



City of New Buffalo Sewer Study

 **ABONMARCHE**

February 19, 2019

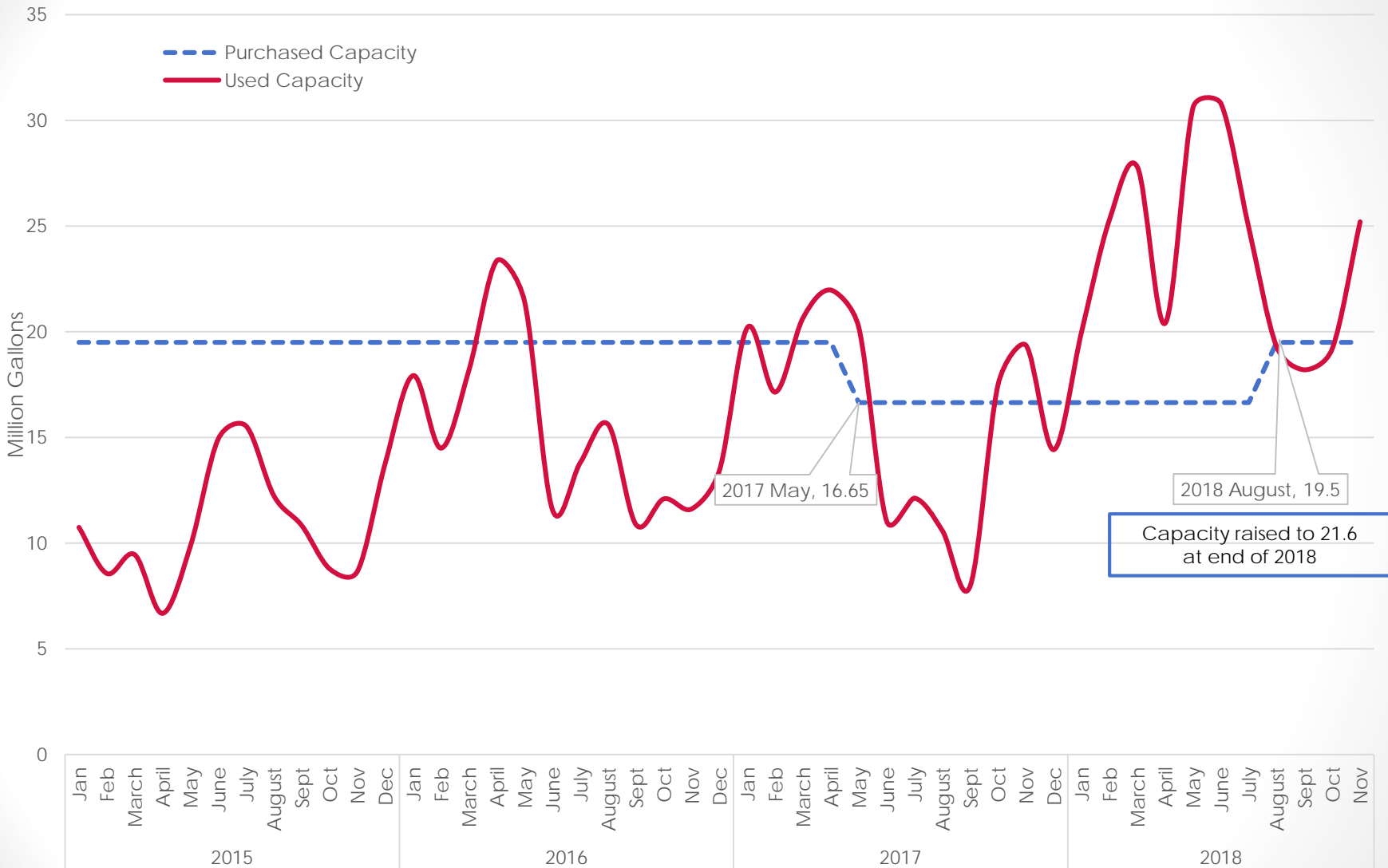


Background

- Starting **Fall 2017**, several **wet weather** events caused **elevated flows** and **surcharges, exceeding purchased capacity** at the Wastewater Treatment Plant (WWTP)
- Additionally, the **purchased capacity** had been **lowered** in May 2017 causing the surcharge fees to be applied to a higher volume of flow while the base rate also increased each year
- Invoice totals from GRSD increased substantially
- Abonmarche engaged to investigate
- **Purchased capacity increased** back to 19.5 MG August 2018 (and 21.6 at end of 2018). Billing arrangement made between City & GRSD
- However, **total flow volumes** are still **higher**



City Used vs Purchased Capacity



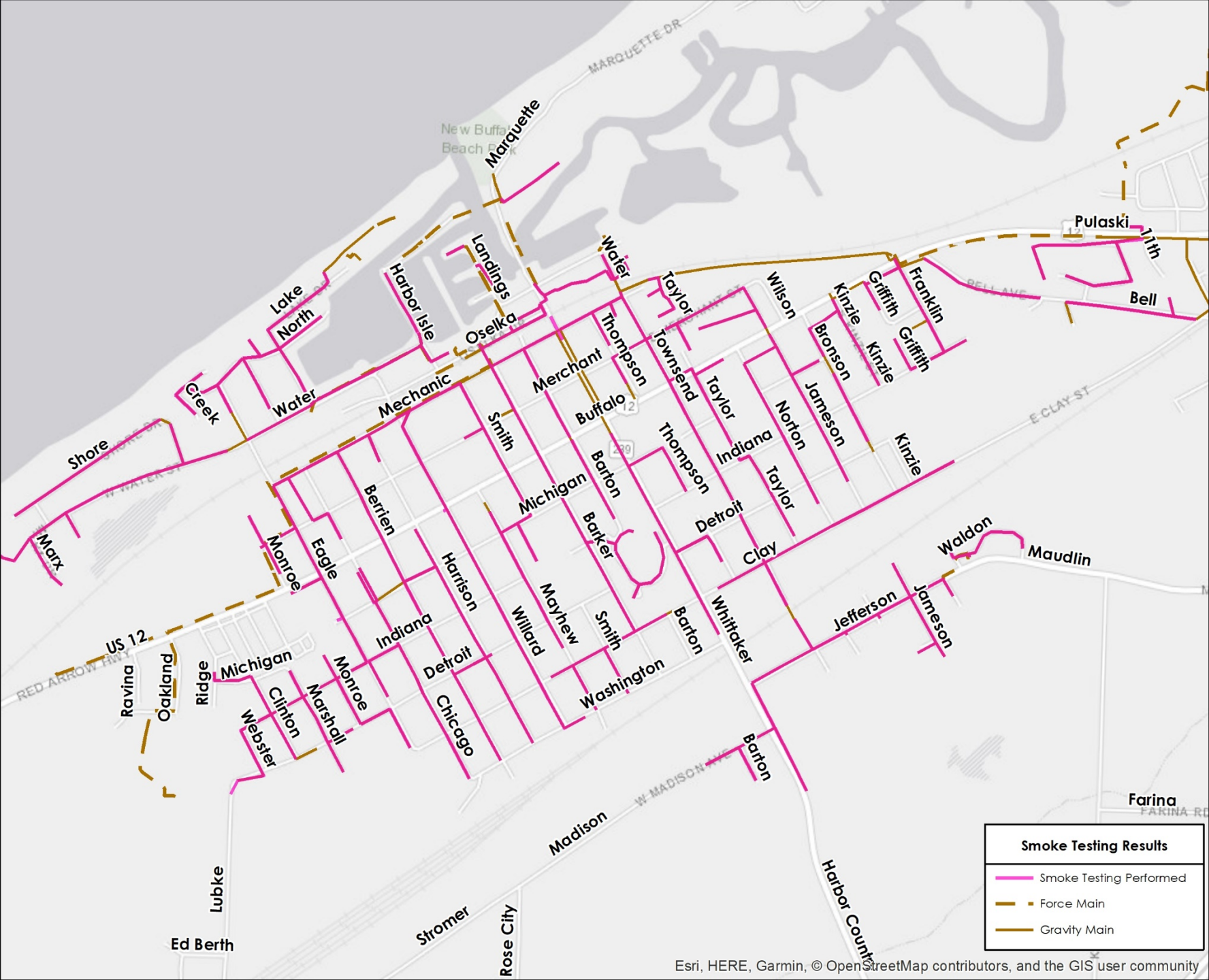
*data from GRSD billings to CNB



Smoke Testing

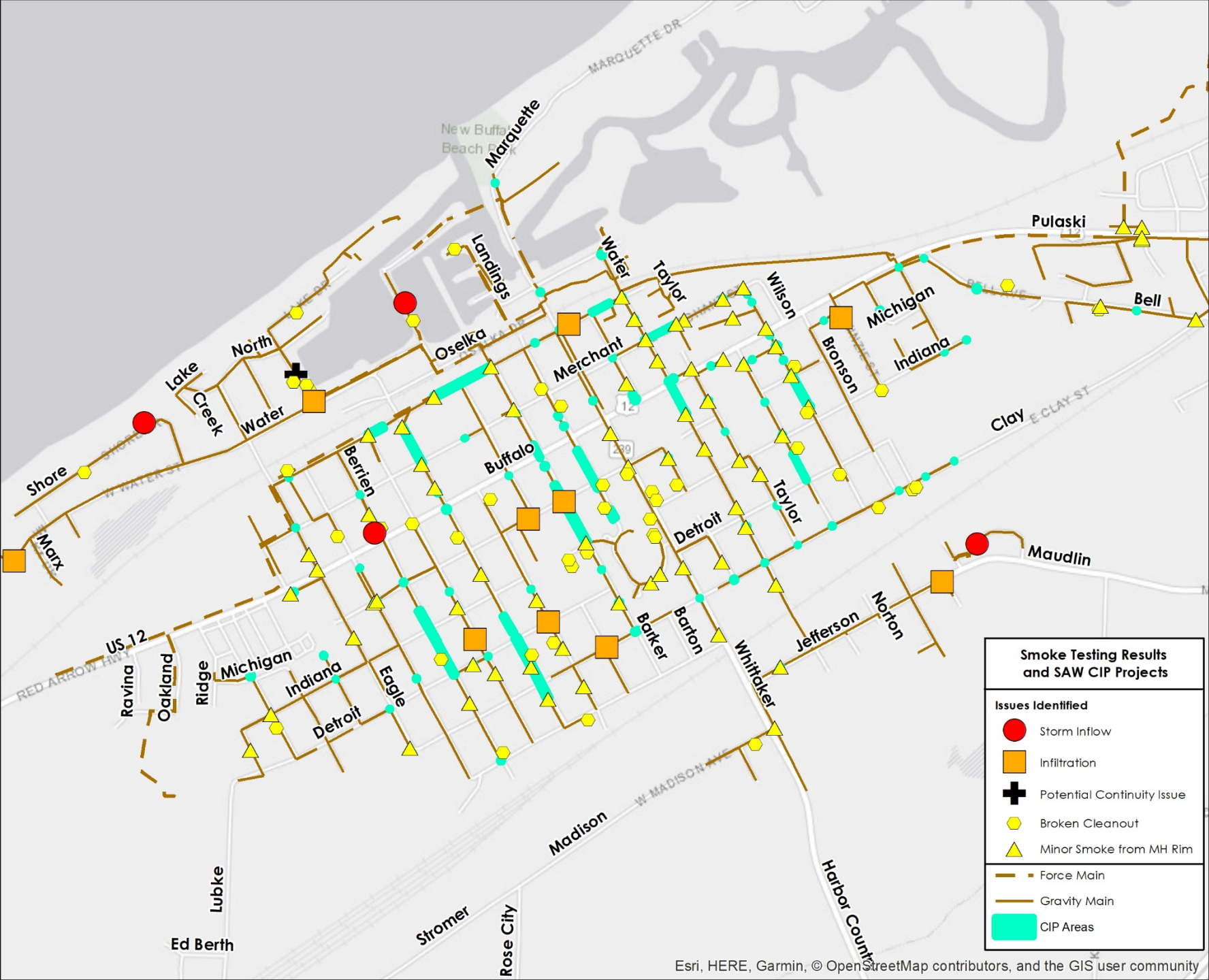
- Performed on City's wastewater system in Sept/Oct to find sources of Inflow and Infiltration (I/I)
- 14 primary sources of I/I found such as:
 - Illegal connection from roof drain
 - Catch basin connects to wastewater pipe
 - Manhole structure joints have water weeping in
- 115 secondary sources such as:
 - Broken cleanout cap
 - Manhole rim with holes/gaps





Smoke Testing Results	
—	Smoke Testing Performed
- - -	Force Main
—	Gravity Main



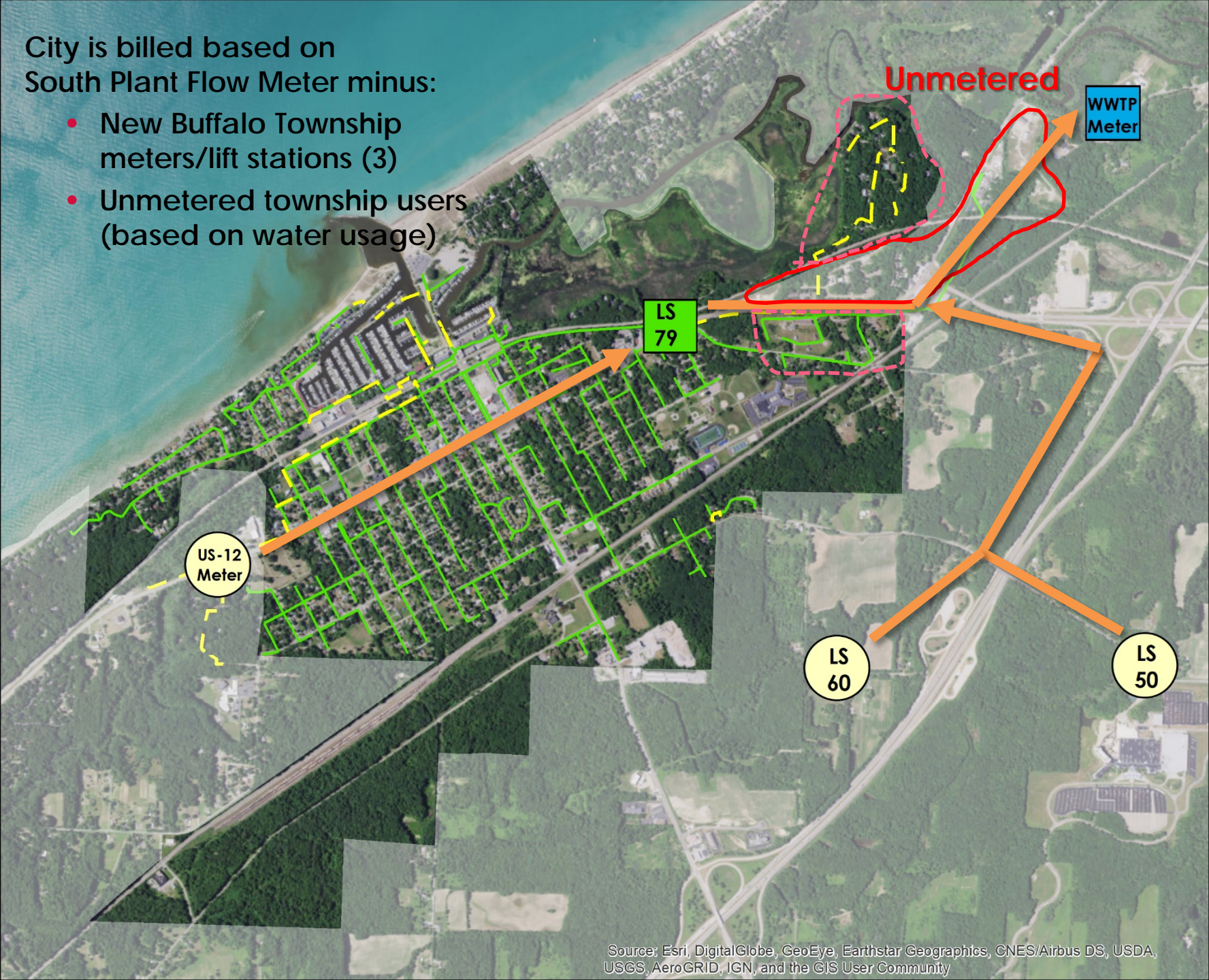


Smoke Testing Results and SAW CIP Projects

Issues Identified	
●	Storm Inflow
■	Infiltration
+	Potential Continuity Issue
⬡	Broken Cleanout
▲	Minor Smoke from MH Rim
	Force Main
	Gravity Main
	CIP Areas

City is billed based on South Plant Flow Meter minus:

- New Buffalo Township meters/lift stations (3)
- Unmetered township users (based on water usage)

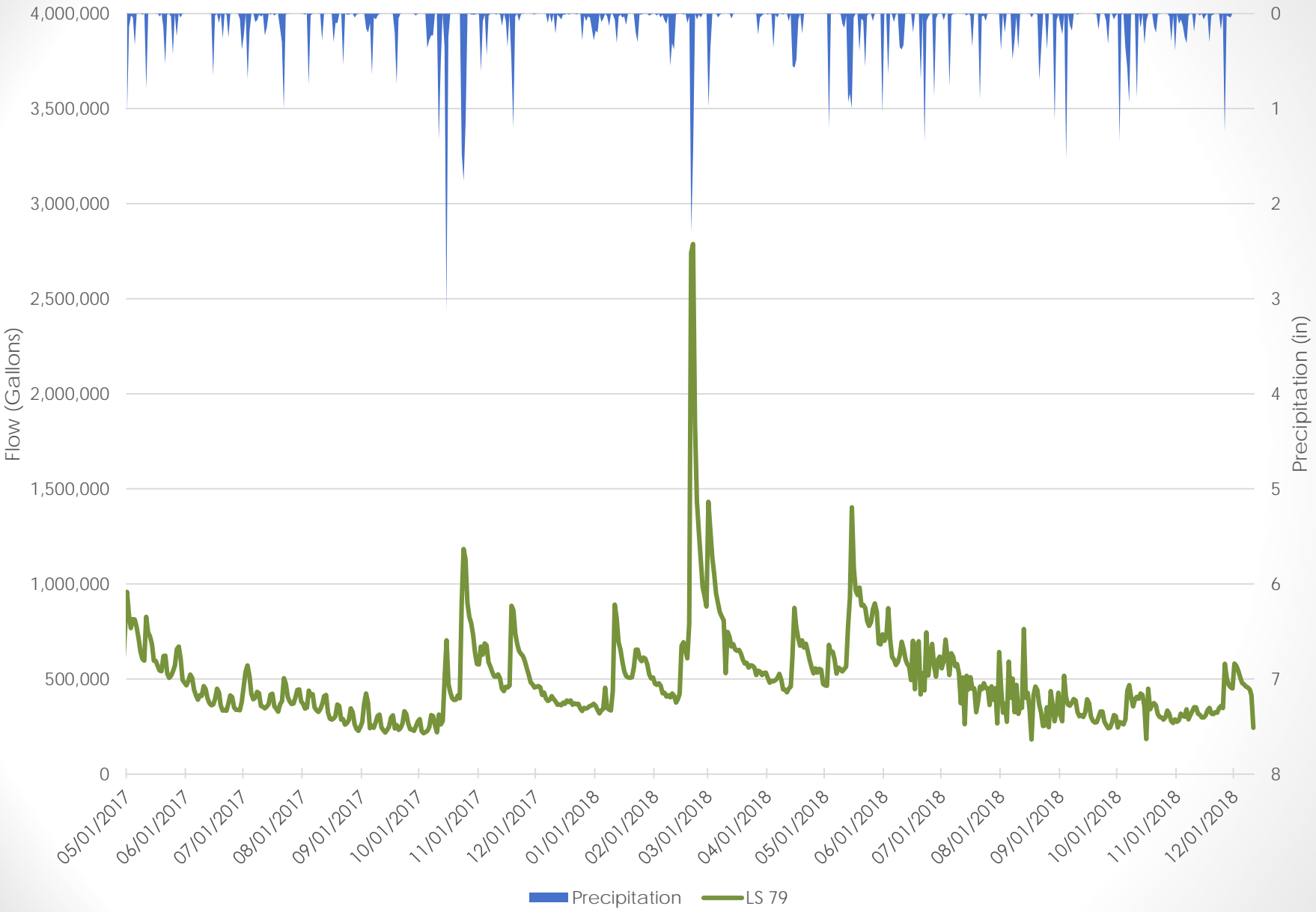


Lift Station Flow Analysis

- Compared City's main lift station (LS 79) with recorded precipitation to show elevated flow volumes correlate to wet weather



Lift Station 79 vs. Precipitation



*data from GRSD, LS flows calculated on run time



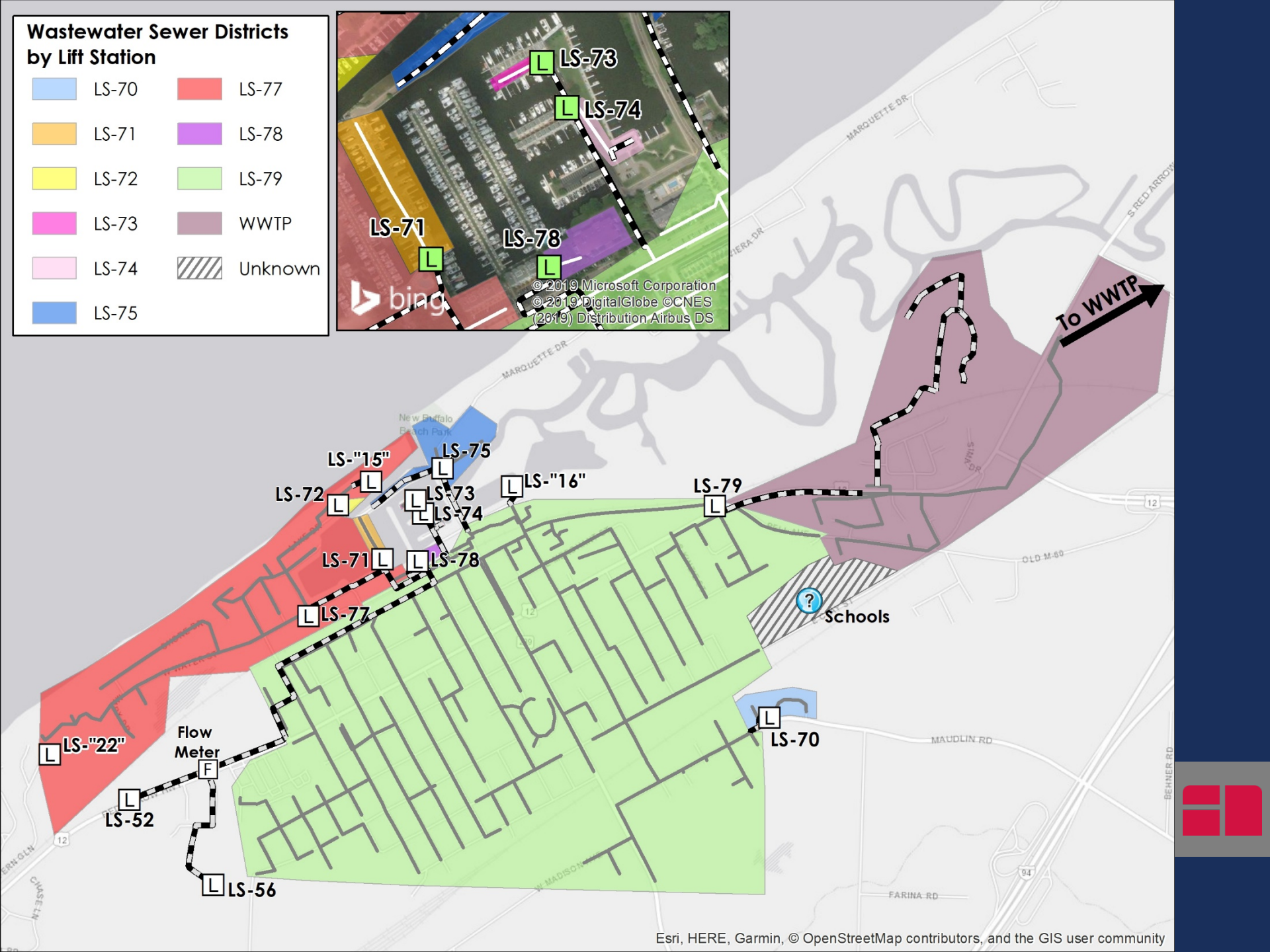
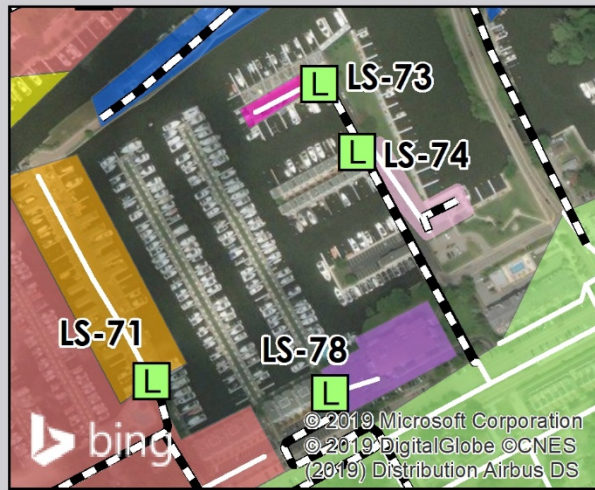
Lift Station Flow Analysis

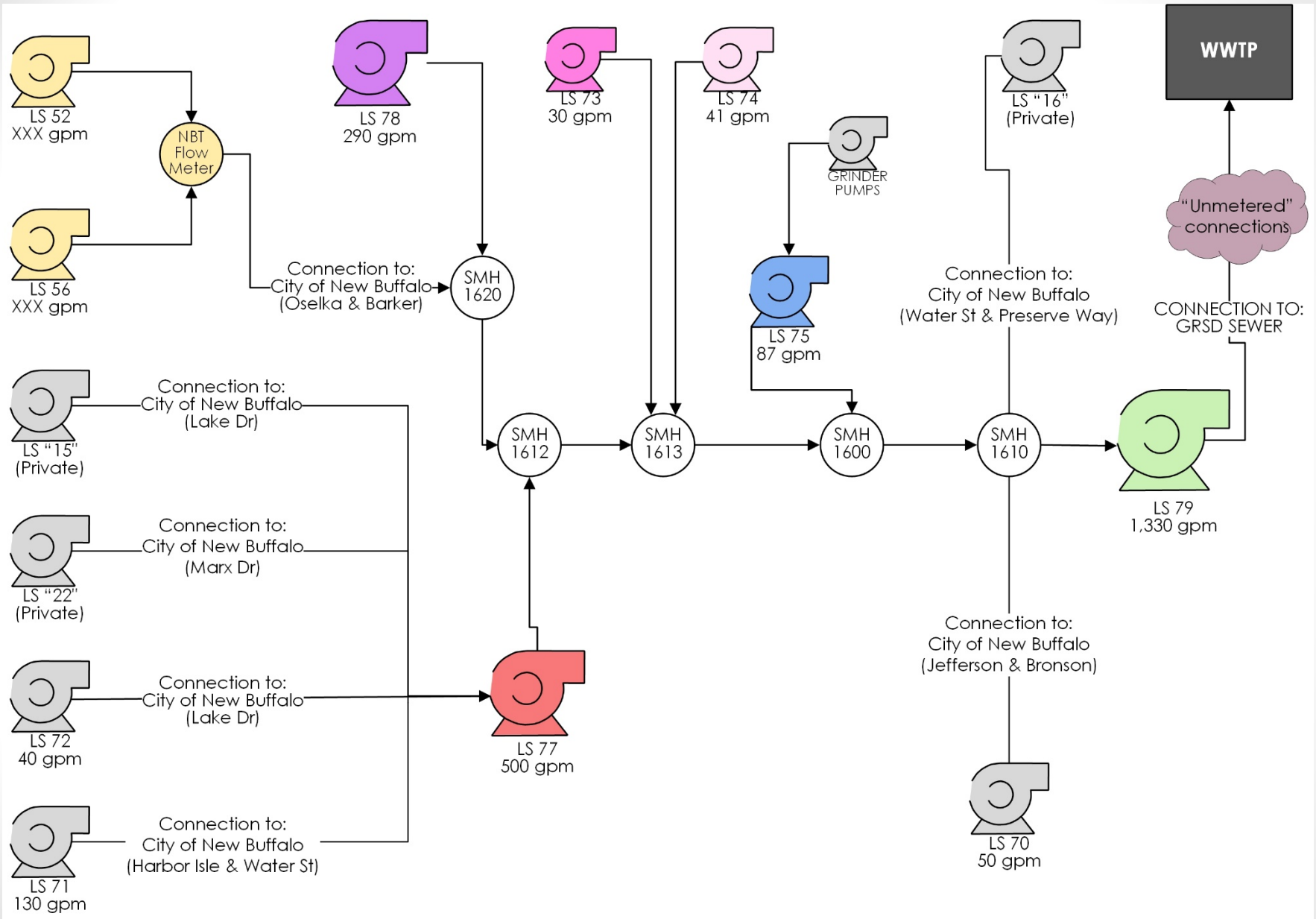
- Compared City's main lift station (LS 79) with recorded precipitation to show elevated flow volumes correlate to wet weather
- Reviewed each lift station's run times to isolate areas of town that have elevated wet weather flows



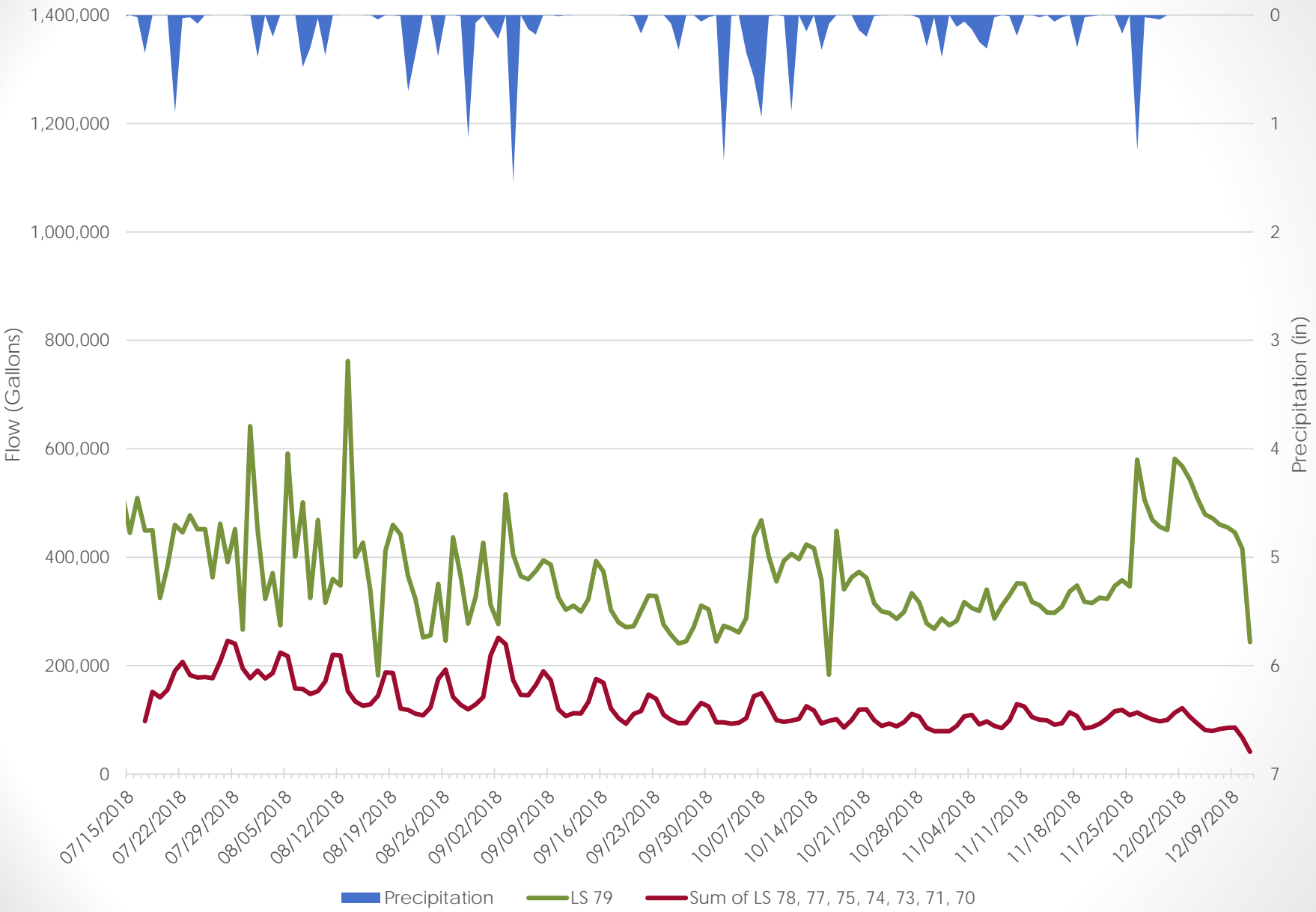
Wastewater Sewer Districts by Lift Station

	LS-70		LS-77
	LS-71		LS-78
	LS-72		LS-79
	LS-73		WWTP
	LS-74		Unknown
	LS-75		





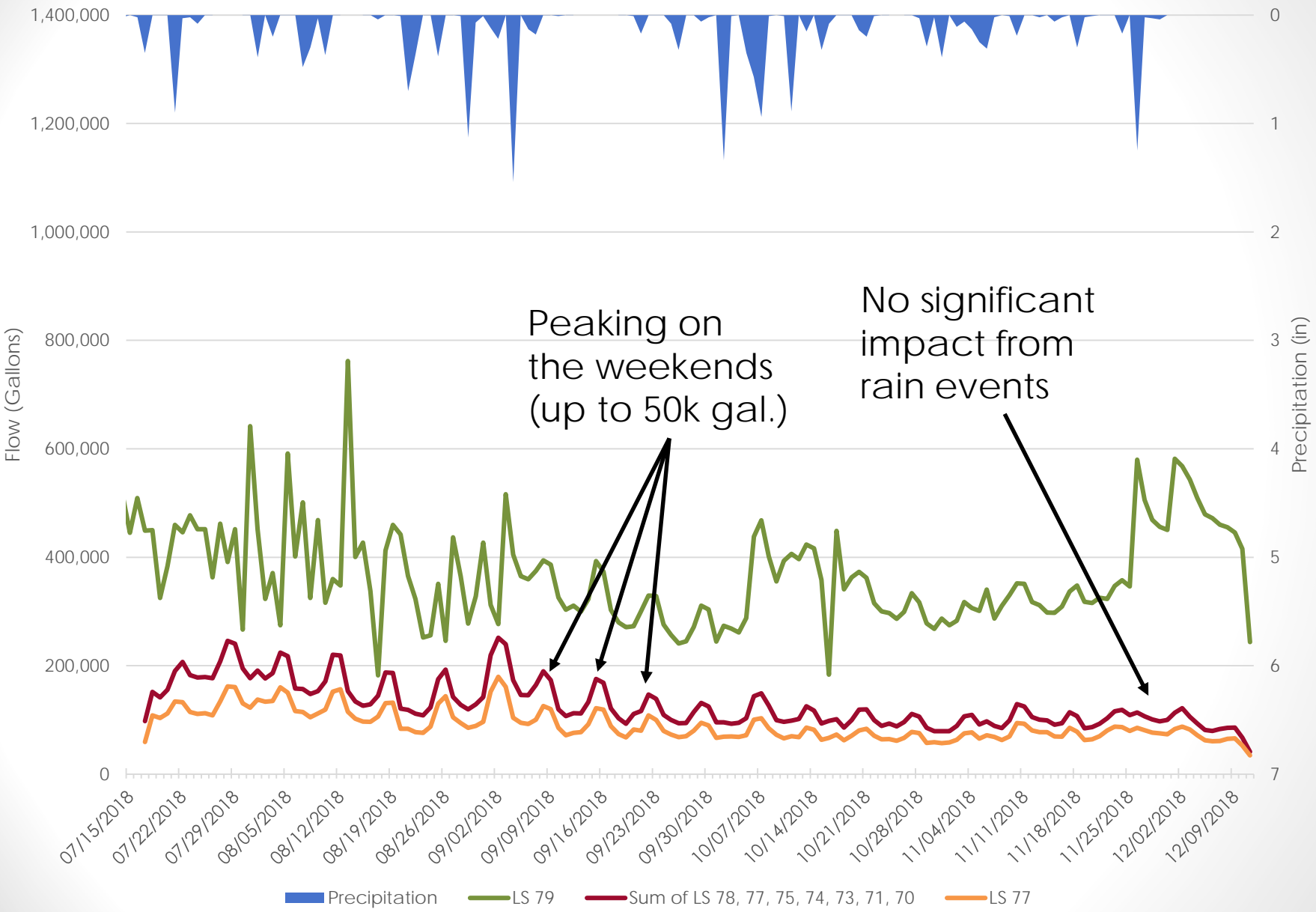
LS 79 vs Others



*data from GRSD, LS flows calculated on run time



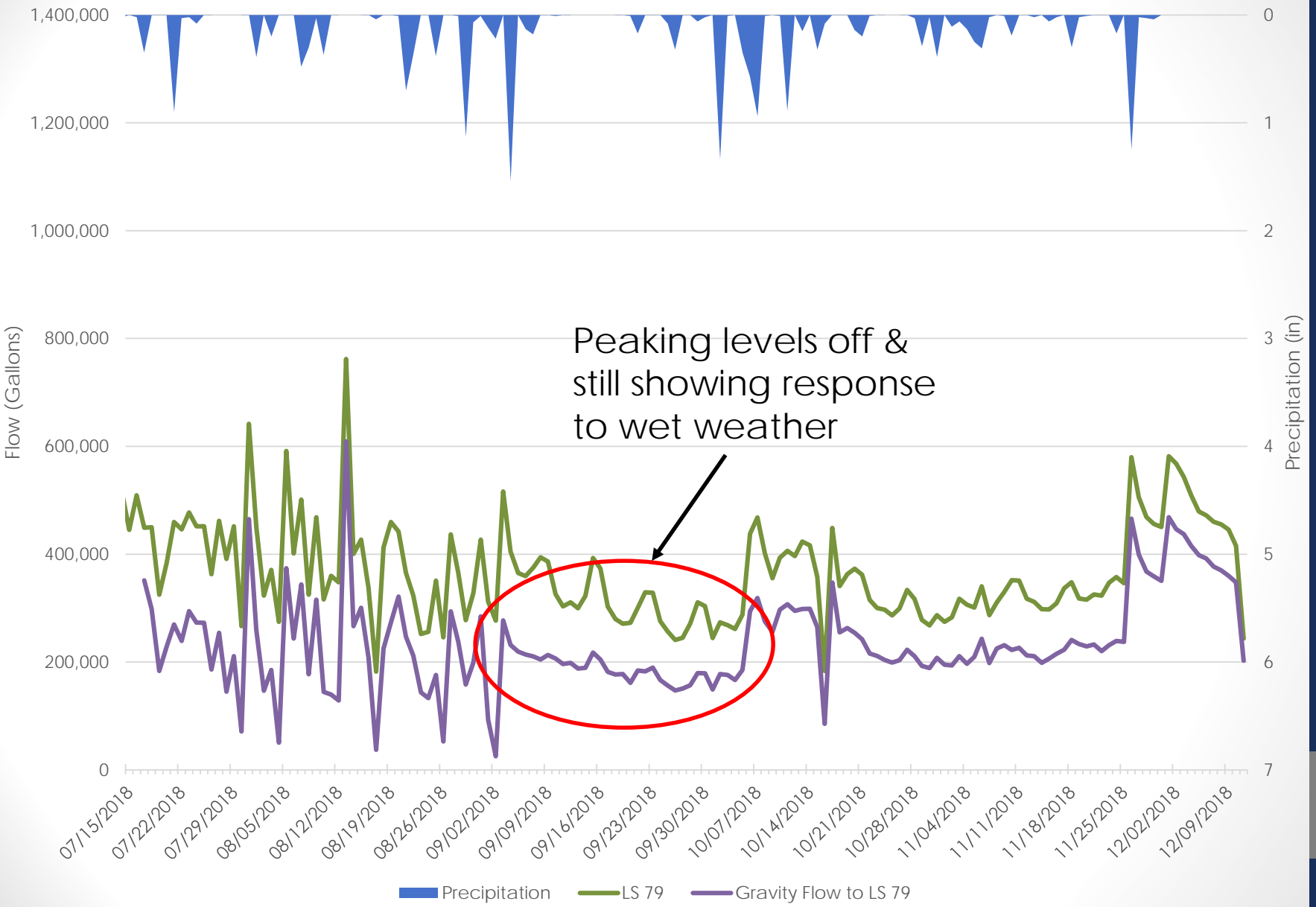
LS 79 vs Others



*data from GRSD, LS flows calculated on run time



Gravity Flow to LS 79



*data from GRSD, LS flows calculated on run time

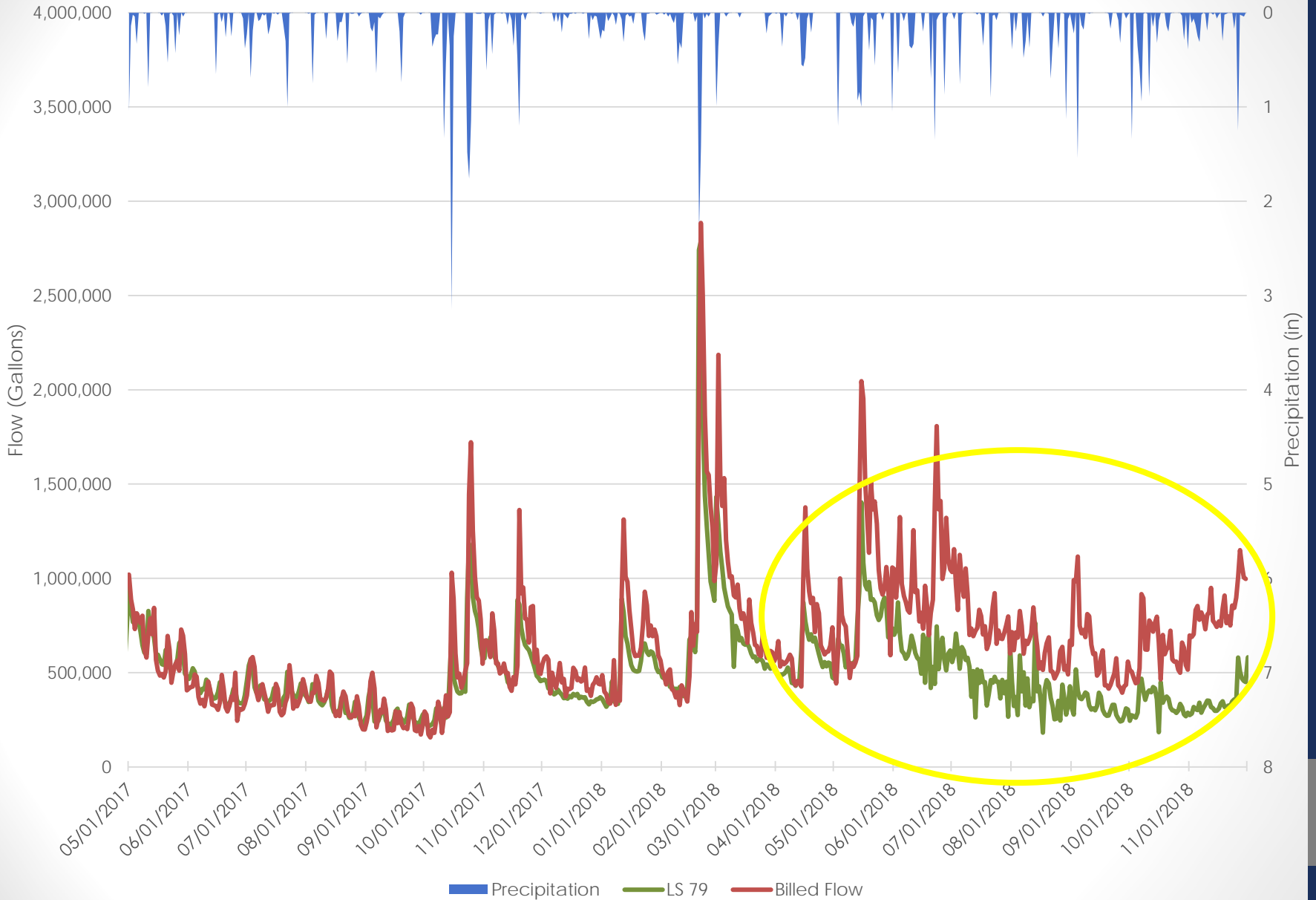


Lift Station Flow Analysis

- Compared City's main lift station (LS 79) with recorded precipitation to show elevated flow volumes correlate to wet weather
- Reviewed each lift station's run times to isolate areas of town that have elevated wet weather flows
- Comparing LS 79 calculated volumes to GRSD billed flow shows divergence starting in June 2018



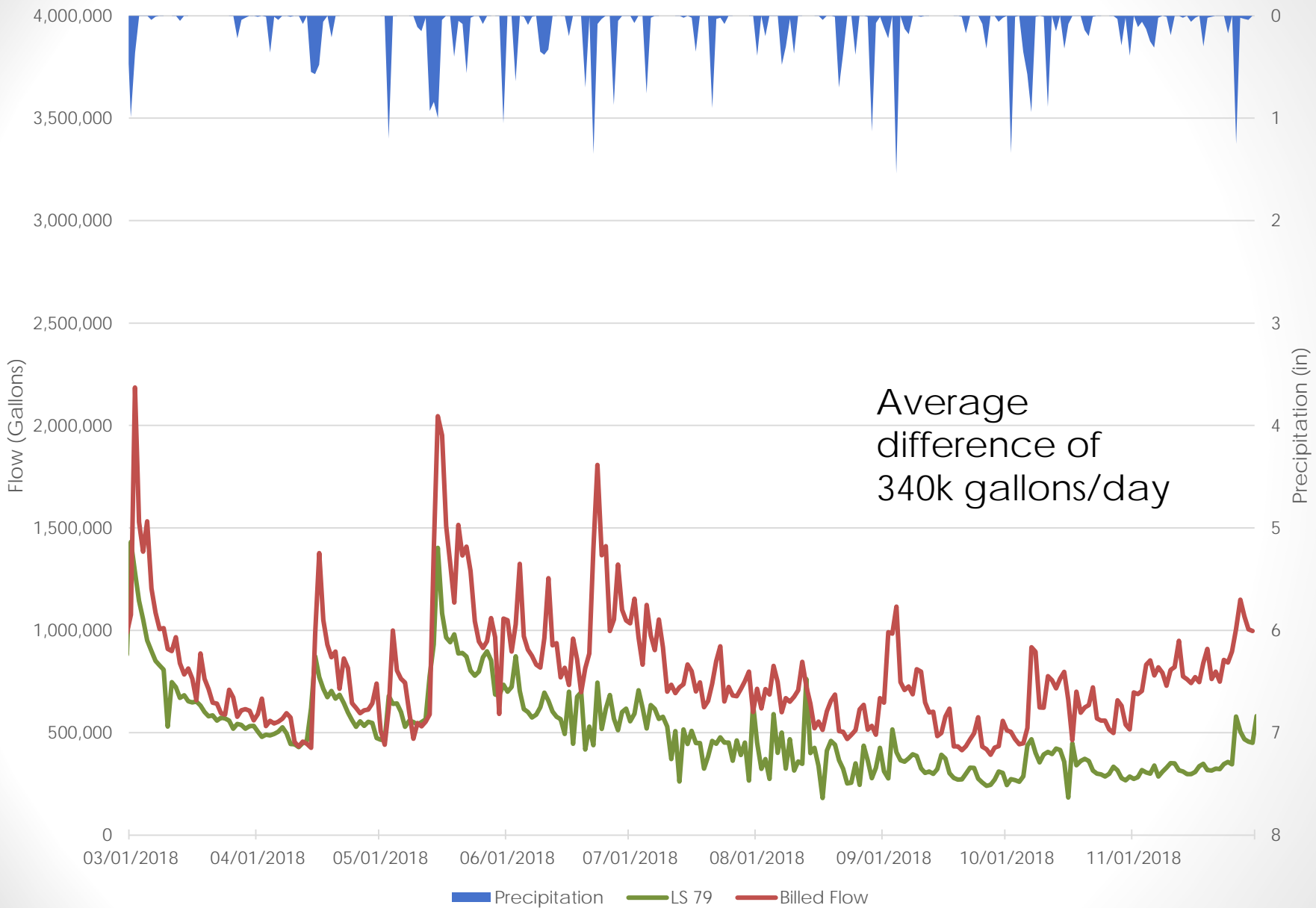
Lift Station 79 vs. Billed Flow



*data from GRSD, LS flows calculated on run time



Lift Station 79 vs. Billed Flow

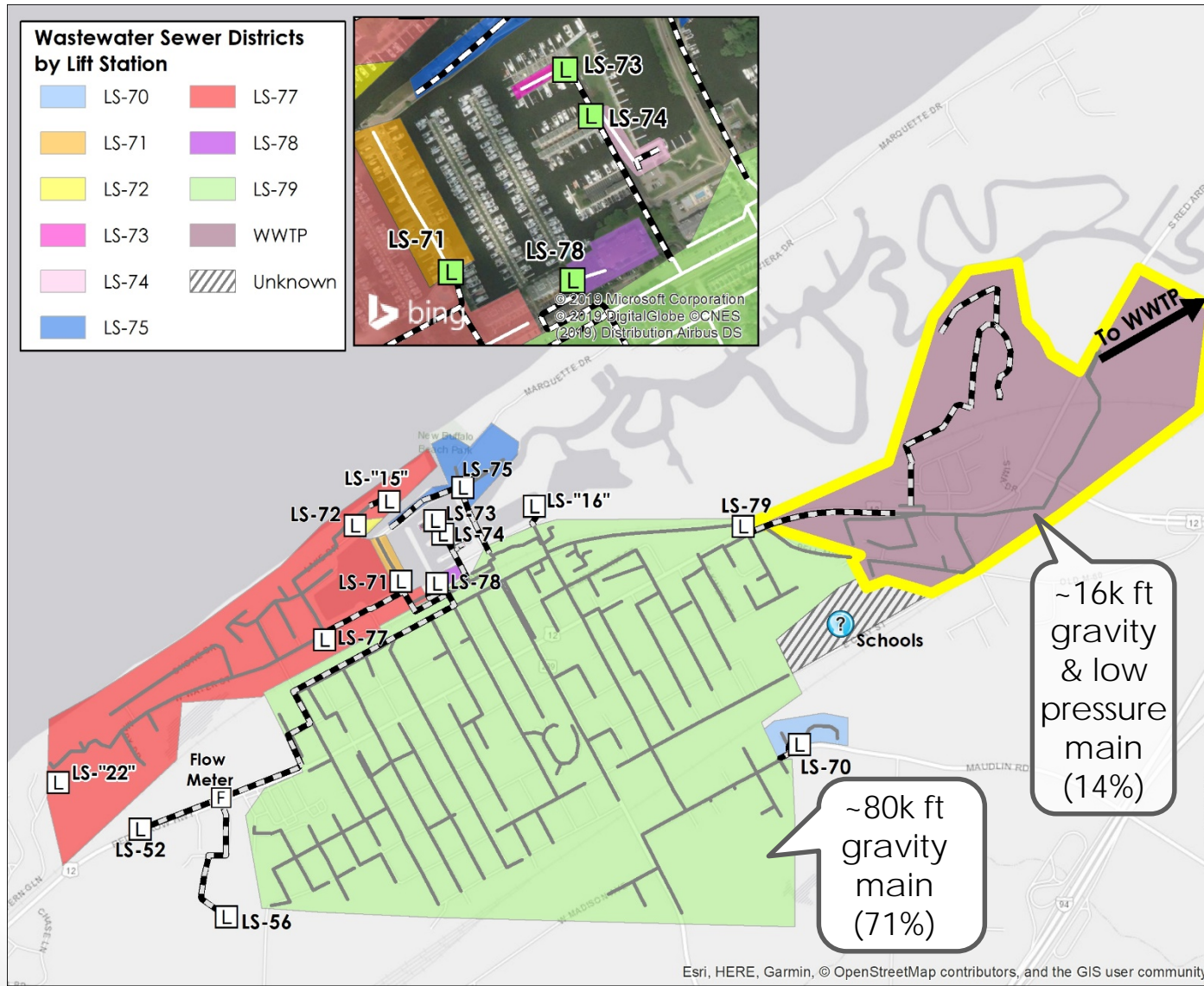


*data from GRSD, LS flows calculated on run time



Areas to Investigate Further

- Area between LS 79 and WWTP (both in the City and Township)

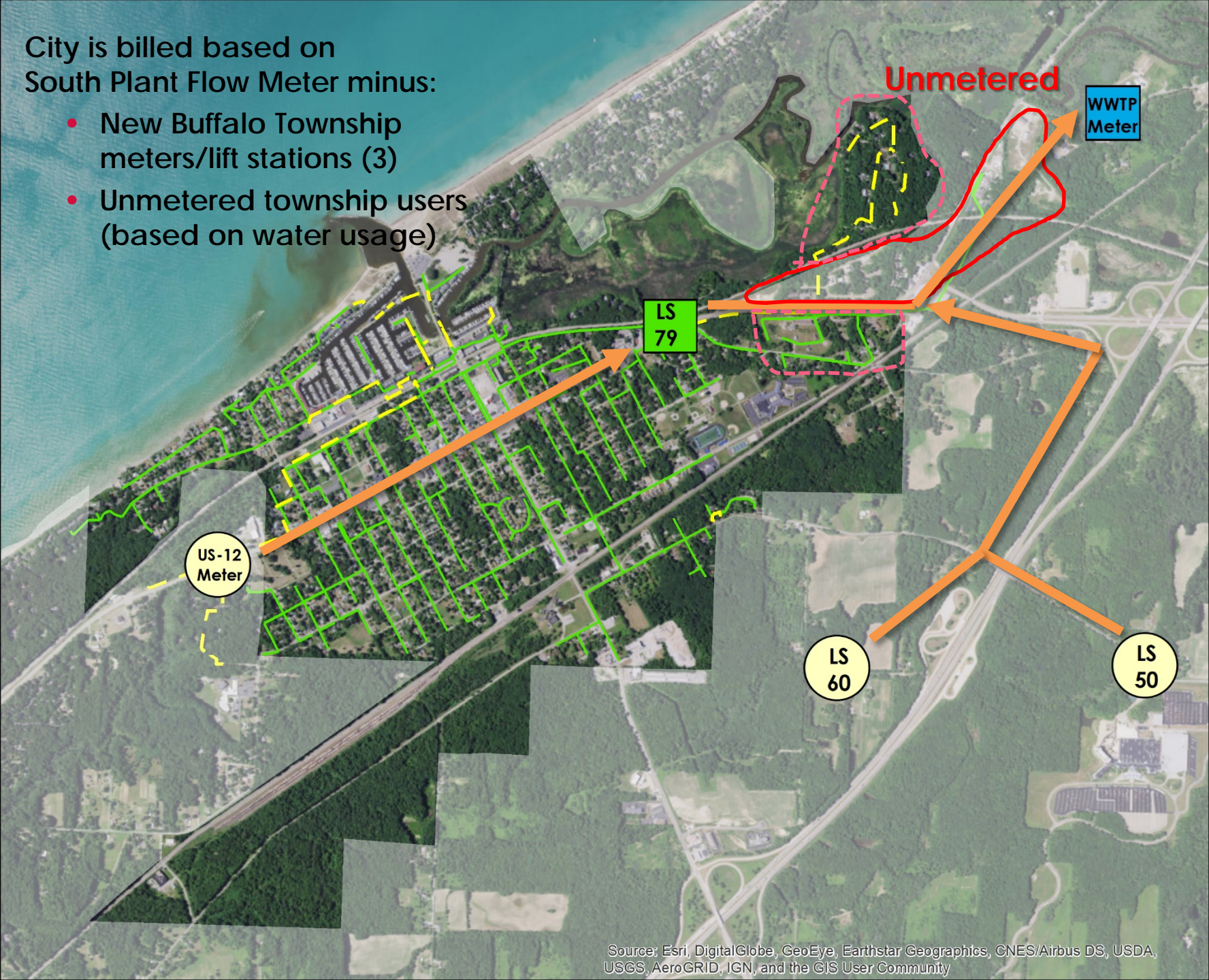


- Starting in June, 40% or more of total flow is coming from an area accounting for about 14% of the pipe network
- Average 340,000 gallons/day difference amounts to 8-14 million gallons/month
- Prior to June, this area contributed 0-23% of flow volume
- This area is composed of City and Township users with no direct mechanism to distinguish the two



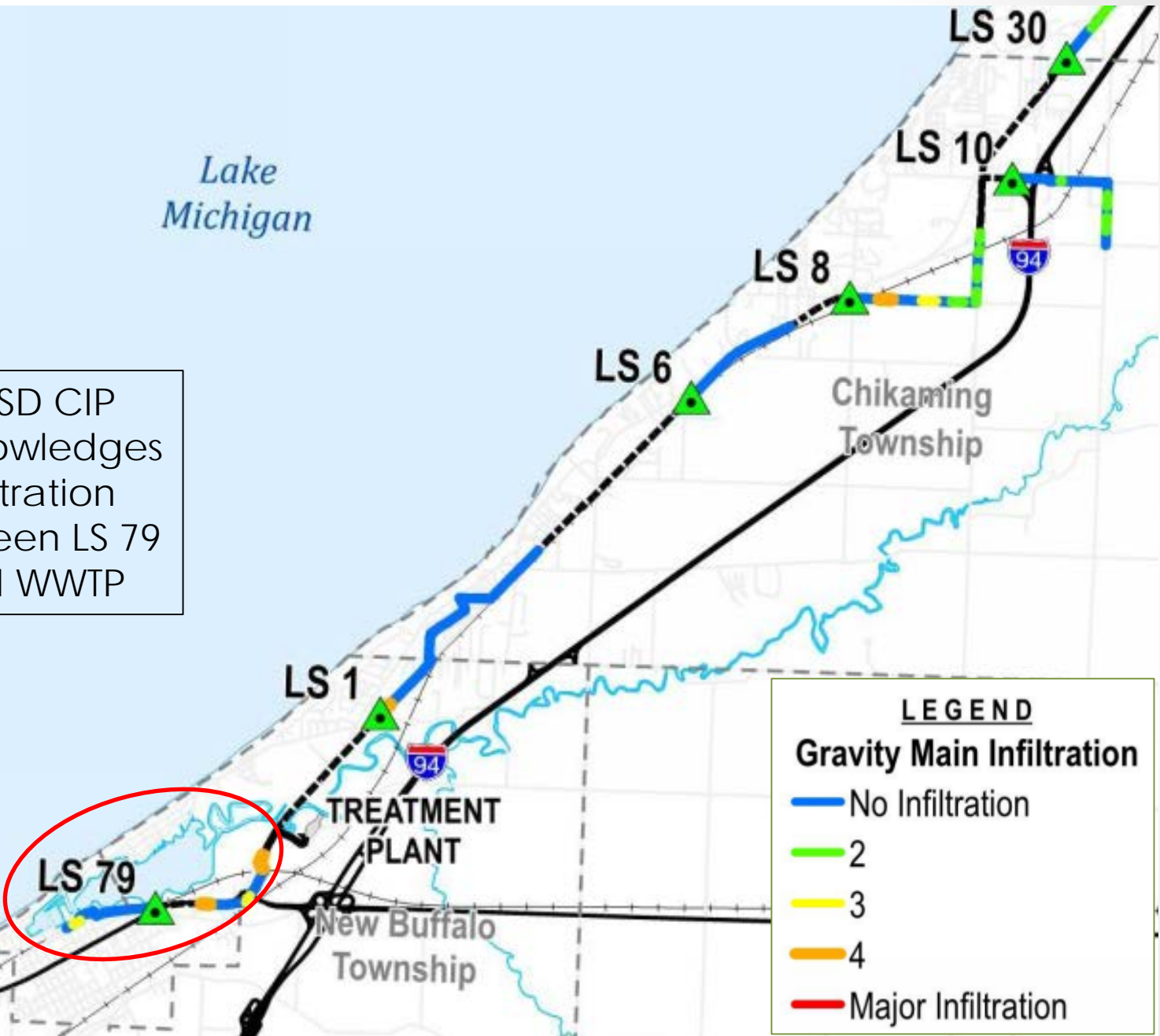
City is billed based on South Plant Flow Meter minus:

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Lake Michigan

GRSD CIP acknowledges infiltration between LS 79 and WWTP



Next Steps

- Address issues found during smoke testing
- Flow metering to target the two areas identified
 - Between LS 79 and WWTP
 - Upstream of LS 79
- Verify Schools connection

