1. Since 2018, GLWA has implemented efforts to identify “significant sources” of PFAS Compounds and implement Best Management Practices to Control, Minimize and/or Eliminate them from Wastewater Discharges.

2. GLWA’s PFOS and PFOA Minimization Program (January 2020) describes its strategy for identifying and controlling these contributions.
   a) This effort has predominantly focused on Point Source Discharges into the Regional Sewer System from active and identifiable Commercial and Industrial Sources, Using skills developed under the Industrial Pretreatment Program’s Monitoring & Surveillance, and Enforcement.
   b) GLWA’s Minimization program also identified a second category, i.e. Non-point Source Contributions, which were generally expected to apply to construction and groundwater remediation projects. This source is harder to identify and control alternatives are more difficult to implement.

3. This Case-Study Presents the on-going efforts being undertaken to address non-point source contributions of PFAS Compounds for a unique a-typical non-point source of discharge.
GLWA’s Service Area

GLWA’s is a wholesale provider of Wastewater Treatment Services for 78 communities who comprise the Regional Sewer System. This system encompasses 840 sq. miles, with approx. 20% of this area being a combined sewer system.

GLWA’s WRRF has a Dry Weather Flow of 550 MGD and Secondary Treatment Capacity of 930 MGD. The regional system has a number of Combined Sewer Overflow (CSO) locations to the Rouge and Detroit Rivers and GLWA operates nine (9) Screening and/or Detention and Disinfection facilities.

Since 1985, an Industrial Pretreatment Program has been implemented to control the discharges from Categorical Industrial Users and Significant Industrial Users and developed skills for monitoring and surveillance and enforcement. These responsibilities include Investigating a variety of incidents that include but not limited to Spills, Upsets, Bypasses, Dumping Complaints, Discharges to Rivers.

However, beginning in 2018, we experienced a NEW one.......
Problem - Background

July 2018 – Bubbling substance was identified from Manhole at Schaefer Hwy embankment in Melvindale Michigan.

❖ The location had no known connections to the Regional Sewer System. The ownership of the manholes was unknown but believed to be part of the Wayne County system.

❖ The location had no history for this type of event.

❖ Michigan EGLE subsequently analyzed foam and its constituents:

<table>
<thead>
<tr>
<th>Constituent</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>PFOS</td>
<td>729,000 ppt</td>
</tr>
<tr>
<td>PFOA</td>
<td>9,000 ppt</td>
</tr>
</tbody>
</table>

*Conclusion: Looks Like AFFF Foam*
Then the Plot Thickens ……

Following EGLE and GLWA outreach efforts, New information was discovered in August 2018:

Wayne County discovered an old sepia drawing identifying 24” connection (Orange star) to the 4’9” sewer with second upstream Manhole (Yellow Arrow).

EGLE Conclusion – Drawing shows the connection is part of the Regional Sewer System, and referred it to GLWA for Investigation and Resolution.

Conclusion: Job for GLWA
From our Phone Booth, We asked: Where Does it Come From and Go To?

Detroit Sewer Maps showed NO Connection to the Foam Source nor confirmed Wayne County’s Drawing.

Existing Sewer is 4’9” sewer w/terminus at County Pump Station

Sewer connects to GLWA upstream of our Oakwood CSO and Pump Station (approx. 2.5 miles) – No record of foam was observed at this location

(Our) Initial Conclusion: Need Field Investigation to connect the Manhole (Source of Foam) to GLWA & Need to look at Available Documents and Drawings
Looking for the Source(s) ……

Began by looking at the source (origin) of the foam.

Preliminary Findings – No reliable drawings available; Location is not a recognized connection from the City of Melvindale;

MH#1: Wayne County Manhole (Lower) locked by County (20’ Deep)

MH#2- Second Upstream Manhole (Upper) accessible – Drops to MH#1 (~10’ Deep) Unknown source

MH#3 Found on Opposite side (in vegetative growth) in-line with MH#2 and 4’9” sewer

Need to know – What’s on the other side of the fence?
**Norfolk Southern RR** – owns multiple properties used as a Loading/Unloading area for Automobile Shipments by rail. Other facts:

- Property is upstream of the Upper embankment Manhole.
- Property was a hard-surfaced (asphalt). Recently resurfaced in June 2018.

GLWA Issued NOV to Railroad to identify cause and source for PFAS Compounds.

- Whether Resurfacing Materials Included PFAS Compounds?
- How is their storm sewer conveyed to Schaefer Hwy Sewers (MH #1 and 2)?

Railroad Response:

- Confirmed connection to Manhole #2
- Provided drawings of (hard pipe) private drainage sewers servicing property.
- Provided Analytical data confirming existence of material in storm sewer but unable to determine source, no prior use of AFFF materials, including paving materials.
- Their investigation identified unknown flow at southernmost reach of their physical storm sewer. During excavation, large sewer uncovered with flow identified from neighboring property (Marathon Petroleum).
Marathon Petroleum – Facility is a Categorical Industrial User with a Wastewater Discharge Permit authorizing discharges from refinery operations since 1985, and Storage Tank area stormwater. The regulated operations are North of Schaefer Hwy, while Southern property is tank storage and supported a Fire Training Area (no discharges authorized by permit from these properties). *No knowledge of a stormwater connection prior to 2018.*

GLWA Issued a Notice of Violation to Marathon – Resulted in following findings:

• Marathon suspended Fire Training Area (FTA) activities in mid-2018 following notice of PFAS Compound Significant Source (April 2018). **Initial position – It’s not us.**
• **But … Agreed to conduct additional investigation for potential contributions from FTA and initiated monitoring of open water and existing groundwater wells. Findings:**
  • Confirmed PFOS in groundwater wells >>> WQS for PFOS.
  • Tracked Marathon’s “open water Ditch” to undeveloped property paralleling Norfolk RR Right-of-Way, with PFOS >> WQS for PFOS.
  • Marathon obtained water samples from upstream property after obtaining permission from Norfolk RR. But results were pending at time of response to NOV. [Later identified PFAS Compounds well above WQS but << below Schaefer Hwy Concentrations]
• Additionally, referenced June 2018 fire event at GLE Scrapyard and raised the **What about them?** Opening Defense. Implied existence of “County Stormwater System” but no evidence of same.
Follow the Flow (Part III) …

GLWA Investigation sought to confirm Marathon’s allegations:

➢ GLWA contacted (Wayne)County & Melvindale - responded they had no assets (drains) in this area and unaware of any stormwater connections.

➢ GLE Scrapyard Contacted: It’s not us. No knowledge about Fire Department Incident Response

➢ No visible connection to GLWA for conveying stormwater to Schaefer Hwy, other than natural watercourse with no identifiable drainage system following RR Right-of-Way. Found area was heavily wooded and generally inaccessible and was in fact, the RR lines Right-of-Way, not a County Drain.

➢ Conducted initial site investigation accessing GLE Scrapyard with Michigan EGLE in summer of 2019.
  ▪ GLE has stormwater Bioswales, observed as dry (+90°F Temperatures)
  ▪ Wooded area East of GLE Scrapyard heavily wooded and dry. No water visible
  ▪ Proceeded downstream to abutting property (Evans Distribution (Trucking Firm) and accessed property.
  ▪ Obtained water sample near boundary with Marathon (Positive PFOS result of 1000 ppt and PFOA 90 ppt).

Conclusion: Since PFAS Compounds are not naturally occurring pollutants, June 2018 fire event likely to have impacted stormwater drainage system upstream of Marathon Petroleum. But how to prove this?
Follow the Flow (Part IV) …..

Contacted City of Melvindale Fire Department
• Obtained Records of the June 4, 2018 Fire at GLE Scrapyard
• Confirmed use of AFFF materials from assisting community
• Dearborn Fire Chief confirmed use of AFFF of about 300 gallons (identified as Thunderstorm FC601A). *GLWA estimate ~90# of PFOS in concentrated solution.*

By August 2019 - we found ourselves outside of our Traditional IPP Experiential Area and shared findings with EGLE and State of Michigan staff, Hoping to obtain a Joint work plan to address contaminated stormwater contributions.

EGLE Investigation focused on Marathon as PFAS Compound source (See MPART Page). GLE Scrapyard not included in initial identification as Source.

*Waited for EGLE Investigation Results …..*
Visual for Identifying the Source ..... 

Used Google Satellite Mapping:

City of Melvindale Bounded at South by Outer Drive. Area West of superimposed (Orange) line has Sanitary service by GLWA and Stormwater Separate.

The area East of this line was NOT part of Melvindale’s official service area. Comprised a 200-acre parcel in Melvindale (Outlined in Red) which includes the following businesses:

- Norfolk Southern RR
- Marathon Petroleum*
- Evans Distribution
- Shrader Tire & Oil
- GLE Scrapyard**
- Detroit Salt company

* Historical Use of AFFF for Refinery Fire Protection (Since 1960’s) & Refinery Operations under IPP Permit (Detroit Side)

** Fire in June 2018 where AFFF used by Local FD. Not believed to have entered the Sewer System at that time.
Reviewed Old Contract Documents w/Melvindale …

City of Melvindale – Separate system for Sanitary & Stormwater
• Existing Service Contract (2014) with City of Melvindale – defines one connection for City to 10’ Northwest Interceptor several miles upstream (and excluding) Schaefer Hwy. Sanitary & Commercial Only – No Stormwater
• Research – Discovered 1977 Contract which referenced same connection for sanitary wastewater but ... included paragraph describing stormwater connection of Private Claims 37, 50 and 667(French Land Claims dating back to 1700’s).
• Settlement minutes in support of the 1977 contract referenced 1965 and 1969 contract agreements, but legal did not have copies.
• However, discovered Melvindale documents in my archives from 1949-1969 with these records describing prior use of the area for WWII munitions manufacturing (1942-45). Sanitary Sewer connection resulted from order of Secretary of War to Detroit to support war effort and suspect lack of documentation for Security purposes. This might explain easement found in land records search in the name of “United States of America” (for sanitary and potable water lines). Connection was NOT at Schaefer Hwy.
The Plot Thickens: Inquiry from Federal Representatives

In 3rd Quarter 2020, Congressional inquiry (2 Representatives) about Marathon classification by EGLE. State directed inquiry to GLWA. GLWA and State conference call, directed GLWA to “Do Something”

But … What Can GLWA Do? – Using the IPP playbook, We Issued a Unilateral Administrative Order to all parties (December 2020) to terminate unauthorized stormwater discharges to Regional Sewer System. Parties included 6 businesses and 9 properties identified from Melvindale parcel.

GLWA also held conference call with Congressional Representatives – to Discuss what can GLWA address?

- Positive discussion giving background of other contributors in addition to Marathon Petroleum.
- Inasmuch as IWC staff had previously worked with One Representative who had been in State government, they expressed confidence in GLWA’s investigative approach (Based on separate prior case experience).
Continued to Follow the Flow (Part V) …..

So GLWA **Did Something**, by initiating an Enforcement Action in December 2020, with UAO
- Identifying the Contributions of Unauthorized Stormwater to the Regional Sewer System;
- Identified suspected and known sources of PFAS Compounds;
- Required Termination of Stormwater Discharges or Plans to mitigate contamination in 45 days
- Required Payment for Stormwater Treatment services (last 6 years).

Based on Time of Year, Covid-19 Challenges and Needs to Provide a response to GLWA, the Parties Requested Additional Time to Investigate and Prepare Plans. GLWA responded favorably by granting two extensions March 15, 2021 and April 30, 2021.
- Preliminary plans formed by parties for (i) reducing stormwater contributions, and (ii) initiating source cleanup (March 2021)
- GLWA Site Investigation in April 2021 identified wet area with heavy vegetation but no visible flow,
  - Stormwater culvert discovered in RR Right-of-Way leading Northwards toward Schaefer Hwy;
  - Second Stormwater System Connection identified at I-75 [East of area] to Visger Sewer;
  - Water Samples collected at GLE Bioswale, RR Right-of-Way/GLE Property Boundary and from culverts. All confirmed presence of PFOS
- GLWA conducted Dye test to confirm path through natural watercourse to Schaefer Hwy
Findings:
- Outlined pathway for Stormwater Flow.
- Confirmed Area not covered by Service Agreement, Contract, or Permit.
- GLWA Water Samples (at “X”) confirmed PFOS Bioswale Samples = 375 ppt
  RR Right-of-way Drainage = 400 ppt
  Northern Drainage Pipe in RR Right-of Way = 1200 ppt
  Drain to Visger = 220 ppt
On-going Challenges:

• Unable to identify physical connection from Scrapyard to RR Right of Way
• Empirically, Sampling data Implies that a Connection(s) exist

Stormwater Overflow to Melvindale?

Stormwater to Neighboring Property (uncontrolled)

TBD: Stormwater Flows to Ecorse Creek (State Water)?
INVESTIGATION – CURRENT STATUS

No Stormwater Generated

Business #1 – Salt Mine Excused from UAO – Demonstrated underground property rights only, no surface or groundwater discharges.

Stormwater Generated

Business #2 – Stormwater Management Plan developed to capture majority of S/W onsite. Comprehensive plan developed and securing local permits to implement with goal of reducing Stormwater contributions by +50%.

Business #3 – Technical report demonstrating No Connection to GLWA Regional System (Potential discharge to Ecorse Creek Watershed). Onsite investigation to verify claims made in report. (May need to refer back to State)

Business #4 (Norfolk Southern RR) – Control Two groups of property (Northern and Southern). Both serve as conduit for S/W flow from neighboring properties. Federal RR laws may permit exercise of private action for unauthorized access to RR Right-of-Way. Cooperating with PFAS Sources for cleanup for upstream and downstream sources.

PFAS Source

Business #5 (Marathon Petroleum) – Confirmed Source from on-site FTA Area, and offsite impacts to neighboring properties. Evaluating cleanup of Melvindale Drain and Visger Street Drain. Proposal for cleanup with interim actions initiated

Business #6 (GLE Scrapyard) – Pursuing redirection of Stormwater to Ecorse Creek watershed with EGLE; no proposal for cleanup to date.
Pursuing Settlement-Next Steps ...

GLWA Engaged in Basic Lawyering – Seeking opportunities for Settlement.

**Terms of Settlement:** Option #1: Terminate all Stormwater contributions. Possible application to Shrader Tire & Evans Distribution

Option #2: Seek authorization to discharge treated stormwater (elements for Settlement).

- Sources of PFAS – Develop and implement corrective action plan to:
  - (i) decontaminate Primary drains to Regional Sewage System
  - (ii) decontaminate hard-pipe sewers
- Implement Stormwater Decontamination Plans
- Apply and obtain (New) General Discharge Permit for Stormwater
- Participate in Development of Community Service Contract
- Enter into Administrative Order for cleanup projects, reporting and monitoring

While hopes of Settlement remain, also preparing to initiate legal action after administrative appeals are exhausted to enjoin Users from System (if needed).
Necessary Components of Settlement

I. Stormwater Control/Reduction

- Stormwater Flow-Control or Reduction
  - Bulkhead Detention Pond Connections
  - Bulkhead/Restrict Internal Culverts or expand Wetland in Right-of-Way
- Require Interim and Long-term Plans for Remediation of PFAS contamination of:
  - Melvindale Drain
  - Visger Drain
  - Contaminated Property Cleanup (Marathon and GLE Scrapyard)

II. Source Control

Site 1 – AFFF Practice Area
- Implement Groundwater Cleanup
- Implement Surface Water Cleanup

Site 2 – Fire Incident Area
- Implement Cleanup of RR Right-of-Way

Other – Melvindale Drain Cleanup
Other – Visger Drain Cleanup

III. Administrative Consent Order that Includes forgoing and
- General Permit Regulation and
- Payment of Treatment Costs
Conclusions:

At the threshold of having measurable steps to (i) Reduce Stormwater Contributions from this area, (ii) Reduce, control and eliminate PFAS Contributions.

When Investigating Non-point Source contributions:
- Require *Modified* Application of IPP Skills
- Perseverance, Commitment and Leadership of Investigators
- Pursuit of all evidence and information
- Review Legal Authority – is it adequate for extraordinary situations (like this one) {Operate at limits of authority and responsibility, especially for unpermitted sources.}

Non-point Source Investigation differs from IPP (Process) investigations. Tenacity of Investigator absolutely necessary. Involvement of Attorneys imperative.

"*Speramus meliora*" — "*We hope for better things.*” (Detroit Motto)