DRAFT

2024 WRRF CLEAN WATER STATE REVOLVING FUND PROJECT PLAN

March 20, 2023

THIS PAGE INTENTIONALLY LEFT BLANK

TABLE OF CONTENTS

APPENDICES

Text and data from the following sources in the development of this Project Plan:

Summary of Additional Sources of Data for the Project Plan	
CDM	GLWA Wastewater Master Plan
MNFI	Endangered, Threatened, or Candidate Species Survey
SEMCOG	Population Data
Wade Trim	2023 Draft of WRRF CWSRF

EXECUTIVE SUMMARY

The Great Lakes Water Authority (GLWA) provides regional wastewater collection, transport, and treatment services for approximately three million people in the City of Detroit and 76 other communities (see Figure ES-1). Wastewater from the service area is conveyed through a series of collection sewers, interceptors, and pump stations to the Water Resource Recovery Facility (WRRF) located in the southwest corner of the City of Detroit near the confluence of the Detroit and Rouge Rivers (Town 2 South, Range 11 East, Wayne County). The WRRF is the largest single-site wastewater reclamation facility in North America.

The discharge of treated wastewater from the WRRF is authorized under the National Pollutant Discharge Elimination System (NPDES) Permit No. MI0022802, issued on June 28, 2019, and effective on July 18, 2019. The GLWA has operational responsibility for the regional sewer system including the combined sewer overflow (CSO) control facilities and outfalls.

The City of Detroit and some of the older suburban communities utilize a combined sewer system to collect both sanitary wastewater and storm water runoff in a single pipe (see Figure ES-2). The newer suburban communities utilize a two-pipe system whereby the sanitary wastewater is transported through a sanitary sewer for treatment to a wastewater treatment plant and storm water drainage is conveyed and discharged directly to a receiving water with generally no treatment via a storm sewer. The combined sewer system within the City of Detroit is designed to convey the dry weather flow and a portion of wet weather flow to the WRRF for treatment. During significant storm events, sufficient flow can be generated such that the hydraulic capacity of the combined sewers and the treatment capacity of CSO control facilities is exceeded, and the excess flow is then discharged through one of the permitted combined sewer outfalls located along the Detroit and Rouge Rivers (see Figure ES-3). However, over 99% of the flow entering the GLWA system is treated to NPDES standards.

GLWA is pursuing State Revolving Fund (SRF) loans for one project at the WRRF. This project is critical to GLWA's ongoing efforts to efficiently treat wastewater to NDPES standards:

- Pump Station No. 2 VFD Replacement – This project includes replacement of five existing variable frequency drives on five of the eight stations pumps. The motors will also be rewound to allow an increase in capacity from nominally 900 HP each to 1000 HP each. Electrical feed to the pumps will also be reconfigured including replacement of original switchgear that is nearing the end of it's anticipated lifespan.

This Project Plan identifies and describes the current condition of GLWA's relevant treatment process assets, provides documentation on the need for improvements, identifies alternatives that were evaluated, and describes the selected alternative. Evaluation of the alternatives was performed based on the Michigan Department of Environment, Great Lakes, and Energy (MI-EGLE's) guidelines for preparing a SRF Project Plan. A summary of the total, present worth and equivalent annual costs for implementing the selected alternatives is summarized in Table ES-1. The total costs include engineering and other costs needed to construct each of the improvements. An annual user impact

was also determined.

Table ES-1 Summary of Projects' Costs

Priority	Project	Annual User Impact Cost	SRF Funding Requested
1	VFD Replacement	$1.27	$12,000,000

Figure ES-1: GLWA Sewer Service Communities

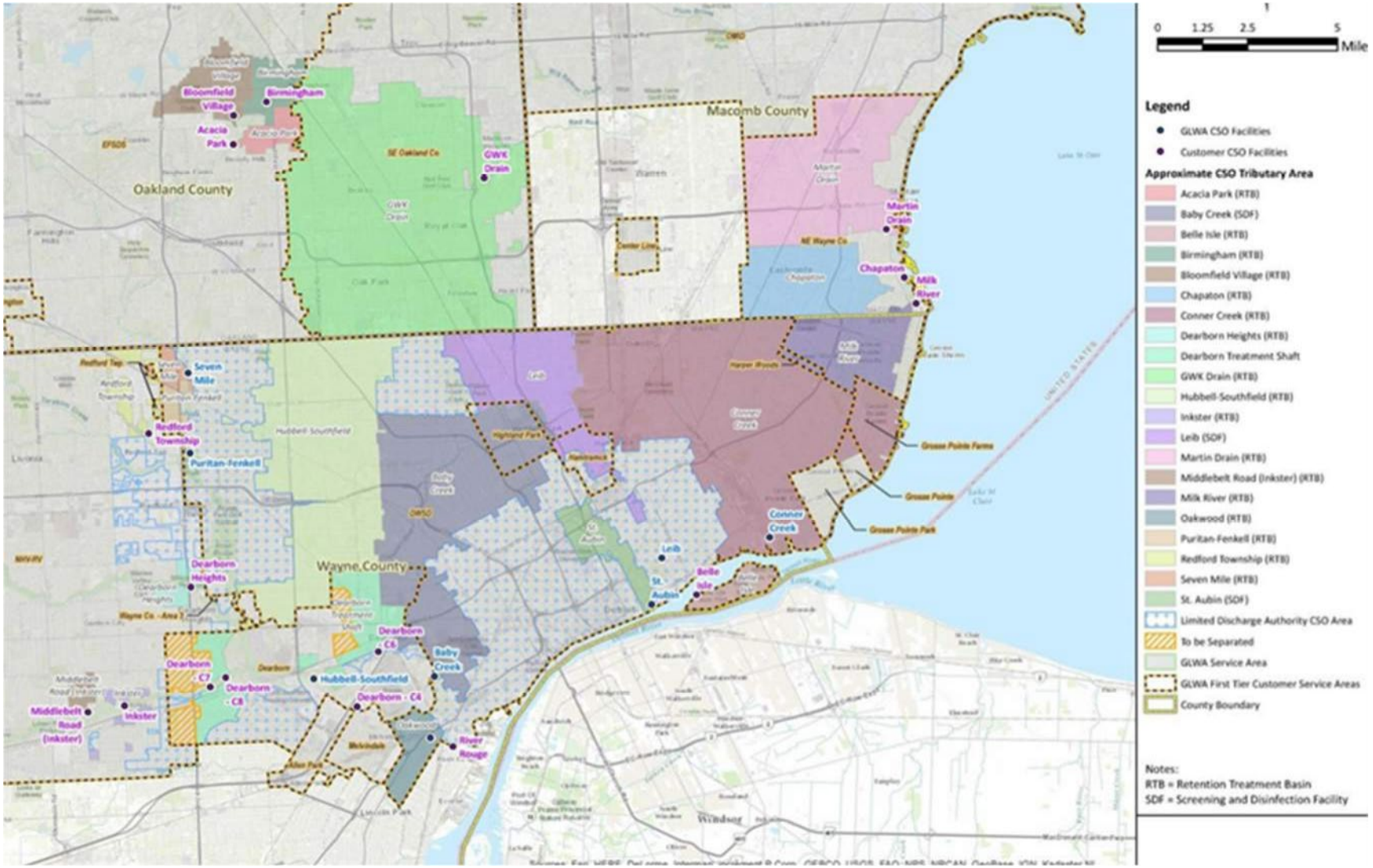


Figure ES-2: Combined and Separated Sewer Service Diagram

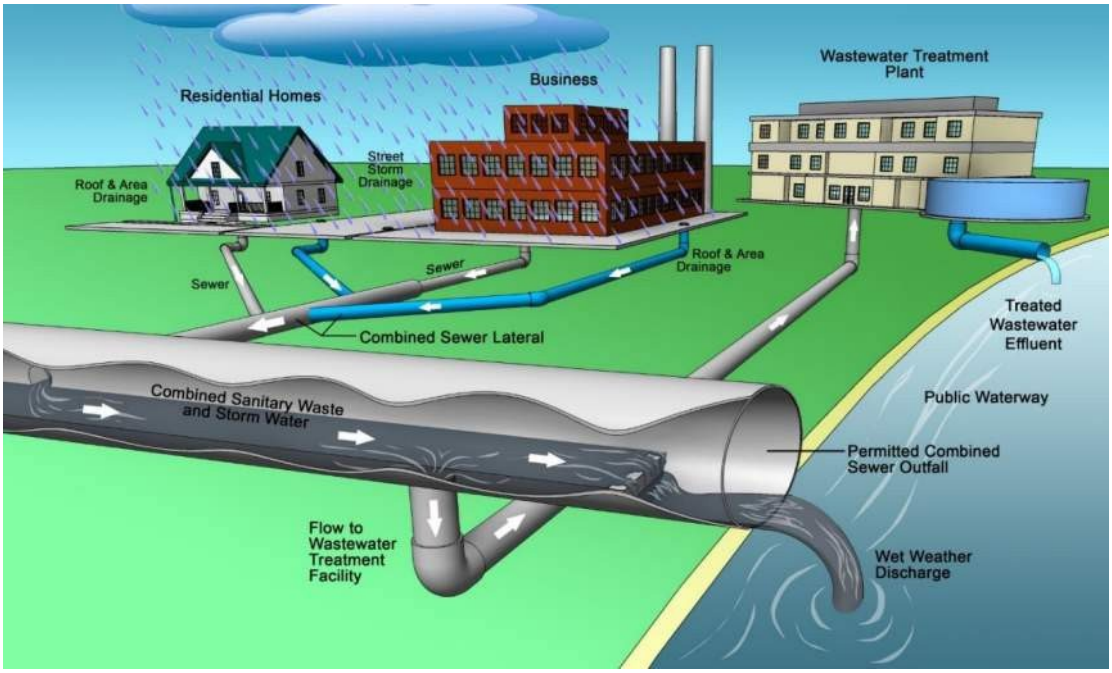
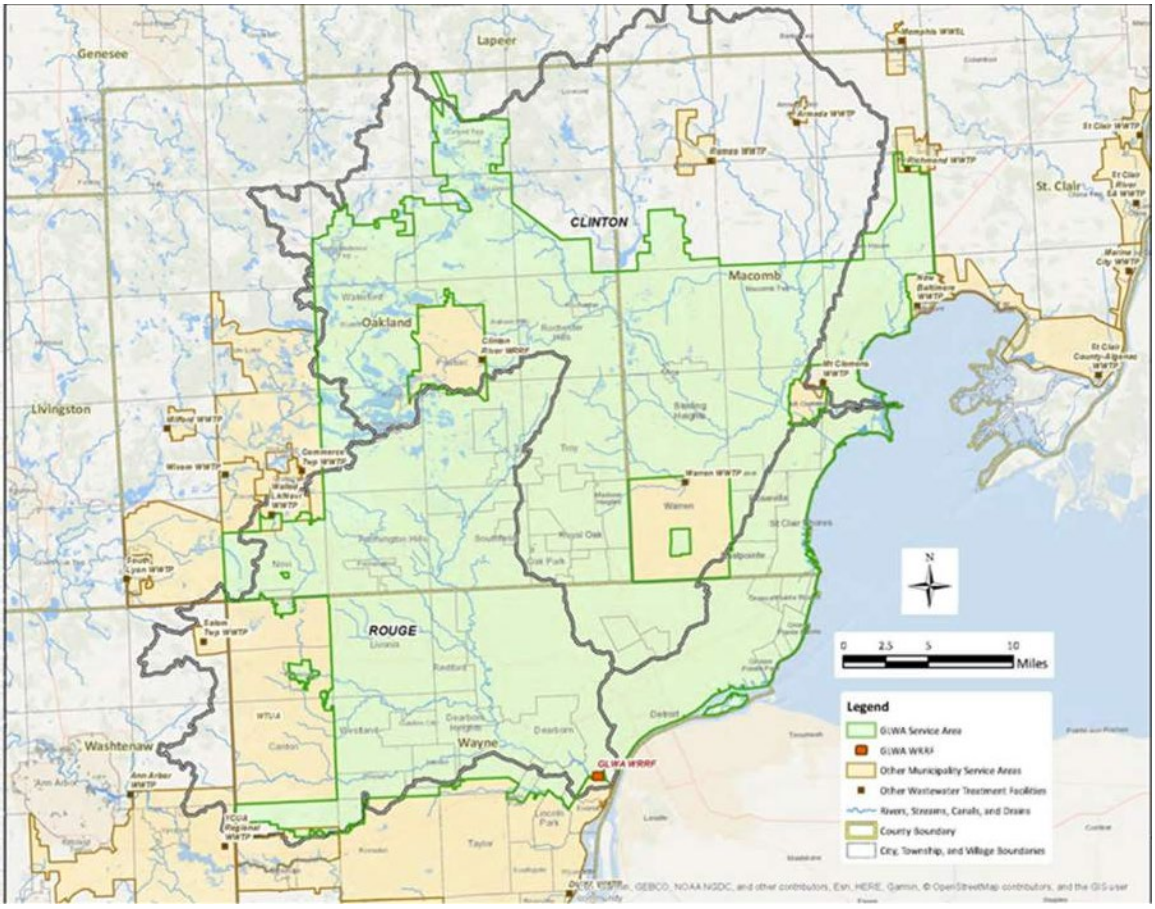


Figure ES-3: GLWA Sewer Service Divided into Rouge River and Detroit River Areas



1.0 PROJECT BACKGROUND

1.1 Introduction and Purpose

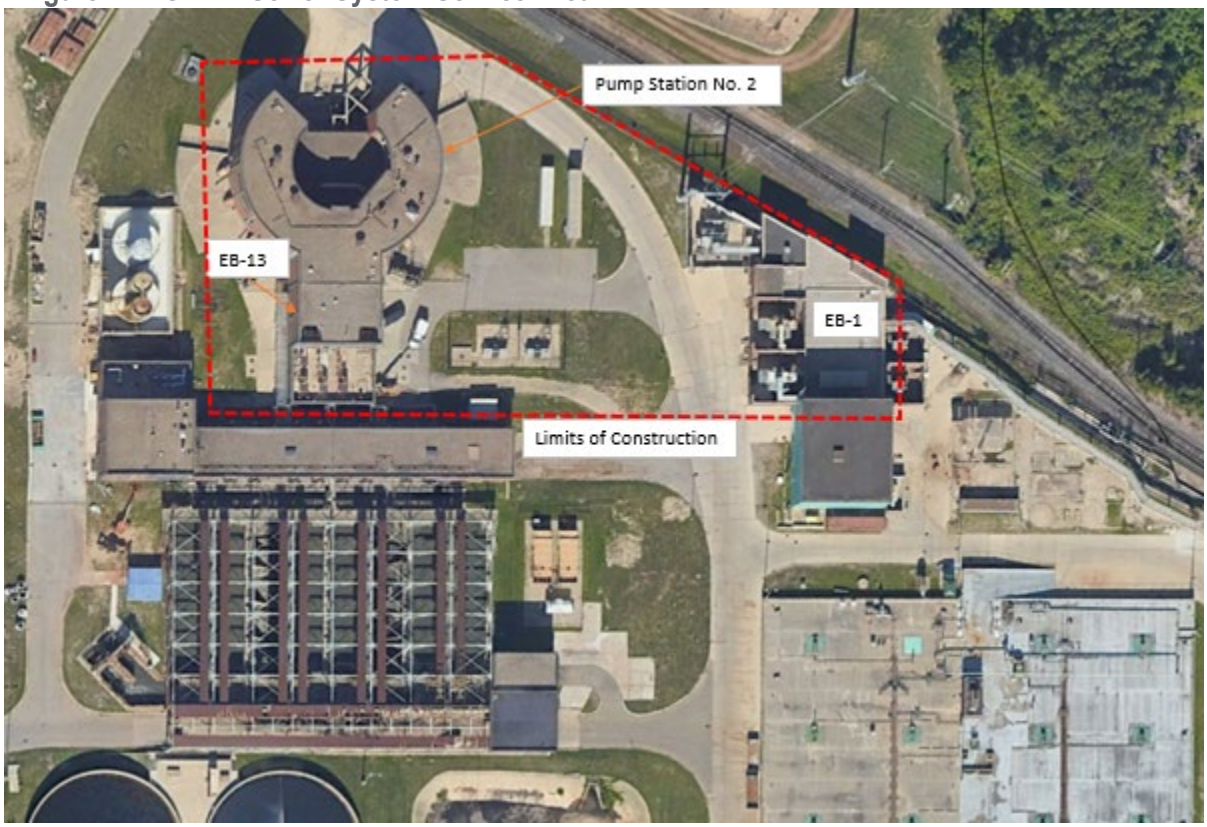
This document has been prepared in accordance with the planning guidelines adopted by MI-EGLE for the SRF low interest loan program. It is the intent of GLWA to seek low interest loan assistance under the SRF program for the recommended work.

The purpose of this document is to describe the necessary improvements for the described project at the WRRF that GLWA is proposing to undertake with SRF funding to provide efficient and reliable operations at the facility. GLWA has identified this project has a priority ranking for which is most important. This Project Plan provides information on the status of the current WRRF operations related to the following proposed project:

- Priority 1 – Replace Pump Station No. 2 VFDs and rehabilitate electrical infrastructure. This project includes replacement of five (5) VFDs Pump Station No. 2 pumps that utilize variable frequency drives (three other pumps are direct drive). In addition to the VFD replacement, each of the five motors will be rewound to increase total capacity from nominally 900 HP each to 1000 HP each. Electrical infrastructure within Pump Station No.2 will be replaced including new 13.8 kV feeds to the building from EB-1 and replacement of the original 5 kV switchgear inside Pump Station No. 2.

The proposed project areas within the WRRF boundary are shown below as Figure 1-1.

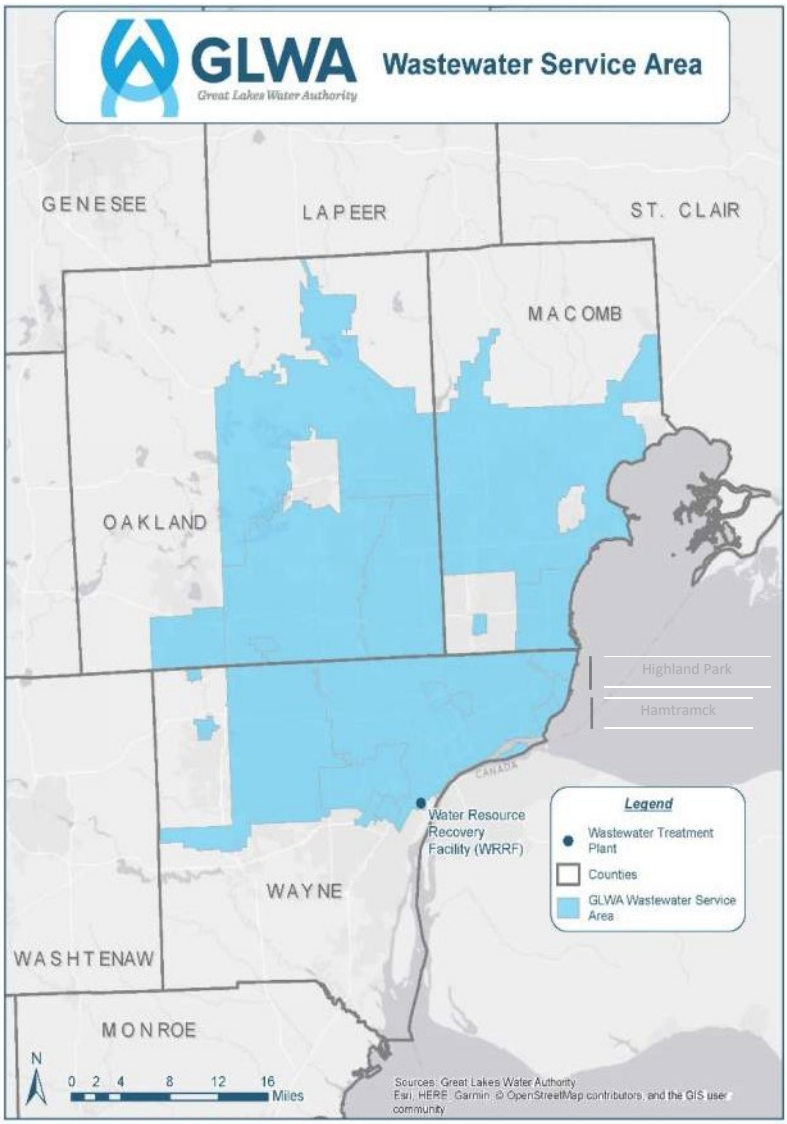
Figure 1-1: GLWA Sewer System Service Area



1.2 Delineation of Study Area

GLWA's wastewater service area includes the City of Detroit; 76 suburban communities; and Highland Park and Hamtramck, which are separate communities located completely within the City's corporate Boundary as shown in Figure 1-2. The study area encompasses approximately 88,876 acres in the City of Detroit with a service population of approximately three million residents plus considerable commercial and industrial activity. Of this area, slightly less than half (39,300 acres) is in the Rouge River drainage area. The remainder (49,576 acres) is tributary to the Detroit River. The service area for the surrounding communities includes 188,024 acres in Wayne County, 308,913 acres in Oakland County, and 162,242 acres in Macomb County.

Figure 1-2: GLWA Sewer System Service Area



1.3 Cultural Resources

To complete the required Michigan State Historic Preservation Office (SHPO) consultation, consultation request letters were sent to the 12 Federally designated tribes in Michigan for their comment. At this time, no responses from this Tribal Historic Preservation Office (THPO) letter have been received. These

letters and email correspondence can be found in Appendix G. A draft Application for SHPO Section 106 Consultation is included in Appendix A. A subconsultant has been retained, which meets the 36 CFR Part 61 qualifications for archaeologists, to complete the required archaeological literature review. Their report will be completed 30 days after receiving the archaeological files from the SHPO. The architectural review will be completed during the same period as the literature review. Within five (5) days of receiving the archaeological literature review, the complete Section 106 consultation application will be submitted to the SHPO with the project's determination of effect. The SHPO typically responds to these applications within 60 days. All Cultural Evaluation Resources will be placed into Appendix A when received.

1.4 The Natural Environment

1.4.1 Air Quality

There are currently no air quality issues caused by or experienced at the GLWA WRRF. During construction of the project in this project plan it is possible that heavy machinery could perpetuate air-born dust. Procedures to minimize dust and other air-born particles caused by construction will be put into place as part of the contract documents. Further mitigation will be discussed in the project specific mitigation sections.

1.4.2 Wetlands

Based on inspection of available National Wetland Inventory maps containing the GLWA WRRF and the surrounding area, there are no wetlands that will be disturbed by the construction of the proposed project in this project plan. The available map is available in Appendix B.

1.4.3 Coastal Zones

There are no coastal zones within the influence of the project contained in this project plan.

1.4.4 Floodplains

Based on inspection of the available Federal Emergency Management Agency (FEMA) FIRMette floodplain maps, there are no floodplains within the GLWA WRRF site. The available FIRMette maps are available in Appendix B.

1.4.5 Natural or Wild and Scenic Rivers

There are two rivers adjacent to the GLWA WRRF. These are the Rouge River and the Detroit River. Neither of these rivers are within the WRRF boundary and the WRRF does not impact either of the rivers' banks. Therefore, the project within this project plan will have no effect on any natural or wild and scenic rivers. A map of surface waters surrounding the GLWA WRRF is available in Appendix B. Water quality issues of the surrounding area are discussed in Section 2.2.

1.4.6 Major Surface Waters

There are two major surface waters surrounding the GLWA WRRF. These are the Rouge River and the Detroit River. The WRRF boundary does not include any area of these waters or their banks. Based on this determination the project within this project plan will have no effect on any surface waters. A map

of the surrounding surface waters is available in Appendix B. Water quality issues of the surrounding area are discussed in Section 2.2.

1.4.7 Topography

The GLWA WRRF is a fully developed site and is considered flat from a topographical perspective. Ground disturbance for any work relating to the project within this project plan will either be for proposed buildings or be temporary and will not result in any changes to the existing topography of the site.

1.4.8 Soils and Geology

All excavation for the project contained within this project plan will take place in previously disturbed areas at the GLWA WRRF. It is expected that all soils encountered while excavating will be backfill materials from previous disturbances. If encountered, unsuitable soils, such as peat or marl, will be removed and replaced with appropriate granular backfill material. These materials and backfilling procedures will be detailed in the contract documents for each project.

1.4.9 Agricultural Resources

The GLWA WRRF is a fully developed area. There are no prime agricultural lands within the WRRF boundary or the surrounding area. Therefore, there will be no effect on agricultural resources from the project within this project plan.

1.4.10 Endangered Species

A request was previously sent to the Michigan Natural Features Inventory (MNFI) for a Rare Species Review of the project boundary and the surrounding area. According to the MNFI, there are multiple species of plants and animals registered as threatened, endangered, and special concern. To see the full list of species, refer to the MNFI response in Appendix B. This MNFI review has concluded several at-risk species have been documented within 1.5 miles of the project area and it is possible that negative impacts may occur. It was noted that the section of the Rouge River near the project area is a Group 2 mussel stream which means that state threatened, or state endangered mussels are expected to occur here and that certain surveys and possibly relocation procedures apply. MNFI also provided Section 7 comments in this review and indicated that the proposed project falls within the range of nine (9) federally listed/proposed/candidate species that have been identified by the U.S. Fish and Wildlife Service (USFWS) to occur in Wayne County, Michigan. Of these species four (4) are federally endangered, four (4) are federally threatened and one (1) is a considered species.

Species identified as federally endangered are the Indiana bat (*Myotis sodalist*), northern riffleshell (*Epioblasma torulosa-angiana*), piping plover (*Charadrius melodus)* and the rayed bean mussel (*villosa fabalis*). It is noted that there are documented occurrences of the northern riffleshell within 1.5 miles of the project site and it was identified that there are suitable habitats within 1.5 miles of the site for the Indiana bat and the rayed bean mussel. There does not appear to be a suitable habitat within 1.5 miles of the project site for the piping plover.

Species identified as federally threatened are the northern long-eared bat (*M. septentrionalis*), eastern prairie fringed orchid (*Platanthera leucophaea*), rufa red night (*Calidris canutus rufa*), and the eastern massasauga rattlesnake (*Sistrurus catenatus*). It was identified that there appears to be a suitable habitat within 1.5 miles of the project site for the rufa red knot. There does not appear to be a suitable habitat for the eastern prairie fringed orchid or the eastern massasauga rattlesnake within 1.5 mile of the project site. While there are no known hibernacula or roost trees that have been documented within 1.5 miles of the project site, it is within the designated WNS zone (i.e., within 150 miles of positive counties/districts impacted by WNS). In addition, suitable habitat does exist within 1.5 miles of the project.

As of December 15, 2020, the USFWS announced that listing the monarch butterfly (*Danaus plexipuss*) as endangered or threatened under the Endangered Species Act is warranted but precluded by higher priority listing actions.

Work will not occur near a waterway, a woodlot within 1 to 3 miles of a waterway, wet prairies or meadows, or caves. The improvements made to the facilities within the project area determined to not have an impact on the Rouge River, which is a habitat for state threatened, or state endangered mussels. The full MNFI report can be found in Appendix B.

1.5 Land Use

Since its construction, the GLWA WRRF has been designated as heavy industrial land use. The official designated zoning is M4 or “Intensive Industrial District”. The zoning map containing the GLWA WRRF is available in Appendix C. There are currently no plans by GLWA to change this zoning designation. The zoning is expected to remain the same for the 20-year planning period of the project contained within this project plan.

1.6 Population Projections

The GLWA WRRF service area includes the City of Detroit and several other suburban communities as shown in Figure 1-. The study area is approximately 88,876 acres. Southeast Michigan Council of Governments (SEMCOG) census data for 2020 shows a total population of 2,988,481. SEMCOG also provided population projection for 2040 and 2045 which are 3,084,387 and 3,112,149, respectively.

The total population data provide by SEMCOG for southeastern Michigan is presented in Table 1-1.

Table 1-1: SEMCOG Population Data for Southeastern Michigan

Population and Households	Census 2020	Census 2010	Change 2010-2020	Pct Change 2010-2020	SEMCOG Jul 2021	SEMCOG 2045
Total Population	4,830,489	4,704,809	125,680	2.7%	4,837,632	5,104,922
Group Quarters Population	70,402	66,202	4,200	6.3%	70,573	98,975
Household Population	4,760,087	4,638,607	121,480	2.6%	4,767,059	5,005,947
Housing Units	2,087,258	2,060,785	26,473	1.3%	2,096,952	-
Households (Occupied Units)	1,936,635	1,844,785	91,850	5.0%	1,945,229	2,080,015
Residential Vacancy Rate	7.2%	10.5%	-3.3%	-	7.2%	-
Average Household Size	2.46	2.51	-0.06	-	2.45	2.41

Source: U.S. Census Bureau and SEMCOG 2045 Regional Development Forecast

1.7 Economic Characteristics

Detroit has an unemployment rate above regional averages. High unemployment rates have been a chronic problem in the areas surrounding the central business district. Compared to the regional averages, the City has a relatively low percentage of its population employed in professional occupations and has a higher than average incidence of unskilled workers. Prime employment categories include civil services, banking, real estate, and insurance. The median household income was found to be $30,894 based on 2020 U.S. Census data provided by SEMCOG. Based on population data and trends provided by SEMCOG, the population in southeastern Michigan is expected to increase at a steady rate in the 20-year planning period.

1.8 Existing Facilities

Overall descriptions of the WRRF various processes are presented as a part of this section. In depth descriptions of the WRRF process systems relevant to the proposed project, which are the subjects of this Project Plan, are presented in Section 4.0.

1.8.1 Method of Wastewater Treatment

GLWA is responsible for operation of one of the largest municipal WRRFs in the United States. The plant was initially placed into service in 1940 when it used primary treatment to remove approximately 50-70% of pollutants. The original plant also provided dewatering and incineration of the solids. In the 1970s, secondary treatment facilities were added to provide a higher degree of treatment. Solids handling facilities were added as the capacity of the plant expanded. The combination of primary and secondary treatment at the WRRF removes more than 85% of incoming pollutants, meeting and exceeding federal and state requirements.

The major processes at the WRRF include influent pumping which lifts the wastewater into the WRRF; primary treatment, which involves removal of material suspended in the wastewater (suspended solids); secondary treatment, which involves biological processes to remove pollutants which reduce the oxygen content (carbonaceous biochemical oxygen demand) in the Detroit River; disinfection, which involves the addition of chlorine to kill harmful bacteria; phosphorous removal, which involves the addition of chemicals to reduce the concentration of phosphorus, which has adverse impacts on the quality of water in the Detroit River and the downstream lakes; and solids handling and disposal, which involves the management and ultimate disposal of solid materials (sludge, ash, grit, and screenings), that are byproducts of wastewater treatment.

Wastewater from the Jefferson and Oakwood interceptors reaches the WRRF from PS-1, where eight (8) pumps lift the wastewater into the WRRF to begin the treatment process. PS-2, which came into operation in 1994, pumps water from GLWA's third major interceptor, the NI-EA, as well as a portion of the Oakwood Interceptor. PS-2 contains eight (8) pumps, each with a design capacity of 107 million gallons per day (MGD). Five (5) of the pumps have variable frequency drives, while two (3) have constant speed drives.

Raw wastewater is pumped to eight (8) mechanically cleaned bar screens at PS-1 and eight (8) at PS-2, where solids larger than 1 inch at the PS-1 and larger than 3/4 inch at PS-2 are removed from the flow. Screenings are conveyed to a dumpster, which is then trucked to a landfill for disposal. After screening, the raw wastewater flows through eight (8) grit removal channels at each of the pump stations, where the flow is slowed to allow heavier inorganic solids such as sand, grit, and gravel to settle. The settled grit is removed by a conveyor system. Grit from PS-1 is typically incinerated and grit from PS-2 is landfilled, although grit from PS-1 is landfilled occasionally.

12 rectangular and six (6) circular clarifiers provide primary clarification. All dry weather flow receives primary and secondary treatment and is disinfected prior to discharge. All wet weather flow, up to 930 MGD, receives primary and secondary treatment with disinfection prior to discharge.

Wet weather flow greater than 930 MGD, receives primary treatment and disinfection up to the discharge capacity of the Detroit River Outfall (DRO) (approximately 1,100 MGD). All remaining wet weather flows are discharged through the Rouge River Outfall (RRO) up to the 1,700 MGD capacity of the WRRF. The flow entering the plant is not metered but the influent volumes are estimated from pump operating curves. Effluent from the primary clarifiers is pumped to secondary treatment by a combination of five (5) pumps located in the Intermediate Lift Pump Station and proceeds through the remainder of the plant by gravity. All five (5) pumps have variable speed drive units.

The initial stage of secondary treatment consists of four (4) activated sludge aeration basins, all utilizing high purity oxygen (HPO). Prior to 2004, one of the activated sludge aeration basins utilized forced air. However, it was enclosed with construction of a new concrete deck and converted from air

to HPO. Microorganisms in the activated sludge basins utilize HPO to treat wastewater. GLWA purchases HPO from an outside entity, Praxair, to provide the primary source of oxygen.

GLWA operates 25 secondary clarifiers to settle out the biological mass after the aeration process. For purposes of defining firm capacity, two (2) of the 25 clarifiers are available to be out of service for preventative maintenance.

Chlorine is used for disinfection of the final effluent discharged to the Detroit River through the DRO (Outfall 049). The current plant effluent chlorine feed disinfection system has been in operation since 2003, and chlorine is fed into the treatment facility effluent to meet effluent bacteria limits. The permit establishes a daily maximum limit on total residual chlorine in the effluent of 0.11 milligrams per liter (mg/L), and the disinfection system includes dechlorination facilities to meet this effluent limit.

The RRO (Outfall 050) is currently used during wet weather-induced high flow events when hydraulic conditions at the plant necessitate. Because discharges from the existing RRO are not currently disinfected, a Design-Build project to reconfigure the SE and PE conduits to disinfect and dechlorinate all discharges to the Rouge River is currently ongoing. The new outfall configuration will provide the hydraulic capacity to discharge 1,700 MGD of treated effluent and will meet effluent limits for bacteria and total residual chlorine (TRC).

To protect downstream water quality in the Detroit River and Lake Erie, phosphorous is removed from the treated wastewater prior to discharge. The monthly average discharge limit for total phosphorus is 0.7 mg/L for flows receiving secondary treatment since January 2015. Since October 2015, the six-month growing seasonal (April – September) average maximum limit for secondary treatment is 0.6 mg/L for phosphorous. By adding ferrous or ferric salts to the influent wastewater, the phosphorous is precipitated from the flow and settles in the primary clarifiers, so it can be processed with the primary sludge. A new ferric chloride feed system was installed at PS-1 and PS-2 in early 2003 to enhance phosphorous removal. Ferric chloride is added directly into the flow prior to it entering the primary clarifiers. While GLWA has made significant strides in phosphorous removal at the WRRF, more stringent phosphorus limits will be included in an upcoming NPDES Permit, lowering the allowable phosphorous limit to 0.4 mg/L.

1.8.2 Method of Sludge Handling

Solids handling and disposal at the WRRF include sludge thickening, sludge blending, storage, belt filtration, centrifuging, incineration, ash disposal, and chemical stabilization. To adequately treat wastewater, solids contained in the wastewater must either be removed or converted to more stable forms. Both of these methods are utilized at the WRRF through sedimentation, biological treatment, incineration, and lime stabilization and landfilling. Solids handling, and disposal are a critical aspect of plant operation, and GLWA is engaged in an ongoing program to improve the capacity and reliability of its sludge processing and disposal facilities.

The 12 gravity sludge thickeners (six (6) in Complex A and six (6) in Complex B), and six (6) storage tanks thicken and inline blend both the primary and secondary sludges for optimum dewatering characteristics and store the contents until they are pumped to dewatering facilities. The capacity of these facilities is adequate for current loading rates. Eight (8) (four (4) in Complex A and four (4) in Complex B) thickeners have been rehabilitated, including the replacement of pumps.

Sludge is dewatered at three (3) locations in the plant. Complex I contain ten (10) belt filter presses, and Complex II contains 12 belt filter presses (Upper Level) and four (4) centrifuges (Lower Level) for dewatering sludge prior to incineration or off-site disposal. All 22 belt filter presses have been recently replaced in their entirety in Complex I and Complex II under Contract PC- 787. The four (4) Sharples centrifuges in Complex II have also been completely refurbished.

Incineration of blended dewatered sludge takes place in two (2) complexes containing a total of 14 multiple hearth incinerators: six (6) in Complex I and eight (8) in Complex II. Air quality standards for incinerator emissions require periodic testing of the emissions from the incinerators, which are regulated by a renewable operating permit issued by MDEQ. GLWA also utilizes the Central Off-load Facility (COF), a truck loading process which produces lime-stabilized sludge cake to be hauled to landfill for disposal.

GLWA has recently constructed a Biosolids Dryer Facility (BDF) directly across W. Jefferson Avenue from the WRRF, which was put in operation in August 2015. This BDF, which has a design capacity of approximately 400 dry tons per day, consists of four thermal dryer trains. Blended primary and secondary liquid sludge is pumped from the existing WRRF sludge storage tanks by sludge feed pumps through one of two underground force mains. This blended liquid sludge is being dewatered at the new BDF in one (1) of eight (8) centrifuges and the dewatered sludge processed through one of four (4) triple-pass thermal dryers. The dried product is conveyed to one (1) of four (4) storage silos, where the material is offloaded to trucks for transport to customers. The product is being utilized by famers in the Midwest and used primarily as fertilizer.

1.8.3 Design Capacity

Wastewater flows in the GLWA system have been analyzed in the past for both dry and wet periods. For purposes of the analysis, dry weather flows were determined based on an examination of water consumption, and metering data. Historical data collected over a three (3) year period in the 1990s showed a typical average consumption of 517 MGD. This value was used for planning purposes as an expected reasonable consumption value for the region over the 20-year planning period. Current consumption is reduced because of the overall economic downturn in the service area, but some recovery is expected as the economy stabilizes and eventually recovers. The 517 MGD reflects water production rates with adjustments for those municipalities who receive water from GLWA, but who do not discharge wastewater into the system. Adjustments have also been made, where appropriate, to

account for communities such as Highland Park which discharge wastewater to the system, but which previously furnished their own domestic water supply. For planning purposes, an estimated 90% of the 517 MGD was assumed to be returned to the sewer system as wastewater. This flow quantity is then coupled with the estimated infiltration and inflow for the system to generate the total average dry weather flow. This approach includes industrial flows from a few facilities, which furnish their own water supply.

The WRRF has a primary treatment capacity of 1700 MGD, secondary treatment of 930 MGD. Wet weather flow greater than 930 MGD receives primary treatment and disinfection up to the discharge capacity of the DRO (approximately 1,100 MGD). All remaining wet weather flows are discharged through the RRO up to the 1,700 MGD capacity of the WRRF.

The limit on the current secondary treatment capacity is the hydraulic capacity of the secondary Aeration Decks. This process has been identified as a candidate for a proposed project to increase the treatment capacity. If the aeration decks secondary treatment capacity is increased, the wet weather secondary treatment capacity of the WRRF will increase as well.

1.8.4 Existing Pump Stations

GLWA relies on nine (9) pumping stations that are located throughout the collection system as listed in Table 1-2. The pumping stations are used to lift the wastewater from the low points in the sewer system in order to convey it by gravity the rest of the way to the WRRF. All nine (9) pumping stations are designed to convey combined sanitary and storm flows.

Major stations are normally controlled remotely from GLWA's System Control Center viaa telemetering system, but they can also be controlled locally. The major stations in the system include Bluehill, Conner Creek, Fairview, Freud, Northeast, Oakwood, and Woodmere. The remaining stations, Belle Isle and Fischer are referred to as minor stations; and they operate in the local automatic mode, controlled by level sensors. In addition to the nine (9) pumping stations, the Lighthouse Point Pumping Station and Brennan Pools also contribute flow to the system but are currently under the jurisdiction of the City of Detroit Recreation Department. Bluehill, Woodmere and Brennan Pools pump stations are managed by DWSD.

Table 1-2: List of System Pump Stations

Station	Date Placed in Service	Type	Operator
Belle Isle	1920s	Combined	DWSD
Bluehill	1940s	Combined	DWSD
Conner Creek	1928	Combined	GLWA
Fairview	1914	Combined	GLWA

Station	Date Placed in Service	Type	Operator
Fischer	1940s	Combined	GLWA
Freud	1950s	Combined	GLWA
Northeast	1960s	Combined	GLWA
Oakwood	1921	Combined	GLWA
Woodmere	1958	Combined	DWSD

GLWA relies on four (4) major pump stations at the WRRF: Pump Station 1, Pump Station 2, the Intermediate Lift Pump Station, and the SFE Pump Station. Wastewater from the Jefferson and Oakwood interceptors reaches the WRRF from PS-1, where eight (8) pumps lift the wastewater into the WRRF to begin the treatment process. PS-2 pumps water from GLWA's third major interceptor, the NI-EA, as well as a portion of the Oakwood Interceptor. PS-2 contains eight (8) pumps, each with a design capacity of 107 MGD. Five (5) of the pumps have variable frequency drives, while three (3) have constant speed drives. Replacement of the five variable frequency drives has been identified as a candidate for a proposed project to increase system reliability.

Effluent from the primary clarifiers is pumped to secondary treatment by a combination of five (5) pumps located in the Intermediate Lift Pump Station and proceeds through the remainder of the plant by gravity. All five (5) pumps have variable speed drive units. The aeration decks receive effluent from this pump station.

The existing SFE pump station provides SFE for various operations throughout the plant. The original capacity of the eight (8) pumps in the station, 124 MGD, far exceeds current average demand of 23 MGD.

1.8.5 Combined Sewer Overflow Facilities

GLWA began to construct CSO control projects in the 1990's. The first facilities were undertaken as part of the National Wet Weather Demonstration Grant Project for the Rouge River Basin, which helped finance CSO control facilities within Oakland County, Wayne County, Dearborn, as well as the City of Detroit. DWSD completed its original Long Term COS Control Plan in 1996 and has prepared updates in 2008 and 2010. Detroit has undertaken numerous CSO control projects recommended in the long-Term Plan within both the Rouge River and Detroit River watersheds. The NPDES permit effective May 1, 2013, has recognized the substantial progress in controlling CSO.

GLWA has also installed in-system storage devices at 33 locations throughout the collection system to utilize excess pipe capacity to retain wet weather flows during small storm events. The in-system storage gates operate in a manner similar to those which were installed under the Rouge River National Wet Weather Demonstration Project.

GLWA has also installed an instrumentation and control system to provide real time information to system operators on flow levels, pump conditions, and overflow status. The information can be used to manage wet weather flows to maximize transport and treatment, and to minimize untreated CSO discharges. A summary of the CSO treatment facilities which are in service is shown as Table 1-3.

Table 1-3: Summary of GLWA CSO Treatment Facilities

CSO Treatment Facility	Size/Flow Rate	Completion Date
Hubbell-Southfield Basin	22 MG	1998
Puritan-Fenkell Basin	2.8 MG	1998
Seven Mile Basin	2.2 MG	1998
Baby Creek Facility	5,200 CFS	2006
Oakwood Basin & Pump Station	9.0 MG	2012
Conner Creek Basin	30 MG	2005
Leib Screening & Disinfection	2,000 CFS	2003
St. Aubin Screening & Disinfection	321 CFS	2003
Belle Isle Basin	0.3 MG	2007

1.8.6 Operation and Maintenance Issues

The GLWA WRRF has been successfully operated and maintained (O&M) for decades. The project included herein is intended to address operational and maintenance improvement opportunities associated with new technology, and aging components. The project will improve reliability, ease of maintenance, and operational efficiency. The specific O&M improvement opportunities are discussed within Section 4.0 under the Project Need for each project.

1.8.7 Climate Resiliency

The WRRF has been designed to provide climate resiliency for all operating processes. All operating equipment and processes including all electrical aspects that are susceptible to temperature fluctuation are maintained in properly temperature controlled and ventilated areas. This provides for the ability to maintain proper operation and treatment through any change internally and from the environment.

All critical process at the WRRF have the ability to run off backup power if the need arises. The backup generators are maintained regularly as part of the preventative maintenance schedule. This gives the plant operating security in the event of a climate related outage as well as outages to the primary electrical supply.

1.9 Fiscal Sustainability Plan

GLWA has implemented an asset management program which captures the inventory of the assets included in this Project Plan. A complete inventory can be made available upon request. The crucial assets impacted by this project are the Pump Station No. 2 lift pump motors (five impacted by project), Variable Frequency Drives (five), the associated 5 kVA Switchgear, and 13.8 kV electrical feeds. The poor condition and performance of these assets is the impetus for the project and is described in the "Project Need" section.

2.0 SUMMARY OF PROJECT NEED

The contents of Section 2.0 are general for the project. A more detailed description of specific project needs is included in Section 4.2.

2.1 Regulatory Compliance Status

The current NPDES Permit in place for the GLWA WRRF can be found in Appendix E. GLWA is currently in compliance with all requirements set forth by the NPDES Permit.

There are currently no active Administrative Consent Orders or Amended Active Consent Orders placed on GLWA for the WRRF.

2.2 Water Quality Issues

2.2.1 Detroit River

The Detroit River is intensively developed, with extensive urban, commercial, and industrial complexes, particularly on the U.S. side. Over the past several decades significant improvements have been made in controlling conventional pollutant point sources in the Detroit River especially for discharges of oil and grease, and nutrients. Concentrations of other conventional pollutants including chloride, ammonia and phenols have declined substantially.

Problems remain, however, with regard to certain toxic organics and metals. The Detroit River is the furthest downstream of the Upper Great Lakes Connecting Channels, and environmental conditions are impacted by upstream pollutant loadings as well as those contributed directly to the river and via tributaries to the river. Water and sediment entering the head of the Detroit River are subject to contamination from the St. Clair River (organic hydrocarbons, volatile organics, and mercury) and the Clinton River (PCBs, heavy metals and P).

The levels of mercury in Detroit River sediments remain a concern, despite improvements in industrial treatment facilities. Overall, aquatic biota, especially bottom dwelling organisms, show some impact from contamination of Detroit River sediments with organic and inorganic substances. Normal macrobenthic communities were found upstream of Zug Island and along the entire Canadian shoreline. Severely impacted communities were noted to occur along and immediately downstream of Zug Island. Communities displaying intermediate impacts were found along the remainder of the U.S. shore.

Data on contaminant levels in fish from the Detroit River is insufficient to determine trends; however, limited research has indicated high levels of PCBs and chlordane residues and gradual reductions in levels of DDT residues. Increased incidence of fish tumors have been detected in the lower river.

The concentrations of several parameters were identified as exceeding Michigan Rule 57 criteria or Great Lakes Water Quality Objectives at one or more locations in the Detroit River: PCB's, hexachlorobenzene, PAHs, lead, and mercury.

P concentrations in the river are below relevant guidelines, but the Detroit River is a contributor of P to Lake Erie. P concentrations from the GLWA WRRF have been consistently below authorized levels as set forth in GLWA's NPDES Permit. Mean concentrations of cadmium, copper, mercury, nickel, and zinc were significantly higher in the lower river, indicative of inputs from sources along the river. PCBs clearly show an increase in downstream concentrations with increase greatest on the U.S. shore. Organochlorine (OC) pesticides (e.g., chlordane, DDT, and dieldrin) were found in the upper river, however, significantly higher OC levels have been observed at many downstream stations. The MDEQ completed a Total Maximum Daily Load (TMDL) study for E Coli in the Detroit River in 2007. The purpose of these TMDL studies is to establish controls on pollutant sources so as to achieve in-stream water quality goals.

A review of the USGS 6-minute interval flow data for the Detroit River at Fort Wayne from October 2008 through August 2017, showed that the Detroit River had an average flow of 191,560 cubic feet per second (CFS). During the period the river flow had a range of minimum 22,700 CFS to a maximum 286,000 CFS with a 95 percent exceedance flow of 154,000 CFS.

2.2.2 Rouge River

The Rouge River is also intensively developed, with little vacant land within the drainage area in the City of Detroit other than designated recreational areas and parks. North of the confluence of the Middle Branch, the development is primarily residential with small commercial outcroppings and a substantial area designated as park land along the riverbanks. After traversing the City of Dearborn, the River emerges into a predominantly industrialized portion within the City of Detroit until it outlets to the Detroit River near Zug Island.

Relatively poor water quality has been documented in the Rouge River by numerous studies and publications including the Rouge River National Wet Weather Demonstration Project, the Remedial Action Plan and various water quality assessments performed by MDEQ and others. However, recent monitoring shows that there has been measurable improvement in many areas for some pollutant parameters. These changes are most likely the result of CSO control facilities and storm water management efforts throughout the watershed.

The River receives municipal and industrial discharges as well as intermittent combined sewer overflows and stormwater discharges during and after wet weather periods. Biological investigations document that pollutant tolerant species predominate in the River, and that sludge beds are a problem.

High fecal coliform levels have been measured during both wet and dry weather periods, and the River has little assimilative capacity due to its shallow depth, slow velocity, and relatively low re-aeration rates. High concentrations of dissolved solids and Biochemical Oxygen Demand have been recorded. P levels were identified to exceed recommended state levels for tributary streams.

Toxic pollutants have been observed in samples from the Rouge River, particularly in sediments. The River supports a limited aquatic fishery of pollutant tolerant species and is considered to be a significant tributary load to the Detroit River and the Great Lakes.

The MDEQ completed two TMDL studies in 2007 for the Rouge River for Biota and E Coli. The E Coli TMDL was revised in 2011 to incorporate the allowable bacteria loadings from GLWA recommended CSO control facilities as identified in the modified NPDES Permit issued to GLWA. The purpose of these TMDL studies is to establish controls on pollutant sources so as to achieve in-stream water quality goals.

In addition to the Detroit and Rouge Rivers, several small tributary water courses are also located in the service area. These include Fox Creek, Conner Creek, and Baby Creek. Historically, these small tributaries provided drainage from areas within the City of Detroit to the Rouge and Detroit Rivers. As Detroit became more and more urbanized and developed, these tributaries have been enclosed over much of their length. Today, the water bodies consist of short channels at the outlet of the historic watershed. During dry weather periods, the enclosed drains from these areas are connected to the wastewater collection system. For this reason, the open water channels tend to be relatively stagnant bodies of water except during wet weather periods. These channels typically exhibit poor water quality as a result of sediment deposition and oxygen depletion, and relatively little interaction with the downstream receiving body.

2.3 Project Needs for the Next 20 Years

The project needs documented in Section 4.2 captures some of the most immediate needs at the WRRF. However, GLWA has identified additional project needs at the WRRF that will address operation and capacity needs based on the 20-year population projection. A list of these identified projects is shown as a table in Appendix F. This table has been taken from the GLWA 2020 Wastewater Master Plan. GLWA will continue to identify and implement projects that maintain and improve the treatment of wastewater at the WRRF.

3.0 ALTERNATIVE EVALUATION APPROACH

Project teams explored "Potential Alternatives" including the Regional Alternative and No Action Alternative to identify those that would provide a viable solution to the Project Needs for the next 20 years. Those that were deemed viable were further analyzed as "Principal Alternatives". The costs and impacts of Principal Alternatives were evaluated as described in Section 3.3. The Regional and "No Action" alternatives are discussed below because they are not viable, and, therefore, not included in the evaluation with the Principal Alternatives.

3.1 Regional Alternative

GLWA operates the regional WRRF that receives wastewater from several counties in the region. The proposed improvements presented in this Project Plan are all within the WRRF property. The City of Detroit and numerous surrounding communities are serviced by GLWA. Therefore, a Regional Alternative in the context of this Project Plan is not applicable.

3.2 No Action Alternative

The "No Action" alternatives would not address the process problems experienced by the plant operators, identified in the 2016 Need Assessment Report, and discussed in the subsequent sections of this Project Plan. Not addressing the problems would erode the reliability and ability of GLWA to meet current and future NPDES permit requirements. The "No Action" alternative is not considered viable and is not pursued further.

3.3 Principal Alternatives

A summary of the principal alternatives is presented for the project in Section 4.0. The needs assessment of the principal alternatives was performed with the goal of achieving optimal performance. The approach considers the long-term impacts of the projects.

3.3.1 Optimal Performance

These alternatives differ in approach and cost and were each evaluated with the goal of obtaining "optimal performance" of the existing facilities. Optimal performance required more than operational change; it required equipment replacement. The comprehensive approach to the evaluation determined whether the replaced equipment would be of the same type/style/technology as the existing. In some cases, optimal performance required more than the replacement of existing equipment. For example, the PS-2 Project includes reconfiguration of the electrical feed to provide the best long-term solution to operation of the system. Operational changes and training are incorporated into and result from the improvements.

3.3.2 Principal Alternatives Approach

The evaluation of principal alternatives takes into consideration not only financial impact of the project, but also the potential environmental impacts to ensure that the project is sustainable. The Principal Alternatives serve the same immediate customers and provide the same end-of-planning-period capacity.

For the purposes of this analysis, the present worth for each alternative considered was based on a 20-year loan at a discount rate of 1.875% used in the calculation of interest during construction and present worth factors. An interest rate of 1.4% is used in the calculation of interest during construction and replacement costs. Salvage values of structures and equipment were determined by using straight line depreciation. It was assumed that interest during construction may be significant and, therefore, may influence the choice of alternatives and, therefore, are included in the monetary evaluation. As a result, interest is calculated as one half of the product of the construction period (in years), the total capital expenditures (in dollars), and the discount rate.

Present worth, used to compare alternatives, includes the initial capital, operation, maintenance, and replacement costs. The present worth calculation takes salvage value at the end of the 20-year planning period into account.

GLWA is a water and wastewater service wholesaler. For the purposes of estimating "User Impact Costs" this Project Plan assumes approximately 3 million customers in the service area. According to the SEMCOG, the average household size, as reflected in the 2020 census, was 2.4 occupants. Using this census data and the population assumption, approximately 1,136,500 households are estimated in the service area.

4 PUMP STATION NO. 2 VFD REPLACEMENT

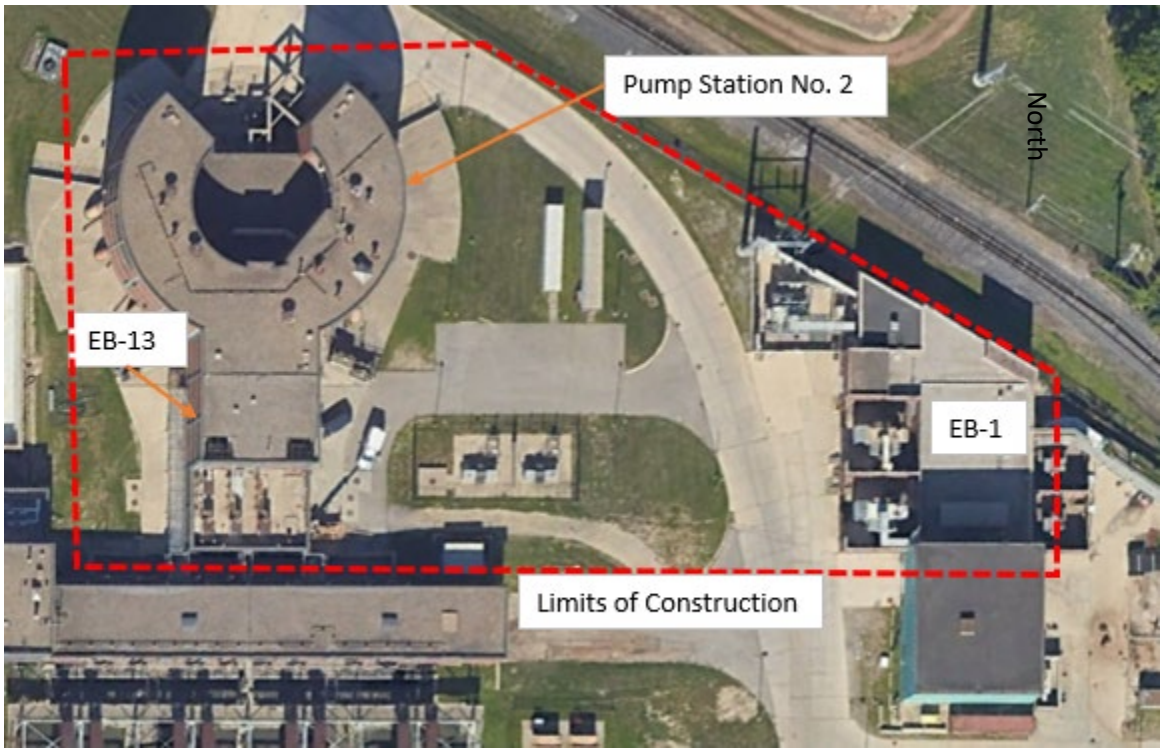
GLWA intends to complete replacement of the existing Pump Station 2 VFDs at the Water Resource Recovery Facility (WRRF). The PS-2 VFD Replacement Project will improve reliability of the five VFD driven pumps within Pump Station No. 2 and address aging electrical infrastructure within the facility.

4.1 Delineation of Project Area

The PS-2 VFD Replacement Project will be located within the confines of the Pump Station 2 and Electrical Building 13 (EB-13) structures, with new underground manhole and electric feeds between EB-1 and EB -13. Figure 8-1 provides an aerial view of the WRRF site indicating the location of PS No. 2, and Figure 8-2 depicts the anticipated limits of the construction for the electrical upgrades, including site/civil work.

Figure 4-1: PS-2 Site Location

Figure 4-2: PS-2 VFD and Electrical Upgrade Limits of Construction



4.2 Summary of PS-2 VFD Replacement Project Need

There are five existing variable frequency drives (VFDs) on the eight lift pumps in Pump Station No. 2, each serving pumps/motors of nominally 900HP. The existing VFDs have extensive O&M issues which are to be mitigated through the VFD replacement. In addition to the VFD replacement, each motor will be rewound (or in one instance replaced) which will allow direct feed of 4160V current in comparison to the existing 480V feeds. This will also allow an increase in the nominal capacity of each pump/motor from nominally 900 HP to 1000 HP.

Although the primary objective of the project is replacement of the VFDs, the existing motors, cabling, transformers, and portions of other BOP support systems are reaching the end of their normal anticipated lifespan, and there are long-term advantages to reconfiguring the electrical feed to the VFD driven pumps. Several project configurations were evaluated and it was determined that replacement of the aging electrical switchgear within Pump Station No. 2 provides the lowest lifecycle operating cost of the units over the next 30-years (the anticipated lifecycle of the equipment).

The initial evaluation of design configurations, preliminary pricing and arrangements for all configurations determined new 13.8 kV electrical feeds from EB-1 to EB-13 as the recommended path forward for development of the design and execution of the project.

4.3 Technical Considerations for the PS-2 VFD Replacement Project Alternatives

The primary technical considerations for the project are an overall improvement in system reliability and resiliency, while improving O&M costs going forward.

4.3.1 Goals and Objectives

The following objectives have been identified for the project:

- Provide a replacement to support a fully functional system to effectively pump both Oakwood and NIEA flow from the Pump Station #2 wet well to the screenings channel.
    - The selected alternative will allow all five VFDs to operate at 100% load continuously, thereby increasing motor horsepower above 900HP, both increasing reliability and providing PS-2 with increased throughput.
- Construct a solution to replace each of the existing VFDs with new VFDs while maintaining firm capacity.
    - The proposed design only removes one motor / pump from service at a time, maintaining firm capacity throughout the project.
- Identify additional equipment needs to be upgraded or replaced to meet new VFD requirements.
    - The project VFDs are powered by the existing medium voltage distribution system which is nearing the end of its service life. The replacement of the VFDs was considered in the larger context of future replacements of the existing medium voltage 13.8kV and 4160V systems.
    - Upgrades to the VFD room HVAC system required for maintaining the replacement VFDs below 104 deg. F / 40 deg. C before output derating, with a maximum operating temperature of 122 deg. F / 50 deg. C.
- Evaluate lowest lifecycle O&M costs and impacts to the system.
    - Evaluations of the potential configurations identified replacement of the switchgear and VFDs concurrently as the lowest lifecycle cost alternative.
    - Arrangements evaluated with Code and manufacturer clearance requirements. Replacement of switchgear provides the best long-term solution for reliability and for ease of maintenance. The replacement of the existing electrical cables, transformers, and rewinding or replacing the existing motors results in the lowest evaluated lifecycle cost.
    - The options evaluated qualitatively assessed the anticipated impact on long-term O&M costs for the different alternatives considered.

4.3.2 Synchronous vs Induction Motors

The existing synchronous motors 9, 12, 13, 15 and 16 are 94.2% efficient or 2-3 % more efficient than an equivalent induction motor operating at the relatively low revolutions per minute of 232-400 in the design. With the existing synchronous motors being 94.2% efficient a comparable induction motor will be 91.2 - 92.2% efficient, based upon OEM correspondence.

The existing motor OEM Ideal Electric provided budgetarily quotations and preliminary data for motors 9, 12, 13, 15 and 16 under the following conditions:

1. Existing motor rewinding to 575V 900HP Synchronous (existing configuration).
2. Existing motor rewinding to 4160V 900HP Synchronous.

3. Existing motor converting to 4160V 1000HP Induction
4. New motor 575V 900HP Synchronous.
5. New motor 4160V 900HP Synchronous.

Although not the lowest cost option, rewinding the existing motors for 4160V induction service would allow simplification of the overall electrical feed and refurbish the units to provide another 30-year service life. The preliminary information from the OEM lists the anticipated motor rewind time as 10-12 weeks, which extends the overall project timeline, and as such, the selected configuration calls for purchasing one-new motor for installation in the first unit to be replaced (#16) with subsequent motors being rewound and installed sequentially to provide the least overall impact to project schedule and unit outage time. This scenario maintains the goal of only allowing one pump out of service for motor replacement.

4.3.3 VFD Replacements

The existing VFDs are a combination of ABB, Basler, Mirus and Rockwell Automation equipment custom integrated by Birclar Electric. The replacement VFDs are to be supplied by one original equipment manufacturer integrating all the major components necessary to control the motors, so the new VFDs are standardized and easier for longterm support.

Budgetary information was received and evaluated for the following alternatives:

Rockwell Automation, through McNaughton McKay for:

1. Replacement VFD 575V 1000HP Synchronous 40C
2. Replacement VFD 575V 1250HP Synchronous (derate to 1000HP at 50C)

Eaton for:

3. Replacement VFD 4160V 900HP Synchronous 40C
4. Replacement VFD 13.8kV / 4160V 900HP Induction 40C

At full load motor current the VFDs are estimated to be 96.9% efficient based upon manufacturer's data.

4.3.4 Motor I/O – Local PLC Replacement

The existing VFDs each contain an Allen Bradley PLC which picks up the local inputs and outputs (I/O) associated with each pump. The motor winding and bearing temperatures are picked up via RTD input cards, and the oil pump, valve, siphon, well level and other status information are picked up via 120VAC input and output cards. The design intention is to replace these existing Allen Bradley PLCs with new individual PLCs for each VFD. The power sources, I/O racks and modules for each pump / motor combination will be independent so a failure on one will not affect the others.

Communication network connections between the new VFDs and the existing Ovation System will be redundant to the extent possible with the selected equipment.

4.3.5 13.8kV Direct Feed vs Replacement Transformers

Converting of the VFDs to allow 13.8 kV direct electrical feed would eliminate the need for stepdown transformers to feed the VFDs as required for the 4160V and 480V alternatives considered. Specific information comparing the VFD costs to transformer replacement for those configurations were received from the following:

OEM Virginia Transformer has budgetarily quoted:

1. Replace 13.8kV / 575V 900kVA Transformer (existing configuration).

McNaughton McKay quoted the following for Federal Pacific Transformers:

1. Replace 13.8kV / 575V 900kVA Transformer.
2. Replace 13.8kV / 4160V 900kVA Transformer.

At full load current for a 900HP motor, the 900kVA transformers are estimated to be 97.4% efficient.

The 575V and 4160V approaches include fused no-load disconnect switches on the secondary side of the transformers, to provide overcurrent protection.

The 13.8kV VFD alternative will not require a transformer since the available 13.8kV can connect directly at the VFD. The 13.8kV VFD then coverts the 13.8kV to the 4160V sent to the motor.

4.3.6 Replacing Medium Voltage Switchgear Arrangement

Replacing the Medium Voltage switchgear prior to refeeding the VFDs includes the installation of two new 13.8kV / 4160V transformers. Budgetary information for this equipment was evaluated from the following:

OEM Virginia Transformer provided data for:

1. 13.8kV / 4160V 10MVA Transformer
2. 13.8kV / 4160V 10MVA Transformer K-6 design.

The Medium Voltage Switchgear replacement approach includes replacement of 5kV switchgear which Eaton provided data for:

1. One lineup of 5kV switchgear with main-tie-main and feeder circuit breakers.

4.3.7 Maintaining Main-Tie-Main Configuration

Medium voltage distribution systems are typically designed in a main-tie-main configuration, with two sources of power supplied through two main circuit breakers, and electrical loads evenly distributed on two sections of switchgear connected by the tie circuit breaker. The 13.8kV and 4160V systems in Electrical Building #13 follow these design principles with Pumps 9, 11, 13 and 15 grouped together and Pumps 10, 12, 14 and 16 grouped together.

Replacing the 13.8kV and 4160V systems as part of the project will maintain the main-tie-main redundancy configurations, although there may be brief construction steps where one of the two main feeds will be out of service, electrically single ending the equipment.

Electrically grouping Pumps 9, 11, 13 and 15 and Pumps 10, 12, 14 and 16 together, shall be maintained through construction and in the final design.

4.3.8 VFD Room and Roof Arrangements and Constraints

Layouts and construction sequences were evaluated for each of the alternatives. The higher voltage scenarios require larger working clearances around the equipment varies from 3ft to 6ft, as noted in NFPA, NEC 70, Table 110.34(A). Preliminary layouts include at least 1ft in addition to the minimum required working clearances to provide margin for future modifications. Some of the 575V drives could be placed within the existing VFD footprints, however all options require some rearrangement of the VFD room. The 575V configurations require the least physical space, 4160V configurations provide the median alternative, and 13.8kV solutions require the most physical space in the VFD room for equipment and working clearances.

4.3.9 Civil and Structural Considerations

The existing exterior roof (above EB-13) outside the south wall of the VFD room supports five 900kVA transformers and appears to have been designed to support a total of eight transformers. For a replace-in-kind configuration, it is anticipated that the replacement equipment will either be of similar or lesser weight and structural modifications to the roof will be minimal. Similarly, the existing VFD room appears to have been designed to enclose eight 900HP VFDs and is anticipated be able to support the new equipment without issue.

Electrical room EB-13 below the VFD room contains the main 15kV switchgear, 5kV motor starters and 480VAC distribution systems. Replacement of these existing systems is anticipated be of similar or lesser weight and structural modifications to this electrical room will be minimal.

The new equipment will require modifications to the existing housekeeping pads and either relocation of conduit penetrations or pull boxes below the VFDs. Any floor or roof modifications, such as core drilling, will be coordinated and approved so the strength of the floor and structure are not reduced, and so the design remains watertight.

For replacement of the medium voltage switchgear, new 3MVA 13.8kV/ 4160V Transformers T-11 and T-14 are intended to be mounted at grade to the east of Pump Station #2 and will require new foundations. In this alternative, new exterior medium voltage cables 13.8kV / 4160V are to be routed through underground duct banks, which will be a mix of new duct banks and spares in the existing duct banks.

The new outdoor equipment will connect into the existing duct bank system through existing manhole MH-15. New duct bank will route from the North of manhole MH-15 to the new equipment through a new manhole to the north of MH-15 for the new outdoor grade mounted transformers.

4.3.10 Mechanical Heating, Ventilation and Air Conditioning (HVAC) Considerations

The existing VFD room has a primary and a secondary ventilation system.

The primary system is comprised of Air House AHU-1 located above the VFD room which supplies conditioned air to the VFD room. This system was installed with the facility when constructed in the late 1980's.

The secondary ventilation system is located in the VFD room and is designed to assist the primary system when the VFD room temperature rises above 75F. The secondary system attempts to lower the VFD room temperature to below 85F by bringing in filtered outdoor air directly into the VFD room. The secondary system was installed in the mid 2000's with the installation of the existing ABB VFDs.

Each existing VFD has a dedicated exhaust fan and motorized louvers, which vent outdoors or recycle a portion of the VFD exhaust air into the VFD room.

Each of the new configurations includes replacement of the existing AHU above the VFD room to provide cooling sufficient to maintain the VFD room maximum temperature below 104 Deg F in all operating scenarios.

Based upon preliminary manufacturer data, a 900HP VFD is anticipated to produce 20k watts or 71k BTU/hr of heat when operating at full power, which equates to 100k watts or 355k BTU/hr of heat with all five 900HP VFDs operating at 100% output.

Similarly, a 1000HP VFD is anticipated to produce 23k watts or 78k BTU/hr of heat when operating at full power, which equates to 115k watts or 390k BTU/hr of heat with five 1000 VFDs operating at 100% output.

The primary source of this heat is the internal isolation transformer part of each VFD. Some larger horsepower VFDs allow the isolation transformer to be remotely located outdoors, but that does not appear to be an option at the 900HP to 1000HP level.

Modern VFDs typically include exhaust fan(s) on the top of the equipment and fresh air filters on the doors. Cool air is pulled in from the aisles and exhausted up through the equipment. The anticipated VFDs can operate at 104 deg. F / 40 deg. C without derating and up to 122 deg. F / 50 deg. C with derating, so the VFD room HVAC

system will need to be designed and adjusted to support these limits and designed to supply cooling air to the aisles and exhaust from above the VFDs.

4.4 Analysis of Alternatives of the PS-2 VFD Project

Several configurations for the project were analyzed, including variations in arrangement, voltage level, motor type, and electrical feed. Voltage level and motor type are summarized in the previous Section. This Section summarizes evaluation of the configurations considered for replacement of the MV Switchgear.

4.4.1 Replacement Configuration Alternatives

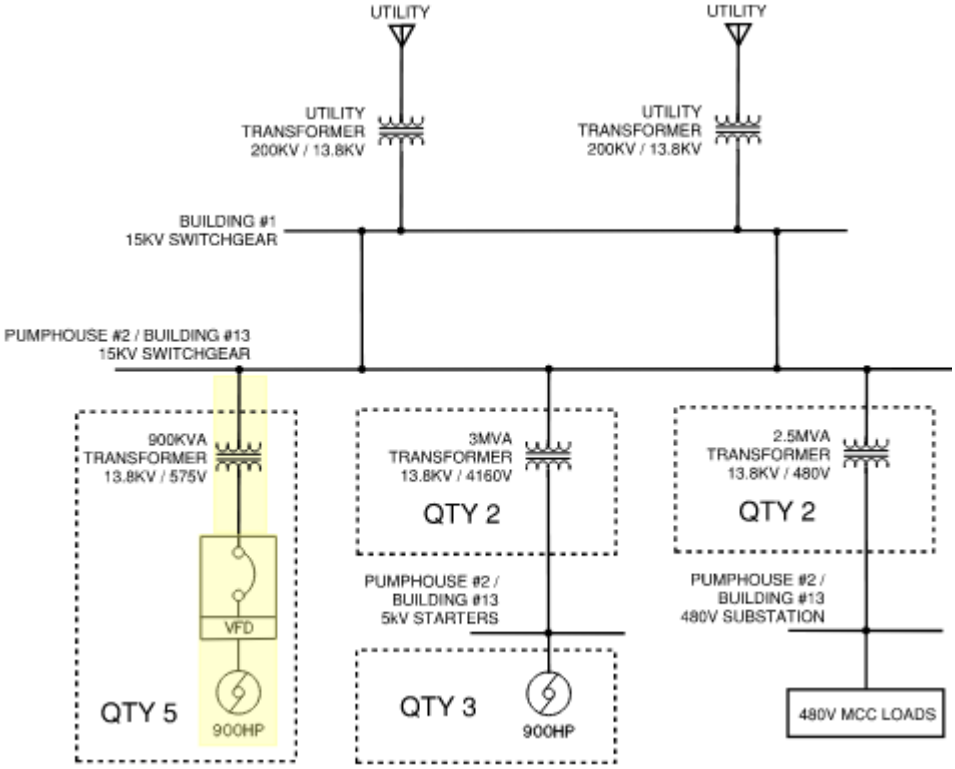
Three variations on overall project scope were reviewed:

1. Replacement of VFDs only (in-kind replacement)
2. Replacement of VFD equipment first with later replacement / upgrade of MV Switchgear
3. Replacement of MV Switchgear first as part of the VFD replacement Project

Replacement of VFDs Only: The VFD Only alternative replaces the existing VFDs, reusing all other equipment to the extent practical. This is the lowest cost alternative and smallest scope. Considering the age of the existing equipment this option is considered to have the lowest long-term reliability and as such is not the recommended solution. This option reuses the existing 13.8kV/575V transformers, installs new 575V VFDs and reuses the existing 575V 900HP synchronous motors without rewinding.

The replacement 575V VFDs would have a similar footprint to the existing VFDs so the existing VFD room ventilation systems will remain as-is and be reused, with only minor ductwork changes to align with the new equipment.

Replacement of VFD Equipment First with later upgrade of MV Switchgear: This approach would replace the cables and equipment from the existing 13.8kV switchgear through to the motors. Below is a simplified single line diagram for Pump Station 2 with the VFDs First scope highlighted. This approach allows for the VFDs to be replaced and creates a path forward for another later project to address the larger medium voltage systems.

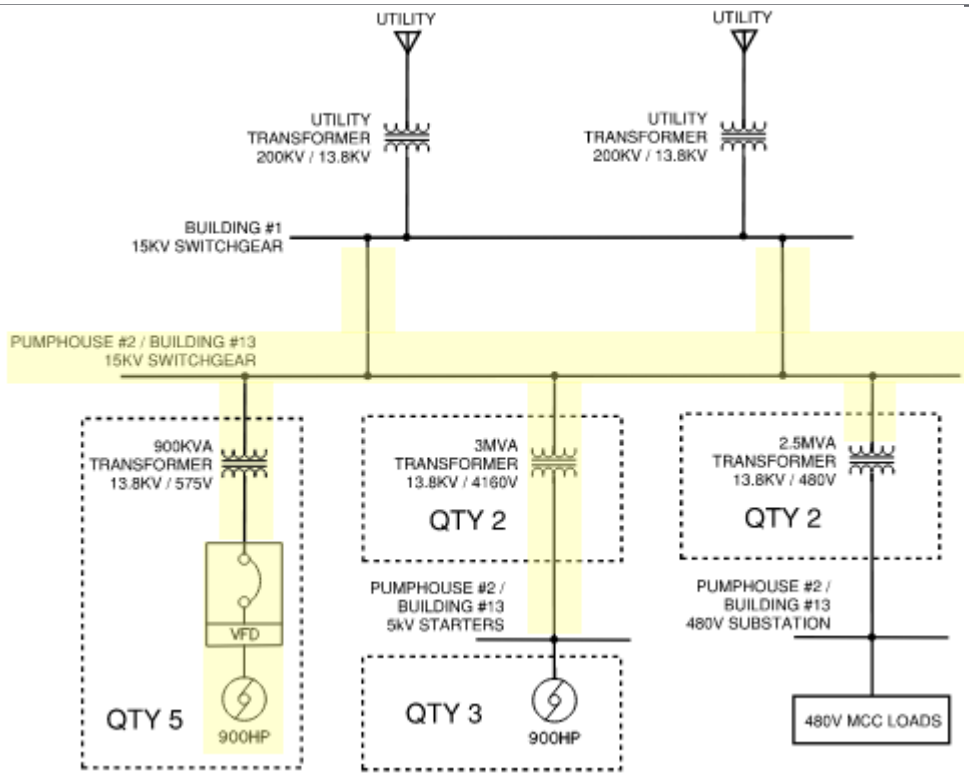


The VFDs First approach allows for changing the VFD and motor voltages with three alternatives:

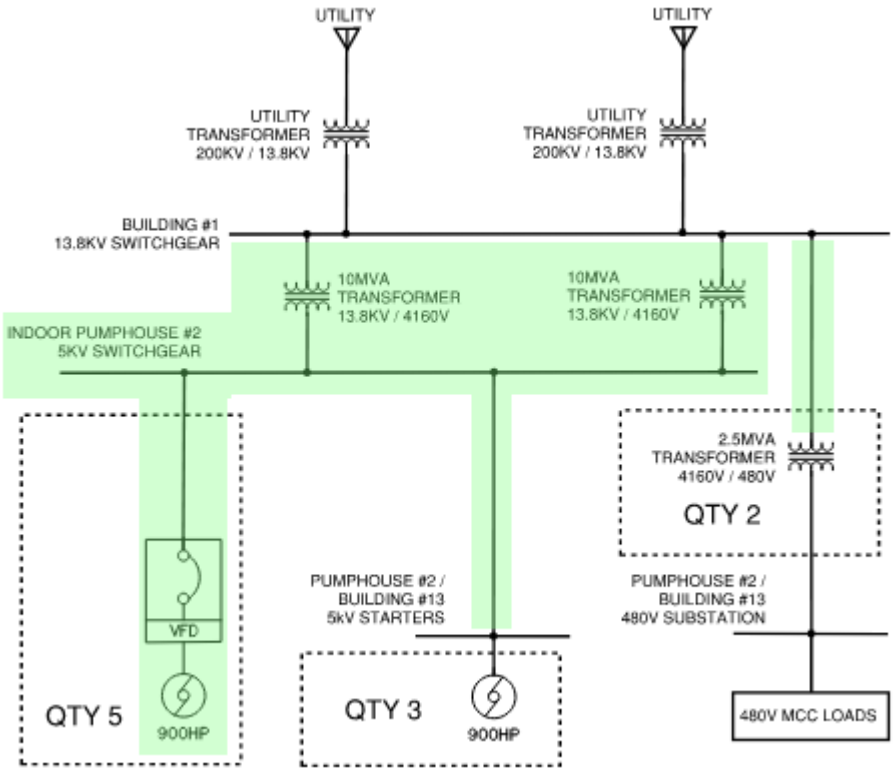
1. **575V** – Replace the existing equipment in-kind with new, matching the existing installation. This is a new 13.8kV/575V transformer, new 575V VFD and rewound 575V 900HP synchronous motor solution.
2. **4160V** – Change the motor and VFD to 4160V from 575V. This is a new 13.8kV/4160V transformer, new 4160V VFD and rewound 4160V 900HP synchronous motor solution.
3. **13.8kV** – Change the VFD to accept 13.8kV, eliminating the transformer and power the motor at 4160V. This is a new 13.8kV to 4160V VFD and 4160V 900HP induction motor solution. VFDs which accept 13.8kV and output 4160V require an induction motor, so the motor type must change from synchronous to induction for this alternative.

The VFDs First approach would reuse the existing 13.8kV switchgear feeder breakers in Electrical Building #13 and leave the other medium voltage 13.8kV and 4160V equipment as-is. Replacing or upgrading the existing medium voltage 13.8kV and 4160V equipment would be left to a future project.

Replacement of MV Switchgear first as part of the VFD replacement Project: The Medium Voltage First approach replaces the existing medium voltage 13.8kV and 4160V systems first, then replaces the VFDs and upgrades the motors. Below is a simplified single line diagram for Pump Station 2 with the Medium Voltage First scope highlighted.



The Medium Voltage First approach would install new two new 13.8kV / 4160V transformers northeast of existing Pump Station #2 and new 5kV switchgear inside Electrical Building #13. This alternative includes repowering the existing 5kV starters controlling induction motors 10, 11 and 14; in addition to addressing the VFDs powering synchronous motors 9, 12, 13, 15 and 16. At project completion, the majority of the medium voltage equipment located in Electrical Building #13 and part of Pump Station #2 will have been replaced or upgraded to provide another anticipated 30-years of service life.



The only original medium voltage equipment kept in service would be the two 2.5MVA 13.8kV/480V transformers T-17 and T-18 within the 480V Unit Substation in Electrical Building #13. T-17 and T-18 power 480V MCC-P2-1 and MCC-P2-2 located in Electrical Building #13 and 480V MCC-P2-3 and MCC-P2-4 located in the Chemical Building. These two transformers would be repowered with 13.8kV from Electrical Building #1 which will require an outage on each.

As noted, the VFD only replacement relies on aging infrastructure which would negatively impact system reliability, and while it is the least initial capital cost solution, it is not considered to align with the overall project's reliability and O&M focused design goals. For the alternatives replacing the MV switchgear and providing new electrical feeds to the VFDs, replacing the MV switchgear first, as part of the VFD project, provides an estimated $800,000 in savings over completing the MV switchgear replacement later as a separate project.

4.4.2 Variations in System Efficiency

Pump Station #2 and Electrical Building #13 are supplied with 13.8kV from Electrical Building #1 which is the connection point for the local utility. The efficiency of the system varies for the different VFD voltage levels discussed due to the transformer, VFD, and motor efficiencies associated with each configuration. Using preliminary manufacturer data, the overall electrical efficiency of each configuration is summarized as follows:

575V or 4160V VFD and Synchronous Motor Efficiency

Transformer * VFD * Synchronous Motor (97.4% * 96.9% * 94.2%) = 88.9%

4160V VFD and 4160V Induction Motor Efficiency

Transformer * VFD * Induction Motor (97.4% * 96.9% * 91.2 - 92.2%) = 86.1% - 87.0%

13.8kV VFD and 4160V Induction Motor Efficiency (No Transformer)

13.8kV VFD * Induction Motor (96.9% * 91.2 - 92.2%) = 88.4% - 89.3%

4.4.3 Lifecycle evaluation of Synchronous Motors vs Induction Motors

Both evaluation of rewinding the existing synchronous motors and converting the existing motors to induction motors were considered. The estimates listed are based on performing the medium voltage work first such that either configuration is supplied with 4160V power for the new VFDs, therefore replacing the existing roof mounted transformers are not required. The 30 year estimated lifecycle costs for these options are within 5% of each other.

LIFECYCLE COST ANALYSIS OF SYNCHRONOUS VS INDUCTION MOTORS		
Technical Comparison	**Option 2B** **VFD + Synch Motor (4160V)**	**Option 3B** **VFD + Induction Motor (4160V)**
Pump Load HP	900	900
System Efficiency (%) 13.8kV to Motor	88.9%	86.5%
Power Draw (kW)	671	671
Annual Electric Consumption (kWh)	3,306,337	3,396,477
Year 1 Costs ($)		
Electricity Purchases	($243,346)	($249,981)
Levelized Major Maintenance Costs	($4,628)	($5,380)
Subtotal Annual Operating Costs	**($247,975)**	**($255,361)**
Estimated 30 year NPV OP Costs (NPV $2022)	**($3,766,259)**	**($3,876,705)**
Capital Estimates		
Major Equipment Only Cost	($611,636)	($652,066)
Estimated 30 Yr Life Cycle Costs (NPV $2022)	**($4,377,895)**	**($4,528,771)**

Notes

1) Major maintenance assumes an annual payment to fund a major capital maintenance activity in yr 15

2) The electrical efficiency for the induction motors was estimated as 91.7% which is the average of the range of 91.2% to 92.2%

3) Pricing is based upon rewinding the existing motors, and converting synchronous motors to induction

4) 4160V is supplied to the VFDs from the two new Main Transformers

4.4.4 Recommended Design Configuration

Comparing the 30-year operating and life cycle costs for the different VFD and motor combinations, the overall lifecycle costs are within 5%. Since the options are each economically similar, other considerations take precedence. The GLWA team has a preference for the 4160V motor solution due to overall efficiency and lifetime system reliability and ease of maintenance. The options were compared considering:

1. Electrical efficiency from the 13.8kV through the motors.
2. Initial Equipment costs.

3. Equipment sizes and installation.

In consideration of all factors, the recommended design configuration is the 4160V VFD and 4160V rewound synchronous motor solution with medium voltage switchgear replacement. This alternative provides GLWA with the lowest overall long-term infrastructure renewal costs, although at a higher initial cost to complete the VFD replacements.

4.5 Selected Alternative for the PS-2 VFD Project

4.5.1 Selected Design Configuration

As noted in the previous Section, the selected design configuration is replacement of the medium voltage switchgear and electrical feeds to the VFDs and rewinding the existing pump motors for 4160V synchronous service. Additional details of the conditions are as follows:

Motors

It is recommended the existing 575V 900HP synchronous motors be rewound by the OEM Ideal Electric to 4160V 900HP synchronous units. This is the second lowest cost and lower risk approach. Rewinding has been estimated at $279k per motor versus $350-390k for a new motor. Rewinding reduces the possibility of unforeseen harmonic issues between the motor and existing pump pairing and the possibility of interface issues such as shaft and mechanical connections and tolerances.

The OEM has indicated the motor horsepower could be increased to 1100HP by configuring the VFDs to operate the motor at 1.0 power factor, instead of the 0.8 power factor originally designed for.

Note: The rewind option extends the replacement schedule per unit due to the 10-12 weeks required for rewind, however this can be partially mitigated with the initial purchase of one new motor, which can be installed for use while each removed 'spare' motor is subsequently being rewound for the next pump.

VFDs

It is recommended the existing 575V 900HP VFDs be replaced with new 4160V 1000HP VFDs to increase system capacity. The 4160V drives can be installed in the existing VFD room and will allow the construction sequence to take one VFD out of service at a time.

Transformers

It is recommended two new 13.8kV / 4160V transformers be installed to the Northeast of Pump Station #2 as part of the replacement of the existing switchgear as the existing transformers have reached their normal expected design life (nominally 30 years).

Cables

It is recommended the existing power and control cables part of the project be replaced with new in kind. The existing cables are nearing the end of their 40-year service life and, with the relocation and replacement of equipment in the VFD room, will likely not reach their new termination points or be of a different voltage. Splicing to extend cables is not acceptable in this application.

Secondary Ventilation System

It is recommended the existing secondary ventilation system in the VFD room be removed and replaced with a new system that includes an air conditioning component. Once the five new VFDs are installed and the existing equipment removed, there will be space in the VFD room and on the adjacent roof to place this new secondary system.

4.5.2 Project Schedule

The rewind of the existing motors and inclusion of medium voltage switchgear replacement has extended the initial project schedule. Key milestone dates from the revised project schedule are summarized below.

Summary of Key Milestones and Schedule Implications

Key milestone dates currently outlined for the project are summarized below:

30% Design Review Package -	December 2022
60% Design Review Package -	January 2023
90% Design Review Package -	February 2023
100% Spec/Drawings Issued -	February 2023
Contractor Bids Received -	July 2023
Contractor Award Date -	September 2023
Contractor Mobilization -	February 2024
Long-Lead Equipment Delivered -	May 2024
Substantial Completion -	May 2025
Final Completion -	September 2025

As firm dates and actual durations of activities are clarified through proactive planning, any adverse schedule impacts will be identified as early as possible in order to overcome or minimize delays to project completion.

Schedule Basis and Assumptions

It is expected that task start/finish dates will continue to be refined throughout Contractor award, at which point the Contractor will continue to maintain the latest project schedule. The current schedule serves to define an overall sequence and time frame required to execute the project.

Estimated Major Equipment Lead Times Based Upon Vendor Correspondence:

- Transformers – Ship 22-24 weeks after acceptance of order
- VFDs – Ship 20 weeks after acceptance of order
- Motor Rewind – Ship 10-12 weeks after receiving at OEM

Unit outages have been staggered so as to minimize the risk of a capacity shortage throughout the duration of project implementation. The expectation is that all major portions of testing and commissioning for one unit will be complete before another unit is taken out of service, however there is some overlap in the timing of each execution, particularly during final commissioning and acceptance of each unit after reliable operation has been demonstrated.

Phasing of Replacements and Unit Outages

As noted in the project Goals and Objectives, the new VFDs are to be implemented while maintaining the highest achievable firm capacity throughout, with the goal to remove only one unit from service at a given time. As outlined in the previous section, the replacement will require some reconfiguration of the existing VFD room and potentially the roof area.

4.5.3 Cost Estimate

The costs for major equipment are based on the budgetary quotes received from industry vendors who are major suppliers of this type of equipment. Commodity supply and labor costs are based on design take offs, similar projects or are from the HDR database.

Capital Estimate – MV Switchgear and VFD Replacement

		GLWA - SWITCHGEAR AND VFDS			
		Man-Hours	**Mat'l/Equip**	**Labor**	**Total Cost**
Construction Direct Costs					
Demolition		1,983	$ 20,000	$ 134,000	$ 154,000
Civil/Sitework		1,708	$ 135,000	$ 105,000	$ 240,000
Mechanical		960	$ 275,000	$ 78,000	$ 353,000
Structural		0	$ -	$ -	$ -
Architectural		0	$ -	$ -	$ -
Electrical and I&C		5,229	$ 6,144,000	$ 414,000	$ 6,558,000
Subtotal Construction Direct Costs		9,880	$ 6,574,000	$ 731,000	$ 7,305,000
Construction Indirect Costs					
Contractor Site Supervision		0	$ -	$ 312,000	$ 312,000
General Conditions		2,594	$ 172,000	$ 250,000	$ 422,000
General Admin & Profit	15%				$ 1,206,000
Subtotal Construction Indirects		2,594	$ 172,000	$ 562,000	$ 1,940,000
Total Construction Cost		**12,474**	**$ 6,746,000**	**$ 1,293,000**	**$ 9,245,000**
Design Engineering					**$ 621,000**
Project Management (Engineering)					**$ 73,000**
Escalation (Mat'l 0%, Labor 0%)			$ -	$ -	**$ -**
Owners Cost	0%				**$ -**
Contingency	20%				**$ 1,988,000**
TOTAL CAPITAL COST					**$ 11,927,000**

4.5.4 Implementation Plan

Switchgear and VFD Repl;acement Construction Steps

STEP 1

1. ***START OF PROJECT***
2. Initial Conditions

STEP 2

1. Install two new 13.8kV/4160V outdoor transformers to the Northeast of Pump Station #2
2. Install new 5kV switchgear in Electrical Building #13
3. Install new duct bank and cables
4. Power new equipment

STEP 3

1. Demo existing VFD 16

2. Send Motor 16 for Rewind

STEP 4

1. Install new VFD 9
2. Install new VFD 12
3. Install new VFD 16
4. Install New Motor 16
5. Power Line-up 16

STEP 5

1. Send Motor 12 for Rewind

STEP 6

1. Install Rewound Motor 12
2. Power Line-up 12

STEP 7

1. Demo 4160V feed to existing 5kV Starters
2. Install replacement 4160V feed to existing 5kV Starters

STEP 8

1. Demo 13.8kV Switchgear Bus C in Electrical Building #13

STEP 9

1. Install new 5kV switchgear Bus B in Electrical Building #13
2. Repower existing T-18 with 13.8kV from Building #1

STEP 10

1. Send Motor 9 for Rewind
2. Demo existing VFD 9
3. Demo existing VFD 12

STEP 11

1. Install new VFD 13
2. Install new VFD 15
3. Install Rewound Motor 9
4. Power Line-up 9
5. Send Motor 13 for Rewind

STEP 12

1. Install Rewound Motor 13
2. Power Line-up 13
3. Send Motor 15 for Rewind

STEP 13

1. Install Rewound Motor 15
2. Power Line-up 15

STEP 14

1. Demo 4160V feed to existing 5kV Starters
2. Install replacement 4160V feed to existing 5kV Starters

STEP 15

1. Demo existing VFD 13
2. Demo existing VFD 15
3. Demo existing VFD Room transformers 9, 12, 13, 15 and 16
4. Demo ground level transformers T-11 and T-14
5. Demo 13.8kV Switchgear Bus B in Electrical Building #13

STEP 16

1. Install new VFD Room HVAC
2. Repower existing T-17 with 13.8kV from Building #1

STEP 17

1. ***PROJECT COMPLETE***

4.5.5 Useful Life Evaluation

The evaluation of the selected alternative took into consideration the expected useful life of the proposed project components. Typical useful life spans for each project aspect were given based on either known lifespan, such as process equipment where a lifespan can be provided by a manufacturer, or standard item lifespans that have been accepted, such as the useful life of a structure. The structural components constructed in this project are expected to have a useful life of 50 years. The site civil work and the proposed process equipment both have an estimated useful life of 20 years. The electrical, instrumentation, and controls have a useful life of 15 years.

4.5.6 Analysis of Impacts

Direct Impacts

The construction of the proposed PS-2 Switchgear and VFD Replacement Project is not expected to have an adverse impact on archaeological, cultural, or historical areas. The construction for this project will occur within the WRRF boundaries and in areas that have been previously disturbed. This project is not anticipated to detrimentally affect water quality, air quality, wetlands, endangered species, wild and scenic rivers, or unique agricultural lands in the area.

The total user costs have been evaluated on an individual project basis. These evaluations estimate a total user cost impact that is not unreasonably high and not considered an adverse direct impact from the implementation of this project.

Indirect Impacts

The improvements made as part of the PS-2 Switchgear and VFD Replacement Project are not expected to have

an impact on the growth and development capacity in the surrounding residential, commercial, or industrial areas. The project is also not anticipated to have an impact on cultural, human, social, or economic resources in the surrounding area.

Cumulative Impacts

The PS-2 Switchgear and VFD Replacement Project is anticipated to improve reliability at the existing Pump Station No. 2 at WRRF leading to long-term system reliability and simplified operations and maintenance.

4.5.7 Mitigation of the Selected Alternative

Where adverse impacts cannot be avoided, mitigation methods will be implemented. Mitigating measures for the projects such as soil erosion control, if required, will be utilized as necessary and in accordance with applicable laws. Details will be further specified in the construction contract documents used for the project.

Short-Term Mitigation

The PS-2 Switchgear and VFD Replacement Project is expected to have unavoidable short-term impacts due to construction activities such as dust, noise, and traffic. Efforts to minimize dust such as giving unpaved areas and access drives used in the construction area a dust-preventive treatment or periodically watering these areas will be implemented. Work will be scheduled and conducted in a manner to minimize the level of noise escaping the site, especially at nights and on weekends. These measures will be detailed in the contract project specifications.

Long-Term Mitigation

The PS-2 Switchgear and VFD Replacement Project is not expected to have adverse long-term impacts. Therefore, no long-term mitigation is expected for this project.

Indirect Impact Mitigation

For the PS-2 Switchgear and VFD Replacement Project, it is not anticipated that mitigative measures for indirect impacts will be necessary. The construction of the PS-2 Bar Racks Replacement and Grit Collection System Improvements Project is located within the boundaries of the WRRF and does not promote growth in the surrounding areas that are not serviced by GLWA.

5 PUBLIC PARTICIPATION

GLWA and the Project Design Teams have identified municipalities, agencies, and government entities that may regulate the work or require permits for the construction required for the project in this Project Plan. Other stakeholders or interested parties, who may be affected by the proposed projects, have also been identified. Communications will be made continuously through the design and construction of these projects.

5.0 Public Hearing Advertisement

A Public Hearing Meeting regarding the project has not yet been advertised. The Project Plan will be advertised in the local newspaper and on the GLWA website. Copies of the Draft Project Plan are

available for download and the public's review on the GLWA website.

5.1 Public Hearing Contents

A Public Hearing may be held to review the work associated with this Draft Project Plan and the "2024 WRRF Clean Water State Revolving Fund Projects Plan Summary". The hearing will review information presented in the Draft Project Plan, including estimated user costs, and submitted comments and views of interested persons.

5.2 Public Comments Received and Answered

Representatives from GLWA and Consultant project teams will address applicable public comments.

As of the date of this Draft Project Plan, no public comments have been received.

Changes to the Project Plan based on the public participation process will be addressed in the Final Project Plan.

5.3 Resolution and Adoption of the Plan

GLWA will make a formal resolution regarding this Project Plan at a Board Meeting following the public hearing. An executed copy of the resolution will be included in the Final Project Plan. This resolution will Authorize GLWA to proceed with the filing of the Project Plan for the purpose of securing low interest loan assistance under the SRF Program.

Appendix A.
Supporting Resources for Cultural Evaluation

Application for SHPO
Section 106 Consultation

APPLICATION FOR SHPO SECTION 106 CONSULTATION

Submit one application for each project for which comment is requested. Consult the *Instructions for the Application for SHPO Section 106 Consultation Form* when completing this application.

Mail form, all attachments, and check list to: Michigan State Historic Preservation Office, 300 North Washington Square, Lansing, MI 48913

I. GENERAL INFORMATION

☒ New submittal
☐ More information relating to SHPO ER# SHPO Project #
☐ Submitted under a Programmatic Agreement (PA)
PA Name/Date: PA name/date, if applicable

a. **Project Name: GLWA 2023 WRRF Clean Water SRF Project**
b. **Project Municipality**: Detroit
c. **Project Address** (*if applicable*): 9300 W. Jefferson Avenue
d. **County:** Wayne

II. FEDERAL AGENCY INVOLVEMENT AND RESPONSE CONTACT INFORMATION

a. **Federal Agency:** U.S Environmental Protection Agency
Contact Name: Andrew Lausted
Contact Address: U.S.EPA – Water Division – Region 5, 77 W. Jackson Blvd. **City:** Chicago **State:** IL **Zip:** 60604-3507
Email: lausted.andrew@epa.gov
Specify the federal agency involvement in the project: U.S. EPA provides capitalization to the Michigan Clean Water SRF program.

b. **If HUD is the Federal Agency: 24 CFR Part 50 ☐ or Part 58 ☐**
Responsible Entity (RE): Name of the entity that is acting as the Responsible Entity
Contact Name: RE Contact name
Contact Address: RE mailing address **City:** RE city **State:** RE State **Zip:** RE zip code
RE Email: RE contact's email **Phone:** RE contact's phone #

c. **State Agency Contact (*if applicable*):** Michigan Department of Environment, Great Lakes, and Energy
Contact Name: Name of state agency contact
Contact Address: Constitution Hall, 525 W. Allegan Street, P.O. Box 30457 **City:** Lansing **Zip:** 48909-7957
Email: State contact's email **Phone:** State contact's phone #

d. **Applicant (if different than federal agency):** Name of Applicant's agency/firm
Contact Name: Applicant contact's name
Contact Address: Applicant contact's mailing address **City:** Applicant's city **State:** Applicant contact's state **Zip:** Applicant contact's zip code
Email: Applicant contact's email **Phone:** Applicant contact's phone #

e. **Consulting Firm (if applicable):** Wade Trim
Contact Name: Arthur F. Mullen, AICP
Contact Address: 500 Griswold Street – Suite 2500 **City:** Detroit **State:** MI **Zip**: 49226-4481
Email: amullen@wadetrim.com Phone: 313.456.8510

III. PROJECT INFORMATION

a. Project Location and Area of Potential Effect (APE)

i. **Maps.** Please indicate all maps that will be submitted as attachments to this form.
☒Street map, clearly displaying the direct and indirect APE boundaries
☐Site map
☒USGS topographic map Name(s) of topo map(s): Dearborn and Detroit
☒Aerial map
☐Map of photographs
☐Other: Identify type(s) of map(s)

ii. Site Photographs

iii. Describe the APE:
The GLWA 2023 Water Resource Recovery Facility (WRRF) Clean Water SRF project is broken down into four separate sub-projects with five specific project areas, each with its own specific direct APEs:

1) Pump Station 1 – The APE of the PS-1 sub-project is within 100' feet of the edge of the site work.
2) Pump Station 2 – The APE of the PS-2 sub-project extends to 100' from the edge of the site work.
3) Aeration Decks – The APE of the Aeration Decks sub-project extends to 100' from the edge of the site work.
4) Screened Final Effluent (SFE) Project – The APE of the SFE sub-project extends to 100' from the edge of the site work. Due to the two locations of work, there will be two APEs for this sub-project.

As the project will be only impacting the efficiency of the WRRF's operations, there will be no indirect APE.

iv. Describe the steps taken to define the boundaries of the APE:
The various construction activities were evaluated to determine the potential for impact upon the structures within the WRRF and potential for impacts beyond the site. After careful consideration of the project's scopes of work at each of the sub-project areas, the project's surroundings were then analyzed to compare the proposed activities to the WRRF facilities and the area adjacent. The boundaries of the APE were then selected to include all of the areas where the construction activities will be occurring at each of the facilities and the areas adjacent to those construction activities. After the brief construction period, the project will have no auditory impacts to the WRRF site and the adjacent properties. The visual impacts of the project will be minimal and will not impact the eligibility of any of the WRRF structures or any adjacent properties. A small sympathetic addition is being added to PS-1 for electrical controls that will not impact architectural integrity of the building and a new SFE building built along W. Jefferson Avenue will not impact the appearance of the WRRF industrial complex or any adjacent properties.

b. Project Work Description
Describe all work to be undertaken as part of the project:
The Great Lakes Water Authority operates the Water Resource Recovery Facility (WRRF), the largest single sewer treatment facility in North America, and the 2023 Clean Water State Revolving Fund Project will upgrade several facilities at the WRRF to upgrade the existing processing equipment, provide systems redundancy, and increase facility efficiency. The overall WRRF 2023 Clean Water SRF project is divided into four sub-projects at five locations:

1) Pump Station 1 – The improvements to PS-1 include refurbishment of existing pumps, renovation of the existing windows, installation of a new doorwall and widening of the opening, and construction of a small sympathetic addition to the pump house.
2) Pump Station 2 – The PS-2 complex does not meet the 50-year-old eligibility threshold; however, some underground work is proposed on the site including new piping, new paving, new retaining wall, and a new structure on pilings as a part of the upgrades to PS-2's rack and grit facilities. This area has been heavily disturbed during the operation of the sewer treatment plant since the late 1930s including significant disturbance during the construction of the PS-2 facility in the early 1990s.
3) Aeration Decks – These improvements will be to the aeration decks that are an important process in the secondary treatment of the effluent including the elimination of phosphorus. These improvements will improve the operation and efficiency of the decks through automation. All work will be above-ground on existing equipment.
4) Screened Final Effluent – Improvements to the SFE system will be made including the construction of a new control structure in Project Area 4 A. Improvements will occur within the Pump Houses in Project Area 4 B, but there will be no changes to the SFE pump house on the Rouge River or any underground disturbances in this subproject area.

IV. IDENTIFICATION OF HISTORIC PROPERTIES

a. Scope of Effort Applied

i. **List sources consulted for information on historic properties in the project area** (including but not limited to SHPO office and/or other locations of inventory data).

The National Register of Historic Places and the Michigan State Historic Sites listing for the City of Detroit were examined, and no listed historic properties were identified within the vicinity of the WRRF. The City of Detroit's Historic District Commission maps do not indicate any designated historic districts within the vicinity of the WRRF. A visual electronic architectural survey was conducted of the project area. The majority of the structures on the WRRF do not meet the 50-year-old criterion for eligibility to the National Register of Historic Places. The oldest building at the complex is the 1940 Pump Station 1 that is a focus of this review, and the incineration complex also dates from circa 1950, which is not located within the APE. NETROnline historical aerials were consulted, which date back to 1951. They indicated that only one non-descript industrial building outside of the WRRF, located at 9303 W. Jefferson Avenue, meets the age eligibility requirement. The building dates from circa 1960, but this building does not meet the criteria for listing on the National Register of Historic Places. See bibliography included on the PS-1 Architectural Properties Identification Form.

ii. Provide documentation of previously identified sites as attachments. Not applicable

iii. **Provide a map** showing the relationship between the previously identified properties and sites, your project footprint and project APE. Not applicable

iv. Have you reviewed existing site information at the SHPO: ☐Yes ☒ No

v. Have you reviewed information from non-SHPO sources: ☒Yes ☐ No

b. Identification Results

i. Above-ground Properties

A. Attach the appropriate Michigan SHPO Architectural Identification Form for each resource or site 50 years of age or older in the APE. Refer to the *Instructions for the Application for SHPO Section 106 Consultation Form* for guidance on this.
See the attached Pump Station 1 Architectural Properties Identification Form.

B. Provide the name and qualifications of the person who made recommendations of eligibility for the above-ground identification forms.
Name Arthur F. Mullen, AICP **Agency/Consulting Firm:** Wade Trim
Is the individual a 36CFR Part 61 Qualified Historian or Architectural Historian ☒ Yes ☐ No
Are their credentials currently on file with the SHPO? ☐ Yes ☐ No
If NO attach this individual's qualifications form and resume.

ii. **Archaeology** (complete this section if the project involves temporary or permanent ground disturbance) Submit the following information using attachments, as necessary.

This section will be completed once Commonwealth Heritage Group completes its archaeological literature review. A request for information was submitted by Commonwealth Heritage Group to the Michigan State Historic Preservation Office on April 11, 2022 for the necessary files.

A. Attach Archaeological Sensitivity Map.

B. Summary of previously reported archaeological sites and surveys:
Previously reported archaeological sites and surveys

C. **Town/Range/Section or Private Claim numbers:** PC 11, 45, 569, 589

D. **Width(s), length(s), and depth(s) of proposed ground disturbance(s):** Width, length, depth of proposed ground disturbance

E. **Will work potentially impact previously undisturbed soils?** ☒ Yes ☐ No
***If YES,* summarize new ground disturbance:**
The ground disturbance activities will include the running of new utilities, new paving, new structures on pilings at the PS-2 complex.
The SFE site 4 A will include some ground disturbance activities including the construction of a new building along W. Jefferson Avenue and running of utilities.

F. Summarize past and present land use:
Originally developed as French ribbon farms and area was developed as industrial uses at the turn of the 20th Century. The City of Detroit opened the original sewer treatment plant in 1938 (Pump Station #1) and the plant has expanded over the fifty years onto formerly developed residential and industrial land.

G. **Potential to adversely affect significant archaeological resources**:
☐ Low ☐ Moderate ☐ High
For moderate and high potential, is fieldwork recommended? ☐ Yes ☐ No
Briefly justify the recommendation:
Justification for recommendation of fieldwork

H. **Has fieldwork already been conducted?** ☐ Yes ☒ No
If YES:
☐ Previously surveyed; refer to A. and B. above.
☐ Newly surveyed; attach report copies and provide full report reference here:
Full report reference

I. Provide the name and qualifications of the person who provided the information for the Archaeology section:
Name: Name of archaeologist **Agency/Firm:** Commonwealth Heritage Group
Is the person a 36CFR Part 61 Qualified Archaeologist? ☒ Yes ☐ No
Are their credentials currently on file with the SHPO? ☒ Yes ☐ No
If NO, attach this individual's qualifications form and resume.

Archaeological site locations are legally protected.
This application may not be made public without first redacting sensitive archaeological information.

V. IDENTIFICATION OF CONSULTING PARTIES

a. **Provide a list of *all* consulting parties,** including Native American tribes, local governments, applicants for federal assistance/permits/licenses, parties with a demonstrated interest in the undertaking, and public comment:
Great Lakes Water Authority
Hazen and Sawyer
Wade Trim
Detroit Historic District Commission
Detroit Historic Designation Advisory Board
Michigan's 12 Federally designated Indian tribes

b. Provide a summary of consultation with consultation parties:
Letters notifying Michigan's 12 Indian tribes were sent in late February, but no responses have been received as of April 13, 2022.
Email notifications were sent to the Detroit Historic Designation Advisory Board and the Detroit Historic District Commission.

c. Provide summaries of public comment and the method by which that comment was sought:
A public hearing is scheduled for May 25, 2022 for input in the SRF plan. As of now, no public comments have been received.

VI. DETERMINATION OF EFFECT

Guidance for applying the Criteria of Adverse Effect can be found in *the Instructions for the Application for SHPO Section 106 Consultation Form*.

a. **Basis for determination of effect**:

Besides the work on PS-1 Complex, it is determined that **no historic properties will be affected** for the remainder of the proposed construction activities. All of the activities will be taking place on facilities that do not meet the age criteria for listing on the National Register of Historic Places. Most of the entire site has been previously disturbed during construction activities at the site over the last 80 years, and there is limited likelihood that virgin soil will be disturbed. Use of an Inadvertent Discovery Plan is recommended for work activities during the PS-2 underground activities and while excavation activities are occurring related to the construction of the new SFE building in Project Area 4 A.

For the work on the PS-1 complex, it is determined that the construction activities will have **no adverse effect** on the pump house. One doorway/window opening is being widened on the northside of the Pump House to allow for the safe and easy removal and installation of pumps from/into the building that occur regularly during refurbishment or replacement. The current opening is barely sufficient enough to allow the removal of the pumps, and to accomplish these repairs/replacements, the entire window and door assembly has to be removed. The brickwork will be widened by approximately 18 inches in the one bay and existing bricks will be used so that the widening of the opening is not noticeable. A small new control structure will be added that is designed with complimentary brick materials, massing, and detailing; however, the new structure will be clearly evident that the addition is a new due to its diminutive size related to the existing structures. This construction activity will not impact the eligibility of the PS-1 complex for listing to the National Register of Historic Places.

b. Determination of effect

☒ **No historic properties will be affected** or

☒ **Historic properties will be affected** and the project will (check one):

☒ have **No Adverse Effect** on historic properties within the APE.

☐ have an **Adverse Effect** on one or more historic properties in the APE and the federal agency, or federally authorized representative, will consult with the SHPO and other parties to resolve the adverse effect under 800.6.

☐ **More Information Needed:** We are initiating early consultation. A determination of effect will be submitted to the SHPO at a later date, pending results of survey.

Federally Authorized Signature:_____Date:_____

Type or Print Name: _____

Title: _____

ATTACHMENT CHECKLIST

Identify any materials submitted as attachments to the form:

☐ Additional federal, state, local government, applicant, consultant contacts

☒ Maps of project location

Number of maps attached: three

☐ Site Photographs

☐ Map of photographs

☐ Plans and specifications

☐ Other information pertinent to the work description: Identify the type of materials attached

☐ Documentation of previously identified historic properties

☒ Architectural Properties Identification Forms

☐ Map showing the relationship between the previously identified properties, your project footprint, and project APE

☐ Above-ground qualified person's qualification form and resume

☐ Archaeological sensitivity map

☐ Survey report

☐ Archaeologist qualifications and resume

☐ Other: Identify other attached materials

Great Lakes Water Authority
2023 Water Resource Recovery Facility
Clean Water SRF Project
Areas of Potential Effects Map

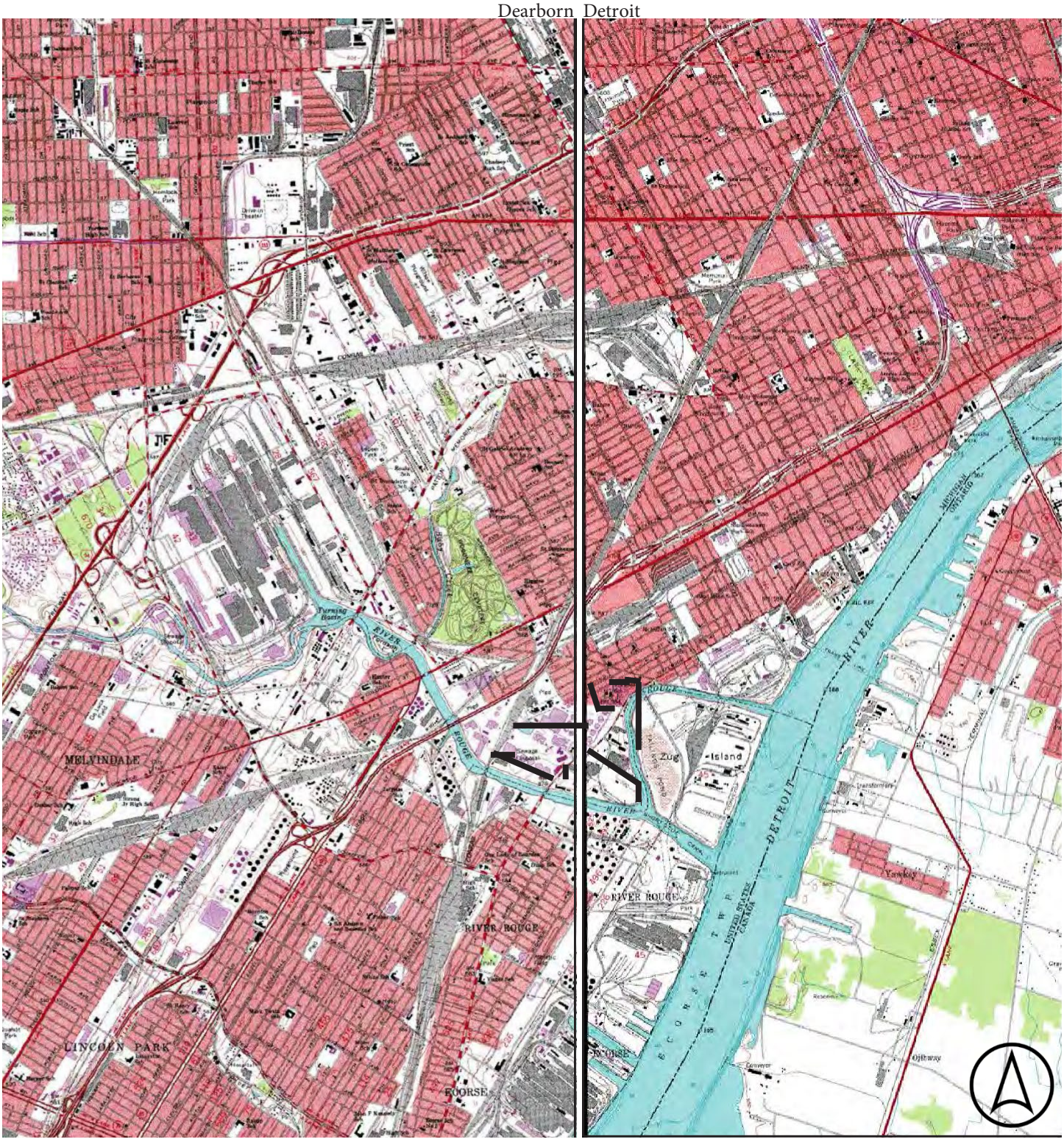
Source: Google Earth

Project APE Areas

- #1 - Pump Station 1
- #2 - Pump Station 2
- #3 - Aeration Decks
- #4 A - SFE - New Building
- #4 B - SFE Pump House (existing)

Great Lakes Water Authority
2023 Water Resource Recovery Facility
Clean Water SRF Project
Topographical Map
Dearborn and Detroit Quadrangle Maps

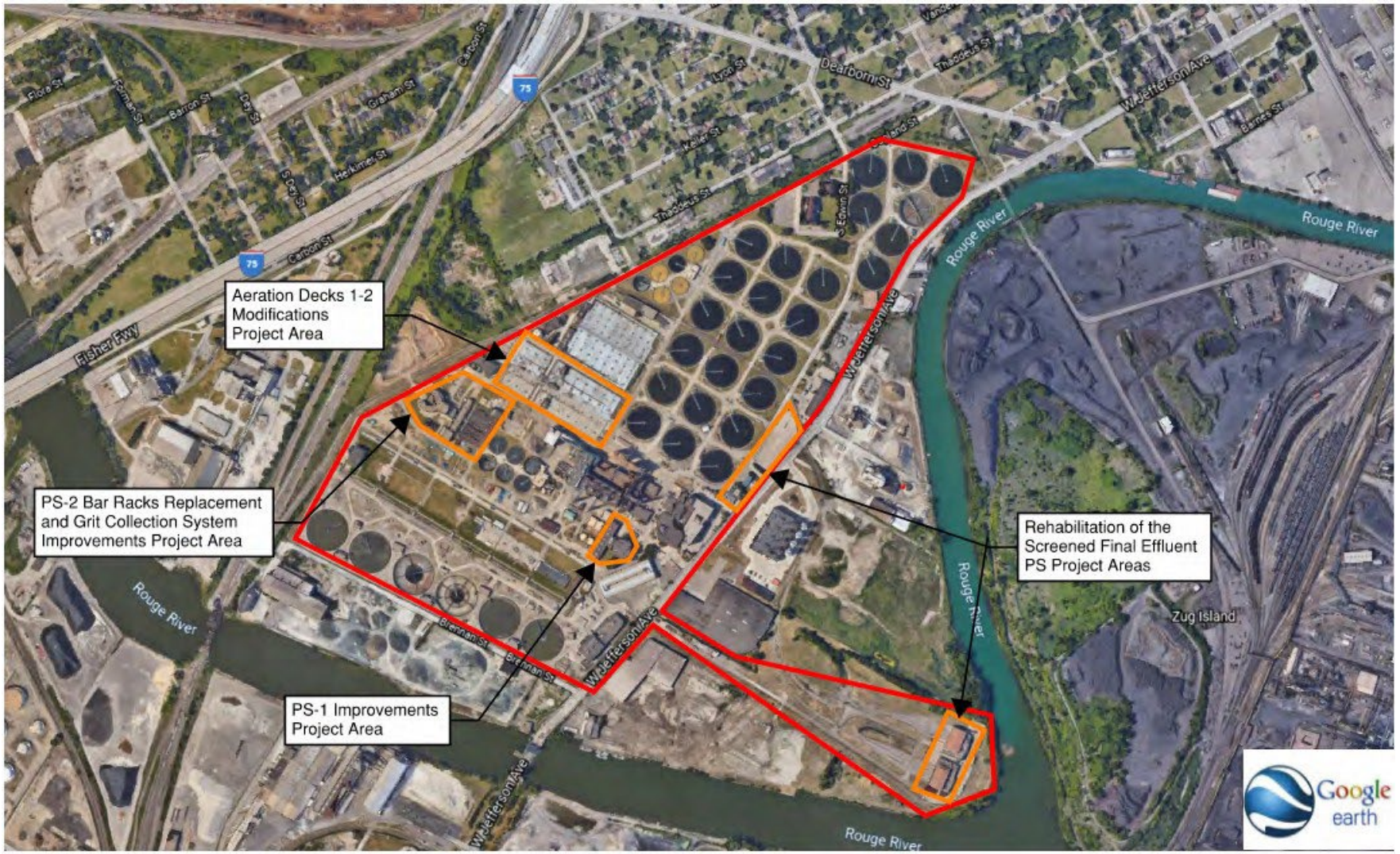
Dearborn Detroit



Source: U.S.G.S. Topographic Map
not to scale

Project Location

Great Lakes Water Authority
2023 Water Resource Recovery Facility
Clean Water SRF Project
Aerial Map



Source: Google Earth

Michigan SHPO Architectural Properties Identification Form

Property Overview and Location Pump Station 1 Complex

Street Address	9300 W. Jefferson Avenue				
City/Township, State, Zip Code	Detroit, MI 48209				
County	Wayne				
Assessor's Parcel #	20000089				
Latitude/Longitude (to the 6th decimal point)	Lat:42.284242		Long: -83.126734		
Ownership	Private ☐	Public-Local ☒	Public-State ☐	Public-Federal ☐	Multiple ☐

Property Type

(Insert primary photograph below.)

Building ☒ select sub-type below Commercial ☐ Residential ☐ Industrial ☒ Other ☐	Structure ☒ Object ☐

Architectural Information

Construction Date	1935-1940	
Architectural Style	Classical	
Building Form	Round and Rectilinear	
Roof Form	Flat	
Roof Materials	Composite	
Exterior Wall Materials	Brick	
Foundation Materials	Concrete	
Window Materials	Aluminum	
Window Type	Industrial Casements	
Outbuildings	Yes ☒	No ☐
Number/Type:	Six/Utilitarian	

Eligibility

Individually Eligible	Criterion A ☒	Criterion B ☐	Criterion C ☒	Criterion D ☐
Criteria Considerations:		a. ☐ b. ☐ c. ☐ d. ☐ e. ☐ f. ☐ g. ☐		
Component of a Historic District	Contributing to a district ☐	Non-contributing to a district ☐	Historic District Name	
Not Eligible ☐				

Area(s) of Significance	Architecture, Engineering							
Period(s) of Significance	1940 to present							
Integrity – Does the property possess integrity in all or some of the 7 aspects?								
Location ☒	Design ☒	Materials ☒	Workmanship ☒	Setting ☒	Feeling			Association ☒
General Integrity:	Intact ☐	Altered ☐	Moved ☐	Date(s):				
Historic Name	Detroit Wastewater Treatment Plant							
Current/Common Name	GLWA Water Resource Recovery Facility							
Historic/Original Owner	City of Detroit							
Historic Building Use	Sewer treatment plant							
Current Building Use	same							
Architect/Engineer/Designer	J.S. Stringham – Detroit City Engineer							
Builder/Contractor								

Survey Date		Recorded By		Agency Report #	

For SHPO Use Only	SHPO Concurrence?: Y / N	Date:

Narrative Architectural Description

Provide a detailed description of the property, including all character-defining features and any accessory resources. This is required for all properties.

The Pump House 1 complex at the WRRF is comprised of the circular measuring 56 feet in circumference measuring 50 feet tall, which is connected to the Rack and Grit Building by a narrow one story Control Room connector. The Rack and Grit Building measures 218 feet long by 55 feet wide by 37 feet tall. All three structures include a darker brick base, central vertical section with a corbelled brick cornice with extruded aluminum coping. Very restrained classical detailing is used throughout.

The Pump House 1 structure is divided into vertical bays approximately 20 feet wide with brick piers separating the individual bays. There is a decorative brick corbelled band that encircles the building. The building's original main entrance is located on the eastern façade with an entrance portico breaking up the circular nature of the pump house. The portico aligns with the Rack and Grit Building. The portico is divided into three bays with narrow vertical window bays on the east side of the entrance bay. Decorative brickwork surmounts the central doorway feature with horizontal and vertical elements and a single upright acorn decorate sconce is located on each side of the doorway. Each of the bays include a carved stone panel inserted into the façade centered over each of the window openings. There are decorative narrow limestone blocks matching the height of the bricks as accents at the top of the vertical brickwork before reaching the soldier coursework across each of the window openings.

Both the Control Room and the Rack and Grit Buildings continue the vertical bay arrangements with the Rack and Grit Building having 13 bays, but there are no inset stone panels above each of the bays however, and only a single piece of decorative stone is at the top of the vertical brick bands adjacent to windows as compared the windows in the Pump House 1. The ends of the Rack and Grit Building are solid brick bays with a single band of vertical windows, which matches the style of the side bays on the front portico to the Pump House 1.

History of the Resource

Provide information on previous owners, land use(s), and construction and alteration dates in a narrative format. <u>This is required for all intensive level surveys, NRPQs, and nominations, and recommended for other identification efforts</u>.

The Water Resources Recovery Facility, aka Detroit Wastewater Treatment Plant, was constructed 1935-1940 for $27 million with majority of the funding coming from the Public Works Administration. This project included the construction of Pump Station 1, the Incinerator Building, and other ancillary structures. The project was designed to collect sewage from the City of Detroit and seven adjacent communities and provide primary treatment through the use of bar screens, grit chambers, sedimentation tanks, and chlorination. L.G. Lenhardt was the Commissioner of Public Works at the time of construction.

The plant included an unusual enclosed sod covered sedimentation tank farm due to the close proximity of the complex to the Carbon Works and Delray neighborhoods.

The plant received a $33 million upgrade in 1957 that expanded and improved the facilities associated with PS-1. Changes to Federal regulations including amendments to the Federal Water Pollution Control Act of 1972 (aka the Clean Water Act), and further amendments to Clean Water Act of 1977 spurred significant expansion of the Detroit Wastewater Treatment Plant to include secondary treatment and numerous cylindrical tanks to the northeast of the PS-1 site, nearly doubling the size of the complex through residential removal of several blocks of homes.

In the 1990s, Pump Station 2 was constructed to increase the plant capacity.

Statement of Significance/Recommendation of Eligibility

Provide a detailed explanation of the property's eligibility for the National Register. Include an evaluation under at least one of the four National Register Criteria and one Area of Significance. Include a discussion of the seven aspects of integrity, and make a recommendation about eligibility. <u>This is required for all properties</u>.

The Pump Station 1 building meets Criterion A and Criterion C.

The effort to bring wastewater treatment to municipal areas was a major concern during the first half of the 20th Century when significant urban and industrial growth exceeded the capacity of the dilution model to address sewerage. From the early 1910s, Detroit as a region was trying to determine where and how to fund wastewater

treatment for the rapidly growing metropolitan area. By the time the funding was addressed through State laws and funding from the Public Works Administration, the Delray site was the only location available. Detroit was constructed as the largest single sewerage plant in the country, a title that it retains today. The location and construction of Detroit's Wastewater Treatment Plant is indicative of a series of events that reflect the pattern of development of the Detroit Metropolitan area as the plant was expanded in the 1950s to allow for much of the region's suburban sprawl.

Regarding Criterion C, the neo-classical design of the pump and flume structures illustrates a peak in municipal architecture where no expense was spared on the brick detailing of utilitarian buildings. After World War II, the design trend would be constrained by the influences of growing Modernism architectural style and a growing cost consciousness that would limit the amount of spending on "non-necessary aesthetic" flourishes on industrial buildings.

The PS-1 complex is significant in the following areas: Architecture and Engineering. It is an exceptional example of the ornate Classicism utilized on a municipal service building and Pump Station 1 served as the pumping station to North America's largest single wastewater treatment plant.

The PS-1 complex retains a majority of its integrity including location, design, materials, workmanship, setting, and association. It's feeling as been altered with the construction of a three and half story tall parking deck directly to its south, and it affects the original alignment of PS-1 that is no longer easily visible from W. Jefferson Avenue.

The PS-1 complex is eligible for listing to the National Register of Historic Places.

References

List references used to research and evaluate the individual property. For NRPQ's include copies of key documents.

Hyde, Charles K., *The Lower Peninsula of Michigan: An Inventory of Historic Engineering and Industrial Sites*, National Park Service, Historic American Engineering Record, Office of Archaeology and Historic Preservation, 1976.

Johnson, Barry N., *Wastewater Treatment Comes to Detroit: Law, Politics, Technology, and Funding*, Wayne State University, Doctor of Philosophy dissertation, May 2011.

Daisy, Michael, *Detroit Water and Sewerage Department: The First 300 Years*, City of Detroit, 2001.

Detroit Water and Sewerage Department: Wastewater Master Plan Executive Summary, Camp Dresser & McKee, October 2003.

Sauer, Wm. C, *Detailed Official Atlas of Wayne County*, Wm. C. Sauer, Detroit, MI, 1893.

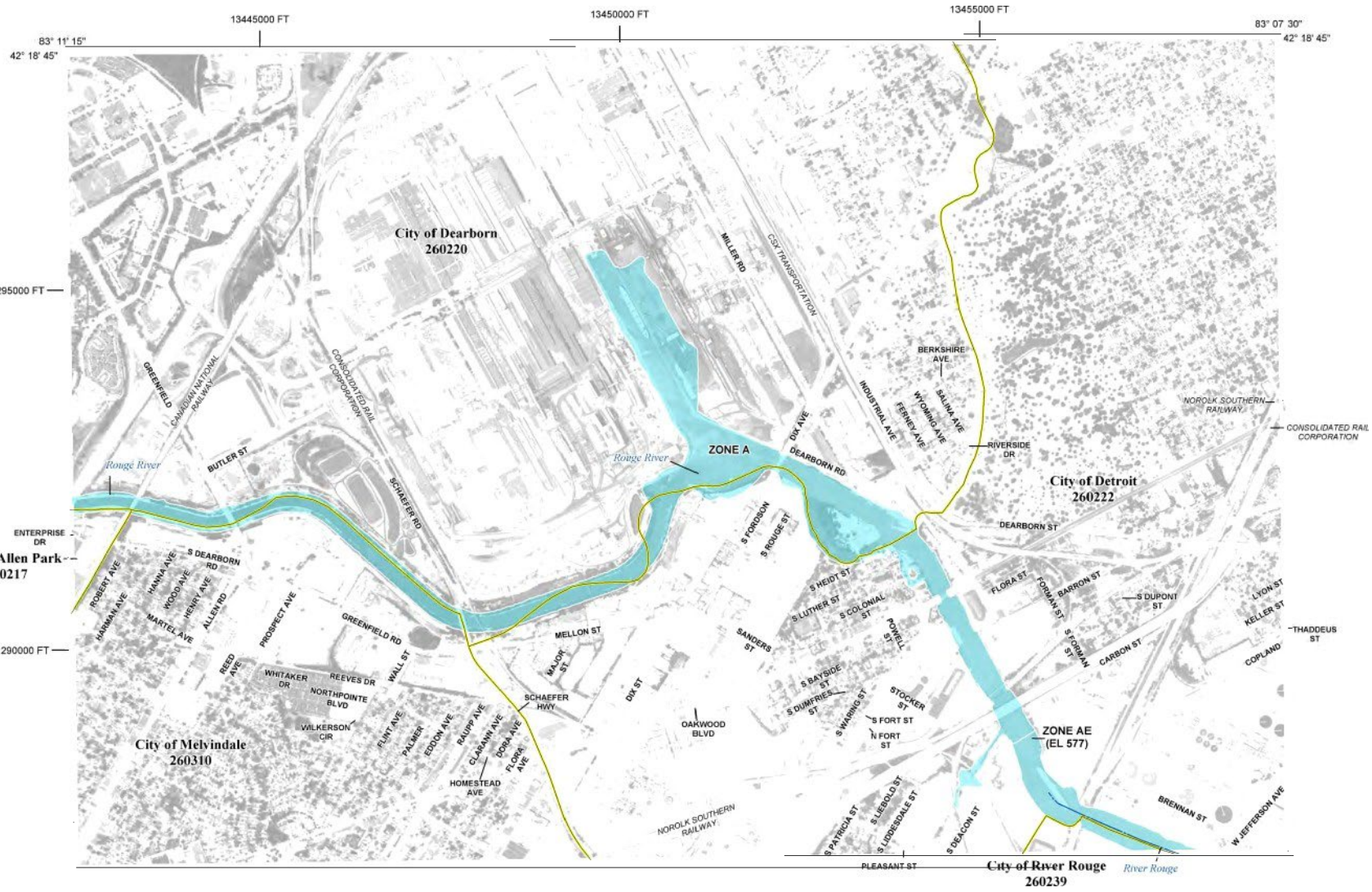
Sewerage Treatment Plant – Pumping Station and Grit Chambers – P.W.A. Docket No. 9602-R drawings, City of Detroit Department of Public Works, City Engineering Office, Bureau of Public Structures, 1936-37.

Cultural Evaluation Report

TO BE ADDED IN FINAL PROJECT PLAN

Appendix B.
Supporting Resources for Environmental Evaluation

FEMA FIRMette Map Panels



THIS AREA SHOWN AT A
SCALE OF 1" = 500'
ON MAP NUMBER
26163C0268

THIS AREA SHOWN AT A
SCALE OF 1" = 500'
ON MAP NUMBER
26163C0269

83° 07' 30"

FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT
IHE INFORMATION DEPICTED ON IHIS MAP AND SUPPORIING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORIVIAIAT HTTPS://MSC.FEMA.GOV

Without Base Hood Elevation (BFE) *Zone A,V, A99*
With BFE or Depth *Zone AE, AO, AH, VE, AR*

SPECTALFLOOD HAZARDAREAS
"J• Regulatory Floodway
¿ 0.2% Annual Chance Flood Hazard, Areas of I% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zc ›e X
Future Conditions t% Annual Chance Flood Hazard Zone \
OTHERAREASOF FLOODHIRD
Area with Reduced Flood Risk due to Levee **See Notes.** *Zone X*
Area with Flood Risk due to Levee z‹" .e 0
OTHER AREAS
]§fB §§§I+ Areas of Minimal Flood Hazard zu/›e x
Area of Undetemined Flood Hazard z‹»e n
GENERAL STRUCTURES
Channel, Culvert, or Storm Sewer
Levee, Dike, or Floodwall
E 18.2 / 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation
8 Coastal Transect
- Coastal Transect Baseline
Profile Baseline
Hydrographic Feature
— *sis*— Base Flood Elevation Line (BFE)

NOTESTOUSERS

For information and questions about this Flood Insurance Rate Map (FIRM), available products associated with this FIRM, including historic versions, the current map date for each FIRM panel, how to order products, or the National Flood Insurance Program (NFIP) in general, please call the FEMA Map Information eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Flood Map Service Center website at https://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website.

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be ordered directly from the Flood Map Service Center at the number listed above.

For community and countywide map dates refer to the Flood Insurance Study Report for this jurisdiction

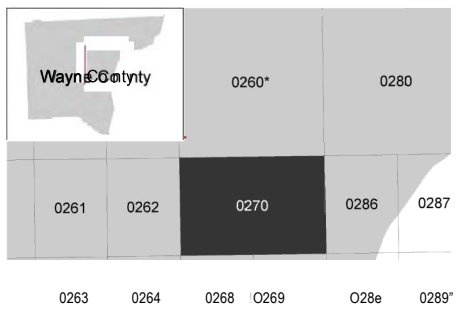
Base map information shown on this FIRM was provided in digital format by the United States Department of Agriculture Farm Service Agency (USDA-FSA). This information was derived from digital orthophotography at a 1-meter resolution from photography dated 2012.

SCALE

Map Projection:
NAD 1983 StatePlane Michigan South FIPS 2113 Feet;
Wee tern Hewisphere, Ver tical Datum NevD 8 s

1 inch = 1,000)eet 1:12,000
4,000
Feet
Meters
0 250 500 1,000

PANEL LOCATOR



OTHER FEATURES
Limit of Study
Jurisdiction Boundary

FEMA
National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM

WAYNE COUNTY, MICHIGAN
(All Jurisdictions)
PANEL 270 OF 575

COfJMUNITY	NUMBER	PANEL	SUFFIX
ALLEN PARK, CITY OF	260217	0270	
DEARBORN, CITY OF	260220	0270	
DETROIT. CITY OF	260222	0270	
MELVINDALE, CITY OF	260310	0270	
RIVER ROUGE, CITY OF	260239	0270	

0401 0402 0406
0407
0426

0403 0404 0408 0409

0430*

* PAN EL NOT PRINTED

VERSION NUMBER

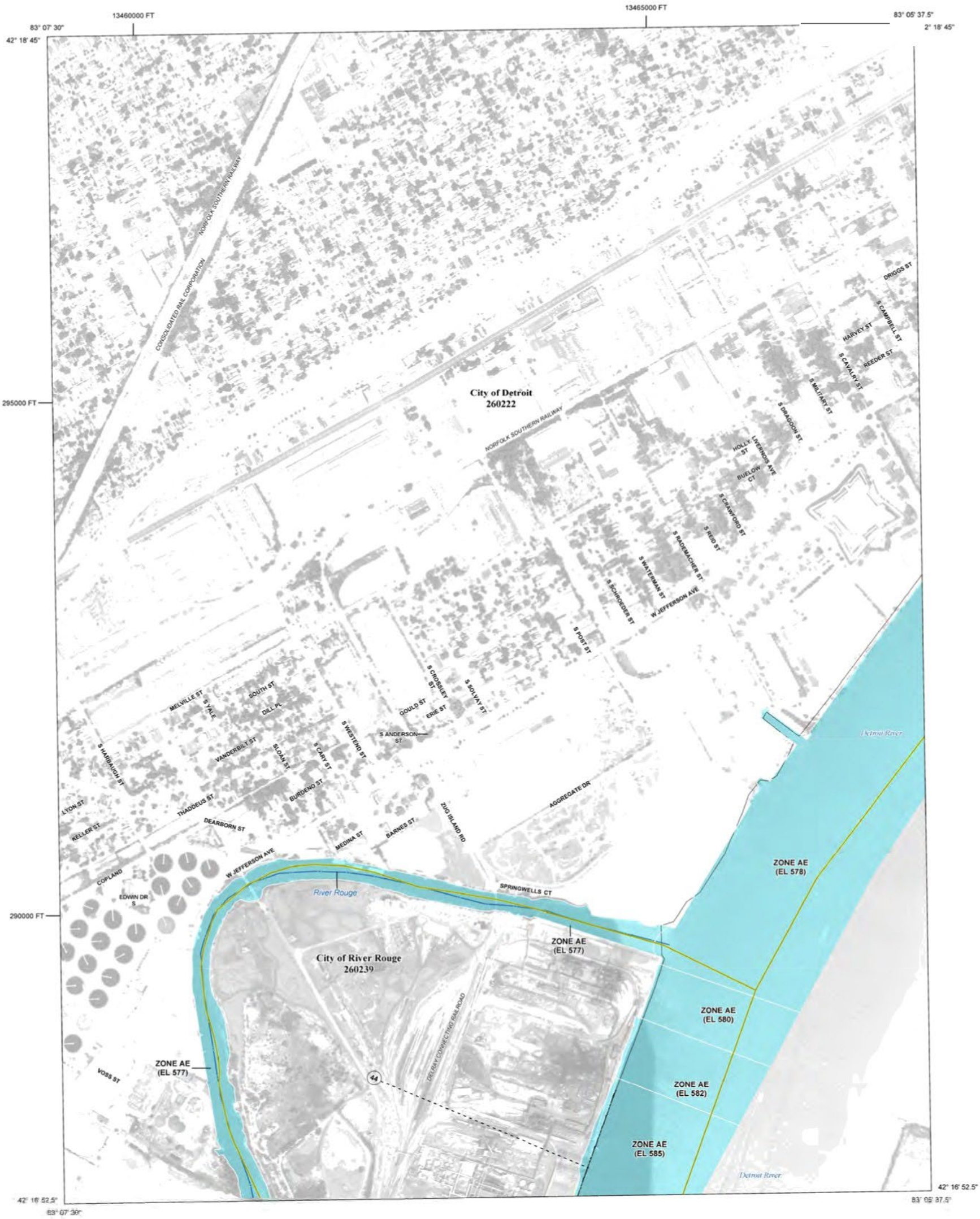
2.4.3.5

MAP NUMBER

26163C0270F

MAP REVISED

OCTOBER 21, 2021



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

THE INF0R81AfiON DEFJCTED ON THIS MAP 1p0 SUPPORfiNG DOCdMEhTATON APE ALSO AVAILABLE I#DIGFAL F0RMA3M HTTPS://MSC.FEMA.I3OV

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) Zone A,V, A99
- With BFE or Depth Zo ' " ' '
- Regulatory Floodway

0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X

Future Conditions 1% Annual Chance Flood Hazard

OTHER AREAS OF FLOOD HAZARD
- Area with Reduced Flood Rlsk due to Levee See Notes.
- /Irea with Rood Rish due to Levee
- NO SCREEN areas of Minimai nood HazanJ

OTHER AREAS
- Area of Undetermined Hood Hazard

ggq¿ggg ---=-=- Channel, Culvert, or Stom Sewer

STRUCTURES """ """ " """ ' Leyee, DiHe, or F!oodwall

Cross Sections with I'd AnnualChanse

Water Surface Elevation

— - Coastal TransectBaseline

— — P ofile Baseline

Hydrographic Feature

— sn— Base Flood Eleratign Line (BFE)

OUfR FEATURES
- Limit of Study
- Jurisdiction Boundary

NOTES TO USERS

For information and questions about this Flood Insurance Rate Map (FIRM), available products associated with this FIRM, including historic versions, the current map date for each FIRM panel, how to order products, or the National Flood Insurance Program (NFIP) in general, please call the FEMA Map Information eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Flood Map Service Center website at https://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website.

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM index. These may be ordered directly from the Flood Map Service Center at the number listed above.

For community and countywide map dates refer to the Flood Insurance Study Report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

Base map information shown on this FIRM was provided in digital format by the United States Department of Agriculture Farm Service Agency (USDA-FSA). This information was derived from digital orthophotography at a 1-meter resolution from photography dated 2012.

SCALE

Map Projection
NAD 1983 StatePlane Michigan South FIPS 2113 Feet; Western Hemisphere; Vertical Datum: NAVD 88

1 inch = 500 feet 1:6,000

0 S00 i.000 2.000 Feel

0 ozs 2s0 500 Meters

PANEL LOCATOR

Wayne onty

0280

0270

02:B8 0289'

'P4NiL%O]P«lnlE[

FEMA

National Flood Insurance Program

NH\I0NAf FLOOD INS URANCE PROGRAM

WAYNE COUNTY, MICHIGAN
(All Jurisdictions)

«286or575

COMMUNITY	NUMBER	PANEL	SUFFIX
DETROIT, CITY OF	260222	0286	
RIVER ROUGE, CITY OF	260239	0286	

VERSION NUMBER
2.4.3.5

MAP NUMBER
26163C0286F

DCTOBER 21, 2021

MI-EGLE Wetland Inventory Map

Wetlands Map Viewer

April 7, 2022

Wetland (Hydric) Soils

National Wetlands Inventory 2005

Potential Wetland Restoration

Highest Potential - Hydric and Presettlement Wetland Overlay

High Potential - Hydric Soils Only

Moderate Potential - Presettlement Wetlands Only

1:19,254

0 0.15 0.3 0.6 mi

0 0.25 0.5 1 km

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap

Disclamer: This map is not intended to be used to determine the specific

USGS National Surface Waters Map


USGS science for a changing world
National Water Dashboard
Add or remove map layers
Layers
Legend 1
Tools
Search for a place
Delray Community Center
Forman Playfield
US Steel Corp
DWSD Wastewater Treatment Plant
Zug Island
Levy Aggregates
Detroit Marine Terminal
River Rouge
Detroit
Rouge
Scale 9,028
300 m
1000 ft
Privacy Policy | Legal | Accessibility | Site Map | Contact USGS | USGS Provisional Statement
U.S. Department of the Interior | DOI Inspector General | White House | E-Gov | USA.gov | No FEAR Act Data | FOIA
Federal Data Sources Include
USGS
NIDIS
FAQ
Feedback

MNFI Review Response

MICHIGAN STATE UNIVERSITY | Extension

Rebecca Bartlett, Engineer
Wade Trim
25251 Northline Road
Taylor, MI 48180

March 16, 2022

Re: Rare Species Review #3079 – GLWA Clean Water Revolving Fund Project, Detroit, Wayne County, MI.

Ms. Bartlett:

The location for the proposed project was checked against known localities for rare species and unique natural features, which are recorded in the Michigan Natural Features Inventory (MNFI) natural heritage database. This continuously updated database is a comprehensive source of existing data on Michigan's endangered, threatened, or otherwise significant plant and animal species, natural plant communities, and other natural features. Records in the database indicate that a qualified observer has documented the presence of special natural features. The absence of records in the database for a site may mean that the site has not been surveyed. The only way to obtain a definitive statement on the status of natural features is to have a competent biologist perform a complete field survey.

Under Act 451 of 1994, the Natural Resources and Environmental Protection Act, Part 365, Endangered Species Protection, "a person shall not take, possess, transport, …fish, plants, and wildlife indigenous to the state and determined to be endangered or threatened," unless first receiving an Endangered Species Permit from the Michigan Department of Natural Resources (MDNR), Wildlife Division. Responsibility to protect endangered and threatened species is not limited to the lists below. Other species may be present that have not been recorded in the database.

Several at-risk species have been documented within 1.5 miles of the proposed activity **and it is possible that negative impacts will occur.** This response reflects a desktop review of the database and MNFI cannot fully evaluate this project without visiting the area. MNFI offers several levels of Rare Species Reviews, including field surveys which I would be happy to discuss with you.

Sincerely,

Michael A. Sanders

Michael A. Sanders
Environmental Review Specialist/Zoologist
Michigan Natural Features Inventory

MSU EXTENSION

Michigan Natural Features Inventory

PO Box 13036
Lansing MI 48901

(517) 284-6200
Fax (517) 373-9566

mnfi.anr.msu.edu

Comments for Rare Species Review #3079:

It is important to note that it is the applicant's responsibility to comply with both state and federal threatened and endangered species legislation. Therefore, if a state listed species occurs at a project site, and you think you need an endangered species permit please contact: Casey Reitz, DNR-Wildlife Division, 517-284-6210, or ReitzC@michigan.gov. If a federally listed species is involved and, you think a permit is needed, please contact Jessica Pruden, U.S. Fish and Wildlife Service, East Lansing office, 517-351-8316, or Jessica_Pruden@fws.gov.

NOTE: special concern species and natural communities are not protected under endangered species legislation, but efforts should be taken to minimize any or all impacts. Please consult MNFI's Rare Species Explorer for additional information on Michigan's rare plants and animals.

Table 1: Occurrences of threatened and endangered species within 1.5 miles of RSR#3079

ELCAT	SNAME	SCOMNAME	USESA	SPROT	G_RANK	S_RANK	FIRSTOBS	LASTOBS
Animal	*Noturus stigmosus*	Northern madtom		E	G3	S1	1978	1978-05-16
Animal	*Acipenser fulvescens*	Lake sturgeon		T	G3G4	S2	1978	1978
Animal	*Falco peregrinus*	Peregrine falcon		E	G4	S3	1997	2019
Animal	*Cyclonaias tuberculata*	Purple wartyback		T	G5	S2	2006-08	2019-07-29
Animal	*Epioblasma torulosa rangiana*	Northern riffleshell	LE	E	G1	S1	2006-08	2019-07-29
Animal	*Obovaria olivaria*	Hickorynut		E	G4	S1	2006-08	2019-07-29
Animal	*Toxolasma parvum*	Lilliput		E	G5	S1	1936-pre	1936-pre
Animal	*Ligumia recta*	Black sandshell		E	G4G5	S1?		
Animal	*Ligumia recta*	Black sandshell		E	G4G5	S1?	2006-08	2019-07-29
Animal	*Ligumia nasuta*	Eastern pondmussel		E	G4	S2	2019-07-29	2019-07-29
Animal	*Obovaria subrotunda*	Round hickorynut		E	G4	S1	2019-07-29	2019-07-29
Plant	*Zizania aquatica*	Wild rice		T	G5	S2S3	1915-09-15	1915-09-05

Comments for Table 1 :

NOTE: Several rare freshwater mussel species have been documented in the area. Freshwater mussels (*Unionida*) require a fish host to complete their life cycle. Eggs are fertilized and develop into larvae within the gills of the female mussel. These larvae, called glochidia, are released into the water and must attach to a suitable fish host to survive and transform into the adult mussel. As zebra mussel (*Dreissena polymorpha*) infestation has led to the extirpation of many native mussel communities, boat hulls and trailers, fishing gear and scuba equipment should be thoroughly cleaned before moving between waterbodies, to prevent the spread of zebra mussel larvae and adults.

This section of the **Rouge River** in this area is a Group 2 mussel stream which means that state threatened, or state endangered mussels are expected to occur here and that certain surveys and possibly relocation procedures apply. I encourage you to review the ***Michigan Freshwater Mussel Survey Protocols and Relocation Procedures*** publication if in-stream work and/or land clearing activities occur that result in streambed disturbance and erosion and sedimentation into the river. A copy of the publication can be found at: https://mnfi.anr.msu.edu/resources/michigan-mussels

Table 2: Occurrences of special concern species/natural features within 1.5 miles of RSR#3079

ELCAT	SNAME	SCOMNAME	USESA	SPROT	G_RANK	S_RANK	FIRSTOBS	LASTOBS
Animal	*Pleurobema sintoxia*	Round pigtoe		SC	G4G5	S3	2006-08	2006-08
Animal	*Villosa iris*	Rainbow		SC	G5	S3	2006-08	2006-08
Animal	*Cincinnatia cincinnatiensis*	Campeloma spire snail		SC	G5	S3		
Animal	*Nycticorax nycticorax*	Black-crowned night-heron		SC	G5	S3	2006-06-25	2006-06-25
Animal	*Lasmigona costata*	Flutedshell		SC	G5	SNR	2006-08	2006-08
Animal	*Potamilus alatus*	Pink heelsplitter		SC	G5	SNR	2006-08	2019-07-29
Animal	*Ptychobranchus fasciolaris*	Kidney shell		SC	G4G5	S2	2006-08	2019-07-29
Animal	*Truncilla truncata*	Deertoe		SC	G5	S2S3	2006-08	2006-08
Animal	*Lasmigona costata*	Flutedshell		SC	G5	SNR	2019-07-29	2019-07-29
Animal	*Villosa iris*	Rainbow		SC	G5	S3	2019-07-25	2019-07-25
Plant	*Cerastium velutinum*	Field Chickweed		X	G5T4?	SX	1867-05	1867-05
Plant	*Corispermum pallasii*	Pallas' bugseed		SC	G4?	SNR	1930-09-30	1930-09-30

Comments for Table 2 :

NOTE: Several rare freshwater mussel speices have been documented in the area. Freshwater mussels (*Unionida*) require a fish host to complete their life cycle. Eggs are fertilized and develop into larvae within the gills of the female mussel. These larvae, called glochidia, are released into the water and must attach to a suitable fish host to survive and transform into the adult mussel. As zebra mussel (*Dreissena polymorpha*) infestation has led to the extirpation of many native mussel communities, boat hulls and trailers, fishing gear and scuba equipment should be thoroughly cleaned before moving between waterbodies, to prevent the spread of zebra mussel larvae and adults.

This section of the **Rouge River** in this area is a Group 2 mussel stream which means that state threatened, or state endangered mussels are expected to occur here and that certain surveys and possibly relocation procedures apply. I encourage you to review the ***Michigan Freshwater Mussel Survey Protocols and Relocation Procedures*** publication if in-stream work and/or land clearing activities occur that result in streambed disturbance and erosion and sedimentation into the river. A copy of the publication can be found at: https://mnfi.anr.msu.edu/resources/michigan-mussels

Codes to accompany Occurrence Tables:

State Protection Status Code Definitions (SPROT)
E: Endangered
T: Threatened
SC: Special concern

Federal Protection Status Code Definitions (USESA)
LE = listed endangered
LT = listed threatened
LELT = partly listed endangered and partly listed threatened
PDL = proposed delist
E(S/A) = endangered based on similarities/appearance
PS = partial status (federally listed in only part of its range)
C = species being considered for federal status

Global Heritage Status Rank Definitions (GRANK)
The priority assigned by NatureServe's national office for data collection and protection based upon the element's status throughout its entire world-wide range. Criteria not based only on number of occurrences; other critical factors also apply. Note that ranks are frequently combined.
G1 = critically imperiled globally because of extreme rarity (5 or fewer occurrences range-wide or very few remaining individuals or acres) or because of some factor(s) making it especially vulnerable to extinction.
G2 = imperiled globally because of rarity (6 to 20 occurrences or few remaining individuals or acres) or because of some factor(s) making it very vulnerable to extinction throughout its range.
G3: Either very rare and local throughout its range or found locally (even abundantly at some of its locations) in a restricted range (e.g. a single western state, a physiographic region in the East) or because of other factor(s) making it vulnerable to extinction throughout its range; in terms of occurrences, in the range of 21 to 100.
G4: Apparently secure globally, though it may be quite rare in parts of its range, especially at the periphery.
G5: Demonstrably secure globally, though it may be quite rare in parts of its range, especially at the periphery.
Q: Taxonomy uncertain

State Heritage Status Rank Definitions (SRANK)
The priority assigned by the Michigan Natural Features Inventory for data collection and protection based upon the element's status within the state. Criteria not based only on number of occurrences; other critical factors also apply. Note that ranks are frequently combined.
S1: Critically imperiled in the state because of extreme rarity (5 or fewer occurrences or very few remaining individuals or acres) or because of some factor(s) making it especially vulnerable to extirpation in the state.
S2: Imperiled in state because of rarity (6 to 20 occurrences or few remaining individuals or acres) or because of some factor(s) making it very vulnerable to extirpation from the state.
S3: Rare or uncommon in state (on the order of 21 to 100 occurrences).
S4 = apparently secure in state, with many occurrences.
S5 = demonstrably secure in state and essentially ineradicable under present conditions.
SX = apparently extirpated from state.

Section 7 Comments for Rare Species Review #3079
Wade Trim
GLWA Clean Water Revolving Fund Project Plan for FY22
City of Detroit
Wayne County, MI
March 16, 2022

For projects involving Federal funding or a federal agency authorization

The following information is provided to assist you with Section 7 compliance of the Federal Endangered Species Act (ESA). The ESA directs all Federal agencies "to work to conserve endangered and threatened species. Section 7 of the ESA, called "Interagency Cooperation, is the means by which Federal agencies ensure their actions, including those they authorize or fund, do not jeopardize the existence of any listed species."

The proposed project falls within the range of nine (9) federally listed/proposed/candidate species that have been identified by the U.S. Fish and Wildlife Service (USFWS) to occur in Wayne County, Michigan:

Federally Endangered

Indiana bat – there appears to be suitable habitat within 1.5 miles of the project site. Indiana bats (*Myotis sodalis*) are found only in the eastern United States and are typically confined to the southern three tiers of counties in Michigan. Indiana bats that summer in Michigan winter in caves in Indiana and Kentucky. This species forms colonies and forages in riparian and mature floodplain habitats. Nursery roost sites are usually located under loose bark or in hollows of trees near riparian habitat. Indiana bats typically avoid houses or other artificial structures and typically roost underneath loose bark of dead elm, maple and ash trees. Other dead trees used include oak, hickory and cottonwood.

Foraging typically occurs over slow-moving, wooded streams and rivers as well as in the canopy of mature trees. Movements may also extend into the outer edge of the floodplain and to nearby solitary trees. A summer colony's foraging area usually encompasses a stretch of stream over a half-mile in length. Upland areas isolated from floodplains and non-wooded streams are generally avoided.

Conservation and Management: the suggested seasonal tree cutting range for Indiana bat is between October 1 and March 31 (i.e., no cutting April 1-September 30). This applies throughout the Indiana bat range in Michigan.

Northern riffleshell – there are documented occurrences within 1.5 miles of the project site. The northern riffleshell *(Epioblasma torulosa-angiana)* mussel inhabits medium to large rivers in gravel riffles, where the water is highly oxygenated. This species was formerly widespread in the Midwest, but it has declined in range by more than 95% and now exists in only eight to ten isolated populations, most of which are small and peripheral.

Conservation and Management: members of the genus *Epioblasma* seem to be particularly sensitive to impacts from impoundment, which include population fragmentation and streamflow alteration. Other threats include habitat destruction (e.g. channelization, dredging, bulkheading), exotic species introductions, siltation, pollution, and modified streamflows due to wetland loss, dam operation, and intensive landscape modification. The other two subspecies of *E. torulosa*, *E. torulosa torulosa* and *E. torulosa gubernaculum*, appear to have already gone extinct due to modification and degradation of river systems.

Piping plover – there does not appear to be suitable habitat within 1.5 miles of the project site. In the Great Lakes region, the federal and state endangered piping plover *(Charadrius melodus)* prefers to nest and forage on sparse or non-vegetated sand-pebble beaches with less than 5% vegetative cover. Nests are simple depressions in the sand are generally placed in level areas between the water's edge and the first dune. Associated bodies of water and interdunal wetlands enhance these areas by increasing food availability. Optimal foraging areas are especially crucial along Lake Superior, where shoreline and benthic invertebrate communities are known to be naturally sparse. While feeding, open shoreline is preferred to vegetated beach areas. Piping plovers begin arriving in mid- to late-April. The nesting season is under way by mid-May and lasts until mid-August.

Conservation and Management - this species is declining throughout the Midwest due to habitat destruction and disturbance. The nests are simple depressions in the sand and are difficult to see. People walking on the beach may inadvertently destroy nests. Dogs on the beach can be especially dangerous for chicks and adults. Piping plovers are protected under the Federal Endangered Species Act and are very sensitive to human disturbance. Please avoid activity along the shoreline in this compartment between May and September.

Rayed bean mussel – there appears to be suitable habitat within 1.5 miles of the project site. The federally and state endangered rayed bean mussel *(Villosa fabalis)* is found in fine mud substrates and riffles among roots of aquatic vegetation. Limits of the breeding season are not known but gravid specimens have been found in May.

Conservation and Management: like other mussels, threats to the rayed bean include: natural flow alterations, siltation, channel disturbance, point and non-point source pollution, and exotic species. Maintenance or establishment of vegetated riparian buffers can help protect mussel habitats from many of their threats. Control of zebra mussels is critical to preserving native mussels. And as with all mussels, protection of their hosts habitat is also crucial.

Federally Threatened

Northern long-eared bat - although no known hibernacula or roost trees have been documented within 1.5 miles of the project site, this activity occurs within the designated WNS zone (i.e., within 150 miles of positive counties/districts impacted by WNS. In addition, suitable habitat does exist within 1.5 miles of the project. The USFWS has prepared a dichotomous key to help determine if this action may cause prohibited take of this bat. Please consult the USFWS Endangered Species Page for more information.

Northern long-eared bat (*M. septentrionalis*) numbers in the northeast US have declined up to 99 percent. Loss or degradation of summer habitat, wind turbines, disturbance to hibernacula, predation, and pesticides have contributed to declines in Northern long-eared bat populations. However, no other threat has been as severe to the decline as White-nose Syndrome (WNS). WNS is a fungus that thrives in the cold, damp conditions in caves and mines where bats hibernate. The disease is believed to disrupt the hibernation cycle by causing bats to repeatedly awake thereby depleting vital energy reserves. This species was federally listed in May 2015 primarily due to the threat from WNS.

Also called northern bat or northern myotis, this bat is distinguished from other *Myotis* species by its long ears. In Michigan, northern long-eared bats hibernate in abandoned mines and caves in the Upper Peninsula; they also commonly hibernate in the Tippy Dam spillway in Manistee County. This species is a regional migrant with migratory distance largely determined by locations of suitable hibernacula sites.

Northern long-eared bats typically roost and forage in forested areas. During the summer, these bats roost singly or in colonies underneath bark, in cavities or in crevices of both living and dead trees. These bats seem to select roost trees based on suitability to retain bark or provide cavities or crevices. Common roost trees in southern Lower Michigan included species of ash, elm, and maple. Foraging occurs primarily in areas along woodland edges, woodland clearings, and over small woodland ponds. Moths, beetles, and small flies are common food items. Like all temperate bats this species typically produces only 1-2 young per year.

Conservation and Management: when there are no known roost trees or hibernacula in the project area, we encourage you to conduct tree-cutting activities and prescribed burns in forested areas during October 1 through March 31. When that is not possible, we suggest all tree removal occur prior to June 1 or after July 31, as that will help to protect young bats that may be in forested areas but are not yet able to fly.

Eastern prairie fringed orchid – there does not appear to be suitable habitat within 1.5 miles of the project site. The eastern prairie fringed orchid (*Platanthera leucophaea*) occurs in a wide variety of habitats, from mesic prairie to wetlands such as sedge meadows, marsh edges, even bogs. It requires full sun for optimum growth and flowering and a grassy habitat with little or no woody encroachment. The white blossoms produce a heavy fragrance at dusk that attracts many moths, including the primary pollinators of *P. leucophaea*, hawkmoths (Lepidoptera: Sphingidae). Hawkmoths are likely co-adapted pollinators, since their tongues are long enough to reach the nectar that lies deep in the spur of the flower. Capsules mature in September, releasing hundreds of thousands of airborne seeds. Plants may not flower every year but frequently produce only a single leaf above ground, possibly even becoming dormant when conditions are unsuitable, such as the onset of drought.

Conservation and Management: this species requires the maintenance of natural hydrological cycles and open habitat. Activities such as shrub removal are likely to benefit the species, but other management such as prescribed fire is not well understood. Caution and proper monitoring should be employed if using prescribed fire in occupied habitat. Spring fires should be conducted prior to emergence (mid-April). Poaching is also a threat.

Rufa red knot – there appears to be suitable habitat within 1.5 miles of the project site. The rufa red knot (*Calidris canutus rufa*) is one of the longest-distance migrants in the animal kingdom, flying some 18,000 miles annually between its breeding grounds in the Canadian Arctic to the wintering grounds at the southern-most tip of South America. Primarily occurring along the Atlantic and Gulf coasts, small groups of this shorebird regularly use the interior of the United States such as the Great Lakes during the annual migration. The Great Lakes shorelines provide vital stopover habitat for resting and refueling during their long annual journey.

The largest concentration of rufa red knots is found in May in Delaware Bay, where the birds stop to gorge on the eggs of spawning horseshoe crabs; a spectacle attracting thousands of birdwatchers to the area. In just a few days, the birds nearly double their weight to prepare for the final leg of their long journey to the Arctic. This species may be especially vulnerable to climate change which affects coastal habitats due to rising sea levels.

Conservation and Management: applies to actions that occur along coastal areas during the Red Knot migratory window of MAY 1 - SEPTEMBER 30.

Eastern massasauga rattlesnake (EMR) – the project falls outside of EMR habitat as designated by the US Fish and Wildlife Service. The eastern massasauga rattlesnake *(Sistrurus catenatus)* is Michigan's only venomous snake and is found in a variety of wetland habitats including bogs, fens, shrub swamps, wet meadows, marshes, moist grasslands, wet prairies, and floodplain forests. Eastern massasaugas occur throughout the

Lower Peninsula but are not found in the Upper Peninsula. Populations in southern Michigan are typically associated with open wetlands, particularly prairie fens, while those in northern Michigan are better known from lowland coniferous forests, such as cedar swamps. These snakes normally overwinter in crayfish or small mammal burrows often close to the groundwater level and emerge in spring as water levels rise. During late spring, these snakes move into adjacent uplands they spend the warmer months foraging in shrubby fields and grasslands in search of mice and voles, their favorite food.

Often described as "shy and sluggish", these snakes avoid human confrontation and are not prone to strike, preferring to leave the area when they are threatened. However, like any wild animal, they will protect themselves from anything they see as a potential predator. Their short fangs can easily puncture skin and they do possess potent venom. Like many snakes, the first human reaction may be to kill the snake, but it is important to remember that all snakes play vital roles in the ecosystem. Some may eat harmful insects. Others like the massasauga consider rodents a delicacy and help control their population. Snakes are also a part of a larger food web and can provide food to eagles, herons, and several mammals.

Conservation and Management: maintaining or restoring open habitat conditions is critical for this species. Fragmentation of suitable wetland-upland habitat complexes by roads or other barriers should be avoided or minimized. Land management practices such as timber harvesting, mowing, disking, or prescribed burning should be conducted in such a manner so as to minimize the potential for adverse impacts to massasaugas (e.g., conducting management activities during the snakes' inactive season (November through early March) or on days when snakes are less likely to be active on the surface during the active season). Protecting suitable hibernation sites also is critical. Hydrological alterations such as drawdowns should be conducted prior to or after hibernation to reduce the potential for causing winter mortality due to desiccation or freezing. Sudden and/or permanent increases or decreases in water levels during the active season also can cause adverse impacts.

Candidate Species

Monarch Butterfly (*Danaus plexipuss*) on December 15, 2020, the U.S. Fish and Wildlife Service announced that listing the monarch as endangered or threatened under the Endangered Species Act is warranted but precluded by higher priority listing actions. The decision is the result of an extensive status review of the monarch that compiled and assessed the monarch's current and future status. The monarch is now a candidate under the Endangered Species Act; we will review its status annually until a listing decision is made.

Management and Conservation: neither section 7 of the Endangered Species Act nor the implementing regulations for section 7 contain requirements for federal agencies with respect to candidate species. Habitat loss and fragmentation has occurred throughout the monarch's range. Pesticide use can destroy the milkweed monarchs need to survive. A changing climate has intensified weather events which may impact monarch populations.

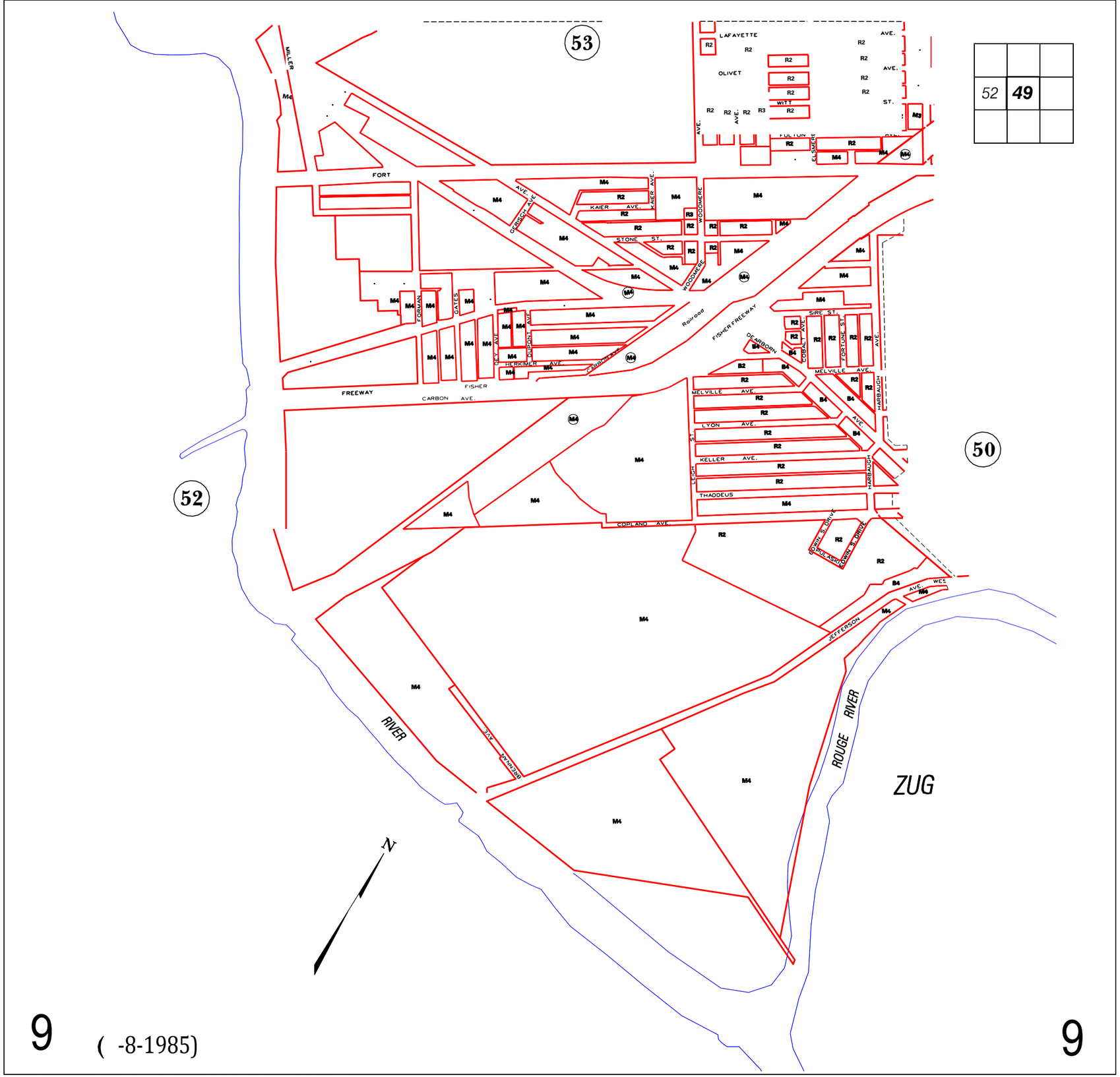
USFWS Section 7 Consultation Technical Assistance can be found at:

https://www.fws.gov/midwest/endangered/section7/s7process/index.html

The website offers step-by-step instructions to guide you through the Section 7 consultation process with prepared templates for documenting "no effect." as well as requesting concurrence on "may affect, but not likely to adversely affect" determinations.

Appendix C.
Zoning Map

City of Detroit Zoning Map Panel



52	**49**	

9 (-8-1985) 9

f:\zoning\complete\ZMAP49.dgn 9/20/2010 11:04:01 AM

Appendix D.
Fiscal Sustainability and Cost Estimation Certifications

Signed Project Useful Life and Cost Analysis Certification Form

Project Useful Life and Cost Analysis Certification Form

Project Information

Applicant Name:

_____

SRF Project to be Funded: _____

_____

_____

Per Section 602(b)(13) of the Federal Water Pollution Control Act (FWPCA), all Clean Water State Revolving Fund (CWSRF) assistance recipients must certify that they have conducted the studies and evaluations described in 602(b)(13)(A) and (B), collectively known as a cost and effectiveness analysis.

☐ 1) The applicant has studied and evaluated the cost and effectiveness of the processes, materials, techniques, and technologies for carrying out the proposed project or activity for which assistance is sought under the CWSRF; and

☐ 2) The applicant has selected, to the maximum extent practicable, a project or activity that maximizes the potential for efficient water use, reuse, recapture, and conservation, and energy conservation, taking into account the cost of:

- constructing the project or activity;
- operating and maintaining the project or activity over the life of the project; and
- replacing the project or activity.

☐ 3) The applicant has completed a Project Useful Life analysis for the project or activity. **Attach appropriate documentation**

I certify that requirements (1), (2), and (3) as checked above have been met.

_____

Name of Professional Engineer *(Please Print or Type)*

_____

Signature of Professional Engineer Date

_____

Name and Title of Authorized Representative *(Please Print or Type)*

_____

Signature of Authorized Representative Date

Signed Fiscal Sustainability Plan Certification Form

Fiscal Sustainability Plan Certification Form

Describe SRF Project to be Funded: OR SRF Project Number _____

_____

_____

Check one box below:

☐ FSP does not apply because:

- ☐ The project is for a new treatment works system.
- ☐ The project involves an upgrade that does not involve repair/replacement or expansion of a treatment works system.
- ☐ The project is for nonpoint source work.
- ☐ Other (explain)

☐ FSP is complete for the SRF-funded project and is available for review by contacting:

_____
(Name) (Phone)

_____

_____

I certify that _____ has developed and implemented a plan that meets
(Applicant's Name)
the requirements of Section 603(d)(1)(E)(i) of the Water Resources Reform and Development Act of 2014. The FSP includes an inventory of critical assets, an evaluation of the condition and performance of inventoried assets, a plan for maintaining, repairing, and as necessary, replacing the treatment works, and a plan for funding such activities. The applicant also certifies that the water and energy conservation efforts have been evaluated and will be implemented.

_____
Name and Title of Authorized Representative *(Please Print or Type)*

_____
Signature of Authorized Representative Date

Appendix E.
Regulatory Compliance Documents

GLWA NPDES Discharge Permit

PERMIT NO. MI0022802

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 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 2011-1,

City of Detroit Water and Sewerage Department
735 Randolph
Detroit, MI 48226

and

Great Lakes Water Authority
735 Randolph
Detroit, MI 48226

are authorized to discharge from the **Great Lakes Water Authority Water Resource Recovery Facility** located at

9300 W. Jefferson
Detroit, MI 48209

designated as **GLWA WRRF**

to the receiving water named the Detroit River and the Rouge River, and from combined sewer overflow facilities to the receiving waters named the Detroit River, the Rouge River, and Conner Creek 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 March 29, 2017 and amended through May 25, 2017.

This permit takes effect on July 18, 2019. 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. MI0022802 (expiring October 1, 2017).

This permit and the authorization to discharge shall expire at midnight on **October 1, 2022**. In order to receive authorization to discharge beyond the date of expiration, the permittees 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, 2022**.

Issued: June 28, 2019. This permit was modified (minor) on July 18, 2019.

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

PERMIT FEE REQUIREMENTS

In accordance with Section 324.3120 of the NREPA, the permittees 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 permittees shall submit the fee in response to the Department's annual notice. The fee shall be postmarked by January 15 for notices mailed by December 1. The fee is due no later than 45 days after receiving the notice for notices mailed after December 1.

Annual Permit Fee Classification: Municipal Major, 500 MGD or greater (IP)

In accordance with Section 324.3132 of the NREPA, the permittees shall make payment of an annual biosolids land application fee to the Department if the permittees land applies biosolids. In response to the Department's annual notice, the permittees shall submit the fee, which shall be postmarked no later than January 31 of each year.

CONTACT INFORMATION

Unless specified otherwise, all contact with the Department required by this permit shall be made to the Southeast Michigan District Office of the Water Resources Division. The Southeast Michigan District Office is located at 27700 Donald Court, Warren, MI, 48092-2793, Telephone: 586-753-3700, Fax: 586-751-4690.

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.

PART I

Section A. Limitations and Monitoring Requirements

1. Effluent Limitations, Monitoring Point 049F

During the period beginning on the effective date of this permit and lasting until the expiration date of this permit, the permittees are authorized to discharge treated municipal wastewater from Monitoring Point 049F through Outfall 049 (DRO). Outfall 049 (DRO) discharges to the Detroit River. Such discharge shall be limited and monitored by the permittees as specified below.

Until the initiation of operation of the Rouge River Outfall (RRO) Disinfection Project, this discharge shall consist of secondary treated municipal wastewater and additional primary treated municipal wastewater up to the hydraulic capacity of Outfall 049 (DRO). After initiation of operation of the RRO Disinfection Project, this discharge shall consist of secondary treated municipal wastewater typically, but primary treated municipal wastewater and additional secondary treated municipal wastewater up to the hydraulic capacity of Outfall 049 (DRO) during wet weather events. During such wet weather events, the permittees are approved to discharge primary treated municipal wastewater from 049A thorough Outfall 049 (DRO).

Whenever Outfall 049 (DRO) is out of service for repairs, the permittees may discharge through Outfall 050 (RRO). All effluent authorized for discharge from Outfall 049F, and the monitoring, limitations and other requirements specified below shall apply to the discharge through Outfall 050 (RRO) unless otherwise specified. At least 10 days in advance of scheduled maintenance and within 24-hours after initiation of diversion due to emergency conditions, the permittees shall notify the Department of the reason for the diversion and the expected duration of the diversion.

	Maximum Limits for Quantity or Loading				Maximum Limits for Quality or Concentration					
Parameter	**Monthly**	**7-Day**	**Daily**	**Units**	**Monthly**	**7-Day**	**Daily**	**Units**	**Monitoring Frequency**	**Sample Type**
Flow	(report)	---	(report)	MGD	---	---	---	---	Daily	Report Total Daily Flow
Fecal Coliform Bacteria	---	---	---	---	200	400	(report)	cts/100 ml	Daily	Grab
Total Residual Chlorine	---	---	---	---	---	---	0.11	mg/l	Daily	Grab
Oil & Grease	---	---	---	---	---	15	(report)	mg/l	Daily	Grab
Polychlorinated Biphenyls (PCBs)										
PCB Aroclor 1016	---	---	---	---	---	---	(report)	µg/l	Weekly	24-Hr Composite
PCB Aroclor 1221	---	---	---	---	---	---	(report)	µg/l	Weekly	24-Hr Composite
PCB Aroclor 1232	---	---	---	---	---	---	(report)	µg/l	Weekly	24-Hr Composite
PCB Aroclor 1242	---	---	---	---	---	---	(report)	µg/l	Weekly	24-Hr Composite
PCB Aroclor 1248	---	---	---	---	---	---	(report)	µg/l	Weekly	24-Hr Composite
PCB Aroclor 1254	---	---	---	---	---	---	(report)	µg/l	Weekly	24-Hr Composite
PCB Aroclor 1260	---	---	---	---	---	---	(report)	µg/l	Weekly	24-Hr Composite
					Maximum PCB Aroclor					
PCB Aroclor (see I.A.1.g.)		---	---	---	<0.1	---	---	µg/l	Monthly	See I.A.1.g.
Acute Toxicity	---	---	---	---	---	---	(report)	TU_A	Quarterly	24-Hr Composite
Carbonaceous Biochemical Oxygen Demand (CBOD5)										
	---	---	(report)	lbs/day	---	---	(report)	mg/l	Daily	24-Hr Composite Ammonia
Nitrogen (as N)		---	(report)	lbs/day	(report)	---	(report)	mg/l	Daily	24-Hr Composite Available
Cyanide	---	---	(report)	lbs/day	---	---	(report)	µg/l	Monthly	Grab

Perfluorooctane sulfonate (PFOS)	(report)	---	(report)	lbs/day	(report)	---	(report)	ng/l	Quarterly	Grab
Perfluorooctanoic acid (PFOA)	(report)	---	(report)	lbs/day	(report)	---	(report)	µg/l	Quarterly	Grab
Total Copper	---	---	(report)	lbs/day	---	---	(report)	µg/l	Quarterly	24-Hr Composite
					Minimum Daily		**Maximum Daily**			
pH	---	---	---	---	6.0	---	9.0	S.U.	Daily	Grab
Dissolved Oxygen	---	---	---	---	(report)	---	---	mg/l	Daily	Grab

The following design flow was used in determining the above limitations, but is not to be considered a limitation or actual capacity: a combined 930 MGD of secondary treated effluent.

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
The sampling locations for the pollutants indicated in Part I.A.1. of this permit shall be representative of the effluent and consistent with the locations approved by the Department. The Department may approve alternate sampling locations that are demonstrated by the permittees 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 permittees 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 permittees shall enter "*G" on the Discharge Monitoring Report (DMR).

d. Total Residual Chlorine (TRC)
Compliance with the TRC limit shall be determined on the basis of one or more grab samples. If more than one (1) sample per day is taken, the additional samples shall be collected in near equal intervals over approximately eight (8) hours. The samples shall be analyzed immediately upon collection and the average reported as the daily concentration. Samples shall be analyzed in accordance with Part II.B.2. of this permit.

e. Monitoring Frequency Reduction for Perfluorooctane Sulfonate (PFOS) and/or Perfluorooctanoic Acid (PFOA)
After the submittal of 24 months of data, the permittee may request, in writing, Department approval of a reduction in monitoring frequency for PFOS and/or PFOA. This request shall contain an explanation as to why the reduced monitoring is appropriate. Upon receipt of written approval and consistent with such approval, the permittee may reduce the monitoring frequency indicated in Part I.A.1. of this permit. The monitoring frequency for PFOS and/or PFOA, 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.

f. Analytical Methods and Quantification Levels for Available Cyanide and Total Copper
The sampling procedures, preservation and handling, and analytical protocol for compliance monitoring for Available Cyanide shall be in accordance with EPA Method OIA-1677. The quantification level for Available Cyanide and Total Copper shall be 2.0 µg/l and 1.0 µg/l respectively unless a higher level is appropriate because of sample matrix interference. Justification for higher quantification levels shall be submitted to the Department within 30 days of such determination. Upon approval from the

Department, the permittees may use alternate analytical methods (for parameters with methods specified in Title 40 of the Code of Federal Regulations (CFR), Part 136, the alternate methods are restricted to those listed in 40 CFR, Part 136).

g. Limits Below the Quantification Level – Total Polychlorinated Biphenyls (PCBs)
The sampling procedures, preservation and handling, and analytical protocol for compliance monitoring for Total PCBs shall be in accordance with EPA Method 608.3. Upon approval from the Department, the permittees may use alternate analytical methods (for parameters with methods specified in 40 CFR, Part 136, the alternate methods are restricted to those listed in 40 CFR, Part 136). The quantification level shall be 0.1 ug/l unless a higher level is appropriate because of sample matrix interference. Justification for a higher quantification level shall be submitted to the Department within 30 days of such determination.

The water quality-based effluent limitation for Total PCBs is $2.6x10^{-5}$ µg/l ($2.0x10^{-4}$ lbs/day) maximum monthly average. This is less than the quantification level. Control requirements are therefore established consistent with R 323.1213. **The discharge of any individual aroclor at or above the quantification level of 0.1 ug/l is a specific violation of this permit**. If concentrations of all aroclors representing a monitoring period are less than their quantification levels, the permittees will be considered to be in compliance with the permit for the monitoring period that the analyses represent, provided that the permittees are also in full compliance with the Pollutant Minimization Program for Total PCBs set forth in Part I.A.10 of this permit. For the purpose of reporting on the Daily tab of the DMR, individual aroclor results less than the quantification level shall be reported as "<0.1." For the purpose of reporting on the Summary tab of the DMR, the value reported under PCB Aroclor shall be the highest aroclor concentration observed during the monitoring period. This permit condition does not authorize the discharge of PCBs at levels that are injurious to the designated uses of the waters of the state or that constitute a threat to the public health or welfare.

h. Acute Toxicity Requirements
Test species shall include *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 permittees shall enter **"*W"** on the DMR. Completed toxicity test reports for each test conducted shall be retained by the permittees in accordance with the requirements of Part II.B.5. of this permit and shall be available for review by the Department upon request. 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.

The Department will review the toxicity data submitted by the permittees to determine if the acute toxicity requirements of R 323.1219 are being satisfied.

1) If the data indicate persistent exceedance of the acute toxicity requirements of R 323.1219, upon written notification by the Department, the following conditions apply. Within 90 days of the above notification, the permittees 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 049F to <3.0 TU_A within three (3) years of notification. 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. The tests shall be conducted and reported as specified above. Upon approval from the Department, the acute toxicity tests may be performed using the more sensitive species identified in the acute toxicity database. If a more sensitive species cannot be identified, the acute toxicity tests shall be performed with both species. Annual progress reports shall be submitted to the Department within 30 days of the completion of the last test of each annual cycle.

2) This permit may be modified in accordance with applicable laws and rules to include additional whole effluent toxicity control requirements as necessary.

2. Effluent Limitations, Monitoring Point 049A

During the period beginning on the effective date of this permit and lasting until the expiration date of this permit, the permittees are approved to discharge treated municipal wastewater and treated storm water runoff from Monitoring Point 049A through Outfall 049 (DRO). Outfall 049 (DRO) discharges to the Detroit River. Such discharge shall be limited and monitored by the GLWA as specified below.

Monitoring Point 049A is a primary treated effluent conduit. There shall be no discharge from Monitoring Point 049A directly to the Detroit River through Outfall 049 (DRO) unless the discharge from Monitoring Point 049B exceeds a peak hourly flow of 930 MGD (which includes recycle) or in accordance with an approved GLWA Wet Weather Operational Plan (see Part I.A.11.). Discharges from Monitoring Point 049A shall be limited and monitored by the permittees as specified below.

	Maximum Limits for Quantity or Loading			Maximum Limits for Quality or Concentration			Monitoring	Sample
Parameter	**Monthly**	**Daily**	**Units**	**Monthly**	**Daily**	**Units**	**Frequency**	**Type**
Flow	(report)	(report)	MGD	---	---	---	Daily	Report Total Daily Flow
Carbonaceous Biochemical Oxygen Demand ($CBOD_5$)	---	---	---	40	(report)	mg/l	Daily	24-Hr Composite
Total Suspended Solids	---	---	---	70	(report)	mg/l	Daily	24-Hr Composite
Total Phosphorus (as P)	---	---	---	1.5	(report)	mg/l	Daily	24-Hr Composite
Ammonia Nitrogen (as N)	---	---	---	(report)	(report)	mg/l	Daily	24-Hr Composite
Total Mercury								
– Corrected	(report)	(report)	lbs/day	(report)	(report)	ng/l	2x Monthly	Calculation
– Uncorrected	---	---	---	---	(report)	ng/l	2x Monthly	Grab
– Field Duplicate	---	---	---	---	(report)	ng/l	2x Monthly	Grab
– Field Blank	---	---	---	---	(report)	ng/l	2x Monthly	Preparation
– Laboratory Method Blank	---	---	---	---	(report)	ng/l	2x Monthly	Preparation

	12-Month Rolling Average				12-Month Rolling Average					
Total Mercury	0.19	---	---	lbs/day	25	---	---	ng/l	Monthly	Calculation

a. Sampling Locations
The sampling locations for the pollutants in Part 1.A.2. of this permit shall be representative of the effluent and consistent with the locations approved by the Department. Samples for CBOD5, Total Suspended Solids, Ammonia Nitrogen, Total Mercury, and Total Phosphorus shall be taken prior to mixing with other waste streams. The Department may approve alternate sampling locations that are demonstrated by the permittees to be representative of the effluent

b. Sampling of Short-Term Wet Weather Events
If the first calendar day of the discharge event through Monitoring Point 049A includes less than three hours of flow but continues into the next calendar day, the sampling can be included as a part of the subsequent event the following day.

c. 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 month is less than or equal to the LCA, the GLWA will be considered to be in compliance for total mercury for that month, provided the GLWA is also in full compliance with the Pollutant Minimization Program for Total Mercury, set forth in Part I.A.10. of this permit.

The permittee may choose to demonstrate that an alternate site-specific LCA is appropriate and request a permit modification. Such request and supporting documentation shall be submitted in writing to the Department. Supporting documentation shall include a minimum of 12 samples taken over 12-month period in accordance with EPA Method 1631. Upon approval, this permit may be modified in accordance with applicable laws and rules to incorporate the alternate site-specific LCA as the effluent limitation for Total Mercury.

After a minimum of 12 monthly data points have been collected, the permittees 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 permittees may reduce the monitoring frequency for total mercury indicated in Part I.A.2. of this permit. The Department may revoke the approval for reduced monitoring at any time upon notification to the permittees.

d. 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." 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 within 30 days of such determination.

The use of clean technique sampling procedures is required unless the permittees 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 permittees 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 permittees 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 permittees 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 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 permittees 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.

3. Effluent Limitations, Monitoring Point 049B

During the period beginning on the effective date of this permit and lasting until the expiration date of this permit, the permittees are authorized to discharge treated municipal wastewater from Monitoring Point 049B through Outfall 049 (DRO), or through Outfall 050 (RRO) when there is reduced hydraulic capacity through DRO or during wet weather, once the RRO Disinfection Project is completed. Outfall 049 (DRO) discharges to the Detroit River. Outfall 050 (RRO) discharges to the Rouge River. In addition, the permittees are authorized to discharge treated municipal wastewater from Monitoring Point 049B through Outfall 050 to the Rouge River as provided in Part I.A.4.

Outfall 049B is the combined secondary treated effluent conduit for all dry weather flows and all wet weather flows up to and including a peak hourly flow of 930 MGD (which includes recycle).

Discharges from Monitoring Point 049B shall be limited and monitored by the permittees as specified below.

	Maximum Limits for Quantity or Loading				**Maximum Limits for Quality or Concentration**					
Parameter	**Monthly**	**7-Day**	**Daily**	**Units**	**Monthly**	**7-Day**	**Daily**	**Units**	**Monitoring Frequency**	**Sample Type**
Flow (This flow measurement is all secondary flow minus recycle and buffer flows)	(report)	---	(report)	MGD	---	---	---	---	Daily	Report Total Daily Flow
Recycled Flow (Screened Final Effluent)	(report)	---	(report)	MGD	---	---	---	---	Daily	Report Total Daily SFE Flow
Buffer Flow	(report)	---	(report)	MGD	---	---	---	---	Daily	Report Total Daily Flow
Carbonaceous Biochemical Oxygen Demand ($CBOD_5$)	194,000	310,000	(report)	lbs/day	25	40	(report)	mg/l	Daily	24-Hr Composite
Total Suspended Solids	233,000	349,000	(report)	lbs/day	30	45	(report)	mg/l	Daily	24-Hr Composite
Ammonia Nitrogen (as N)	---	---	---	---	(report)	---	(report)	mg/l	Daily	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 Average				**12 Month Rolling Average**					
Total Mercury	0.023	---	---	lbs/day	3.0	---	---	ng/l	Monthly	Calculation
					Minimum Daily		**Maximum Daily**			
pH	---	---	---	---	6.0		9.0	S.U.	Daily	Grab
Total Phosphorus (as P)	5400	---	(report)	lbs/day	0.7	---	(report)	mg/l	Daily	24-Hr Composite
	Six Month Average (April - Sept.)				**Six Month Average (April - Sept.)**					
Total Phosphorus	4600	---	---	lbs/day	0.6	---	---	mg/l	(see I.A.3.c)	Calculation

				Minimum Monthly					
$CBOD_5$ Minimum % Removal	---	---	---	85	---	(report)	%	Monthly	Calculation
Total Suspended Solids Minimum % Removal			---	85	---	(report)	%	Monthly	Calculation

a. Sampling Locations
Samples for $CBOD_5$, Total Suspended Solids, Ammonia Nitrogen, Total Phosphorus, Total Mercury and pH shall be taken prior to mixing with other waste streams. Samples for pH shall be collected only during periods of discharge from Monitoring Point 049A through Outfall 049 (DRO).

b. Percent Removal Requirements
These requirements shall be calculated based on the monthly (30-day) effluent CBOD5 and TSS concentrations and the monthly influent concentrations for approximately the same period.

c. Total Phosphorus Six Month Average Limit (April - September)
The six month average shall be determined by adding the six monthly average results from April through September and dividing the sum by six. For the purpose of reporting on the Discharge Monitoring Reports, the permittees shall calculate and report the six month average on the October Discharge Monitoring Report.

d. 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).

e. 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 month is less than or equal to the LCA, the permittees will be considered to be in compliance for total mercury for that month, provided the permittees are also in full compliance with the Pollutant Minimization Program for Total Mercury, set forth in Part I.A.10. of this permit.

The permittee may choose to demonstrate that an alternate site-specific LCA is appropriate and request a permit modification. Such request and supporting documentation shall be submitted in writing to the Department. Supporting documentation shall include a minimum of 12 samples taken over 12-month period in accordance with EPA Method 1631. Upon approval, this permit may be modified in accordance with applicable laws and rules to incorporate the alternate site-specific LCA as the effluent limitation for Total Mercury.

After a minimum of 12 monthly data points have been collected, the permittees 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 permittees may reduce the monitoring frequency for total mercury indicated in Part I.A.3. of this permit. The Department may revoke the approval for reduced monitoring at any time upon notification to the permittees.

f. 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." 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 within 30 days of such determination.

The use of clean technique sampling procedures is required unless the permittees 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 permittees 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 permittees 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 permittees 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 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 permittees 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.

4. Interim Effluent Limitations, Monitoring Point 050A

During the period beginning on the effective date of this permit and lasting until initiation of operation of the RRO Disinfection Project, the permittees are approved to discharge treated municipal wastewater and treated storm water runoff from Monitoring Point 050A through Outfall 050 (RRO). Normally, the discharge may consist of only primary treated effluent when the discharge is necessary due to hydraulic constraints resulting from wet weather events. There shall be no discharge from Monitoring Point 050A unless the discharge from Monitoring Point 049B exceeds a peak hourly flow of 930 MGD (which includes recycle) or in accordance with an approved GLWA WRRF Wet Weather Operational Plan (see Part I.A.11.). Discharge from Outfall 050 (RRO) is not allowed unless hydraulically or structurally necessary. Outfall 050 (RRO) discharges to the Rouge River.

Other options for discharge from Outfall 050 include, 1) when Outfall 049 (DRO) is out-of-service, the discharge may consist of secondary or secondary and primary treated wastewater, 2) when Outfall 049 (DRO) has reduced hydraulic capacity the discharge may consist of secondary or secondary and primary treated wastewater, and 3) when there is department approved limited secondary capacity when Outfall 049 cannot be used due to construction, the discharge may consist of secondary or secondary and primary treated wastewater. Discharges from Monitoring Point 050A shall be limited and monitored by the permittees as specified below.

	Maximum Limits for Quantity or Loading				Maximum Limits for Quality or Concentration				Monitoring	Sample
Parameter	**Monthly**	**7-Day**	**Daily**	**Units**	**Monthly**	**7-Day**	**Daily**	**Units**	**Frequency**	**Type**

Limitations and monitoring requirements in effect when Outfall 049 is out-of-service and prior to initiation of operation of the RRO Disinfection Project:

All limitations and monitoring specified in Part I.A.1. apply except for the Available Cyanide monitoring requirement, Total Residual Chlorine requirement, and the Fecal Coliform Bacteria limitations, which are replaced with the limitations and monitoring requirements specified below with the Total Residual Chlorine monitoring and limitation removed:

Available Cyanide	---	---	---	---	---	89	µg/l	Daily	Grab
Fecal Coliform Bacteria	---	---	---	(report)	(report)	---	cts/100 ml	Daily	Grab

a. Sampling of Short-Term Wet Weather Events
If the first calendar day of the discharge event through Monitoring Point 050A includes less than three hours of flow but continues into the next calendar day, the sampling can be included as a part of the subsequent event the following day.

4. Interim Effluent Limitations, Monitoring Point 050A (continued)

Parameter	Maximum Limits for Quantity or Loading: Monthly	7-Day	Daily	Units	Maximum Limits for Quality or Concentration: Monthly	7-Day	Daily	Units	Monitoring Frequency	Sample Type
Limitations and monitoring requirements in effect during other periods of discharge from Monitoring Point 050A and prior to Initiation of operation of the RRO Disinfection Project:										
Flow	(report)	---	(report)	MGD	---	---	---	---	Daily	Report Total Daily Flow
Carbonaceous Biochemical Oxygen Demand ($CBOD_5$)	---	---	---	---	40	---	(report)	mg/l	Daily	24-Hr Composite
Total Suspended Solids	---	---	---	---	70	---	(report)	mg/l	Daily	24-Hr Composite
Total Phosphorus (as P)	---	---	---	---	1.5	---	(report)	mg/l	Daily	24-Hr Composite
Available Cyanide	---	---	---	---	---	---	89	µg/l	Daily	Grab
Fecal Coliform Bacteria	---	---	---	---	(report)	---	(report)	cts/100 ml	Daily	Grab
Ammonia Nitrogen (as N)		---	---	---	(report)	---	(report)	mg/l	Daily	24-Hr Composite Total
Copper	---	---	---	---	---	---	(report)	µg/l	Daily	24-Hr Composite Polychlorinated
Biphenyls (PCBs)										
PCB Aroclor 1016	---	---	---	---	---	---	(report)	µg/l	Weekly	24-Hr Composite
PCB Aroclor 1221	---	---	---	---	---	---	(report)	µg/l	Weekly	24-Hr Composite
PCB Aroclor 1232	---	---	---	---	---	---	(report)	µg/l	Weekly	24-Hr Composite
PCB Aroclor 1242	---	---	---	---	---	---	(report)	µg/l	Weekly	24-Hr Composite
PCB Aroclor 1248	---	---	---	---	---	---	(report)	µg/l	Weekly	24-Hr Composite
PCB Aroclor 1254	---	---	---	---	---	---	(report)	µg/l	Weekly	24-Hr Composite
PCB Aroclor 1260	---	---	---	---	---	---	(report)	µg/l	Weekly	24-Hr Composite
					Maximum PCB Aroclor					
PCB Aroclor (see I.A.4.e.)		---	---	---	(report)	---	---	µg/l	Monthly	See I.A.4.e.
					Minimum Daily		**Maximum Daily**			
pH	---	---	---	---	6.0		9.0	S.U.	Daily	Grab
Dissolved Oxygen	---	---	---	---	(report)		---	mg/l	Daily	Grab

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
The sampling locations for the pollutants in Part 1.A.4. of this permit shall be representative of the effluent and consistent with the locations approved by the Department. The Department may approve alternate sampling locations that are demonstrated by the GLWA to be representative of the effluent.

c. Sampling of Short-Term Wet Weather Events
If the first calendar day of the discharge event through Monitoring Point 050A includes less than three hours of flow but continues into the next calendar day, the sampling can be included as a part of the subsequent event the following day.

d. Analytical Methods and Quantification Levels for Available Cyanide and Total Copper
The sampling procedures, preservation and handling, and analytical protocol for compliance monitoring for Available Cyanide shall be in accordance with EPA Method OIA-1677. The quantification levels for Available Cyanide and Total Copper shall be 2.0 µg/l and 1.0 µg/l respectively unless a higher level is appropriate because of sample matrix interference. Justification for higher quantification levels shall be submitted to the Department within 30 days of such determination. Upon approval of the Department, the permittees may use alternate analytical methods (for parameters with methods specified in 40 CFR 136, the alternate methods are restricted to those listed in 40 CFR 136).

e. Limits Below the Quantification Level – Total Polychlorinated Biphenyls (PCBs) The sampling procedures, preservation and handling, and analytical protocol for compliance monitoring for Total PCBs shall be in accordance with EPA Method 608.3. Upon approval from the Department, the permittees may use alternate analytical methods (for parameters with methods specified in 40 CFR, Part 136, the alternate methods are restricted to those listed in 40 CFR, Part 136). The quantification level shall be 0.1 ug/l unless a higher level is appropriate because of sample matrix interference. Justification for a higher quantification level shall be submitted to the Department within 30 days of such determination.

For the purpose of reporting on the Daily tab of the DMR, individual aroclor results less than the quantification level shall be reported as "<0.1." For the purpose of reporting on the Summary tab of the DMR, the value reported under PCB Aroclor shall be the highest individual aroclor concentration observed during the monitoring period. This permit condition does not authorize the discharge of PCBs at levels that are injurious to the designated uses of the waters of the state or that constitute a threat to the public health or welfare.

5. Final Effluent Limitations, Monitoring Point 050A

Upon initiation of operation of the RRO Disinfection Project, the permittees are approved to discharge secondary treated municipal wastewater and primary treated municipal wastewater when hydraulically necessary from Monitoring Point 050A through Outfall 050 (RRO). Outfall 050 (RRO) discharges to the Rouge River. Discharge from Outfall 050 (RRO) is approved when the hydraulic capacity of Outfall 049 (DRO) is not sufficient to meet the approved GLWA wet weather operational plan (see Part I.A.11.). Such discharge shall be limited and monitored by the permittees as specified below.

	Maximum Limits for Quantity or Loading				Maximum Limits for Quality or Concentration				Monitoring	Sample
Parameter	**Monthly**	**7-Day**	**Daily**	**Units**	**Monthly**	**7-Day**	**Daily**	**Units**	**Frequency**	**Type**
Flow	(report)	---	(report)	MGD	---	---	---	---	Daily	Report Total Daily Flow
Available Cyanide	---	---	---	---	---	---	44	µg/l	Daily	Grab
Total Copper	---	---	---	---	---	---	(report)	µg/l	Monthly	24-Hr Composite
Fecal Coliform Bacteria	---	---	---	---	200	400	(report)	cts/100 ml	Daily	Grab
Total Residual Chlorine	---	---	---	---	---	---	38	µg/l	Daily	Grab
Oil & Grease	---	---	---	---	---	15	(report)	mg/l	Daily	Grab
Total Polychlorinated Biphenyls (PCBs)										
PCB Aroclor 1016	---	---	---	---	---	---	(report)	µg/l	Weekly	24-Hr Composite
PCB Aroclor 1221	---	---	---	---	---	---	(report)	µg/l	Weekly	24-Hr Composite
PCB Aroclor 1232	---	---	---	---	---	---	(report)	µg/l	Weekly	24-Hr Composite
PCB Aroclor 1242	---	---	---	---	---	---	(report)	µg/l	Weekly	24-Hr Composite
PCB Aroclor 1248	---	---	---	---	---	---	(report)	µg/l	Weekly	24-Hr Composite
PCB Aroclor 1254	---	---	---	---	---	---	(report)	µg/l	Weekly	24-Hr Composite
PCB Aroclor 1260	---	---	---	---	---	---	(report)	µg/l	Weekly	24-Hr Composite
					Maximum PCB Aroclor					
PCB Aroclor (See I.A,5.f.)		---	---	---	<0.1	---	---	µg/l	Monthly	See I.A.5.f.
					Minimum Daily		**Maximum Daily**			
pH	---	---	---	---	6.0	---	9.0	S.U.	Daily	
Dissolved Oxygen	---	---	---	---	3.0	---	---	mg/l	Daily	Grab

a. Narrative Standard
The receiving water shall contain no turbidity, color, oil films, floating solids, foams, settleable solids, suspended 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
The sampling locations for the pollutants in Part I.A.5. of this permit shall be representative of the effluent and consistent with the locations approved by the Department. The Department may approve alternate sampling locations that are demonstrated by the permittees to be representative of the effluent.

c. Sampling of Short-Term Wet Weather Events
If the first calendar day of the discharge event includes less than three hours of flow but continues into the next calendar day, the sampling can be included as part of the subsequent event the following day.

d. Total Residual Chlorine (TRC)
Compliance with the TRC limit shall be determined on the basis of one or more grab samples. If more than one (1) sample per day is taken, the additional samples shall be collected in near equal intervals over approximately eight (8) hours. The samples shall be analyzed immediately upon collection and the average reported as the daily concentration. Samples shall be analyzed in accordance with Part II.B.2. of this permit.

e. Analytical Methods and Quantification Levels for Available Cyanide and Total Copper
The sampling procedures, preservation and handling, and analytical protocol for compliance monitoring for Available Cyanide shall be in accordance with EPA Method OIA-1677. The quantification levels for Available Cyanide and Total Copper shall be 2.0 µg/l and 1.0 µg/l, respectively, unless a higher level is appropriate because of sample matrix interference. Justification for higher quantification levels shall be submitted to the Department within 30 days of such determination. Upon approval of the Department, the permittees may use alternate analytical methods (for parameters with methods specified in 40 CFR 136, the alternate methods are restricted to those listed in 40 CFR 136).

f. Limits Below the Quantification Level – Total Polychlorinated Biphenyls (PCBs)
The sampling procedures, preservation and handling, and analytical protocol for compliance monitoring for Total PCBs shall be in accordance with EPA Method 608.3. Upon approval from the Department, the permittees may use alternate analytical methods (for parameters with methods specified in 40 CFR, Part 136, the alternate methods are restricted to those listed in 40 CFR, Part 136). The quantification level shall be 0.1 ug/l unless a higher level is appropriate because of sample matrix interference. Justification for a higher quantification level shall be submitted to the Department within 30 days of such determination.

The water quality-based effluent limitation for Total PCBs is 2.6×10^{-5} µg/l (2.0×10^{-4} lbs/day) maximum monthly average. This is less than the quantification level. Control requirements are therefore established consistent with R 323.1213. **The discharge of any individual aroclor at or above the quantification level of 0.1 ug/l is a specific violation of this permit**. If concentrations of all aroclors representing a monitoring period are less than their quantification levels, the permittees will be considered to be in compliance with the permit for the monitoring period that the analyses represent, provided that the permittees are also in full compliance with the Pollutant Minimization Program for Total PCBs set forth in Part I.A.10 of this permit. For the purpose of reporting on the Daily tab of the DMR, individual aroclor results less than the quantification level shall be reported as "<0.1." For the purpose of reporting on the Summary tab of the DMR, the value reported under PCB Aroclor shall be the highest aroclor concentration observed during the monitoring period. This permit condition does not authorize the discharge of PCBs at levels that are injurious to the designated uses of the waters of the state or that constitute a threat to the public health or welfare.

g. Schedule of Implementation
The permittees shall implement the following for Outfall 050 (RRO) Disinfection Program:

1) On or before February 1, 2010 (submitted), the permittees shall submit for review and approval a basis of design report for the previously proposed Outfall 084 (RRO2).

2) On or before March 1, 2011 (submitted), the permittees shall submit for review and approval complete plans and specifications for Segment 1 of the previously proposed Outfall 084 (RRO2) project. Segment 1 consists of improvements undertaken at the WRRF consistent with the approved Basis of Design report.

3) On or before July 1, 2012 (submitted), the permittees shall commence construction of Segment 1, consistent with the approved plans and specifications.

4) On or before July 1, 2013 (submitted), the permittees shall submit a construction progress report for Segment 1 of the previously proposed Outfall 084 (RRO2).

5) On or before March 1, 2015, (completed) the permittees shall complete construction of Segment 1 of the previously proposed Outfall 084 (RRO2) project.

6) On or before June 1, 2016, (submitted) the permittees shall submit for review and approval a complete basis of design report, and complete plans and specifications, for the Outfall 050 (RRO) Disinfection Project (if design, bid, build). Alternatively, if DWSD chooses to pursue design-build for the Outfall 050 (RRO) Disinfection Project, DWSD shall submit on or before June 1, 2016, (submitted) a detailed engineering report for the overall project, a permitting plan (that includes a description of the construction segments), a timetable for Part 41 permit application submittal, and sufficient project schematics for the overall project.

7) On or before November 1, 2016, (completed) the permittees shall submit complete plans and specifications for at a minimum the first segment to be construction under a design-build contract.

8) On or before April 1, 2017, (commenced) the permittees shall commence construction of the RRO Disinfection Project, consistent with the approved plans and specifications.

9) On or before April 1, 2018, (submitted) the permittees shall submit a construction progress report for RRO Disinfection Project.

10) On or before April 1, 2019, (completed) the permittees shall complete construction of RRO Disinfection Project and place into full operation the facilities to achieve final effluent limits specified in Part I.A.5.

6. Combined Sewer Overflow Retention Treatment Basin Discharge Authorization, Monitoring Points 101A, 102A, 103A, 104A, 108A and 109A

During the period beginning on the effective date of this permit and lasting until the expiration date of this permit, the permittees are authorized to discharge treated combined sewage from the Hubbell/Southfield Combined Sewer Overflow (CSO) Retention Treatment Basin (RTB), Monitoring Point 101A, through Outfall 101; from the Puritan/Fenkell CSO RTB, Monitoring Point 102A, through Outfall 102; from the Seven Mile CSO RTB, Monitoring Point 103A, through Outfall 103; from the Belle Isle RTB, Monitoring Point 108A, through Outfall 108; from the Oakwood RTB, Monitoring Point 109A, through Outfall 109; and from the Conner Creek CSO RTB Monitoring Point 104A, through Outfall 104 when the basins are full and wastewater flows exceed downstream interceptor capacity. Outfall 101, Outfall 102, Outfall 103, and Outfall 109 discharge to the Rouge River. Outfall 108 discharges to the Detroit River. Outfall 104 discharges to Conner Creek. Such discharges shall be limited and monitored by the permittees as specified below:

Influent Characteristics	**Maximum Limits for Quantity or Loading**				**Maximum Limits for Quality or Concentration**				**Monitoring Frequency**	**Sample Type**
	Monthly	**7-Day**	**Daily**	**Units**	**Monthly**	**7-Day**	**Event**	**Units**		
Flow	(report)	---	(report)	MGD	---	---	---	---	Daily	Report Total Daily Flow
Effluent Characteristics										
Flow	(report)	---	(report)	MGD	---	---	---	---	Daily	Report Total Daily Flow
Carbonaceous Biochemical Oxygen Demand ($CBOD_5$)	---	---	---	---	(report)	---	(report)	mg/l	Event	Composite
Total Suspended Solids	---	---	---	---	(report)	---	(report)	mg/l	Event	Composite
Ammonia Nitrogen (as N)	---	---	---	---	(report)	---	(report)	mg/l	Event	Composite
Total Phosphorus (as P)	---	---	---	---	(report)	---	(report)	mg/l	Event	Composite
Fecal Coliform Bacteria										
May 1 – October 31	---	---	---	---	---	---	400	cts/100 ml	See I.A.6.a.	Grab
November 1 – April 30	---	---	---	---	---	---	1000	cts/100 ml	See I.A.6.a.	Grab
					Event Average		**Event Maximum**			
Total Residual Chlorine										
Any Event	---	---	---	---	(report)	---	(report)	mg/l	See I.A.6.a.	Grab

(See additional controls specified in Part I.A.8.)

Effluent Characteristics	Maximum Limits for Quantity or Loading Monthly	7-Day	Daily	Units	Maximum Limits for Quality or Concentration Monthly	7-Day	Event	Units	Monitoring Frequency	Sample Type
Oil & Grease (Monitoring Point 109A only)	---	---	---	---	(report)	---	(report)	mg/l	Daily During Discharge	Grab
					Event Minimum		**Event Maximum**			
pH	---	---	---	---	(report)	---	(report)	S.U.	Daily During Discharge	Grab
Dissolved Oxygen	---	---	---	---	(report)	---	---	mg/l	Daily During Discharge	Grab

a. Retention Basin Monitoring and Reporting
The permittee shall conduct retention basin monitoring and report consistent with the requirements of Part II.C.2. of this permit. The permittee shall supply the results of each sample analyzed during each discharge period.

An Event starts when combined sewage is discharged into a facility, and ends when effluent flow (if any) ceases and does not resume within 24 hours.

Influent flow shall be reported for all wet weather events where combined sewage is discharged into the facility. Influent flow reporting shall also indicate the component of the total influent flow that is dewatered to the interceptor from the facility during an event and shall be reported in the comment section of the monthly Discharge Monitoring Reports (DMR). Alternate procedures may be approved by the Department.

Effluent flow shall be reported for all events that cause discharge from the facility to the receiving waters.

Effluent sampling for $CBOD_5$, TSS, Ammonia Nitrogen (as N), and Total Phosphorus (as P) shall be by effluent flow-weighted composite sampling over the entire event. Alternate procedures for determining an event composite may be approved by the Department if existing equipment cannot reliably determine a flow-weighted composite. For purposes of reporting for a discharge event that occurs on multiple calendar days, the composite pollutant concentrations for the event shall be reported on the day the discharge event ended. Individual events shall be determined by a lack of effluent discharge for 24 hours.

For **effluent pH,** report the maximum value of any individual sample taken during the month in the "Maximum" column under "Quality or Concentration" on the monthly DMRs and the minimum value of any individual sample taken during the month in the "Minimum" column under "Quality or Concentration" on the monthly DMRs. The individual values taken during the month shall be reported on the daily DMRs.

For **effluent dissolved oxygen**, report the lowest concentration of any individual sample in the "Minimum" column under the "Quantity or Concentration" on the monthly DMRs. The individual values taken during the month shall be reported on the daily DMRs.

For **effluent Fecal Coliform Bacteria and Total Residual Chlorine,** grab samples shall be collected every two (2) hours for the first six (6) hours of the discharge and every four (4) hours thereafter for the duration of the discharge; the first sample shall be collected as soon as practical after the discharge begins. For fecal coliform, the “event maximum” shall be reported on the daily DMRs as the geometric mean of all samples taken during an event, provided that three (3) or more samples are collected. For TRC, report the average of all samples in an event as the “Event Average” and the maximum individual sample in an event as the “Event Maximum” on the daily DMRs. The goal of the effluent sampling program is to collect at least three samples during each discharge event, and samples shall be collected at shorter intervals at the onset of the event, if the permittee estimates that the event duration may be less than six hours. For purposes of reporting for a discharge event that occurs on multiple calendar days, the pollutant concentrations for the event shall be reported on the day the discharge event ended. The highest event averages for Fecal Coliform and TRC shall also be reported in the “Maximum” columns under “Quality and Concentration” on the monthly DMRs.

b. Retention Treatment Basin Dewatering

The retention treatment basin shall be promptly dewatered as in accordance with the Department Approved Consolidated Annual Report following the need to divert flow to the basin and shall be maintained in readiness for use. The discharge of sludge or residual accumulations from the basin to the surface waters is prohibited. These sludges shall be promptly removed and disposed in accordance with procedures approved by the Department.

For this permit while the Regional Operational Plan is being revised, if up to 930 MGD (including recycle) is being processed with secondary treatment at the WRRF and no primary flow is being discharged, then tributary combined or sanitary storage basins in the GLWA system may be dewatered. Such dewatering will not be considered a violation of this permit, even if contrary to the Wet Weather Event definition (see Part II.A.). Once a revised Regional Operation Plan is developed, it shall be implemented once reviewed and approved by the Department.

c. 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.

d. Operation and Maintenance Plan

The permittee shall assure that discharges only occur in response to rainfall (or snowmelt) events and cease soon thereafter. Any rehabilitation and maintenance needs shall be addressed to ensure adequate sewer capacity and functionality. This may be accomplished through continued implementation of the approved Operation and Maintenance Plan.

7. Combined Sewer Overflow Screening and Disinfection Facilities Discharge Authorization, Monitoring Points 105A, 106A and 107A

During the period beginning on the effective date of this permit and lasting until the expiration date of this permit, the permittees are authorized to discharge treated combined sewage from the Leib Combined Sewer Overflow (CSO) Screening and Disinfection Facility Monitoring Point 105A through Outfall 105, from the St. Aubin CSO Screening and Disinfection Facility Monitoring Point 106A through Outfall 106, and from the Baby Creek CSO Screening and Disinfection Facility Monitoring Point 107A through Outfall 107 when the wastewater flows exceed downstream interceptor capacities. Outfall 105 and Outfall 106 discharge to the Detroit River. Outfall 107 discharges to the Rouge River. Such discharges shall be limited and monitored by the permittees as specified below:

Effluent Characteristics	Maximum Limits for Quantity or Loading Monthly	7-Day	Daily	Units	Maximum Limits for Quality or Concentration Monthly	7-Day	Daily	Units	Monitoring Frequency	Sample Type
Flow	(report)	---	(report)	MGD	---	---	---	---	Daily	Report Total Daily Flow
Carbonaceous Biochemical Oxygen Demand (CBOD5)	---	---	---	---	(report)	---	(report)	mg/l	Quarterly	Grab
Total Suspended Solids	---	---	---	---	(report)	---	(report)	mg/l	Quarterly	Grab
Ammonia Nitrogen (as N)	---	---	---	---	(report)	---	(report)	mg/l	Quarterly	Grab
Total Phosphorus (as P)	---	---	---	---	(report)	---	(report)	mg/l	Quarterly	Grab
Oil & Grease (Baby Creek CSO Screening & Disinfection Facility, only)	---	---	---	---	(report)	---	(report)	mg/l	Daily During Discharge	Grab
							Event Maximum			
Fecal Coliform Bacteria										
May 1 – October 31	---	---	---	---	---	---	400 cts/100 ml		See I.A.7.a.	Grab
November 1 – April 30	---	---	---	---	---	---	1000 cts/100 ml		See I.A.7.a.	Grab
					Event Average		**Event Maximum**			
Total Residual Chlorine Any Event (see additional controls specified in Part 1.A.8.)	---	---	---	---	(report)	---	(report)	mg/l	See I.A.7.a.	Grab
					Event Minimum		**Event Maximum**			
pH	---	---	---	---	(report)	---	(report)	S.U.	Daily During Discharge	Grab
Dissolved Oxygen	---	---	---	---	(report)	---	---	mg/l	Daily During Discharge	Grab

a. Screening and Disinfection Facilities Monitoring and Reporting
The permittees shall monitor screening and disinfection facilities performance and report the monitoring consistent with the requirements of Part II.C.2. of this permit. The permittees shall supply the results of each sample taken during each discharge period.

Effluent flow shall be reported for all events that cause discharge from the facility to the receiving waters.

For **effluent pH**, report the maximum value of any individual sample taken during the month in the "Maximum" column under "Quality or Concentration" on the monthly DMRs and the minimum value of any individual sample taken during the month in the "Minimum" column under "Quality or Concentration" on the monthly DMRs. The individual values taken during the month shall be reported on the daily DMRs.

For **effluent dissolved oxygen**, report the lowest concentration of any individual sample in the "Minimum" column under the "Quantity or Concentration" on the monthly DMRs. The individual values taken during the month shall be reported on the daily DMRs.

For **effluent Fecal Coliform Bacteria and Total Residual Chlorine**, grab samples shall be collected every two (2) hours for the first six (6) hours of the discharge and every four (4) hours thereafter for the duration of the discharge; the first sample shall be collected as soon as practical after the discharge begins. For fecal coliform, the "event maximum" shall be reported on the daily DMRs as the geometric mean of all samples taken during an event, provided that three (3) or more samples are collected. For TRC, report the average of all samples in an event as the "Event Average" and the maximum individual sample in an event as the "Event Maximum" on the daily DMRs. The goal of the effluent sampling program is to collect at least three samples during each discharge event, and samples shall be collected at shorter intervals at the onset of the event, if the permittees estimate that the event duration may be less than six hours. For purposes of reporting for a discharge event that occurs on multiple calendar days, the pollutant concentrations for the event shall be reported on the day the discharge event ended. The highest event averages for Fecal Coliform and TRC shall also be reported in the "Maximum" columns under "Quality and Concentration" on the monthly DMRs.

b. 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.

c. Sampling Locations
The sampling locations for the pollutants indicated in Part I.A.7 of this permit shall be representative of the effluent and consistent with the locations approved by the Department.

d. Operation and Maintenance Plan
The permittees shall assure that discharges only occur in response to rainfall (or snowmelt) events and cease soon thereafter. Any rehabilitation and maintenance needs shall be addressed to ensure adequate sewer capacity and functionality. This may be accomplished through continued implementation of the approved Operation and Maintenance Plan.

e. Treatment Facility Dewatering
The treatment facility shall be promptly dewatered (if applicable) in accordance with the Department Approved Consolidated Annual Report possible following the need to divert flow to the facility and shall be maintained in readiness for use. The discharge of sludge or residual accumulations from the facility to the surface waters is prohibited.

For this permit while the Regional Operational Plan is being revised, if up to 930 MGD (including recycle) is being processed with secondary treatment at the WRRF and no primary flow is being discharged, then tributary combined or sanitary storage basins in the GLWA system may be dewatered. Such dewatering will not be considered a violation of this permit, even if contrary to the Wet Weather Event definition (see Part II.A). Once a revised Regional Operation Plan is developed, it shall be implemented once reviewed and approved by the Department.

f. 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).

8. Total Residual Chlorine Minimization Program

The goal of the Total Residual Chlorine (TRC) Minimization Program is operate the CSO RTBs and the CSO screening and disinfection facilities in a manner that will provide consistent, effective disinfection while minimizing the discharge of TRC, recognizing the overall goal is compliance with the TRC Final Acute Value of 0.038 mg/l at any point in the receiving stream, unless it is determined by the Department by a permit action that a higher level is acceptable.

In addition, the Operational Goals for this facility are 1.5 mg/l TRC as an event average value and 2.0 mg/l (November – April) or 3.0 mg/l (May – October) TRC as an event instantaneous maximum value.

a. TRC Minimization Assessment (Assessment) (submitted)
The permittees shall prepare and conduct a program to assess the capability of each of the 5 CSO RTBs and screening and disinfection facilities as agreed to (a subset of those listed in Part I.A.6. and Part I.A.7.), to minimize the discharge of TRC. Each Assessment shall be conducted according to a schedule acceptable to the Department. Compliance with the Fecal Coliform Bacteria effluent limits set forth in Part I.A.6. and Part I.A.7. of this permit shall be maintained during each Assessment. Each Assessment shall include an evaluation of various operational practices under a variety of wet weather events to identify measures which can be taken to reduce TRC discharge concentrations. Upon notification by the Department, the permittees shall begin conducting each Assessment over an 18-month period and shall submit a report summarizing the results to the Department within 60 days of completion. An extension of an Assessment period beyond 18 months may be requested by the permittees for approval by the Department in the event that a sufficient number of CSO discharge events have not occurred to allow for an adequate assessment of operational procedures.

Each Assessment report shall include the expected achievable TRC discharge concentrations, recommendations as to specific protocols to be used to manage sodium hypochlorite (NaOCl) dosage rates under various conditions to achieve the Operational Goals, and recommended facility modifications to enhance the ability to control TRC levels while maintaining compliance with the Fecal Coliform Bacteria limits. Specific procedures for adjustment of NaOCl feed rates to minimize the discharge of TRC shall be submitted as part of the Operational Plan (and revised as appropriate in annual updates), as required by Part I.A.15.e. of this permit. The TRC minimization procedures, developed as part of each Assessment, shall be implemented upon approval by the Department.

b. Operational Goals
Upon completion of each Assessment, the permittees shall operate the facility with a goal of 1.5 mg/l TRC as an event average value and a goal of 2.0 mg/l (November – April) or 3.0 mg/l (May – October) TRC as an event instantaneous maximum value. If upon completion of an Assessment, the permittees determine the facility can achieve lower TRC goals than those specified above, then the permittees shall operate the facility to achieve the lower TRC levels. If either TRC goal is exceeded for a CSO discharge event, the permittees shall submit a written report to the Department within seven (7) days explaining the cause of the exceedance and describing the corrective measures that will be undertaken to prevent a future recurrence.

c. In-Stream TRC Effluent Plume Evaluation (submitted)
The permittees shall conduct an evaluation of the in-stream TRC effluent plume attributable to each of the agreed-to 5 CSO RTBs screening and disinfection facility discharges. The evaluation shall identify the location and size of the TRC effluent plume during and after CSO discharge events and identify the maximum TRC concentrations in-stream at various downstream locations. Upon notification by the Department to begin conducting each Assessment (Part I.A.8.a.), the permittees shall have 60 days to submit a TRC effluent plume work plan describing the proposed evaluation including sampling locations and a proposed implementation schedule such that the In-Stream TRC Effluent Plume Evaluation shall occur after completion of each Assessment and when the operational goals begin. The permittees shall implement the In-Stream TRC Effluent Plume Evaluation following the schedule upon Department approval of the TRC effluent plume work plan. The permittees shall submit a report documenting the results of the TRC Effluent Plume Evaluation within 90 days after completion of the field work.

d. Permit Re-Opener Clause
Upon completion of each TRC Minimization Assessment and each In-Stream TRC Effluent Plume Evaluation, the Department may reevaluate the need for TRC effluent limitations. This permit may be

modified in accordance with applicable laws and rules to incorporate such revisions as may be necessary to comply with Water Quality Standards at the time of discharge.

e. Best Management Practices/Operator Coordination Work Group (Work Group)
The permittees shall attend and participate in at least quarterly Work Group meetings with representatives from other CSO facilities in Southeast Michigan to exchange information and share experiences relating to the operation and maintenance of CSO control facilities. Such Work Group meetings shall be used to develop Best Management Practices (BMPs) relating to CSO RTB operation, with an initial focus on actions to minimize the TRC discharge levels. At a minimum, the Work Group shall include representatives of the following CSO facilities: Birmingham CSO RTB, Bloomfield Village CSO RTB, Dearborn CSO, GLWA WRRF CSO Facilities, Inkster-Dearborn Heights CSO, Oakland County-Acacia Park (Acacia Park CSO Drainage District, Village of Beverly Hills, City of Birmingham), Redford Township CSO, River Rouge CSO, Wayne County – Dearborn Heights CSO, Wayne County – Inkster CSO, Wayne County – Inkster – Dearborn Heights CSO, and Wayne County – Redford – Livonia CSO. The Work Group shall submit an annual report summarizing the meetings and BMPs developed to the Department by March 1st of each year.

9. Additional Monitoring Requirements

As a condition of this permit, the permittees shall monitor the discharge from monitoring points 049F and 050A for the constituents identified below. This monitoring is an application requirement of 40 CFR 122.21(j), effective December 2, 1999. Testing shall be conducted in October 2019, May 2020, March 2021, and August 2021. Grab samples shall be collected for total phenols, and the Volatile Organic Compounds identified below. For all other parameters, 24-hour composite samples shall be collected.

Test species for whole effluent toxicity monitoring shall include fathead minnow **and** *Ceriodaphnia dubia*. If the permittees have received Department approval to conduct chronic toxicity testing using the more sensitive species identified in the toxicity database, the first three (3) tests required above may be performed using the more sensitive species. The last (4^{th}) test shall be conducted using both species. Testing and reporting procedures shall follow procedures contained in EPA-821-R-02-013, “Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms” (Fourth Edition). When the effluent ammonia nitrogen (as N) concentration is greater than 3 mg/l, the pH of the toxicity test shall be maintained at a pH of 8 Standard Units. Acute and chronic toxicity data shall be included in the reporting for the toxicity test results. 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.

For selected parameters required under this section, the maximum acceptable quantification levels and analytical methods shall be as specified under Quantification Levels and Analytical Methods for Selected Parameters, below, unless a higher quantification level is appropriate because of sample matrix interference. Justification for higher quantification levels shall be submitted to the Department within 30 days of such determination.

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 permittees 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. The permittees shall report to the Department any whole effluent toxicity test results greater than 1.0 TU_A or 1.0 TU_C within five (5) days of becoming aware of the result. 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.

Whole Effluent Toxicity
chronic toxicity

Hardness
calcium carbonate

Metals (Total Recoverable), Cyanide and Total Phenols

antimony	arsenic	barium	
beryllium	boron	cadmium	chromium
copper	lead	nickel	
selenium	silver	thallium	zinc
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
indeno(1,2,3-cd)pyrene	isophorone	naphthalene	nitrobenzene
n-nitrosodi-n-propylamine	n-nitrosodimethylamine	n-nitrosodiphenylamine	phenanthrene
pyrene	1,2,4-trichlorobenzene		

Quantification Levels and Analytical Methods for Selected Parameters

Parameter	**Quantification Level**		**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	EPA Method 605
4-chloro-3-methylphenol	7.0	ug/l	
4,4'-DDD	0.05	ug/l	EPA Method 608
4,4'-DDE	0.01	ug/l	EPA Method 608
4,4'-DDT	0.01	ug/l	EPA Method 608
Acrylonitrile	1.0	ug/l	
Aldrin	0.01	ug/l	EPA Method 608
Alpha-Hexachlorocyclohexane	0.01	ug/l	EPA Method 608
Antimony, Total	1	ug/l	
Arsenic, Total	1	ug/l	
Barium, Total	5	ug/l	
Benzidine	0.1	ug/l	EPA Method 605
Beryllium, Total	1	ug/l	
Beta-Hexachlorocyclohexane	0.01	ug/l	EPA Method 608

Parameter	Quantification Level		Analytical Method
Bis (2-Chloroethyl) Ether	1.0	ug/l	
Boron, Total	20	ug/l	
Cadmium, Total	0.2	ug/l	
Chlordane	0.01	ug/l	EPA Method 608
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	EPA Method 608
Dieldrin	0.01	ug/l	EPA Method 608
Di-N-Butyl Phthalate	9.0	ug/l	
Endosulfan I	0.01	ug/l	EPA Method 608
Endosulfan II	0.01	ug/l	EPA Method 608
Endosulfan Sulfate	0.01	ug/l	EPA Method 608
Endrin	0.01	ug/l	EPA Method 608
Endrin Aldehyde	0.01	ug/l	EPA Method 608
Fluoranthene	1.0	ug/l	
Heptachlor	0.01	ug/l	EPA Method 608
Heptachlor Epoxide	0.01	ug/l	EPA Method 608
Hexachlorobenzene	0.01	ug/l	EPA Method 612
Hexachlorobutadiene	0.01	ug/l	EPA Method 612
Hexachlorocyclopentadiene	0.01	ug/l	EPA Method 612
Hexachloroethane	5.0	ug/l	
Lead, Total	1	ug/l	
Lindane	0.01	ug/l	EPA Method 608
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	EPA Method 608.3
PCB-1221	0.1	ug/l	EPA Method 608.3
PCB-1232	0.1	ug/l	EPA Method 608.3
PCB-1242	0.1	ug/l	EPA Method 608.3
PCB-1248	0.1	ug/l	EPA Method 608.3
PCB-1254	0.1	ug/l	EPA Method 608.3
PCB-1260	0.1	ug/l	EPA Method 608.3
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)	2.0	ng/l	ASTM D7979 or an isotope dilution method (sometimes referred to as Method 537 modified)
Phenanthrene	1.0	ug/l	
Selenium, Total	1.0	ug/l	

Parameter	Quantification Level		Analytical Method
Silver, Total	0.5	ug/l	
Strontium, Total	1000	ug/l	
Sulfide, Dissolved	20	ug/l	
Thallium, Total	1	ug/l	
Toxaphene	0.1	ug/l	EPA Method 608
Vinyl Chloride	0.25	ug/l	
Zinc, Total	10	ug/l	

10. Pollutant Minimization Program for Total Mercury and PCBs

The goal of the Pollutant Minimization Program is to maintain the effluent concentration of total mercury at or below 1.3 ng/l and the final effluent limitations for Total Polychlorinated Biphenyls (PCBs). The permittees shall continue to implement the Pollutant Minimization Program approved on November 9, 1995, and updated in October, 1996, 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 and PCBs entering the wastewater collection system, including wet weather sources such as runoff/contributions from contaminated sites in the collection area;

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

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

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

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.

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

11. Water Resource Recovery Facility Wet Weather Operational Plan

The approved Water Resource Recovery Facility Wet Weather Operational Plan provides the protocol for operations during the interim period before full completion of the Long-term CSO Control Plan. This plan details the necessary requirements to maximize wet weather treatment at the WRRF, while complying with effluent limits and all other conditions of this permit, and minimizing untreated combined sewage discharges in the tributary collection system.

The GLWA WRRF Wet Weather Operational Plan shall be coordinated with the Collection System and CSO Treatment Facilities Operational Plan that is required in accordance with Part I.A.15.d. of this permit. Annually, on or before April 1st, the permittees shall submit an update of the Water Resource Recovery Facility Wet Weather Operational Plan in conjunction with the Collection System and CSO Treatment Facilities Operational Plan update as part of the Consolidated Annual Report to the Department for review and approval.

12. Facilities Improvement Program

The permittees shall continue to meet the sludge dewatering, conveyance, and final disposal requirements; submit and implement the solids disposal plans; correct the alum sludge issue; submit the WRRF shutdown schedules; and develop and implement the asset management program as detailed below.

a. WRRF Solids Processing Requirements and Corrections

1) Capacity for sludge dewatering, conveyance, and final disposal; Required maximum solids inventory loads.

The permittees shall ensure that sludge dewatering equipment, sludge conveyance equipment, and final sludge disposal capability is available at the GLWA WRRF as follows:

a) The permittees shall ensure that the WRRF sludge dewatering equipment, sludge conveyance equipment, and final sludge disposal capability are maintained for use; and in good operational working order to meet the following requirements:

(1) Average capacity of 500 dry tons per day (dtpd), calculated as a calendar monthly average;

(2) Peak capacity of 850 dtpd, calculated as a 10-day average;

(3) The peak 10-day average shall be available during any wet weather event when the WRRF is operated in the “Storm Period” of the currently approved WRRF Wet Weather Operational Plan as required by Part I.A.11.

The permittees shall also:

(4) Notify the Department within one business day if solids are recycled from the gravity thickeners to the head of the WRRF for more than 72 hours and provide an explanation for the recycled solids. Recycled solids are defined as a TSS overflow concentration of 1000 mg/l or greater from Complex A thickeners;

(5) Maintain a monthly average solids inventory of less than 750 dtpd, when there are less than 5 days of discharge from Outfall 049A during the month, and maintain a calendar quarterly average solids inventory not to exceed 1000 dtpd. Solids inventory is defined as the total solids in gravity thickener complexes A and B, determined daily in dtpd;

(6) This Section will be reviewed during the next NPDES reissuance based on WRRF performance; and

(7) The permittees are allowed to submit to the Department for review and approval a request to modify the numerical levels specified in Part I.A.12.a. of this permit. This modification request shall include supporting rationale for the revised numerical levels.

2) Long-Term Solids Disposal Plan

a) The permittees submitted to the Department for review and approval a Long-Term Solids Disposal Plan (LTSDP). This Solids Disposal Plan is designed to ensure the availability of sufficient sludge dewatering equipment and sludge disposal capability to meet the capacity requirements specified in Parts I.A.12.a.1).a).(1)&(2) of this permit. The permittees shall implement the LTSDP in accordance with the following schedule:

(1) On or before December 31, 2018, (submitted) the permittees shall submit for approval, a disposal plan for 250 dtpd. This requirement is based on the LTSDP approved on September 24, 2013. Upon notification from the Department, the permittees shall implement the approved disposal plan;

(2) On or before December 31, 2025, the permittees shall complete implementation of the approved plan referenced in item (1) above;

b) The GLWA are advised that implementation of individual elements of the LTSDP may require Part 41 wastewater construction permits or may require other Department approvals.

3) Alum Sludge Correction
The permittees shall continue to implement the approved plan to correct the solids dewatering concerns at the WRRF due to alum sludge discharges from GLWA water treatment plants (WTPs) into the collection system.

Annually, on or before September 1st the permittees shall submit a report to the Department describing if the implemented plan continued to meet the conditions specified above for the preceding fiscal year (July 1 – June 30).

Part 41 construction permits at the WRRF and/or Act 399 construction permits at the specific WTPs may be needed depending on the components of the approved plan.

b. WRRF Quarterly Shutdown Schedules
On or before December 1, March 1, June 1, and September 1, the permittees shall submit quarterly WRRF Shutdown Schedules, until notified in writing by the Department. Consistent with the quarterly dates indicated above, these schedules shall be submitted to the Department in a mutually agreeable format one month prior to the start of each calendar quarter for review and approval. Each quarterly schedule shall detail the primary treatment capacity, secondary treatment capacity, and sludge processing capacity that is planned to be available during the upcoming quarter, considering coordinated shutdowns necessary to complete all rehabilitation and other projects. The shutdown schedules shall be proposed to minimize environmental impact and maximize available treatment during construction of all projects, consistent with the requirements of the rules associated with Act 451, Part 41, being 299.2943 and 299.2955(1) and (3).

c. Operation, Maintenance & Replacement/Asset Management
The permittees shall at all times properly operate and maintain all facilities (i.e., sewer system, treatment works, as defined in Part 41 of Act 451, 1994 as amended, and control systems) that are installed or used by the permittees to operate the treatment works and sewer system and achieve and maintain compliance with the conditions of this permit. The requirements of an asset management program contain goals of effective performance, adequate funding, and adequate operator staffing and training. Asset management is a planning process focused on gaining optimum value for each asset and providing the financial resources to rehabilitate and replace them 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 best-value life-cycle costs, and the best long-term funding strategy.

1) The permittees shall continue to implement the approved Asset Management Program that addresses the following items:

- A comprehensive fixed asset inventory that is maintained, managed, and updated within a computerized maintenance management system (CMMS),

- A comprehensive inventory of the collection system fixed assets and collection system map,
- A Preventive Maintenance Program that may include predictive and reliability centered maintenance,
- A Needs Assessment updated every five years as part of the Project Plan (due on or before October 1, 2021), including condition assessment and evaluation of service level,
- An assessment of asset criticality and risk management,
- A capital planning process,
- A Scheduled Replacement Program (SRP) for assets,
- Monitoring and periodic performance evaluation through Key Performance Indicators (KPIs),
- Management oversight of system performance.

The permittees' Asset Management Program submitted on January 1, 2014, was approved on January 14, 2014, and substantially revised on September 29, 2017.

2) An Annual Report covering implementation of the Asset Management Program during the prior Fiscal Year (July 1 – June 30) shall be prepared by the permittees and submitted to the Department on or before October 1st. The Annual Report shall include:

a) A description and evaluation of the sufficiency of the staffing levels maintained during the year,

b) A description and evaluation of the sufficiency and adequacy of inspections and maintenance activities conducted and corrective actions taken during the previous year,

c) Expenditures for collection system maintenance activities, treatment works maintenance activities, corrective actions, and capital investment during the previous year, compared with budged/projected expenditures, including an evaluation of the sufficiency of expenditures,

d) A summary of asset/areas identified for inspection/action (including capital improvement) in the upcoming year based on the five (5) core elements and the criticality and risk analysis,

e) A maintenance budget and capital improvement budget for the upcoming year, based on implementation of an effective asset management program that meets the five (5) core elements,

f) An updated estimate of the revenue necessary to complete anticipated OM&R activities, the associated rate schedule impact, and an assessment of the adequacy of the revenue to perform necessary OM&R work, and

g) A description of the progress made towards completion of the outstanding tasks as described in the previous year's Asset Management Annual Report and an updated schedule for completion of any outstanding tasks.

d. Staffing Plan

A Staffing Plan, as required by ACO-00131, has been approved by the Department. The GLWA shall provide an adequate staffing level, in accordance with the approved Staffing Plan, to carry out the operation, maintenance, repair, and testing functions required to ensure compliance with the terms and conditions of this permit. During the term of ACO-00131, a change in the minimum staffing level may be requested by the GLWA by submittal of a revised Staffing Plan, including training requirements, and may be revised only by mutual agreement in writing between the GLWA and the Department. Should ACO-00131 be terminated, then the staffing plan shall be updated as required by the Operations and Maintenance Manual (Part II.C.14 of this permit), and an up to date copy of the manual shall be kept at the WRRF. The Department may review the manual in whole or in part (i.e. staffing) at their discretion and require modifications to it if portions are determined to be inadequate.

e. Key Performance Indicator Monthly Report
The permittee shall update the Key Performance Indicator (KPI) report monthly. If Administrative Consent Order No. ACO-000131, as amended, is terminated, the KPI report shall be submitted by the last day of the month following the termination of the ACO.

f. Public Participation
The permittees will participate in Department initiated public outreach meetings during the term of this permit as resources allow and provided there is adequate notification by the Department.

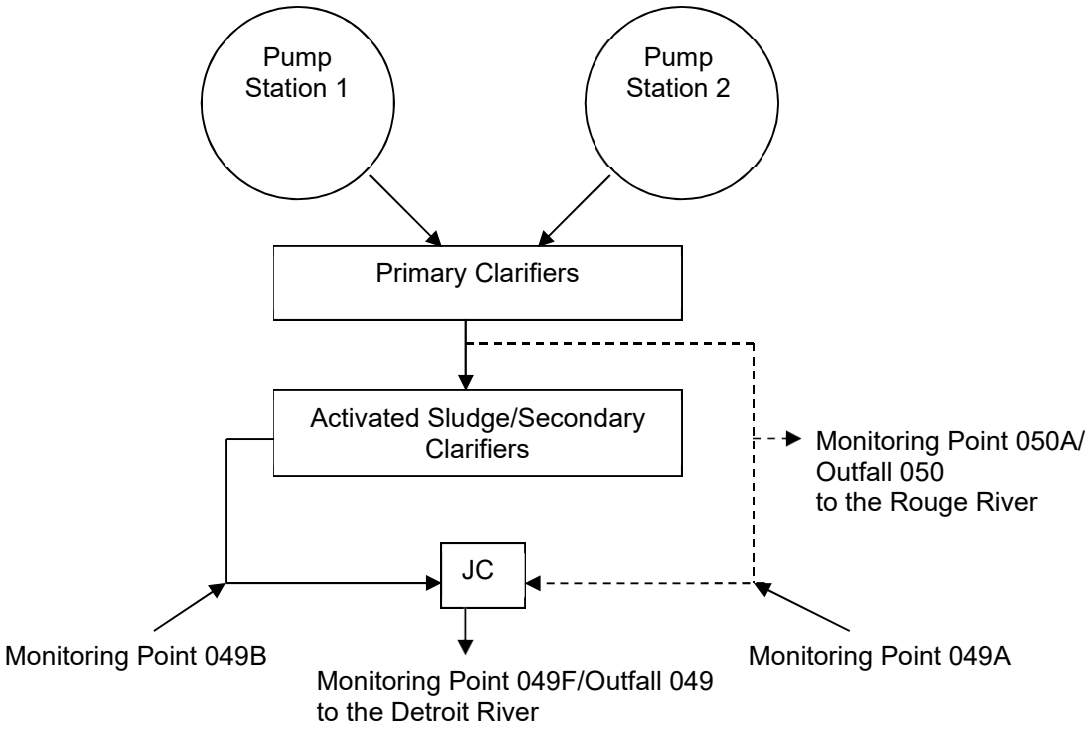
13. Reopener for Primary and Secondary Treatment Capacity

The permittees are required to maintain a wet weather primary treatment capacity of 1700 MGD (raw) and wet weather secondary treatment capacity of 930 MGD (which includes recycle). When the elevation of the influent wet well is greater than 85 feet and the facility is not pumping at 1700 MGD (raw), the discharge from untreated combined sewage overflow (CSO) upstream of the facility are not authorized, unless caused by localized storm conditions.

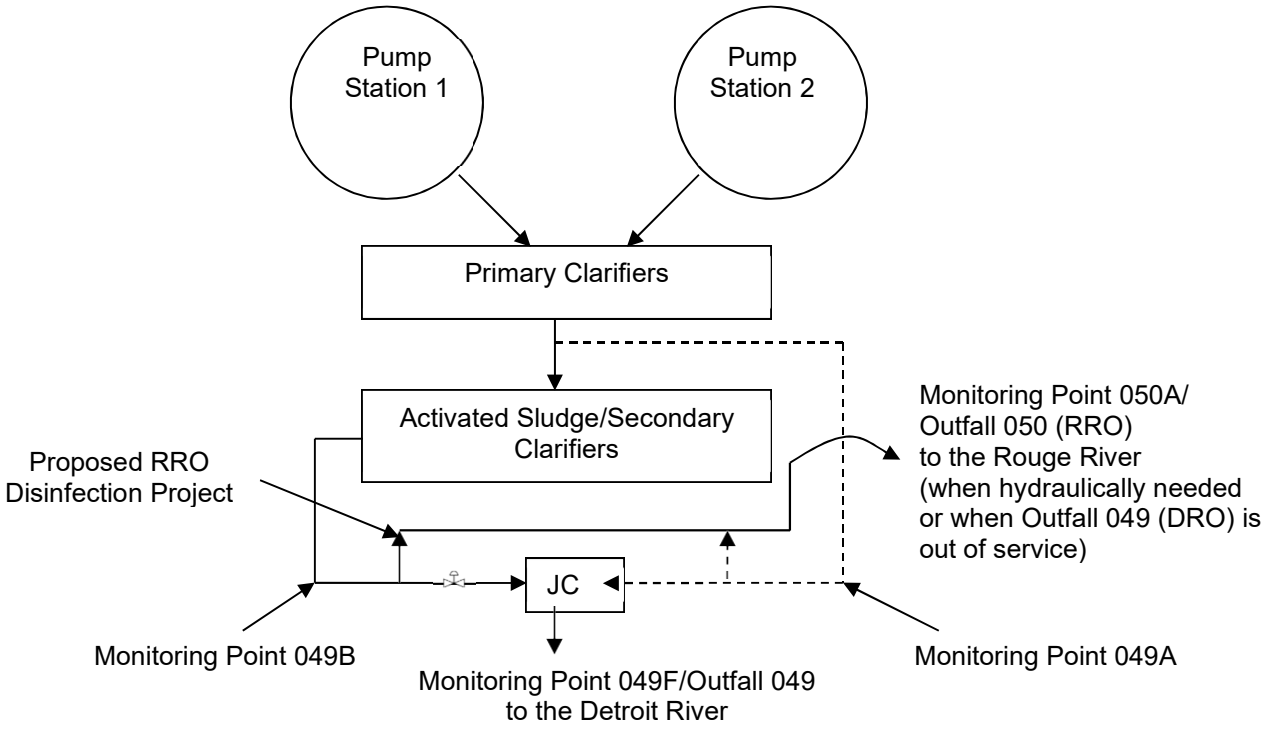
These required wet weather treatment capacities may be revised if new/altered wet weather conditions (such as initiation of operation of upstream CSO facilities, etc.) indicate that either less or more flow can be effectively processed. The criteria used to determine whether the required wet weather primary treatment capacities should be revised must include additional plant evaluation under the updated conditions, using testing procedures approved by the Department.

For reference, outfall/monitoring point designations are shown on the following diagrams:

Prior to Initiation of Operation of RRO Disinfection Project



After Initiation of Operation of RRO Disinfection Project



14. Outfalls Prohibited from Discharge to Combined Sewer System

The following Outfalls are prohibited from discharge except as provided for in Part II.C.9.:

OUTFALL	LOCATION	LAT/LONG	RECEIVING STREAM
004	Fairview (DWF) Pump Station (P28 through P31) Parkview & Detroit River - **Emergency only**	42°21'20" 082°58'01"	Discharge to Detroit River (Stop-logged)
014	Dubois (B12) Dubois & Detroit River	42°20'01" 083°01'19"	Detroit River
051	Carbon (B46) Carbon & Rouge River	42°17'07" 083°08'17"	Rouge River
054	Fort St. (DWSD Northwest) Interceptor) (B50) South Fort St. & Rouge River (West Shore)	42°17'25" 083°08'35"	Rouge River
056	Fort St. (Oakwood District) (B49) South Fort St. & Rouge River (West Shore)	42°17'27" 083°08'33"	Rouge River
080	Fox Creek Backwater Gates (B01) East Jefferson & Fox Creek.	42°22'28" 082°56'27"	Fox Creek to Detroit River

The permittees shall provide for ongoing monitoring (Flow, Duration) for these outfalls should they discharge. This monitoring shall be used to comply with the requirements of Section 324.3112(a) of The Michigan Act (See Part I.A.16.).

15. Discharges from Combined Sewer System

a. Limited Discharge Authorization

The permittees are required to utilize, to the maximum extent practicable, available sewerage system transportation capabilities for the delivery of combined sewage to treatment facilities. For an interim period during which the amended Long-Term CSO Control Plan is to be implemented, the permittees are authorized to discharge during wet weather events (see Part II.A.) combined sewage from the outfalls and locations listed below in accordance with the following conditions:

1) a flow rate equivalent to the peak dry weather flow rate has been conveyed to the secondary treatment facilities for treatment without bypass,

2) the total sewerage system storage and transportation capacity for conveyance of wet weather flows to the treatment facilities for treatment has been utilized within the hydraulic design constraints of the system,

3) all primary treatment plant capacity and secondary treatment plant capacity has been utilized in accordance with the approved WRRF Wet Weather Operation Plan (Part 1.A.11.), unless a storm event is localized to the extent that the hydraulic capacity of a portion of the collection system (considering storage) is exceeded prior to reaching plant capacities, and

4) the permittees are in full compliance with all requirements as set forth in Part I.A.16. Combined Sewer Overflow discharges to the Rouge River, the Detroit River, and the Old Channel of the Rouge River are authorized until prohibited, eliminated, or adequately treated to meet water quality standards at times of discharge in accordance with the requirements below, and as specified in Part 1.A.15.f. and g.

5) the outfalls that immediately follow this paragraph are included in the Limited Discharge Authorization. There are some untreated CSO outfalls that appear to discharge only during extreme events. Extreme is defined as; (a) no more than one untreated discharge in ten years from a CSO outfall during the April 1 through October 31 growth period, (b) modeled to not discharge at the 25 year – 24 hour event (during growth period, with normal soil moisture, rainfall distributed to a SCS Type II distribution), or (c) monitored to occur only at rainfalls greater than 4 inches in a 24 hour period. The Department does not intend to require construction of treatment facilities at the following outfalls should they continue to only discharge at the extreme event. This addresses CSO outfalls consistently with SSO outfalls according to the 2002 SSO Policy and 2003 Clarification Statement. The list of untreated CSO outfalls that only discharge at the extreme event is flexible and may be adjusted with the adaptive management CSO correction program.

OUTFALL	LOCATION	LAT/LONG	RECEIVING STREAM
029	Rosa Parks (B27) Rosa Parks & Detroit River	42°19'13" 083°03'56"	Detroit River
030	Vermont (B28) Vermont (extended) & Detroit River	42°19'06" 083°04'09"	Detroit River
037	McKinstry (B35) McKinstry & Detroit River	42°18'19" 083°05'13"	Detroit River
042	Campbell (B40) Campbell & Detroit River	42°18'01" 083°05'30"	Detroit River
048	Pulaski (B59A &B) Pulaski & Rouge River	42°17'21" 083°07'11"	Old Channel Rouge River

6) the outfalls that immediately follow this paragraph are also included in the Limited Discharge Authorization. There are some untreated CSOs that appear to discharge at a minimal frequency and volume. Minimal discharge is defined as actual monitoring of a volume less than 0.3 MG of discharge over a five year period. The Department does not intend to require construction of treatment facilities at the following outfalls should they continue to only discharge at this minimal frequency and volume. The list of untreated CSO outfalls that only discharge at a minimal frequency and volume is flexible and may be adjusted with the adaptive management CSO correction program.

OUTFALL	LOCATION	LAT/LONG	RECEIVING STREAM
024	Griswold (B22) Griswold & Detroit River	42°19'35" 083°02'28"	Detroit River
032	Twenty-First St. (B30) Twenty-First St. & Detroit River	42°18'53" 083°04'31"	Detroit River
034	West Grand Blvd. (B32) West Grand Blvd. & Detroit River	42°18'41" 083°04'50"	Detroit River
035	Swain (B33) Swain & Detroit River	42°18'35" 083°04'56"	Detroit River
036	Scotten (B34) Scotten & Detroit River	42°18'31" 083°05'02"	Detroit River
041	Junction (B39) Junction & Detroit River	42°18'07" 083°05'25"	Detroit River
043	Dragoon (Livernois Relief) (B41) Dragoon (extended) & Detroit River	42°17'49" 083°05'41"	Detroit River
047	Dearborn St. (B45) Dearborn St. & Rouge River	42°17'26" 083°06'59"	Old Channel Rouge River
073	Riverdale (B79) Florence & Rouge River	42°24'36" 083°16'13"	Rouge River

7) the outfalls that immediately follow this paragraph are also included in the Limited Discharge Authorization. These are untreated CSOs that represent the remaining non-core outfalls that will be required to be addressed under the adaptive management CSO correction program. They include the high-priority non-core CSOs. Note that the list of untreated CSO outfalls is flexible and may be adjusted with the adaptive management CSO correction program.

OUTFALL	LOCATION	LAT/LONG	RECEIVING STREAM
005	McClellan (B03) McClellan (extended) & Detroit River	42°21'20" 082°58'02"	Detroit River
006	Fischer (B04) Fischer & Detroit River	42°21'16" 082°59'15"	Detroit River
007	Iroquois (B05) Iroquois & Detroit River	42°21'14" 082°59'21"	Detroit River
008	Helen (B06) Helen & Detroit River	42°20'40" 083°00'06"	Detroit River
009	Mt. Elliott (B07) Mt. Elliott & Detroit River	42°20'24" 083°00'28"	Detroit River
011	Adair (B09) Adair & Detroit River	42°20'16" 083°00'41"	Detroit River
012	Joseph Campau (B10) Joseph Campau & Detroit River	42°10'08" 083°01'02"	Detroit River
016	Orleans Relief (B15) Orleans (Eastside of) & Detroit River	42°19'54" 083°01'36"	Detroit River
017	Orleans (B14) Orleans (Westside of) & Detroit River	42°19'53" 083°01'37"	Detroit River
018	Riopelle (B16) Riopelle & Detroit River	42°19'52" 083°01'42"	Detroit River
019	Rivard (B17) Rivard & Detroit River	42°19'48" 083°01'55"	Detroit River
020	Hastings (B18) Schweizer Place & Detroit River	42°19'46" 083°02'03"	Detroit River
021	Randolph (B19) Randolph & Detroit River	42°19'29" 083°02'26"	Detroit River
022	Bates (B20) Bates & Detroit River	42°19'38" 083°02'32"	Detroit River
023	Woodward (B21) Woodward & Detroit River	42°19'37" 083°02'35"	Detroit River
025	First-Hamilton (B23) First (extended) & Detroit River	42°19'30" 083°02'57"	Detroit River
026	Third St. (B24) Third St. & Detroit River	42°19'28" 083°03'07"	Detroit River

OUTFALL	LOCATION	LAT/LONG	RECEIVING STREAM
027	Cabacier (B25) Brooklyn (extended) & Detroit River	42°19'24" 083°03'26"	Detroit River
028	Eleventh St. (B26) Eleventh St. & Detroit River	42°19'17" 083°03'46"	Detroit River
031	Eighteenth St. (B29) Eighteenth St. & Detroit River	42°18'57" 083°04'31"	Detroit River
033	Twenty-Fourth St. (B31) Twenty-Fourth St. & Detroit River	42°18'47" 083°04'42"	Detroit River
038	Summit-Clark (B36) Summit & Detroit River	42°18'14" 083°05'18"	Detroit River
039	Ferdinand (B37) Ferdinand & Detroit River	42°18'13" 083°05'19"	Detroit River
040	Morrell (B38) Morrell & Detroit River	42°18'10" 083°05'22"	Detroit River
044	Schroeder (B42) Schroeder & West Jefferson	42°17'32" 083°06'00"	Detroit River
046	Cary (B44) Cary & Rouge River	42°17'29" 083°06'47"	Old Channel Rouge River
059	Warren (B54) West Warren & Rouge River	42°20'34" 083°14'57"	Rouge River
060	Tireman (B56, 57 & 58) Tireman & Rouge River	42°20'59" 083°14'51"	Rouge River
061	West Chicago (B60, 61 & 62) West Chicago & Rouge River (East Shore)	42°21'46" 083°14'56"	Rouge River
062	West Chicago (B63) West Chicago & Rouge River (West Shore)	42°21'52" 083°15'18"	Rouge River
063	Plymouth (B64) Plymouth & Rouge River	42°22'18" 083°15'21"	Rouge River
064	Glendale Relief (B65) Rouge Park Golf Course	42°22'33" 083°14'52"	Rouge River
065	Lahser (Dolson) (B67 & 68) Lahser & Rouge River	42°22'52" 083°15'23"	Rouge River
066	Schoolcraft (B70) Jeffries Freeway, I-96 & Rouge River	42°23'07" 083°16'02"	Rouge River

OUTFALL	LOCATION	LAT/LONG	RECEIVING STREAM
067	West Parkway (B69) Jeffries Freeway, I-96 & Rouge River	42°23'07" 083°16'02"	Rouge River
068	Brammel (B71) Ray & Rouge River	42°23'30" 083°15'56"	Rouge River
069	Lyndon (B72) Lyndon & Rouge River	42°23'35" 083°15'57"	Rouge River
072	Puritan (B77) Puritan & Rouge River (East Shore)	42°24'28" 083°16'14"	Rouge River
074	McNichols (B80 & 81) West McNichols & Rouge River	42°24'52" 083°15'59"	Rouge River
075	Glenhurst (B82) Glenhurst & Rouge River	42°25'32" 083°16'19"	Rouge River
077	Seven Mile (B85) West Seven Mile & Rouge River (East Shore)	42°25'44" 083°16'09"	Rouge River
079	Pembroke (B87) Frisbee & East Shore Rouge River	42°26'02" 083°16'24"	Rouge River

Nothing in this section of the permit shall be construed to limit the State of Michigan's ability to pursue remedies under the Michigan Act.

b. Qualified Operations and Maintenance Manager for CSO Discharges
The permittees shall place the wastewater collection system under the supervision of a qualified Operations and Maintenance Manager who shall serve as the contact person for the Department regarding combined sewer discharges. The permittees may replace the manager at any time and shall notify the Department within ten days after the replacement.

c. Disconnection of Eaves Troughs and Roof Downspouts
The permittees shall eliminate direct connections of eaves troughs and roof downspouts to the sewer system throughout the service area tributary to the Upper Rouge CSO outfalls (Outfalls 059-069, 072-075, 077, and 079). This requirement shall be completed for residential property and commercial and industrial properties or as approved by the Department consistent with the permittees' implementation of the Green Storm Water Infrastructure program. In addition, the permittees shall eliminate direct connections of eave troughs and roof downspouts in the service areas tributary to the CSO RTBs, to the CSO Screening & Disinfection Facilities, and to the remaining untreated CSOs based upon the plan detailed in the revised Long-term Control Program. This requirement does not apply if the permittees demonstrates that the disconnection of eaves troughs and roof downspouts is not a cost-effective means of reducing the frequency or duration of combined sewer overflows or of maintaining compliance with this permit. Such a demonstration and supporting documentation shall be submitted to the Department for approval.

d. Collection System and CSO Treatment Facilities Operational Plan
The permittees shall continue implementation of the approved Collection System and CSO Treatment Facilities Operational Plan (Operational Plan). The implementation of the Operational Plan shall be coordinated with the WRRF Wet Weather Operational Plan that is required for development and implementation in accordance with Part I.A.11. of this permit.

On or before April 1 (annually), the permittees shall submit a revised Operational Plan for Department review and approval, which incorporates all changes made to the plan during the last calendar year (items 1-12 below), and supplies the annual discharge documentation (item 13 below). Any changes to the Operational Plan that affect the rate, volume, or characteristics of the discharge, or the system

storage and transportation for conveyance of wet weather flows, shall be submitted to the Department and approved prior to implementation. The operational plan shall define the hydraulic design constraints of the system during both dry and wet weather operation.

The plan shall include:

1) the procedures utilized at the permittees' CSO RTBs and Screening & Disinfection Facilities for adjustment of NaOCl disinfectant feed rates to minimize the discharge of total residual chlorine,

2) the procedures and schedule for sampling/monitoring the stored NaOCl disinfectant at the permittees' CSO RTBs and Screening & Disinfection Facilities to determine the concentration of available chlorine and assure that the stored NaOCl is of sufficient strength to provide effective disinfection,

3) the procedures for sampling/monitoring the available chlorine concentration of each load of NaOCl delivered to the permittees' CSO RTBs and Screening & Disinfection Facilities,

4) if applicable, the procedures utilized at the permittees' CSO RTBs and Screening & Disinfection Facilities for adjustment of dehalogenating reagent feed rates to minimize the discharge of excess reagent,

5) the procedures to ensure that the collection and treatment systems are operated to maximize treatment,

6) the procedures to ensure that all dry weather flows are conveyed to the treatment facilities for treatment without bypass,

7) the hydraulic profile and hydraulic operational elevations for system pump stations, regulators, diversion devices, gates, level sensors, interceptors, etc., to ensure the conveyance of all dry weather flows to the treatment facilities for treatment without bypass,

8) the procedures to ensure that the sewerage system hydraulic and storage capacity is identified and fully utilized during wet weather events with eventual treatment of stored flows,

9) the procedures to ensure that the greatest quantity of wet weather flow is conveyed to the treatment facilities for treatment to minimize untreated wastewater discharges within the region tributary to the GLWA WRRF,

10) the hydraulic profile and hydraulic operational elevations for system pump stations, regulators, diversion devices, gates, level sensors, interceptors, etc., to ensure that the greatest quantity of wet weather flow is conveyed to the treatment facilities for treatment to minimize combined sewage discharges,

11) the procedures for ongoing inspection of the sewer system within the permittees' jurisdiction for excessive inflow and infiltration and, where necessary, reduction of the excessive infiltration and inflow sources, and the elimination of unauthorized sewer system connections, and

12) identification of the location of the rain gauges.

13) The permittees shall submit annual reports that supply the documentation of rainfall and the frequency, duration, and volume of all discharge events during the previous 12-month period (from January 1st through December 31st of the previous year).

The permittees shall continue to pursue the coordination of operational plans (Regional Operational Plan) with tributary communities with the intent of maximizing flow conveyance to the GLWA system and minimizing regional CSOs. Once the Regional Operational Plan is approved by the Department, it shall be implemented.

e. New Wastewater Flows

Increased levels of discharge of sanitary sewage from the combined sewer overflow outfalls listed in Part I.A.15.a. of this permit, the CSO RTBs (see Part I.A.6. of this permit), and the CSO Screening and Disinfection Facilities (see Part I.A.7. of this permit) are prohibited unless:

1) the increased discharges are the result of new sanitary wastewater flows which, on the basis of sound professional judgment, are within design peak dry weather transportation capacity, or

2) the permittees have officially adopted and are timely implementing a definite program, satisfactory to the Department, leading to the construction and operation of necessary collection, transportation, or treatment devices.

f. CSO Control Projects

1) Pertinent CSO Program History

The permittees are continuing to implement CSO Control Programs for the various CSO outfalls that discharge to the Rouge River and the Detroit River. Depending upon the particular CSO Control Program and outfall, the permittees are required to provide for the prohibition, elimination, or adequate treatment of combined sewage discharges containing raw sewage, to comply with the Water Quality Standards at times of discharge.

For the CSO outfalls discharging to the Rouge River, the development and implementation of the CSO Control Programs for the various outfalls was initially established based upon the goals of the Rouge River Remedial Action Plan (RAP), which called for a phased approach to solving the water quality problems of the river. Phase I of the Rouge River RAP extended to 1993 and included 1) monitoring and optimization of the existing combined sewer system, 2) detailed local planning for CSO controls and 3) resolution of financing and institutional problems. Phase II of the Rouge River RAP extended to 2005 (2012 for a few limited outfalls) and called for facility construction based on the goal of protection of public health through the elimination of raw sewage discharges and the control of toxic pollutants. Phase III of the Rouge River RAP follows completion of Phase II facilities and includes further improvements, if necessary, to comply with water quality standards at the time of discharge. Due to the demonstrated financial capability of the permittees for City of Detroit residents in 2009, 2012 and 2017, the CSO Control Program for the CSOs discharging to the Rouge River has been revised as reflected below.

For the CSO outfalls discharging to the Detroit River and the Old Channel of the Rouge River, Department approval of the CSO Control Programs is determined on a case-by-case basis with considerations for environmental impacts, public health impacts, technical feasibility, and economic affordability. As was the case for the Rouge River program, the demonstrated financial capability of the permittees for City of Detroit residents in 2009, 2012 and 2017 also affected the CSO Control Program for the Detroit River and the Old Channel of the Rouge River, and has been revised as reflected below.

In addition, the CSO Control Program now includes significant Green Storm water Infrastructure (GSI) requirements that are an important component of the approved Long-Term CSO Control Program.

Previous Long-Term CSO Control Program Documents include:

- Original Long-Term CSO Control Plan (1996)
- Long-Term CSO Control Plan Update (2002)
- Amendment Rouge (2008)
- Amendment Detroit (2008)
- Evaluation of CSO Control Alternative (for the Upper Rouge Outfalls) (December 15, 2009)

- Supplemental Report on Alternative CSO Controls for the Upper Rouge Outfalls) (April 30, 2010)

The implementation and completion of the CSO Control Program indicated in Part I.A.15.f. and g. are a necessary and essential requirement of this permit.

2) CSO Correction Program Moving Forward

The permittees shall control remaining combined sewer discharges, that are not classified as either extreme or minimal (see Part 1.A.15.a.5) & 6)), to eliminate the discharges or provide adequate treatment of the combined sewage discharges to comply with Water Quality Standards at times of discharge. Upon completion of the RRO disinfection project at the GLWA WRRF and commencing final use of Outfall 050A, the permittees will have completed core elements of their CSO control program and will have achieved a very high level of CSO control. It has been determined that this core level of control has routinely achieved adequate treatment of 95% of the annual combined sewer volume to the collection system. While additional CSO control measures are needed to fully comply with Michigan's Water Quality Standards, as the permittees moves into the final phases of the CSO control program it is appropriate to plan and schedule the remaining control measures, taking into account what has been put in place to date and lessons learned, the unique technical and financial situation of the city of Detroit, and the nature of the remaining CSO challenges.

Based on the foregoing, the permittees shall proceed with remaining CSO corrections using an adaptive management approach. This means that as new information is gained from: (1) evaluation of existing CSO projects and new treatment technologies, (2) evaluation of real-time collection system controls, (3) more accurate and complete data on CSO discharge frequency and volume, (4) benefits of less flow to the collection system from green storm water infrastructure (GSI), (5) benefits of less flow to the collection system due to the City's drainage charge program and new storm water ordinance, (6) benefits of less flow to the collection system as the City continues its sewer rehabilitation program, and (7) any other pertinent information, future CSO controls can be adapted to best provide cost-effective elimination of discharges, adequate treatment of discharges, or classification of discharges as minimal or extreme. Note that for purposes of designing CSO correction projects, minimal discharge is defined as less than 0.3 MG of discharge over a five year period, and extreme is defined as; (a) no more than one untreated discharge in ten years from a CSO outfall during the April 1 through October 31 growth period, (b) modeled to not discharge at the 25 year – 24 hour event (during growth period, with normal soil moisture, rainfall distributed to a SCS Type II distribution), or (c) monitored to occur only at rainfalls greater than 4 inches in a 24 hour period. The performance standard can be based on actual monitoring data normalized for a typical and representative 10-year period of rainfall record or predictively determined based on a calibrated and verified continuous model using a typical and representative 10-year period of rainfall record or other method as determined acceptable by the Department.

The permittees shall propose the non-core CSO correction projects to be designed, constructed, and operated to provide CSO elimination or adequate treatment during the subsequent five-year permit cycle, with each permit reapplication beginning in April 2022. High priority non-core outfalls should generally be addressed first, and outfalls thought of as high priority can change at any time due to implementation of the adaptive management approach. City of Detroit residents within the DWSD service area are "high burden" status based on sewer fees paid as a percentage of median annual household income. Planning of CSO control measures may reflect the permittees' financial capacity for City of Detroit residents determined in the Financial Capability Evaluation that is submitted with each permit reapplication. Based on current and projected CSO capital revenue requirements, and the current average cost per Detroit household for wastewater treatment and CSO control as a percentage of Detroit median household income, the Department does not expect the permittees to propose non-core CSO correction projects with this permit. The permittees shall next propose non-core CSO correction projects for review and approval with the permit reapplication required by April 4, 2022 (and then on April 4, 2027, and April 4, 2032). However, this first tier of non-core projects during 2023 through 2027 is expected to be relatively low cost. Discussion between the permittees and the Department have determined that low cost projects can include connection of CSO discharges to existing CSO treatment facilities, limited storage projects based on the performance standard with no disinfection, outfall gates and in-system storage projects, increased regulator flow capacity, separation projects that use smaller sanitary pipes in existing larger combined sewers to carry sanitary sewage to

GLWA interceptors while the existing combined sewer becomes a storm sewer, and others. At each application submittal in 2022, 2027, and 2032, the project proposal shall include an updated Financial Capability Evaluation that may also include other financial factors as appropriate. Reissued permits will then be drafted and issued with schedules for approved CSO correction projects that provide continuing progress toward meeting water quality standards. The permittees shall prepare an evaluation of Financial Capability, consistent with state and federal guidance, and shall submit the evaluation with the applications for reissuance of this permit (see the cover page of this permit for the next application due date). The Financial Capability Report shall be in the form of previous reports utilizing the EPA Financial Capability Guidance Document (USEPA 832-B-97-004; February, 1997), and updated with information as may be available in order to assess the permittees' ability to undertake future capital improvement projects related to the Long-Term CSO Control Program. This permit may be modified in accordance with applicable law and rules to incorporate revisions to conform to pertinent laws or rules, or as necessary to address prevailing situations.

Based on information currently available, the following are lists by water body that are high priority CSOs that require control. These outfalls can be revised at any time by the permittees or the Department, reflecting adaptive management considerations. While either the permittees or Department can propose changes at any time, an agreement between the two parties is required and shall be made in writing. The goal will be to complete projects fully addressing all high priority outfalls before October 1, 2037.

Rouge River non-core CSOs (these can be changed by mutual agreement between the permittees and the Department)

High Priority Outfalls
059, 061, 064, 065, 074

Detroit River non-core CSOs (these can be changed by mutual agreement between the permittees and the Department)

High Priority Outfalls
005, 007, 009, 012, 022, 025, 031, 038

3) Adaptive Management Program for this Permit

The adaptive management approach for this permit, before beginning relatively low cost CSO correction projects from 2023-2027, looks at the (1) evaluation of existing CSO projects and new treatment technologies, (2) evaluation of real-time collection system controls, (3) more accurate and complete data on CSO discharge frequency and volume, (4) benefits of less flow to the collection system from green storm water infrastructure (GSI), (5) benefits of less flow to the collection system due to the City's drainage charge program and new storm water ordinance, (6) benefits of less flow to the collection system as the City continues its sewer rehabilitation program, and (7) any other pertinent information. The permittees shall use the above measures, as appropriate, to further reduce untreated CSO discharges on an ongoing basis from the collection system before starting CSO projects from 2023 - 2037.

On or before April 1st (annually starting in 2020), the permittees shall prepare a joint Progress Report that summarizes; 1) significant real time controls that occurred during the preceding calendar year, 2) GSI implementation work during the preceding year that has been undertaken and completed, including a work plan for GSI implementation projects for the next year, documentation of the annual expenditure for the preceding year, and documentation of a cumulative total-spent-to-date on the GSI program, 3) benefits from the new storm water ordinance and green credit program, and 4) benefits from the City sewer rehabilitation program. The report shall summarize the total benefits from all programs by including; a) an updated estimate of the annual volume of wet weather flow that has been removed from the combined sewer system, b) the resulting frequency, volume and duration of CSO discharges (based on actual monitoring), and c) the predicted change modeled continuously and at design events to frequency, volume and duration of CSO discharges based on the calibrated hydraulic model developed in the Master Plan effort. The report shall reference the CSO discharge report submitted under Part I.A.15.d.(13) of this permit and include the pertinent data as a reference. As part of this reporting process, it shall be documented that an average of $3 million dollars per fiscal year was spent for 2018

and 2019, and $2 million dollars per year for 2020, 2021, and 2022 for the GSI program (these expenditures are an enforceable requirement of this permit).

A more complete description of the adaptive management approach includes:

a) Real-time Control

The GLWA is in the process of determining if real-time control can be used to help further minimize or even eliminate some untreated CSO discharges. One real-time control discussion currently taking place is the Interim Wet Weather Operations Plan (IWOP). The operational changes agreed to between the permittees and the Department in the IWOP will be reported in the Operational Plan Annual Update (Part 1.A.15 d.). The IWOP is evaluating if critical system regulators, gates, pumps, etc., can be adjusted to allow for more treated CSO, and less untreated CSO from the remaining CSO outfalls.
Approved adjustments will be at least acceptable until completion of all non-core CSO correction projects and shall be included in Operational Plan Annual Updates. The evaluation shall include all necessary supporting documentation, including hydraulic model runs if appropriate.

b) Green Storm Water Infrastructure (GSI)

For the west side of the City, there is a GSI program in the tributary area to Rouge River Outfalls 059-069, 072-075, 077, and 079. DWSD has developed and is implementing a Department approved GSI Plan for this area consistent with the “Evaluation of CSO Control Alternatives” report dated December 15, 2009. The GSI Plan describes a process for locating, designing, constructing, operating, and evaluating GSI in these sewersheds. GSI implementation shall be planned to capture, reduce, or otherwise control wet weather flows that would otherwise flow into the sewer system and contribute to CSOs, at the permittees’ direction. The Plan includes the following elements:

(1) Provisions for disconnection of residential downspouts and disconnection of commercial and industrial downspouts where feasible (see Part I.A.15.c.).

(2) Provisions for demolition and removal of vacant structures and replacement with pervious land cover. Where demolition is planned and implemented at sites that will be re-purposed for GSI, the demolition specifications shall ensure that basements and other impervious surfaces at the sites are removed, that the site is raked to remove large rocks and construction debris, and that engineered soils consisting of an appropriate mix of topsoil, compost, and sand is applied following the demolition to support plant growth and promote infiltration.

(3) Provisions for installation of bioswales along roadways and parking lots to intercept runoff and reduce storm water inputs to the combined sewer system from impervious surfaces.

(4) Provisions for installation of GSI and/or BMPs at commercial and residential properties to capture and retard storm water runoff.

(5) Provisions for tree planting for uptake and evapotranspiration along roadways and open spaces.

(6) Provisions for other GSI implementation projects as determined to be appropriate.

(8) Processes for public outreach and public participation in selecting sites and implementing GSI practices.

(9) Procedures/methods for tracking GSI implementation and measuring effects.

(10) Provisions for ensuring appropriate maintenance of sites where GSI has been implemented, including roles and schedules for maintenance.

(11) Provisions for ensuring storm water management (runoff reduction) benefits associated with GSI implementation continue over time, even as redevelopment may occur in the sewersheds.

The permittees shall continue to implement GSI in these sewersheds. The investment in GSI in these sewersheds shall be an average of 3 million dollars per fiscal year for the ten-year period ending 2019

(for a total of $30 million), and an average of 2 million dollars per year for the following 10 years (for a total of $20 million). GSI implementation will be in accordance with the GSI Plan.

For the near-east side of the City, there has been another GSI program in the tributary area to Detroit River Outfalls 005 - 009, 011, and 012. Because of the potential for some larger-scale green projects due to a relatively large amount of vacant land in the area, it may be possible to eliminate or reduce the size of some previously envisioned CSO treatment facilities for this area using the combination of GSI implementation along with possible sewer separation, and other engineering solutions. With GSI implementation now spreading across the city, it is acceptable for the city to use one-third (1/3) of the total GSI expenditures on projects upstream of untreated CSOs other than Rouge River Outfalls 059-069, 072-075, 077, and 079.

c) Storm Water Control

1) On or before April 1, 2018, (submitted) the permittees shall submit to the Department for review and approval a storm water control requirement for areas of new development and/or redevelopment. This storm water control requirement is primarily a focus within the Rouge Sewer District and Central Sewer District, as it is these two Districts that have untreated CSOs. Therefore, the permittees shall propose a level of storm water control for new development and redevelopment in these two sewer districts, and for the circumstances stated above, that is designed to help further reduce the volume and frequency of untreated CSO discharges, and a procedure and schedule for implementing this control requirement.

2) Storm water runoff from new development and redevelopment that will be conveyed through storm sewers to DWSD's combined sewers will require control to help further reduce volume and frequency of untreated CSO discharges. These are projects that will require construction plan review by the permittees, and a Part 41 construction permit issued by the Department. Please note that in most cases, new combined sewers will no longer be permitted under Part 41 (except for combined sewer relocation projects). Note that this is not a requirement for storm sewers subject to Permit No. MIS040000 issued to the City of Detroit, as the storm sewers under MIS040000 discharge directly to surface waters and are not owned by the DWSD.

d) City Sewer Rehabilitation

DWSD is currently working on a more robust annual program to remove infiltration/inflow (I/I) from its combined collection system. It is the Department's understanding that this program has a budget of about $20 million per year.

g. Combined Sewer Overflow Control Program Schedule

1) West-side Model; Rouge River Outfalls 059-069, Outfalls 072-075, Outfall 077, and Outfall 079. For untreated combined sewer overflows from Outfalls 059-069, Outfalls 072-075, Outfall 077, and Outfall 079, the permittees shall determine the accurate frequency and volume of untreated CSO discharges and amend the "Supplemental Report on Alternative CSO Controls for the Upper Rouge River," dated April 30, 2010 according to the following schedule:

a) The work plan has been approved by the Department that (1) sets forth the monitoring of the 17 CSOs that will be accomplished to accurately determine the frequency and volume of these untreated CSO discharges, (2) uses this monitoring along with the current Ovation monitoring as appropriate in a calibrated and verified model to accurately detail the volume and frequency of the 17 CSOs during a representative and typical 10-year period of rainfall record, and (3) to determine the peak hour flow at the 10 yr – 1 hr event of each of the 17 CSOs. The permittees shall continue to implement the approved work plan.

b) On or before April 15, 2019, (submitted) the permittees shall submit a report to the Department for review and approval that summarizes the determination and provides the volume and frequency of these 17 CSOs over a representative and typical 10-year period of rainfall record and provides the peak hour flow at the 10 yr – 1 hr event for each of these 17 CSOs;

c) On or before November 15, 2022, the permittees shall submit an amendment for Department review and approval to the "Supplemental Report on Alternative CSO Controls for the Upper Rouge River" (dated April 30, 2010) that describes any changes to the recommended long-term CSO control projects for the 17 CSOs. This plan may propose an alternative to the use of 10 minutes of detention at the 10 year – 1 hour event, at the permittees' discretion;

2) Near eastside; Detroit River Outfalls 005-009, 011, and 012. The permittees shall develop a revised CSO Control Plan for this tributary area in accordance with the following schedule:

On or before November 15, 2022, the permittees shall submit to the Department for review and approval an update to their Long-term CSO Control program (Detroit update 2008) for providing elimination or adequate treatment of CSO Outfalls 005-009, Outfall 011, and Outfall 012 to meet water quality standards at times of discharge. This plan shall consider the GI recommendations and potential for storm water reduction from the completed 205(j) report for this area. This plan may propose an alternative control requirement for the Long-term CSO control program.

3) The permittees may choose to offer an entire updated Long-term CSO Control program for all Detroit River CSOs. This updated plan can include a totally revised Detroit update (2008) for all remaining CSOs. Note that CSOs can be prohibited, eliminated, or adequately treated to meet water quality standards at times of discharge. If the permittees decide to pursue this approach, then the revised plan is due on or before November 15, 2022, for Department review and approval.

Following implementation of any phase of any of the approved Control Programs contained in Part I.A.15.f. and g. of this permit, the Control Program(s) may be reevaluated by the permittees or the Department. Future permits may include requirements to conduct water quality evaluations designed to verify that the overall CSO control program is providing adequate treatment to meet water quality standards. This permit may be modified in accordance with applicable laws and rules, to incorporate revisions necessary to conform to pertinent rules or laws, or as necessary to address prevailing situations, such as technical or financial constraints.

h. Notification and Testing Requirements

The federal rule promulgated by the United States Environmental Protection Agency in 40 CFR Part 122 establishing the public notification requirements for CSO discharges to the Great Lakes basin took effect February 7, 2018.

On or before August 7, 2018, (submitted) the permittees shall submit to the Department for approval, a public notification plan in accordance with 40 CFR 122.38(c). Additionally, on or before April 4, 2022, with the application for reissuance, the permittees shall submit to the Department for approval, an updated public notification plan.

Beginning November 7, 2018, all permittees authorized to discharge untreated or treated CSO to the Great Lakes Basin must provide public notification of CSO discharges in accordance with 40 CFR 122.38(a) and the approved public notification plan. The requirements include but are not limited to the following: notification of the local public health department, other potentially affected public entities and the public; and signage, where feasible at discharge points and other potentially impacted public access areas. In addition, in accordance with Section 324.3112a of the NREPA, the permittees shall provide notification to a newspaper of general circulation in the county in which the discharge occurred or is occurring. To the extent that a conflict may arise between Part I.A.15.h. and Part I.A.16., the Department approved Public Notification Plan shall govern.

16. 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 entity responsible for the sewer system shall immediately, but not more than 24 hours after the discharge begins, notify, by telephone, the Department, local health departments, a daily newspaper of general circulation in the county in which the permittees are 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 permittees 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 permittees' discharge of untreated or partially treated sewage, and, if those municipalities wish to be notified in the same manner as specified above, the permittees shall provide such notification. Such notification shall also include a daily newspaper in the county of the affected municipality.

At the conclusion of the discharge, written notification shall be submitted in accordance with and on the "Report of Discharge Form" available via the internet at: http://www.deq.state.mi.us/csosso/ , or, alternatively for combined sewer overflow discharges, in accordance with notification procedures approved by the Department.

In addition, in accordance with Section 324.3112a of the NREPA, each time a discharge of untreated or partially treated sewage occurs, the permittees 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 testing shall be done at locations specified by each affected local county health department but shall not exceed ten (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. The results of this testing shall be submitted with the written notification required above, or, if the results are not yet available, submitted as soon as they become available. This testing is not required, if the testing has been waived by the local health department, or if the discharge(s) did not affect surface waters.

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.

17. Pollutant Minimization and Source Evaluation Program for Perfluorooctane Sulfonate (PFOS) and/or Perfluorooctanoic Acid (PFOA)

The goal of the Pollutant Minimization and Source Evaluation Program is to identify and address sources of perfluorooctane sulfonate (PFOS) and/or perfluorooctanoic acid (PFOA) and to reduce and maintain the effluent concentrations of PFOS and/or PFOA at or below the water quality standards (WQS) and/or the Water Quality-Based Effluent limit (WQBEL). The WQS is 11 **ng/L** for PFOS and the WQBEL for PFOA is 8.04 **ug/l**.

On or before October 1, 2019, the permittee shall submit an approvable Pollutant Minimization and Source Evaluation Program for PFOS and/or PFOA to proceed toward the goal. The Pollutant Minimization and Source Evaluation Program shall continue work under the IPP Interim Initiative and shall include the following at a minimum:

a. Identification of and strategies to identify any additional potential and probable PFOS and/or PFOA sources

b. Monitoring plan for the permitted facility's influent and effluent and effluent from potential sources

c. Implemented measures thus far to eliminate, reduce, and/or control sources, and an assessment of the degree of success and the strategies used to measure success

d. Proposed measures and implementation schedules for elimination, control, and/or reduction of the identified sources (prioritizing highest loadings and concentrations), and the strategies that will be used to measure success

The Pollutant Minimization and Source Evaluation Program shall be implemented upon approval by the Department.

On or before May 1 of each year following Pollutant Minimization and Source Evaluation Program implementation, the permittee shall submit to the Department a status report for the previous calendar year. Upon written notification by the Department, the permittee may be required to submit more frequent status reports. Status reports at a minimum shall include:

a. Complete listing of PFOS and/or PFOA sources

b. Summary of influent and effluent monitoring data

c. Summary of monitoring data from known or potential sources

d. History and compliance status for sources

e. Implemented measures to eliminate, reduce, or control sources, (prioritizing highest loadings and concentrations), and an assessment of the degree of success and the strategies used to measure success

f. Proposed measures and schedules for elimination, control, or reduction of any newly identified PFOS and/or PFOA sources (prioritizing highest loadings and concentrations), and the strategies that will be used to measure success

g. Barriers to implementation and revisions to the implementation schedule

h. Laboratory reports, if not previously supplied

Any information generated as a result of the Pollutant Minimization and Source Evaluation Program set forth in this permit may be used to support a request to modify the Pollutant Minimization and Source Evaluation Program or to demonstrate that the requirement has been completed satisfactorily.
A request for modification of the approved Pollutant Minimization and Source Evaluation Program shall be submitted in writing to the Department along with supporting documentation for review and approval. The Department may approve modifications to the approved Pollutant Minimization and Source Evaluation Program, including a reduction in the frequency of the influent and known or potential source monitoring requirements. Approval of a Pollutant Minimization and Source Evaluation Program modification does not require a permit modification.

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

18. Collection System Contingency Plan

An emergency condition at the WRRF might occur that requires reduced (or even no) influent flows to the WRRF. Under Rule 299.2959 of Part 41, the permittee is required to minimize discharge of excessive pollutants. On or before July 1, 2020, the permittee shall submit to the Department for review and approval, a report that documents how the collection system and WRRF would be operated if an emergency condition required reduced influent flow (or no flow) to the WRRF to minimize discharge of excessive pollutants per Rule 299.2959 of Part 41 of PA 451. This could involve in-system storage of flows, use of Retention Treatment Basins for storage and potentially treated discharge, rerouting of flow, use of portions of the WRRF as appropriate, etc. The report shall evaluate operation of the collection system and WRRF, considering at least two hypothetical conditions with no influent flow to the WRRF; a duration of six (6) hours of no influent flow, and a duration of 24 hours of no influent flow.

19. Facility Contact

The "Facility Contact" was specified in the application. The permittees may replace the facility contact at any time, and shall notify the Department in writing within 10 days 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 obviates the permittees from properly submitting reports and forms as required by law.

20. Monthly Operating Reports

Part 41 of Act 451 of 1994 as amended, specifically Section 324.4106 and associated R 299.2953, requires that the permittees 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.

Within thirty (30) days of the effective date of this permit, the permittees 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 permittees 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 http://www.michigan.gov/deq/0,1607,7-135-3313_44117---,00.html. The permittees may use alternate forms if they are consistent with the approved treatment facility monitoring program. Unless the Department provides written notification to the permittees 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.

21. Discharge Monitoring Report – Quality Assurance Study Program

The permittees 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 permittees 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.

Section B. Storm Water Pollution Prevention

This section is not required.

PART I

Section C. Industrial Waste Pretreatment Program

1. Federal Industrial Pretreatment Program

a. The permittees shall implement the Federal Industrial Pretreatment Program approved on June 26, 1997, and any subsequent modifications approved up to the issuance of this permit. Approval of substantial program modifications after the issuance of this permit shall be incorporated into this permit by minor modification in accordance with 40 CFR 122.63.

b. The permittees shall comply with R 323.2301 through R 323.2317 of the Michigan Administrative Code (Part 23 Rules), the General Pretreatment Regulations for Existing and New Sources of Pollution (40 CFR Part 403), and the approved Federal Industrial Pretreatment Program.

c. The permittees shall have the legal authority and necessary interjurisdictional agreements that provide the basis for the implementation and enforcement of the approved Federal Industrial Pretreatment Program throughout the service area. The legal authority and necessary interjurisdictional agreements shall include, at a minimum, the authority to carry out the activities specified in R 323.2306(a).

d. The permittees shall develop procedures which describe, in sufficient detail, program commitments which enable implementation of the approved Federal Industrial Pretreatment Program, 40 CFR Part 403, and the Part 23 Rules in accordance with R 323.2306(c).

e. The permittees shall establish an interjurisdictional agreement (or comparable document) with all tributary governmental jurisdictions. Each interjurisdictional agreement shall contain, at a minimum, the following:

1) identification of the agency responsible for the implementation and enforcement of the approved Federal Industrial Pretreatment Program within the tributary governmental jurisdiction's boundaries; and

2) the provision of the legal authority which provides the basis for the implementation and enforcement of the approved Federal Industrial Pretreatment Program within the tributary governmental jurisdiction's boundaries.

f. The permittees shall prohibit discharges that:

1) cause, in whole or in part, the permittees, failure to comply with any condition of this permit or the NREPA;

2) restrict, in whole or in part, the permittee’s management of biosolids;

3) cause, in whole or in part, operational problems at the treatment facility or in its collection system;

4) violate any of the general or specific prohibitions identified in R 323.2303(1) and (2);

5) violate categorical standards identified in R 323.2311; and

6) violate local limits established in accordance with R 323.2303(4).

g. The permittees shall maintain a list of its nondomestic users that meet the criteria of a significant industrial user as identified in R 323.2302(cc).

h. The permittees shall develop an enforcement response plan which describes, in sufficient detail, program commitments which will enable the enforcement of the approved Federal Industrial Pretreatment Program, 40 CFR Part 403, and the Part 23 Rules in accordance with R 323.2306(g).

i. The Department may require modifications to the approved Federal Industrial Pretreatment Program which are necessary to ensure compliance with 40 CFR Part 403 and the Part 23 Rules in accordance with R 323.2309.

j. The permittees shall not implement changes or modifications to the approved Federal Industrial Pretreatment Program without notification to the Department. Any substantial modification shall be subject to Department public noticing and approval in accordance with R 323.2309.

k. The permittees shall maintain an adequate revenue structure and staffing level for effective implementation of the approved Federal Industrial Pretreatment Program.

l. The permittees shall develop and maintain, for a minimum of three (3) years, all records and information necessary to determine nondomestic user compliance with 40 CFR Part 403, Part 23 Rules and the approved Federal Industrial Pretreatment Program. This period of retention shall be extended during the course of any unresolved enforcement action or litigation regarding a nondomestic user or when requested by the Department or the United States Environmental Protection Agency. All of the aforementioned records and information shall be made available upon request for inspection and copying by the Department and the United States Environmental Protection Agency.

m. The permittees shall evaluate the approved Federal Industrial Pretreatment Program for compliance with the 40 CFR Part 403, Part 23 Rules and the prohibitions stated in item f. (above). Based upon this evaluation, the permittees shall propose to the Department all necessary changes or modifications to the approved Federal Industrial Pretreatment Program no later than the next Industrial Pretreatment Program Annual Report due date (see item o. below).

n. The permittees shall develop and enforce local limits to implement the prohibitions listed in item f above. Local limits shall be based upon data representative of actual conditions demonstrated in a maximum allowable headworks loading analysis. An evaluation of whether the existing local limits need to be revised shall be submitted to the Department by June 1, 2021. The submittal shall provide a technical evaluation of the basis upon which this determination was made which includes information regarding the maximum allowable headworks loading, collection system protection criteria, and worker health and safety, based upon data collected since the last local limits review.

The following pollutants shall be evaluated:

1) Arsenic, Cadmium, Chromium, Copper, Cyanide, Lead, Mercury, Nickel, Silver, and Zinc;

2) Pollutants that are subject to limits or monitoring in this permit;

3) Pollutants that have an existing local limit; and,

4) Other pollutants of concern which would reasonably be expected to be discharged or transported by truck or rail or otherwise introduced into the POTW.

o. On or before April 1 of each year, the permittees shall submit to the Department, as required by R 323.2310(8), an Industrial Pretreatment Program Annual Report on the status of program implementation and enforcement activities. The reporting period shall begin on January 1 and end on December 31. At a minimum, the Industrial Pretreatment Program Annual Report shall include:

1) the Pretreatment Program Report data identified in Appendix A to 40 CFR part 127 – NPDES Electronic Reporting;

2) a summary of changes to the approved IPP that have not been previously reported to the Department;

3) a summary of results of all the sampling and analyses performed of the WRRF's influent, effluent, and biosolids conducted in accordance with approved methods during the reporting period. The summary shall include the monthly average, daily maximum, quantification level, and number of samples analyzed for each pollutant. At a minimum, the results of analyses for all locally limited parameters for at least one monitoring event that tests influent, effluent and biosolids during the reporting period shall be submitted with each report, unless otherwise required by the Department. Sample collection shall be at intervals sufficient to provide pollutant removal rates, unless the pollutant is not measurable; and;

4) any other relevant information requested by the Department.

p, The permittee is required under this permit and R 323.2303(4) of the Michigan Administrative Code to review and update their local limits when:

1) New pollutants are introduced.

2) New pollutants that were previously unevaluated are identified

3) New water quality or biosolids standards are established or additional information becomes available about the nature of pollutants, such as removal rates and accumulation in biosolids.

Substantial increases of pollutants are proposed as required in the notification of new or increased uses in accordance with the provisions of 40 CFR 122.42.

2. Schedule for Notification to Contributing Jurisdictions

On or before May 1st and November 1st of each year, the permittees shall submit to the Department a report demonstrating the efforts and progress toward achieving the requirement of having all contributing jurisdictions adopt a legal authority that is equivalent to or more restrictive than the permittees', including the revised local limits to be incorporated by the permittees as result of the requirements of Part I.C.2. of this permit. This legal authority includes the provisions of Ordinance 08-05 (Detroit City Code Chapter 56, Article III. Division 3) and subsequent revisions to the local limits. These progress reports shall be submitted every six months until the requirement is achieved. The biannual progress reports shall contain:

a. a listing of all contributing jurisdictions,

b. the status of each contributing jurisdiction's adoption of adequate legal authority, and

c. for contributing jurisdictions who have not yet adopted adequate legal authority, a description of the steps/actions the permittees have taken to assure progress toward the contributing jurisdiction's adoption of adequate legal authority.

The permittees shall, to the best of its ability, work with those contributing jurisdictions who did not adopt adequate legal authority by January 1, 2008, to obtain such legal authority.

PART I

Section D. Residuals Management Program

1. Residuals Management Program for Land Application of Biosolids

The permittees are authorized to land-apply bulk biosolids or prepare bulk biosolids for land application in accordance with the permittees' approved Residuals Management Program (RMP) approved on April 22, 2008, and approved modifications thereto, in accordance with the requirements established in R 323.2401 through R 323.2418 of the Michigan Administrative Code (Part 24 Rules). The 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/deq/ and on the left side of the screen click on Water, Biosolids & Industrial Pretreatment, Biosolids then click on Biosolids Laws and Rules Information which is under the Laws & Rules banner in the center of the screen).

a. Annual Report
On or before October 30 of each year, the permittees 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 Biosolids Annual Report Form, available at https://miwaters.deq.state.mi.us.

b. Modifications to the Approved RMP
Prior to implementation of modifications to the RMP, the permittees 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.

c. Record Keeping
Records required by the Part 24 Rules shall be kept for a minimum of five 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.

d. Contact Information
RMP related submittals to the Department shall be to the Southeast Michigan District Supervisor of the Water Resources Division. The Southeast Michigan District Office is located at 27700 Donald Court, Warren Michigan, 48092-2793, Telephone: 586-753-3750, Fax: 586-753-3751.

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 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.

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. 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.

Daily concentration is the sum of the concentrations of the individual samples of a parameter divided by the number of samples taken during any calendar day. If the parameter concentration in any sample is less than the quantification limit, regard that value as zero when calculating the daily concentration. The daily concentration will be used to determine compliance with any maximum and minimum daily concentration limitations (except for pH and dissolved oxygen). When required by the permit, report the maximum calculated daily concentration for the month in the "MAXIMUM" column under "QUALITY OR CONCENTRATION" on the Discharge Monitoring Reports (DMRs).

For pH, report the maximum value of any *individual* sample taken during the month in the "MAXIMUM" column under "QUALITY OR CONCENTRATION" on the DMRs and the minimum value of any *individual* sample taken during the month in the "MINIMUM" column under "QUALITY OR CONCENTRATION" on the DMRs. For dissolved oxygen, report the minimum concentration of any *individual* sample in the "MINIMUM" column under "QUALITY OR CONCENTRATION" on the DMRs.

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.

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 sample is a composite sample with the sample volume proportional to the effluent flow.

General permit means a National Pollutant Discharge Elimination System permit issued 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.

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 the 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.

MGD means million gallons per day.

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 publicly-owned treatment works 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 Federal 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 Federal 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.

Outfall is the location at which a point source discharge enters the surface waters 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 activities under Part 615, Part 631, or Part 632 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 permittees' National Pollutant Discharge Elimination System 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 (R 324.2001 through R 324.2009 of the Michigan Administrative Code).

POTW is a publicly owned treatment work.

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.

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 or ground waters of this 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 permittees 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 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 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 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).

Special-use area means 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 for which the Department determines monitoring is needed.

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.

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 Federal 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.

Wet Weather Flow is the wastewater flow (domestic, industrial, commercial and institutional) including infiltration and inflow that occurs as the result of a precipitation or snowmelt event.

Wet Weather Event, for the interim period, is defined as those days on which an average 0.10 inches or more of precipitation was recorded by six strategically located rainfall gauges (as defined in Part I.9.c.(10) of the Operational Plan) in the WRRF's service area, plus two days immediately following days of 0.10 inch to 1.00 inch days of precipitation or three days following days of 1.00 inch or more precipitation. Rainfall days are further limited to those days in which the air temperature exceeds 32° F (0° C) for at least an eight hour period. The permittee may demonstrate that certain events such as snowmelt, and other unforeseen events will be considered rainfall days.

The above definition of wet weather event is not adequate on a long term basis, or for the purposes of planning, designing, or implementing the combined sewer overflow improvements required in this permit. For purposes of planning and designing future CSO improvements, the permittee shall consider the effect of dewatering tributary storage basins on overall system recovery, both at the WRRF and CSO overflow points in the collection system.

For this permit while the Regional Operational Plan is being revised, if up to 930 MGD (including recycle) is being processed with secondary treatment at the WRRF and no primary flow is being discharged, then tributary combined or sanitary storage basins in the GLWA system may be dewatered. Such dewatering will not be considered a violation of this permit, even if contrary to the above Wet Weather Event definition. Once a revised Regional Operation Plan is developed, it shall be implemented once reviewed and approved by the Department.

Upon approval of the Department, an alternate "wet weather event" definition may be used.

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.

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. In accordance with the Department Approved Wet Weather Operational Plan (See Part I.A.11.), alternate requirements for 24-hour composite sampling may be utilized to satisfy the monitoring requirements of this permit.

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 Federal 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**. 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 Section 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 permittees may use such procedures upon approval.

The permittees 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 permittees' laboratory Quality Control/Quality Assurance program.

3. Instrumentation

The permittees 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 permittees 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 and 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.

PART II

Section C. Reporting Requirements

1. Start-up Notification

If the permittees will not discharge during the first 60 days following the effective date of this permit, the permittees shall notify the Department within 14 days following the effective date of this permit, and then 60 days prior to the commencement of the discharge.

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 permittees shall submit self-monitoring data via the Department's MiWaters system.

The permittees 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 permittees may be allowed to submit the electronic forms after this date if the Department has granted an extension to the submittal date.

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 permittees 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 permittees 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 permittees 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 permittees by notification in writing from the Department. In such cases, the permittees 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 permittees. Reissuance or modification of this permit or reissuance or modification of an individual permittees' authorization to discharge shall not affect previous approval or denial for retained self-monitoring unless the Department provides notification in writing to the permittees.

4. Additional Monitoring by Permittees

If the permittees monitor 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 (Act 96 of the Public Acts of 1987) 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 permittees shall submit a *written* notification to the Department 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 permittees 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 permittees accomplish this, a separate written notification is not required.

6. Noncompliance Notification

Compliance with all applicable requirements set forth in the Federal 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 permittees becomes aware of the noncompliance. A written submission shall also be provided within five (5) days.

b. Other Reporting
The permittees shall report, in writing, 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 permittees become aware of the noncompliance.

Written reporting shall include: 1) a description of the discharge and cause of noncompliance; and 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 the steps taken to reduce, eliminate and prevent recurrence of the noncomplying discharge.

7. Spill Notification

The permittees shall immediately report any release of any polluting material which occurs to the surface waters or groundwaters of the state, unless the permittees have 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, call the Department's 24-hour Pollution Emergency Alerting System telephone number, 1-800-292-4706 (calls from **out-of-state** dial 1-517-373-7660).

Within ten (10) days of the release, the permittees shall submit to the Department a full written explanation as to the cause of the release, the discovery of the release, response (clean-up and/or recovery) measures taken, and preventive measures taken or a schedule for completion of measures to be taken to prevent reoccurrence of similar releases.

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 permittees) has occurred, the permittees 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 permittees 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 permittees 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 permittees, 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 permittees submitted notices as required under 9.b. or 9.c. below.

b. Notice of Anticipated Bypass
If the permittees know in advance of the need for a bypass, it shall submit prior notice to the Department, if possible at least ten (10) days before the date of the bypass, and 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 listed in 9.a. above.

c. Notice of Unanticipated Bypass
The permittees shall submit notice to the Department of an unanticipated bypass by calling the Department at the number indicated on the second page of this permit (if the notice is provided after regular working hours, use the following number: 1-800-292-4706) as soon as possible, but no later than 24 hours from the time the permittees becomes aware of the circumstances.

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 permittees 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 9.a., 9.b., 9.c., and 9.d., above. This provision does not relieve the permittees 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 permittees are 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 permittees shall notify the Department, in writing, as soon as possible but no later 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.

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 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 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 control or ownership of facilities from which the authorized discharge emanates, the permittees shall submit to the Department 30 days prior to the actual transfer of ownership or control a written agreement between the current permittees and the new permittees 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 permittees are 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.

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 Federal Act and the NREPA.

The Federal 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 permittees shall submit electronically all such reports or notifications as required by this permit, on forms provided by the Department.

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 permittees 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 Federal Act and constitutes grounds for enforcement action; for permit or Certificate of Coverage (COC) termination, revocation and reissuance, or modification; or denial of an application for permit or COC renewal.

It shall not be a defense for permittees 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 permittees 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 permittees shall, at all times, properly operate and maintain all treatment or control facilities or systems installed or used by the permittees 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 permittees shall either:

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

5. Adverse Impact

The permittees 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 permittees 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 Publicly Owned Treatment Work (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 permittees 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 Federal Act and Rule 2128 (R 323.2128 of the Michigan Administrative Code), all reports prepared in accordance with the terms of this permit, shall be available for public inspection at the offices of the Department and the Regional Administrator. As required by the Federal 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 Federal Act and Sections 3112, 3115, 4106 and 4110 of the NREPA.

10. Duty to Provide Information

The permittees shall furnish to the Department, 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 permittees shall also furnish to the Department, upon request, copies of records required to be kept by this permit.

Where the permittees become 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.

PART II

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 permittees 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 permittees from any responsibilities, liabilities, or penalties to which the permittees may be subject under Section 311 of the Federal 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 permittees from any responsibilities, liabilities, or penalties established pursuant to any applicable state law or regulation under authority preserved by Section 510 of the Federal 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.

Appendix F.
GLWA Project Projections

GLWA Schedule of Project Needs
2020 through 2060

Table 7-21. Schedule of Active and Future Planned CIP Projects WRRF Liquid Treatment Train

	CIP No.	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060
PRELIMINARY TREATMENT																																										
Rehab of Ferric Chloride System	211008																																									
Future Rehab of Ferric Chloride System (as necessary)																																										
PS1 Improvements	211006																																									
Future PS1 Improvements																																										
PS 2 Improvements - Phase II	211005																																									
PS2 Screen and Grit Improvements	211007																																									
Future PS2 Improvements																																										
Future PS2 Screen and Grit Improvements																																										
PS1 Screen and Grit Improvements																																										
Future PS1 Screen and Grit Improvements																																										
New Connection - Oakwood Interceptor to PS2																																										
PRIMARY TREATMENT																																										
Rehab of Rectangular Clarifiers 1-12																																										
Rehab of Circular Clarifier Scum Removal	211009																																										
New High Rate Clarification (HRC) System																																										
Rehab Circular Clarifiers 17 and 18																																										
Rehab Circular Clarifiers 13-16																																										
SECONDARY TREATMENT																																										
Rehab RAS pumps																																										
Rehab of Secondary Clarifiers																																										
Aeration Decks 1 and 2: EBPR w/ Oxygen and Hydraulic Optimization	212008																																									
Aeration Decks 3 and 4: EBPR w/ Oxygen and Hydraulic Optimization																																										
Aeration Decks 1 & 2: Step Feed and ILP Mods	212008																																									
Aeration Decks 3 & 4: Step Feed and ILP Mods																																										
Aeration Decks 1 & 2: Aerator Replacement																																										
Aeration Decks 3 & 4: Aerator Replacement																																										
Future Aeration Decks 1 & 2 Improvements																																										
Future Aeration Decks 3 & 4 Improvements																																										
DISINFECTION																																										
Future rehab of Hypochlorite System (as necessary)																																										
Convert to Sodium Hypo for all flow (if feasible)																																										
Assess Alternative Disinfectant																																										
ANCILLARY FACILITIES																																										
Underground Duct Bank Repair	216001																																									
Plant-Wide Fire Alarm	216002																																									
Potable Water, SFE, Natural Gas, Compressed Air (F)	216003																																									
Rehab SFE PS and secondary water system (F)	216006																																									
Rehab Maint Bldg (F)	216005																																									

Appendix G.
Correspondences

Michigan Natural Features Inventory Correspondence

Davidek, Tyler

From: Sanders, Michael <sander75@msu.edu>
Sent: Wednesday, March 16, 2022 1:32 PM
To: Bartlett, Rebecca
Cc: Delia, David; Ware, Alexander; Davidek, Tyler
Subject: RE: Rare Species Review - GLWA CWRF
Attachments: RSR #3079_ Response Letter.pdf; RSR_3079_Section 7 Comments_Wayne County.pdf

Rare Species Review #3079 in Wayne County, MI

Hello:

Please find our response letter for Rare Species Review #3079 in Wayne County, MI. Also included are comments for projects involving federal funding or a federal agency authorization, plus the optional project map as requested.

Please let me know if you have questions or comments.

Thank you,

Mike Sanders

Michael Sanders
Rare Species Review Specialist/Zoologist
Michigan Natural Features Inventory
Michigan State University Extension
PO Box 13036
Lansing, MI 48901
Cell: 517-980-5632

Have you found a rare species? Follow the link below!
Learn How to Report Rare Species Observations

From: Bartlett, Rebecca <rbartlett@wadetrim.com>
Sent: Friday, February 18, 2022 5:09 PM
To: mnfi@msu.edu
Cc: Delia, David <ddelia@wadetrim.com>; Ware, Alexander <aware@wadetrim.com>; Davidek, Tyler <tdavidek@wadetrim.com>
Subject: Rare Species Review - GLWA CWRF

Hello,

GLWA is preparing a Clean Water Revolving Fund Project Plan to apply for State Revolving Fund funding of four project located at the GLWA Wastewater Resource Recovery Facility, 9300 W Jefferson Ave, Detroit, MI 48209. These projects are in the same area so we would request a single Rare Species Review. The projects are: 1) Rehabilitation of Pump Station 1 (PS-1) Improvements, 2) Pump Station 2 (PS-2) Bar Rack Replacements and Grit Collection System Improvements, 3) Rehabilitation of the Screened Final Effluent (SFE) Pump Station, and 4) Aeration Decks 1-2 Modification.

I have attached a pdf map of the project boundary as well as a brief summary of each project.

If you have any questions, please contact me by email at rbartlett@wadetrim.com or by phone at (248)–880-6557

Thank you,
Rebecca

Rebecca Bartlett, Engineer
25251 Northline Road, Taylor, MI 48180
734.947.9700 office
248.880.6557 cell

Davidek, Tyler

From: Sanders, Michael <sander75@msu.edu>
Sent: Tuesday, March 1, 2022 3:22 PM
To: Bartlett, Rebecca
Cc: Delia, David; Ware, Alexander; Davidek, Tyler
Subject: RE: Rare Species Review - GLWA CWRF
Attachments: RSR#3079_Invoice.pdf; RSR #3079_InfoAgre.pdf

Rare Species Review #3079

Hello,

Thank you for allowing MNFI to review this activity for possible impacts to Michigan's rare natural features. Attached are the project invoice plus the Information Use Agreement that explains how our data can be used.

We will begin processing the review once payment is received and the signed Information Agreement is returned.

Please let me know if you have questions or comments.

V/r,

Mike Sanders

Michael Sanders
Rare Species Review Specialist/Zoologist
Michigan Natural Features Inventory
Michigan State University Extension
PO Box 13036
Lansing, MI 48901

From: Bartlett, Rebecca <rbartlett@wadetrim.com>
Sent: Friday, February 18, 2022 5:09 PM
To: mnfi@msu.edu
Cc: Delia, David <ddelia@wadetrim.com>; Ware, Alexander <aware@wadetrim.com>; Davidek, Tyler <tdavidek@wadetrim.com>
Subject: Rare Species Review - GLWA CWRF

Hello,

GLWA is preparing a Clean Water Revolving Fund Project Plan to apply for State Revolving Fund funding of four project located at the GLWA Wastewater Resource Recovery Facility, 9300 W Jefferson Ave, Detroit, MI 48209. These projects are in the same area so we would request a single Rare Species Review. The projects are: 1) Rehabilitation of Pump Station 1 (PS-1) Improvements, 2) Pump Station 2 (PS-2) Bar Rack Replacements and Grit Collection System

Improvements, 3) Rehabilitation of the Screened Final Effluent (SFE) Pump Station, and 4) Aeration Decks 1-2 Modification.

I have attached a pdf map of the project boundary as well as a brief summary of each project.

If you have any questions, please contact me by email at rbartlett@wadetrim.com or by phone at (248)–880-6557

Thank you,
Rebecca

Rebecca Bartlett, Engineer
25251 Northline Road, Taylor, MI 48180
734.947.9700 office
248.880.6557 cell

Tribal Historic Preservation Office Correspondence

Wade Trim Associates, Inc.
25251 Northline Road • Taylor, MI 48180
734.947.9700 • www.wadetrim.com

February 18, 2022

Little Traverse Bay Band of Odawa
7500 Odawa Circle
Harbor Springs, MI 49740

Attention: Mr. Wes Andrews

Re: Notice and Opportunity to Comment
GLWA WRRF 2022 State Revolving Fund Projects' Application
Great Lakes Water Authority

Dear Mr. Andrews:

Wade Trim Associates, working on behalf of Great Lakes Water Authority (GLWA), is preparing a Clean Water Revolving Fund (CWRF) Project Plan with the intent to apply for State Revolving Fund (SRF) funding of the following four projects located at the GLWA Wastewater Resource Recovery Facility (WRRF), 9300 W Jefferson Ave, Detroit, MI 48209: Rehabilitation of Pump Station 1 (PS-1) Improvements, Pump Station 2 (PS-2) Bar Rack Replacements and Grit Collection System Improvements, Rehabilitation of the Screened Final Effluent (SFE) Pump Station, and Aeration Decks 1-2 Modification. This application is intended to secure low interest loan funding through the Michigan Department of Environment, Great Lakes, and Energy (MI-EGLE) CWRF, with distribution starting in fiscal year 2023.

This notice and opportunity to comment is being sent to you to fulfill the consultation requirement of Section 106 of the National Historic Preservation Act review process. Should you have any comments on potential impacts to known areas of religious, historic, and/or cultural significance in the area of the proposed project, please provide them before the Public Hearing Meeting on May 25th, 2022. Any comments or concerns received will be included in the Final Project Plan.

The following are brief descriptions of the proposed projects:

The proposed work for the Rehabilitation of PS-1 Improvements consists of significant structural, mechanical, process, and electrical upgrades that will maintain the long-term reliability of this critical pumping facility at the headworks of the Water Resource Reclamation Facility (WRRF).

The proposed work for PS-2 Bar Rack Replacements and Grit Collection System Improvements consists of finer bar screens with enhanced capture, the possible addition of additional bar screens, improved screenings removal, improved grit removal, and a new grit processing facility to improve the reliability of the rack and grit systems.

The proposed work for the Rehabilitation of the SFE Pump Station consists of replacing the existing SFE pump station with a new SFE pump station that will add additional water treatment to significantly reduce the amount of city water required to operate the WRRF and to allow the facility to operate during any water supply interruptions.

The proposed work for the Aeration Decks 1-2 Modification Project consists of modifications to allow for step-feed, biological Phosphorous removal, and improved hydraulic control to accommodate swings in demand from wet weather conditions reducing recovery times and probability of in-plant violations.

Please see the attached maps for the specific location of the projects.

The complete draft project plan will be available to the public on April 22nd, 2022, on the **GLWA Website:** https://www.glwater.org/. If you require a bound printed copy, please contact me and we can arrange for a physical copy to be mailed.

If you have any questions on this request or need further information to complete a review of the proposed projects, please contact me at 734.947.9700 or at tdavidek@wadetrim.com. Please direct any written communications to my office at 25251 Northline Road, PO Box 10, Taylor MI, 48180 with the subject heading *2023 WRRF Clean Water State Revolving Fund (CWSRF)*.

Very truly yours,

Wade Trim Associates, Inc.

Tyler Davidek, PE
Engineer

TD:lf
HZN 2005-01T
20220218_Andrews-Ltr.docx
Attachments

Wade Trim Associates, Inc.
25251 Northline Road • Taylor, MI 48180
734.947.9700 • www.wadetrim.com

February 18, 2022

Match-e-be-nash-shee-wish Gun Lake Band of Potawatomi Indians
2872 Mission Drive
Shelbyville, MI 49344

Attention: Ms. Heather Bush

Re: Notice and Opportunity to Comment
GLWA WRRF 2022 State Revolving Fund Projects' Application
Great Lakes Water Authority

Dear Ms. Bush:

Wade Trim Associates, working on behalf of Great Lakes Water Authority (GLWA), is preparing a Clean Water Revolving Fund (CWRF) Project Plan with the intent to apply for State Revolving Fund (SRF) funding of the following four projects located at the GLWA Wastewater Resource Recovery Facility (WRRF), 9300 W Jefferson Ave, Detroit, MI 48209: Rehabilitation of Pump Station 1 (PS-1) Improvements, Pump Station 2 (PS-2) Bar Rack Replacements and Grit Collection System Improvements, Rehabilitation of the Screened Final Effluent (SFE) Pump Station, and Aeration Decks 1-2 Modification. This application is intended to secure low interest loan funding through the Michigan Department of Environment, Great Lakes, and Energy (MI-EGLE) CWRF, with distribution starting in fiscal year 2023.

This notice and opportunity to comment is being sent to you to fulfill the consultation requirement of Section 106 of the National Historic Preservation Act review process. Should you have any comments on potential impacts to known areas of religious, historic, and/or cultural significance in the area of the proposed project, please provide them before the Public Hearing Meeting on May 25th, 2022. Any comments or concerns received will be included in the Final Project Plan.

The following are brief descriptions of the proposed projects:

The proposed work for the Rehabilitation of PS-1 Improvements consists of significant structural, mechanical, process, and electrical upgrades that will maintain the long-term reliability of this critical pumping facility at the headworks of the Water Resource Reclamation Facility (WRRF).

The proposed work for PS-2 Bar Rack Replacements and Grit Collection System Improvements consists of finer bar screens with enhanced capture, the possible addition of additional bar screens, improved screenings removal, improved grit removal, and a new grit processing facility to improve the reliability of the rack and grit systems.

The proposed work for the Rehabilitation of the SFE Pump Station consists of replacing the existing SFE pump station with a new SFE pump station that will add additional water treatment to significantly reduce the amount of city water required to operate the WRRF and to allow the facility to operate during any water supply interruptions.

The proposed work for the Aeration Decks 1-2 Modification Project consists of modifications to allow for step-feed, biological Phosphorous removal, and improved hydraulic control to accommodate swings in demand from wet weather conditions reducing recovery times and probability of in-plant violations.

Please see the attached maps for the specific location of the projects.

The complete draft project plan will be available to the public on April 22nd, 2022, on the **GLWA Website:** https://www.glwater.org/. If you require a bound printed copy, please contact me and we can arrange for a physical copy to be mailed.

If you have any questions on this request or need further information to complete a review of the proposed projects, please contact me at 734.947.9700 or at tdavidek@wadetrim.com. Please direct any written communications to my office at 25251 Northline Road, PO Box 10, Taylor MI, 48180 with the subject heading *2023 WRRF Clean Water State Revolving Fund (CWSRF)*.

Very truly yours,

Wade Trim Associates, Inc.

Tyler Davidek, PE
Engineer

TD:lf
HZN 2005-01T
20220218_Bush-Ltr.docx
Attachments

Wade Trim Associates, Inc.
25251 Northline Road • Taylor, MI 48180
734.947.9700 • www.wadetrim.com

February 18, 2022

Bay Mills Indian Community
12140 W. Lakeshore Drive
Brimley, MI 49715

Attention: Ms. Paula Carrick, THPO

Re: Notice and Opportunity to Comment
GLWA WRRF 2022 State Revolving Fund Projects' Application
Great Lakes Water Authority

Dear Ms. Carrick:

Wade Trim Associates, working on behalf of Great Lakes Water Authority (GLWA), is preparing a Clean Water Revolving Fund (CWRF) Project Plan with the intent to apply for State Revolving Fund (SRF) funding of the following four projects located at the GLWA Wastewater Resource Recovery Facility (WRRF), 9300 W Jefferson Ave, Detroit, MI 48209: Rehabilitation of Pump Station 1 (PS-1) Improvements, Pump Station 2 (PS-2) Bar Rack Replacements and Grit Collection System Improvements, Rehabilitation of the Screened Final Effluent (SFE) Pump Station, and Aeration Decks 1-2 Modification. This application is intended to secure low interest loan funding through the Michigan Department of Environment, Great Lakes, and Energy (MI-EGLE) CWRF, with distribution starting in fiscal year 2023.

This notice and opportunity to comment is being sent to you to fulfill the consultation requirement of Section 106 of the National Historic Preservation Act review process. Should you have any comments on potential impacts to known areas of religious, historic, and/or cultural significance in the area of the proposed project, please provide them before the Public Hearing Meeting on May 25th, 2022. Any comments or concerns received will be included in the Final Project Plan.

The following are brief descriptions of the proposed projects:

The proposed work for the Rehabilitation of PS-1 Improvements consists of significant structural, mechanical, process, and electrical upgrades that will maintain the long-term reliability of this critical pumping facility at the headworks of the Water Resource Reclamation Facility (WRRF).

The proposed work for PS-2 Bar Rack Replacements and Grit Collection System Improvements consists of finer bar screens with enhanced capture, the possible addition of additional bar screens, improved screenings removal, improved grit removal, and a new grit processing facility to improve the reliability of the rack and grit systems.

The proposed work for the Rehabilitation of the SFE Pump Station consists of replacing the existing SFE pump station with a new SFE pump station that will add additional water treatment to significantly reduce the amount of city water required to operate the WRRF and to allow the facility to operate during any water supply interruptions.

The proposed work for the Aeration Decks 1-2 Modification Project consists of modifications to allow for step-feed, biological Phosphorous removal, and improved hydraulic control to accommodate swings in demand from wet weather conditions reducing recovery times and probability of in-plant violations.

Please see the attached maps for the specific location of the projects.

The complete draft project plan will be available to the public on April 22nd, 2022, on the **GLWA Website:** https://www.glwater.org/. If you require a bound printed copy, please contact me and we can arrange for a physical copy to be mailed.

If you have any questions on this request or need further information to complete a review of the proposed projects, please contact me at 734.947.9700 or at tdavidek@wadetrim.com. Please direct any written communications to my office at 25251 Northline Road, PO Box 10, Taylor MI, 48180 with the subject heading *2023 WRRF Clean Water State Revolving Fund (CWSRF)*.

Very truly yours,

Wade Trim Associates, Inc.

Tyler Davidek, PE
Engineer

TD:lf
HZN 2005-01T
20220218_Carrick-Ltr.docx
Attachments

Wade Trim Associates, Inc.
25251 Northline Road • Taylor, MI 48180
734.947.9700 • www.wadetrim.com

February 18, 2022

Saginaw Chippewa Indian Tribe of MI
6650 E. Broadway
Mt. Pleasant, MI 48858

Attention: Mr. William Johnson
Interim THPO

Re: Notice and Opportunity to Comment
GLWA WRRF 2022 State Revolving Fund Projects' Application
Great Lakes Water Authority

Dear Mr. Johnson:

Wade Trim Associates, working on behalf of Great Lakes Water Authority (GLWA), is preparing a Clean Water Revolving Fund (CWRF) Project Plan with the intent to apply for State Revolving Fund (SRF) funding of the following four projects located at the GLWA Wastewater Resource Recovery Facility (WRRF), 9300 W Jefferson Ave, Detroit, MI 48209: Rehabilitation of Pump Station 1 (PS-1) Improvements, Pump Station 2 (PS-2) Bar Rack Replacements and Grit Collection System Improvements, Rehabilitation of the Screened Final Effluent (SFE) Pump Station, and Aeration Decks 1-2 Modification. This application is intended to secure low interest loan funding through the Michigan Department of Environment, Great Lakes, and Energy (MI-EGLE) CWRF, with distribution starting in fiscal year 2023.

This notice and opportunity to comment is being sent to you to fulfill the consultation requirement of Section 106 of the National Historic Preservation Act review process. Should you have any comments on potential impacts to known areas of religious, historic, and/or cultural significance in the area of the proposed project, please provide them before the Public Hearing Meeting on May 25th, 2022. Any comments or concerns received will be included in the Final Project Plan.

The following are brief descriptions of the proposed projects:

The proposed work for the Rehabilitation of PS-1 Improvements consists of significant structural, mechanical, process, and electrical upgrades that will maintain the long-term reliability of this critical pumping facility at the headworks of the Water Resource Reclamation Facility (WRRF).

The proposed work for PS-2 Bar Rack Replacements and Grit Collection System Improvements consists of finer bar screens with enhanced capture, the possible addition of additional bar screens, improved screenings removal, improved grit removal, and a new grit processing facility to improve the reliability of the rack and grit systems.

The proposed work for the Rehabilitation of the SFE Pump Station consists of replacing the existing SFE pump station with a new SFE pump station that will add additional water treatment to significantly reduce the amount of city water required to operate the WRRF and to allow the facility to operate during any water supply interruptions.

The proposed work for the Aeration Decks 1-2 Modification Project consists of modifications to allow for step-feed, biological Phosphorous removal, and improved hydraulic control to accommodate swings in demand from wet weather conditions reducing recovery times and probability of in-plant violations.

Please see the attached maps for the specific location of the projects.

The complete draft project plan will be available to the public on April 22nd, 2022, on the **GLWA Website:** https://www.glwater.org/. If you require a bound printed copy, please contact me and we can arrange for a physical copy to be mailed.

If you have any questions on this request or need further information to complete a review of the proposed projects, please contact me at 734.947.9700 or at tdavidek@wadetrim.com. Please direct any written communications to my office at 25251 Northline Road, PO Box 10, Taylor MI, 48180 with the subject heading *2023 WRRF Clean Water State Revolving Fund (CWSRF)*.

Very truly yours,

Wade Trim Associates, Inc.

Tyler Davidek, PE
Engineer

TD:lf
HZN 2005-01T
20220218_Johnson-Ltr.docx
Attachments

Wade Trim Associates, Inc.
25251 Northline Road • Taylor, MI 48180
734.947.9700 • www.wadetrim.com

February 18, 2022

Keweenaw Bay Indian Community
16429 Bear Town Road
Baraga, MI 49908

Attention: Mr. Gary Loonsfoot, THPO

Re: Notice and Opportunity to Comment
GLWA WRRF 2022 State Revolving Fund Projects' Application
Great Lakes Water Authority

Dear Mr. Loonsfoot:

Wade Trim Associates, working on behalf of Great Lakes Water Authority (GLWA), is preparing a Clean Water Revolving Fund (CWRF) Project Plan with the intent to apply for State Revolving Fund (SRF) funding of the following four projects located at the GLWA Wastewater Resource Recovery Facility (WRRF), 9300 W Jefferson Ave, Detroit, MI 48209: Rehabilitation of Pump Station 1 (PS-1) Improvements, Pump Station 2 (PS-2) Bar Rack Replacements and Grit Collection System Improvements, Rehabilitation of the Screened Final Effluent (SFE) Pump Station, and Aeration Decks 1-2 Modification. This application is intended to secure low interest loan funding through the Michigan Department of Environment, Great Lakes, and Energy (MI-EGLE) CWRF, with distribution starting in fiscal year 2023.

This notice and opportunity to comment is being sent to you to fulfill the consultation requirement of Section 106 of the National Historic Preservation Act review process. Should you have any comments on potential impacts to known areas of religious, historic, and/or cultural significance in the area of the proposed project, please provide them before the Public Hearing Meeting on May 25th, 2022. Any comments or concerns received will be included in the Final Project Plan.

The following are brief descriptions of the proposed projects:

The proposed work for the Rehabilitation of PS-1 Improvements consists of significant structural, mechanical, process, and electrical upgrades that will maintain the long-term reliability of this critical pumping facility at the headworks of the Water Resource Reclamation Facility (WRRF).

The proposed work for PS-2 Bar Rack Replacements and Grit Collection System Improvements consists of finer bar screens with enhanced capture, the possible addition of additional bar screens, improved screenings removal, improved grit removal, and a new grit processing facility to improve the reliability of the rack and grit systems.

The proposed work for the Rehabilitation of the SFE Pump Station consists of replacing the existing SFE pump station with a new SFE pump station that will add additional water treatment to significantly reduce the amount of city water required to operate the WRRF and to allow the facility to operate during any water supply interruptions.

The proposed work for the Aeration Decks 1-2 Modification Project consists of modifications to allow for step-feed, biological Phosphorous removal, and improved hydraulic control to accommodate swings in demand from wet weather conditions reducing recovery times and probability of in-plant violations.

Please see the attached maps for the specific location of the projects.

The complete draft project plan will be available to the public on April 22nd, 2022, on the **GLWA Website:** https://www.glwater.org/. If you require a bound printed copy, please contact me and we can arrange for a physical copy to be mailed.

If you have any questions on this request or need further information to complete a review of the proposed projects, please contact me at 734.947.9700 or at tdavidek@wadetrim.com. Please direct any written communications to my office at 25251 Northline Road, PO Box 10, Taylor MI, 48180 with the subject heading *2023 WRRF Clean Water State Revolving Fund (CWSRF).*

Very truly yours,

Wade Trim Associates, Inc.

Tyler Davidek, PE
Engineer

TD:lf
HZN 2005-01T
20220218_Loonsfoot-Ltr.docx
Attachments

Wade Trim Associates, Inc.
25251 Northline Road • Taylor, MI 48180
734.947.9700 • www.wadetrim.com

February 18, 2022

Keweenaw Bay Indian Community
P.O. Box 249
Watersmeet, MI 49969

Attention: Giiwegiizhigookway Martin

Re: Notice and Opportunity to Comment
GLWA WRRF 2022 State Revolving Fund Projects' Application
Great Lakes Water Authority

Dear Giiwegiizhigookway Martin:

Wade Trim Associates, working on behalf of Great Lakes Water Authority (GLWA), is preparing a Clean Water Revolving Fund (CWRF) Project Plan with the intent to apply for State Revolving Fund (SRF) funding of the following four projects located at the GLWA Wastewater Resource Recovery Facility (WRRF), 9300 W Jefferson Ave, Detroit, MI 48209: Rehabilitation of Pump Station 1 (PS-1) Improvements, Pump Station 2 (PS-2) Bar Rack Replacements and Grit Collection System Improvements, Rehabilitation of the Screened Final Effluent (SFE) Pump Station, and Aeration Decks 1-2 Modification. This application is intended to secure low interest loan funding through the Michigan Department of Environment, Great Lakes, and Energy (MI-EGLE) CWRF, with distribution starting in fiscal year 2023.

This notice and opportunity to comment is being sent to you to fulfill the consultation requirement of Section 106 of the National Historic Preservation Act review process. Should you have any comments on potential impacts to known areas of religious, historic, and/or cultural significance in the area of the proposed project, please provide them before the Public Hearing Meeting on May 25th, 2022. Any comments or concerns received will be included in the Final Project Plan.

The following are brief descriptions of the proposed projects:

The proposed work for the Rehabilitation of PS-1 Improvements consists of significant structural, mechanical, process, and electrical upgrades that will maintain the long-term reliability of this critical pumping facility at the headworks of the Water Resource Reclamation Facility (WRRF).

The proposed work for PS-2 Bar Rack Replacements and Grit Collection System Improvements consists of finer bar screens with enhanced capture, the possible addition of additional bar screens, improved screenings removal, improved grit removal, and a new grit processing facility to improve the reliability of the rack and grit systems.

The proposed work for the Rehabilitation of the SFE Pump Station consists of replacing the existing SFE pump station with a new SFE pump station that will add additional water treatment to significantly reduce the amount of city water required to operate the WRRF and to allow the facility to operate during any water supply interruptions.

The proposed work for the Aeration Decks 1-2 Modification Project consists of modifications to allow for step-feed, biological Phosphorous removal, and improved hydraulic control to accommodate swings in demand from wet weather conditions reducing recovery times and probability of in-plant violations.

Please see the attached maps for the specific location of the projects.

The complete draft project plan will be available to the public on April 22nd, 2022, on the **GLWA Website:** https://www.glwater.org/. If you require a bound printed copy, please contact me and we can arrange for a physical copy to be mailed.

If you have any questions on this request or need further information to complete a review of the proposed projects, please contact me at 734.947.9700 or at tdavidek@wadetrim.com. Please direct any written communications to my office at 25251 Northline Road, PO Box 10, Taylor MI, 48180 with the subject heading *2023 WRRF Clean Water State Revolving Fund (CWSRF)*.

Very truly yours,

Wade Trim Associates, Inc.

Tyler Davidek, PE
Engineer

TD:lf
HZN 2005-01T
20220218_Martin -Ltr.docx
Attachments

Wade Trim Associates, Inc.
25251 Northline Road • Taylor, MI 48180
734.947.9700 • www.wadetrim.com

February 18, 2022

Sault Ste. Marie Tribe of Chippewa
523 Ashmun
Sault Ste. Marie, MI 49783

Attention: Ms. Colleen Medicine

Re: Notice and Opportunity to Comment
GLWA WRRF 2022 State Revolving Fund Projects' Application
Great Lakes Water Authority

Dear Ms. Medicine:

Wade Trim Associates, working on behalf of Great Lakes Water Authority (GLWA), is preparing a Clean Water Revolving Fund (CWRF) Project Plan with the intent to apply for State Revolving Fund (SRF) funding of the following four projects located at the GLWA Wastewater Resource Recovery Facility (WRRF), 9300 W Jefferson Ave, Detroit, MI 48209: Rehabilitation of Pump Station 1 (PS-1) Improvements, Pump Station 2 (PS-2) Bar Rack Replacements and Grit Collection System Improvements, Rehabilitation of the Screened Final Effluent (SFE) Pump Station, and Aeration Decks 1-2 Modification. This application is intended to secure low interest loan funding through the Michigan Department of Environment, Great Lakes, and Energy (MI-EGLE) CWRF, with distribution starting in fiscal year 2023.

This notice and opportunity to comment is being sent to you to fulfill the consultation requirement of Section 106 of the National Historic Preservation Act review process. Should you have any comments on potential impacts to known areas of religious, historic, and/or cultural significance in the area of the proposed project, please provide them before the Public Hearing Meeting on May 25th, 2022. Any comments or concerns received will be included in the Final Project Plan.

The following are brief descriptions of the proposed projects:

The proposed work for the Rehabilitation of PS-1 Improvements consists of significant structural, mechanical, process, and electrical upgrades that will maintain the long-term reliability of this critical pumping facility at the headworks of the Water Resource Reclamation Facility (WRRF).

The proposed work for PS-2 Bar Rack Replacements and Grit Collection System Improvements consists of finer bar screens with enhanced capture, the possible addition of additional bar screens, improved screenings removal, improved grit removal, and a new grit processing facility to improve the reliability of the rack and grit systems.

The proposed work for the Rehabilitation of the SFE Pump Station consists of replacing the existing SFE pump station with a new SFE pump station that will add additional water treatment to significantly reduce the amount of city water required to operate the WRRF and to allow the facility to operate during any water supply interruptions.

The proposed work for the Aeration Decks 1-2 Modification Project consists of modifications to allow for step-feed, biological Phosphorous removal, and improved hydraulic control to accommodate swings in demand from wet weather conditions reducing recovery times and probability of in-plant violations.

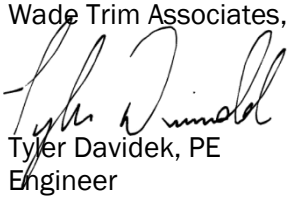
Please see the attached maps for the specific location of the projects.

The complete draft project plan will be available to the public on April 22nd, 2022, on the **GLWA Website:** https://www.glwater.org/. If you require a bound printed copy, please contact me and we can arrange for a physical copy to be mailed.

If you have any questions on this request or need further information to complete a review of the proposed projects, please contact me at 734.947.9700 or at tdavidek@wadetrim.com. Please direct any written communications to my office at 25251 Northline Road, PO Box 10, Taylor MI, 48180 with the subject heading *2023 WRRF Clean Water State Revolving Fund (CWSRF)*.

Very truly yours,

Wade Trim Associates, Inc.



Tyler Davidek, PE
Engineer

TD:lf
HZN 2005-01T
20220218_Medicine -Ltr.docx
Attachements

Wade Trim Associates, Inc.
25251 Northline Road • Taylor, MI 48180
734.947.9700 • www.wadetrim.com

February 18, 2022

Hannahville Potawatomi Indian Community
N-14911 Hannahville B-1 Road
Wilson, MI 49896

Attention: Mr. Earl Meshigaud

Re: Notice and Opportunity to Comment
GLWA WRRF 2022 State Revolving Fund Projects' Application
Great Lakes Water Authority

Dear Mr. Meshigaud:

Wade Trim Associates, working on behalf of Great Lakes Water Authority (GLWA), is preparing a Clean Water Revolving Fund (CWRF) Project Plan with the intent to apply for State Revolving Fund (SRF) funding of the following four projects located at the GLWA Wastewater Resource Recovery Facility (WRRF), 9300 W Jefferson Ave, Detroit, MI 48209: Rehabilitation of Pump Station 1 (PS-1) Improvements, Pump Station 2 (PS-2) Bar Rack Replacements and Grit Collection System Improvements, Rehabilitation of the Screened Final Effluent (SFE) Pump Station, and Aeration Decks 1-2 Modification. This application is intended to secure low interest loan funding through the Michigan Department of Environment, Great Lakes, and Energy (MI-EGLE) CWRF, with distribution starting in fiscal year 2023.

This notice and opportunity to comment is being sent to you to fulfill the consultation requirement of Section 106 of the National Historic Preservation Act review process. Should you have any comments on potential impacts to known areas of religious, historic, and/or cultural significance in the area of the proposed project, please provide them before the Public Hearing Meeting on May 25th, 2022. Any comments or concerns received will be included in the Final Project Plan.

The following are brief descriptions of the proposed projects:

The proposed work for the Rehabilitation of PS-1 Improvements consists of significant structural, mechanical, process, and electrical upgrades that will maintain the long-term reliability of this critical pumping facility at the headworks of the Water Resource Reclamation Facility (WRRF).

The proposed work for PS-2 Bar Rack Replacements and Grit Collection System Improvements consists of finer bar screens with enhanced capture, the possible addition of additional bar screens, improved screenings removal, improved grit removal, and a new grit processing facility to improve the reliability of the rack and grit systems.

The proposed work for the Rehabilitation of the SFE Pump Station consists of replacing the existing SFE pump station with a new SFE pump station that will add additional water treatment to significantly reduce the amount of city water required to operate the WRRF and to allow the facility to operate during any water supply interruptions.

The proposed work for the Aeration Decks 1-2 Modification Project consists of modifications to allow for step-feed, biological Phosphorous removal, and improved hydraulic control to accommodate swings in demand from wet weather conditions reducing recovery times and probability of in-plant violations.

Please see the attached maps for the specific location of the projects.

The complete draft project plan will be available to the public on April 22nd, 2022, on the **GLWA Website:** https://www.glwater.org/. If you require a bound printed copy, please contact me and we can arrange for a physical copy to be mailed.

If you have any questions on this request or need further information to complete a review of the proposed projects, please contact me at 734.947.9700 or at tdavidek@wadetrim.com. Please direct any written communications to my office at 25251 Northline Road, PO Box 10, Taylor MI, 48180 with the subject heading 2023 WRRF Clean Water State Revolving Fund (CWSRF).

Very truly yours,

Wade Trim Associates, Inc.

Tyler Davidek, PE
Engineer

TD:lf
HZN 2005-01T
20220218_Meshigaud-Ltr.docx
Attachments

Wade Trim Associates, Inc.
25251 Northline Road • Taylor, MI 48180
734.947.9700 • www.wadetrim.com

February 18, 2022

Little River Band of Ottawa Indians
2608 Government Center Drive
Manistee, MI 49660

Attention: Mr. Jay Sam
Director

Re: Notice and Opportunity to Comment
GLWA WRRF 2022 State Revolving Fund Projects' Application
Great Lakes Water Authority

Dear Mr. Sam:

Wade Trim Associates, working on behalf of Great Lakes Water Authority (GLWA), is preparing a Clean Water Revolving Fund (CWRF) Project Plan with the intent to apply for State Revolving Fund (SRF) funding of the following four projects located at the GLWA Wastewater Resource Recovery Facility (WRRF), 9300 W Jefferson Ave, Detroit, MI 48209: Rehabilitation of Pump Station 1 (PS-1) Improvements, Pump Station 2 (PS-2) Bar Rack Replacements and Grit Collection System Improvements, Rehabilitation of the Screened Final Effluent (SFE) Pump Station, and Aeration Decks 1-2 Modification. This application is intended to secure low interest loan funding through the Michigan Department of Environment, Great Lakes, and Energy (MI-EGLE) CWRF, with distribution starting in fiscal year 2023.

This notice and opportunity to comment is being sent to you to fulfill the consultation requirement of Section 106 of the National Historic Preservation Act review process. Should you have any comments on potential impacts to known areas of religious, historic, and/or cultural significance in the area of the proposed project, please provide them before the Public Hearing Meeting on May 25th, 2022. Any comments or concerns received will be included in the Final Project Plan.

The following are brief descriptions of the proposed projects:

The proposed work for the Rehabilitation of PS-1 Improvements consists of significant structural, mechanical, process, and electrical upgrades that will maintain the long-term reliability of this critical pumping facility at the headworks of the Water Resource Reclamation Facility (WRRF).

The proposed work for PS-2 Bar Rack Replacements and Grit Collection System Improvements consists of finer bar screens with enhanced capture, the possible addition of additional bar screens, improved screenings removal, improved grit removal, and a new grit processing facility to improve the reliability of the rack and grit systems.

The proposed work for the Rehabilitation of the SFE Pump Station consists of replacing the existing SFE pump station with a new SFE pump station that will add additional water treatment to significantly reduce the amount of city water required to operate the WRRF and to allow the facility to operate during any water supply interruptions.

The proposed work for the Aeration Decks 1-2 Modification Project consists of modifications to allow for step-feed, biological Phosphorous removal, and improved hydraulic control to accommodate swings in demand from wet weather conditions reducing recovery times and probability of in-plant violations.

Please see the attached maps for the specific location of the projects.

The complete draft project plan will be available to the public on April 22nd, 2022, on the **GLWA Website:** https://www.glwater.org/. If you require a bound printed copy, please contact me and we can arrange for a physical copy to be mailed.

If you have any questions on this request or need further information to complete a review of the proposed projects, please contact me at 734.947.9700 or at tdavidek@wadetrim.com. Please direct any written communications to my office at 25251 Northline Road, PO Box 10, Taylor MI, 48180 with the subject heading *2023 WRRF Clean Water State Revolving Fund (CWSRF)*.

Very truly yours,

Wade Trim Associates, Inc.

Tyler Davidek, PE
Engineer

TD:lf
HZN 2005-01T
20220218_Sam-Ltr.docx
Attachments

Wade Trim Associates, Inc.
25251 Northline Road • Taylor, MI 48180
734.947.9700 • www.wadetrim.com

February 18, 2022

Pokagon Band of Potawatomi
58620 Sink Road
Dowagiac, MI 49047

Attention: Mr. Marcus Winchester, THPO

Re: Notice and Opportunity to Comment
GLWA WRRF 2022 State Revolving Fund Projects' Application
Great Lakes Water Authority

Dear Mr. Winchester:

Wade Trim Associates, working on behalf of Great Lakes Water Authority (GLWA), is preparing a Clean Water Revolving Fund (CWRF) Project Plan with the intent to apply for State Revolving Fund (SRF) funding of the following four projects located at the GLWA Wastewater Resource Recovery Facility (WRRF), 9300 W Jefferson Ave, Detroit, MI 48209: Rehabilitation of Pump Station 1 (PS-1) Improvements, Pump Station 2 (PS-2) Bar Rack Replacements and Grit Collection System Improvements, Rehabilitation of the Screened Final Effluent (SFE) Pump Station, and Aeration Decks 1-2 Modification. This application is intended to secure low interest loan funding through the Michigan Department of Environment, Great Lakes, and Energy (MI-EGLE) CWRF, with distribution starting in fiscal year 2023.

This notice and opportunity to comment is being sent to you to fulfill the consultation requirement of Section 106 of the National Historic Preservation Act review process. Should you have any comments on potential impacts to known areas of religious, historic, and/or cultural significance in the area of the proposed project, please provide them before the Public Hearing Meeting on May 25th, 2022. Any comments or concerns received will be included in the Final Project Plan.

The following are brief descriptions of the proposed projects:

The proposed work for the Rehabilitation of PS-1 Improvements consists of significant structural, mechanical, process, and electrical upgrades that will maintain the long-term reliability of this critical pumping facility at the headworks of the Water Resource Reclamation Facility (WRRF).

The proposed work for PS-2 Bar Rack Replacements and Grit Collection System Improvements consists of finer bar screens with enhanced capture, the possible addition of additional bar screens, improved screenings removal, improved grit removal, and a new grit processing facility to improve the reliability of the rack and grit systems.

The proposed work for the Rehabilitation of the SFE Pump Station consists of replacing the existing SFE pump station with a new SFE pump station that will add additional water treatment to significantly reduce the amount of city water required to operate the WRRF and to allow the facility to operate during any water supply interruptions.

The proposed work for the Aeration Decks 1-2 Modification Project consists of modifications to allow for step-feed, biological Phosphorous removal, and improved hydraulic control to accommodate swings in demand from wet weather conditions reducing recovery times and probability of in-plant violations.

Please see the attached maps for the specific location of the projects.

The complete draft project plan will be available to the public on April 22nd, 2022, on the **GLWA Website:** https://www.glwater.org/. If you require a bound printed copy, please contact me and we can arrange for a physical copy to be mailed.

If you have any questions on this request or need further information to complete a review of the proposed projects, please contact me at 734.947.9700 or at tdavidek@wadetrim.com. Please direct any written communications to my office at 25251 Northline Road, PO Box 10, Taylor MI, 48180 with the subject heading *2023 WRRF Clean Water State Revolving Fund (CWSRF).*

Very truly yours,

Wade Trim Associates, Inc.

Tyler Davidek, PE
Engineer

TD:lf
HZN 2005-01T
20220218_Winchester-Ltr.docx
Attachments

Wade Trim Associates, Inc.
25251 Northline Road • Taylor, MI 48180
734.947.9700 • www.wadetrim.com

February 18, 2022

Grand Traverse Band of Ottawa and Chippewa Indians
2605 NW Bayshore Drive
Peshawbetown, MI 49682

Attention: Ms. Cindy Winslow

Re: Notice and Opportunity to Comment
GLWA WRRF 2022 State Revolving Fund Projects' Application
Great Lakes Water Authority

Dear Ms. Winslow:

Wade Trim Associates, working on behalf of Great Lakes Water Authority (GLWA), is preparing a Clean Water Revolving Fund (CWRF) Project Plan with the intent to apply for State Revolving Fund (SRF) funding of the following four projects located at the GLWA Wastewater Resource Recovery Facility (WRRF), 9300 W Jefferson Ave, Detroit, MI 48209: Rehabilitation of Pump Station 1 (PS-1) Improvements, Pump Station 2 (PS-2) Bar Rack Replacements and Grit Collection System Improvements, Rehabilitation of the Screened Final Effluent (SFE) Pump Station, and Aeration Decks 1-2 Modification. This application is intended to secure low interest loan funding through the Michigan Department of Environment, Great Lakes, and Energy (MI-EGLE) CWRF, with distribution starting in fiscal year 2023.

This notice and opportunity to comment is being sent to you to fulfill the consultation requirement of Section 106 of the National Historic Preservation Act review process. Should you have any comments on potential impacts to known areas of religious, historic, and/or cultural significance in the area of the proposed project, please provide them before the Public Hearing Meeting on May 25th, 2022. Any comments or concerns received will be included in the Final Project Plan.

The following are brief descriptions of the proposed projects:

The proposed work for the Rehabilitation of PS-1 Improvements consists of significant structural, mechanical, process, and electrical upgrades that will maintain the long-term reliability of this critical pumping facility at the headworks of the Water Resource Reclamation Facility (WRRF).

The proposed work for PS-2 Bar Rack Replacements and Grit Collection System Improvements consists of finer bar screens with enhanced capture, the possible addition of additional bar screens, improved screenings removal, improved grit removal, and a new grit processing facility to improve the reliability of the rack and grit systems.

The proposed work for the Rehabilitation of the SFE Pump Station consists of replacing the existing SFE pump station with a new SFE pump station that will add additional water treatment to significantly reduce the amount of city water required to operate the WRRF and to allow the facility to operate during any water supply interruptions.

The proposed work for the Aeration Decks 1-2 Modification Project consists of modifications to allow for step-feed, biological Phosphorous removal, and improved hydraulic control to accommodate swings in demand from wet weather conditions reducing recovery times and probability of in-plant violations.

Please see the attached maps for the specific location of the projects.

The complete draft project plan will be available to the public on April 22nd, 2022, on the **GLWA Website:** https://www.glwater.org/. If you require a bound printed copy, please contact me and we can arrange for a physical copy to be mailed.

If you have any questions on this request or need further information to complete a review of the proposed projects, please contact me at 734.947.9700 or at tdavidek@wadetrim.com. Please direct any written communications to my office at 25251 Northline Road, PO Box 10, Taylor MI, 48180 with the subject heading *2023 WRRF Clean Water State Revolving Fund (CWSRF).*

Very truly yours,

Wade Trim Associates, Inc.

Tyler Davidek, PE
Engineer

TD:lf
HZN 2005-01T
20220218_Winslow-Ltr.docx
Attachments

Wade Trim Associates, Inc.
25251 Northline Road • Taylor, MI 48180
734.947.9700 • www.wadetrim.com

February 18, 2022

Nottawaseppi Band of Huron Potawatomi
1485 Mno-Bmadzewen Way
Fulton, MI 49052

Attention: Mon-ee Zapata
Cultural Specialist

Re: Notice and Opportunity to Comment
GLWA WRRF 2022 State Revolving Fund Projects' Application
Great Lakes Water Authority

Dear Mon-ee Zapata:

Wade Trim Associates, working on behalf of Great Lakes Water Authority (GLWA), is preparing a Clean Water Revolving Fund (CWRF) Project Plan with the intent to apply for State Revolving Fund (SRF) funding of the following four projects located at the GLWA Wastewater Resource Recovery Facility (WRRF), 9300 W Jefferson Ave, Detroit, MI 48209: Rehabilitation of Pump Station 1 (PS-1) Improvements, Pump Station 2 (PS-2) Bar Rack Replacements and Grit Collection System Improvements, Rehabilitation of the Screened Final Effluent (SFE) Pump Station, and Aeration Decks 1-2 Modification. This application is intended to secure low interest loan funding through the Michigan Department of Environment, Great Lakes, and Energy (MI-EGLE) CWRF, with distribution starting in fiscal year 2023.

This notice and opportunity to comment is being sent to you to fulfill the consultation requirement of Section 106 of the National Historic Preservation Act review process. Should you have any comments on potential impacts to known areas of religious, historic, and/or cultural significance in the area of the proposed project, please provide them before the Public Hearing Meeting on May 25th, 2022. Any comments or concerns received will be included in the Final Project Plan.

The following are brief descriptions of the proposed projects:

The proposed work for the Rehabilitation of PS-1 Improvements consists of significant structural, mechanical, process, and electrical upgrades that will maintain the long-term reliability of this critical pumping facility at the headworks of the Water Resource Reclamation Facility (WRRF).

The proposed work for PS-2 Bar Rack Replacements and Grit Collection System Improvements consists of finer bar screens with enhanced capture, the possible addition of additional bar screens, improved screenings removal, improved grit removal, and a new grit processing facility to improve the reliability of the rack and grit systems.

The proposed work for the Rehabilitation of the SFE Pump Station consists of replacing the existing SFE pump station with a new SFE pump station that will add additional water treatment to significantly reduce the amount of city water required to operate the WRRF and to allow the facility to operate during any water supply interruptions.

The proposed work for the Aeration Decks 1-2 Modification Project consists of modifications to allow for step-feed, biological Phosphorous removal, and improved hydraulic control to accommodate swings in demand from wet weather conditions reducing recovery times and probability of in-plant violations.

Please see the attached maps for the specific location of the projects.

The complete draft project plan will be available to the public on April 22nd, 2022, on the **GLWA Website:** https://www.glwater.org/. If you require a bound printed copy, please contact me and we can arrange for a physical copy to be mailed.

If you have any questions on this request or need further information to complete a review of the proposed projects, please contact me at 734.947.9700 or at tdavidek@wadetrim.com. Please direct any written communications to my office at 25251 Northline Road, PO Box 10, Taylor MI, 48180 with the subject heading *2023 WRRF Clean Water State Revolving Fund (CWSRF)*.

Very truly yours,

Wade Trim Associates, Inc.

Tyler Davidek, PE
Engineer

TD:lf
HZN 2005-01T
20220218_Zapata-Ltr.docx
Attachments

Davidek, Tyler

From: Davidek, Tyler
Sent: Friday, February 18, 2022 5:47 PM
To: cindy.winslow@gtb.nsn.us
Cc: Delia, David; Ware, Alexander
Subject: GLWA Draft Project Plan - Request to Review
Attachments: 20220218_Winslow-Ltr.pdf

Hello Ms. Winslow,

I work for an engineering firm called Wade Trim and we are currently putting together a Clean Water Revolving Fund Project Plan on behalf of Great Lakes Water Authority. As part of this Project Plan, all THPOs that may have historic, cultural, and/or religious areas close to the project site are sent a request to review and return any comments and/or concerns.

I have attached a letter to this email that has also been sent to you by standard mail. The letter contains brief descriptions of the projects as well as a map of the locations of the projects. A full Draft Project Plan will be available to the public on April 22nd for your review.

We ask that all comments and/or concerns be returned to us on or before May 25th. This is the date of the public hearing for the Draft Project Plan, and we would like to get all comments and concerns addressed by this date. If there are any major concerns that arise during your review, please contact me as soon as possible so that we can work out a plan for working around any specific requirements that there may be.

If you have any questions or need more information for your review, please feel free to contact me by email or phone.

Thank you,

Tyler

WADE TRIM

Tyler Davidek, P.E., Professional Engineer
25251 Northline Road, Taylor, MI 48180
734.947.2667 office
810.360.9729 cell

Davidek, Tyler

From: Davidek, Tyler
Sent: Friday, February 18, 2022 6:02 PM
To: cmedicine@saulttribe.net
Subject: GLWA Project Plan - Request to Review
Attachments: 20220218_Medicine-Ltr.pdf

Hello Ms. Medicine,

I work for an engineering firm called Wade Trim and we are currently putting together a Clean Water Revolving Fund Project Plan on behalf of Great Lakes Water Authority. As part of this Project Plan, all THPOs that may have historic, cultural, and/or religious areas close to the project site are sent a request to review and return any comments and/or concerns.

I have attached a letter to this email that has also been sent to you by standard mail. The letter contains brief descriptions of the projects as well as a map of the locations of the projects. A full Draft Project Plan will be available to the public on April 22nd for your review.

We ask that all comments and/or concerns be returned to us on or before May 25th. This is the date of the public hearing for the Draft Project Plan, and we would like to get all comments and concerns addressed by this date. If there are any major concerns that arise during your review, please contact me as soon as possible so that we can work out a plan for working around any specific requirements that there may be.

If you have any questions or need more information for your review, please feel free to contact me by email or phone.

Thank you,

Tyler

WADE TRIM

Tyler Davidek, P.E., Professional Engineer
25251 Northline Road, Taylor, MI 48180
734.947.2667 office
810.360.9729 cell

Davidek, Tyler

From: Davidek, Tyler
Sent: Friday, February 18, 2022 6:01 PM
To: wjohnson@sagchip.org
Subject: GLWA Project Plan - Request to Review
Attachments: 20220218_Johnson-Ltr.pdf

Hello Mr. Johnson,

I work for an engineering firm called Wade Trim and we are currently putting together a Clean Water Revolving Fund Project Plan on behalf of Great Lakes Water Authority. As part of this Project Plan, all THPOs that may have historic, cultural, and/or religious areas close to the project site are sent a request to review and return any comments and/or concerns.

I have attached a letter to this email that has also been sent to you by standard mail. The letter contains brief descriptions of the projects as well as a map of the locations of the projects. A full Draft Project Plan will be available to the public on April 22nd for your review.

We ask that all comments and/or concerns be returned to us on or before May 25th. This is the date of the public hearing for the Draft Project Plan, and we would like to get all comments and concerns addressed by this date. If there are any major concerns that arise during your review, please contact me as soon as possible so that we can work out a plan for working around any specific requirements that there may be.

If you have any questions or need more information for your review, please feel free to contact me by email or phone.

Thank you,

Tyler

WADE TRIM

Tyler Davidek, P.E., Professional Engineer
25251 Northline Road, Taylor, MI 48180
734.947.2667 office
810.360.9729 cell

Davidek, Tyler

From: Davidek, Tyler
Sent: Friday, February 18, 2022 5:59 PM
To: marcus.winchester@pokogonband-nsn.gov
Subject: GLWA Project Plan - Request to Review
Attachments: 20220218_Winchester-Ltr.pdf

Hello Mr. Winchester,

I work for an engineering firm called Wade Trim and we are currently putting together a Clean Water Revolving Fund Project Plan on behalf of Great Lakes Water Authority. As part of this Project Plan, all THPOs that may have historic, cultural, and/or religious areas close to the project site are sent a request to review and return any comments and/or concerns.

I have attached a letter to this email that has also been sent to you by standard mail. The letter contains brief descriptions of the projects as well as a map of the locations of the projects. A full Draft Project Plan will be available to the public on April 22nd for your review.

We ask that all comments and/or concerns be returned to us on or before May 25th. This is the date of the public hearing for the Draft Project Plan, and we would like to get all comments and concerns addressed by this date. If there are any major concerns that arise during your review, please contact me as soon as possible so that we can work out a plan for working around any specific requirements that there may be.

If you have any questions or need more information for your review, please feel free to contact me by email or phone.

Thank you,

Tyler

WADE TRIM

Tyler Davidek, P.E., Professional Engineer
25251 Northline Road, Taylor, MI 48180
734.947.2667 office
810.360.9729 cell

Davidek, Tyler

From: Davidek, Tyler
Sent: Friday, February 18, 2022 5:58 PM
To: mzapata@nhbpi.com
Subject: GLWA Project Plan - Request to Review
Attachments: 20220218_Zapata-Ltr.pdf

Hello,

I work for an engineering firm called Wade Trim and we are currently putting together a Clean Water Revolving Fund Project Plan on behalf of Great Lakes Water Authority. As part of this Project Plan, all THPOs that may have historic, cultural, and/or religious areas close to the project site are sent a request to review and return any comments and/or concerns.

I have attached a letter to this email that has also been sent to you by standard mail. The letter contains brief descriptions of the projects as well as a map of the locations of the projects. A full Draft Project Plan will be available to the public on April 22nd for your review.

We ask that all comments and/or concerns be returned to us on or before May 25th. This is the date of the public hearing for the Draft Project Plan, and we would like to get all comments and concerns addressed by this date. If there are any major concerns that arise during your review, please contact me as soon as possible so that we can work out a plan for working around any specific requirements that there may be.

If you have any questions or need more information for your review, please feel free to contact me by email or phone.

Thank you,

Tyler

WADE TRIM

Tyler Davidek, P.E., Professional Engineer
25251 Northline Road, Taylor, MI 48180
734.947.2667 office
810.360.9729 cell

Davidek, Tyler

From: Davidek, Tyler
Sent: Friday, February 18, 2022 5:56 PM
To: heather.bush@glt-nsn.gov
Cc: Delia, David; Ware, Alexander
Subject: GLWA Project Plan - Request to Review
Attachments: 20220218_Bush-Ltr.pdf

Hello Ms. Bush,

I work for an engineering firm called Wade Trim and we are currently putting together a Clean Water Revolving Fund Project Plan on behalf of Great Lakes Water Authority. As part of this Project Plan, all THPOs that may have historic, cultural, and/or religious areas close to the project site are sent a request to review and return any comments and/or concerns.

I have attached a letter to this email that has also been sent to you by standard mail. The letter contains brief descriptions of the projects as well as a map of the locations of the projects. A full Draft Project Plan will be available to the public on April 22nd for your review.

We ask that all comments and/or concerns be returned to us on or before May 25th. This is the date of the public hearing for the Draft Project Plan, and we would like to get all comments and concerns addressed by this date. If there are any major concerns that arise during your review, please contact me as soon as possible so that we can work out a plan for working around any specific requirements that there may be.

If you have any questions or need more information for your review, please feel free to contact me by email or phone.

Thank you,

Tyler

WADE TRIM

Tyler Davidek, P.E., Professional Engineer
25251 Northline Road, Taylor, MI 48180
734.947.2667 office
810.360.9729 cell

Davidek, Tyler

From: Davidek, Tyler
Sent: Friday, February 18, 2022 5:54 PM
To: jsam@lrboi-nsn.gov
Cc: Delia, David; Ware, Alexander
Subject: GLWA Project Plan - Request to Review
Attachments: 20220218_Sam-Ltr.pdf

Hello Mr. Sam,

I work for an engineering firm called Wade Trim and we are currently putting together a Clean Water Revolving Fund Project Plan on behalf of Great Lakes Water Authority. As part of this Project Plan, all THPOs that may have historic, cultural, and/or religious areas close to the project site are sent a request to review and return any comments and/or concerns.

I have attached a letter to this email that has also been sent to you by standard mail. The letter contains brief descriptions of the projects as well as a map of the locations of the projects. A full Draft Project Plan will be available to the public on April 22nd for your review.

We ask that all comments and/or concerns be returned to us on or before May 25th. This is the date of the public hearing for the Draft Project Plan, and we would like to get all comments and concerns addressed by this date. If there are any major concerns that arise during your review, please contact me as soon as possible so that we can work out a plan for working around any specific requirements that there may be.

If you have any questions or need more information for your review, please feel free to contact me by email or phone.

Thank you,

Tyler

WADE TRIM

Tyler Davidek, P.E., Professional Engineer
25251 Northline Road, Taylor, MI 48180
734.947.2667 office
810.360.9729 cell

Davidek, Tyler

From: Davidek, Tyler
Sent: Friday, February 18, 2022 5:53 PM
To: gmartin@lvdtribal.com
Cc: Delia, David; Ware, Alexander
Subject: GLWA Project Plan - Request to Review
Attachments: 20220218_Martin-Ltr.pdf

Hello,

I work for an engineering firm called Wade Trim and we are currently putting together a Clean Water Revolving Fund Project Plan on behalf of Great Lakes Water Authority. As part of this Project Plan, all THPOs that may have historic, cultural, and/or religious areas close to the project site are sent a request to review and return any comments and/or concerns.

I have attached a letter to this email that has also been sent to you by standard mail. The letter contains brief descriptions of the projects as well as a map of the locations of the projects. A full Draft Project Plan will be available to the public on April 22nd for your review.

We ask that all comments and/or concerns be returned to us on or before May 25th. This is the date of the public hearing for the Draft Project Plan, and we would like to get all comments and concerns addressed by this date. If there are any major concerns that arise during your review, please contact me as soon as possible so that we can work out a plan for working around any specific requirements that there may be.

If you have any questions or need more information for your review, please feel free to contact me by email or phone.

Thank you,

Tyler

WADE TRIM

Tyler Davidek, P.E., Professional Engineer
25251 Northline Road, Taylor, MI 48180
734.947.2667 office
810.360.9729 cell

Davidek, Tyler

From: Davidek, Tyler
Sent: Friday, February 18, 2022 5:51 PM
To: gloonsfoot@kbic-nsn.gov
Cc: Delia, David; Ware, Alexander
Subject: GLWA Project Plan - Request to Review
Attachments: 20220218_Loonsfoot-Ltr.pdf

Hello Mr. Loonsfoot,

I work for an engineering firm called Wade Trim and we are currently putting together a Clean Water Revolving Fund Project Plan on behalf of Great Lakes Water Authority. As part of this Project Plan, all THPOs that may have historic, cultural, and/or religious areas close to the project site are sent a request to review and return any comments and/or concerns.

I have attached a letter to this email that has also been sent to you by standard mail. The letter contains brief descriptions of the projects as well as a map of the locations of the projects. A full Draft Project Plan will be available to the public on April 22nd for your review.

We ask that all comments and/or concerns be returned to us on or before May 25th. This is the date of the public hearing for the Draft Project Plan, and we would like to get all comments and concerns addressed by this date. If there are any major concerns that arise during your review, please contact me as soon as possible so that we can work out a plan for working around any specific requirements that there may be.

If you have any questions or need more information for your review, please feel free to contact me by email or phone.

Thank you,

Tyler

WADE TRIM

Tyler Davidek, P.E., Professional Engineer
25251 Northline Road, Taylor, MI 48180
734.947.2667 office
810.360.9729 cell

Davidek, Tyler

From: Davidek, Tyler
Sent: Friday, February 18, 2022 5:50 PM
To: earlmeshigaud@hannahville.org
Cc: Delia, David; Ware, Alexander
Subject: GLWA Project Plan - Request to Review
Attachments: 20220218_Meshigaud-Ltr.pdf

Hello Mr. Meshigaud,

I work for an engineering firm called Wade Trim and we are currently putting together a Clean Water Revolving Fund Project Plan on behalf of Great Lakes Water Authority. As part of this Project Plan, all THPOs that may have historic, cultural, and/or religious areas close to the project site are sent a request to review and return any comments and/or concerns.

I have attached a letter to this email that has also been sent to you by standard mail. The letter contains brief descriptions of the projects as well as a map of the locations of the projects. A full Draft Project Plan will be available to the public on April 22nd for your review.

We ask that all comments and/or concerns be returned to us on or before May 25th. This is the date of the public hearing for the Draft Project Plan, and we would like to get all comments and concerns addressed by this date. If there are any major concerns that arise during your review, please contact me as soon as possible so that we can work out a plan for working around any specific requirements that there may be.

If you have any questions or need more information for your review, please feel free to contact me by email or phone.

Thank you,

Tyler

WADE TRIM

Tyler Davidek, P.E., Professional Engineer
25251 Northline Road, Taylor, MI 48180
734.947.2667 office
810.360.9729 cell

Davidek, Tyler

From: Davidek, Tyler
Sent: Friday, February 18, 2022 6:04 PM
To: wandrews@ltbbodawa-nsn.gov
Subject: GLWA Project Plan - Request to Review
Attachments: 20220218_Andrews-Ltr.pdf

Hello Mr. Andrews,

I work for an engineering firm called Wade Trim and we are currently putting together a Clean Water Revolving Fund Project Plan on behalf of Great Lakes Water Authority. As part of this Project Plan, all THPOs that may have historic, cultural, and/or religious areas close to the project site are sent a request to review and return any comments and/or concerns.

I have attached a letter to this email that has also been sent to you by standard mail. The letter contains brief descriptions of the projects as well as a map of the locations of the projects. A full Draft Project Plan will be available to the public on April 22nd for your review.

We ask that all comments and/or concerns be returned to us on or before May 25th. This is the date of the public hearing for the Draft Project Plan, and we would like to get all comments and concerns addressed by this date. If there are any major concerns that arise while you review, please let me know as soon as possible so we can work around any requests.

If you have any questions or need more information for your review, please feel free to contact me by email or phone.

Thank you,

Tyler

WADE TRIM

Tyler Davidek, P.E., Professional Engineer
25251 Northline Road, Taylor, MI 48180
734.947.2667 office
810.360.9729 cell

Davidek, Tyler

From: Davidek, Tyler
Sent: Friday, February 18, 2022 5:44 PM
To: paulacarrick@baymills.org
Cc: Delia, David; Ware, Alexander
Subject: GLWA Project Plan Review Request
Attachments: 20220218_Carrick-Ltr.pdf

Hello Ms. Carrick,

I work for an engineering firm called Wade Trim and we are currently putting together a Clean Water Revolving Fund Project Plan on behalf of Great Lakes Water Authority. As part of this Project Plan, all THPOs that may have historic, cultural, and/or religious areas close to the project site are sent a request to review and return any comments and/or concerns.

I have attached a letter to this email that has also been sent to you by standard mail. The letter contains brief descriptions of the projects as well as a map of the locations of the projects. A full Draft Project Plan will be available to the public on April 22nd for your review.

We ask that all comments and/or concerns be returned to us on or before May 25th. This is the date of the public hearing for the Draft Project Plan, and we would like to get all comments and concerns addressed by this date. If there are any major concerns that arise during your review, please contact me as soon as possible so that we can work out a plan for working around any specific requirements that there may be.

If you have any questions or need more information for your review, please feel free to contact me by email or phone.

Thank you,

Tyler

WADE TRIM

Tyler Davidek, P.E., Professional Engineer
25251 Northline Road, Taylor, MI 48180
734.947.2667 office
810.360.9729 cell

State Historic Preservation Office Correspondence

TO BE ADDED IN FINAL PROJECT PLAN

Appendix H.
Cost Estimates and Present Worth (Lifecycle Cost) Calculations

Pump Station 2 MV Switchgear and VFD Project Cost Estimate

CAPITAL ESTIMATE – MEDIUM VOLTAGE SWITCHGEAR AND VFD REPLACEMENT

		GLWA - SWITCHGEAR AND VFDS			
		Man-Hours	**Mat'l/Equip**	**Labor**	**Total Cost**
Construction Direct Costs					
Demolition		1,983	$ 20,000	$ 134,000	$ 154,000
Civil/Sitework		1,708	$ 135,000	$ 105,000	$ 240,000
Mechanical		960	$ 275,000	$ 78,000	$ 353,000
Structural		0	$ -	$ -	$ -
Architectural		0	$ -	$ -	$ -
Electrical and I&C		5,229	$ 6,144,000	$ 414,000	$ 6,558,000
Subtotal Construction Direct Costs		9,880	$ 6,574,000	$ 731,000	$ 7,305,000
Construction Indirect Costs					
Contractor Site Supervision		0	$ -	$ 312,000	$ 312,000
General Conditions		2,594	$ 172,000	$ 250,000	$ 422,000
General Admin & Profit	15%				$ 1,206,000
Subtotal Construction Indirects		2,594	$ 172,000	$ 562,000	$ 1,940,000
Total Construction Cost		**12,474**	**$ 6,746,000**	**$ 1,293,000**	**$ 9,245,000**
Design Engineering					**$ 621,000**
Project Management (Engineering)					**$ 73,000**
Escalation (Mat'l 0%, Labor 0%)			$ -	$ -	**$** -
Owners Cost	0%				**$** -
Contingency	20%				**$ 1,988,000**
TOTAL CAPITAL COST					**$ 11,927,000**

Appendix I.
Public Participation

GLWA CWRF 2024 Project Plan Summary

TO BE ADDED IN FINAL PROJECT PLAN

GLWA CWRF 2024 Project Plan
Public Hearing Transcript

TO BE ADDED IN FINAL PROJECT PLAN

GLWA CWRF 2024 Project Plan
Public Hearing List of Questions

TO BE ADDED IN FINAL PROJECT PLAN

GLWA CWRF 2024 Project Plan
Direct Mailing List

TO BE ADDED IN FINAL PROJECT PLAN

Appendix J.
Board Resolution

Executed Board Resolution

TO BE ADDED IN FINAL PROJECT PLAN