Charges Work Group
Meeting Agenda
August 2, 2018, 2:00 – 4:00 pm

Lathrup Village Community Center
27400 Southfield Rd. Lathrup Village, MI - Lathrup Village

Time	Topic
2:00 p.m.	**Welcome, desired outcomes, agenda review – Kerry Sheldon** ▪ Desired outcomes: 1) To deepen member-partners' shared understanding of how the wastewater system operates under both dry and wet conditions, and the way GLWA's charges methodology is currently structured, and 2) to share a proposed work plan and timeline for refining the latter
2:05 p.m.	**Opening remarks – Sue McCormick**
2:10 p.m.	**Overview of the wastewater system – Suzanne Coffey** *30 minute presentation; 15 minute discussion* ▪ What questions and observations do you have? ▪ What surprised you to learn? ▪ What did we miss or not emphasize enough?
2:55 p.m.	**Discussion of current charges methodology – Nicolette Bateson, Bart Foster** *20 minute presentation; 10 minute discussion* ▪ What did you hear? ▪ What questions and observations do you have?
3:25 p.m.	**Work groups' membership, mission, and guiding principles – Kerry Sheldon** ▪ Sewer SHAREs work group ▪ Charges methodology work group ▪ Suggested guiding principles for both work groups: 1. Practice the Rules of Collaboration in the Partnering Agreement 2. Focus on the long-term impacts of the decisions we make today; ensure alignment with the longer-term vision of where we're headed as a region (including the WWMP) 3. Maintain good connectivity with our respective communities' leadership and key stakeholders throughout the process *4. What else?*
3:40 p.m.	**Timeline and next steps – Kerry Sheldon, Suzanne Coffey, Nicolette Bateson** ▪ Review overall timeline ▪ Sewer SHAREs work group tomorrow: August 3, 12:00-2:00p, SEMCOG ▪ Charges methodology work group – *scheduling in process*
4:00 p.m.	**Adjourn**

Wastewater Charges Work Group

August 2, 2018

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Agenda

- Welcome, Introduction & Desired Outcomes
- Opening Remarks
- Overview of the Wastewater System
- Wastewater Charges Methodology Summary
- Work Group's Membership, Mission, & Guiding Principles
- Timeline & Next Steps

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Desired Outcomes

1. To deepen member-partners' shared understanding of how the wastewater system operates under both dry and wet conditions, and the way GLWA's charges methodology is currently structured, and

2. To share a proposed work plan and timeline for refining the latter

Opening Remarks

Sue McCormick

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Overview of the Wastewater System

Suzanne Coffey

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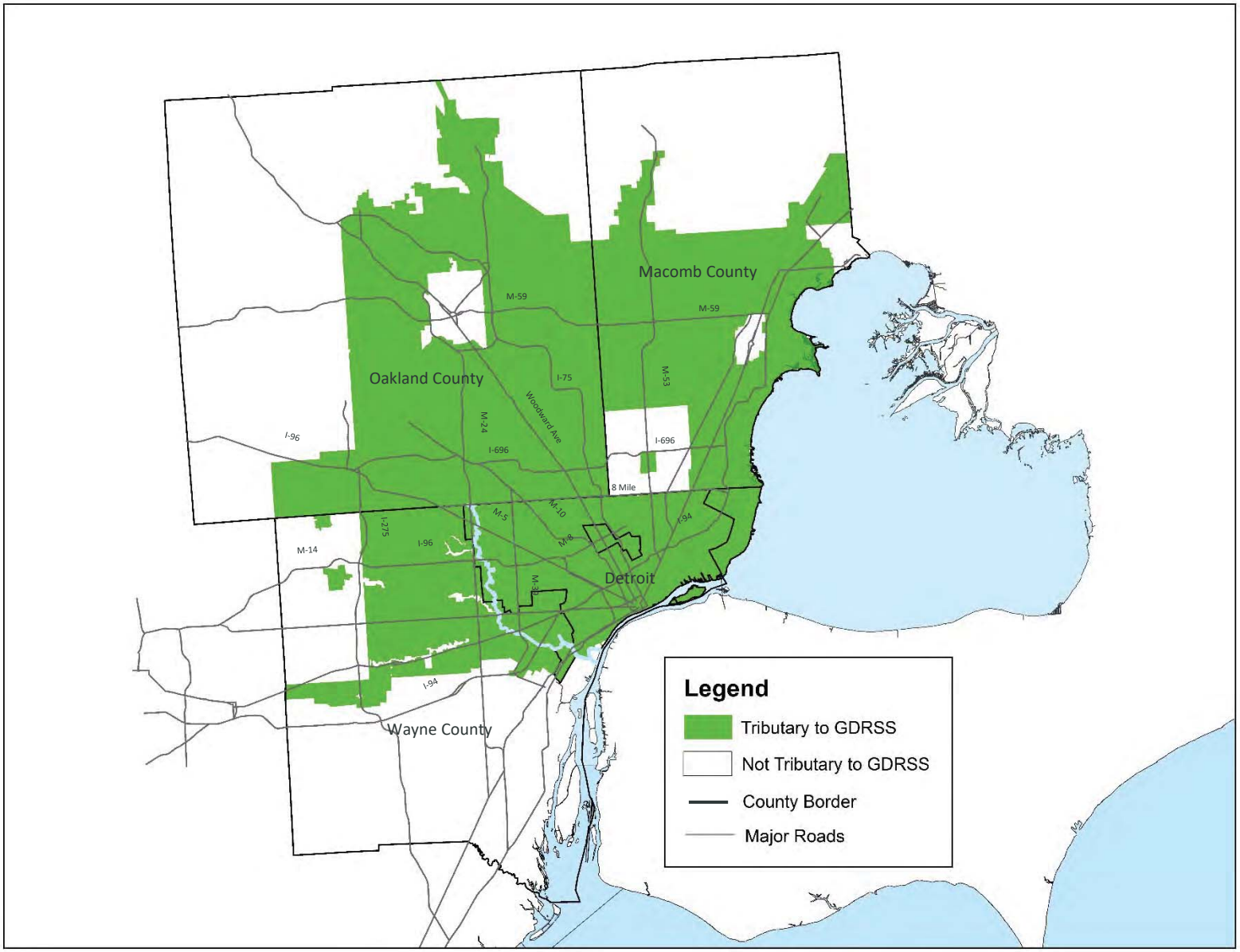
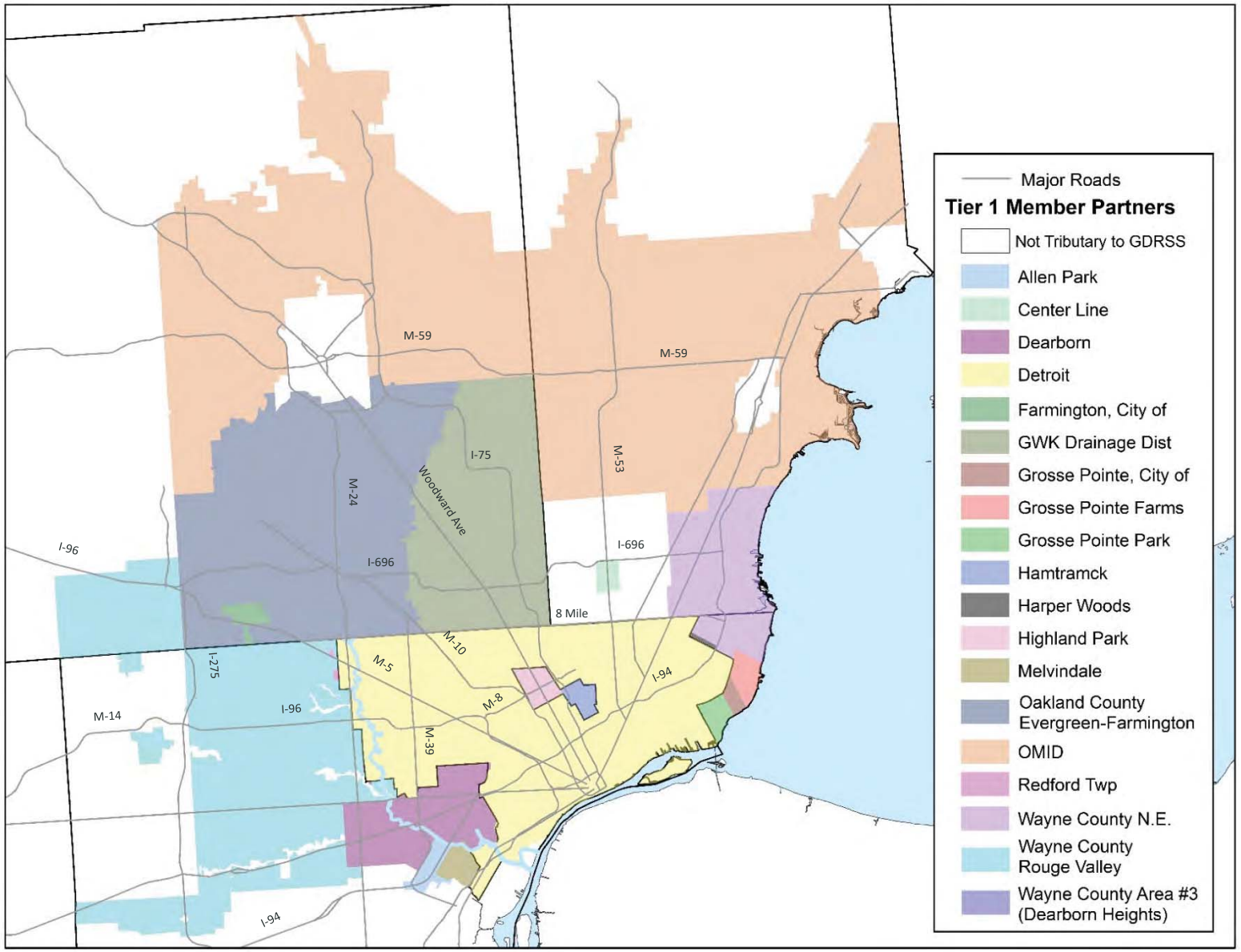
GLWA Service Area

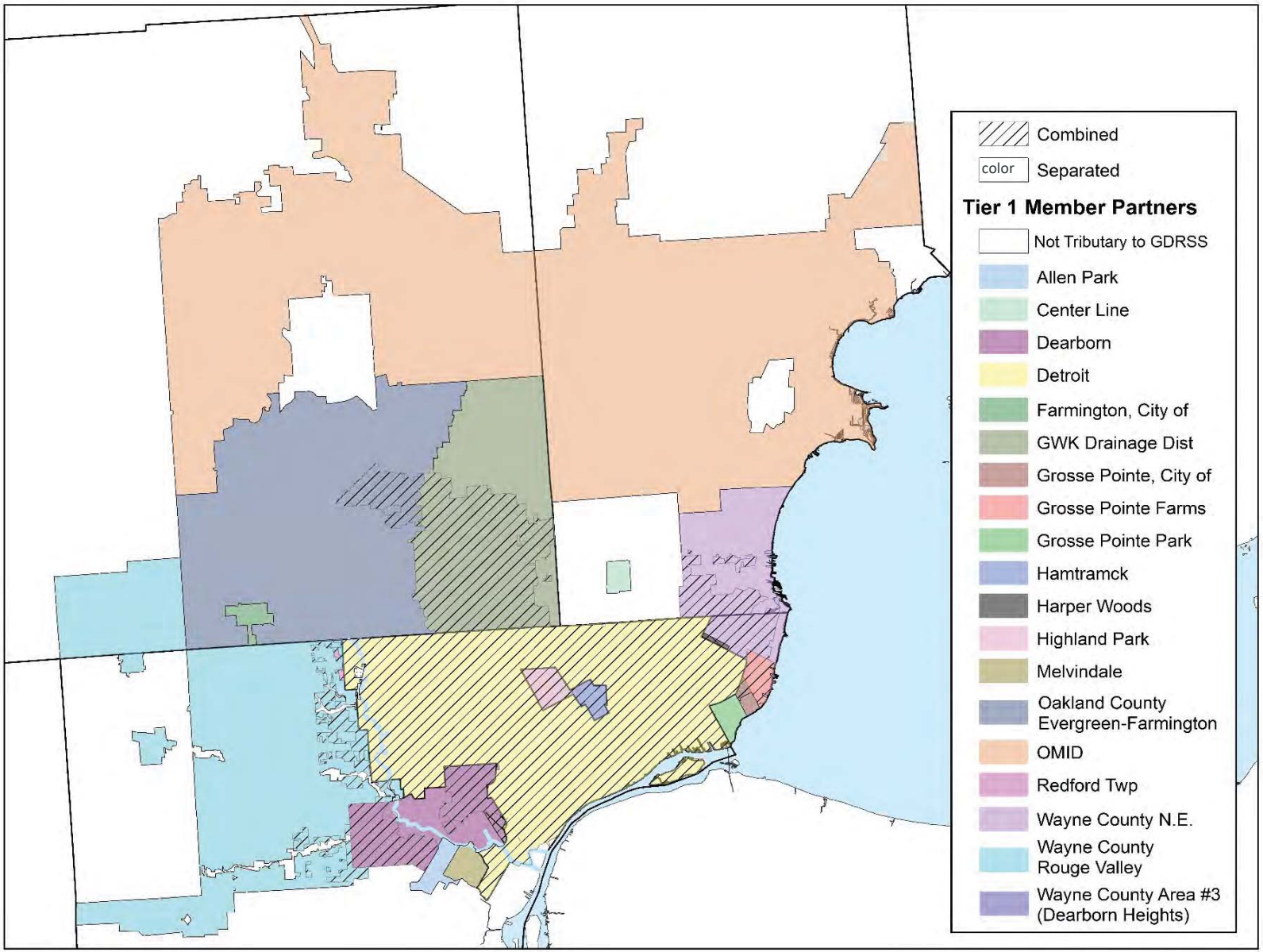


GLWA Tier 1 Member Partners



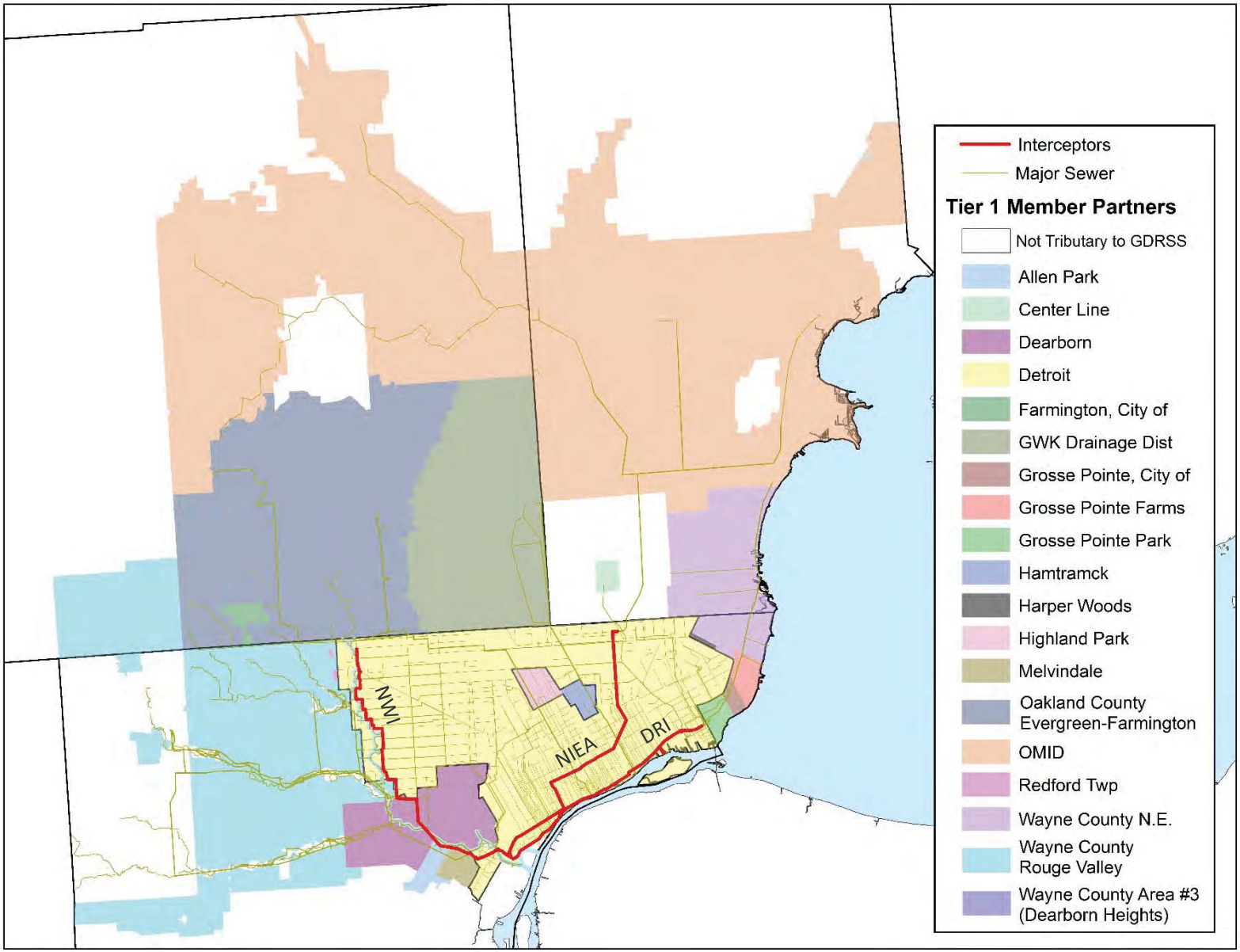
17 1st Tier Member Partners

Tier 1 Member Partners Collection System Type

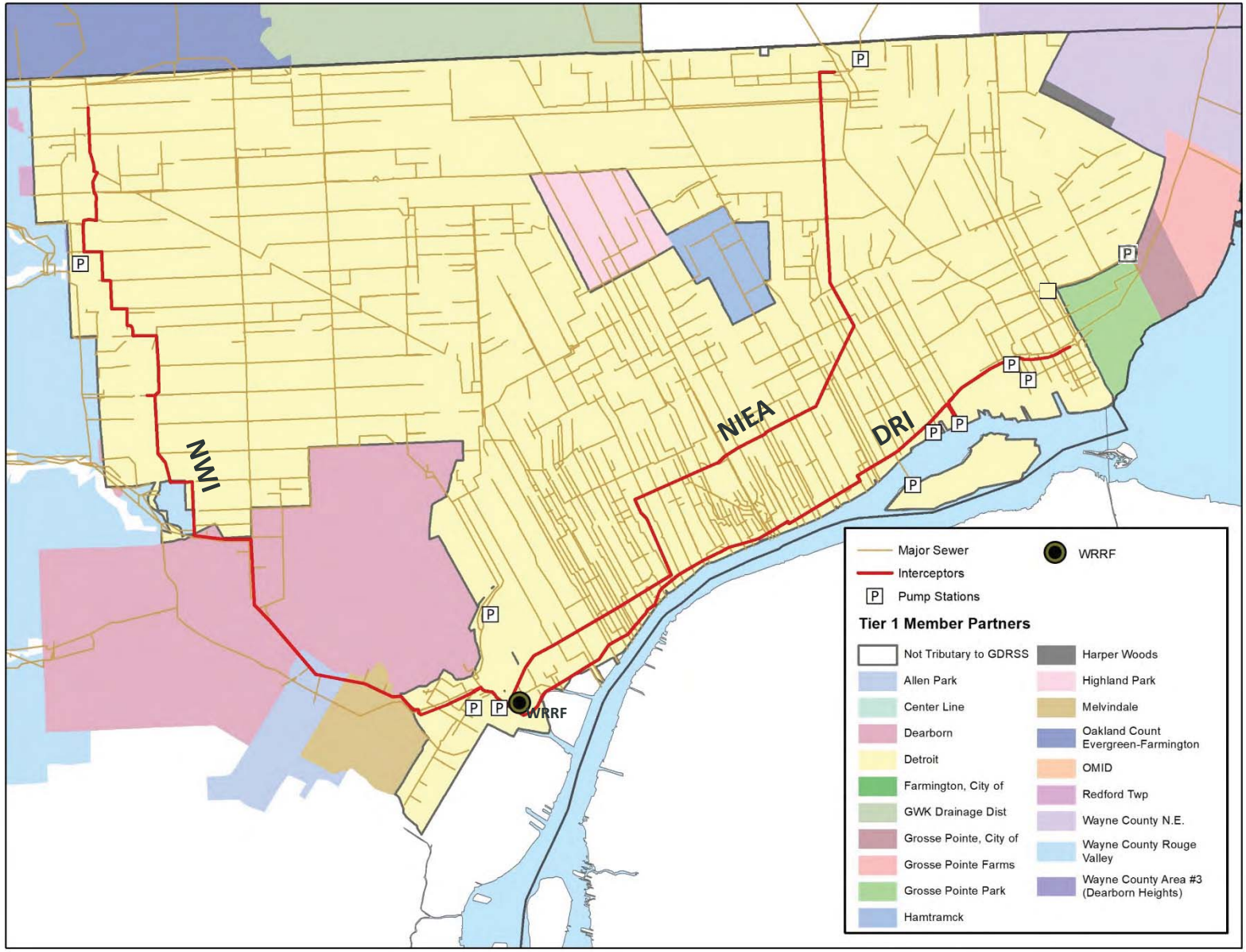


Combined = 24%
Separated = 76%

GLWA Interceptors



GLWA Interceptors



Collection System Elements

Pipes

- 190 Miles

Pump Stations

- 5 GLWA Pump Stations
- 4 DWSD Pump Stations

In-system Storage Dams

- 13 Inflatable dams on GLWA and DWSD sewers
- 56 MG of storage

Valve Remotes

- 17 Valve remote sites to regulate/divert flow in the collection system

Sewer and Flow Monitoring Network

- 26 Level sensors throughout the collection system to monitor trunk sewer and interceptor levels
- 43 Sewer meters to monitor flows at the customer connections, interceptors, and GLWA facilities

Precipitation Gage Network

- 39 precipitation gages in the collection system to monitor rain intensity and volume

CSO Outfalls

- 39 Outfalls on Detroit River
- 17 Outfalls on Rouge River
- River level, sewer level and backwater gate monitoring

Overview of System Components

Dry Weather

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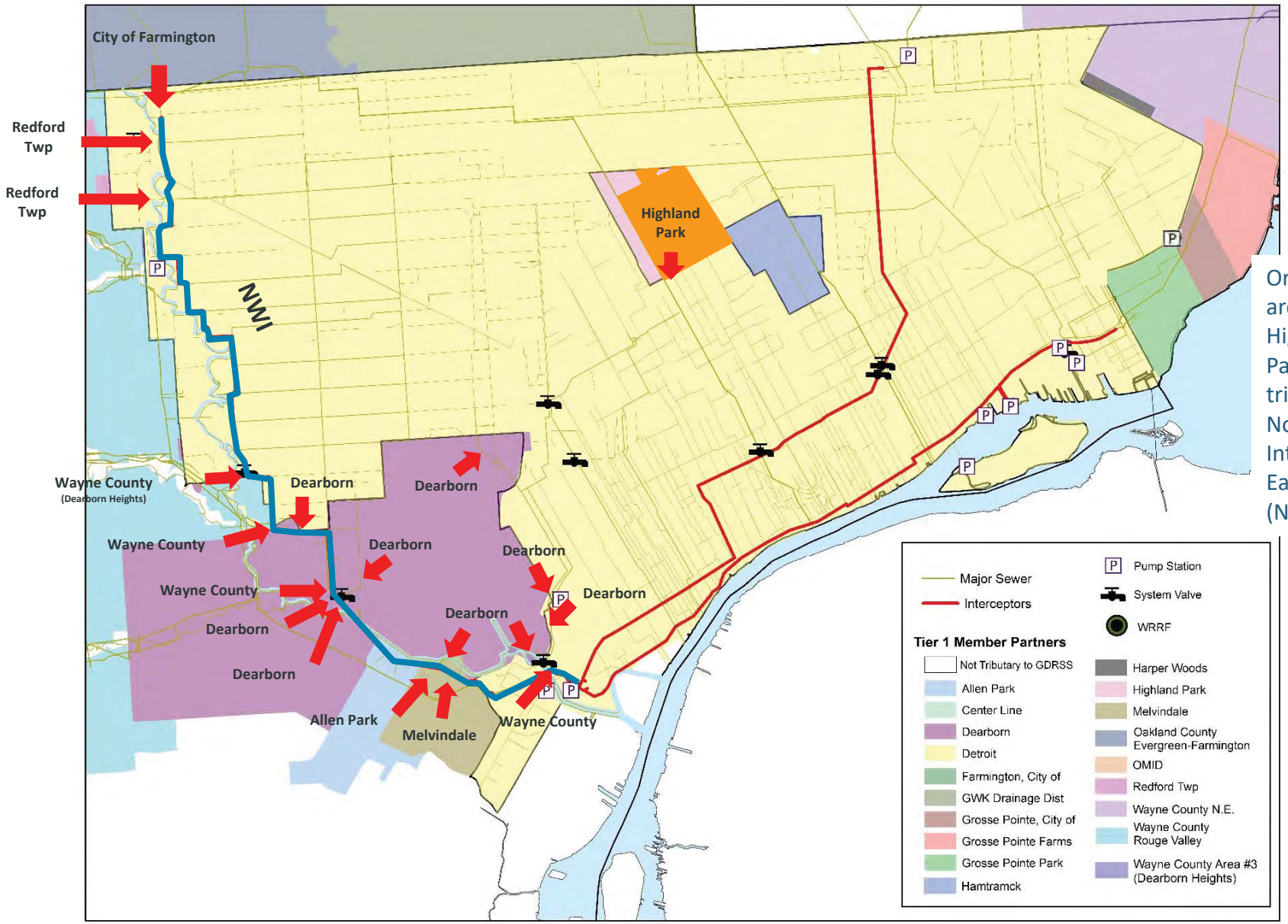
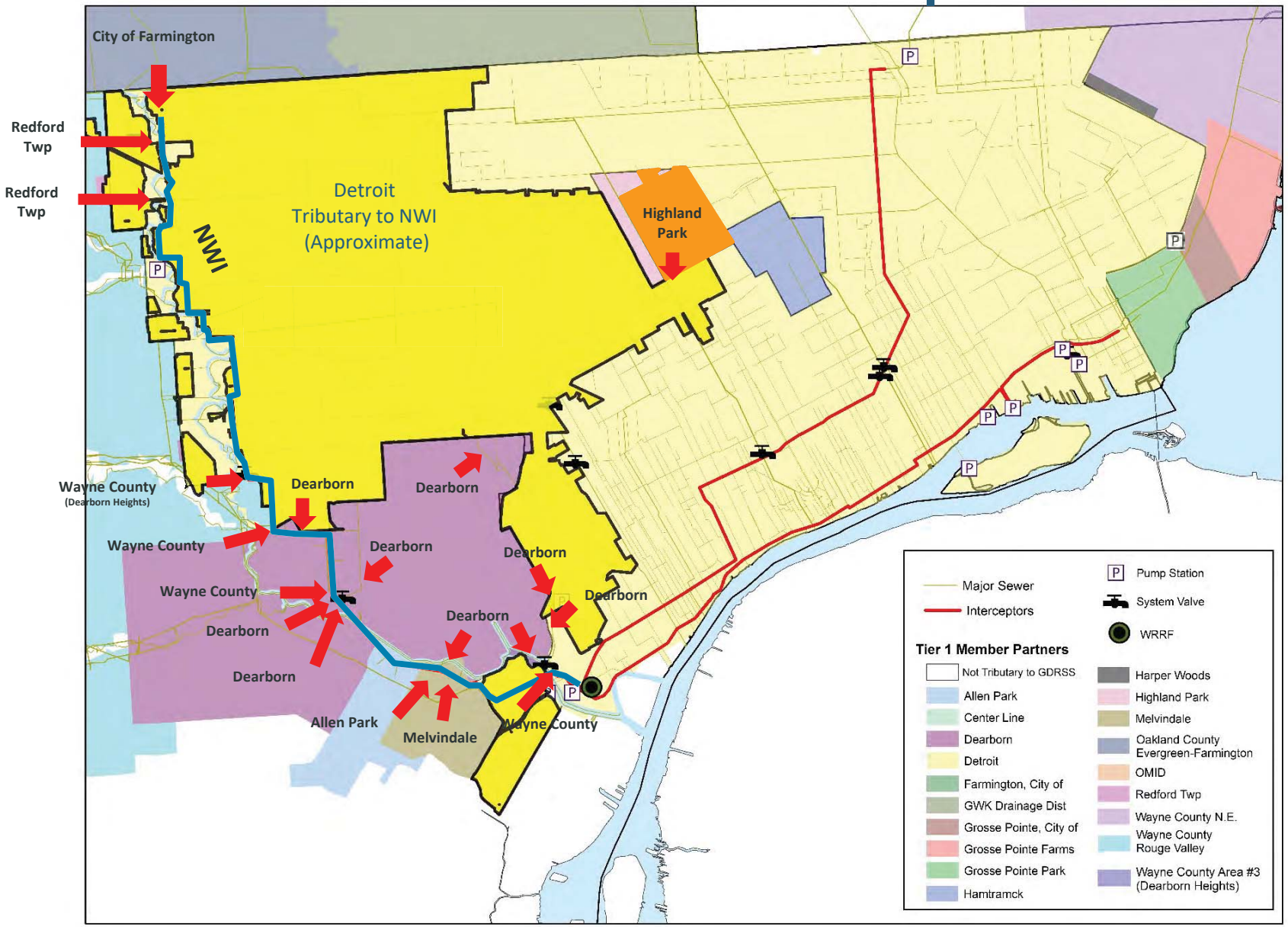
Northwest Interceptor



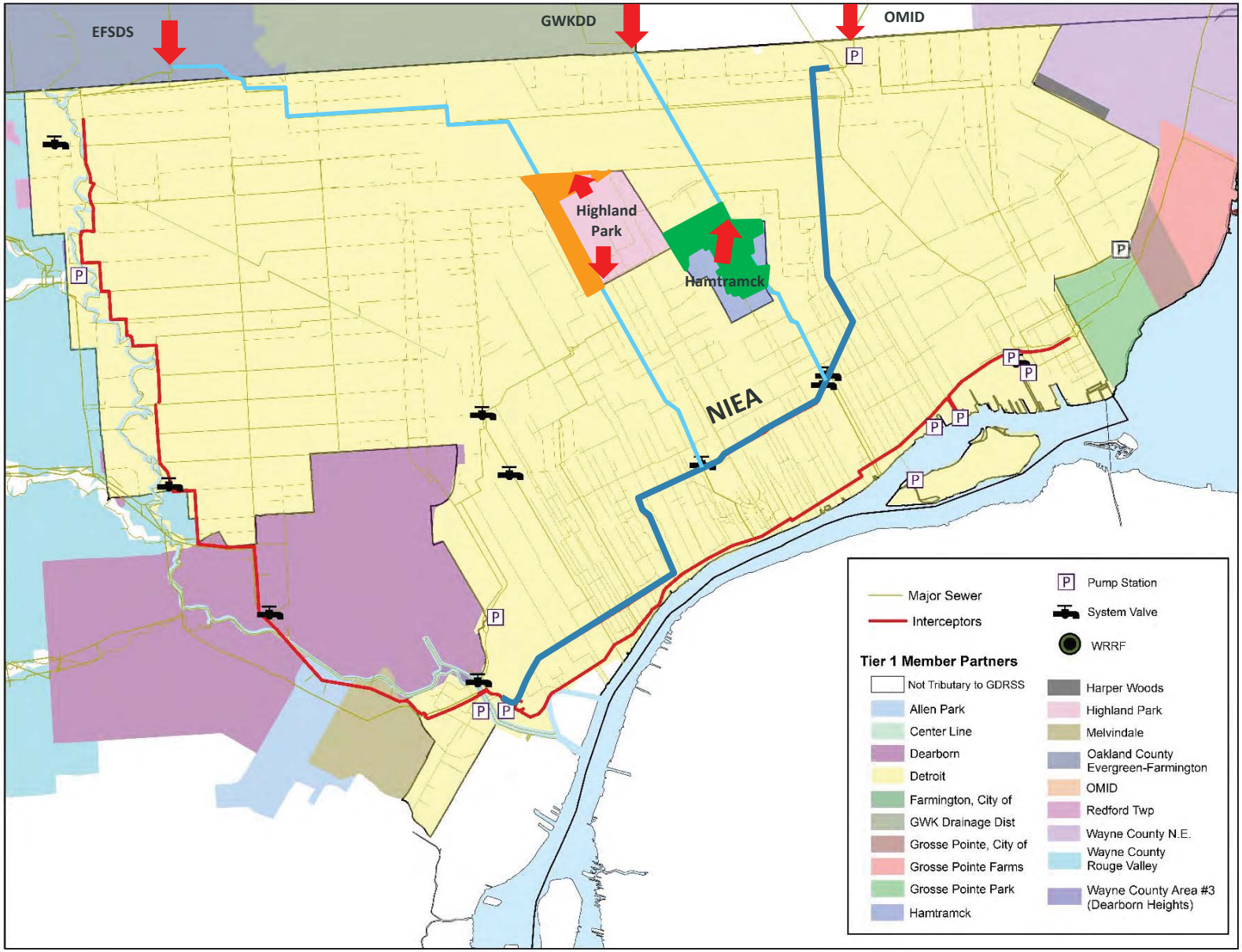
Orange area within Highland Park is tributary to North Interceptor East Arm (NIEA)

Northwest Interceptor



Orange area within Highland Park is tributary to Northwest Interceptor (NWI)

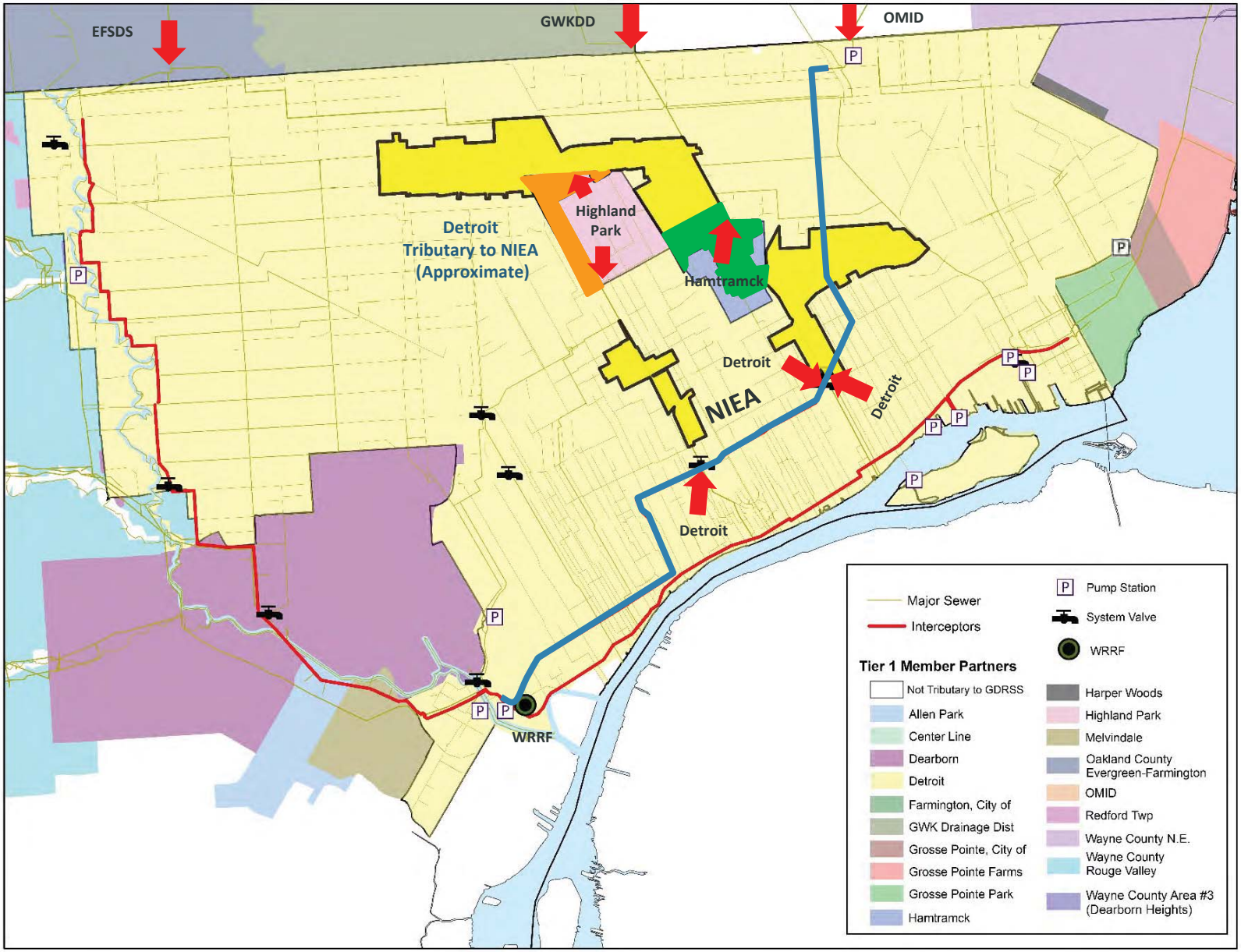
North Interceptor East Arm



Orange area within Highland Park is tributary to North Interceptor East Arm (NIEA)

Green area within Hamtramck is tributary to NIEA

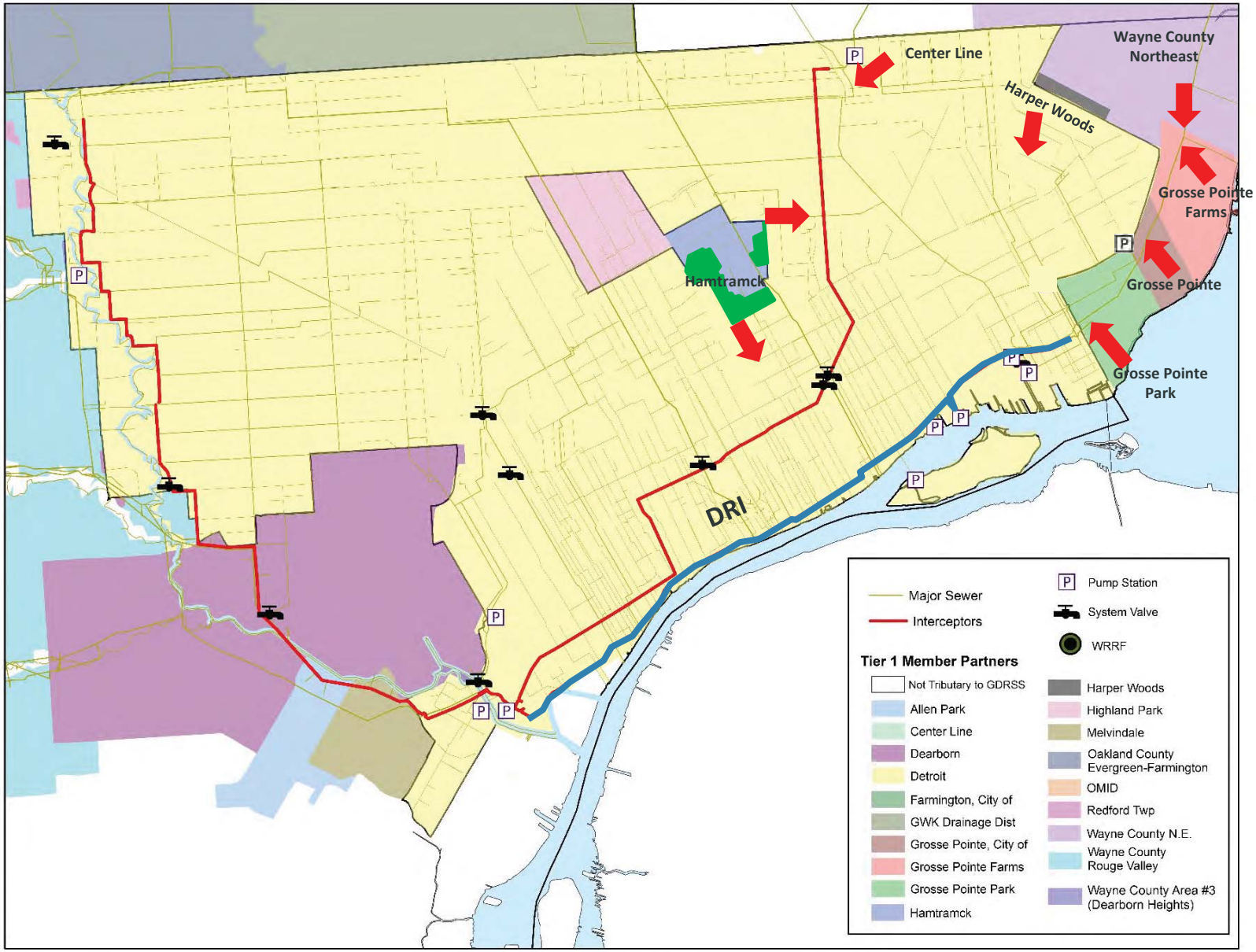
North Interceptor East Arm



Orange area within Highland Park is tributary to North Interceptor East Arm (NIEA)

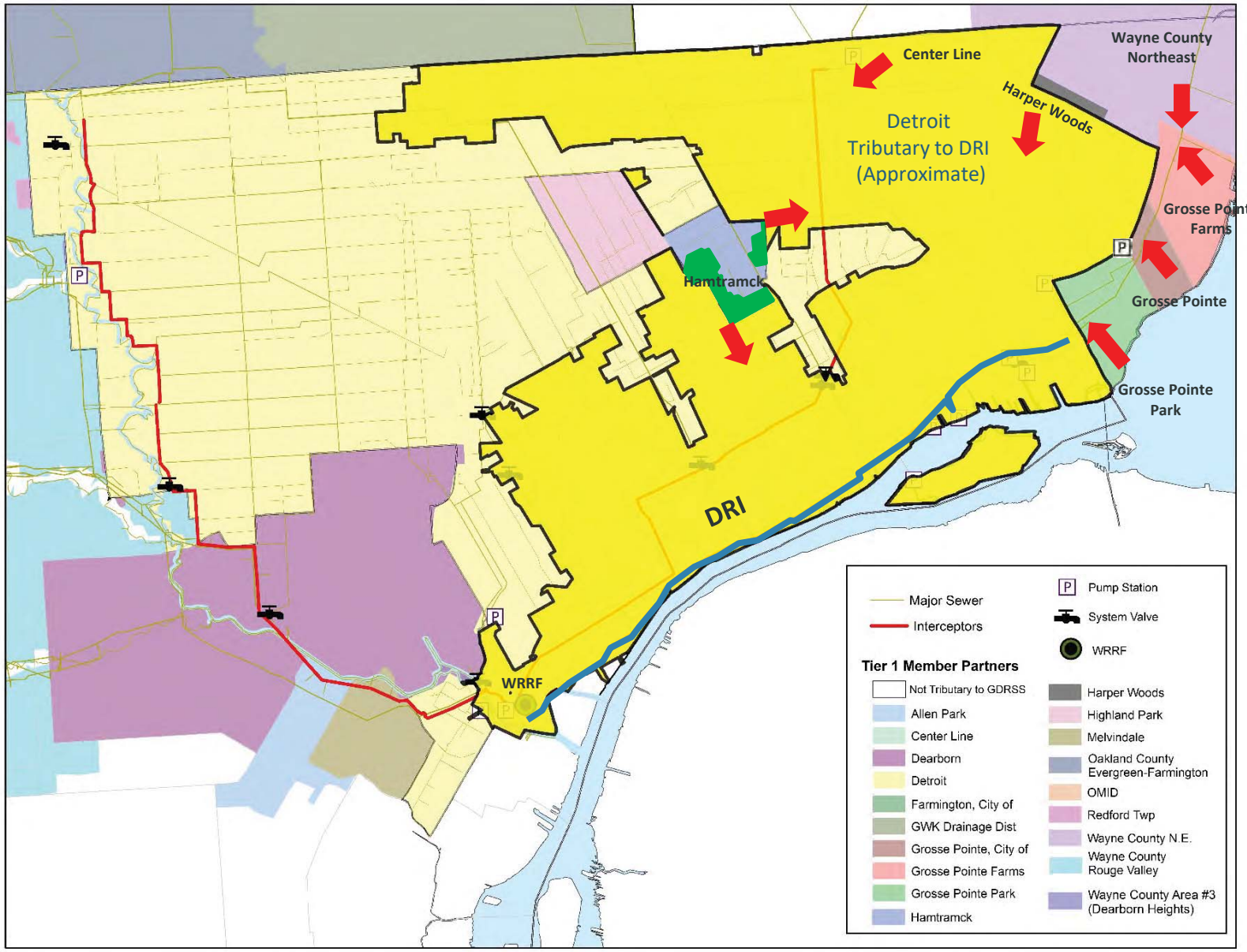
Green area within Hamtramck is tributary to NIEA

Detroit River Interceptor



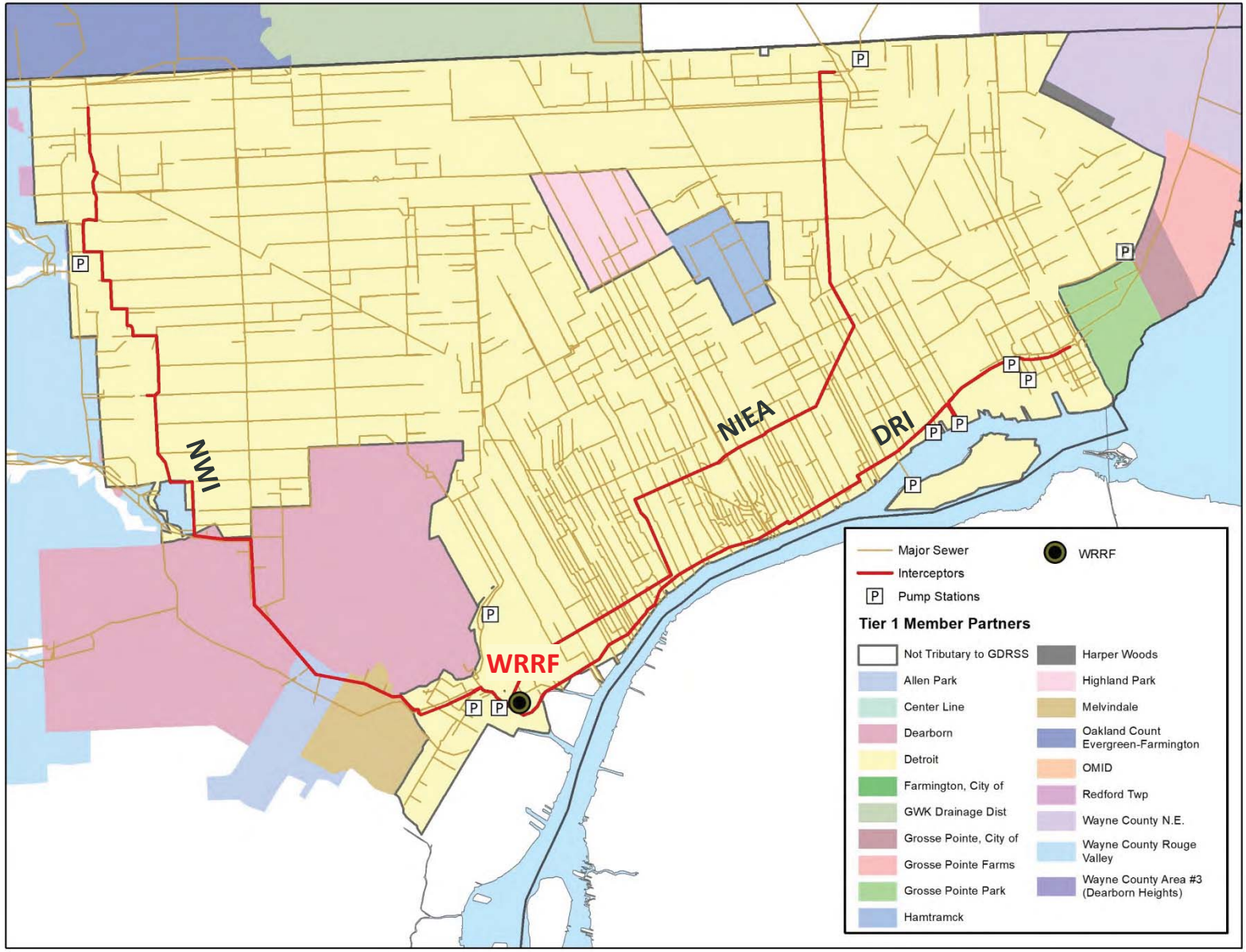
Green area within Hamtramck is tributary to Detroit River Interceptor (DRI)

Detroit River Interceptor



Green area within Hamtramck is tributary to Detroit River Interceptor (DRI)

GLWA Interceptors

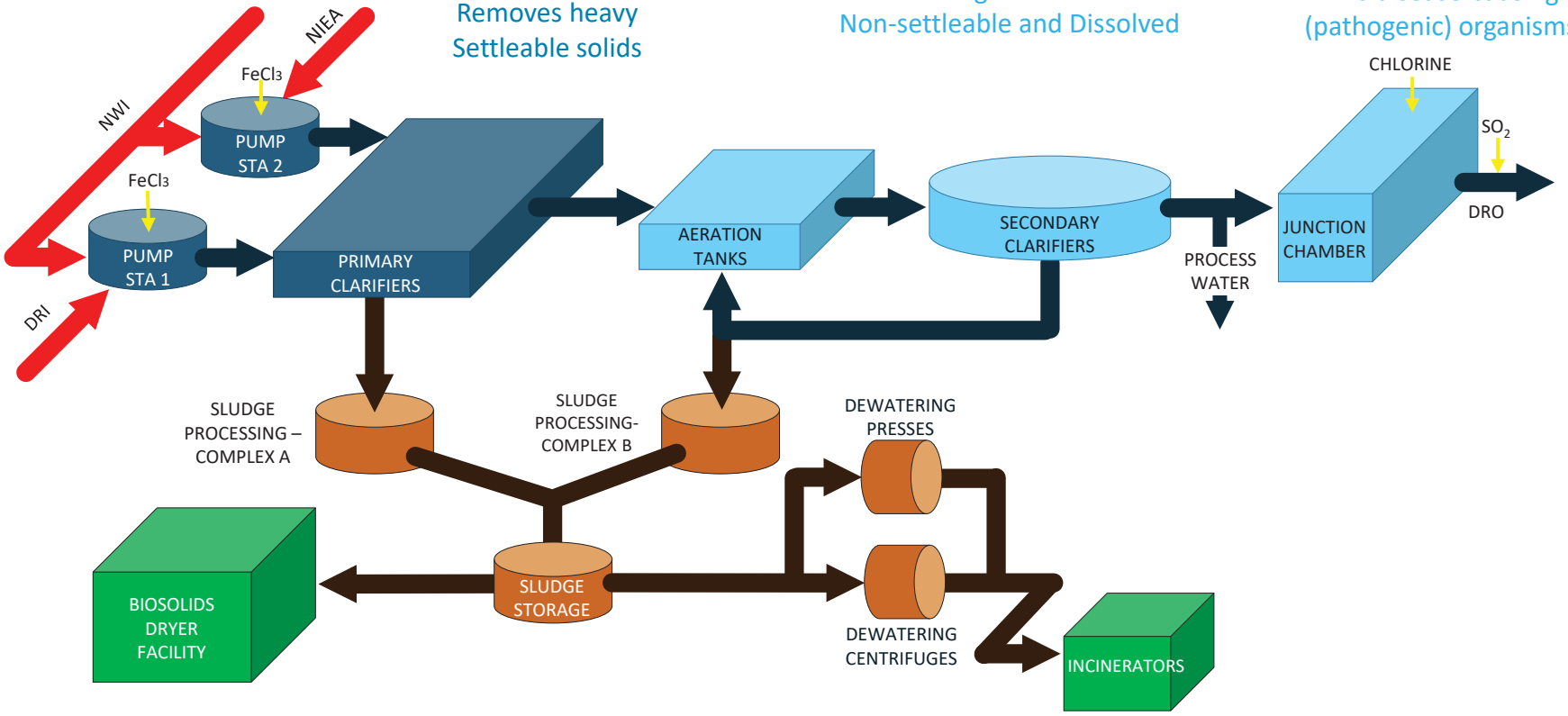


Water Resource Recovery Facility (WRRF) Schematic

Preliminary & Primary Treatment
Removes heavy Settleable solids

Secondary Treatment
Removes organic matter both Non-settleable and Dissolved

Disinfection
Kills disease-causing (pathogenic) organisms



Residuals
Sludge is dried and formed into fertilizer pellets for beneficial reuse

Dewatering
Removes water from solids to reduce volume before disposal

Residuals
Sludge is incinerated and the resulting ash is landfilled

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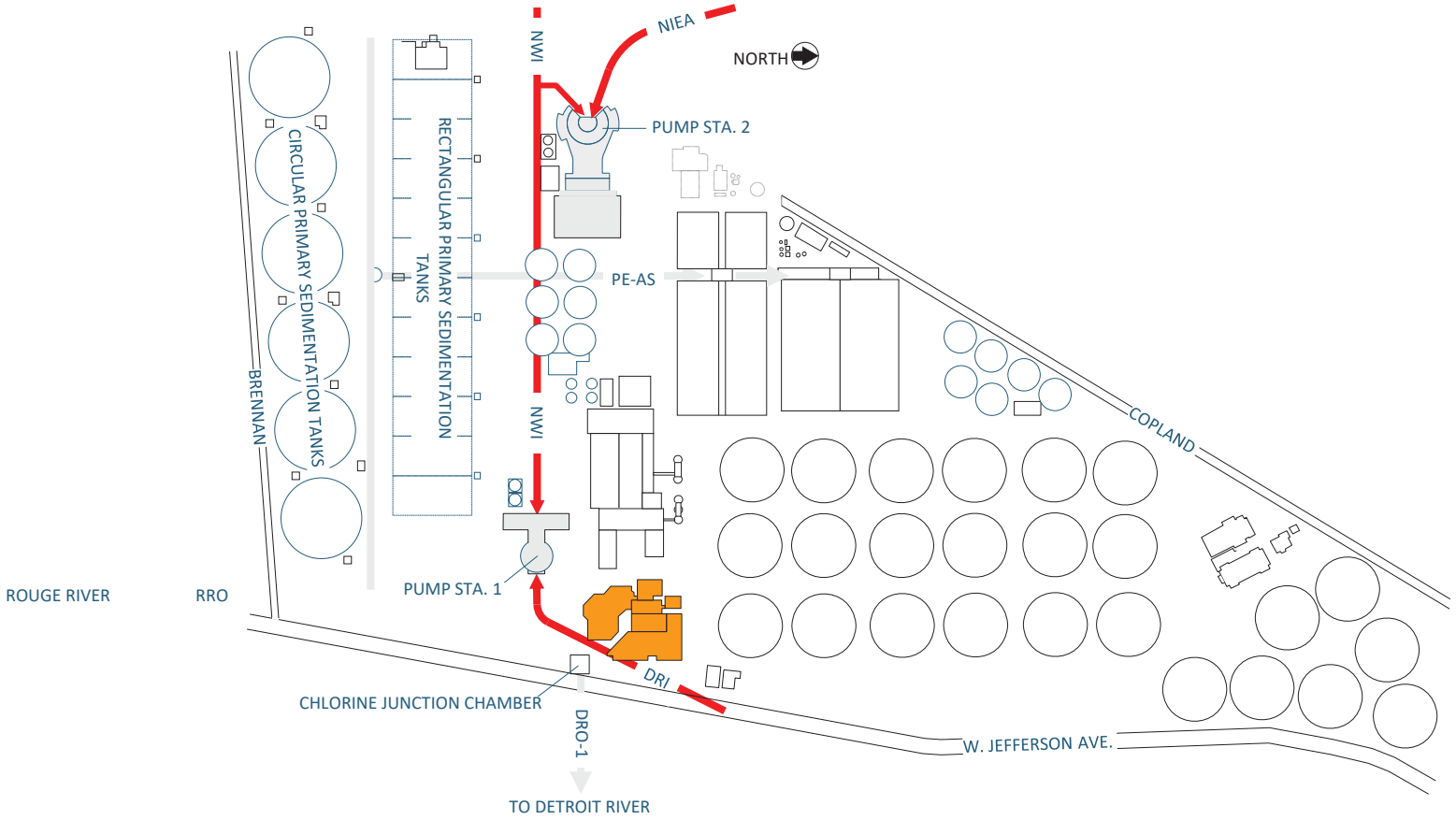
Water Resource Recovery Facility (WRRF) Physical Layout



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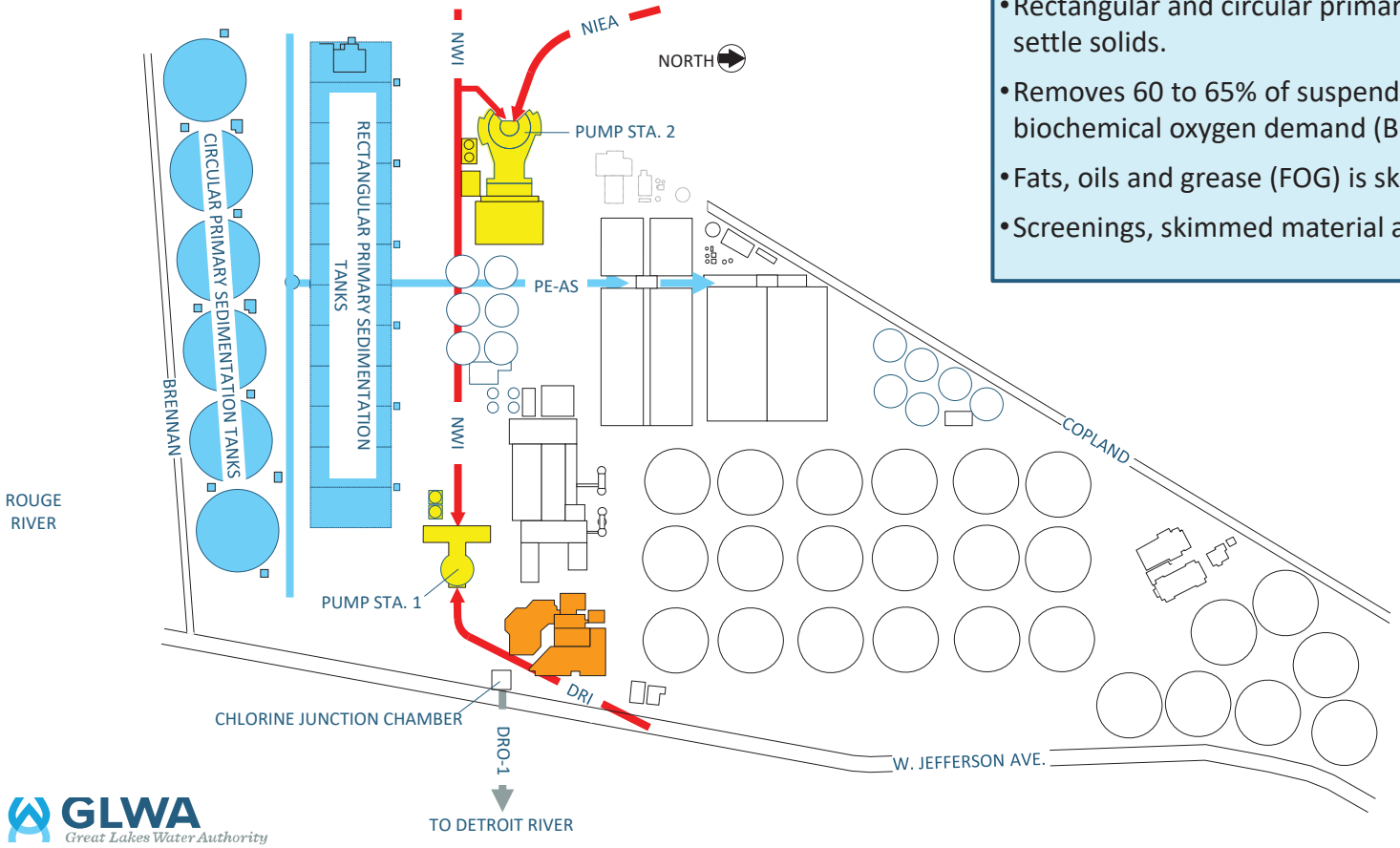
Dry Weather Preliminary & Primary Treatment

OPERATION

- PS-1 and PS-2 pump 450 MGD as average dry weather flow
- Screens remove large items (screenings) at both pump stations
- Ferric chloride added to remove excess phosphorus (P)
- Grit removal systems at both pump stations
- Rectangular and circular primary clarifiers slow flow to settle solids.
- Removes 60 to 65% of suspended solids (TSS) and biochemical oxygen demand (BOD)
- Fats, oils and grease (FOG) is skimmed
- Screenings, skimmed material and grit are landfilled



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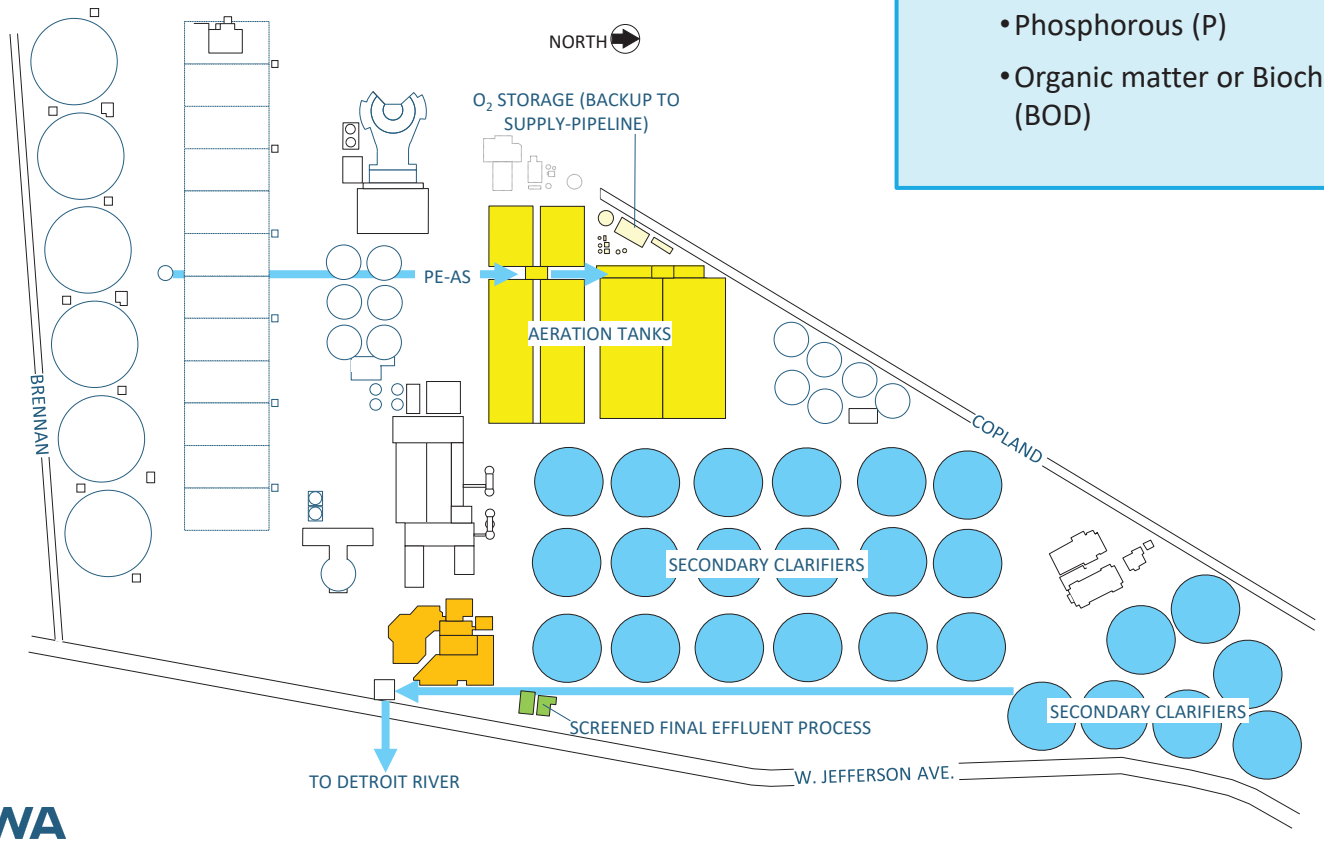
Dry Weather Secondary Treatment

OPERATION

- Aeration tanks provide oxygen for microorganisms (biomass) to thrive
- Target to keep the microorganism population stable
- Secondary clarifiers slow flow for microorganisms to settle
- Processes remove nearly all remaining
  - Suspended solids (TSS)
  - Phosphorous (P)
  - Organic matter or Biochemical Oxygen Demand (BOD)



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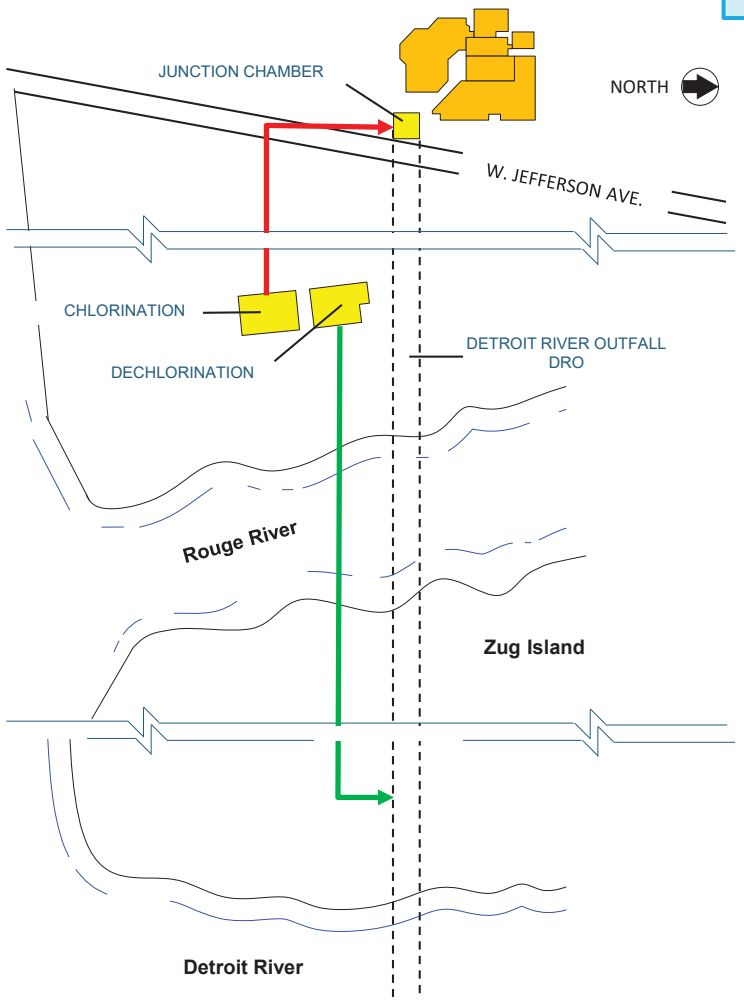
Dry Weather Disinfection

OPERATION

- Add chlorine to kill pathogens (disinfect)
- Add sulfur dioxide to remove any remaining chlorine after disinfection



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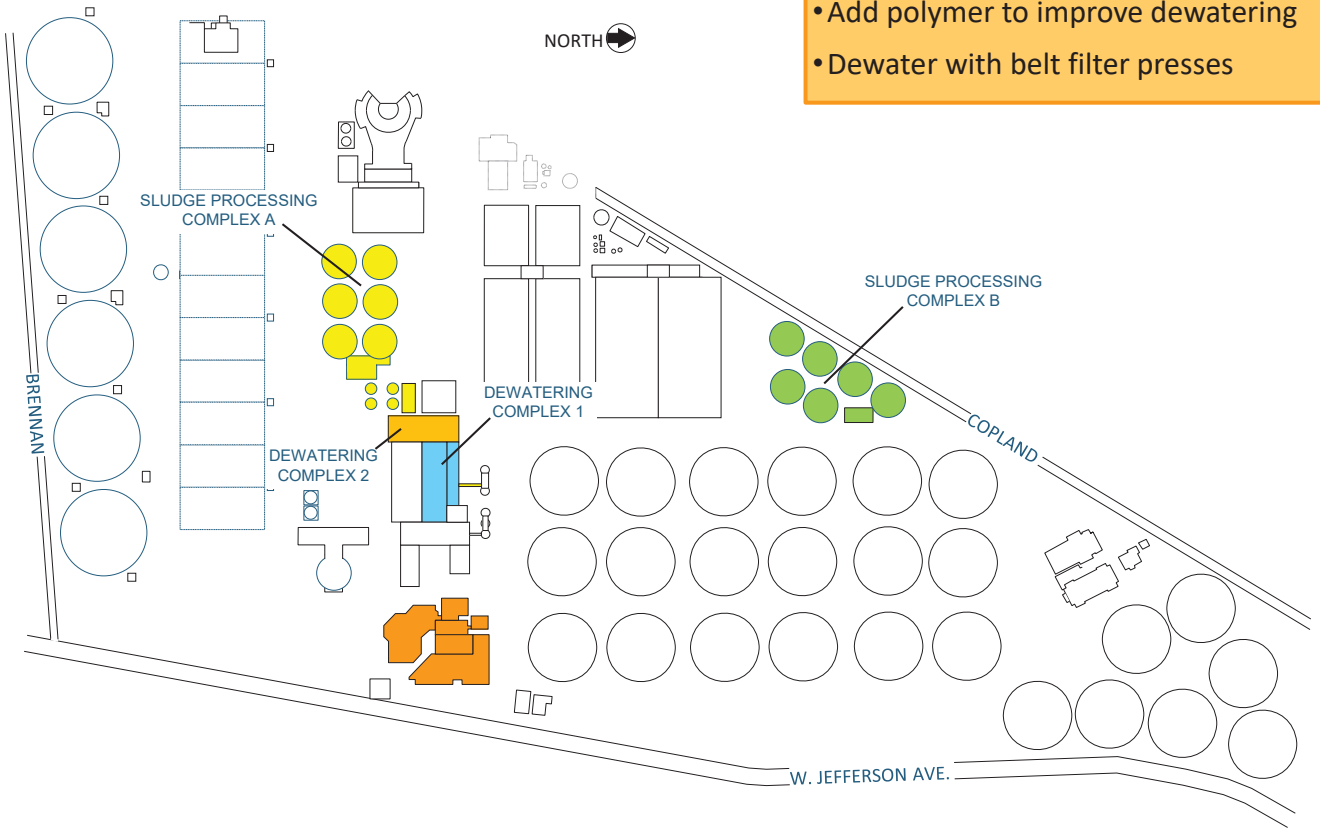
Dry Weather Dewatering

OPERATION

- Allow time for sludge to thicken
- Send thickened sludge to the biosolids dryer first where the BDF facility dewaters with centrifuges
- Dewater the remaining sludge
- Add polymer to improve dewatering
- Dewater with belt filter presses



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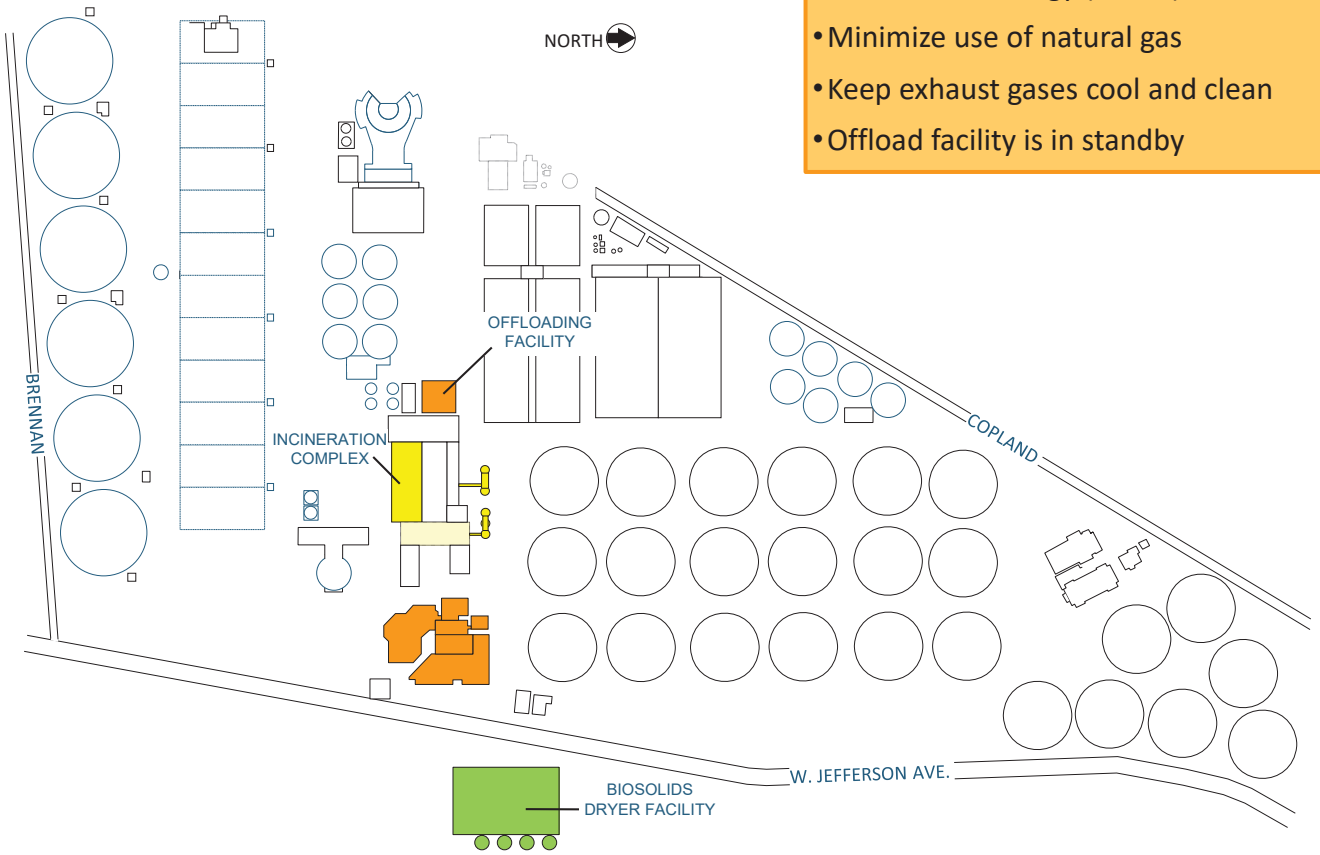
Dry Weather Residuals Disposal

OPERATION

- Prioritize beneficial reuse through production of fertilizer pellets
- Incinerate remaining sludge with upgraded emissions equipment that meets the Maximum Achievable Control Technology (MACT) standards
- Minimize use of natural gas
- Keep exhaust gases cool and clean
- Offload facility is in standby



Overview of System Components

Wet Weather

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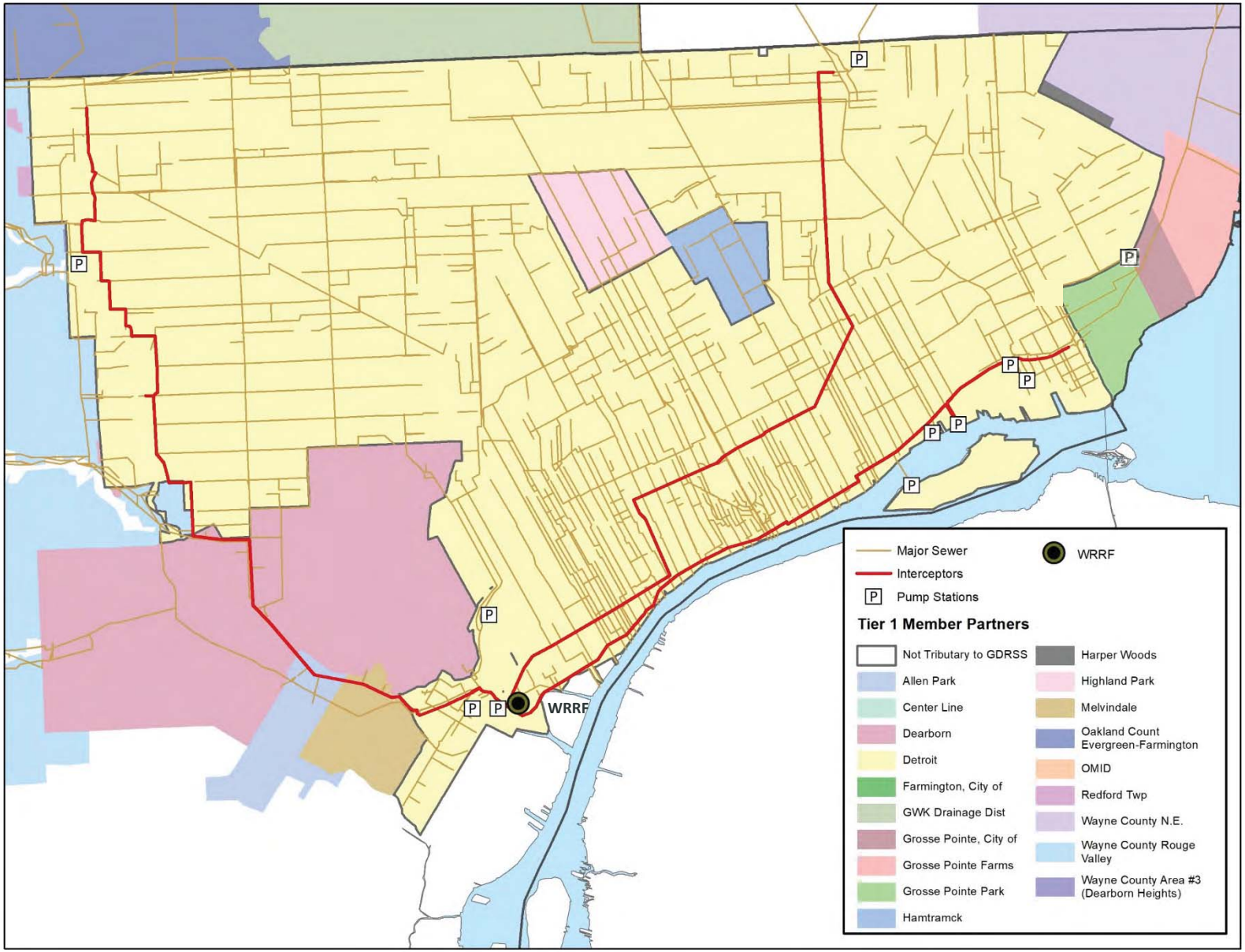
GLWA Wet Weather Facilities



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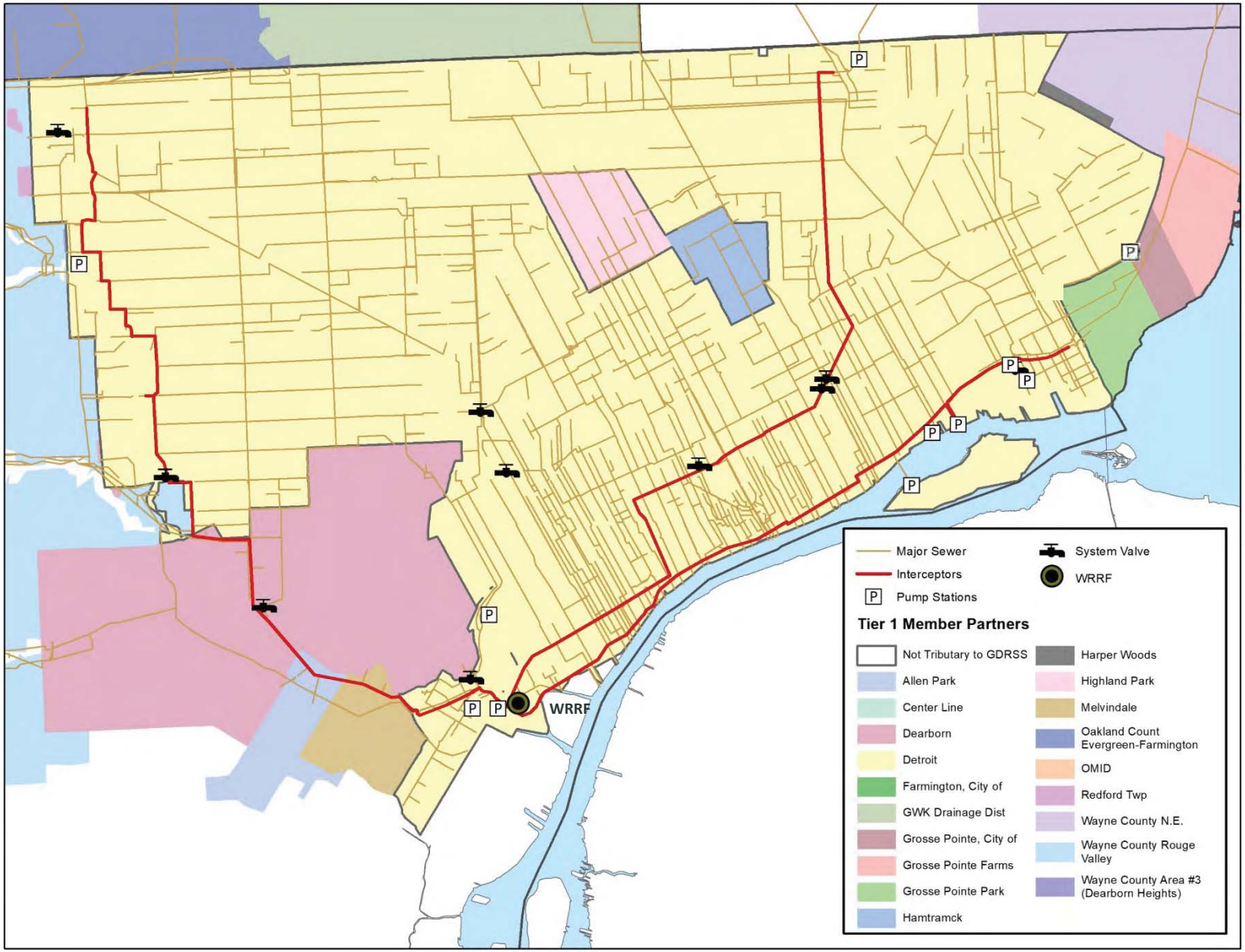

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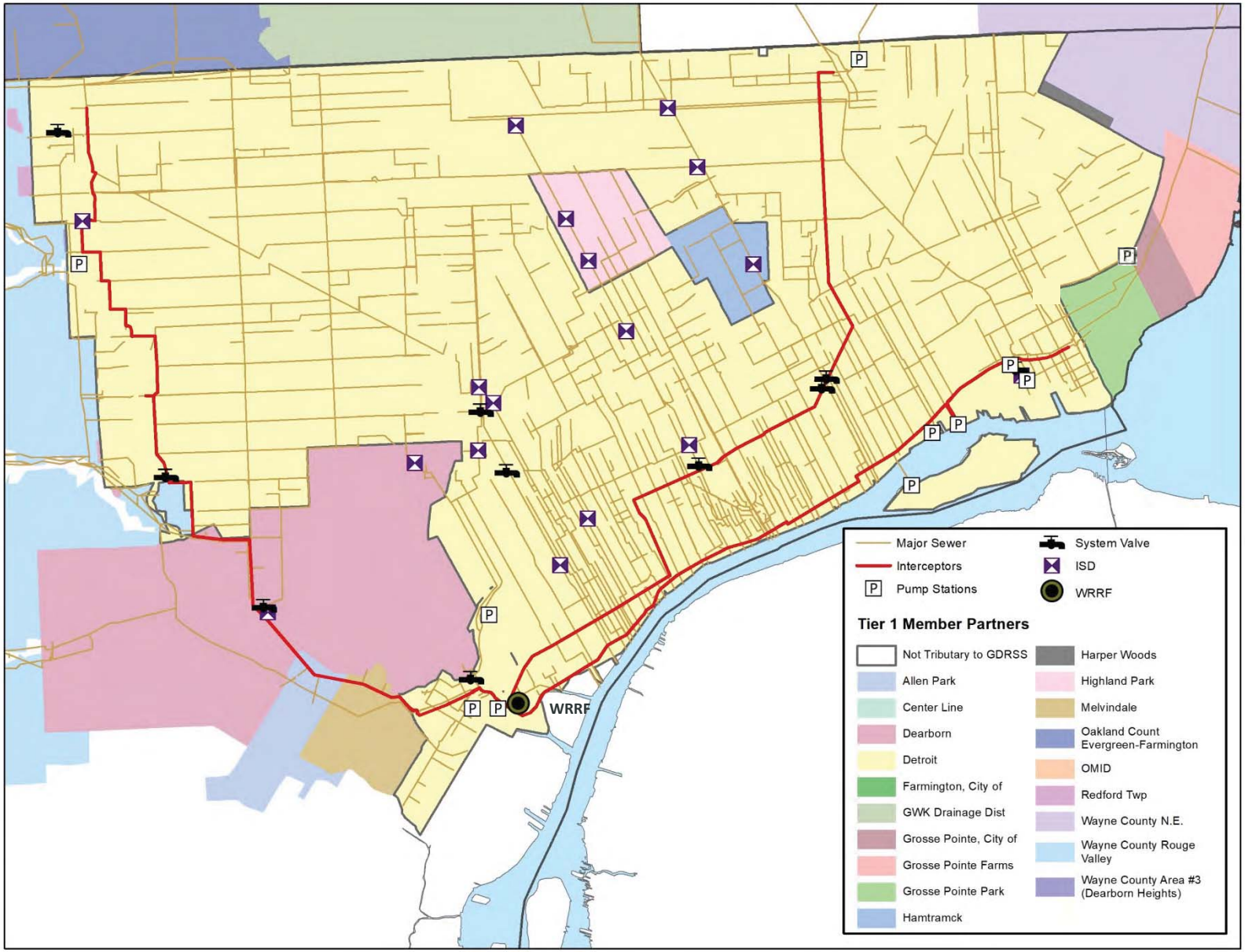

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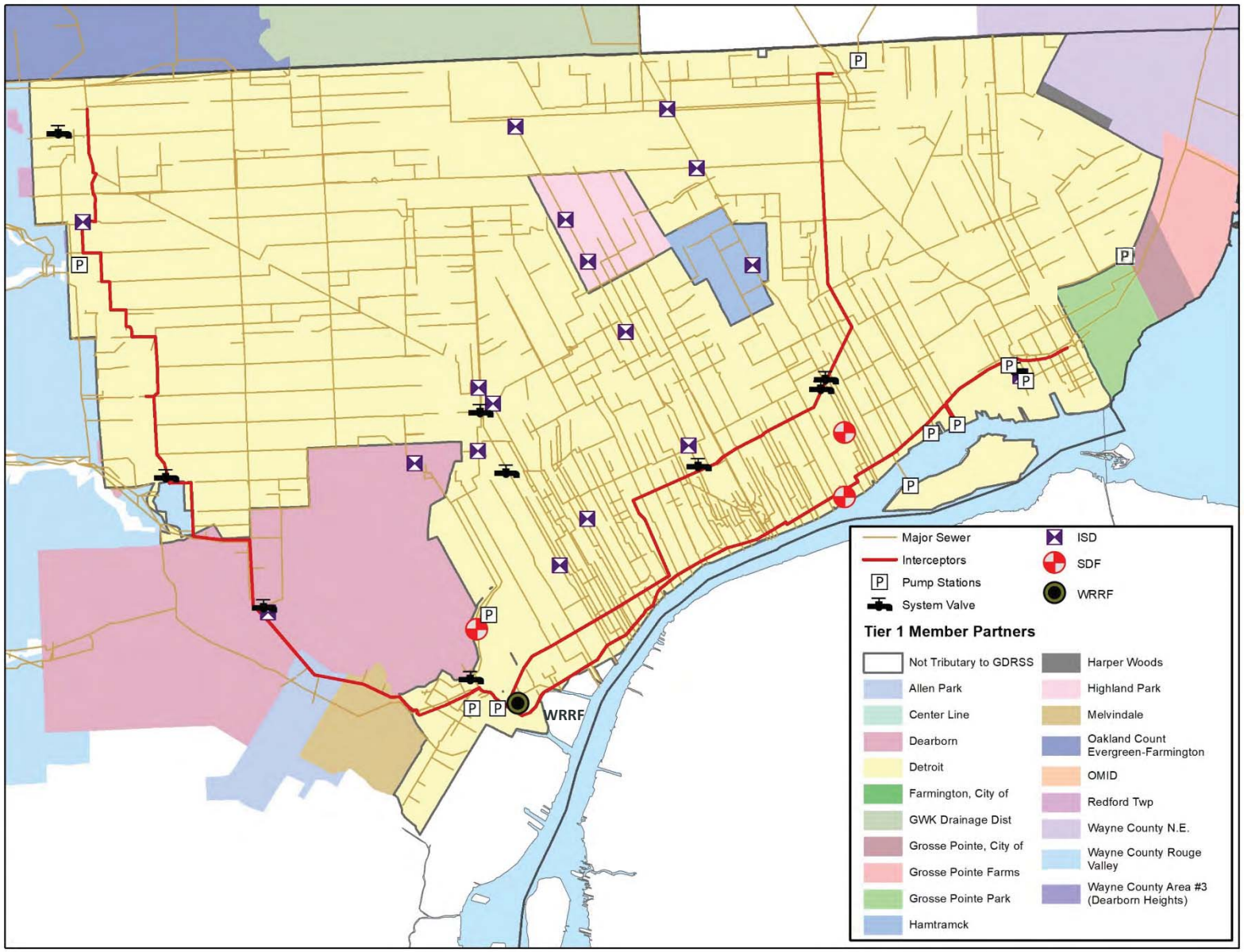

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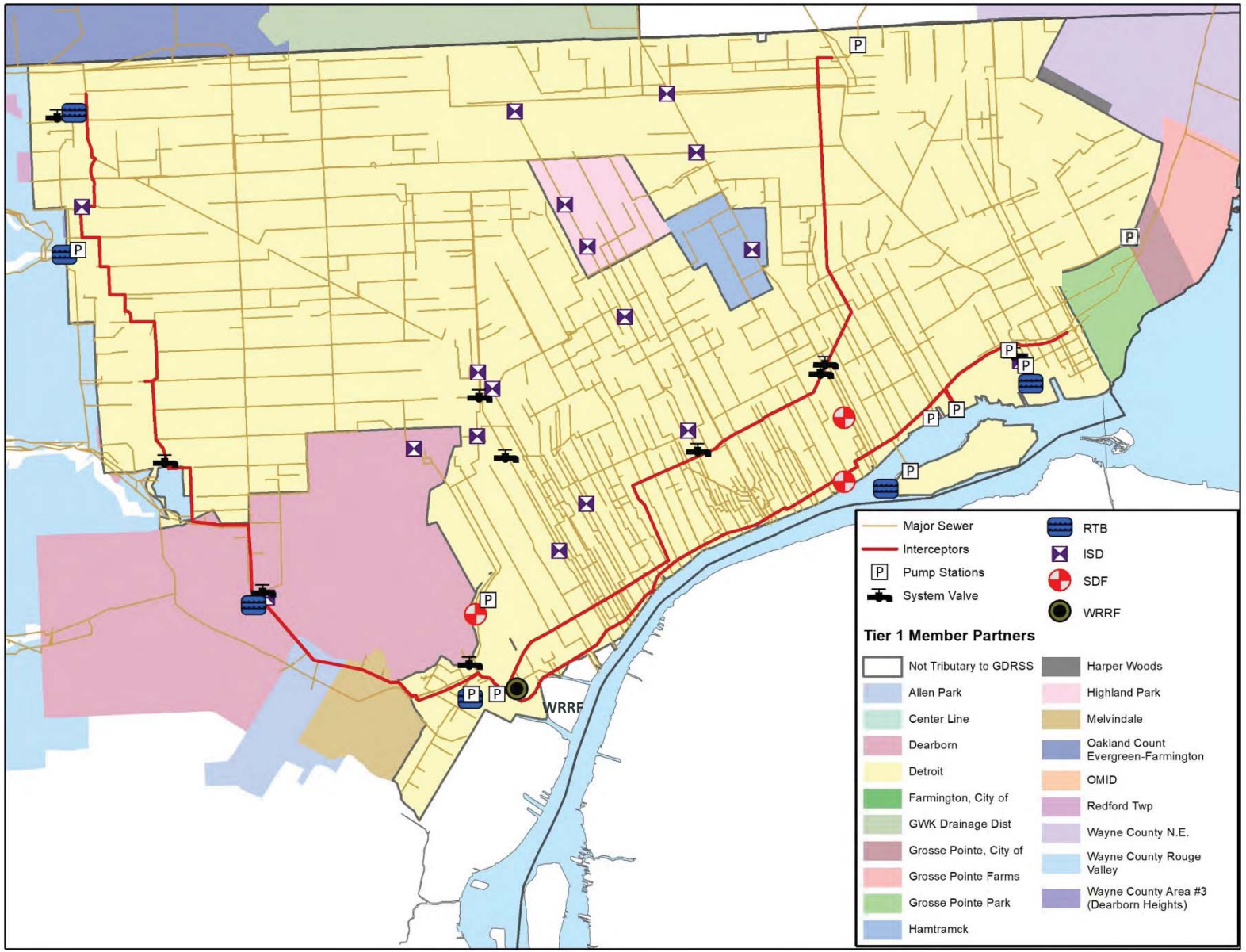

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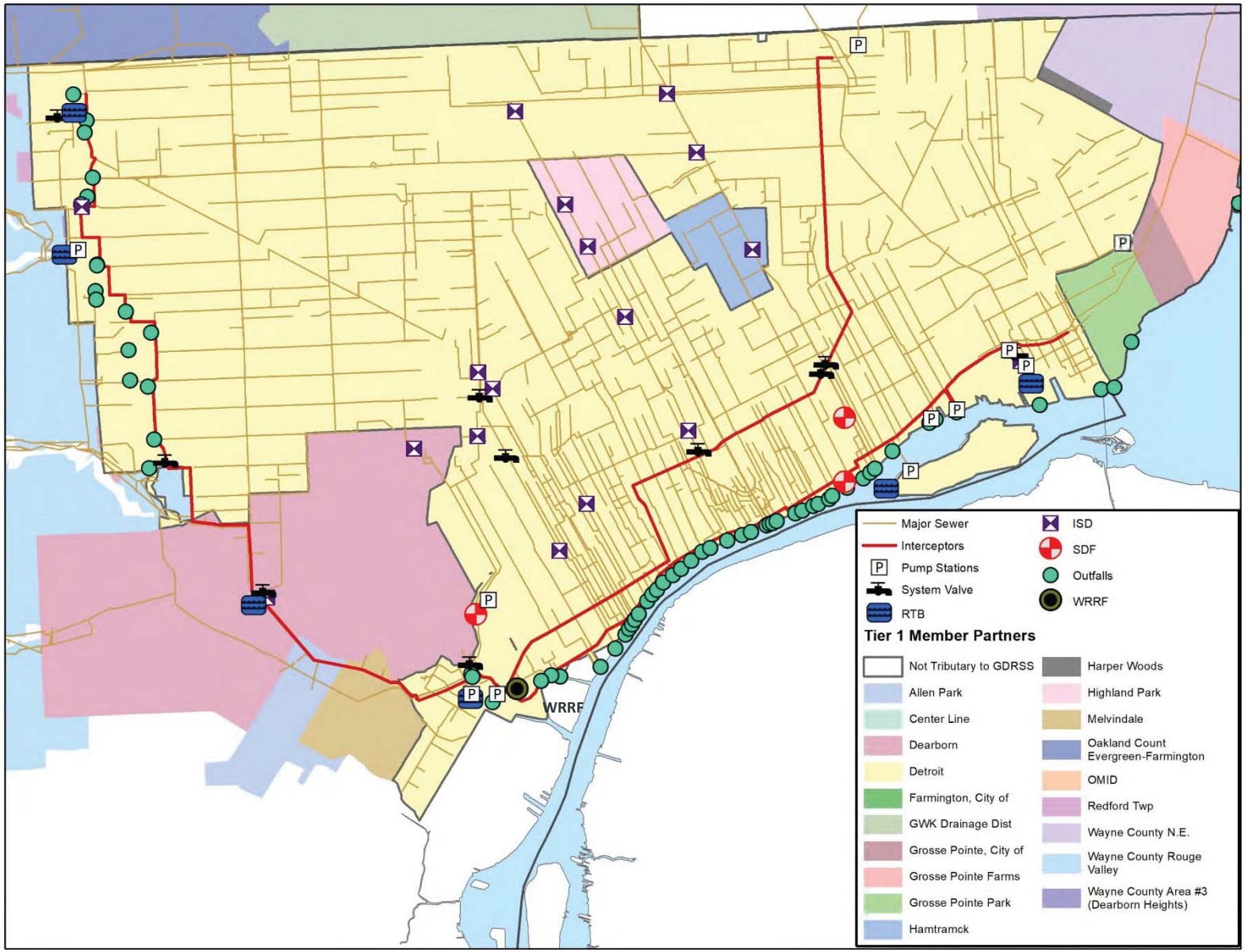
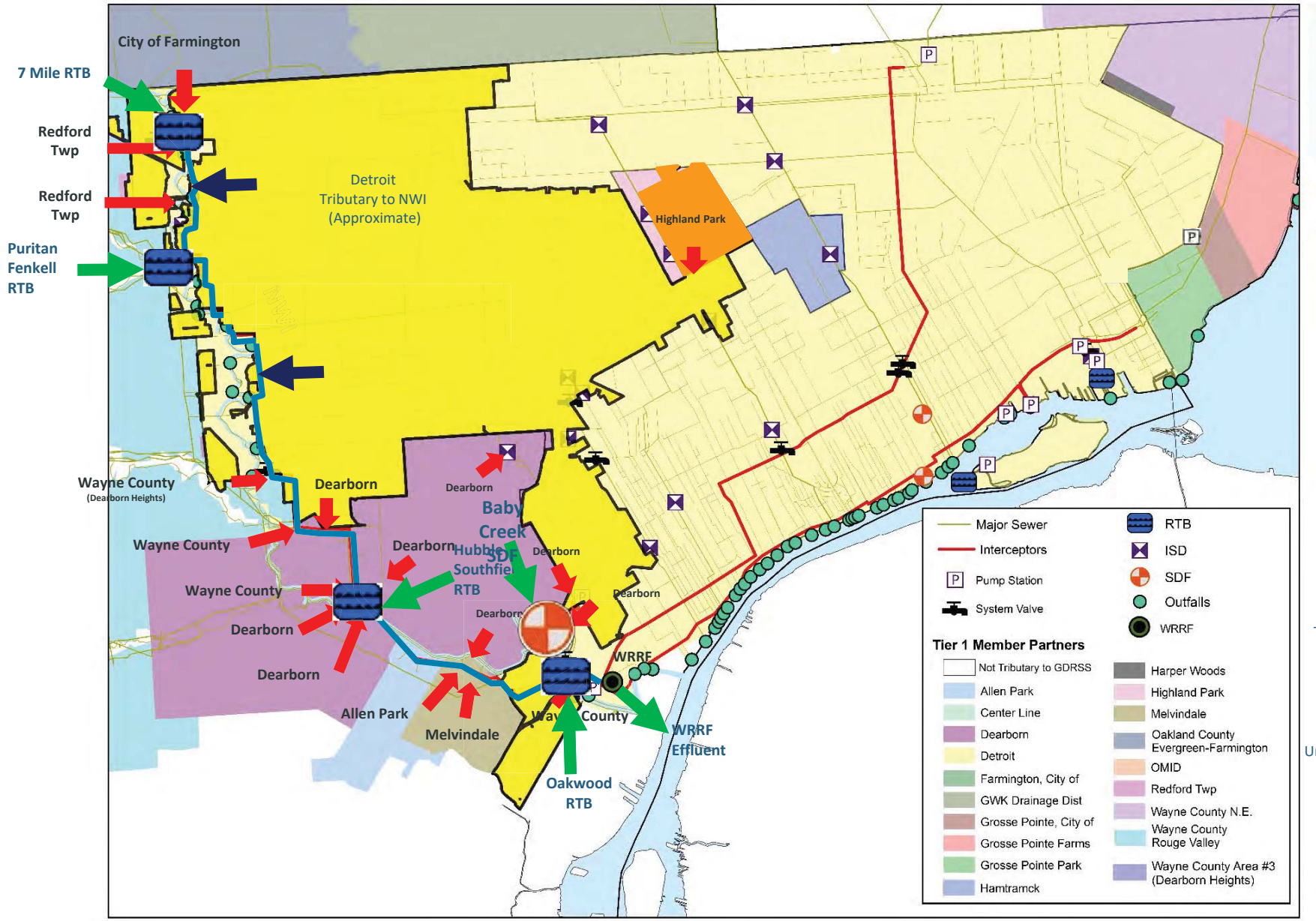
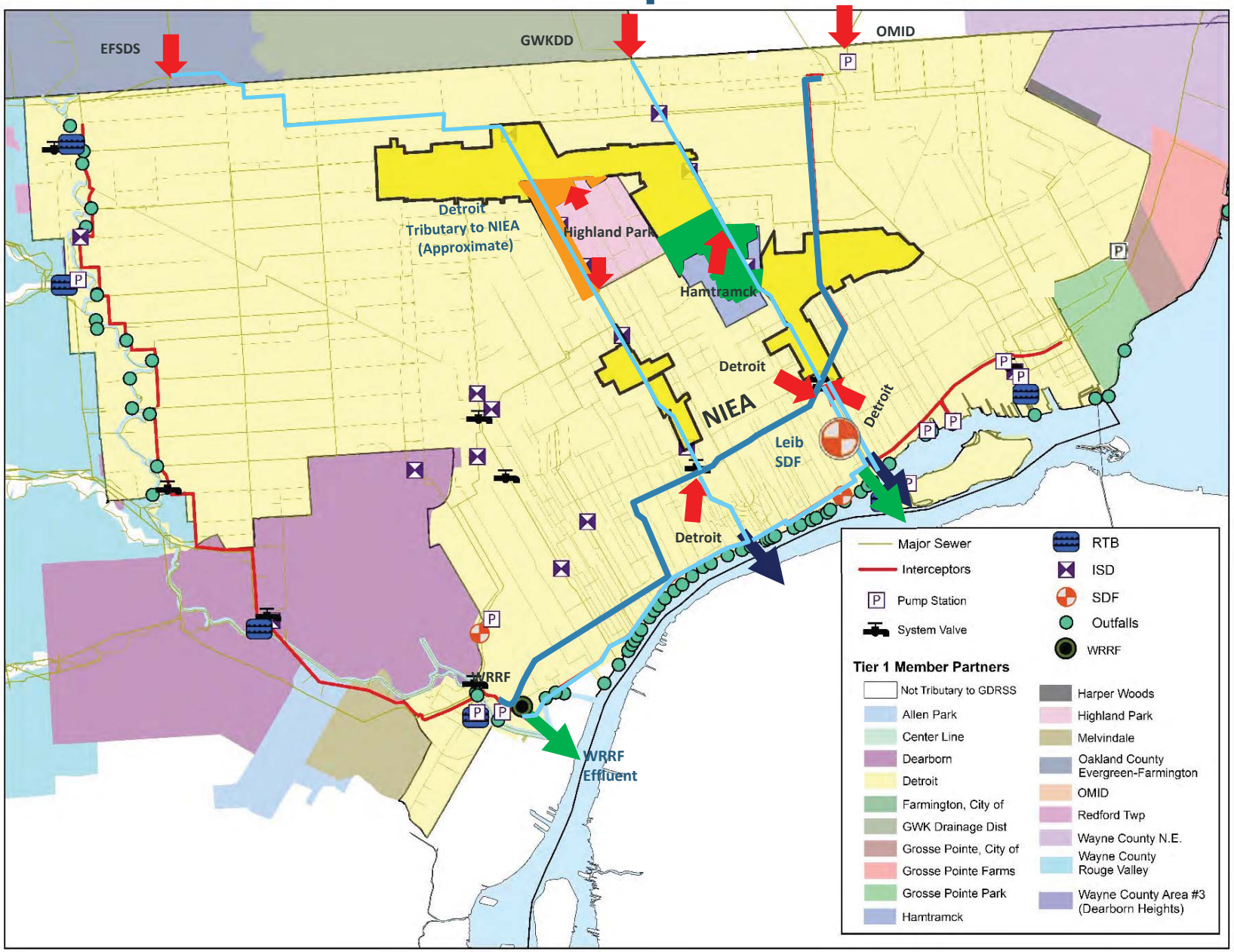


Northwest Interceptor



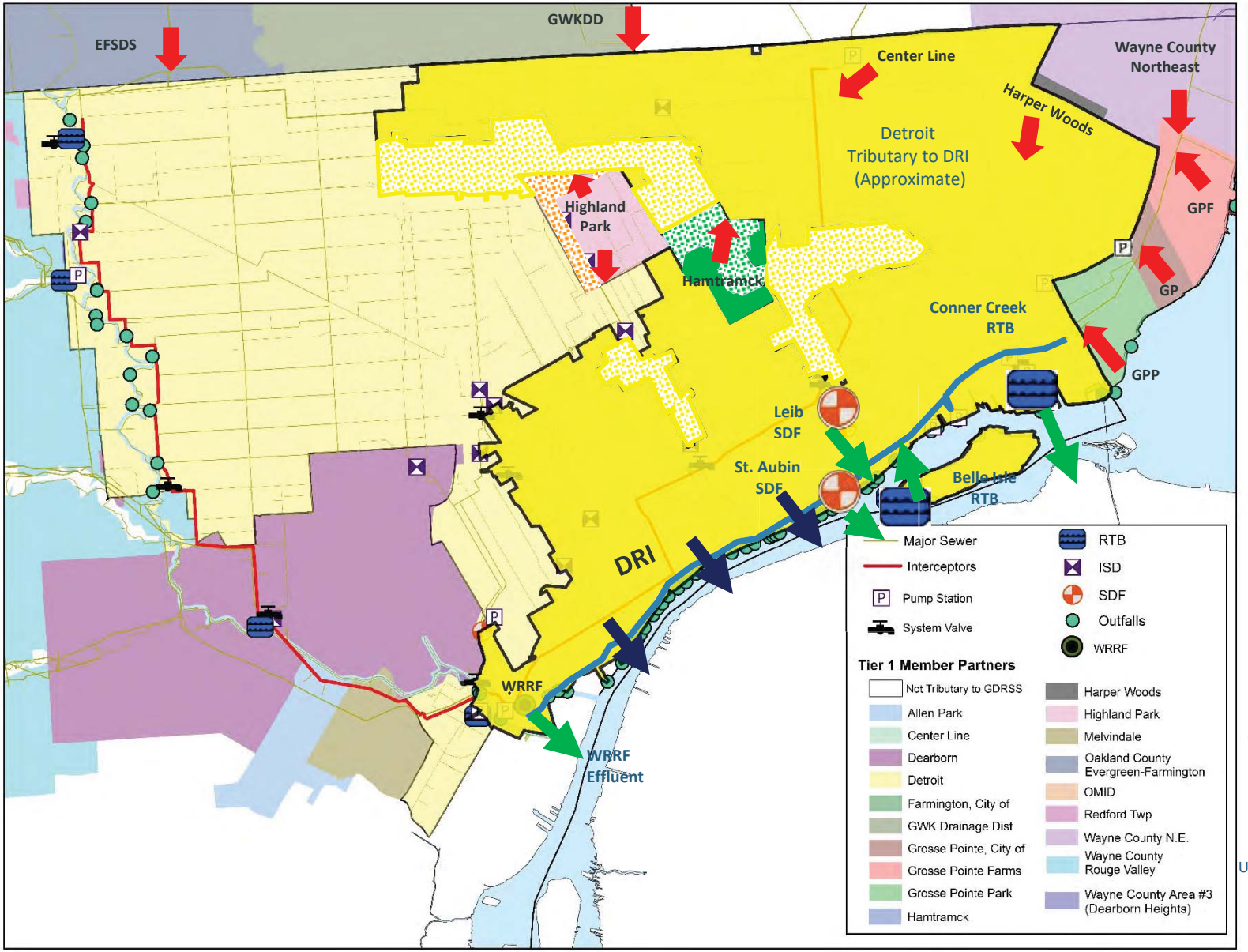
North Interceptor East Arm



Treated Discharge

Untreated Discharge

Detroit River Interceptor



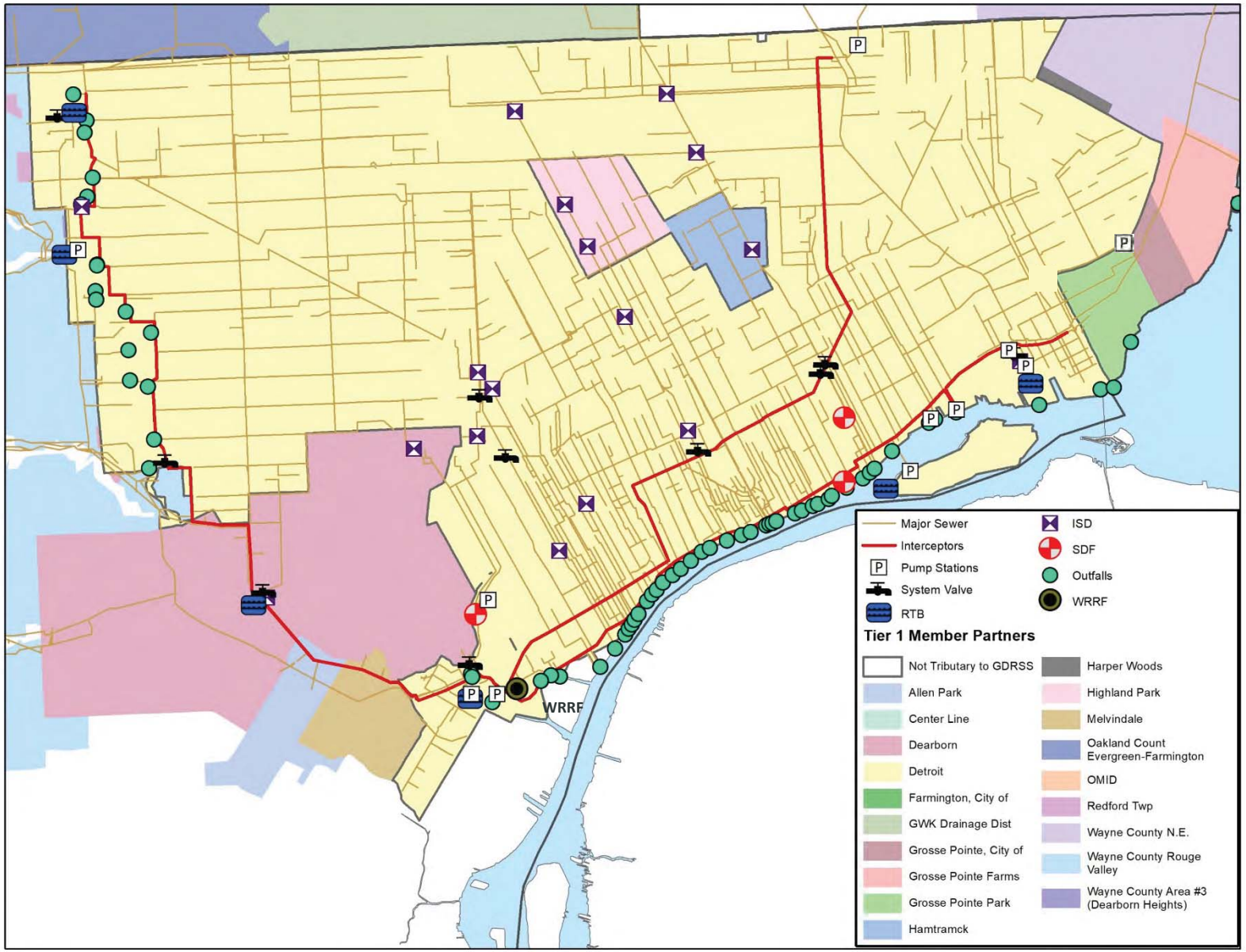
Dotted areas indicate area is tributary to both NIEA and DRI during wet weather

Complex and variable flow patterns occur during wet weather events

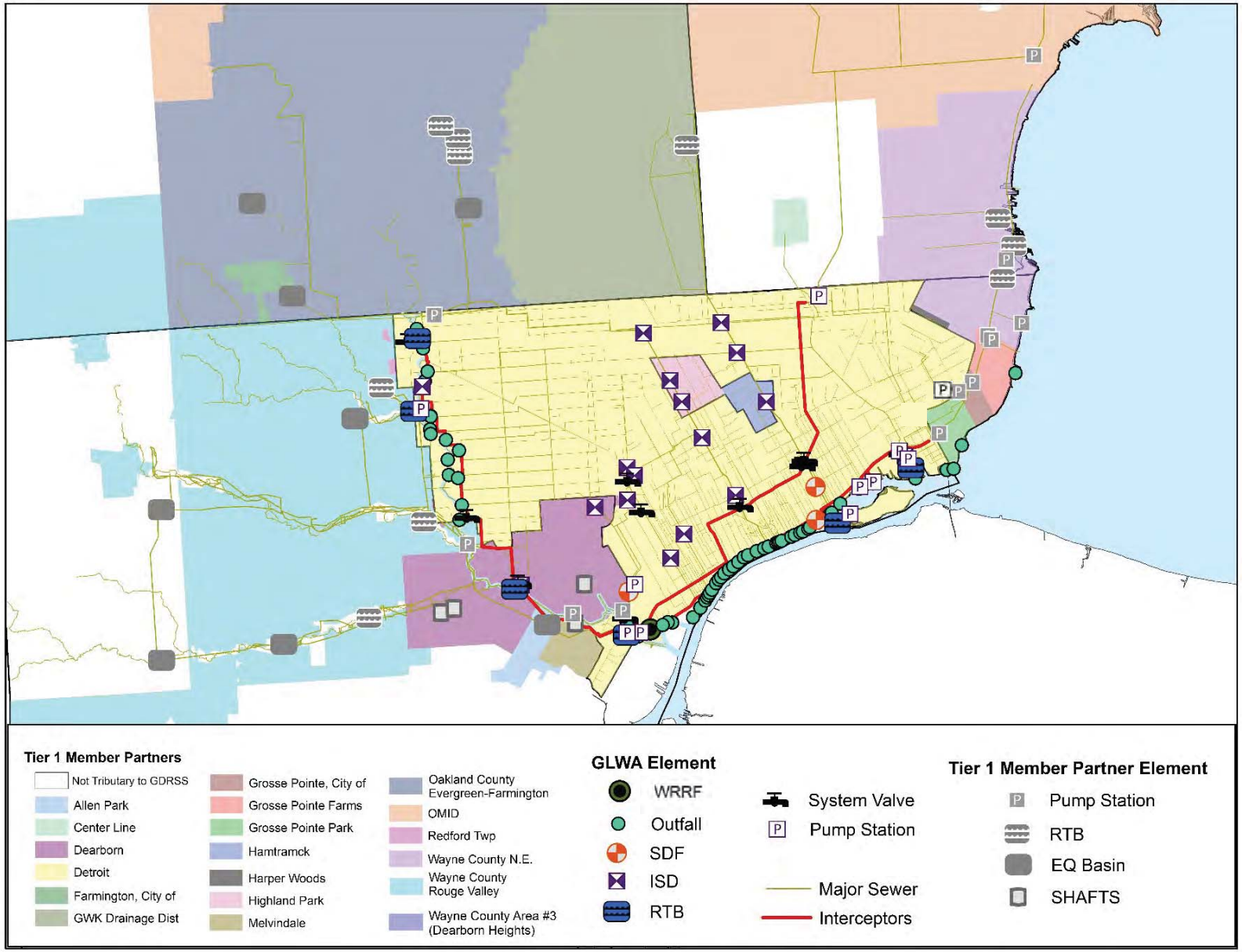
Treated Discharge

Untreated Discharge

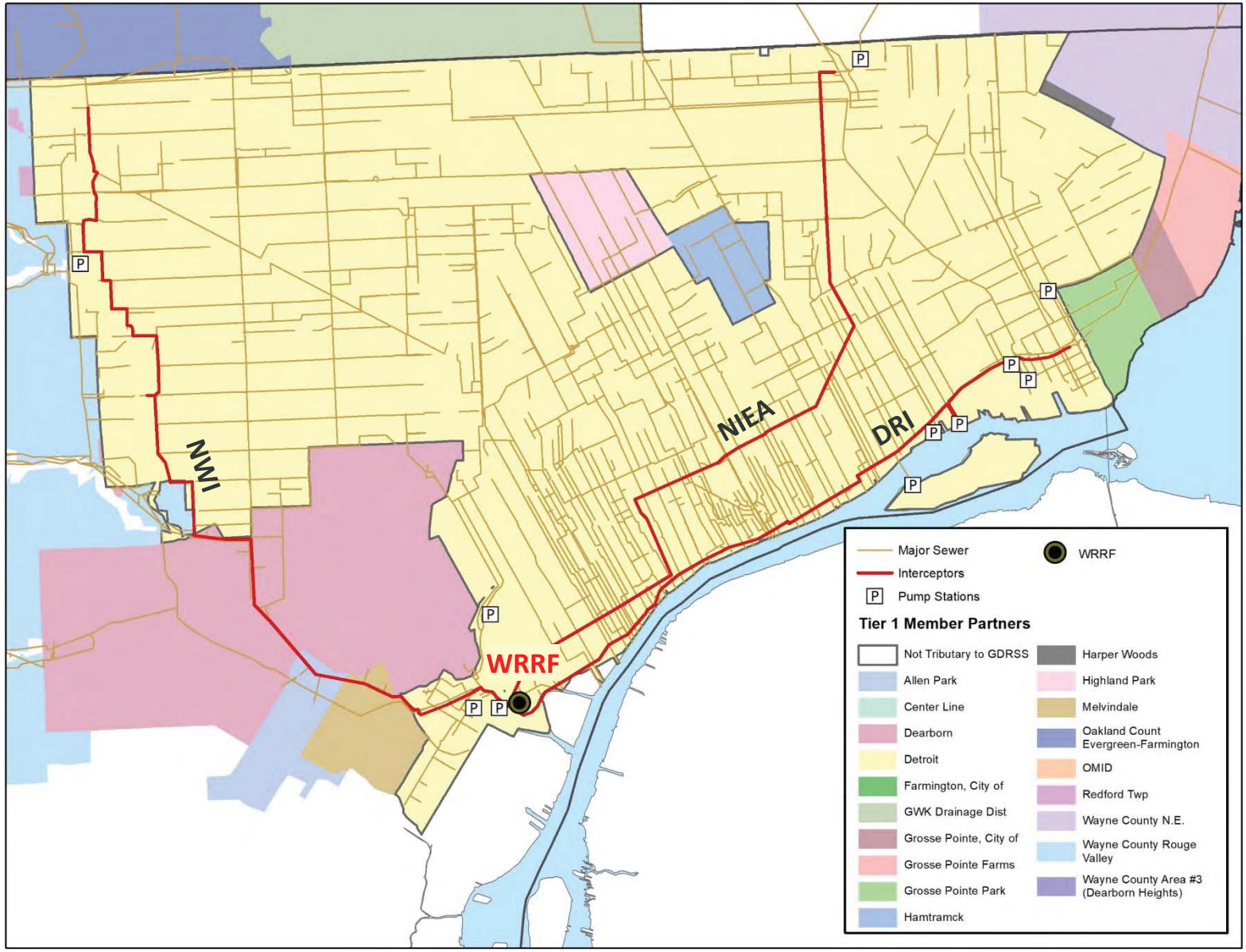
GLWA Wet Weather Facilities



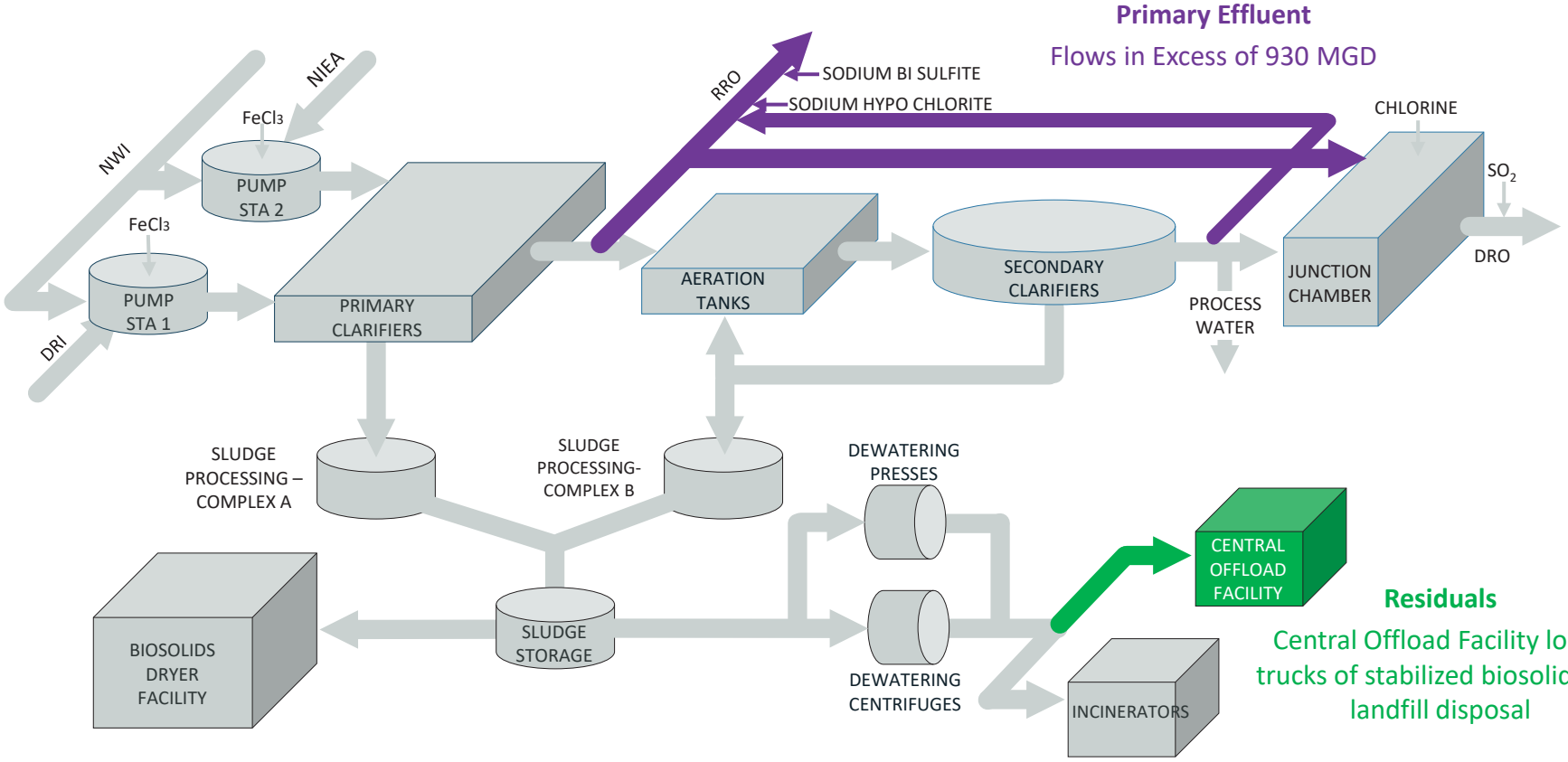
Regional System Operational Elements



GLWA Interceptors



Water Resource Recovery Facility (WRRF) Schematic



Residuals

Central Offload Facility loads trucks of stabilized biosolids for landfill disposal

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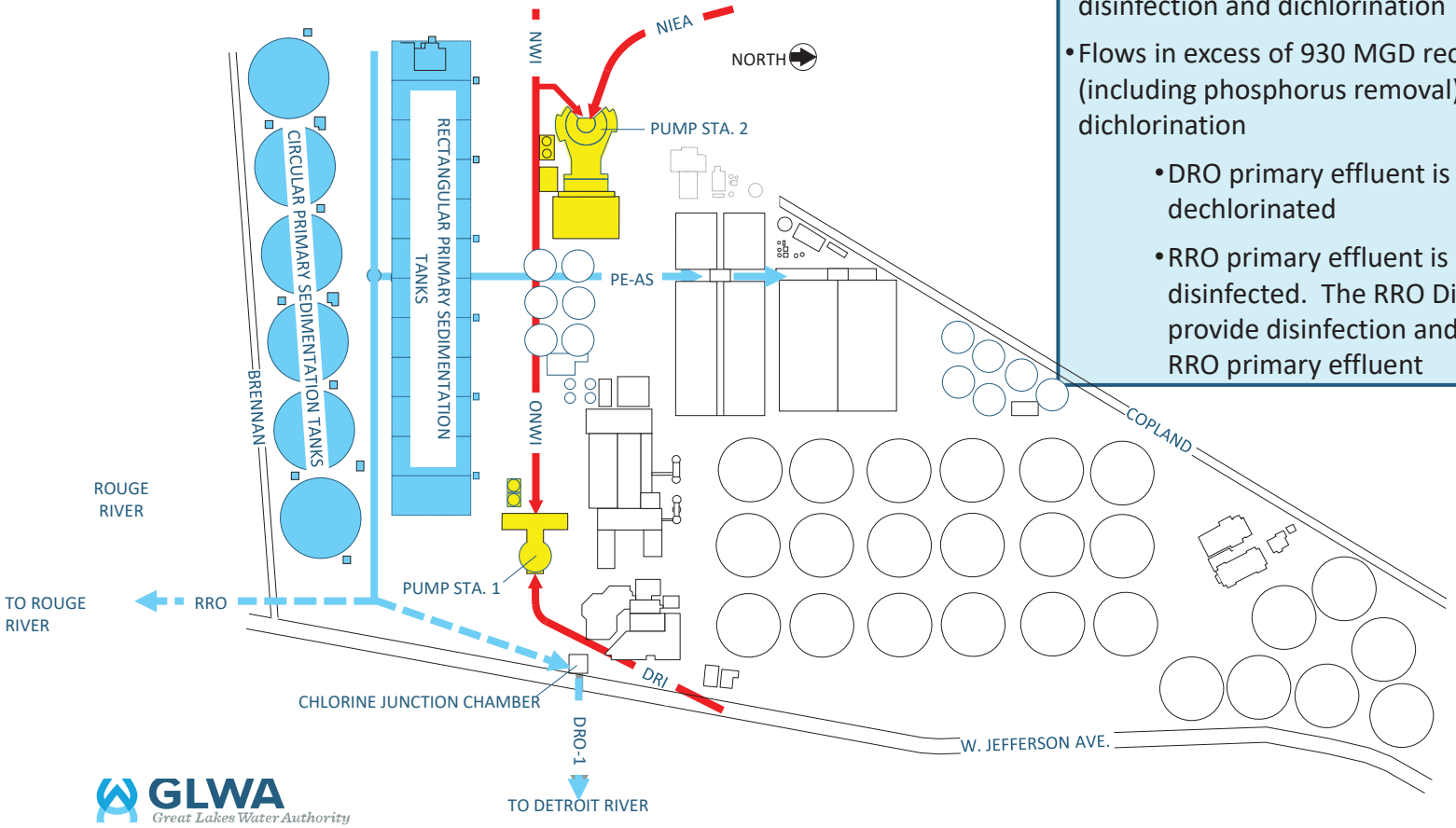
Wet Weather Preliminary & Primary Treatment

OPERATION

- PS-1 and PS-2 pump up to 1700 MGD peak wet weather flow
- Screens remove large items (screenings)
- Ferric Chloride added to remove excess phosphorus (P)
- Grit increases with wet weather
- Flows up to 930 MGD receive full secondary treatment, disinfection and dichlorination
- Flows in excess of 930 MGD receive primary treatment (including phosphorus removal), disinfection and dichlorination
  - DRO primary effluent is disinfected and dechlorinated
  - RRO primary effluent is currently not disinfected. The RRO Disinfection Project will provide disinfection and dichlorination for the RRO primary effluent



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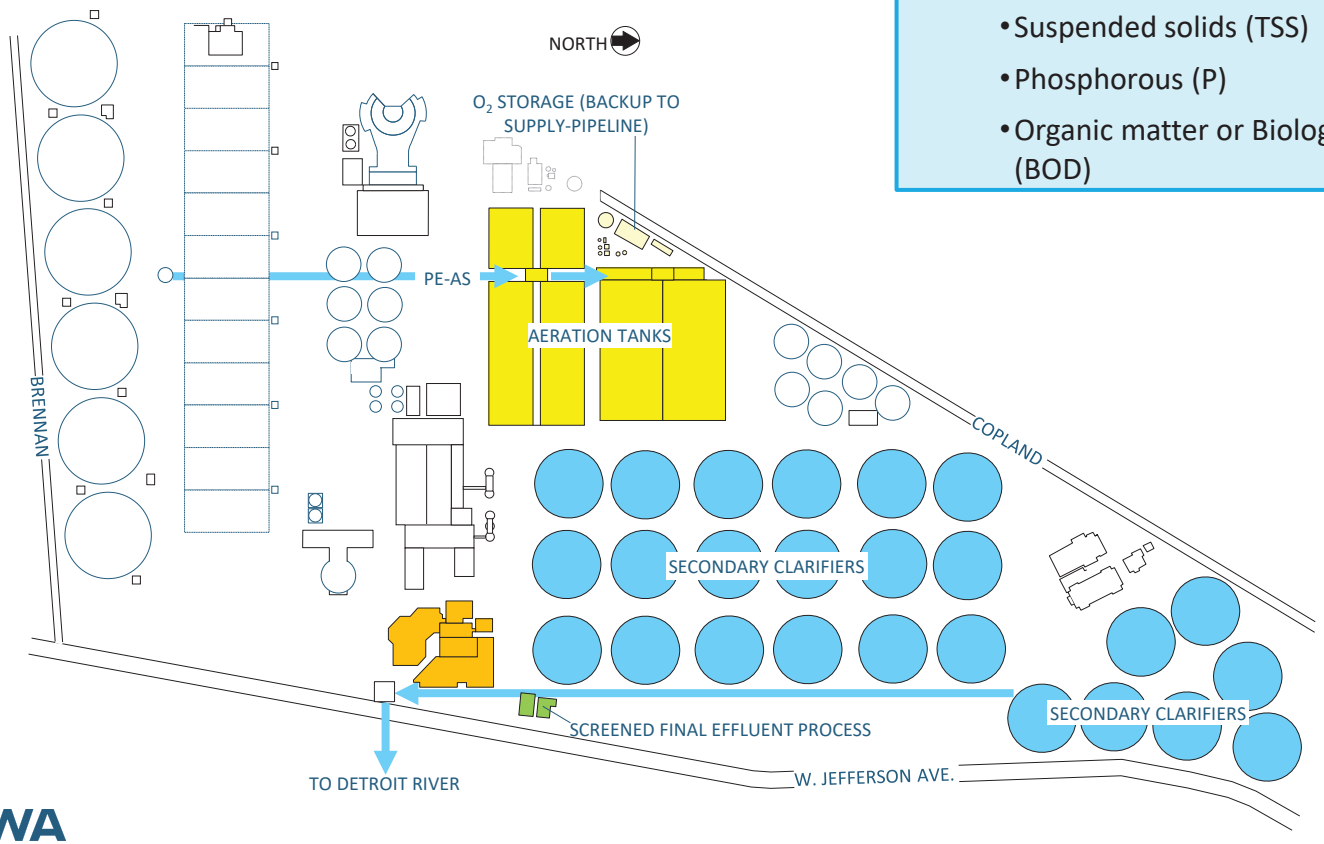
Wet Weather Secondary Treatment

OPERATION

- Flows up to 930 MGD receive full secondary treatment
- Aeration tanks provide oxygen for microorganisms (biomass) to thrive
- Target to keep the microorganism population stable
- Secondary clarifiers slow flow for microorganisms to settle
- Processes remove nearly all remaining
  - Suspended solids (TSS)
  - Phosphorous (P)
  - Organic matter or Biological Oxygen Demand (BOD)



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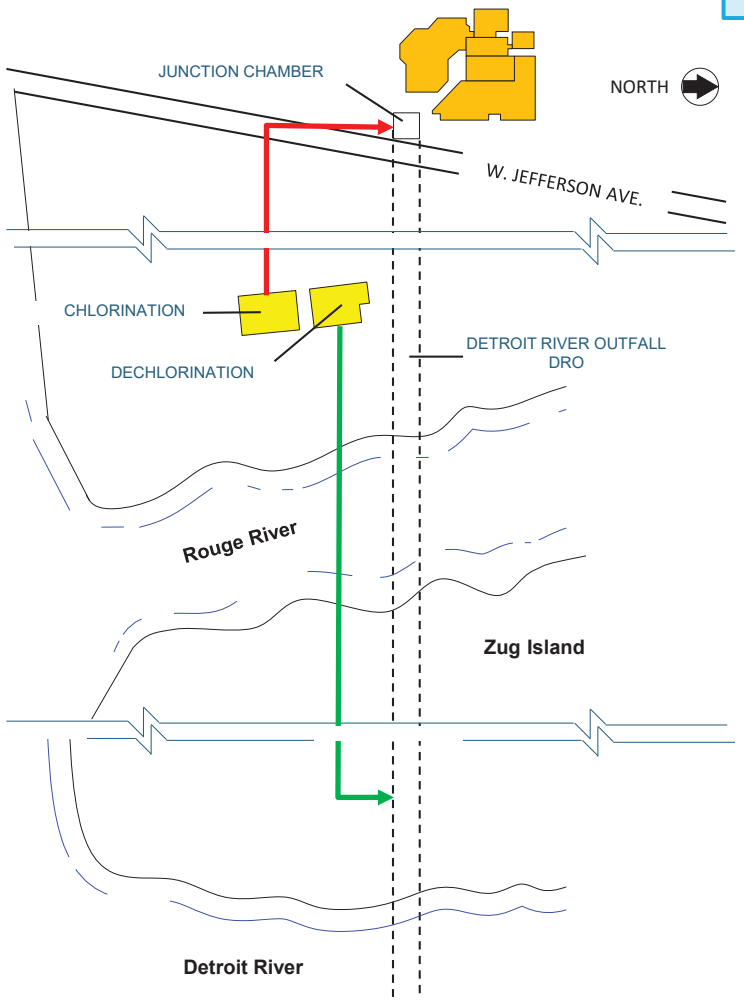
Wet Weather Disinfection

OPERATION

- Add chlorine to kill pathogens (disinfect)
- Add sulfur dioxide to remove any remaining chlorine after disinfection



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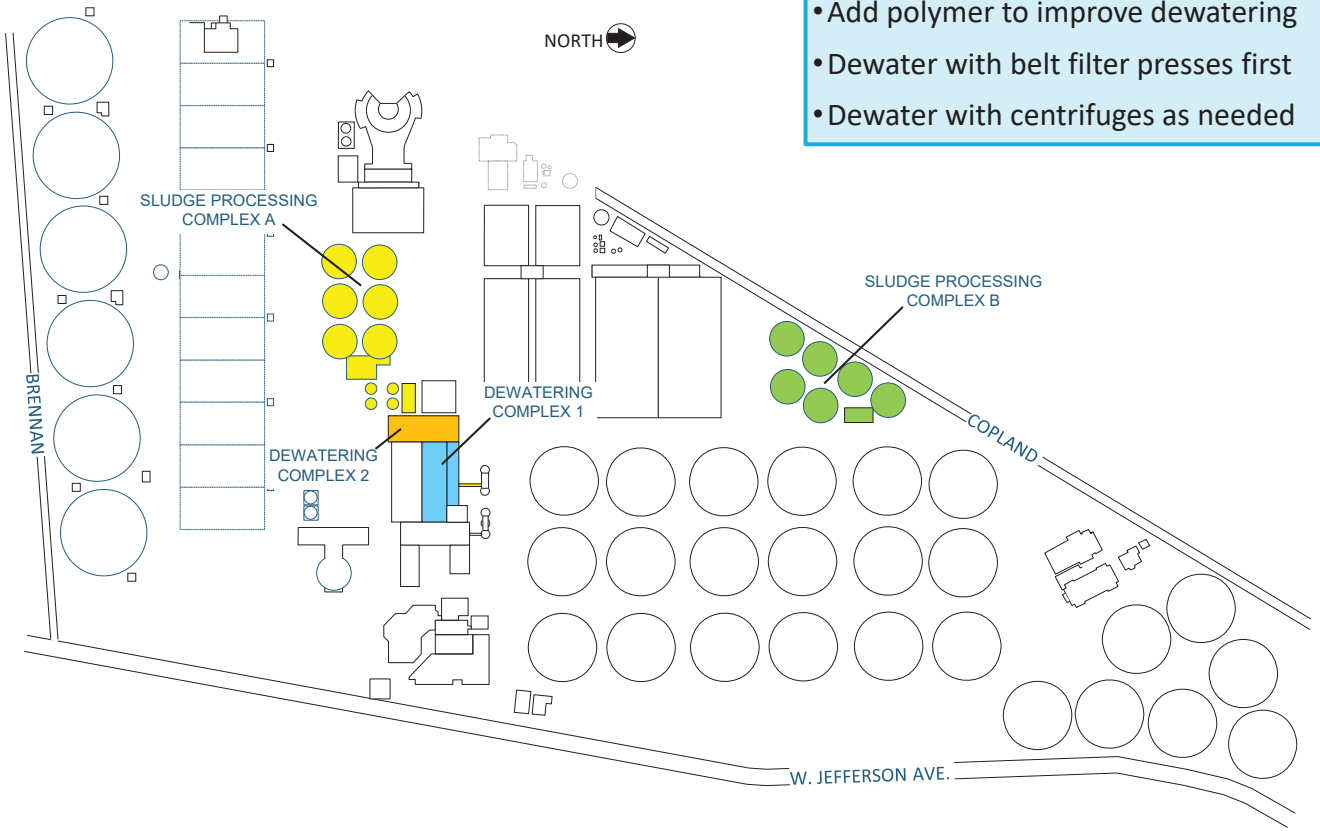
Wet Weather Dewatering

OPERATION

- Allow time for sludge to thicken
- Send thickened sludge to the biosolids dryer first where the BDF facility dewaters with centrifuges
- Dewater the remaining sludge
- Add polymer to improve dewatering
- Dewater with belt filter presses first
- Dewater with centrifuges as needed



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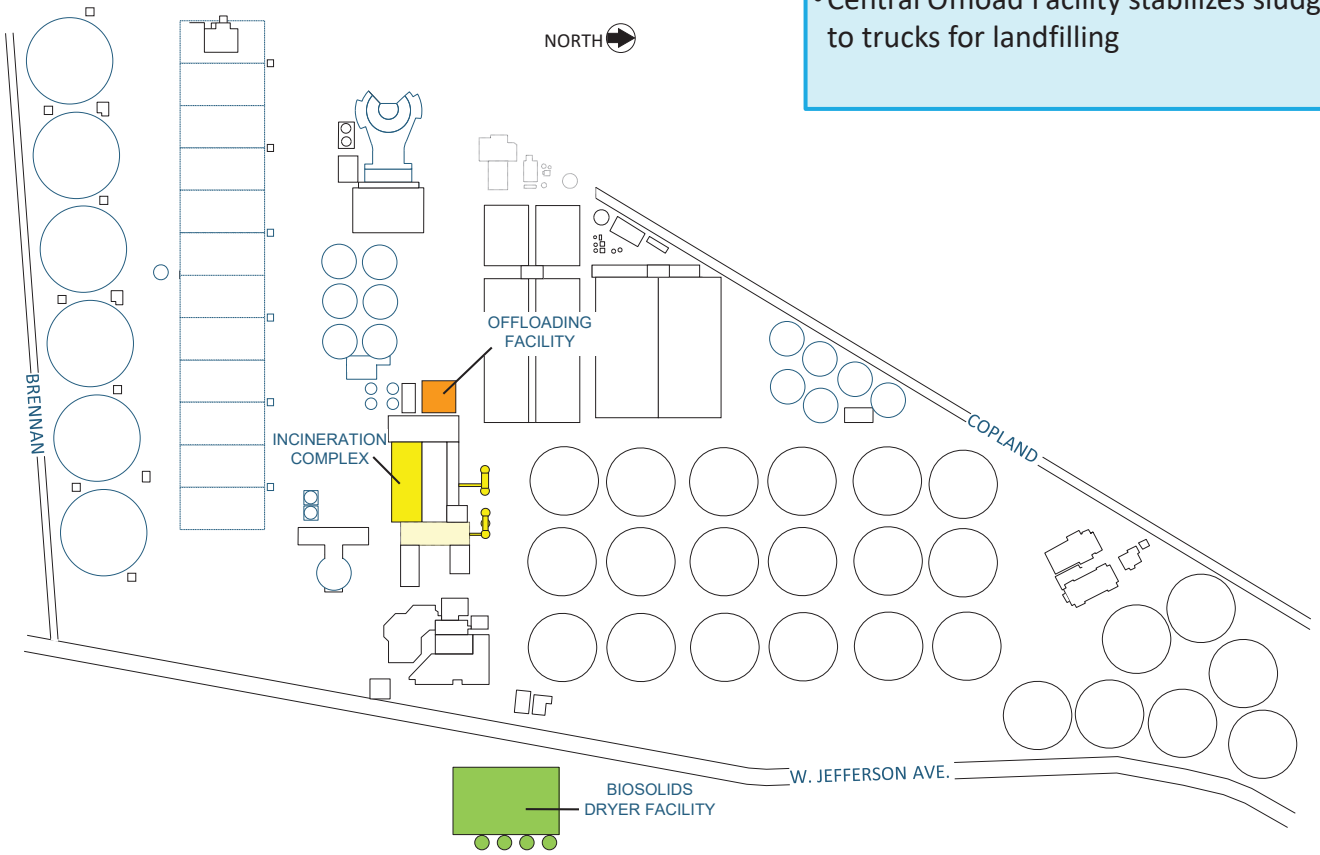
Wet Weather Residuals Disposal

OPERATION

- Prioritize beneficial reuse through production of fertilizer pellets
- Sludge in excess of the BDF capacity is incinerated or offloaded
- Central Offload Facility stabilizes sludge prior to loading to trucks for landfilling



Dry Weather vs. Wet Weather

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Dry Weather vs. Wet Weather Pump Stations

Pump Station	Rated Capacity (cfs)	Total # of pumps	Dry Weather	Wet Weather
Belle Isle Sanitary (Detroit)	44	2	1	1
Belle Isle Storm	696	4	0	2
Blue Hill Sanitary (Detroit)	20	2	1	1
Blue Hill Storm (Detroit)	961	4	0	3
Conner Sanitary	333	4	2	2
Conner Storm	4,000	8	0	3
Freud Sanitary	55	2	1	0
Freud Storm	3,600	8	0	5
Fairview	525	4	1	2
Fischer (Detroit)	22	2	1	2
Woodmere Sanitary (Detroit)	18	2	1	0
Woodmere Storm (Detroit)	920	3	2	2
Oakwood Sanitary	40	4	1	0
Oakwood Storm	1,950	8	0	4

Dry Weather vs. Wet Weather at WRRF

Process	Component	Total	Dry Weather In-Service	Wet Weather In-Service
Primary	Pump Station 1 Pumps	8	2-4	6-8
	Rectangular Clarifiers	12	6-7	8-10
	Pump Station 2 Pumps	8	2-4	6-8
	Circular Clarifiers	6	3-4	5-6
Secondary	Aeration Decks	4	3	3
	Secondary Clarifiers	25	23	23
	Chlorinators	16	2-4	6-8
	Sulfinators	14	2-3	5-6
Dewatering	Belt Filter Presses	22	2-3	10-12
	Centrifuges	12	4-6	6-10
Residuals Disposal	Incinerators	8	2	4-6
	Central Offload Facility Bays	3	0	1-2
	Biosolids Dryer Facility Dryers	4	2-3	3-4

WRRF Unit Process Capacities

Preliminary and Primary Process	Total Capacity	Firm Capacity
Pump Station 1 w/ Screens, Gravity Grit Chambers & FeCl3 Addition	1417 MGD	1188 MGD (based on largest pump OOS)
Pump Station 2 w/Screens, Aerated Grit Chambers & FeCl3 Addition	758 MGD	653 MGD (based on largest pump OOS)
Total Pumping	2175 MGD	1841 MGD
Primary Rectangular Tanks: 12 @ 90 MGD ea.	1080 MGD	
Primary Circular Tanks: 6 @ 180 MGD ea.	1080 MGD	
Total Primary Treatment	2160 MGD	1800 MGD (based on two rectangular and one circular tank OOS for maintenance)

Secondary Process	Capacity	Firm Capacity
Intermediate Lift Pumps: 5 @ 365 ea.	1825 MGD	1460 MGD (based on one ILP OOS)
Aeration Tanks: 4 @ 310 MGD ea.	1240 MGD	930 MGD (based on one basin OOS for maintenance)
Secondary Clarifiers: 25 @ 40 MGD ea.	1000 MGD	960 MGD (based on one tank OOS for maintenance)
Screened Final Effluent Pumps: 6 @ 18 MGD ea. + 2 @ 12 MGD ea.	132 MGD	

Disinfection Process	Capacity	Firm Capacity
Chlorinators: 16 @ 8,000 lb/day	128,000 lbs/day	112,000 lbs/day (based on 14 of 16 chlorinators in service)
Sulfinators: 14 @ 7,600 lb/day	106,400 lbs/day	91,200 lbs/day (based on 12 of 14 sulfinators in service)

Dewatering Process	Capacity	Firm Capacity
Primary Sludge Gravity Thickeners: 6 @ 5 MGD ea.	30 MGD	
Secondary Sludge Gravity Thickeners: 6 @ 2 MGD ea.	12 MGD	
Sludge Feed Pumps: 6 @ 3.5 MGD ea.	21 MGD	
Belt Filter Presses: 22 @ 48 Dry Ton/Day ea.	1,056 ton/day	696ton/day (based on 14.5 BFPs of 22 in service)
Centrifuges: 4 @ 48 Dry Ton/Day ea.	192 ton/day	144 ton/day (based on 3 of 4 centrifuges in service

Residuals Process	Capacity	Firm Capacity
Biosolids Dryer Facility: 4 Trains @ 105 dry ton/day ea.	420 dry ton/day	315 dry ton/day (based on 3 of 4 trains in service)
Incineration: 8 Incinerators @ 76.8 dry ton/day	614 dry ton/day	460.8 dry ton/day (based on 6 of 8 incinerators in service)
COF: 3 Trains @ 200 dry ton/day ea.	600 dry ton/day	300 dry ton/day (based on 50% in service)

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Considerations

- Rainfall is rarely spatially uniform producing complex and variable flow patterns
- Member Partners have a wide range of actual flows and contract capacities
- GLWA currently has a high level of control in the system with gates, in-system storage devices, pump stations and regulators
- Updating models and running scenarios is providing ideas for further optimization
- Optimization of existing assets involves moving flows around the system and storing in locations that will vary significantly from storm to storm
- Although the wastewater system is currently treating approximately 97% of wet weather flows, untreated discharges still occur
- Coordinated regional operations is key

Questions?

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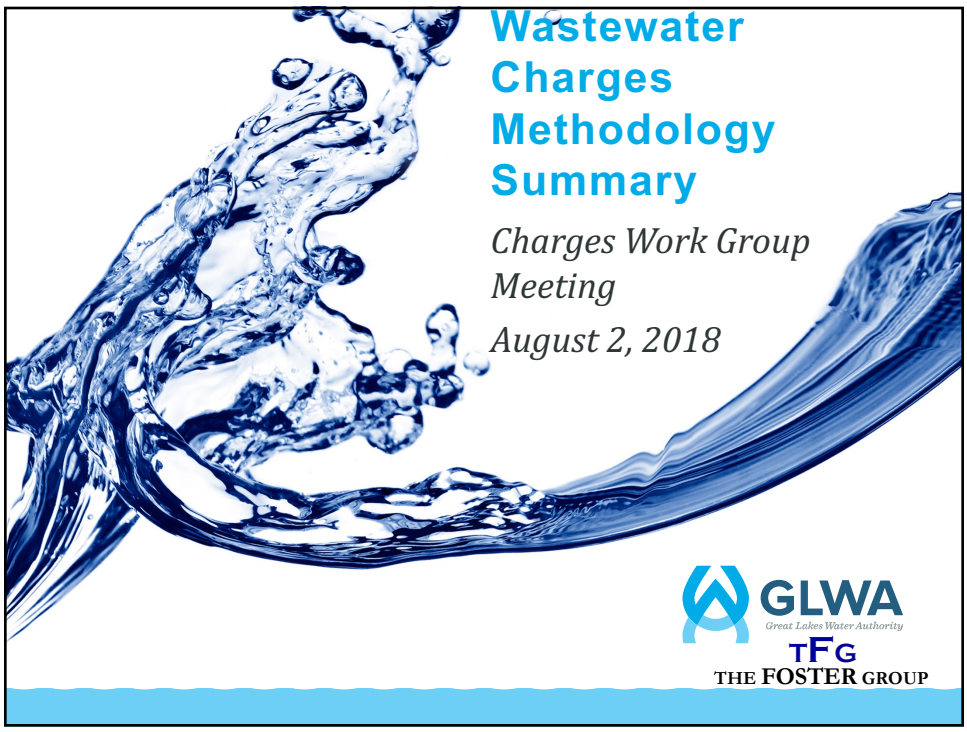

Wastewater Charges Methodology Summary

Charges Work Group Meeting

August 2, 2018

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Presentation Outline / Key Messages

- This discussion document provides material that has been prepared (and previously presented) regarding the current wastewater charges methodology
  - ✓ *Portions are excerpted from the "pre Symposium" primer that was distributed to participants*
- Nothing contained herein is "new material"

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GLWA Wastewater Charges Methodology – Cost Pools

- Annual Revenue Requirements are assigned to "Cost Pools" designed to facilitate costs of service to Customers
  - ✓ *Common-to-All ("CTA") SHAREs*
    - Water Resource Recovery Facility, Interceptors, Lift Stations
  - ✓ *Suburban Wholesale Only*
    - Master Meter Facilities and Programs
  - ✓ *Combined Sewer Overflow ("CSO") Facilities*
  - ✓ *Oakland Macomb Interceptor District ("OMID") specific facilities*
  - ✓ *Industrial Waste Control ("IWC") Program*
  - ✓ *Note – any Local System specific costs related to service to Detroit are removed before cost allocation*

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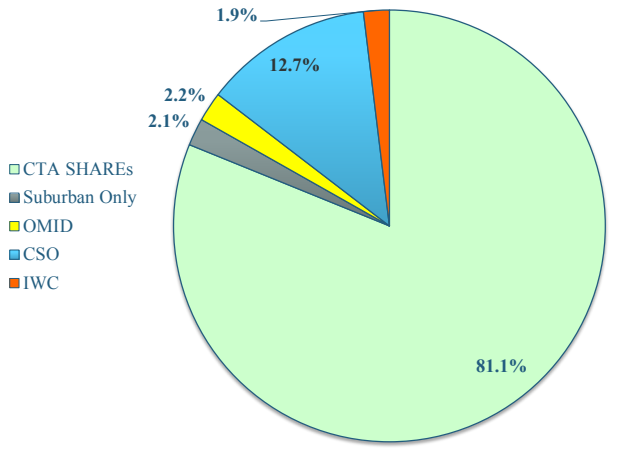
Proposed FY 2019 GLWA Wastewater Cost Pool Allocation Summary



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GLWA Wastewater Charges Methodology – CTA SHAREs

- GLWA assigns revenue requirements to "sub" cost pools within the CTA SHAREs category
- These additional categories are designed to align with cost causative collection, treatment, and disposal functions

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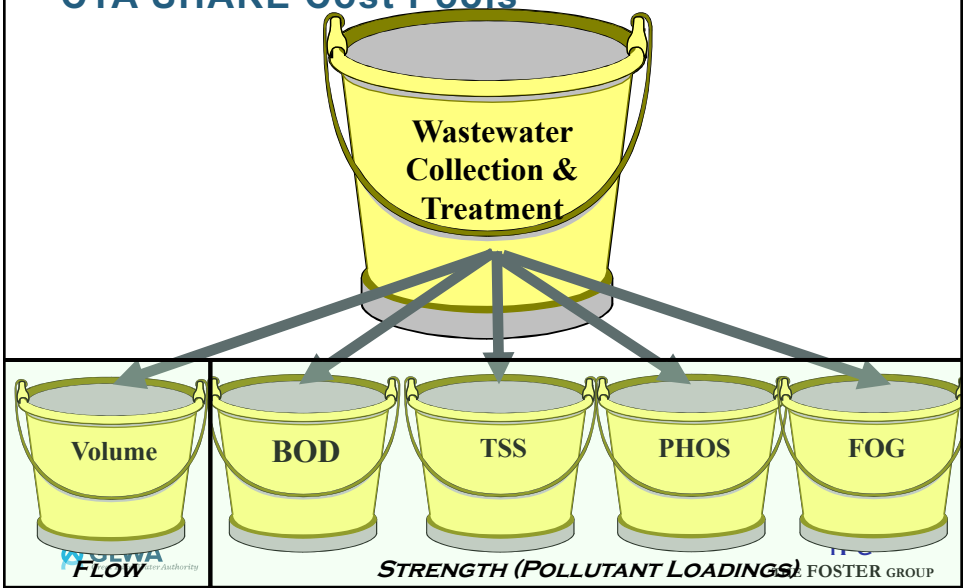
GLWA Wastewater Charges Methodology CTA SHARE Cost Pools



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GLWA Wastewater Charges Methodology – *Capital Rev Req'ts*

Functional / Service Cost Allocation Matrix - *CAPITAL COSTS*

Effective Methodology Applied for FY 2017 GLWA Revenue Requirements via Rate Simplification Initiative

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
		Directly Assigned		*Common-to-All*							
Cost		Wholesale	OMID	*Costs Allocable via SHAREs*					New CSO		Industry
Code	System Component	Only	Only	Volume	BOD	TSS	PHOS	FOG	Facilities	Customer	Only
0101	Primary Pumping			100%							
0102	Rack & Grit			100%							
0103	Primary Chemical Addition						100%				
0104	Primary Sedimentation			***85%***		***10%***		***5%***			
0105	Aeration			***20%***	***80%***						
0106	Secondary Clarifiers			***65%***	***35%***						
0107	Chlorination			100%							
0108	Sludge Treatment				15%	70%	15%				
0109	Scum Incineration							100%			
0110	Process Water & Outfall			100%							
0111	Industry Only										100%
0201	Laboratory			Allocated to WWTP functions based on subtotal of direct allocations							
0202	Process Water & Outfall			Allocated to WWTP functions based on subtotal of direct allocations							
0203	Heating Plant			Allocated to WWTP functions based on subtotal of direct allocations							
0204	General Plant			Allocated to WWTP functions based on subtotal of direct allocations							
1904	OMID Pump Stations		100%								
1905	Common Pump Stations			100%							
2004	OMID Interceptors		100%								
2005	Common Interceptors			100%							
2007	Suburban Meters	100%									
3000	New CSO Facilities - 83/17								100%		

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GLWA Wastewater Charges Methodology – *Operating Rev Req'ts*

Functional / Service Cost Allocation Matrix - *OPERATING COSTS*

Effective Methodology Applied for FY 2017 GLWA Revenue Requirements via Rate Simplification Initiative

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
		Directly Assigned		*Common-to-All*							
Cost		Wholesale	OMID	*Costs Allocable via SHAREs*					New CSO		Industry
Code	System Component	Only	Only	Volume	BOD	TSS	PHOS	FOG	Facilities	Customer	Only
0101	Primary Pumping			100%							
0102	Rack & Grit			100%							
0103	Primary Chemical Addition						100%				
0104	Primary Sedimentation					**70%**	**20%**	**10%**			
0105	Aeration				***100%***						
0106	Secondary Clarifiers				***25%***	***65%***	***10%***				
0107	Chlorination			100%							
0108	Sludge Treatment				15%	70%	15%				
0109	Scum Incineration							100%			
0110	Process Water & Outfall			100%							
0111	Industry Only										100%
0201	Laboratory			Allocated to WWTP functions based on subtotal of direct allocations							
0202	Process Water & Outfall			Allocated to WWTP functions based on subtotal of direct allocations							
0203	Heating Plant			Allocated to WWTP functions based on subtotal of direct allocations							
0204	General Plant			Allocated to WWTP functions based on subtotal of direct allocations							
1904	OMID Pump Stations		100%								
1905	Common Pump Stations			100%							
2004	OMID Interceptors		100%								
2005	Common Interceptors			100%							
2007	Suburban Meters	100%									
3000	New CSO Facilities - 83/17								100%		
	Administriative and General	***Allocated to all other functions based on subtotal of direct allocations***									

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SHAREs Assessment Project Update
Cost Pool Allocations

From FY 2018 SHAREs Update

- Incomplete pending development of FY 2018 Budget
- No changes from Status Quo approach are anticipated for FY 2018 pending additional study
- **However, the specifics of the FY 2018 Budget may result in shifts amongst cost pools and possible impacts on Customers**
- Approximate Relative Common to All Cost Pool Allocation – Current SHAREs:

	O&M	Capital	Total
Volume	28%	61%	47%
Strength	72%	39%	53%

Used 50/50 for purposes of FY 2018 SHAREs

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Alignment of "Allocated Costs" and "Units of Service"

- The prior material illustrates the current methodology for "populating" cost causative Cost Pools
- Step 2 is determining how best to measure each Customer's use of each Cost Pool
  - ✓ *Units of Service, which then are simplified into SHAREs*

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GLWA Wastewater Charges Methodology – CTA SHAREs

- SHAREs are developed based on review of historical data monitored for each Customer and for the System in total
- Data reviewed includes:
  - ✓*Contributed Wastewater Volume:*
    - Sanitary Flows
    - Dry Weather Infiltration
    - Wet Weather Inflow
  - ✓*Pollutant Loadings for each type of flow, re:*
    - BOD, TSS, PHOS, FOG

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GLWA Wastewater Charges Methodology – CTA SHAREs

- The underlying data is used to assign each Customer's responsibility (share) for each of the CTA cost pools
- SHAREs represent the aggregation of the individual *shares* for each cost pool

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GLWA Wastewater Charges Methodology – Sample Customer SHARE Calculation

Estimated "Strength of Flow" Factors - *mg/l*

	BOD	TSS	PHOS	FOG
Sanitary Contributions	274.5	322.9	7.6	34.8
Dry Weather Infiltration	6.6	6.8	0.3	0.0
Wet Weather Inflow	14.5	125.9	0.2	14.0
"Common" Extraneous Flow	117.4	161.3	3.3	17.2
Weighted Avg Flow to WRRF	95.8	138.5	2.7	14.7

Sample Customer BOD Calculation

	Volume *Mcf*	Strength *mg/l*	Conversion *mg/l*	Loadings *lbs*
Sanitary Contributions	1,011,100	274.5	0.0624	17,316,100
Dry Weather Infiltration	645,800	6.6	0.0624	265,400
Wet Weather Inflow	820,900	14.5	0.0624	745,100
Customer Contributions to WRRF	2,477,800	*118.5*		18,326,600
Total for All Customers	23,690,800			173,326,400
Customer Share	10.46%			10.57%

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GLWA Wastewater Charges Methodology – Sample Customer SHARE Calculation (cont'd)

Sample Customer BOD Calculation

	Volume *Mcf*	Strength *mg/l*	Conversion *mg/l*	Loadings *lbs*
Sanitary Contributions	1,011,100	274.5	0.0624	17,316,100
Dry Weather Infiltration	645,800	6.6	0.0624	265,400
Wet Weather Inflow	820,900	14.5	0.0624	745,100
Customer Contributions to WRRF	2,477,800	*118.5*		18,326,600
Total for All Customers	23,690,800			173,326,400
Customer Share	10.46%			10.57%

Consolidated Sample Customer SHARE Calculation

	Share	Rev Req't Allocation	Weighted Share
Volume Share	10.46%	50.00%	5.229%
BOD Share	10.57%	15.14%	1.601%
TSS Share	11.37%	26.72%	3.037%
PHOS Share	10.45%	6.53%	0.683%
FOG Share	11.46%	1.61%	0.184%
Consolidated SHARE			**10.735%**

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GLWA Wastewater Charges Methodology –
Sample Customer SHARE Calculation (cont'd)

Consolidated Sample Customer SHARE Calculation

	Share	Rev Req't Allocation	Weighted Share
Volume Share	10.46%	50.00%	5.229%
BOD Share	10.57%	15.14%	1.601%
TSS Share	11.37%	26.72%	3.037%
PHOS Share	10.45%	6.53%	0.683%
FOG Share	11.46%	1.61%	0.184%
Consolidated SHARE			**10.735%**

Consolidated Sample Customer Revenue Requirement Allocation

Common To All Revenue Requirements - $	375,967,300
Customer SHARE	10.735%
Allocated Customer Revenue Requirements - $	40,359,100

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Table 3
Sewage Disposal System
Allocation of FY 2019 GLWA Wholesale Service BUDGET to Cost Pools

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
			Cost Pools						
		Allocated FY 2019	Common to All SHAREs	Suburban Wholesale	OMID Specific	CSO Facilities	Industrial Waste Control	*Common-to-All (SHAREs)* *Flow*	*Common-to-All (SHAREs)* *Pollutants*
	BUDGET Elements								
1	Regional System O&M Expense	193,122,000	157,127,900	3,926,000	6,046,800	18,781,700	7,239,600	*47,350,100*	*109,777,800*
2	Pension Obligation - Operating Portion	10,824,000	8,375,600	267,000	411,300	1,277,500	492,400	*2,577,800*	*5,797,800*
3	Debt Service	214,991,000	174,412,400	4,407,800	2,817,200	33,042,700	310,800	*117,898,900*	*56,513,500*
4	Non-Operating Portion of Pension Oblig	11,620,700	8,992,100	286,700	441,600	1,371,500	528,700	*2,767,600*	*6,224,500*
5	Transfer to WRAP Fund	2,261,000	1,832,300	46,700	50,400	287,700	43,900	*905,200*	*927,100*
6	Transfer to Extra. Repair and Repl. Fund	627,000	508,700	12,900	8,200	96,400	900	*343,900*	*164,800*
7	Lease Payment - Transfer to Detroit Local I&E	27,500,000	22,285,600	567,500	613,600	3,499,500	533,700	*11,009,600*	*11,276,000*
8	Transfer to GLWA Regional I&E Account	12,010,600	9,743,600	246,200	157,400	1,846,000	17,400	*6,586,500*	*3,157,100*
9	Operating Reserves	1,853,800	1,508,400	37,700	58,000	180,300	69,500	*454,500*	*1,053,900*
10	Total Gross BUDGET	474,810,100	384,786,600	9,798,500	10,604,500	60,383,300	9,236,900	*189,894,100*	*194,892,500*
11	less: Non-Operating Revenue	(4,570,900)	(3,704,200)	(94,300)	(102,000)	(581,700)	(88,700)	*(1,829,900)*	*(1,874,300)*
12	Net BUDGET Req'd from Charges	470,239,200	381,082,400	9,704,200	10,502,500	59,801,600	9,148,200	*188,064,200*	*193,018,200*
	Summary - BUDGET Required from Charges								
13	*Net Operating Expenses*	*205,799,800*	*167,011,900*	*4,230,700*	*6,516,100*	*20,239,500*	*7,801,500*	*50,382,400*	*116,629,500*
14	*Net Capital Requirements*	*264,439,400*	*214,070,500*	*5,473,500*	*3,986,400*	*39,562,100*	*1,346,700*	*137,681,800*	*76,388,700*
15	*Total*	*470,239,200*	*381,082,400*	*9,704,200*	*10,502,500*	*59,801,600*	*9,148,200*	*188,064,200*	*193,018,200*
16	*Relative Cost Pool Distribution*		*81.0%*	*2.1%*	*2.2%*	*12.7%*	*1.9%*	*40.0%*	*41.0%*

Table 5
Sewage Disposal System
Summarized FY 2019 ***Wholesale Service*** BUDGET Allocation to Cost Pools and Customer Classes

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
			Cost Pool Allocation							
		Amount to Allocate	Common to All	Suburban Wholesale	OMID Specific	CSO Facilities	Industrial Waste Control	TOTAL	*Common to All (b)*	
									Flow	*Pollutants*
		$	*$*	*$*	*$*	*$*	*$*	*$*	*$*	*$*
	BUDGET Elements									
1	Net Operating Expenses	205,799,800	167,011,900	4,230,700	6,516,100	20,239,500	7,801,500	205,799,700	*50,382,400*	*116,629,500*
2	Net Capital Requirements	264,439,400	214,070,500	5,473,500	3,986,400	39,562,100	1,346,700	264,439,200	*137,681,800*	*76,388,700*
3	Net to Recover from Charges	470,239,200	381,082,400	9,704,200	10,502,500	59,801,600	9,148,200	470,238,900	*188,064,200*	*193,018,200*
	Allocated to Industrial									
4	Net Operating Expenses	10,892,200	3,090,700	0	0	0	7,801,500	10,892,200	*0*	*3,090,700*
5	Net Capital Requirements	3,371,100	2,024,400	0	0	0	1,346,700	3,371,100	*0*	*2,024,400*
6	Net to Recover from Charges	14,263,300	5,115,100	0	0	0	9,148,200	14,263,300	*0*	*5,115,100*
	Net Req'd from Customers									
7	Net Operating Expenses	194,907,600	163,921,200	4,230,700	6,516,100	20,239,500	0	194,907,500	*50,382,400*	*113,538,800*
8	Net Capital Requirements	261,068,300	212,046,100	5,473,500	3,986,400	39,562,100	0	261,068,100	*137,681,800*	*74,364,300*
9	Net BUDGET from Charges	455,975,900	375,967,300	9,704,200	10,502,500	59,801,600	0	954,741,100	*188,064,200*	*187,903,100*

(a) Industrial Surcharge Customers *based on % of total influent pollutant loadings that are "surchargeable"* *2.65%*

(b) Relative Flow/Pollutants in CTA Cost Pool *50%* *50%*

Relative Flow / SOF Allocation:
Operating Rev Req'ts = 30/70
Capital Rev Req'ts = 65/35
Combined Total = ~ 50/50

Consolidated Allocation of Wastewater Operating Costs to Cost Pools - FY 2019 Budget

Goal is to allocate specific budget items within the Group that align with Cost Pools used to allocate costs to customers.
Based on the assignment to Groups, Functional Category allocation factors can be applied to allocate to Cost Pools
The FY 2019 allocation factors are based on historical data and judgement. The upcoming Sewer Cost Allocation Methodology Project will review these factors.

Step 1 - Summarize Group Expenes

from Page 8

	Wastewater System Functional Categories														
	WRRF Cost Allocation								Wastewater Collection Cost Allocation						Grand
	Primary Pumping	Rack & Grit	Primary Treatment	Aeration	Secondary Treatment	Dewatering	Sludge Disposal	General WRRF	Lift Stations	CSO Facilities	Interceptors	Industrial Waste Control	Master Meters	Admin & General	Total O&M
Wastewater Operations Group															
Total	5,481,600	3,411,200	9,640,900	13,801,500	10,697,100	13,680,500	41,689,600		3,727,100	14,853,900	0	5,725,600	289,400		122,999,300
Power	2,869,500	1,147,800	574,000	2,295,600	1,377,400	2,869,500	1,398,300		0	0	0	0	0		12,532,100
Chemicals	282,600	421,400	2,103,000	2,640,800	2,639,900	1,008,500	982,800		0	0	0	0	0		10,079,900
Other Utilities	449,300	449,300	449,100	1,797,000	449,300	449,300	7,335,900		0	0	0	0	0		11,379,200
Subtotal w/o Commodities	*1,880,200*	*1,392,700*	*6,514,800*	*7,068,100*	*6,230,500*	*9,353,200*	*31,972,600*		*3,727,100*	*14,853,900*	*0*	*5,725,600*	*289,400*		*89,008,100*
WTP Allocation Factors	*2.9%*	*2.2%*	*10.1%*	*11.0%*	*9.7%*	*14.5%*	*49.6%*								*100.0%*
Centralized Services															
Original Allocation								10,591,300	14,093,900	0	9,343,800	0	2,815,600		36,844,600
Allocation of General	309,200	229,000	1,071,200	1,162,200	1,024,500	1,537,900	5,257,300	(10,591,300)							0
Allocated Total	309,200	229,000	1,071,200	1,162,200	1,024,500	1,537,900	5,257,300	0	14,093,900	0	9,343,800	0	2,815,600		36,844,600
Subtotal "Direct" Total	5,790,800	3,640,200	10,712,100	14,963,700	11,721,600	15,218,400	46,946,900	0	17,821,000	14,853,900	9,343,800	5,725,600	3,105,000		159,843,900
Subtotal "Direct" w/o Commodities	*2,189,400*	*1,621,700*	*7,586,000*	*8,230,300*	*7,255,000*	*10,891,100*	*37,229,900*	*0*	*17,821,000*	*14,853,900*	*9,343,800*	*5,725,600*	*3,105,000*		*125,852,700*
Indirect Overhead Allocation Factors	*1.7%*	*1.3%*	*6.0%*	*6.5%*	*5.8%*	*8.7%*	*29.6%*	*0.0%*	*14.2%*	*11.8%*	*7.4%*	*4.5%*	*2.5%*		*100.0%*
Administrative Services															
Original Allocation														33,278,300	33,278,300
Allocation of General	578,900	428,800	2,005,900	2,176,300	1,918,400	2,879,900	9,844,400	0	4,712,300	3,927,700	2,470,700	1,514,000	821,000	(33,278,300)	0
Allocated Total	578,900	428,800	2,005,900	2,176,300	1,918,400	2,879,900	9,844,400	0	4,712,300	3,927,700	2,470,700	1,514,000	821,000	0	33,278,300
ALLOCATED GRAND TOTAL	**6,369,700**	**4,069,000**	**12,718,000**	**17,140,000**	**13,640,000**	**18,098,300**	**56,791,300**	**0**	**22,533,300**	**18,781,600**	**11,814,500**	**7,239,600**	**3,926,000**	**0**	**193,122,200**

from Page 10

from page 12

Step 2 - Develop Allocation Factors
Based on Prior Simplified Assumptions

	Cost Pool Allocation									
	Common-to-All (SHAREs)					Suburban	OMID	CSO	Industrial	Det Only
	Flow	BOD	TSS	PHOS	FOG	Wholesale	Specific	Facilities	Waste Control	Direct
Primary Pumping	*100.00%*									
Rack & Grit	*100.00%*									
Primary Chemical Addition				*100.00%*						
Primary Sedimentation			*70.00%*	*20.00%*	*10.00%*					
Aeration		*100.00%*								
Secondary Clarification		*25.00%*	*65.00%*	*10.00%*						
Chlorination	*100.00%*									
Dewatering		*15.00%*	*70.00%*	*15.00%*						
Sludge Treatment		*15.00%*	*70.00%*	*15.00%*						
Process Water & Outfall	*100.00%*									
Lift Stations	*75.00%*						*25.00%*			
CSO Facilities								*100.00%*		
Interceptors	*96.50%*						*3.50%*			
Industrial Waste Control									*100.00%*	
Suburban Meters						*100.00%*				

OMID figures estimated based on updated data review

Traditional allocation factors developed in the late 1970s as part of the original Rate Settlement Agreements

Consolidated Allocation of Wastewater Operating Costs to Cost Pools - FY 2019 Budget

Goal is to allocate specific budget items within the Group that align with Cost Pools used to allocate costs to customers.
Based on the assignment to Groups, Functional Category allocation factors can be applied to allocate to Cost Pools
The FY 2019 allocation factors are based on historical data and judgement. The upcoming Sewer Cost Allocation Methodology Project will review these factors.

Step 3 - Apply Allocation Factors		**Cost Pool Allocation**										
		Common-to-All (SHAREs)					Suburban	OMID	CSO	Industrial	Det Only	Allocated
		Flow	BOD	TSS	PHOS	FOG	Wholesale	Specific	Facilities	Waste Control	Direct	TOTAL
All Operating Costs												
Primary Pumping	6,369,700	6,369,700	0	0	0	0	0	0	0	0	0	6,369,700
Rack & Grit	4,069,000	4,069,000	0	0	0	0	0	0	0	0	0	4,069,000
Primary Chemical Addition	***2,103,000***	0	0	0	2,103,000	0	0	0	0	0	0	2,103,000
Primary Sedimentation	10,615,000	0	0	7,430,500	2,123,000	1,061,500	0	0	0	0	0	10,615,000
Aeration	17,140,000	0	17,140,000	0	0	0	0	0	0	0	0	17,140,000
Secondary Clarification	11,000,100	0	2,750,000	7,150,100	1,100,000	0	0	0	0	0	0	11,000,100
Chlorination	***2,639,900***	2,639,900	0	0	0	0	0	0	0	0	0	2,639,900
Dewatering	18,098,300	0	2,714,700	12,668,800	2,714,700	0	0	0	0	0	0	18,098,200
Sludge Treatment	56,791,300	0	8,518,700	39,753,900	8,518,700	0	0	0	0	0	0	56,791,300
Process Water & Outfall	0	0	0	0	0	0	0	0	0	0	0	0
Lift Stations	22,533,300	16,900,000	0	0	0	0	0	5,633,300	0	0	0	22,533,300
CSO Facilities	18,781,600	0	0	0	0	0	0	0	18,781,600	0	0	18,781,600
Interceptors	11,814,500	11,401,000	0	0	0	0	0	413,500	0	0	0	11,814,500
Industrial Waste Control	7,239,600	0	0	0	0	0	0	0	0	7,239,600	0	7,239,600
Suburban Meters	3,926,000	0	0	0	0	0	3,926,000	0	0	0	0	3,926,000
Total	193,121,300	41,379,600	31,123,400	67,003,300	16,559,400	1,061,500	3,926,000	6,046,800	18,781,600	7,239,600	0	193,121,200
Cost Pool Allocation Factor - All Costs		***21.4%***	***16.1%***	***34.7%***	***8.6%***	***0.5%***	***2.0%***	***3.1%***	***9.7%***	***3.7%***	***0.0%***	
Non-Commodity Costs												
Primary Pumping	2,189,400	2,189,400	0	0	0	0	0	0	0	0	0	2,189,400
Rack & Grit	1,621,700	1,621,700	0	0	0	0	0	0	0	0	0	1,621,700
Primary Chemical Addition		0	0	0	0	0	0	0	0	0	0	0
Primary Sedimentation	7,586,000	0	0	5,310,200	1,517,200	758,600	0	0	0	0	0	7,586,000
Aeration	8,230,300	0	8,230,300	0	0	0	0	0	0	0	0	8,230,300
Secondary Clarification	7,255,000	0	1,813,800	4,715,800	725,500	0	0	0	0	0	0	7,255,100
Chlorination		0	0	0	0	0	0	0	0	0	0	0
Dewatering	10,891,100	0	1,633,700	7,623,800	1,633,700	0	0	0	0	0	0	10,891,200
Sludge Treatment	37,229,900	0	5,584,500	26,060,900	5,584,500	0	0	0	0	0	0	37,229,900
Process Water & Outfall	0	0	0	0	0	0	0	0	0	0	0	0
Lift Stations	17,821,000	13,365,800	0	0	0	0	0	4,455,300	0	0	0	17,821,100
CSO Facilities	14,853,900	0	0	0	0	0	0	0	14,853,900	0	0	14,853,900
Interceptors	9,343,800	9,016,800	0	0	0	0	0	327,000	0	0	0	9,343,800
Industrial Waste Control	5,725,600	0	0	0	0	0	0	0	0	5,725,600	0	5,725,600
Suburban Meters	3,105,000	0	0	0	0	0	3,105,000	0	0	0	0	3,105,000
Total	125,852,700	26,193,700	17,262,300	43,710,700	9,460,900	758,600	3,105,000	4,782,300	14,853,900	5,725,600	0	125,853,000
Cost Pool Allocation Factor - Non Commodity Costs		***20.8%***	***13.7%***	***34.7%***	***7.5%***	***0.6%***	***2.5%***	***3.8%***	***11.8%***	***4.5%***	***0.0%***	

Allocation of Wastewater Capital Revenue Requirements to Cost Pools - FY 2019 Budget

Goal is to use recent GLWA asset inventory and valuation analysis to establish allocation of capital revenue requirements (debt service, etc) to Cost Pools and Customers.
First step: Evaluate data from recent capital asset inventory and valuation study.
Then: Utilize this information to establish functional allocation of capital revenue requirements.
Final: Allocate capital revenue requirements to Cost Pools based on existing methodology matrices.

	Step 3 - Allocate to Cost Pools	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
			Capital Revenue Requirement Allocation Factors						Allocation of Capital Revenue Requirements to Cost Pools									
		Total Capital	Common-to-All (SHAREs)						Common-to-All (SHAREs)					Suburban	OMID	CSO	Industrial	Det Only
		Rev Req't	Flow	BOD	TSS	PHOS	FOG	Other	Flow	BOD	TSS	PHOS	FOG	Wholesale	Specific	Facilities	Waste Contro	Direct
1	Primary Pumping	14,035,300	100%						14,035,300	0	0	0	0					
2	Rack & Grit	6,705,300	100%						6,705,300	0	0	0	0					
3	Primary Chemical Addition	0				100%			0	0	0	0	0					
4	Primary Sedimentation	21,280,400	85%		10%		5%		18,088,300	0	2,128,000	0	1,064,000					
5	Aeration	10,996,900	20%	80%					2,199,400	8,797,500	0	0	0					
6	Secondary Clarification	19,609,100	65%	35%					12,745,900	6,863,200	0	0	0					
7	Chlorination	0	100%						0	0	0	0	0					
8	Dewatering	0		15%	70%	15%			0	0	0	0	0					
9	Sludge Treatment	55,204,600		15%	70%	15%			0	8,280,700	38,643,200	8,280,700	0					
10	Process Water & Outfall	11,386,800	100%						11,386,800	0	0	0	0					
11	Lift Stations	21,794,000	100%						21,794,000	0	0	0	0					
12	CSO Facilities	34,282,500		*Direct Cost Pool Allocation*												34,282,500		
13	Interceptors	20,667,600	96.5%					**3.5%**	19,944,200	0	0	0	0		723,400			
14	Industrial Waste Control	322,500		*Direct Cost Pool Allocation*													322,500	
15	Suburban Meters	4,573,200		*Direct Cost Pool Allocation*										4,573,200				
16	OMID Facilities	2,199,500		*Direct Cost Pool Allocation*											2,199,500			
17	Total	223,057,700							106,899,200	23,941,400	40,771,200	8,280,700	1,064,000	4,573,200	2,922,900	34,282,500	322,500	0
18	*Capital Revenue Req't Allocation Factor*								*47.9%*	*10.7%*	*18.3%*	*3.7%*	*0.5%*	*2.1%*	*1.3%*	*15.4%*	*0.1%*	*0.0%*

Traditional allocation factors developed in the late 1970s as part of the original Rate Settlement Agreements

Approximate inch-mile proportion of OMID only interceptors relative to total interceptor inventory

O&M factors from page 16

Capital factors from page 22

Consolidated Sewer Revenue Requirment Allocated to Cost Pools - FY 2019 Budget

Goal is to use allocation factors resulting from detailed review to allocate the final 2019 BUDGET figures for the FY 2019 Charges

Allocation Factors from Detailed Review

		Cost Pool Allocation									
		Common-to-All (SHAREs)					Suburban	OMID	CSO	Industrial	Det Only
		Flow	BOD	TSS	PHOS	FOG	Wholesale	Specific	Facilities	Waste Control	Direct
O&M Expense - Total	*1*	***21.4%***	***16.1%***	***34.7%***	***8.6%***	***0.5%***	***2.0%***	***3.1%***	***9.7%***	***3.7%***	***0.0%***
O&M Expense - Non-Commodity	*2*	***20.8%***	***13.7%***	***34.7%***	***7.5%***	***0.6%***	***2.5%***	***3.8%***	***11.8%***	***4.5%***	***0.0%***
Capital Revenue Requirements	*3*	***47.9%***	***10.7%***	***18.3%***	***3.7%***	***0.5%***	***2.1%***	***1.3%***	***15.4%***	***0.1%***	***0.0%***

Apply Allocation Factors to BUDGET

				Cost Pool Allocation										
				Common-to-All (SHAREs)					Suburban	OMID	CSO	Industrial	Det Only	Allocated
		Budget to Allocate	*Allocation Basis*	Flow	BOD	TSS	PHOS	FOG	Wholesale	Specific	Facilities	Waste Control	Direct	TOTAL
	BUDGET Elements													
1	Regional System O&M Expense	193,122,000	1	41,379,800	31,123,500	67,003,600	16,559,500	1,061,500	3,926,000	6,046,800	18,781,700	7,239,600	0	193,122,000
2	Pension Obligation - Operating Portion	10,824,000	2	2,252,800	1,484,600	3,759,300	813,700	65,200	267,000	411,300	1,277,500	492,400	0	10,823,800
3	Debt Service	214,991,000	3	103,033,300	23,075,600	39,296,800	7,981,200	1,025,500	4,407,800	2,817,200	33,042,700	310,800	0	214,990,900
4	Non-Operating Portion of Pension Oblig	11,620,700	2	2,418,600	1,593,900	4,036,000	873,600	70,000	286,700	441,600	1,371,500	528,700	0	11,620,600
5	Transfer to WRAP Fund	2,261,000	*4*	791,100	299,200	594,100	136,300	11,600	46,700	50,400	287,700	43,900	0	2,261,000
6	Transfer to Extra. Repair and Repl. Fund	627,000	3	300,500	67,300	114,600	23,300	3,000	12,900	8,200	96,400	900	0	627,100
7	Lease Payment - Transfer to Detroit Local I&E	27,500,000	*4*	9,621,400	3,639,200	7,226,000	1,657,400	141,600	567,500	613,600	3,499,500	533,700	0	27,499,900
8	Transfer to GLWA Regional I&E Account	12,010,600	3	5,756,000	1,289,100	2,195,300	445,900	57,300	246,200	157,400	1,846,000	17,400	0	12,010,600
9	Operating Reserves	1,853,800	1	397,200	298,800	643,200	159,000	10,200	37,700	58,000	180,300	69,500	0	1,853,900
10	Total Gross BUDGET	474,810,100		165,950,700	62,871,200	124,868,900	28,649,900	2,445,900	9,798,500	10,604,500	60,383,300	9,236,900	0	474,809,800
11	less: Non-Operating Revenue	(4,570,900)	*4*	(1,599,200)	(604,900)	(1,201,100)	(275,500)	(23,500)	(94,300)	(102,000)	(581,700)	(88,700)	0	(4,570,900)
12	Net BUDGET Req'd from Charges	470,239,200		164,351,500	62,266,300	123,667,800	28,374,400	2,422,400	9,704,200	10,502,500	59,801,600	9,148,200	0	470,238,900
13	*Subtotal Direct Elements*			*154,840,500*	*58,566,700*	*116,291,000*	*26,673,900*	*2,279,500*	*9,133,700*	*9,874,300*	*56,319,400*	*8,588,900*	*0*	*442,567,900*
14	*Allocation Factors for Indirect Elements*		*4*	***35.0%***	***13.2%***	***26.3%***	***6.0%***	***0.5%***	***2.1%***	***2.2%***	***12.7%***	***1.9%***	***0.0%***	

THIS IS SEWER TABLE 3 IN THE FY 2018 COST OF SERVICE STUDY MEMORANDUM

Wastewater Charges Methodology Review Project Work Plan

		Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19
1	**Combined / Coordinated Work Group Meetings**																	
1a	*Gain Understanding of Current Design / Operating Structure*																	
1b	*Final Recommended Methodology*																	
1c	*Consolidated Findings - Application of Technical/Cost Data to Methodology*																	
1d	*Application of Findings to Preliminary FY 2021Budget*																	
1e	*Consolidated Progress Update Meeting*																	
2	**Wastewater Charges Methodology Work Group**																	
2a	*Gain Understanding of Current Design / Operating Structure*																	
2b	*Explore Alternative Methodology Approaches*																	
2c	*Identify 3rd Party Scope of Services*																	
2d	*Procure 3rd Party*																	
2e	*3rd Party Recommended Methodology Due*																	
2f	*Review and Establish Consensus Recommendation re: Matrix*																	
2g	*Final Work Group Methodology Recommendation*																	
2h	*Identify Data Needs from Sewer SHAREs Work Group*																	
2i	*Collaboratively Review Technical Data*																	
2j	*Identify Cost Pool Requirements of Cost Allocation Project*																	
3	**Sewer SHAREs Work Group**																	
	Strength of Flow Sampling																	
3a	Review and understand sampling from last SHAREs update																	
3b	Finalize sampling plan																	
3c	Perform sampling																	
3d	Analyze sampling data																	
3e	Consider update of 2016 Strength of Flow recommendations																	
	Flow Analyses																	
3f	Install and collect data from WWMP meters																	
3g	Install and collect data from D+ meters																	
3h	Review data frorm new metering efforts																	
3i	Determine use of new metering data (direct measurement, extrapolation, etc.)																	
3j	Compile FY2015 through FY2019 metered flows																	
3k	Review and update Table 1 from the 2016 Sewer Share Assessment Report																	
	Peaking																	
3l	Select options for compiling peak flow data																	
3m	Prepare peaking datasets																	
3n	Review peaking datasets																	
3o	*Other Data As Requested*																	
3p	*Final 2019 Sewer Shares Assessment Report*																	
4	**Cost Allocation Project**																	
4a	*Establish / Refine Financial Systems to Align with Cost Pools*																	
4b	*Refined Functional Cost Structure / Reporting Capability Implemented*																	
4c	*Prepare / Deliver FY 2021 Cost of Service Study*																	

EXECUTIVE SUMMARY

GROUP NAME: Charges Work Group Meeting

ATTENDEES: 48 Participants

MEETING DATE: August 2, 2018

MEETING TOPICS:

- Overview of the wastewater system
- Review current charges methodology
- Discuss SHAREs and Charges Methodology work groups' respective membership, mission, and guiding principles

REQUESTS TO GLWA ADMINISTRATION:

- None

DECISIONS:

- None

ACTION ITEMS:

- Each Tier 1 community to designate one primary and one secondary (backup) representative to participate in the Sewer SHAREs and Charges Methodology Work Groups. Direct member participation is required for the Charges Methodology Work Group; members or member representatives are welcome in SHAREs.
- Members are asked to keep their elected leadership and key stakeholders informed of the progress and decisions made throughout the process.

Wastewater Charges Work Group
Meeting Summary
August 2, 2018

Discussion Highlights

1. **Welcome and Agenda Review - Kerry Sheldon, Bridgeport Consulting**
   - Desired outcomes: To deepen our shared understanding of:
     - How the wastewater system operates under both dry and wet conditions
     - How the current charges methodology is structured
     - The overall charges schedule

2. **Opening Remarks - Sue McCormick, GLWA**
   - I very much appreciate the investment everyone has made already to this process: from participating in the symposium to reconvening a couple weeks ago to weigh in on the path forward.
   - We know the work ahead will be a heavy lift, and it's encouraging to see everyone's willingness to do that work alongside us.
   - As requested, we're going to get into the details of what that work looks like today, beginning with a walk-through of how the wastewater system operates under different conditions. We heard loud and clear that this type of shared understanding is vital.
   - Before we do that, though, I also wanted to respond to a few offline comments and concerns members have shared through Outreach.
   - Specifically, we've focused a lot on the technical work and the financial work - but what about the policy work? What are the policy parameters that define that work? How do we ensure acceptance by our respective governing bodies when all this good work comes to conclusion?
   - Please know that these questions are of paramount importance - they are top of mind for me. My leadership team and I will be engaging with the GLWA Board regularly, both to help articulate those parameters, and be absolutely sure they are well-informed at every step along the way.
   - As several people mentioned at our last meeting, making sure there are no surprises is a key success factor to this process.
   - To that end, you'll hear later today our request - and in fact, expectation - that you do the same with your elected leadership and other key stakeholders. It's a shared responsibility to bring everyone along. We're all in this together.

3. **Overview of the Wastewater System - Suzanne Coffey, GLWA**
   - Suzanne provided an overview of how the wastewater system works, inclusive of the WRRF, interceptors, and other facilities (*see presentation for details*)

   - Suzanne concluded the presentation with several considerations that shape the path forward:
     - Rainfall is variable, which produces complex and variable flow patterns. It's not intuitive where all the flows are going, so we need models to understand.

- There's a wide range of actual flows and contract capacities among members.
- We have a high level of control in the system with gates and in-system storage devices.
- As we are updating models and running scenarios, we are discovering new ideas for further optimization to reduce overflows.
- Optimization of existing assets involves moving flows around; focusing on the region rather than any individual component of the system. 97% of overflows are treated, but we all agree further reduction of untreated overflows is the goal.
- Coordinated regional operations is key. At the Symposium, Seattle said they "just build it bigger," meaning they just continue to upsize their infrastructure to accommodate higher volumes. We don't want to do that; we want to optimize what we have.

- Questions and answers, comments and responses:

1. **Detroit relief sewers have excess capacity - could these hold flow from suburban communities? How could that be leveraged for the region's benefit as a whole?**
    a. This concept is precisely aligned with the regional optimization approach described earlier. Must keep in mind that the specific way we optimize will depend on the storm, so modeling is needed. We're starting to run these scenarios to understand what will happen.

2. **Ah-ha moment about possibilities: in upstream facilities currently, we quickly dewater the retention treatment basin (RTB). Does that practice contribute to a downstream discharge? Maybe an operating practice serves the particular community, but it may be contributing to a discharge downstream.**
    a. Agreed. The Wastewater Master Plan steering team has also talked about this phenomenon. We foresee a need to have a work group to transcend the WWMP to drive the Regional Operating Plan. The SCC can quarterback who will dewater and when. We don't anticipate having one single permit, but DEQ will review a Regional Operating Plan that may be referenced in each permit.. Spatial variation in rains means that we would be able to store in some areas to prevent overflows. Scenarios are being modeled as part of WWMP.

3. **Can we get the PowerPoint presentation, rather than a PDF, that retains the arrows?**
    a. Yes!

4. **Why are there 23 secondary clarifiers on all the time; why not use them just in wet weather?**
    a. Keeping the clarifiers active maintains the sludge blankets, which are important. The health of the "bugs" in the clarifiers is critical to maintain.

5. **What forum is the opportunity to get into the detail? First meeting of the methodology work group?**
    a. Yes, that's correct - both in the Sewer Shares and Methodologies work groups, as well as in the WWMP Steering Team.
6. **You described system performance into both wet and dry scenarios: would it make sense to evaluate four scenarios: dry, small storm, big storm, and post-storm?**
    a. In reality, there are probably infinite scenarios possible. And yes, we can and will develop models to look at many different scenarios.

4. **Discussion of current charges methodology - Nickie Bateson, GLWA and Bart Foster, The Foster Group**

- Bart notes that the material in the presentation was previously provided to members prior to Wastewater Charges Symposium, as well.
- Looking back at the 1979 study and the consent judgement, Bart notes some of the changes:
    - Per the consent agreement, 1100 MGD had to go all the way through the plant, today we're at 930 MGD.
    - 3 treatment buckets/capacities: 1700 MGD primary, 930 MGD secondary, solids
- Regarding the 1979 CDM report figure 2.e. - the basic treatment train is the same today. Difference is the incineration and solids treatment. Cost allocation has been refined over time but methodology has remained static since 1979.
- Cost pools established in 1979 remain today: Volume, BOD, TSS, PHOS, FOG.
- Until strength of flow, BOD, TSS, PHOS, FOG costs weren't differentiated among member communities.
- First train: primary pumping, rack and grit, primary chemical addition, and primary sedimentation
- Second train: Aeration, secondary clarifiers, chlorination, and sludge treatment
- Third train: disinfection, dewatering, residuals disposal
- Flow/strength of flow was allocated 50/50 for FY2018 Sewer SHAREs
- Key questions for the Charge Methodology Work Group to consider: Do we have the right buckets? Do we have all the buckets we need? Are we assigning costs to buckets in an appropriate manner? When those answers are determined, then instruct the technical group to collect data for those buckets.
- Whether or how the 83/17 CSO allocation is addressed is an in depth conversation for the subgroups to address.

- **Questions and answers, comments and responses**

1. Bart's last statement regarding key questions for the Charge Methodology Work Group gets to the core of what we're trying to do.

2. Would like to know the technical decisions that went into the strength of flow calculation - how do you know what costs go into what buckets? What is the current process? What is the vision? Personnel, electrical, chemical use?
    a. The technical basis for each decision (with respect to the matrix that aligns treatment processes with cost pools) is described in

great detail in the 1979 study. Developing the future vision is the mission of the Charges Methodology work group.

3. Explain the technical details of how you get to strength of flow for the non-master metered communities?
    a. Prior to Rate Simplification, flow modeling was prepared for the individual non-master metered customer communities. During Rate Simplification, the individual data points for these customers were ignored and they were grouped into “D+” - which was simply total flow reported at the WWRF less estimated “common” infiltration less the flow from the master metered customer communities. We then simply pro-rata assigned D+ flow (by type) to each D+ community based on the old flow balance data, and computed loadings for each customer based on SOF assumptions. The SHAREs work group will take up this topic.

4. Slide 14: Breakout of sanitary contributions. What differences from the current way we recognize peak flows are we contemplating? What are the refinements proposed or desired?
    a. This topic will be considered in the Charges Methodology work group.

5. Would like to understand the CSO costs better.
    a. We will provide an in-depth review of this topic at a future Charges work group meeting.

6. Observation: The National Symposium participants were able to explain their methodologies. No one without a wastewater treatment background would be able to understand ours. We should be heading more toward simplicity.
    A: Agreed. Current GLWA methodology is incredibly complex. It takes three slides to explain the calculations for one pollutant. Simplicity is a worthwhile goal.

5. Work Group Membership, Charges, and Guiding Principles - Kerry Sheldon, Bridgeport Consulting

- Sewer SHAREs is the technical work group. First meeting is August 3, 12:00 - 2:00 p.m. Purpose is to generate the data needed to populate the charge methodology. May generate data that is ultimately not used.
- Charges methodology is the financial work group. Will engage a third party consultant to assist in developing the methodology itself, and ultimately using/applying the data from the Sewer SHAREs methodology to populate member-partner charges.
- Subgroups will be populated by first tier members.
- GLWA requests one primary and one alternate representative from each first-tier community, to ensure coverage when someone is unavailable.
- Designated Sewer SHAREs representative can be a consultant, but on the charges methodology, direct member participation is sought. (That group will be engaged in third party consultant scope development, etc.; appropriate and aligned with past practice to specify direct member participation.)

- Guiding principles for both work groups:
    1. Practice the Rules of Collaboration as described in the Partnering Agreement:
        - Show **mutual respect** for each Members' point of view
        - **Balance** the needs of your individual community or entity with the interests of the system as a whole
        - Work toward **consensus**[1] on each issue
        - Enter each meeting with a willingness to acknowledge your own personal bias to encourage and maintain a **collaborative** working environment
        - **Respect individual** concerns and needs as each member is unique
        - Be **proactive** and take initiative in raising issues and providing recommendations prior to, during, and after meetings

    2. Focus on the long-term impacts of the decisions we make today; ensure alignment with the longer-term vision of where we're headed as a region (including the wastewater master plan)
    3. Maintain good connectivity with our respective communities'

- Questions and answers, comments and responses
    - Suggestion to print and post the 3 Guiding Principles at all meetings
    - Can the work groups throw out the entire methodology and see where we end up?
        - Yes - that's for the work groups to determine. Be mindful, however, that the clock is ticking. Directional convergence is needed within the next few months, and the process must be completed by November 2019.

6. Timeline and Next Steps

- Preliminary timeline is included on Slide 71 of the presentation
- Sewer SHAREs work group meeting: August 3, 12:00pm - 2:00pm, SEMCOG
- Charges Methodology work group - *scheduling in process*

Participants:

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[1] "Consensus" means an opinion held by all or most of the partnership and/or work group, which is supported by a show of hands.

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