purposes.

Nonstructural controls are practices or procedures implemented by employees at a facility to manage storm water or to prevent contamination of storm water.

NPDES means National Pollutant Discharge Elimination System.

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PART II

Section A. Definitions

Outfall is the location at which a point source discharge first enters a surface water of the state.

Part 91 agency means an agency that is designated by a county board of commissioners pursuant to the provisions of Section 9105 of Part 91 of the NREPA; an agency that is designated by a city, village, or township in accordance with the provisions of Section 9106 of Part 91 of the NREPA; or the Department for soil erosion and sedimentation control activities under Part 615, Supervisor of Wells; Part 631, Reclamation of Mining Lands; or Part 632, Nonferrous Metallic Mineral Mining, of the NREPA, pursuant to the provisions of Section 9115 of Part 91 of the NREPA.

Part 91 permit means a soil erosion and sedimentation control permit issued by a Part 91 agency pursuant to the provisions of Part 91 of the NREPA.

Partially treated sewage is any sewage, sewage and storm water, or sewage and wastewater, from domestic or industrial sources that is treated to a level less than that required by the permittee's NPDES permit, or that is not treated to national secondary treatment standards for wastewater, including discharges to surface waters from retention treatment facilities.

Point of discharge is the location of a point source discharge where storm water is discharged directly into a separate storm sewer system.

Point source discharge means a discharge from any discernible, confined, discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, or rolling stock. Changing the surface of land or establishing grading patterns on land will result in a point source discharge where the runoff from the site is ultimately discharged to waters of the state.

Polluting material means any material, in solid or liquid form, identified as a polluting material under the Part 5 Rules, Spillage of Oil and Polluting Materials, promulgated under Part 31 of the NREPA (R 324.2001 through R 324.2009 of the Michigan Administrative Code).

POTW is a publicly owned treatment work.

Predevelopment is the last land use prior to the planned new development or redevelopment.
Pretreatment is reducing the amount of pollutants, eliminating pollutants, or altering the nature of pollutant properties to a less harmful state prior to discharge into a public sewer. The reduction or alteration can be by physical, chemical, or biological processes, process changes, or by other means. Dilution is not considered pretreatment unless expressly authorized by an applicable National Pretreatment Standard for a particular industrial category.

Public (as used in the MS4 individual permit) means all persons who potentially could affect the authorized storm water discharges, including, but not limited to, residents, visitors to the area, public employees, businesses, industries, and construction contractors and developers.

Public body means the United States; the state of Michigan; a city, village, township, county, school district, public college or university, or single-purpose governmental agency; or any other body which is created by federal or state statute or law.

Qualified Personnel means an individual who meets qualifications acceptable to the Department and who is authorized by an Industrial Storm Water Certified Operator to collect the storm water sample.

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PART II

Section A. Definitions

Qualifying storm event means a storm event causing greater than 0.1 inch of rainfall and occurring at least 72 hours after the previous measurable storm event that also caused greater than 0.1 inch of rainfall. Upon request, the Department may approve an alternate definition meeting the condition of a qualifying storm event.

Quantification level means the measurement of the concentration of a contaminant obtained by using a specified laboratory procedure calculated at a specified concentration above the detection level. It is considered the lowest concentration at which a particular contaminant can be quantitatively measured using a specified laboratory procedure for monitoring of the contaminant.

Quarterly monitoring frequency refers to a three month period, defined as January through March, April through June, July through September, and October through December. When required by this permit, an analytical result, reading, value or observation shall be reported for that period if a discharge occurs during that period.

Regional Administrator is the Region 5 Administrator, U.S. EPA, located at R-19J, 77 W. Jackson Blvd., Chicago, Illinois 60604.

Regulated area means the permittee's urbanized area, where urbanized area is defined as a place and its adjacent densely-populated territory that together have a minimum population of 50,000 people as defined by the United States Bureau of the Census and as determined by the latest available decennial census.

Secondary containment structure means a unit, other than the primary container, in which significant materials are packaged or held, which is required by state or federal law to prevent the escape of significant materials by gravity into sewers, drains, or otherwise directly or indirectly into any sewer system or to the surface waters or groundwaters of the state.

Separate storm sewer system means a system of drainage, including, but not limited to, roads, catch basins, curbs, gutters, parking lots, ditches, conduits, pumping devices, or man-made channels, which is not a combined sewer where storm water mixes with sanitary wastes, and is not part of a POTW.

Significant industrial user is a nondomestic user that: 1) is subject to Categorical Pretreatment Standards under 40 CFR 403.6 and 40 CFR Chapter I, Subchapter N; or 2) discharges an average of 25,000 gallons per day or more of process wastewater to a POTW (excluding sanitary, noncontact cooling and boiler blowdown wastewater); contributes a process waste stream which makes up five (5) percent or more of the average dry weather hydraulic or organic capacity of the POTW treatment plant; or is designated as such by the permittee as defined in 40 CFR 403.12(a) on the basis that the industrial user has a reasonable potential for adversely affecting the POTW's treatment plant operation or violating any pretreatment standard or requirement (in accordance with 40 CFR 403.8(f)(6)).

Significant materials means any material which could degrade or impair water quality, including but not limited to: raw materials; fuels; solvents, detergents, and plastic pellets; finished materials such as metallic products; hazardous substances designated under Section 101(14) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (see 40 CFR 372.65); any chemical the facility is required to report pursuant to Section 313 of Emergency Planning and Community Right-to-Know Act (EPCRA); polluting materials as identified under the Part 5 Rules (R 324.2001 through R 324.2009 of the Michigan Administrative Code); Hazardous Wastes as defined in Part 111, Hazardous Waste Management, of the NREPA; fertilizers; pesticides; and waste products such as ashes, slag, and sludge that have the potential to be released with storm water discharges.

Significant spills and significant leaks means any release of a polluting material reportable under the Part 5 Rules (R 324.2001 through R 324.2009 of the Michigan Administrative Code).

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PART II

Section A. Definitions

Special-use area means storm water discharges for which the Department has determined that additional monitoring is needed from: secondary containment structures required by state or federal law; lands on Michigan's List of Sites of Environmental Contamination pursuant to Part 201, Environmental Remediation, of the NREPA; and/or areas with other activities that may contribute pollutants to the storm water.

Stoichiometric means the quantity of a reagent calculated to be necessary and sufficient for a given chemical reaction.

Storm water means storm water runoff, snow melt runoff, surface runoff and drainage, and non-storm water included under the conditions of this permit.

Storm water discharge point is the location where the point source discharge of storm water is directed to surface waters of the state or to a separate storm sewer. It includes the location of all point source discharges where storm water exits the facility, including *outfalls* which discharge directly to surface waters of the state, and *points of discharge* which discharge directly into separate storm sewer systems.

Structural controls are physical features or structures used at a facility to manage or treat storm water.

SWPPP means the Storm Water Pollution Prevention Plan prepared in accordance with this permit.

Tier I value means a value for aquatic life, human health or wildlife calculated under R 323.1057 of the Water Quality Standards using a tier I toxicity database.

Tier II value means a value for aquatic life, human health or wildlife calculated under R 323.1057 of the Water Quality Standards using a tier II toxicity database.

Total maximum daily loads (TMDLs) are required by the Clean Water Act for waterbodies that do not meet water quality standards. TMDLs represent the maximum daily load of a pollutant that a waterbody can assimilate and meet water quality standards, and an allocation of that load among point sources, nonpoint sources, and a margin of safety.

Toxicity reduction evaluation (TRE) means a site-specific study conducted in a stepwise process designed to identify the causative agents of effluent toxicity, isolate the sources of toxicity, evaluate the effectiveness of toxicity control options, and then confirm the reduction in effluent toxicity.

Water Quality Standards means the Part 4 Water Quality Standards promulgated pursuant to Part 31 of the NREPA, being R 323.1041 through R 323.1117 of the Michigan Administrative Code.

Weekly monitoring frequency refers to a calendar week which begins on Sunday and ends on Saturday. When required by this permit, an analytical result, reading, value, or observation shall be reported for that period if a discharge occurs during that period. If the calendar week begins in one month and ends in the following month, the analytical result, reading, value, or observation shall be reported in the month in which monitoring was conducted.

WWSL is a wastewater stabilization lagoon.

WWSL discharge event is a discrete occurrence during which effluent is discharged to the surface water up to 10 days of a consecutive 14-day period.

3-portion composite sample is a sample consisting of three equal-volume grab samples collected at equal intervals over an 8-hour period.

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PART II

Section A. Definitions

7-day concentration
FOR WWSLs THAT COLLECT AND STORE WASTEWATER AND ARE AUTHORIZED TO DISCHARGE ONLY IN THE SPRING AND/OR FALL ON AN INTERMITTENT BASIS – The 7-day concentration is the sum of the daily concentrations determined during any 7 consecutive days of discharge during a WWSL discharge event divided by the number of daily concentrations determined. If the number of daily concentrations determined during the WWSL discharge event is less than 7 days, the number of actual daily concentrations determined shall be used for the calculation. The calculated 7-day concentration will be used to determine compliance with any maximum 7-day concentration limitations. When required by the permit, report the maximum calculated 7-day concentration for the WWSL discharge event in the "MAXIMUM" column under "QUALITY OR CONCENTRATION" on the DMR. If the WWSL discharge event was partially in each of two months, the value shall be reported on the DMR of the month in which the last day of discharge occurred.

FOR ALL OTHER DISCHARGES – The 7-day concentration is the sum of the daily concentrations determined during any 7 consecutive days in a reporting month divided by the number of daily concentrations determined. If the number of daily concentrations determined is less than 7, the actual number of daily concentrations determined shall be used for the calculation. The calculated 7-day concentration will be used to determine compliance with any maximum 7-day concentration limitations in the reporting month. When required by the permit, report the maximum calculated 7-day concentration for the month in the "MAXIMUM" column under "QUALITY OR CONCENTRATION" on the DMR. The first 7-day calculation shall be made on day 7 of the reporting month, and the last calculation shall be made on the last day of the reporting month.

7-day loading
FOR WWSLs THAT COLLECT AND STORE WASTEWATER AND ARE AUTHORIZED TO DISCHARGE ONLY IN THE SPRING AND/OR FALL ON AN INTERMITTENT BASIS – The 7-day loading is the sum of the daily loadings determined during any 7 consecutive days of discharge during a WWSL discharge event divided by the number of daily loadings determined. If the number of daily loadings determined during the WWSL discharge event is less than 7 days, the number of actual daily loadings determined shall be used for the calculation. The calculated 7-day loading will be used to determine compliance with any maximum 7-day loading limitations. When required by the permit, report the maximum calculated 7-day loading for the WWSL discharge event in the "MAXIMUM" column under "QUANTITY OR LOADING" on the DMR. If the WWSL discharge event was partially in each of two months, the value shall be reported on the DMR of the month in which the last day of discharge occurred.

FOR ALL OTHER DISCHARGES – The 7-day loading is the sum of the daily loadings determined during any 7 consecutive days in a reporting month divided by the number of daily loadings determined. If the number of daily loadings determined is less than 7, the actual number of daily loadings determined shall be used for the calculation. The calculated 7-day loading will be used to determine compliance with any maximum 7-day loading limitations in the reporting month. When required by the permit, report the maximum calculated 7-day loading for the month in the "MAXIMUM" column under "QUANTITY OR LOADING" on the DMR. The first 7-day calculation shall be made on day 7 of the reporting month, and the last calculation shall be made on the last day of the reporting month.

24-hour composite sample is a flow-proportioned composite sample consisting of hourly or more frequent portions that are taken over a 24-hour period and in which the volume of each portion is proportional to the discharge flow rate at the time that portion is taken. A time-proportioned composite sample may be used upon approval from the Department if the permittee demonstrates it is representative of the discharge.

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PART II

Section B. Monitoring Procedures

1. Representative Samples

Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge.

2. Test Procedures

Test procedures for the analysis of pollutants shall conform to regulations promulgated pursuant to Section 304(h) of the Clean Water Act (40 CFR Part 136 – Guidelines Establishing Test Procedures for the Analysis of Pollutants), unless specified otherwise in this permit. **Test procedures used shall be sufficiently sensitive to determine compliance with applicable effluent limitations**. For lists of approved test methods, go to https://www.epa.gov/cwa-methods. Requests to use test procedures not promulgated under 40 CFR Part 136 for pollutant monitoring required by this permit shall be made in accordance with the Alternate Test Procedures regulations specified in 40 CFR 136.4. These requests shall be submitted to the Manager of the Permits Section, Water Resources Division, Michigan Department of Environment, Great Lakes, and Energy, P.O. Box 30458, Lansing, Michigan, 48909-7958. The permittee may use such procedures upon approval.

The permittee shall periodically calibrate and perform maintenance procedures on all analytical instrumentation at intervals to ensure accuracy of measurements. The calibration and maintenance shall be performed as part of the permittee's laboratory Quality Assurance/Quality Control program.

3. Instrumentation

The permittee shall periodically calibrate and perform maintenance procedures on all monitoring instrumentation at intervals to ensure accuracy of measurements.

4. Recording Results

For each measurement or sample taken pursuant to the requirements of this permit, the permittee shall record the following information: 1) the exact place, date, and time of measurement or sampling; 2) the person(s) who performed the measurement or sample collection; 3) the dates the analyses were performed; 4) the person(s) who performed the analyses; 5) the analytical techniques or methods used; 6) the date of and person responsible for equipment calibration; and 7) the results of all required analyses.

5. Records Retention

All records and information resulting from the monitoring activities required by this permit, including all records of analyses performed, calibration and maintenance of instrumentation, and recordings from continuous monitoring instrumentation, shall be retained for a minimum of three (3) years, or longer if requested by the Regional Administrator or the Department.

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PART II

Section C. Reporting Requirements

1. Start-Up Notification

The permittee shall notify the Department of start-up if one of the following conditions applies and in accordance with the applicable condition:

a. Non-CAFOs

1) **If this is an individual permit** and the permittee will not discharge during the first 60 days following the effective date of this permit, the permittee shall notify the Department via MiWaters within 14 days following the effective date of this permit, and then again 60 days prior to commencement of the discharge.

2) **If this is a general permit** and the permittee will not discharge during the first 60 days following the effective date of the Certificate of Coverage (COC) issued under this general permit, the permittee shall notify the Department via MiWaters within 14 days following the effective date of the COC, and then again 60 days prior to commencement of the discharge.

b. CAFOs

1) **If this is an individual permit** and the permittee will not populate with animals during the first 60 days following the effective date of this permit, the permittee shall notify the Department via MiWaters within 14 days following the effective date of this permit, and then again 60 days prior to populating with animals.

2) **If this is a general permit** and the permittee will not populate with animals during 60 days following the effective date of the Certificate of Coverage (COC) issued under this general permit, the permittee shall notify the Department via MiWaters within 14 days following the effective date of the COC, and then again 60 days prior to populating with animals.

2. Submittal Requirements for Self-Monitoring Data

Part 31 of the NREPA (specifically Section 324.3110(7)); and R 323.2155(2) of Part 21, Wastewater Discharge Permits, promulgated under Part 31 of the NREPA, allow the Department to specify the forms to be utilized for reporting the required self-monitoring data. Unless instructed on the effluent limitations page to conduct "Retained Self-Monitoring," the permittee shall submit self-monitoring data via the Department's MiWaters system.

The permittee shall utilize the information provided on the MiWaters website, located at https://miwaters.deq.state.mi.us, to access and submit the electronic forms. Both monthly summary and daily data shall be submitted to the Department no later than the 20th day of the month following each month of the authorized discharge period(s). The permittee may be allowed to submit the electronic forms after this date if the Department has granted an extension to the submittal date.

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PART II

Section C. Reporting Requirements

3. Retained Self-Monitoring Requirements

If instructed on the effluent limits page (or otherwise authorized by the Department in accordance with the provisions of this permit) to conduct retained self-monitoring, the permittee shall maintain a year-to-date log of retained self-monitoring results and, upon request, provide such log for inspection to the staff of the Department. Retained self-monitoring results are public information and shall be promptly provided to the public upon request.

The permittee shall certify, in writing, to the Department, on or before January 10th (April 1st for animal feeding operation facilities) of each year, that: 1) all retained self-monitoring requirements have been complied with and a year-to-date log has been maintained; and 2) the application on which this permit is based still accurately describes the discharge. With this annual certification, the permittee shall submit a summary of the previous year's monitoring data. The summary shall include maximum values for samples to be reported as daily maximums and/or monthly maximums and minimum values for any daily minimum samples.

Retained self-monitoring may be denied to a permittee by notification in writing from the Department. In such cases, the permittee shall submit self-monitoring data in accordance with Part II.C.2., above. Such a denial may be rescinded by the Department upon written notification to the permittee. Reissuance or modification of this permit or reissuance or modification of an individual permittee's authorization to discharge shall not affect previous approval or denial for retained self-monitoring unless the Department provides notification in writing to the permittee.

4. Additional Monitoring by Permittee

If the permittee monitors any pollutant at the location(s) designated herein more frequently than required by this permit, using approved analytical methods as specified above, the results of such monitoring shall be included in the calculation and reporting of the values required in the Discharge Monitoring Report. Such increased frequency shall also be indicated.

Monitoring required pursuant to Part 41 of the NREPA or Rule 35 of the Mobile Home Park Commission Act, 1987 PA 96, as amended, for assurance of proper facility operation, shall be submitted as required by the Department.

5. Compliance Dates Notification

Within 14 days of every compliance date specified in this permit, the permittee shall submit a written notification to the Department via MiWaters (https://miwaters.deq.state.mi.us) indicating whether or not the particular requirement was accomplished. If the requirement was not accomplished, the notification shall include an explanation of the failure to accomplish the requirement, actions taken or planned by the permittee to correct the situation, and an estimate of when the requirement will be accomplished. If a written report is required to be submitted by a specified date and the permittee accomplishes this, a separate written notification is not required.

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PART II

Section C. Reporting Requirements

6. Noncompliance Notification

Compliance with all applicable requirements set forth in the Clean Water Act, Parts 31 and 41 of the NREPA, and related regulations and rules is required. All instances of noncompliance shall be reported as follows:

a. 24-Hour Reporting
Any noncompliance which may endanger health or the environment (including maximum and/or minimum daily concentration discharge limitation exceedances) shall be reported, verbally, within 24 hours from the time the permittee becomes aware of the noncompliance by calling the Department at the number indicated on the second page of this permit (or, if this is a general permit, on the COC). A written submission shall also be provided via MiWaters (https://miwaters.deq.state.mi.us) within five (5) days.

b. Other Reporting
The permittee shall report, in writing via MiWaters (https://miwaters.deq.state.mi.us), all other instances of noncompliance not described in a. above at the time monitoring reports are submitted; or, in the case of retained self-monitoring, within five (5) days from the time the permittee becomes aware of the noncompliance.

Reporting shall include: 1) a description of the discharge and cause of noncompliance; 2) the period of noncompliance, including exact dates and times, or, if not yet corrected, the anticipated time the noncompliance is expected to continue; and 3) the steps taken to reduce, eliminate, and prevent recurrence of the noncomplying discharge.

7. Spill Notification

The permittee shall immediately report any release of any polluting material which occurs to the surface waters or groundwaters of the state, unless the permittee has determined that the release is not in excess of the threshold reporting quantities specified in the Part 5 Rules (R 324.2001 through R 324.2009 of the Michigan Administrative Code), by calling the Department at the number indicated on the second page of this permit (or, if this is a general permit, on the COC); or, if the notice is provided after regular working hours, by calling the Department's 24-hour Pollution Emergency Alerting System telephone number, 1-800-292-4706.

Within 10 days of the release, the permittee shall submit to the Department via MiWaters (https://miwaters.deq.state.mi.us) a full written explanation as to the cause of the release, the discovery of the release, response measures (clean-up and/or recovery) taken, and preventive measures taken or a schedule for completion of measures to be taken to prevent reoccurrence of similar releases.

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PART II

Section C. Reporting Requirements

8. Upset Noncompliance Notification

If a process "upset" (defined as an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the permittee) has occurred, the permittee who wishes to establish the affirmative defense of upset shall notify the Department by telephone within 24 hours of becoming aware of such conditions; and within five (5) days, provide in writing, the following information:

a. that an upset occurred and that the permittee can identify the specific cause(s) of the upset;

b. that the permitted wastewater treatment facility was, at the time, being properly operated and maintained (note that an upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation); and

c. that the permittee has specified and taken action on all responsible steps to minimize or correct any adverse impact in the environment resulting from noncompliance with this permit.

No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

In any enforcement proceedings, the permittee, seeking to establish the occurrence of an upset, has the burden of proof.

9. Bypass Prohibition and Notification

a. Bypass Prohibition
Bypass is prohibited, and the Department may take an enforcement action, unless:

1) bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

2) there were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate backup equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass; and

3) the permittee submitted notices as required under b. or c. below.

b. Notice of Anticipated Bypass
If the permittee knows in advance of the need for a bypass, the permittee shall submit written notification to the Department before the anticipated date of the bypass. This notification shall be submitted at least 10 days before the date of the bypass; however, the Department will accept fewer than 10 days advance notice if adequate explanation for this is provided. The notification shall provide information about the anticipated bypass as required by the Department. The Department may approve an anticipated bypass, after considering its adverse effects, if it will meet the three (3) conditions specified in a. above.

c. Notice of Unanticipated Bypass
As soon as possible but no later than 24 hours from the time the permittee becomes aware of the unanticipated bypass, the permittee shall notify the Department by calling the number indicated on the second page of this permit (or, if this is a general permit, on the COC); or, if notification is provided after regular working hours, call the Department's 24-hour Pollution Emergency Alerting System telephone number, 1-800-292-4706.

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PART II

Section C. Reporting Requirements

d. Written Report of Bypass
A written submission shall be provided within five (5) working days of commencing any bypass to the Department, and at additional times as directed by the Department. The written submission shall contain a description of the bypass and its cause; the period of bypass, including exact dates and times, and if the bypass has not been corrected, the anticipated time it is expected to continue; steps taken or planned to reduce, eliminate, and prevent reoccurrence of the bypass; and other information as required by the Department.

e. Bypass Not Exceeding Limitations
The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to ensure efficient operation. These bypasses are not subject to the provisions of a., b., c., and d., above. This provision does not relieve the permittee of any notification responsibilities under Part II.C.11. of this permit.

f. Definitions

1) Bypass means the intentional diversion of waste streams from any portion of a treatment facility.

2) Severe property damage means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

10. Bioaccumulative Chemicals of Concern (BCC)

Consistent with the requirements of R 323.1098 and R 323.1215 of the Michigan Administrative Code, the permittee is prohibited from undertaking any action that would result in a lowering of water quality from an increased loading of a BCC unless an increased use request and antidegradation demonstration have been submitted and approved by the Department.

11. Notification of Changes in Discharge

The permittee shall notify the Department, via MiWaters (https://miwaters.deq.state.mi.us), as soon as possible but within no more than 10 days of knowing, or having reason to believe, that any activity or change has occurred or will occur which would result in the discharge of: 1) detectable levels of chemicals on the current Michigan Critical Materials Register, priority pollutants or hazardous substances set forth in 40 CFR 122.21, Appendix D, or the Pollutants of Initial Focus in the Great Lakes Water Quality Initiative specified in 40 CFR 132.6, Table 6, which were not acknowledged in the application or listed in the application at less than detectable levels; 2) detectable levels of any other chemical not listed in the application or listed at less than detection, for which the application specifically requested information; or 3) any chemical at levels greater than five times the average level reported in the complete application (see the first page of this permit, for the date(s) the complete application was submitted). Any other monitoring results obtained as a requirement of this permit shall be reported in accordance with the compliance schedules.

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PART II

Section C. Reporting Requirements

12. Changes in Facility Operations

Any anticipated action or activity, including but not limited to facility expansion, production increases, or process modification, which will result in new or increased loadings of pollutants to the receiving waters must be reported to the Department by a) submission of an increased use request (application) and all information required under R 323.1098 (Antidegradation) of the Water Quality Standards or b) by written notice if the following conditions are met: 1) the action or activity will not result in a change in the types of wastewater discharged or result in a greater quantity of wastewater than currently authorized by this permit; 2) the action or activity will not result in violations of the effluent limitations specified in this permit; 3) the action or activity is not prohibited by the requirements of Part II.C.10.; and 4) the action or activity will not require notification pursuant to Part II.C.11. Following such written notice, the permit or, if applicable, the facility's COC, may be modified according to applicable laws and rules to specify and limit any pollutant not previously limited.

13. Transfer of Ownership or Control

In the event of any change in ownership or control of facilities from which the authorized discharge emanates, the following requirements apply: Not less than 30 days prior to the actual transfer of ownership or control – for non-CAFOs, or within 30 days of the actual transfer of ownership or control – for CAFOs, the permittee shall submit to the Department via MiWaters (https://miwaters.deq.state.mi.us) a written agreement between the current permittee and the new permittee containing: 1) the legal name and address of the new owner; 2) a specific date for the effective transfer of permit responsibility, coverage and liability; and 3) a certification of the continuity of or any changes in operations, wastewater discharge, or wastewater treatment.

If the new permittee is proposing changes in operations, wastewater discharge, or wastewater treatment, the Department may propose modification of this permit in accordance with applicable laws and rules.

14. Operations and Maintenance Manual

For wastewater treatment facilities that serve the public (and are thus subject to Part 41 of the NREPA), Section 4104 of Part 41 and associated Rule 2957 of the Michigan Administrative Code allow the Department to require an Operations and Maintenance (O&M) Manual from the facility. An up-to-date copy of the O&M Manual shall be kept at the facility and shall be provided to the Department upon request. The Department may review the O&M Manual in whole or in part at its discretion and require modifications to it if portions are determined to be inadequate.

At a minimum, the O&M Manual shall include the following information: permit standards; descriptions and operation information for all equipment; staffing information; laboratory requirements; record keeping requirements; a maintenance plan for equipment; an emergency operating plan; safety program information; and copies of all pertinent forms, as-built plans, and manufacturer's manuals.

Certification of the existence and accuracy of the O&M Manual shall be submitted to the Department at least sixty days prior to start-up of a new wastewater treatment facility. Recertification shall be submitted sixty days prior to start-up of any substantial improvements or modifications made to an existing wastewater treatment facility.

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PART II

Section C. Reporting Requirements

15. Signatory Requirements

All applications, reports, or information submitted to the Department in accordance with the conditions of this permit and that require a signature shall be signed and certified as described in the Clean Water Act and the NREPA.

The Clean Water Act provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance, shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than 6 months per violation, or by both.

The NREPA (Section 3115(2)) provides that a person who at the time of the violation knew or should have known that he or she discharged a substance contrary to this part, or contrary to a permit, COC, or order issued or rule promulgated under this part, or who intentionally makes a false statement, representation, or certification in an application for or form pertaining to a permit or COC or in a notice or report required by the terms and conditions of an issued permit or COC, or who intentionally renders inaccurate a monitoring device or record required to be maintained by the Department, is guilty of a felony and shall be fined not less than $2,500.00 or more than $25,000.00 for each violation. The court may impose an additional fine of not more than $25,000.00 for each day during which the unlawful discharge occurred. If the conviction is for a violation committed after a first conviction of the person under this subsection, the court shall impose a fine of not less than $25,000.00 per day and not more than $50,000.00 per day of violation. Upon conviction, in addition to a fine, the court in its discretion may sentence the defendant to imprisonment for not more than 2 years or impose probation upon a person for a violation of this part. With the exception of the issuance of criminal complaints, issuance of warrants, and the holding of an arraignment, the circuit court for the county in which the violation occurred has exclusive jurisdiction. However, the person shall not be subject to the penalties of this subsection if the discharge of the effluent is in conformance with and obedient to a rule, order, permit, or COC of the Department. In addition to a fine, the attorney general may file a civil suit in a court of competent jurisdiction to recover the full value of the injuries done to the natural resources of the state and the costs of surveillance and enforcement by the state resulting from the violation.

16. Electronic Reporting

Upon notice by the Department that electronic reporting tools are available for specific reports or notifications, the permittee shall submit electronically via MiWaters (https://miwaters.deq.state.mi.us) all such reports or notifications as required by this permit, on forms provided by the Department.

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PART II

Section D. Management Responsibilities

PART II

Section D. Management Responsibilities

1. Duty to Comply

All discharges authorized herein shall be consistent with the terms and conditions of this permit. The discharge of any pollutant identified in this permit, more frequently than, or at a level in excess of, that authorized, shall constitute a violation of the permit.

It is the duty of the permittee to comply with all the terms and conditions of this permit. Any noncompliance with the Effluent Limitations, Special Conditions, or terms of this permit constitutes a violation of the NREPA and/or the Clean Water Act and constitutes grounds for enforcement action; for permit or COC termination, revocation and reissuance, or modification; or denial of an application for permit or COC renewal.

It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

2. Operator Certification

The permittee shall have the waste treatment facilities under direct supervision of an operator certified at the appropriate level for the facility certification by the Department, as required by Sections 3110 and 4104 of the NREPA. Permittees authorized to discharge storm water shall have the storm water treatment and/or control measures under direct supervision of a storm water operator certified by the Department, as required by Section 3110 of the NREPA.

3. Facilities Operation

The permittee shall, at all times, properly operate and maintain all treatment or control facilities or systems installed or used by the permittee to achieve compliance with the terms and conditions of this permit. Proper operation and maintenance includes adequate laboratory controls and appropriate quality assurance procedures.

4. Power Failures

In order to maintain compliance with the effluent limitations of this permit and prevent unauthorized discharges, the permittee shall either:

a. provide an alternative power source sufficient to operate facilities utilized by the permittee to maintain compliance with the effluent limitations and conditions of this permit; or

b. upon the reduction, loss, or failure of one or more of the primary sources of power to facilities utilized by the permittee to maintain compliance with the effluent limitations and conditions of this permit, the permittee shall halt, reduce or otherwise control production and/or all discharge in order to maintain compliance with the effluent limitations and conditions of this permit.

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PART II

Section D. Management Responsibilities

5. Adverse Impact

The permittee shall take all reasonable steps to minimize or prevent any adverse impact to the surface waters or groundwaters of the state resulting from noncompliance with any effluent limitation specified in this permit including, but not limited to, such accelerated or additional monitoring as necessary to determine the nature and impact of the discharge in noncompliance.

6. Containment Facilities

The permittee shall provide facilities for containment of any accidental losses of polluting materials in accordance with the requirements of the Part 5 Rules (R 324.2001 through R 324.2009 of the Michigan Administrative Code). For a POTW, these facilities shall be approved under Part 41 of the NREPA.

7. Waste Treatment Residues

Residuals (i.e. solids, sludges, biosolids, filter backwash, scrubber water, ash, grit, or other pollutants or wastes) removed from or resulting from treatment or control of wastewaters, including those that are generated during treatment or left over after treatment or control has ceased, shall be disposed of in an environmentally compatible manner and according to applicable laws and rules. These laws may include, but are not limited to, the NREPA, Part 31 for protection of water resources, Part 55 for air pollution control, Part 111 for hazardous waste management, Part 115 for solid waste management, Part 121 for liquid industrial wastes, Part 301 for protection of inland lakes and streams, and Part 303 for wetlands protection. Such disposal shall not result in any unlawful pollution of the air, surface waters or groundwaters of the state.

8. Right of Entry

The permittee shall allow the Department, any agent appointed by the Department, or the Regional Administrator, upon the presentation of credentials and, for animal feeding operation facilities, following appropriate biosecurity protocols:

a. to enter upon the permittee's premises where an effluent source is located or any place in which records are required to be kept under the terms and conditions of this permit; and

b. at reasonable times to have access to and copy any records required to be kept under the terms and conditions of this permit; to inspect process facilities, treatment works, monitoring methods and equipment regulated or required under this permit; and to sample any discharge of pollutants.

9. Availability of Reports

Except for data determined to be confidential under Section 308 of the Clean Water Act and Rule 2128 (R 323.2128 of the Michigan Administrative Code), all reports prepared in accordance with the terms of this permit and required to be submitted to the Department shall be available for public inspection via MiWaters (https://miwaters.deq.state.mi.us). As required by the Clean Water Act, effluent data shall not be considered confidential. Knowingly making any false statement on any such report may result in the imposition of criminal penalties as provided for in Section 309 of the Clean Water Act and Sections 3112, 3115, 4106 and 4110 of the NREPA.

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PART II

Section D. Management Responsibilities

10. Duty to Provide Information

The permittee shall furnish to the Department via MiWaters (https://miwaters.deq.state.mi.us), within a reasonable time, any information which the Department may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or the facility's COC, or to determine compliance with this permit. The permittee shall also furnish to the Department, upon request, copies of records required to be kept by this permit.

Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Department, it shall promptly submit such facts or information.

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Section E. Activities Not Authorized by This Permit

1. Discharge to the Groundwaters

This permit does not authorize any discharge to the groundwaters. Such discharge may be authorized by a groundwater discharge permit issued pursuant to the NREPA.

2. POTW Construction

This permit does not authorize or approve the construction or modification of any physical structures or facilities at a POTW. Approval for the construction or modification of any physical structures or facilities at a POTW shall be by permit issued under Part 41 of the NREPA.

3. Civil and Criminal Liability

Except as provided in permit conditions on "Bypass" (Part II.C.9. pursuant to 40 CFR 122.41(m)), nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for noncompliance, whether or not such noncompliance is due to factors beyond the permittee's control, such as accidents, equipment breakdowns, or labor disputes.

4. Oil and Hazardous Substance Liability

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee may be subject under Section 311 of the Clean Water Act except as are exempted by federal regulations.

5. State Laws

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable state law or regulation under authority preserved by Section 510 of the Clean Water Act.

6. Property Rights

The issuance of this permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize violation of any federal, state or local laws or regulations, nor does it obviate the necessity of obtaining such permits, including any other Department of Environment, Great Lakes, and Energy permits, or approvals from other units of government as may be required by law.

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Appendix B

CWSRF Project Planning Document:

Asset Management Plan

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City of Sault Ste. Marie

Sault St. Marie, MI | 225 E. Portage Ave. | Sault Ste. Marie, MI

City of Sault Ste. Marie
Wastewater and Stormwater System Asset Management Plan

December 2022

Submitted by:
Brian Masterson

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Appendix A – Fixed Asset Registry

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CHAPTER 1 – EXECUTIVE SUMMARY

1.1 INTRODUCTION

The City of Sault Ste. Marie (City) is developing an asset management program to comply with requirements in Michigan's National Pollution Discharge Elimination System (NPDES) permit. The intent of the asset management program is to ensure the City continues to cost effectively and reliably provide wastewater treatment services to their customers.

1.2 CITY OF SAULT ST. MARIE SYSTEM

The City's wastewater system includes a diverse group of assets including a wastewater treatment plant, lift stations and a collection system. The collection system includes a combination of gravity sewers, lift stations and force mains to serve the City of Sault Ste. Marie.

On average the City treats 2.5 million gallons per day with a maximum capacity of more than 10.0 million gallons per day.

1.3 ASSET MANAGEMENT PLANNING

The asset management plan outlines the management strategies for each service area and the necessary investments required to provide a defined level of service in the most cost effective way. The City's objectives for the asset management program are:

- Make decisions that are based on data, sound principles, and an ethical framework
- Maintain infrastructure assets that are up-to-date, reliable, and suited for purpose
- Maintain regulatory compliance
- Continue a reputation for high quality and responsive customer service
- Provide transparency where citizens and customers are informed and involved
- Maintain the highest regard for the health and welfare
- Encourage economic growth and vitality
- Maintain rates that are stable and affordable.

The City uses GIS to manage the collection system assets. Data and information from the City's systems are used to balance costs, risks, opportunities and performance to achieve the City's level of service objectives.

The goal is to position the City's staff over time to address the following questions: (taken from EPA Simple):

- What is the current state of my assets?
- What is my required level of service?
- Which assets are critical to sustained performance?
- What are the minimum life cycle costs capital improvement program (CIP) and operation and maintenance (O&M) strategies?
- What are my best O&M and CIP investment strategies?

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1.4 ASSET MANAGEMENT FRAMEWORK

Asset management is a strategy designed to achieve the following objectives

- Utilize assets to provide defined levels of service
- Maintain a level of risk acceptable to the organization
- Achieve service level and risk objectives at the lowest life cycle cost

The City is developing an asset management framework that includes policy, strategy and planning for the effective management of system assets.

The key components of an asset management framework include:

- An agreed **policy** that establishes the principles and requirements for asset management and incorporates an accountability structure that identifies roles and responsibilities.
- A **strategy** that sets out the actions needed to implement the policy and links the asset performance to level of service objectives
- Asset management **plans** that link to the policy, strategy, long-term financial plans and intended levels of service.
- Systems that support the **operational** needs of the City to execute maintenance, manage efficiency, implement capital and report performance.

1.5 ASSET INVENTORY AND LEVELS OF SERVICE

The City's currently uses systems to manage the asset inventory for the water treatment plant and distribution system. The wastewater treatment asset registry is developed in Microsoft Excel. The collection system assets are managed in GIS. The wastewater treatment plant asset registry is included in Appendix A.

1.5.1 LEVELS OF SERVICE

The City's level of service (LOS) objectives are primarily based on compliance with the measurable state and federal drinking water standards. The level of service objectives are managed as part of a business risk evaluation process. The City is developing the level of service objectives and business risk evaluation for incorporation into the system asset management plan.

1.6 BUDGET SUFFICIENCY

The objectives of the asset management plan are as follows:

- Develop financial plans that properly fund operation and maintenance (O&M) expenses, capital repair and replacement and provide for prudent levels of operating reserves.
- Review current rate structures for the water and sewer enterprises and make recommendations regarding increasing fixed cost recovery

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The plans goals are to achieve independent financial sustainability for the wastewater system funds over the next five years. This includes developing positive cash flow as well as building an appropriate level of operating reserves and developing the capacity to cash fund certain capital projects.

1.7 CAPITAL PLANNING

The City develops a capital improvement plan (CIP) on an annual basis. The CIP identifies major capital improvement projects needed and/or plannied to achieve the level of service objectives.

1.7.1 SYSTEM NEEDS FOR THE NEXT 20 YEARS

The planning process developed routine repair and replacement costs anticipated for the wastewater system over a 20 year period are summarized in Table 1-1 and Table 1-2.

Table 1-1 Wastewater Treatment Plant Capital Plan

Name	Description	Costs
Rehab and Renewal Projects	• Secondary clarifier mechanism replacements • RBC replacements (shafts, media, blowers) • Structural repairs (doors, brick improvements) • NFPA compliance (initial concepts)	$8,258,000
Preliminary Treatment	• Five screw pump rehabilitations • Influent screens • Gates • Influent grit removal • Potential structure improvements	$8,885,000
Disinfection System	• New disinfection system facilities	$7,276,000
Biosolids Handling	• Replace two BFPs with a single BFP • Polymer makeup system • Scum concentrator • Pump replacement	$3,775,000
Anaerobic Digester	• Replace covers • Replacing mixing • Improve digester feed and withdrawal • Improve heating	$18,183,000
Electrical and I&C	• Site electrical improvements • New electrical distribution in existing Chlorine Room • Site I&C communications and control distribution	$3,386,000

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Table 1-2 Wastewater Collection System Capital Plan

Project		Fiscal Year	
No.	**Name**	**2024**	**2025 - 2029**
1	Peck and Meridian	$5,180,000	
2	Power and Canal		$975,000
3	I-500 Sewer		$790,000
4	McCandless/Ravine St		$830,000
5	16th and 20th Avenue/John St		$831,000
6	Stormwater Catch Basin Separations		$572,000
7	Collection System Modeling		$300,000

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CHAPTER 2 STAFFING PLAN

2.1 INTRODUCTION

The Northeast Guide for Estimating Staffing at Publicly and Privately Owned Wastewater Treatment Plants was used as a benchmark reference to consider adequate staffing at the treatment plant. This standard takes into account technological advances made in wastewater treatment such as SCADA, GIS, and computerized maintenance management systems The guide estimated 7.0 full time equivalent employees are necessary to operate and maintain the system. The facility staffing exceeds the estimated amount.

Maintenance Staff Requirements	Included
Is there an explanation of how the staffing level was determined?	✓
Are FTE's determined?	✓
Is a Quantitative method used in the plan?	✓
Include collection system and plant?	✓
Does plant staffing include lab?	✓

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CHAPTER 3 COLLECTION SYSTEM MAPPING

3.1 INTRODUCTION

The City currently uses ERSI ArcGIS Enterprise (ELA) to manage the collection system and stormwater assets. The collection system mapping is available through an internet portal. A map of the sanitary and storm collection system is included in Figure 3-1 and**Error! Reference source not found.**Figure 3-2. Collection system attributes mapped and managed in GIS include:

Collection System Mapping Requirements	Included
Is there a collection system map and how was it created (as built drawings, physical survey, electronic)?	✓
Does the plan state that the collection system map include sanitary and storm water lines, facilities, manholes, connections, sizes, elevations and related attributes.	✓

- All sanitary sewer lines and related manholes
- All outfalls, including the treatment plant outfall.
- All pump stations
- All force mains
- All wastewater treatment facilities
- Major appurtenances such as inverted siphons and air release values.
- Scale and north arrow appear on printed maps
- A numbering system to uniquely identify manholes, catch basins, overflow points, regulators and outfalls.
- Pipe diameters, date of pipe installations, pipe material, distance between manholes, direction of flow
- Manhole elevations.

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Figure 3-1 Sanitary Sewer System Map

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Figure 3-2 Storm Sewer System Map

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CHAPTER 4 INVENTORY FIXED ASSETS AND COLLECTION SYSTEM

4.1 ASSET REGISTRY

The City owns and maintains a diverse group of above ground and below ground assets. A fundamental understanding of the managed assets is the foundation for asset management. This includes asset valuations, installation and consumption profiles. This information, along with risk management strategies become the basis for repair and replacement and capital improvements.

Fixed Asset Inventory Requirements	Included
Is a fixed asset inventory developed?	✓
Does the fixed asset inventory include a description of the asset, capacity, level of redundancy, tag number, location, installation year?	✓
Does the plan include an asset assessment?	✓

The asset register is the central database for the City's managed assets. The asset register and condition worksheets will be used to manage assets at the WWTP. Linear assets such as the collection and storm water systems are currently managed in GIS. An inventory of fixed assets is included in Appendix A.

4.2 FIXED ASSET HIERARCHY AND CLASSIFICATION

The asset registers are defined and constructed in a hierarchy to support asset management. Assets are organized by location, functionality and classification. The intent is to develop a parent/child arrangement that allows querying asset information such as cost, work history, etc. in reporting formats useful to the City.

For the purposes of this evaluation, the assets are categorized as follows:

- Wastewater Treatment – Wastewater treatment plant including mechanical, electrical, structures and other equipment.
- Wastewater Network Facilities – Lift stations
- Wastewater and Storm Water Collection System – Linear force mains, gravity pipes, manholes, etc.

4.3 ASSET INVENTORY

The asset inventory is based on the City's asset registry. The City's WWTP and lift station asset registry is managed in Excel. The wastewater collection and storm water system assets are managed in GIS.

4.3.1 WASTEWATER TREATMENT PLANT

Wastewater treatment plant assets generally includes structural, mechanical, electrical, instrumentation and control equipment that is managed by the City. The asset registry includes a general category for process mechanical, process electrical and process control. Asset types included in each category can be seen in Table 4-1. These categories allow tracking work associated with the piping or electrical systems in a location that is not assigned to a specific asset.

Table 4-1 Equipment Category Description

Category	Equipment Description

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Mechanical	Pump, Air Compressor, Gate, Mixer, Valve, Grinder, Hoist, Grit Handling Equipment, Conveyor, Blower, Filter, Chemical Tank Pumping System, Heat Exchanger, Polymer Feed System, Thickening Equipment, Screen, Channel Bulkhead, Clarifier Mechanism, Fan, Aeration Basin Diffuser, Drip Trap, Flare
Electrical	Generator, Transformer, Switchboard, VFD, MCC, UPS, Surge Protector, Electrical Panel, Switches, Drives, Surge Protector
HVAC	Air-Handling Unit, , Makeup Air Unit, Roof Top Air Handling Unit, Air Dryer, HVAC Control System, Gas Heater, Heating Unit, Air Louver, Variable Air Volume Box, Boiler
I&C	Control Panel, SCADA Server, SCADA Network
Instrumentation	Transmitter, Meter (Flow, Level), Sampler, Probe (DO, ORP), Gas Monitoring, Manometer
Structural	Buildings, Tanks, Digesters, Wet Wells
Security and Workstations	Security Camera System, Security System, Entry Gate, Computer, Communication Systems

The assets are organized by location and identified by a tag number and a brief description. For each asset attributes including installation date, level of redundancy and present condition are recorded using currently available information

4.3.2 SANITARY SEWER COLLECTION SYSTEM

The linear wastewater assets includes pipes (force mains and gravity), manholes, access structures and other equipment. A summary of collection system assets by pipe diameter and age are shown in Table 4-2.

Table 4-2 Sanitary Sewer Collection Asset Summary

Size	No.	Total length	Age	No.	Total length
Less than 12	929	222,567	1939-1950	243	6,1631
12 inch to 18 Inch	331	84,021	1950-1970	271	7,2362
18 - 36	242	65,119	1970-1980	226	6,5563
Total	1514	371,707	1980-2000	774	17,2151

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CHAPTER 5 FIXED ASSET ASSESSMENT

5.1 WASTEWATER TREATMENT PLANT BUSINESS RISK EVALUATION

The asset management plan incorporates a fixed asset condition assessment based on a business risk evaluation. By assessing an asset's probability and consequence of failure, a business risk factor is calculated to identify asset risks.

Fixed Asset Assessment Requirements	Included
Does the assessment include the current value of the fixed assets in dollars?	✓
Does the assessment include the current replacement value of the fixed assets in dollars?	✓
Does the plan indicate how the present condition of the asset is assessed?	✓
Does the plan explain how the replacement cost and the current value are developed?	✓
Does the plan include a business risk evaluation including the probability of failure and asset criticality?	✓

5.1.1 CONDITION ASSESSMENT

Asset condition was scored on a scale from 1 to 5. A score of 1 represents a new piece of equipment in startup condition. An asset scored a 5 is past its useful life or in poor or un-working condition. Table 5-1 shows the full rating criteria. Asset condition ratings help predict an asset's likelihood of failure.

Table 5-1 Asset Condition Definition

Ranking	High Score	Definition
Very High	5	Very poor, multiple defects and failure of intended function
High	4	Poor condition, defects requiring immediate review found, life cycle significantly altered
Medium	3	Average condition, some minor life cycle altering defects - 50% of equipment life remaining
Low	2	Good condition, appropriate for life cycle
Very Low	1	Excellent condition, brand new

5.1.2 PROBABILITY OF FAILURE

The probability of failure represents the likelihood that an asset will fail based on various attributes such as the asset's condition, life expectancy, performance, and maintenance history. Each of these factors is evaluated to determine condition of the asset. A score between 1 and 5 is then assigned to the asset as described in Table 5-2. The point schedule for the probability of failure is based on the accuracy and level of confidence of the available data.

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Table 5-2 Probability of Failure Definition

Ranking	Score	Definition	Value Range
Very High	5	There is direct evidence or substantial indirect evidence to suggest it has initiated and/or is likely to occur.	Event will occur within a year
High	4	The fundamental condition or defect is known to exist, indirect evidence suggests it is plausible, and key evidence is weighted more heavily toward likely than unlikely.	Event will occur at least once every 1-5 years
Medium	3	The fundamental condition or defect is known to exist, indirect evidence suggests it is plausible, and key evidence is weighted more heavily toward unlikely than likely	Event will occur at least once every 5-10 years
Low	2	The possibility cannot be ruled out, but there is no compelling evidence to suggest it has occurred or that a condition or flaw exists that could lead to its development.	Event will occur once every 10-20 years.
Very Low	1	Several events must occur concurrently or in a series to trigger failure. Most, if not all of the events are very unlikely; potential failure is non-credible.	Event will occur less than once in 20 years.

Criteria selected by the City for use in determining the probability of failure for this project include the following:

- **Age** – The age of the asset will be used to determine how long until the asset meets the end of its expected useful life and can be extended through routine maintenance and rehabilitation activities.
- **Performance** – Is the asset functioning as required? Is it functioning reliably?
- **Maintenance History** – As the City records work orders, individual assets will develop a history of maintenance or repairs and this information will be stored and used to identify assets which may require capital improvements to eliminate recurring maintenance issues.

5.1.3 CRITICALITY OF AN ASSET

The criticality of an asset is scored similar to the probability of failure. The asset criticality considers the consequence of failure versus the desired level of service. Table 5-3 summarizes the scoring criteria.

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Table 5-3 Asset Criticality Rating System

Rating Score	Definition
5	Serious impact to compliance, health or safety if asset fails to perform – no reasonable contingencies available
4	Serious impact to compliance, health or safety if asset fails to perform – backup contingencies may not be readily available
3	Moderate impact to compliance, health or safety if asset fails to perform – backup contingencies available if asset fails to perform
2	Possible impact to compliance, health or safety if asset fails to perform
1	Very low, if any impact to regulatory compliance, health or safety if asset fails to function

5.1.4 BUSINESS RISK EXPOSURE

The Business Risk Exposure is calculated after assessment of each asset. The calculation is based on Probability of Failure and asset criticality. The equation is provided below.

Probability of Failure x Asset Criticality = Business Risk

The BRE can range from 1 to 25, with a value of 1 indicating the lowest risk to the facility and a value of 25 posing the highest risk. The business risk is used to prioritize maintenance and the replacement of assets as part of the development of the capital improvements plan by focusing on assets with higher BRE values.

5.1.5 ASSET RENEWAL YEAR AND REPLACEMENT COST

Each asset is assigned an average service life as well as an estimated replacement cost. The average service lives are assigned based on prior experience and reference data. The assumed asset life for each type of equipment in the WWTP are shown in Table 5-4. The assumed equipment life is used to determine the expected renewal date for the asset.

Many existing assets are operating beyond their useful life, but are in good condition. Other assets may not have reached their useful life, but are in need of replacement. Condition based replacement years were calculated for each asset based on the following process.

1. Identify the asset renewal year based on the average service life identified in Table 5-4.
2. Asses the condition of the asset
3. Convert the condition ranking score to a percentage as defined in Table 5-5
4. Multiply the original service life by the percentage determined in Step 3.
5. Add the conditioned based adjustment factor to the expected renewal date to determine condition-based renewal date.

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Table 5-4 Average Service Life

Asset Category	Asset Subtype	Average Service Life
CONTROLS	INSTRUMENT	10
	CONTROL PANEL	20
	PLC	10
	CONTROL OTHER	20
ELECTRICAL	SWITCHGEAR	30
	SWITCH	30
	TRANSFORMER	30
	MOTOR CONTROL CENTER	30
	MOTOR	30
	VARIABLE SPEED DRIVE	10
	GENERATOR	30
	ELECTRICAL GENERAL	30
	ELECTRICAL OTHER	30
HVAC	MAKEUP AIR UNIT	30
	EXHAUST FAN	30
	HVAC GENERAL	30
	BOILER	30
	PUMP	20
	HVAC OTHER	30
MECHANICAL	VALVE	30
	PUMP	30
	CHEMICAL	15
	BACKFLOW PREVENTER	20
	AIR COMPRESSOR	30
	BLOWER	30
	PROCESS EQUIPMENT	30
	SLUICE GATE	50
	GEARBOX	30
	TANK	20
	SAMPLER	20
	ODOR CONTROL	30
	MIXER	20
	MECHANICAL GENERAL	30
	MECHANICAL OTHER	30
STRUCTURE	FACILITY	80
	STRUCTURE	80
SERVICES	SERVICES	20

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Table 5-5 Condition Based Adjustment Factor Based on Asset Condition

Asset Condition	BRE Range	% ASUL Remaining
Very Good	0 to 5	95%
Good	5 to 8	75%
Fair	8 to 10	50%
Poor	10 to 12	30%
Very Poor	12 to 25	5%

Equipment replacement costs were estimated based on reference data and previous experience. To determine the estimated renewal cost, the equipment replacement costs were increased by 50% to account for costs associated to installation. The equipment replacement cost was also used to calculate the present worth of the asset by using straight line depreciation over a 20 year timespan.

Repair and replacement planning is then based upon the BRE, asset renewal cost, and estimated renewal year in order to target projects which mitigate risk and provide the required level of service within a cost-effective time period.

5.1.6 ASSET ASSESSMENT WORKSHEETS

A summary of the assets and condition assessment are included in the following tables.

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APPENDICES

Appendix A – Fixed Asset Registry

Risk Score = Liklihood of Failure ((Asset Condition + CM History)/2) * Consequence of Failure * Redundancy	Renewal date calulated based on installation date and design life. Estimated renewal cost calculated based on equipment replacement cost and install multiplier. If desired, mannual update the date or estimated renewal cost and note adjusments in the comments column. Place notes in renewal comments column.	Annual repair and replacement costs are calculated based on recommended renewal date and estimated renewal cost. Calucations are guidance. Manually update renewal data and estimated costs based on experience.

Equipment Description	Structure No.	Count of Same Crit/Con Score	Business Risk Score	Renewal Year (Manual Entry in Red)	Estimated Renewal Cost In Next 20 yrs (Manual Entry in Red)	O&M Costs (Default Value 2%)	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Adminstration Building	100	7	9.0	2062		2%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Preliminary Treatment Building	200	7	9.0	2062		2%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Grit Removal Building and Channels	200	2	6.0	2082		2%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Influent Pump No. 1	200	2	10.0	2037	$300,000	2%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$300,000	$0	$0	$0	$0	$0
Influent Pump No. 2	200	7	25.0	2023	$300,000	2%	$0	$300,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Influent Pump No. 3	200	7	25.0	2023	$300,000	2%	$0	$300,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Influent Pump No. 4	200	7	25.0	2023	$300,000	2%	$0	$300,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Influent Pump No. 5	200	7	25.0	2023	$300,000	2%	$0	$300,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Influent Gate No. 1	200	16	10.0	2024	$60,000	2%	$0	$0	$60,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Influent Gate No. 2	200	16	10.0	2024	$60,000	2%	$0	$0	$60,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Influent Gate No. 3	200	16	10.0	2024	$60,000	2%	$0	$0	$60,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Influent Gate No. 4	200	16	10.0	2024	$60,000	2%	$0	$0	$60,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Influent Gate No. 5	200	16	10.0	2024	$60,000	2%	$0	$0	$60,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Influent Screen	200	1	20.0	2024	$225,000	2%	$0	$0	$225,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Influent Bypass Rack	200	16	10.0	2024	$15,000	2%	$0	$0	$15,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Grit Removal Mechanism No. 1	200	22	15.0	2024	$187,500	2%	$0	$0	$187,500	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Grit Removal Mechanism No. 2	200	22	15.0	2024	$187,500	2%	$0	$0	$187,500	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Grit Influent Gate No. 1	200	4	8.0	2032	$60,000	2%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$60,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Grit Influent Gate No. 2	200	4	8.0	2032	$60,000	2%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$60,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Grit Air Compressor	200	1	12.0	2030	$37,500	2%	$0	$0	$0	$0	$0	$0	$0	$0	$37,500	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Grit Classifier	200	22	10.0	2024	$135,000	2%	$0	$0	$135,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Motor Control Center	200	4	20.0	2030	$75,000	2%	$0	$0	$0	$0	$0	$0	$0	$0	$75,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Air Supply Unit	200	2	25.0	2024	$37,500	2%	$0	$0	$37,500	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Ferric Tank No. 1	200	5	12.0	2027	$37,500	2%	$0	$0	$0	$0	$0	$37,500	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Ferric Tank No. 2	200	5	12.0	2027	$37,500	2%	$0	$0	$0	$0	$0	$37,500	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Primary Treatment Building	300	7	9.0	2062		2%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Switchgear	300	3	20.0	2030	$22,500	2%	$0	$0	$0	$0	$0	$0	$0	$0	$22,500	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Motor Control Center	300	3	20.0	2030	$75,000	2%	$0	$0	$0	$0	$0	$0	$0	$0	$75,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Primary Clarifier No. 1	300	13	6.0	2082		2%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Primary Clarifier No. 2	300	13	6.0	2082		2%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Primary Clarifier No. 3	300	13	6.0	2082		2%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Primary Clarifier No. 4	300	13	6.0	2082		2%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Primary Clarifier No. 1 Collector Mech	300	13	6.0	2045		2%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Primary Clarifier No. 2 Collector Mech	300	13	6.0	2045		2%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Primary Clarifier No. 3 Collector Mech	300	13	6.0	2045		2%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Primary Clarifier No. 4 Collector Mech	300	13	6.0	2045		2%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Air Supply Unit	300	3	20.0	2030	$37,500	2%	$0	$0	$0	$0	$0	$0	$0	$0	$37,500	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Primary Sludge Pump No. 1	300	22	15.0	2023	$45,000	2%	$0	$45,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Primary Sludge Pump No. 2	300	22	15.0	2023	$45,000	2%	$0	$45,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Rotary Biological Contactor Channel 1	400	4	12.0	2062		2%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Rotary Biological Contactor Channel 2	400	4	12.0	2062		2%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Rotary Biological Contactor Channel 3	400	4	12.0	2062		2%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Rotary Biological Contactor Channel 4	400	4	12.0	2062		2%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Rotary Biological Contactor Channel 1	400	22	20.0	2024	$150,000	2%	$0	$0	$150,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Rotary Biological Contactor Channel 1	400	22	20.0	2024	$150,000	2%	$0	$0	$150,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Rotary Biological Contactor Channel 1	400	22	20.0	2024	$150,000	2%	$0	$0	$150,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Rotary Biological Contactor Channel 1	400	22	20.0	2024	$150,000	2%	$0	$0	$150,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Rotary Biological Contactor Channel 2	400	22	20.0	2024	$150,000	2%	$0	$0	$150,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Rotary Biological Contactor Channel 2	400	22	20.0	2024	$150,000	2%	$0	$0	$150,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Rotary Biological Contactor Channel 2	400	22	20.0	2024	$150,000	2%	$0	$0	$150,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Rotary Biological Contactor Channel 2	400	22	20.0	2024	$150,000	2%	$0	$0	$150,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Rotary Biological Contactor Channel 3	400	22	20.0	2024	$150,000	2%	$0	$0	$150,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Rotary Biological Contactor Channel 3	400	22	20.0	2024	$150,000	2%	$0	$0	$150,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Rotary Biological Contactor Channel 3	400	22	20.0	2024	$150,000	2%	$0	$0	$150,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Rotary Biological Contactor Channel 3	400	22	20.0	2024	$150,000	2%	$0	$0	$150,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Rotary Biological Contactor Channel 4	400	22	20.0	2024	$150,000	2%	$0	$0	$150,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Rotary Biological Contactor Channel 4	400	22	20.0	2024	$150,000	2%	$0	$0	$150,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Rotary Biological Contactor Channel 4	400	22	20.0	2024	$150,000	2%	$0	$0	$150,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Rotary Biological Contactor Channel 4	400	22	20.0	2024	$150,000	2%	$0	$0	$150,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
RBC Influent Gate No. 1	400	17	6.0	2042		2%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$37,500
RBC Influent Gate No. 2	400	17	6.0	2042		2%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$37,500
RBC Influent Gate No. 3	400	17	6.0	2042		2%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$37,500
RBC Influent Gate No. 4	400	17	6.0	2042		2%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$37,500
RBC Influent Gate No. 5	400	17	6.0	2042		2%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$37,500
RBC Influent Gate No. 6	400	17	6.0	2042		2%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$37,500
RBC Effluent Gate No. 1	400	17	6.0	2042		2%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$37,500
RBC Effluent Gate No. 2	400	17	6.0	2042		2%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$37,500
RBC Effluent Gate No. 3	400	17	6.0	2042		2%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$37,500
RBC Effluent Gate No. 4	400	17	6.0	2042		2%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$37,500
RBC Effluent Gate No. 5	400	17	6.0	2042		2%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$37,500
RBC Effluent Gate No. 6	400	17	6.0	2042		2%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$37,500
Blower No. 1	400	4	16.0	2030	$112,500	2%	$0	$0	$0	$0	$0	$0	$0	$0	$112,500	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Blower No. 2	400	4	16.0	2030	$112,500	2%	$0	$0	$0	$0	$0	$0	$0	$0	$112,500	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Clarifier No. 1	400	7	12.0	2062		2%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Clarifier No. 2	400	7	12.0	2062		2%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Clarifier No. 1 Collector Mechanism	400	4	16.0	2030	$225,000	2%	$0	$0	$0	$0	$0	$0	$0	$0	$225,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Clarifier No. 2 Collector Mechanism	400	7	20.0	2024	$225,000	2%	$0	$0	$225,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Clarifier No. 1 Sludge Pump	400	7	20.0	2023	$45,000	2%	$0	$45,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Clarifier No. 2 Sludge Pump	400	7	20.0	2023	$45,000	2%	$0	$45,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Boiler	400	1	6.0	2045		2%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Chlorine Contact Channel No. 1	500	7	12.0	2062		2%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Chlorine Contact Channel No. 2	500	7	12.0	2062		2%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Chlorinator	500	2	6.0	2037	$45,000	2%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$45,000	$0	$0	$0	$0	$0
Ejector	500	2	6.0	2037	$45,000	2%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$45,000	$0	$0	$0	$0	$0
Chlorine Weigh Scale No. 2	500	3	9.0	2037	$7,500	2%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$7,500	$0	$0	$0	$0	$0
Chlorine Weigh Scale No. 1	500	3	9.0	2037	$7,500	2%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$7,500	$0	$0	$0	$0	$0

Risk Score = Liklihood of Failure ((Asset Condition + CM History)/2) * Consequence of Failure * Redundancy	Renewal date calulated based on installation date and design life. Estimated renewal cost calculated based on equipment replacement cost and install multiplier. If desired, mannual update the date or estimated renewal cost and note adjusments in the comments column. Place notes in renewal comments column.	Annual repair and replacement costs are calculated based on recommended renewal date and estimated renewal cost. Calucations are guidance. Manually update renewal data and estimated costs based on experience.

Equipment Description	Structure No.	Count of Same Crit/Con Score	Business Risk Score	Renewal Year (Manual Entry in Red)	Estimated Renewal Cost In Next 20 yrs (Manual Entry in Red)	O&M Costs (Default Value 2%)	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Disinfection Gate No. 1	500	13	4.0	2045		2%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Disinfection Gate No. 2	500	13	4.0	2052		2%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Disinfection Gate No. 3	500	13	4.0	2052		2%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Disinfection Gate No. 4	500	13	4.0	2052		2%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Disinfection Gate No. 5	500	13	4.0	2052		2%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Digester No. 1	600	17	9.0	2062		2%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Digester No. 2	600	17	9.0	2062		2%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Digester No. 3	600	17	9.0	2062		2%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Digester No. 4	600	17	9.0	2062		2%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Digester No. 1 Cover	600	2	12.0	2042		2%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$525,000
Digester No. 2 Cover	600	2	15.0	2026	$525,000	2%	$0	$0	$0	$0	$525,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Digester No. 3 Cover	600	2	12.0	2042		2%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$750,000
Digester No. 4 Cover	600	2	15.0	2026	$750,000	2%	$0	$0	$0	$0	$750,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Anaerobic Digester Building	600	17	9.0	2062		2%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Boiler No. 1	600	16	10.0	2024	$225,000	2%	$0	$0	$225,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Boiler No. 2	600	16	10.0	2024	$225,000	2%	$0	$0	$225,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Digester No. 1 Gas Compressor Mixer	600	16	10.0	2024	$450,000	2%	$0	$0	$450,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Digester No. 2 Gas Compressor Mixer	600	16	10.0	2024	$450,000	2%	$0	$0	$450,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Motor Control Center	600	2	25.0	2024	$75,000	2%	$0	$0	$75,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Hot Water Recircualtion Pump No. 1	600	4	8.0	2027	$30,000	2%	$0	$0	$0	$0	$0	$30,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Hot Water Recircualtion Pump No. 2	600	4	8.0	2027	$30,000	2%	$0	$0	$0	$0	$0	$30,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Heat Exchanger No. 1	600	1	3.0	2051		2%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Sludge Recirculation Pump No. 1	600	5	12.0	2027	$60,000	2%	$0	$0	$0	$0	$0	$60,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Sludge Recirculation Pump No. 2	600	5	12.0	2027	$60,000	2%	$0	$0	$0	$0	$0	$60,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Sludge Transfer Pump	600	5	8.0	2027	$60,000	2%	$0	$0	$0	$0	$0	$60,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Waste Gas Burner	600	22	10.0	2024	$225,000	2%	$0	$0	$225,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Solids Handling Building	700	3	6.0	2062		2%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Belt Filter Press No. 1	700	16	10.0	2024	$712,500	2%	$0	$0	$712,500	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Belt Filter Press No. 2	700	16	10.0	2024	$712,500	2%	$0	$0	$712,500	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Polymer Solution Tank No. 1	700	16	10.0	2023	$22,500	2%	$0	$22,500	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Polymer Solution Tank No. 2	700	16	10.0	2023	$22,500	2%	$0	$22,500	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Polymer Feed Pump No. 1	700	16	10.0	2023	$22,500	2%	$0	$22,500	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Polymer Feed Pump No. 2	700	16	10.0	2023	$22,500	2%	$0	$22,500	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
					$11,070,000		**$0**	**$1,470,000**	**$8,377,500**	**$0**	**$1,275,000**	**$315,000**	**$0**	**$0**	**$697,500**	**$0**	**$120,000**	**$0**	**$0**	**$0**	**$0**	**$405,000**	**$0**	**$0**	**$0**	**$0**	**$1,725,000**

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Appendix C

CWSRF Project Planning Document:

Cost Worksheets

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CITY OF SAULT STE. MARIE, MI
FACILITY STUDY
SAULT STE MARIE WWTP
14150

Collection System Improvements
[INITIAL CONSTRUCTION COST OPINION]

Year		Project	Road Cost Estimate	Utility Cost Estimate	Total Cost Estimate
CWSRF					
2024	July 1-June 30	Peck and Meridian	$925,464.00	$3,060,000.00	$5,181,000.00
2025	July 1-June 30	Power Canal Sewer		$750,000.00	$975,000.00
2025	July 1-June 30	16th and 20th Avenue/John St	$832.312.99	$1,292,933.43	$2,656,000.00
		Catch basin storm water separation			
2026	July 1-June 30	Catch Basins Magazine/Spruce		$100,000.00	$130,000.00
2026	July 1-June 30	Catch Basins Gros Cap Ave		$100,000.00	$130,000.00
2026	July 1-June 30	Catch Basins Seymour	$90,000.00	$150,000.00	$312,000.00
2027	July 1-June 30	I-500 Sewer		$304,000.00	$790,000.00
2028	July 1-June 30	McCandless/Ravine St	$53,800.00	$266,000.00	$831,000.00

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CITY OF SAULT STE. MARIE, MI
FACILITY STUDY
SAULT STE MARIE WWTP
14150

Preliminary Treatment
[INITIAL CONSTRUCTION COST OPINION]

General Description

Replace influent pump screws, and rebuild major components, replace existing screens with chain and rake systems, new bypass gate with actuator. Replace aerated grit system with stacked plate systems.

Alternative Initial Cost Summary

Discipline Cost Summary			Initial Cost
Process-Mechanical			$2,410,000
Architectural/Structural			$680,277
Civil			$570,513
Plumbing			$142,628
HVAC			$237,714
Electrical			$475,427
Instrumentation & Control			$237,714
	Discipline Cost Subtotal		$4,754,273
	Undesigned Details	30%	$1,426,282
	Subtotal		$6,180,555
	Contractor Overhead & Profit	25%	$1,545,139
	Total Construction Cost		**$7,726,000**
	Engineering	15%	$1,158,900
	Total Initial Cost		**$8,885,000**

Alternative Operating Cost Summary

Operating Cost Summary			Annual Cost
Electricity			$28,335
Maintenance Hours			$14,000
Maintenance Equipment			$35,000
	Total Annual Cost		**$77,300**
	Interest Rate Per Year	0.5%	
	Number of Years	20	
	Present Worth Factor	18.987	
	Present Worth of Annual O&M Costs		**$1,467,700**

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CITY OF SAULT STE. MARIE, MI
FACILITY STUDY
SAULT STE MARIE WWTP
14150

Preliminary Treatment

Detailed Cost Breakdown

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
2.5-ft Screen	ea	2	250,000	500,000
Gates	ea	5	30,000	150,000
Bypass Gate Actuator	ea	1	15,000	15,000
Removals	ea	1	25,000	25,000
Raw Pump Rebuilds	ea	5	200,000	1,000,000
Item	ea			
Grit Headcell	ls	1	561,000	561,000
Grit Classifier	ea	1	120,000	120,000
Grit Pump	ea	1	39,000	39,000
Item	ls			
Item	ls			
Item	ls			
Item	ls			
Item	ls			
Item	ls			
			Process-Mechanical Subtotal	**$2,410,000**

Architectural/Structural Detailed Cost Breakdown

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
Item	ls			
Item	cu yds			
Item	cu yds			
Item	cu yds			
Item	sq ft			
Item	ft			
Item	risers			
Item	sq ft			
Item	ea			
Item	ea			
Item	ea			
Modify Grit Basins	ls	1	44,850	44,850
Modify Grit Basins (Removals)	ls	1	10,000	10,000
Channel Modifications	ls	1	150,000	150,000
Building Improvements			10%	475,427
			Architectural/Structural Subtotal	**$680,277**

Civil Detailed Cost Breakdown

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
Excavation	cu yds			
Buried Piping < 8"	ln ft			
Buried Piping 12" to 24"	ln ft		188	0
Buried Piping > 30"	ln ft			
Pavement Road	sq ft			
Fittings	ea		2,175	0
Item	ea			
Item	ls			
Item	ls			
Exterior Improvements			12%	570,513
			Civil Subtotal	**$570,513**

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CITY OF SAULT STE. MARIE, MI
FACILITY STUDY
SAULT STE MARIE WWTP
14150

Preliminary Treatment

Plumbing Detailed Cost Breakdown

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
Item	ea			
Item	ea			
Item	ls			
Item	ls			
Plumbing			3%	142,628
			Plumbing Subtotal	**$142,628**

HVAC Detailed Cost Breakdown

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
6 ACH	cu ft			
Item	ea			
Item	ls			
Item	ls			
HVAC			5%	237,714
			HVAC Subtotal	**$237,714**

Electrical Detailed Cost Breakdown

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
Item	ea			
Item	ea			
Item	ls			
Item	ls			
Electrical			10%	475,427
			Electrical Subtotal	**$475,427**

Instrumentation & Control Detailed Cost Breakdown

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
Item	ea			
Item	ea			
Item	ls			
Item	ls			
Instrumentation & Control			5%	237,714
			Instrumentation & Control Subtotal	**$237,714**

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CITY OF SAULT STE. MARIE, MI
FACILITY STUDY
SAULT STE MARIE WWTP
14150

Preliminary Treatment

Electricity Usage Detailed Cost Breakdown

ITEM	Operating HP	CS or VFD	Operating Hours per Week	Annual Kw-Hrs
screw pumps	40	CS	168	283,350
bar screens	5	CS	168	35,419
Grit system	5	CS	168	35,419
Item				0
Item				0
Item				0
Item				0
			Electricity Usage Subtotal (Kw-Hrs)	354,188
			Electricity Cost ($ / Kw-Hr)	0.080
			Electricity Annual Cost	**$28,335**

Maintenance Hours Detailed Cost Breakdown

ITEM	Quantity	Hours per Week	Weeks per Year	Annual Hrs
screw pumps				200
bar screens				100
Grit system				100
Item				0
Item				0
Item				0
Item				0
			Maintenance Hours Subtotal	400
			Maintenance Cost ($ / Hr)	35
			Maintenance Annual Cost	**$14,000**

Maintenance Items Detailed Cost Breakdown

ITEM	#	Cost	Useful Life, Years	Annual Cost ($/yr)
screw pumps	5	100,000	20	25,000
bar screens	1	100,000	20	5,000
Grit system	1	100,000	20	5,000
Item				
Item				
Item				
Item				
			Maintenance Annual Cost	**$35,000**

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CITY OF SAULT STE. MARIE, MI
FACILITY STUDY
SAULT STE MARIE WWTP
14150

Secondary Treatment
[INITIAL CONSTRUCTION COST OPINION]

General Description

Rehab and repair projects to sustain process equipment and structures. Improvements include full replacement of RBC components (excluding motors/drives), replacement of secondary clarifier mechanisms, replacement of piston pumps for secondary/primary sludge with double disc pumps.

Alternative Initial Cost Summary

Discipline Cost Summary			Initial Cost
Process-Mechanical			$3,905,390
Architectural/Structural			$0
Civil			$0
Plumbing			$0
HVAC			$247,000
Electrical			$84,743
Instrumentation & Control			$0
	Discipline Cost Subtotal		$4,237,133
	Undesigned Details	30%	$1,271,140
	Subtotal		$5,508,272
	Contractor Overhead & Profit	25%	$1,377,068
	Total Construction Cost		**$6,885,000**
	Engineering	15%	$1,032,750
	Total Initial Cost		**$7,918,000**

Alternative Operating Cost Summary

Operating Cost Summary			Annual Cost
Electricity			$34,677
Maintenance Hours			$10,500
Maintenance Equipment			$180,000
	Total Annual Cost		**$225,200**
	Interest Rate Per Year	0.5%	
	Number of Years	20	
	Present Worth Factor	18.987	
	Present Worth of Annual O&M Costs		**$4,276,000**

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CITY OF SAULT STE. MARIE, MI
FACILITY STUDY
SAULT STE MARIE WWTP
14150

Secondary Treatment

Detailed Cost Breakdown

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
65-ft Diameter Clarifier	ea	2	250,000	500,000
RBC Replacements	ls	1	3,225,600	3,225,600
Blowers	ea	2	70,800	141,600
Crane	Months	3	12,730	38,190
Item	ea			
Item	ea			
Item	ea			
Item	ls			
Item	ls			
Item	ls			
Item	ls			
Item	ls			
Item	ls			
Item	ls			
			Process-Mechanical Subtotal	**$3,905,390**

Architectural/Structural Detailed Cost Breakdown

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
Item	ls			
Item	cu yds			
Item	cu yds			
Item	cu yds			
Item	sq ft			
Item	ft			
Item	risers			
Overhead Door	sq ft	0	45	0
Coiling Overhead Door	sq ft	0	75	0
Single Doors	ea	0	2,000	0
Double Doors	ea	0	3,300	0
Digester Brick Repairs	sq ft	0	10	0
Primary Building Brick	sq ft	0	10	0
Tunnel Repair	ln ft	0	70	0
Building Improvements			0%	0
			Architectural/Structural Subtotal	**$0**

Civil Detailed Cost Breakdown

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
Excavation	cu yds			
Buried Piping < 8"	ln ft			
Buried Piping 12" to 24"	ln ft		130	0
Buried Piping > 30"	ln ft			
Pavement Road	sq ft			
Item	ea			
Item	ea			
Item	ls			
Item	ls			
Exterior Improvements			0%	0
			Civil Subtotal	**$0**

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FACILITY STUDY
SAULT STE MARIE WWTP
14150

Secondary Treatment

Plumbing Detailed Cost Breakdown

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
Item	ea			
Item	ea			
Item	ls			
Item	ls			
Plumbing			0%	0
			Plumbing Subtotal	**$0**

HVAC Detailed Cost Breakdown

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
12 ACH Ventilation for Basement/Digestion	cuft	95,000	2.6	247,000
Item	ea			
Item	ls			
Item	ls			
HVAC			0%	0
			HVAC Subtotal	**$247,000**

Electrical Detailed Cost Breakdown

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
Item	ls			
Electrical			2%	84,743
			Electrical Subtotal	**$84,743**

Instrumentation & Control Detailed Cost Breakdown

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
Item	ea			
Item	ls			
Item	ls			
Instrumentation & Control			0%	0
			Instrumentation & Control Subtotal	**$0**

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CITY OF SAULT STE. MARIE, MI
FACILITY STUDY
SAULT STE MARIE WWTP
14150

Secondary Treatment

Electricity Usage Detailed Cost Breakdown

ITEM	Operating HP	CS or VFD	Operating Hours per Week	Annual Kw-Hrs
RBC	50	CS	168	354,188
Final Settling Tank	10	CS	168	70,838
Pumps	10	CS	20	8,433
Item				0
Item				0
Item				0
Item				0
			Electricity Usage Subtotal (Kw-Hrs)	433,458
			Electricity Cost ($ / Kw-Hr)	0.080
			Electricity Annual Cost	**$34,677**

Maintenance Hours Detailed Cost Breakdown

ITEM	Quantity	Hours per Week	Weeks per Year	Annual Hrs
RBC				100
Final Settling Tank				100
Pumps				100
Item				0
Item				0
Item				0
Item				0
			Maintenance Hours Subtotal	300
			Maintenance Cost ($ / Hr)	35
			Maintenance Annual Cost	**$10,500**

Maintenance Items Detailed Cost Breakdown

ITEM	#	Cost	Useful Life, Years	Annual Cost ($/yr)
RBC	12	250,000	20	150,000
Final Settling Tank	2	300,000	20	30,000
Pumps				
Item				
Item				
Item				
Item				
			Maintenance Annual Cost	**$180,000**

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CITY OF SAULT STE. MARIE, MI
FACILITY STUDY
SAULT STE MARIE WWTP
14150

Disinfection System
[INITIAL CONSTRUCTION COST OPINION]

General Description

Replacement of the existing gas chlorine with a liquid chlorine system. This includes procurement of a tanks to store liquid chlorine and ferric chloride. Provide new piping and chlorine feed pumps.

Alternative Initial Cost Summary

Discipline Cost Summary			Initial Cost
Process-Mechanical			$563,300
Architectural/Structural			$2,295,612
Civil			$391,471
Plumbing			$194,670
HVAC			$194,670
Electrical			$59,000
Instrumentation & Control			$194,670
	Discipline Cost Subtotal		$3,893,393
	Undesigned Details	30%	$1,168,018
	Subtotal		$5,061,411
	Contractor Overhead & Profit	25%	$1,265,353
	Total Construction Cost		**$6,327,000**
	Engineering	15%	$949,050
	Total Initial Cost		**$7,276,000**

Alternative Operating Cost Summary

Operating Cost Summary			Annual Cost
Electricity			$0
Maintenance Hours			$7,000
Maintenance Equipment			$2,500
	Total Annual Cost		**$9,500**
	Interest Rate Per Year	0.5%	
	Number of Years	20	
	Present Worth Factor	18.987	
	Present Worth of Annual O&M Costs		**$180,400**

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CITY OF SAULT STE. MARIE, MI
FACILITY STUDY
SAULT STE MARIE WWTP
14150

Disinfection System

Detailed Cost Breakdown

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
Chlorine Tank (7,000 gallon)	ea	2	45,000	90,000
Ferric Tank Replacement (5,000 gallon)	ea	2	30,000	60,000
Peristaltic Pump	ea	7	1,500	10,500
Sodium Bisultite (5,000 gallon)	ea	1	30,000	30,000
Item	ea			
Item	ea			
Disinfection Gates	ea	4	43,200	172,800
Double Disk Pumps	ea	4	50,000	200,000
Item	ls			
Item	ls			
Item	ls			
Item	ls			
Item	ls			
Item	ls			
			Process-Mechanical Subtotal	**$563,300**

Architectural/Structural Detailed Cost Breakdown

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
Dewatering	ls	1	50,000	50,000
Excavation	cu yds	952	25	23,792
Concrete Base Slab	cu yds	302	350	105,775
Concrete Walls	cu yds	162	1,325	214,091
Aluminum Grating	sq ft			
Aluminum Handrail	ft	226	53	11,955
Aluminum Stairway	risers			
Building	sq ft	3,500	300	1,050,000
Demolition	ea			
Piles	ln ft	2,800	300	840,000
Item	ea			
Item	ls			
Item	ls			
Item	ls			
Building Improvements			0%	0
			Architectural/Structural Subtotal	**$2,295,612**

Civil Detailed Cost Breakdown

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
Excavation	cu yds			
Buried Piping < 8"	ln ft	500	50	25,000
Buried Piping 12" to 24"	ln ft		188	0
Buried Piping > 30"	ln ft			
Pavement Road (10-ft wide)	ln ft	500	110	55,000
Fittings	ea			
Item	ea			
Item	ls			
Item	ls			
Exterior Improvements			8%	311,471
			Civil Subtotal	**$391,471**

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CITY OF SAULT STE. MARIE, MI
FACILITY STUDY
SAULT STE MARIE WWTP
14150

Disinfection System

Plumbing Detailed Cost Breakdown

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
Item	ea			
Item	ea			
Item	ls			
Item	ls			
Plumbing			5%	194,670
			Plumbing Subtotal	**$194,670**

HVAC Detailed Cost Breakdown

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
Item	ea			
Item	ea			
Item	ls			
Item	ls			
HVAC			5%	194,670
			HVAC Subtotal	**$194,670**

Electrical Detailed Cost Breakdown

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
Switchgear	ea			
MCC	ea			
Duct Bank	ln ft	150	60	9,000
New Electrical	ls	1	50,000	50,000
Electrical			0%	0
			Electrical Subtotal	**$59,000**

Instrumentation & Control Detailed Cost Breakdown

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
Item	ea			
Item	ea			
Item	ls			
Item	ls			
Instrumentation & Control			5%	194,670
			Instrumentation & Control Subtotal	**$194,670**

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CITY OF SAULT STE. MARIE, MI
FACILITY STUDY
SAULT STE MARIE WWTP
14150

Disinfection System

Electricity Usage Detailed Cost Breakdown

ITEM	Operating HP	CS or VFD	Operating Hours per Week	Annual Kw-Hrs
		VFD		0
		CS		0
Item				0
Item				0
Item				0
Item				0
Item				0
			Electricity Usage Subtotal (Kw-Hrs)	0
			Electricity Cost ($ / Kw-Hr)	0.080
			Electricity Annual Cost	**$0**

Maintenance Hours Detailed Cost Breakdown

ITEM	Quantity/d			Annual
Chlorine	50			18,265
Item				0
Item				0
Item				0
Item				0
Item				0
Item				0
			Chemical Subtotal	18,265
			Chemical Cost ($ / lb)	0.55
			Chemical Annual Cost	**$10,046**

Maintenance Hours Detailed Cost Breakdown

ITEM	Quantity	Hours per Week	Weeks per Year	Annual Hrs
Chlorine System				200
Item				0
Item				0
Item				0
Item				0
Item				0
Item				0
			Maintenance Hours Subtotal	200
			Maintenance Cost ($ / Hr)	35
			Maintenance Annual Cost	**$7,000**

Maintenance Items Detailed Cost Breakdown

ITEM	#	Cost	Useful Life, Years	Annual Cost ($/yr)
Chlorine System	1	10,000	4	2,500
Item				
Item				
Item				
Item				
Item				
Item				
			Maintenance Annual Cost	**$2,500**

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FACILITY STUDY
SAULT STE MARIE WWTP
14150

Electrical, I&C and Building Improvements
[INITIAL CONSTRUCTION COST OPINION]

General Description

Replacements of MCC's that are in poor condition or non-compliant locations. Replace switchgear with distribution panel. Provide automatic transfer switch for generator. SCADA system with PLC(s). Separation and ventilation of classified spaces. Brick repairs on the corner of the admin/primary building, sealant of a tunnel leak, limited digester brick work, and replacement of all doors (including overhead doors).

Alternative Initial Cost Summary

Discipline Cost Summary			Initial Cost
Process-Mechanical			$0
Architectural/Structural			$291,940
Civil			$0
Plumbing			$0
HVAC			$247,000
Electrical			$630,000
Instrumentation & Control			$800,000
	Discipline Cost Subtotal		$1,968,940
	Undesigned Details	30%	$590,682
	Subtotal		$2,559,622
	Contractor Overhead & Profit	25%	$639,905
	Total Construction Cost		**$3,200,000**
	Engineering	15%	$480,000
	Total Initial Cost		**$3,680,000**

Alternative Operating Cost Summary

Operating Cost Summary			Annual Cost
Electricity			$0
Maintenance Hours			$0
Maintenance Equipment			$0
	Total Annual Cost		**$0**
	Interest Rate Per Year	0.5%	
	Number of Years	20	
	Present Worth Factor	18.987	
	Present Worth of Annual O&M Costs		**$0**

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FACILITY STUDY
SAULT STE MARIE WWTP
14150

Electrical, I&C and Building Improvements

Detailed Cost Breakdown

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
Item	ea			
Item	ea			
Item	ea			
	ea			
Item	ea			
Item	ea			
Item	ea			
Item	ls			
Item	ls			
Item	ls			
Item	ls			
Item	ls			
Item	ls			
Item	ls			
		Process-Mechanical Subtotal		**$0**

Architectural/Structural Detailed Cost Breakdown

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
Overhead Door	sq ft	476	45	21,420
Coiling Overhead Door	sq ft	95	75	7,088
Single Doors	ea	39	2,000	78,000
Double Doors	ea	8	3,300	26,400
Digester Brick Repairs	sq ft	0	10	0
Primary Building Brick	sq ft	1,416	10	14,159
Tunnel Repair	ln ft	35	70	2,427
Item	sq ft		0%	
Seal Doors	ea	4	1,500	6,000
Vestibule with Door	ls	1	38,000	38,000
Item	ls			
Item	ls			
Item	ls			
Building Improvements			5%	98,447
		Architectural/Structural Subtotal		**$291,940**

Civil Detailed Cost Breakdown

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
Excavation	cu yds			
Buried Piping < 8"	ln ft			
Buried Piping 12" to 24"	ln ft		130	0
Buried Piping > 30"	ln ft			
Pavement Road	sq ft			
Item	ea			
Item	ea			
Item	ls			
Item	ls			
Exterior Improvements			0%	0
			Civil Subtotal	**$0**

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CITY OF SAULT STE. MARIE, MI
FACILITY STUDY
SAULT STE MARIE WWTP
14150

Electrical, I&C and Building Improvements

Plumbing Detailed Cost Breakdown

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
Item	ea			
Item	ea			
Item	ls			
Item	ls			
Plumbing			0%	0
			Plumbing Subtotal	**$0**

HVAC Detailed Cost Breakdown

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
12 ACH Ventilation for Basement/Digestion	cuft	95,000	2.6	247,000
Item	ea			
Item	ls			
Item	ls			
HVAC			0%	0
			HVAC Subtotal	**$247,000**

Electrical Detailed Cost Breakdown

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
Switchgear	ea	3	25,000	75,000
MCC Vertical Section (Replace)	ea	17	15,000	255,000
MCC Rewiring	ls	1	300,000	300,000
Item	ls			
Electrical			0%	0
			Electrical Subtotal	**$630,000**

Instrumentation & Control Detailed Cost Breakdown

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
SCADA Upgrade	ls	1	800,000	800,000
Item	ea			
Item	ls			
Item	ls			
Instrumentation & Control			0%	0
			Instrumentation & Control Subtotal	**$800,000**

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CITY OF SAULT STE. MARIE, MI
FACILITY STUDY
SAULT STE MARIE WWTP
14150

Biosolids Handling
[INITIAL CONSTRUCTION COST OPINION]

General Description

Replace dewatering and material handling equipment. One belt filter presses, polymer skids, polymer tote storage. Scum concentrator for primary scum handling.

Alternative Initial Cost Summary

Discipline Cost Summary			Initial Cost
Process-Mechanical			$1,717,300
Architectural/Structural			$0
Civil			$0
Plumbing			$114,487
HVAC			$228,973
Electrical			$114,487
Instrumentation & Control			$114,487
	Discipline Cost Subtotal		$2,289,733
	Undesigned Details	30%	$686,920
	Subtotal		$2,976,653
	Contractor Overhead & Profit	25%	$744,163
	Total Construction Cost		**$3,721,000**
	Engineering	15%	$558,150
	Total Initial Cost		**$4,279,000**

Alternative Operating Cost Summary

Operating Cost Summary			Annual Cost
Electricity			$918
Maintenance Hours			$8,750
Maintenance Equipment			$22,000
	Total Annual Cost		**$31,700**
	Interest Rate Per Year	0.5%	
	Number of Years	20	
	Present Worth Factor	18.987	
	Present Worth of Annual O&M Costs		**$601,900**

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Biosolids Handling

Detailed Cost Breakdown

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
2-m Belt Filter Press	ea	1	1,092,500	1,092,500
Polymer Skids	ea	1	52,800	52,800
Polymer Tote Rack	ea	1	14,000	14,000
Scum Concentrator	ea	1	252,000	252,000
Item	ea			
Scum Pumps	ea	2	30,000	60,000
Scum Piping	ls	1	30,000	30,000
Item	ls			
Double Disc Sludge Pumps	ea	4	54,000	216,000
Item	ls			
Item	ls			
Item	ls			
Item	ls			
Item	ls			
			Process-Mechanical Subtotal	**$1,717,300**

Architectural/Structural Detailed Cost Breakdown

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
Item	ls			
Item	cu yds			
Item	cu yds			
Item	cu yds			
Item	sq ft			
Item	ft			
Item	risers			
Item	sq ft			
Item	ea			
Item	ea			
Item	ea			
Item	ls			
Item	ls			
Item	ls			
Building Improvements	ls		0	0
			Architectural/Structural Subtotal	**$0**

Civil Detailed Cost Breakdown

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
Excavation	cu yds			
Buried Piping < 8"	ln ft			
Buried Piping 12" to 24"	ln ft			
Buried Piping > 30"	ln ft			
Pavement Road	sq ft			
Fittings	ea			
Item	ea			
Item	ls			
Item	ls			
Exterior Improvements			0%	0
			Civil Subtotal	**$0**

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CITY OF SAULT STE. MARIE, MI
FACILITY STUDY
SAULT STE MARIE WWTP
14150

Biosolids Handling

Plumbing Detailed Cost Breakdown

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
Item	ea			
Item	ea			
Item	ls			
Item	ls			
Plumbing			5%	114,487
			Plumbing Subtotal	**$114,487**

HVAC Detailed Cost Breakdown

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
Item	ea			
Item	ea			
Item	ls			
Item	ls			
HVAC			10%	228,973
			HVAC Subtotal	**$228,973**

Electrical Detailed Cost Breakdown

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
Item	ea			
Item	ea			
Item	ls			
Item	ls			
Electrical			5%	114,487
			Electrical Subtotal	**$114,487**

Instrumentation & Control Detailed Cost Breakdown

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
Item	ea			
Item	ea			
Item	ls			
Item	ls			
Instrumentation & Control			5%	114,487
			Instrumentation & Control Subtotal	**$114,487**

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CITY OF SAULT STE. MARIE, MI
FACILITY STUDY
SAULT STE MARIE WWTP
14150

Biosolids Handling

Electricity Usage Detailed Cost Breakdown

ITEM	Operating HP	CS or VFD	Operating Hours per Week	Annual Kw-Hrs
2-m Belt Filter Press	5	CS	16	3,373
Polymer Skids	1	CS	16	675
Scum Concentrator	2	CS	8	675
Scum Pumps	10	CS	16	6,746
Item				0
Item				0
Item				0
			Electricity Usage Subtotal (Kw-Hrs)	11,469
			Electricity Cost ($ / Kw-Hr)	0.080
			Electricity Annual Cost	**$918**

Maintenance Hours Detailed Cost Breakdown

ITEM	Quantity	Hours per Week	Weeks per Year	Annual Hrs
2-m Belt Filter Press				100
Polymer Skids				50
Scum Concentrator				50
Scum Pumps				50
Item				0
Item				0
Item				0
			Maintenance Hours Subtotal	250
			Maintenance Cost ($ / Hr)	35
			Maintenance Annual Cost	**$8,750**

Maintenance Items Detailed Cost Breakdown

ITEM	#	Cost	Useful Life, Years	Annual Cost ($/yr)
2-m Belt Filter Press	1	300,000	20	15,000
Polymer Skids	1	50,000	20	2,500
Scum Concentrator	1	50,000	20	2,500
Scum Pumps	2	20,000	20	2,000
Item				
Item				
Item				
			Maintenance Annual Cost	**$22,000**

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CITY OF SAULT STE. MARIE, MI
FACILITY STUDY
SAULT STE MARIE WWTP
14150

Anaerobic Digester
[INITIAL CONSTRUCTION COST OPINION]

General Description

Replace floating covers, provision new pressure relief vave systems, waste gas burner, digester gas piping (specifically in digester 3, ancillary digester gas equipment in the digester gas room), boilers, dedicated heat exchangers for digesters 2-4, mixers

Alternative Initial Cost Summary

Discipline Cost Summary			Initial Cost
Process-Mechanical			$8,756,646
Architectural/Structural			$486,480
Civil			$0
Plumbing			$97,296
HVAC			$0
Electrical			$194,592
Instrumentation & Control			$194,592
	Discipline Cost Subtotal		$9,729,607
	Undesigned Details	30%	$2,918,882
	Subtotal		$12,648,488
	Contractor Overhead & Profit	25%	$3,162,122
	Total Construction Cost		**$15,811,000**
	Engineering	15%	$2,371,650
	Total Initial Cost		**$18,183,000**

Alternative Operating Cost Summary

Operating Cost Summary			Annual Cost
Electricity			$0
Maintenance Hours			$0
Maintenance Equipment			$0
	Total Annual Cost		**$0**
	Interest Rate Per Year	0.5%	
	Number of Years	20	
	Present Worth Factor	18.987	
	Present Worth of Annual O&M Costs		**$0**

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CITY OF SAULT STE. MARIE, MI
FACILITY STUDY
SAULT STE MARIE WWTP
14150

Anaerobic Digester

Detailed Cost Breakdown

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
Heat Exchanger	ea	2	100,800	201,600
Waste Gas Burner	ea	1	64,000	64,000
Fire Tube Boiler	ea	2	225,750	451,500
Digester PRV Assemblies	ea	4	36,000	144,000
Digester Cover Floating (50-ft)	ea	1	800,000	800,000
Digester Cover Floating (70-ft)	ea	1	1,300,000	1,300,000
External Draft Tubes	ea	4	420,000	1,680,000
Demo Floating Covers	ea	2	75,000	150,000
Digester Gas Equipment	ls	1	90,000	90,000
Digester Gas Piping	ls	1	228,000	228,000
Digester Cover Insulation	ls	1	1,200,000	1,200,000
Digester Coating	sqft	31,127	20	622,546
Digester Cover (50-ft)	ea	1	800,000	800,000
Digester Cover (55-ft)	ea	1	900,000	900,000
Fixed Cover Demo	ls	1	125,000	125,000
			Process-Mechanical Subtotal	**$8,756,646**

Architectural/Structural Detailed Cost Breakdown

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
Item	ls			
Item	cu yds			
Item	cu yds			
Item	cu yds			
Item	sq ft			
Item	ft			
Item	risers			
Item	sq ft			
Item	ea			
Item	ea			
Item	ea			
Item	ls			
Item	ls			
Item	ls			
Building Improvements			5%	486,480
			Architectural/Structural Subtotal	**$486,480**

Civil Detailed Cost Breakdown

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
Excavation	cu yds			
Buried Piping < 8"	ln ft			
Buried Piping 12" to 24"	ln ft			
Buried Piping > 30"	ln ft			
Pavement Road	sq ft			
Item	ea			
Item	ea			
Item	ls			
Item	ls			
Exterior Improvements			0%	0
			Civil Subtotal	**$0**

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CITY OF SAULT STE. MARIE, MI
FACILITY STUDY
SAULT STE MARIE WWTP
14150

Anaerobic Digester

Plumbing Detailed Cost Breakdown

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
Item	ea			
Item	ea			
Item	ls			
Item	ls			
Plumbing			1%	97,296
			Plumbing Subtotal	**$97,296**

HVAC Detailed Cost Breakdown

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
Item	ea			
Item	ea			
Item	ls			
Item	ls			
HVAC			0%	0
			HVAC Subtotal	**$0**

Electrical Detailed Cost Breakdown

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
Item	ea			
Item	ea			
Item	ls			
Item	ls			
Electrical			2%	194,592
			Electrical Subtotal	**$194,592**

Instrumentation & Control Detailed Cost Breakdown

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
Item	ea			
Item	ea			
Item	ls			
Item	ls			
Instrumentation & Control			2%	194,592
			Instrumentation & Control Subtotal	**$194,592**

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Appendix D

CWSRF Project Planning Document:

Environmental Notifications

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Appendix D1

Environmental Notifications:

SHPO State Historic Preservation Office

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Appendix D2

Environmental Notifications:

THPO Tribal Historic Preservation Officers

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Appendix D3

Environmental Notifications:

US Fish and Wildlife

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Appendix D1

Environmental Notifications:

MNFI Threatened and Endangered Plants and Animals

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Appendix D5

Environmental Notifications:

EGLE Water Resources Division

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Appendix E

CWSRF Project Planning Document:

Public Hearing and Resolution Information

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CITY OF SAULT STE. MARIE
NOTICE OF PUBLIC HEARING

A public hearing has been called by the Sault Ste. Marie City Commission for Monday, April 17, 2023, at 7:00 p.m. in the City Commission Chambers at City Hall – 225 East Portage Avenue, Sault Ste. Marie, Michigan, for the purpose of receiving comments from interested persons on the Clean Water State Revolving Fund (SRF) Project Plan for the Wet Weather Flow Program and Wastewater Treatment Plant Improvements.

Copies of the plan detailing the proposed project are available for inspection at the City Engineering Department starting March 31, 2023– 225 East Portage Avenue, Sault Ste. Marie, MI 49783

Should anyone have comments on the proposed action who cannot attend the meeting, please address them in writing to Robin R. Troyer MMC, Deputy City Manager – 225 East Portage Avenue, Sault Ste. Marie, MI 49783 or e-mail at rtroyer@saultcity.com prior to the date of the meeting.

ROBIN R. TROYER MMC, Deputy City Manager
CITY OF SAULT STE. MARIE

LOCALiQ

Petoskey News-Review | The Monroe News
Holland Sentinel | Gaylord Herald Times
Daily Telegram | Hillsdale Daily News
The Daily Reporter | Sturgis Journal
The Sault News | Cheboygan Daily Tribune

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Order Confirmation

Not an Invoice

Account Number:	877090
Customer Name:	City Of Sault Ste. Marie-
Customer Address:	City Of Sault Ste. Marie- 225 E Portage AVE Sault Sainte Marie MI 49783-2053
Contact Name:	City Of Sault Ste. Marie-
Contact Phone:	9066325715
Contact Email:	
PO Number:	

Date:	03/22/2023
Order Number:	8607426
Prepayment Amount:	$ 0.00

Column Count:	1.0000
Line Count:	45.0000
Height in Inches:	0.0000

Print

Product	#Insertions	Start - End	Category
SSM The Sault News	1	03/25/2023 - 03/25/2023	Public Notices
SSM sooeveningnews.com	1	03/25/2023 - 03/25/2023	Public Notices

Total Order Confirmation	**$50.65**

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Ad Preview

CITY OF
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ROBIN R. TROYER MMC,
Deputy City Manager
CITY OF
SAULT STE. MARIE

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Appendix F

CWSRF Project Planning Document:

Adopted Resolution

Included in Final Project Plan