



Resiliency Team Progress
GLWA Board Of Directors
February 28, 2024 | Navid Mehram, P.E.

Exceptional System Performance During the January 23 - February 2, 2024, Rain Event

From January 23 to February 2, 2024, the tributary area experienced a series of rain showers and warmer temperatures that generated snow melt. The system received a total volume of approximately 15 billion gallons (BG). 9.8 BG received secondary treatment. The Water Resource Recovery Facility (WRRF) discharged 3.2 BG of partially treated effluent and the CSO basins discharged 1.9 BG. At 11 days, this was the longest-duration wet weather event since a 14-day event in 2019. **Because of Great Lakes Water Authority (GLWA) team members' hard work, GLWA assets experienced no interruptions during the event.**

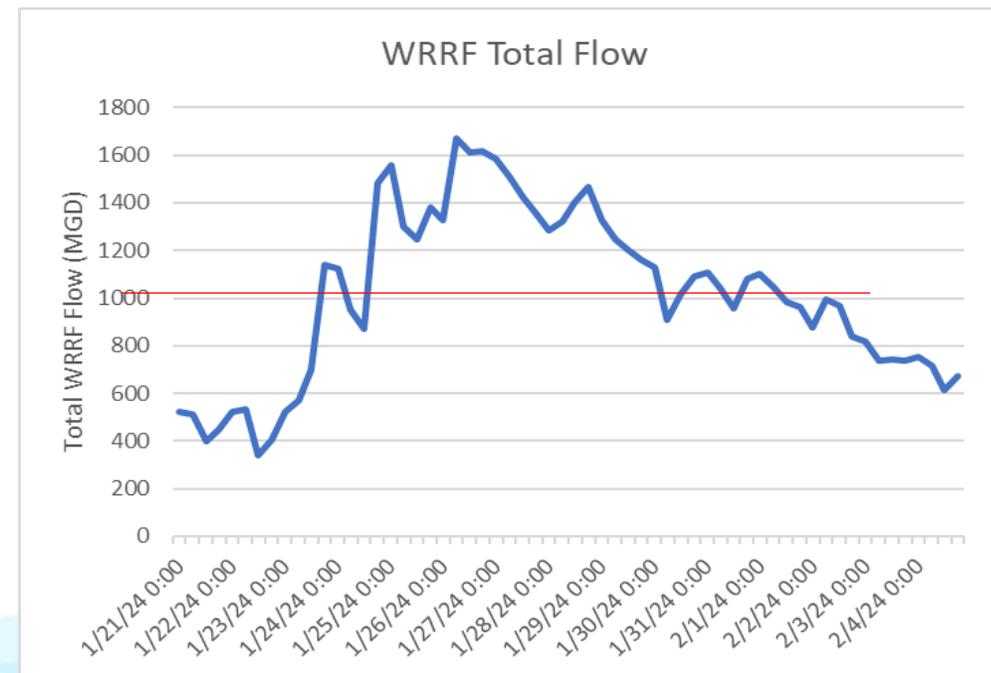
GLWA System Wet Weather Comparable to Olympic Pool

Olympic Pool

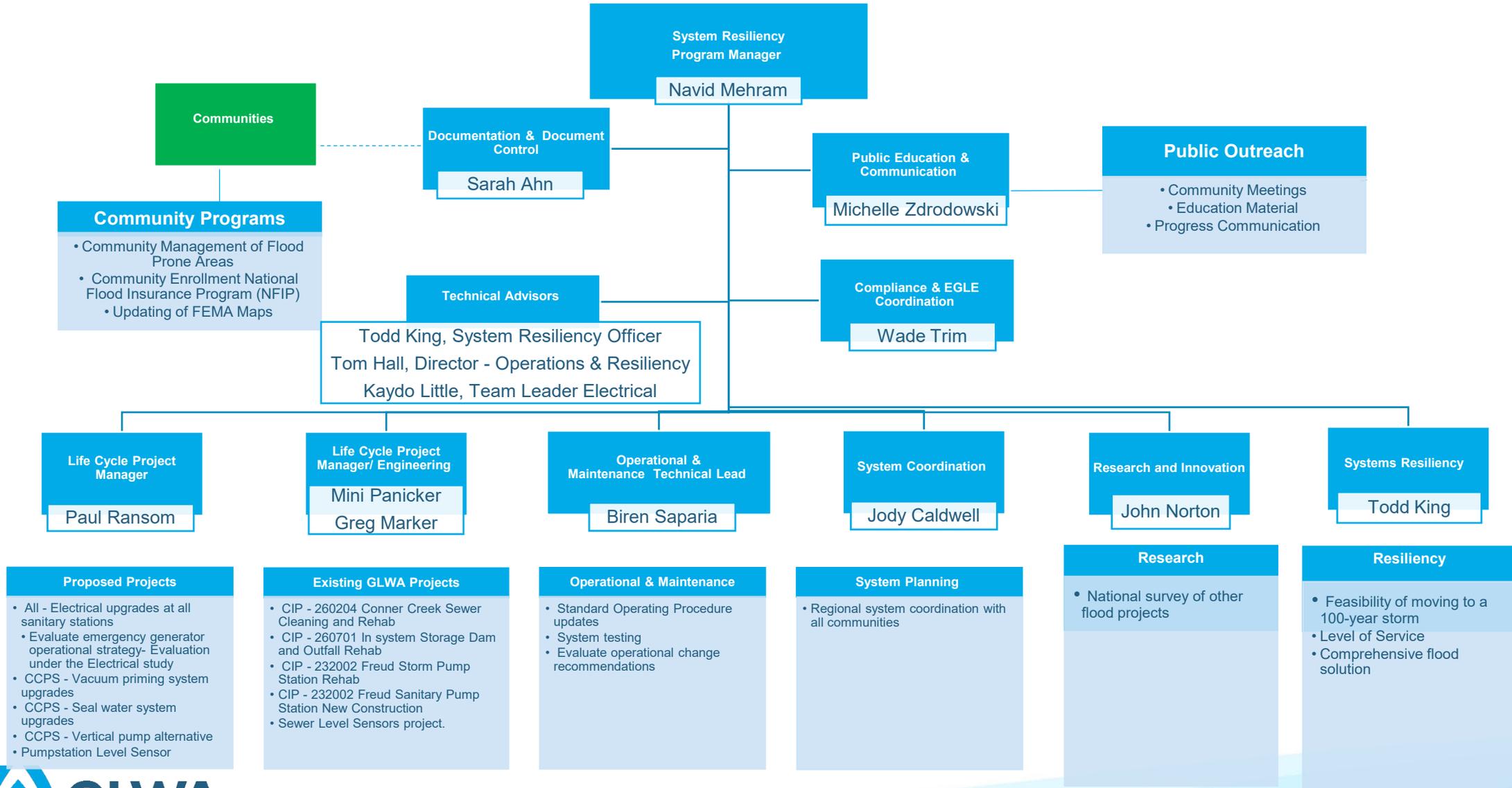
- Total volume of 660,000 gallons
- The WRRF treated 9.8 BG over the 7-day period equivalent to 14,850 Olympic pools.
- The entire GLWA sewer system conveyed over 15 BG over the 7-day period equivalent to filling 22,720 Olympic pools.



MG = million gallon
BG = billion gallon



Resiliency Delivery Team



Executive Summary - Short Term Measures

Project Milestone	Project Status			Notes
	Not Started	In Progress	Completed	
Short Term Measures				
General Recommendation				
Pump availability during storm events.				GLWA has continued to monitor the system closely to ensure no more than 1 pump out of service at each station.
Pump Stations				
Testing of the Vacuum Priming System.				
Pump sequence testing.				
Operational documentation and communication.				This effort is ongoing, several SOP's have been reviewed with some minor modifications.
Electric Equipment				
Power conversion from Public Lighting Department (PLD) to DTE.				
Back up generator measures.				This measure is being evaluated as part of the larger electrical resiliency project anticipated to be completed June 2024.
Confirm that the power supply for each DTE can support the entire station.				This review is incorporated in the larger electrical resiliency project.
Mechanical Equipment				
Conner Pumpstation Seal Water System.				Bids received, working on award.
Vacuum Priming System upgrade.				Documents are in preparation for advertisement.

Executive Summary - Medium Term Measures

Project Milestone	Project Status			Notes
	Not Started	In Progress	Completed	
Medium Term Measures				
General Recommendation				
Prioritization of the Wastewater Capital Improvement Planning (CIP) projects.			Completed	Complete/Ongoing.
Evaluation of future rainfall beyond the Atlas 14.				This task will be captured within Water Resource Development Act with USACE.
Take into consideration other climate change factors into the design.	Not Started			This task will be captured within Water Resource Development Act with USACE.
Pumpstation				
Continue with the Freud Pump Station projects.		In Progress		In progress/contract awarded.
Electical Equipment				
Upsize the transformers at each facility to run the entire facility.		In Progress		This review is incorporated in the larger electrical resiliency project anticipated to be completed June 2024.
Electrical reliability study for Freud and Conner Pump Stations.		In Progress		
Mechanical Equipment				
Complete other scenarios as proposed through the Clemson Engineering scale model.			Completed	
Review the idea of vertical pumps for the Conner Storm Station.			Completed	
Operational Measures				
Inspection and monitor the Intake Flow Conditioning (IFC) in both the Conner and Freud Pump Stations.	Not Started			This item is pending the improvements to Freud and Conner Pump Stations.
Review of previous studies.		In Progress		GLWA continues to review prior studies as new projects progress.
Studies				
Level of service.	Not Started			This task will be captured within Water Resource Development Act with USACE.
Dynamic System Operations Study	Not Started			This task will be captured within Water Resource Development Act with USACE.
Stormwater/Wastewater Master Plan	Not Started			This task will be captured within Water Resource Development Act with USACE.

Executive Summary - Long Term Measures

Project Milestone	Project Status			Notes
	Not Started	In Progress	Completed	
Long Term Measures				
General Recommendation				
Feasibility of moving to a 100-year storm.				This task will be captured within Water Resource Development Act with US Army Corps of Engineers (USACE).
Local government program for voluntary purchase of flood prone areas.				
Local government public outreach campaign for flood risk and purchasing flood insurance.				
National research of other large-scale flood reduction projects.				GLWA began communication with other utilities in the US alternative approach, the survey is being considered.
Pump Stations				
Medium-term solutions are not successful.				The project team has incorporated this into the Conner Storm project schedule.
Further automation of the pumping stations.				Steps are being taken toward this effort. An example includes the seal water system for Conner.
Regional System Coordination				
Review of the member partners' optional strategy to find alternative operations.				GLWA has started discussion around the Regional Operational Plan. Additionally, GLWA is coordinating with member partners during major storm events.
Local government engagement in the National Flood Insurance Program (NFIP).				
Local government should consider updating the flood maps.				
GLWA community outreach.				Regular cadence has been established.
Community flood collection data to provide guidance into modeling validation.				Some communities have developed processes to track flooding information.

2301499 – Sewage Pump Stations Power Reliability Study

Thorough study/analysis of the existing reliability of the power systems for each pumping station.

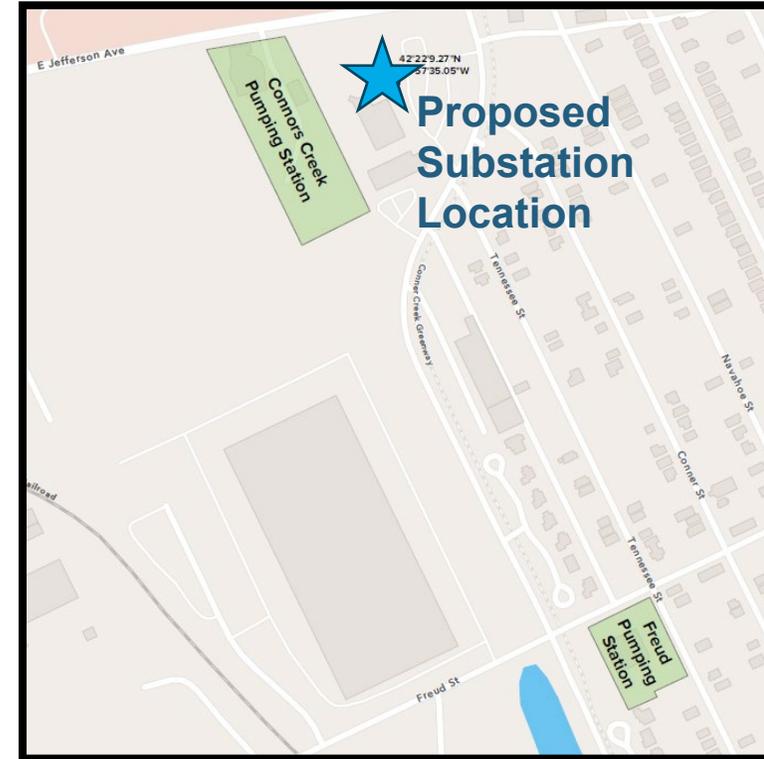
- Power systems include utility feed(s), transformers, switchgear, generators, motors, and everything else in between.
- Utilize data to understand possible system weaknesses and to develop strategies to enhance reliability/resiliency in those areas.

Field investigation for the 9 pump stations have been completed.

- Workshop #1 was held on 09/22/23.
 - Field Investigation
 - Methodology
 - Preliminary Data Findings
- Workshop #2 was held on 11/28/23.
 - Discuss the Draft Technical Memo for Conner Creek pump station.
 - This memo will be used as a standard for the remaining pump station's memos.
- Workshop #3 is scheduled for 03/30/24.
 - Freud
 - Fairview
 - Blue Hill
 - Northeast
- Workshop #4 is scheduled for 05/01/24.
 - Belle Isle
 - Fischer
 - Oakwood
 - Woodmere
- Workshop #5 is scheduled for 05/29/24.
 - Final Technical Memos
 - Proposed Alternatives

Grant Opportunity to Support a Dedicated Microgrid for Critical Pump Station Resiliency

- To support study and design phase activities, **\$642,000** was requested for a project scoping grant from the Federal Emergency Management Agency's (FEMA) Building Resilient Infrastructure and Communities (BRIC) program.
- **Objective: Install a new dedicated substation** to increase the resiliency of power supply to Conner Creek and Freud Pump Stations and Conner Creek CSO.
- **Important step towards a full BRIC grant**, where a much larger award to fund construction is possible.
- **Spring 2024:** Anticipated date for award announcements.



- ★ Proposed Substation Location
- Benefiting Area



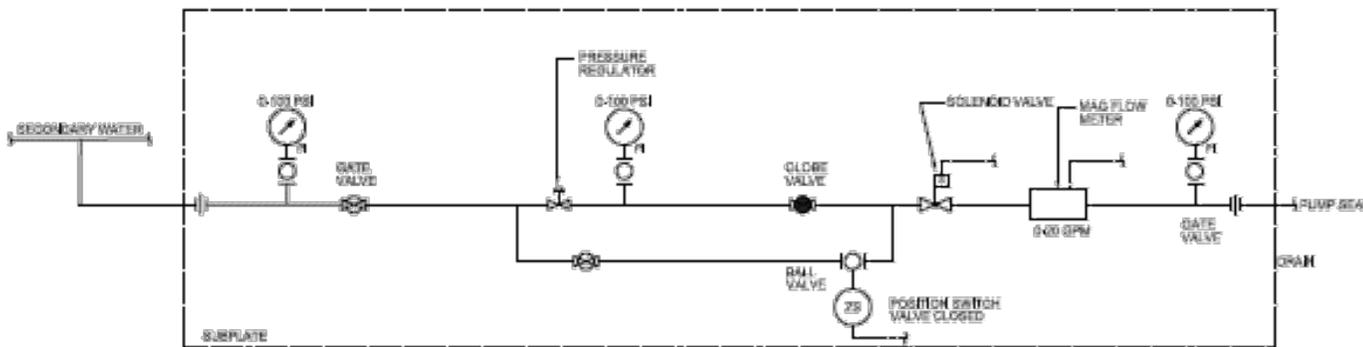
Conner Creek PS Seal Water and Vacuum System

2303832 – Pump Seal Water Improvements

- Upgrade Seal Water System to eliminate deficiencies and allow for further automation of the system.
- Project to be performed as a Job Order Contract.
- Notice to Proceed issued for 02/27/24.
- Substantial Completion of 08/25/24.
- Final Completion of 09/24/24.

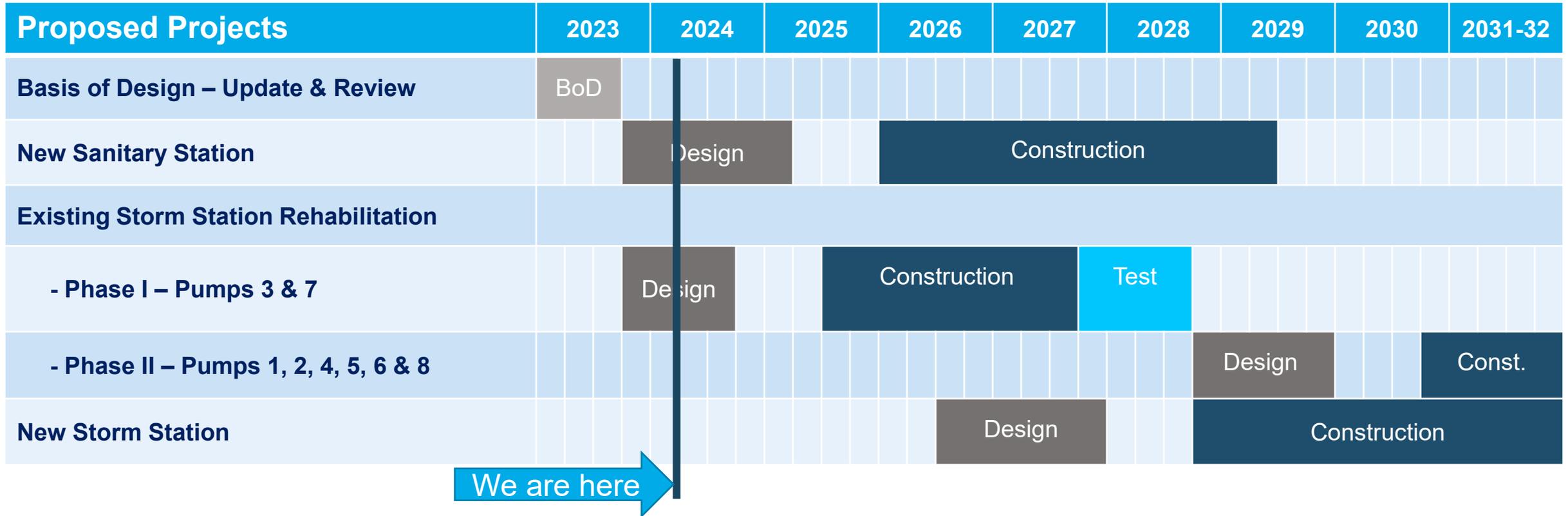
2304058 – Pump Vacuum Priming Level Switch Addition

- Add a water level sensor to the Vacuum Priming System to provide positive confirmation that the pump is primed.
- Project to be performed as a Job Order Contract.
- The team is finalizing the advertisement package.
 - Install sensor on one storm pump.
 - Test sensor to determine suitability and usefulness.
 - Install sensor on 7 remaining storm pumps following successful testing.



STORMWATER PUMP SEAL WATER
PANEL PFD DETAIL
NO SCALE

Conner Pump Station Design/Construction Road Map



- Revised Basis of Design – Critical Path
 - Workshops: May – July
 - Review: August – September

Conner Pump Station Pump Replacement Design

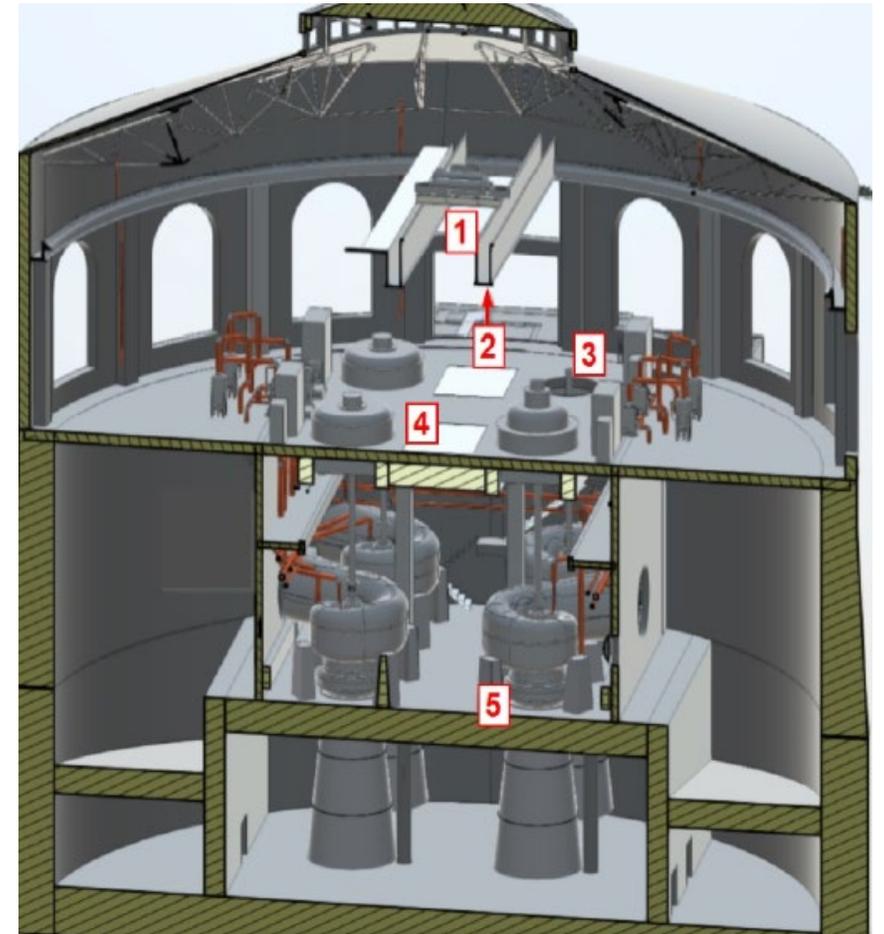
Design Memos

- 1 – Operating Conditions & Capacity
- 2 – Replacement Pump Control Description
- 3 – West Storm Wet Well Isolation Chamber
- 4 – East Wet Well Isolation Chamber
- 5 – Replacement Storm Pump
- 6 – Electrical Improvements
- 7 – Vacuum Priming System Modifications
- 8 – Storm Pump Intake Flow Conditioning
- 9 – Facilitation of Work in the Wet Well
- 10 – Replacement Pump Installation

60% design complete and Workshop to review design scheduled for 02/15/24.

90% design to be completed in May 2024.

100% design to be completed by June 2024.



Conner Pump Station Sanitary Station Design

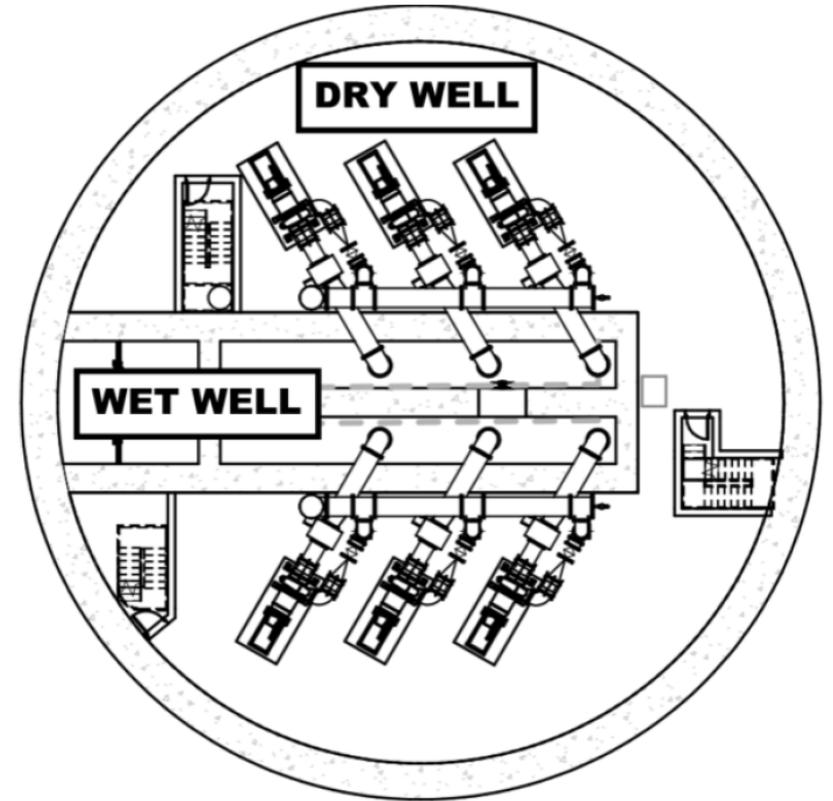
Design Memos

- 1 – Wet Well Configuration & Sanitary Pumps
- 2 – Zoning and Permit Requirements
- 3 – Cite Civil, Conveyance, & Access
- 4 – Building Requirements
- 5 – Electrical Improvements
- 6 – Operating Levels & Pump Control Description
- 7 – Decommissioning Existing Sanitary Pump Station

60% Design to be completed in August 2024.

90% Design to be completed in February 2025.

Final Design to be completed in May 2025.



2204605 - Freud SPS Improvement

Project was posted on Bonfire for solicitation of bids.

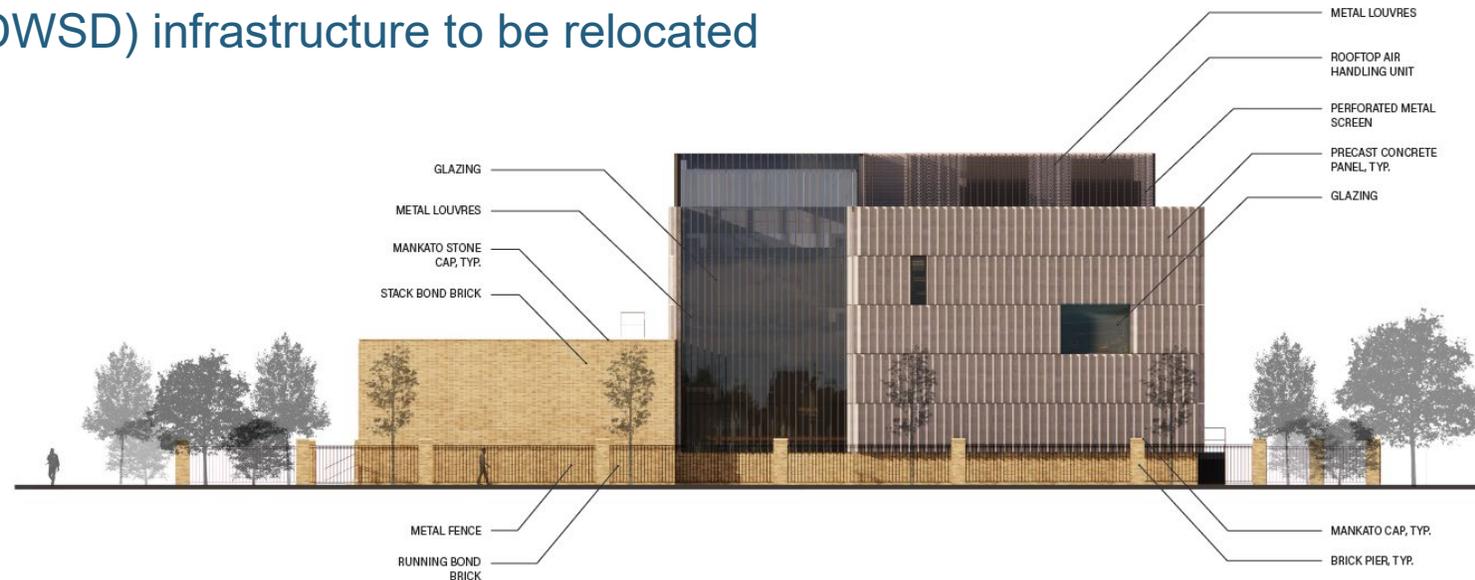
- Request for Bid (RFB) posted on 08/23/23.
- Notice of Intent to Award to Kokosing Industrial, Inc. on 12/14/23.

Michigan Department of Environment, Great Lakes, and Energy (EGLE) published their *Finding of No Significant Impact* on 01/30/24.

- 30-day public comment period.

Approval of Utility ROW Vacation is in progress.

- Finalizing agreements with DTE to relocate both electric and gas infrastructure.
- AT&T's agreement to follow DTE's due to shared infrastructure.
- Detroit Water and Sewerage Department (DWSD) infrastructure to be relocated as a portion of the construction process.



SPS= Sanitary Pump Station
ROW= Right-of-Way

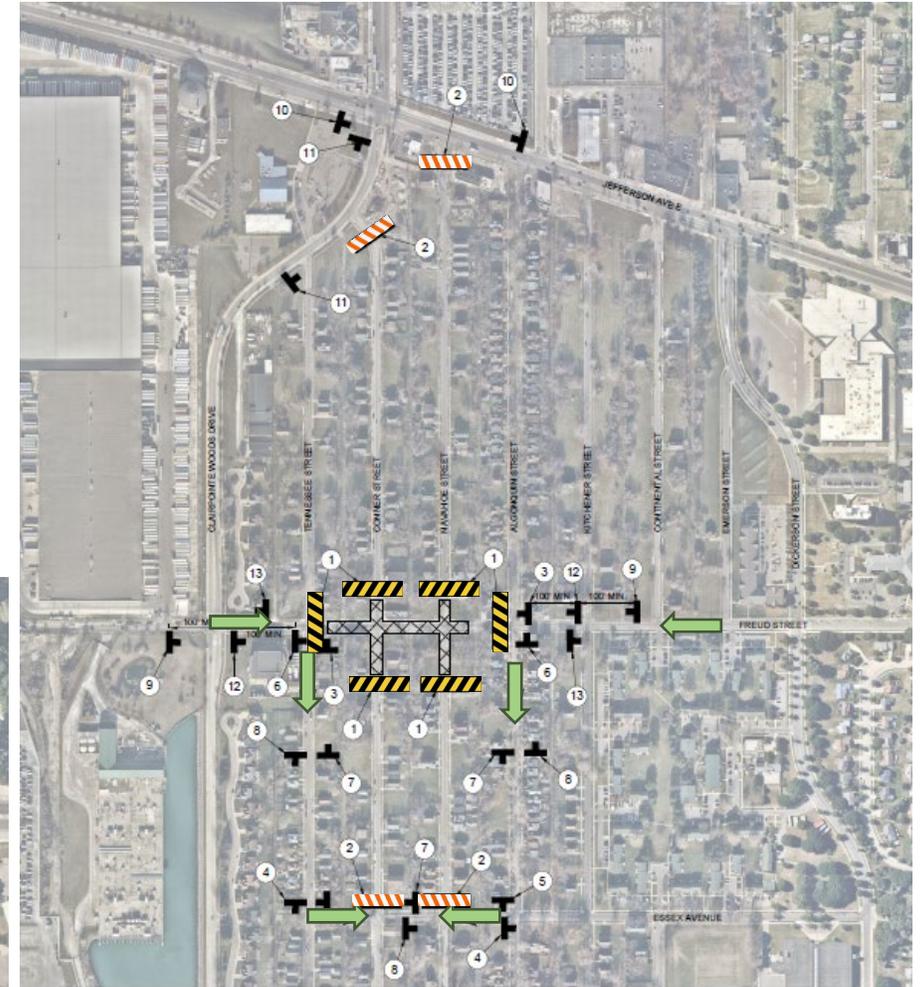
Freud SPS Improvement – Area Impact / Traffic Control

Jefferson & Navahoe Lane Closure

- 36" Force Main Installation
- 6+ Months
- Private Access Maintained

Freud Street Closure

- Sanitary Station Construction
- 3+ Years
- Multiple Available Detour Routes



Traffic Flow →
Road Closure 
Road Closure to through traffic 

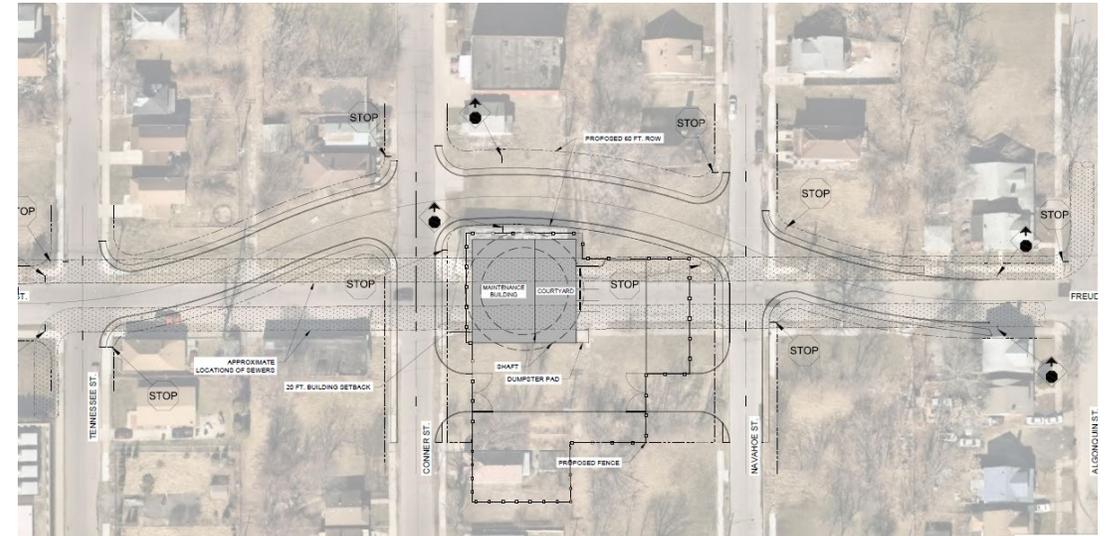
Freud SPS Improvement – Community Engagement Plan

Kokosing Industrial, Inc.

- Onsite Project Office
- Local Office in Taylor, MI
- Tina Wolff - Community Relations
- Communication
 - Mailings/Door Hangers
 - Timeline
 - Description
 - Phone Numbers
 - Onsite Message Boards
- Noise Impacts
 - Normal Construction Noise
 - Working Hours 07:00 – 17:00

GLWA

- Community Engagement Events
- District 4
 - Council Member Johnson & Staff
 - Department of Neighborhoods Staff

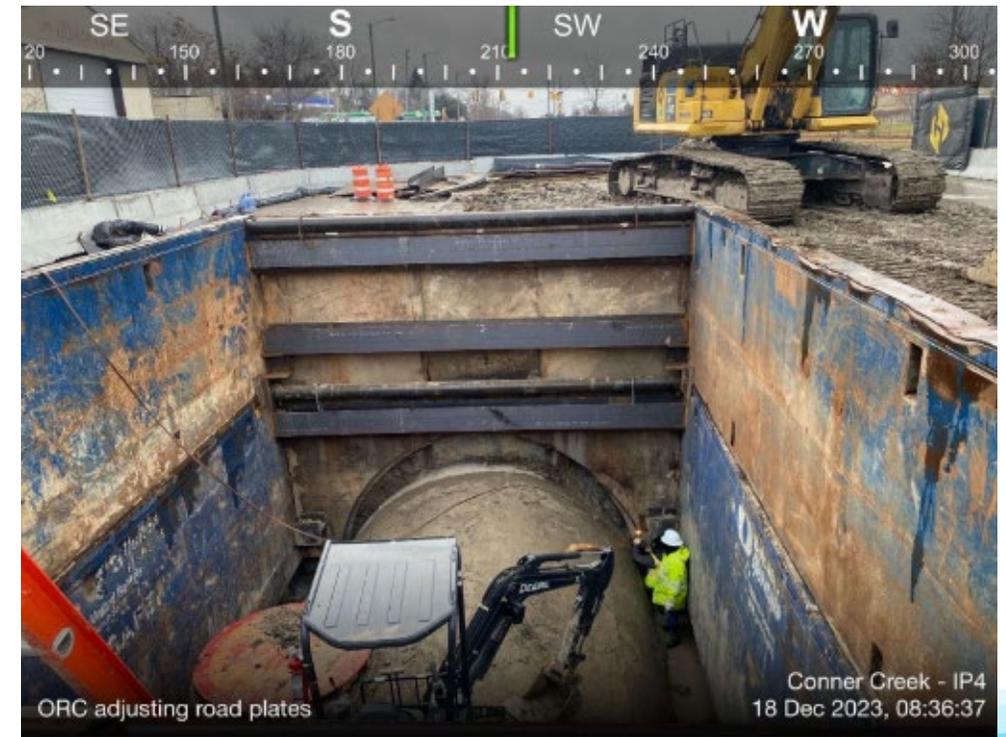


Existing GLWA Projects

- **CIP - 260701 In System Storage Devices (ISD), Valve Remotes (VR), and Outfall Infrastructure Elements Rehab**
 - **Outfall Infrastructure Project**
 - Regulator expansion is complete for B-10 and B-17 outfalls.
 - Regulator expansion in progress at B-21.
 - Additional dry weather flow connection to Detroit River Interceptor (DRI) construction is complete for B-05.
 - New backwater gate structure construction is complete for B-5, B-16, B-29, B-33 and B-40 outfalls.
 - New backwater gates were installed at B-6 and B-40.
 - Excavation in progress at B-14, B-15, and B-44 for a new backwater gate structure.
 - New SCADA control cabinets were installed at B-6, B-17, B-21 and B-26.
 - **ISDs and VRs Project**
 - ISD equipment installation is ongoing at ISD 6 and ISD 13
 - ISD 5 new equipment installations complete. Equipment startup and testing was performed on 1-17-2024 by contractor and GLWA staff.
 - All ISD sites manhole modification is complete.

Existing GLWA Projects Continued

- **CIP - 260204 Conner Creek Sewer Cleaning and Rehab**
 - Grouting, rebar coating, and spot repairs continue under the cemetery and airport. These repairs are the critical path for the project and will continue till the end of the project.
 - Debris removal for the project is complete. 47,000 tons were forecast for the project, 7,200 tons were found across the entire project. The claim for the adjustment in unit price for the differing condition has been settled with the Contractor. Negotiations for the FEMA reimbursement continue.
 - Slip lining between Six and Seven Mile has begun at Seven Mile headed south.
 - City Airport has announced an expansion for taxiways on the west side of the airport. Wastewater Engineering, Water Engineering, System Resiliency, through the Utility Review and Permits (URAP) group are coordinating our review work with the City airport designer team.
 - The project has added design of forebay modifications upstream of Conner CSO to allow the facility to perform debris removal in future maintenance operations. The work is being added to the current project.



System Resiliency

- **Water Resource Development Act (WRDA) Effort**
 - GLWA meeting with the US Army Corps of Engineers (USACE) on a weekly basis to work through scope, schedule, and budget issues regarding the Planning Assistance to States (PAS) and General Investigation (GI) Studies.
 - Funding for GI is pending congressional action.
- GLWA is in draft of the Request for Proposal (RFP) for support services to assist GLWA in providing in kind services for USACE GI study.

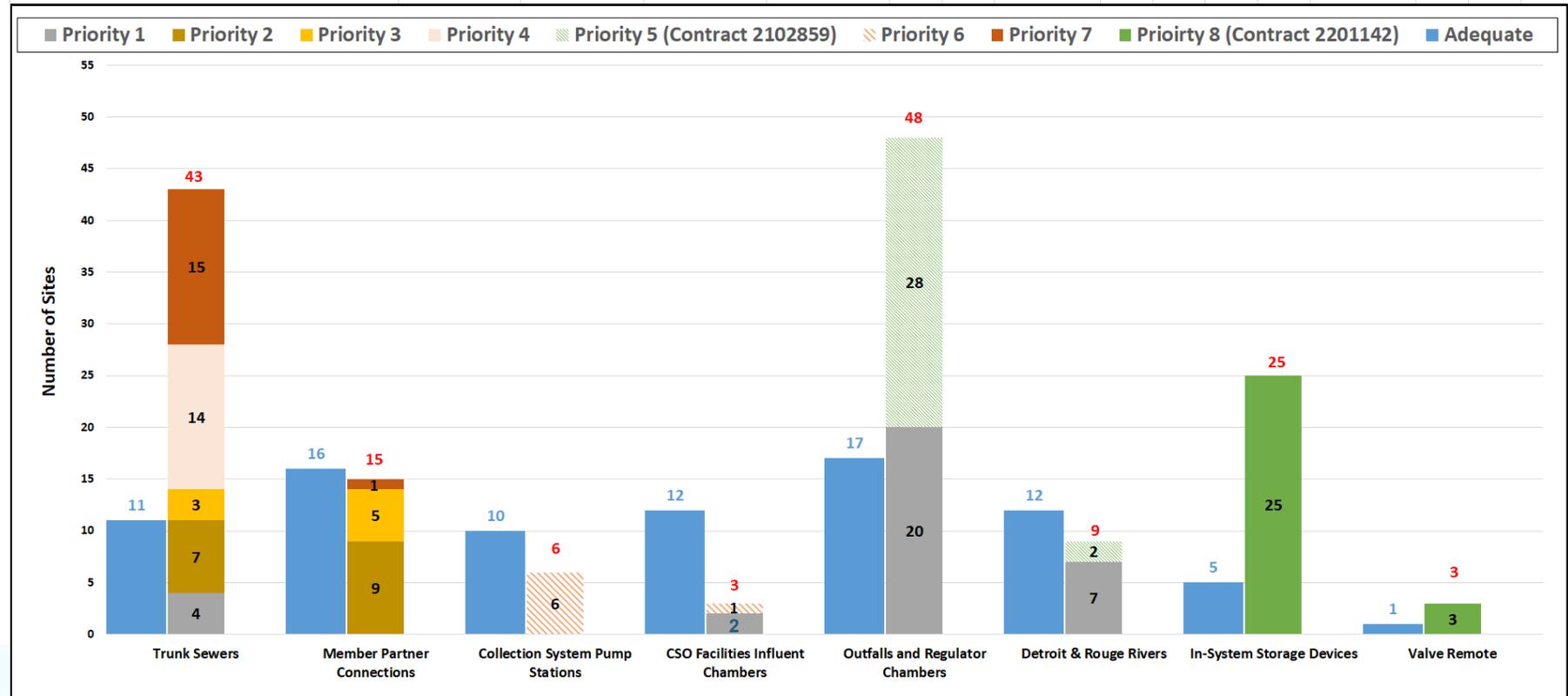
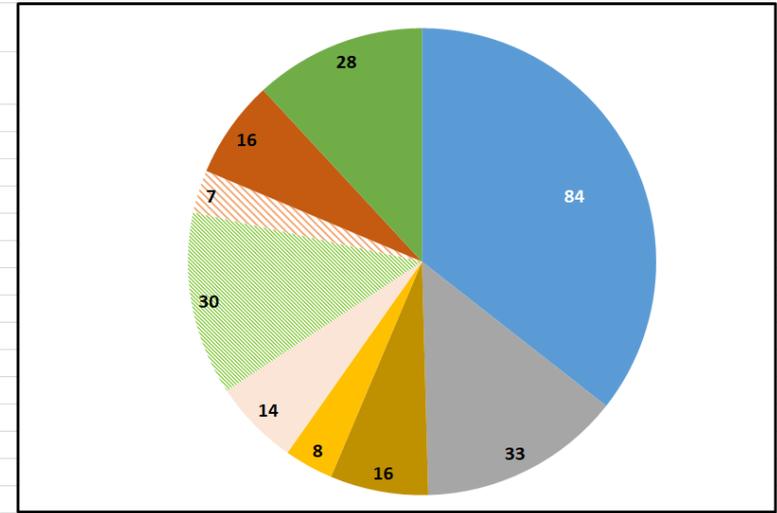
GLWA continues to review the sewer system instrumentation and make corrections in a phased approach.

GLWA released approx. \$3.55M for revisions to nearly 87 sites. This will complete Priority 1, 2, 3, 4, & 7 sites.

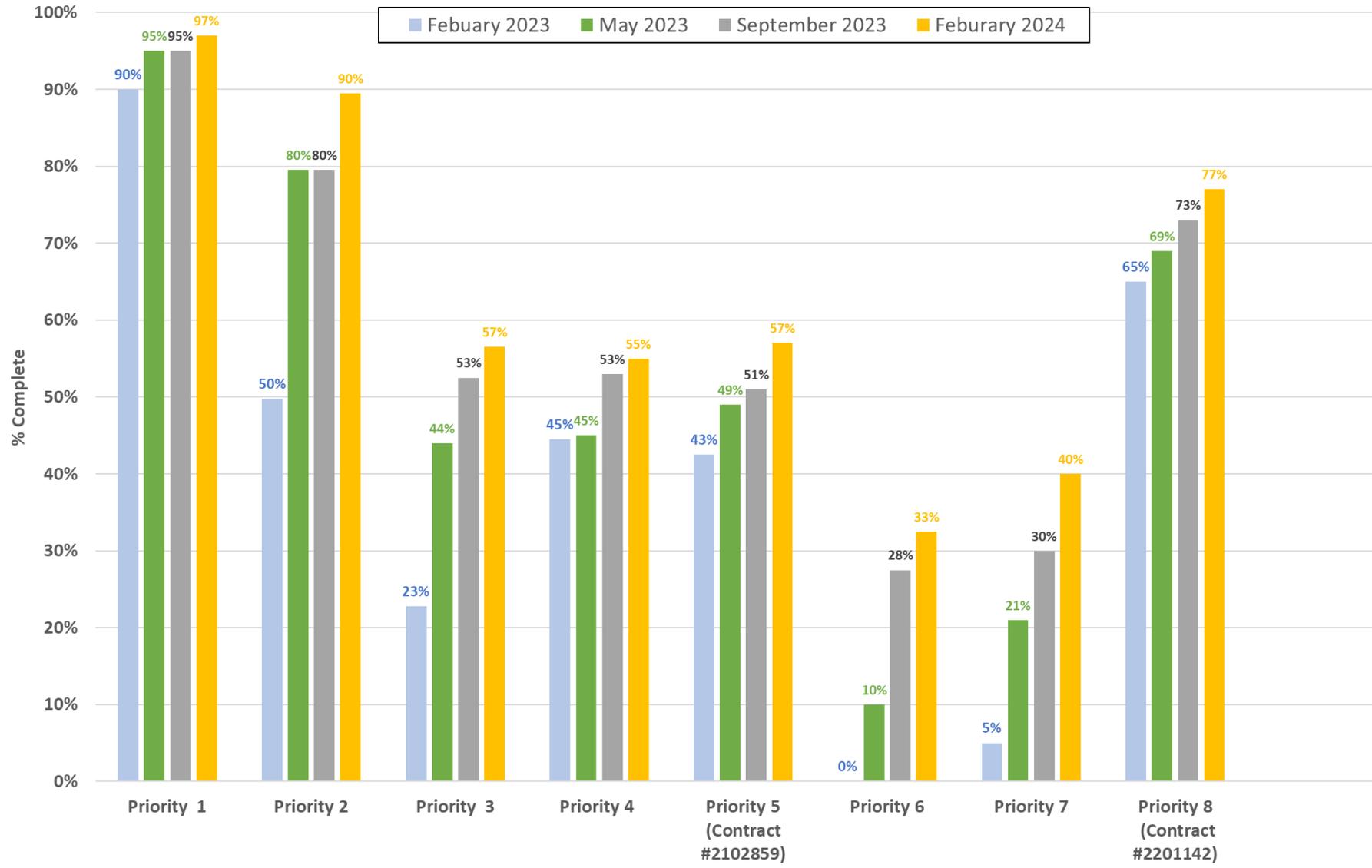


Baseline Conditions
Engineering Services for GLWA Collection System Level Sensors and Precipitation Gauges Program (TOES 30T 2200729)

Level Sensor Group	Priority #	No. of Sites (some sites may include multiple sensors)		
		Adequate Installation	Need Improvement (or New Installation)	Total
Trunk Sewers				
Original L-Series	1, 4, 7	7	24	31
10 L-Sites Surveyed in 2022	1, 2	2	8	10
Sewage Meters (DT-S-00)	1, 4, 7	2	8	10
Hydraulic Viewers	3	0	3	3
Member Partner Connections				
Existing Flow Meters	3, 7	16	6	22
9 Additional Sites (L-Sites & Flow Meters)	2	0	9	9
Collection System Pump Stations				
CSO Facilities Influent Chambers	6	10	6	16
Outfalls and Regulator Chambers (Contract #2102859)				
River (Detroit & Rouge) Level Sensors	1, 5	17	48	65
In-System Storage Devices (Contract #2201142)				
Valve Remote (Contract #2201142)	Other Contracts	5	25	30
Valve Remote (Contract #2201142)	Other Contracts	1	3	4
TOTAL		84	152	236



Progress to Date
Engineering Services for GLWA Collection System Level Sensors and Precipitation Gauges Program (TOES 30T 2200729)



Thank you