



# City of Grosse Pointe

Sewer System Overview

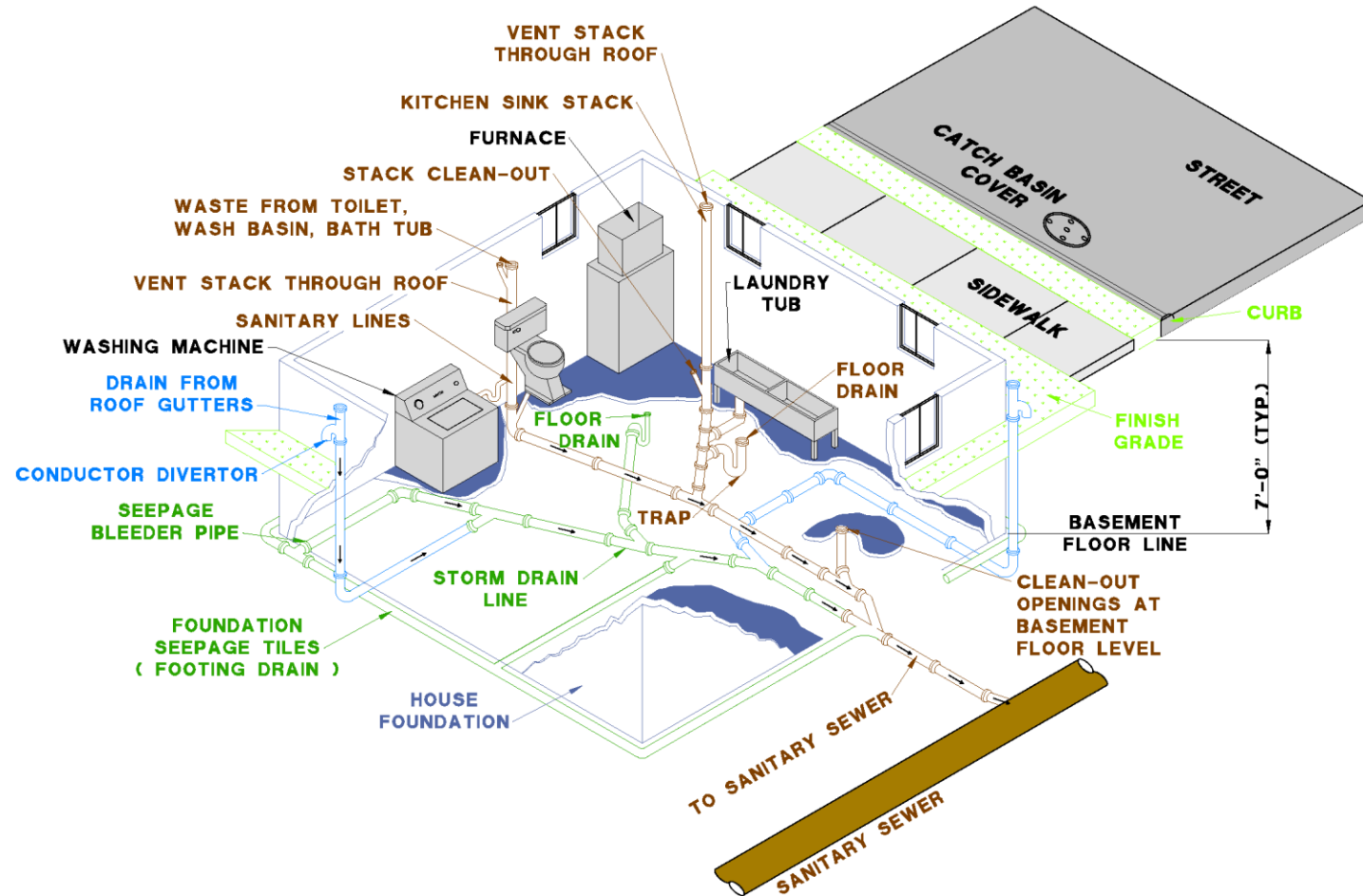
September, 2021



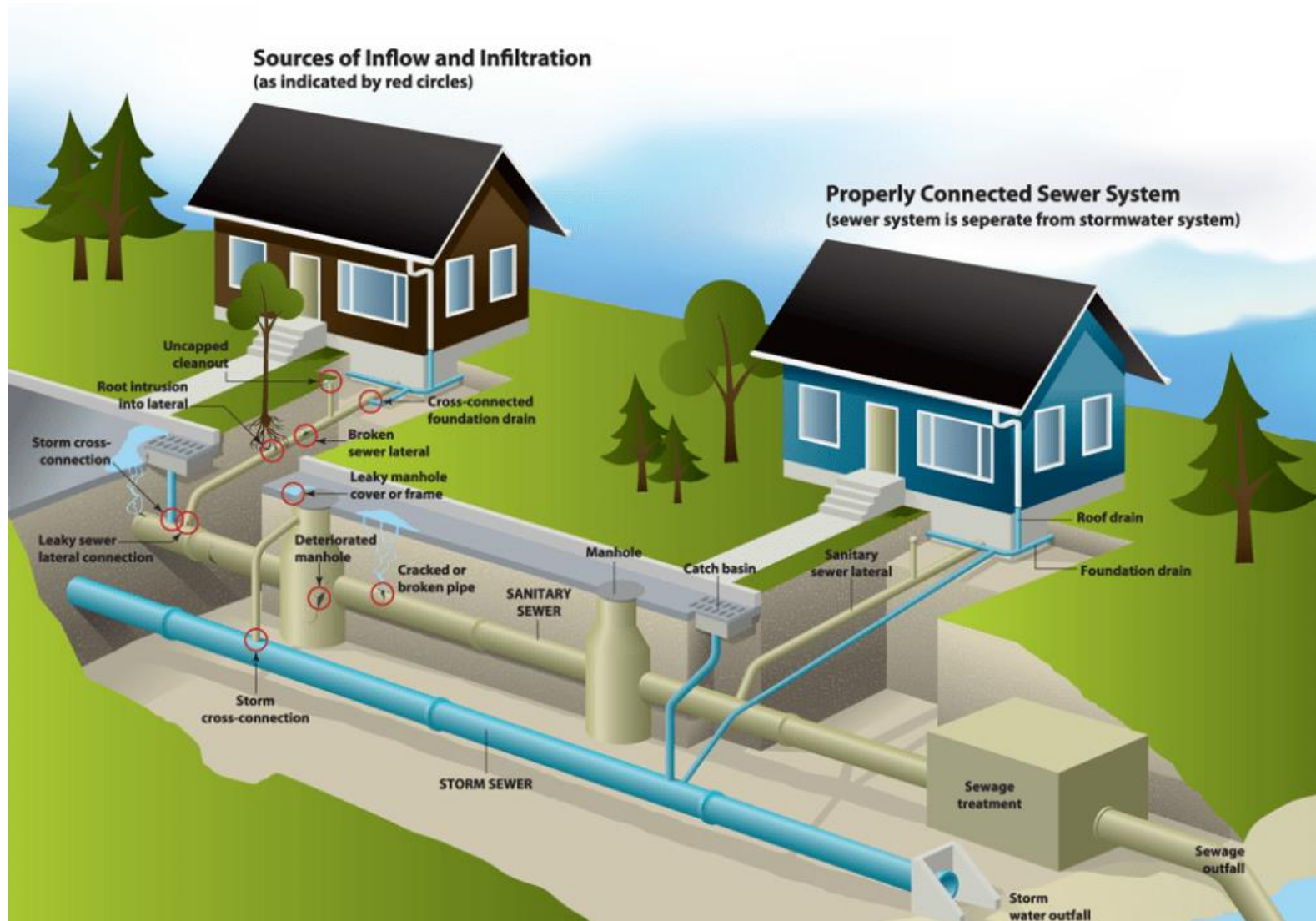
# Agenda

- How does our Sewer System Work?
  - House Plumbing and Sewer Connections
  - Sanitary Sewer
  - Storm Sewer
  - Neff Road Pump Station
- Downstream of Neff Road Pump Station
- What can be done to improve the system?
  - Make sure existing system is working properly
  - Slow or reduce the amount of water entering the system
  - Increase the capacity of the existing system
  - Regional System Improvements
  - Improvements that can be made to individual Homes/Businesses
  - Village System Improvements

# Plumbing and Sewer Connections



# Plumbing and Sewer Connections



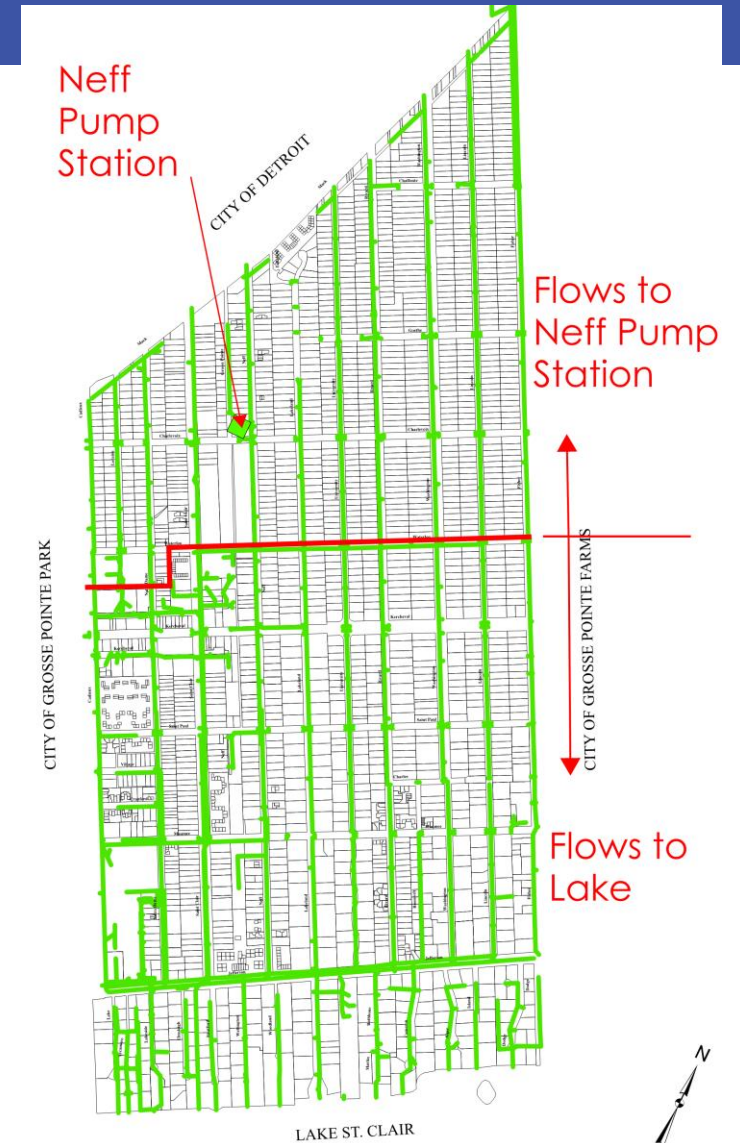
# How does our Sanitary Sewer System Work?

- System includes approx. 137,000 feet of 6" to 69" sewers
- All Sanitary Sewers in the city flow to Neff Road pump station



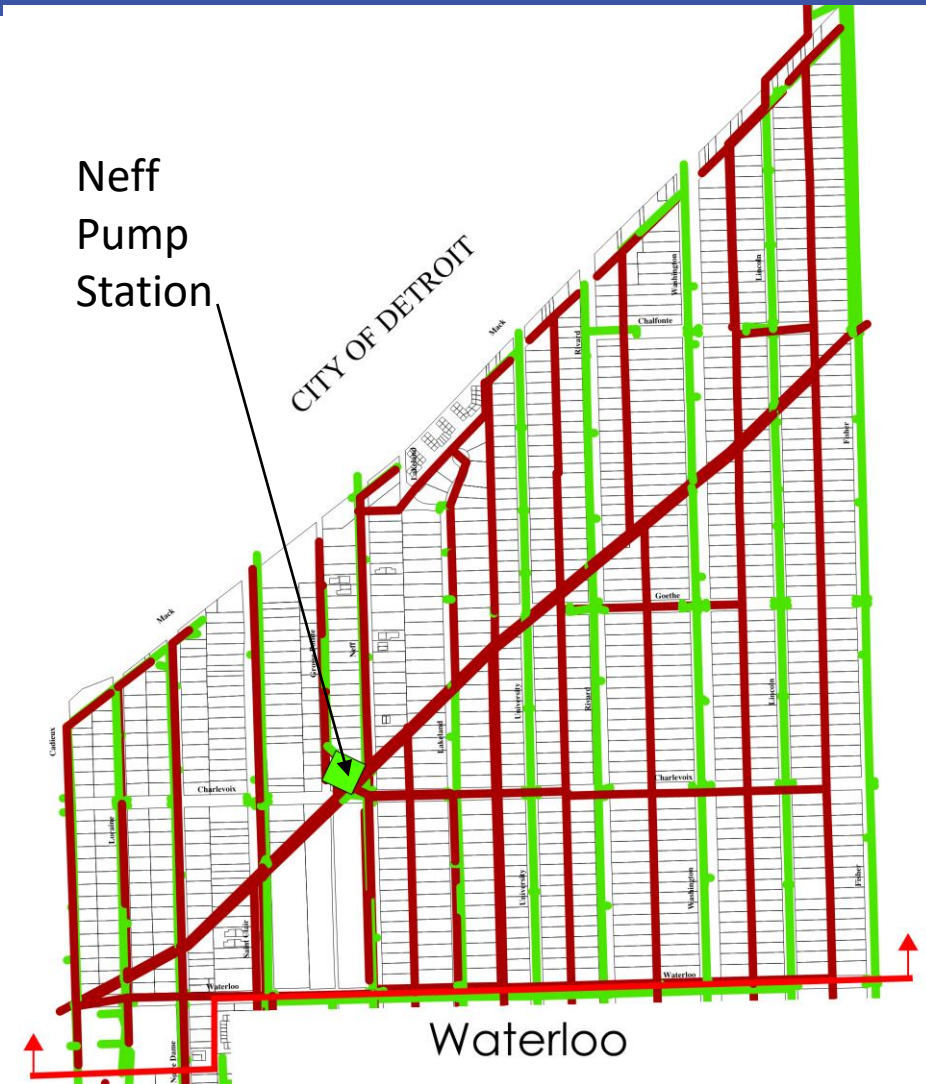
# How does our Storm Sewer System Work?

- System includes approx. 127,000 feet of 6" to 63" x 98" sewers
- Storm Sewers south of Waterloo generally flow to Lake St. Clair
- Storm Sewers north of Waterloo flow to the Neff Road Pump Station
- Some footing drains and downspouts are connected to the sanitary



# How does our Sewer System Work north of Waterloo?

- Storm Sewers north of Waterloo flow to the Neff Road Pump Station and create a combined sewer at the outlet to the Fox Creek
- There are only two residential areas in the City that we would consider purely combined sewers.
  - Lakeland Ave, 500 feet North of Charlevoix to end
  - Grosse Pointe Ct.



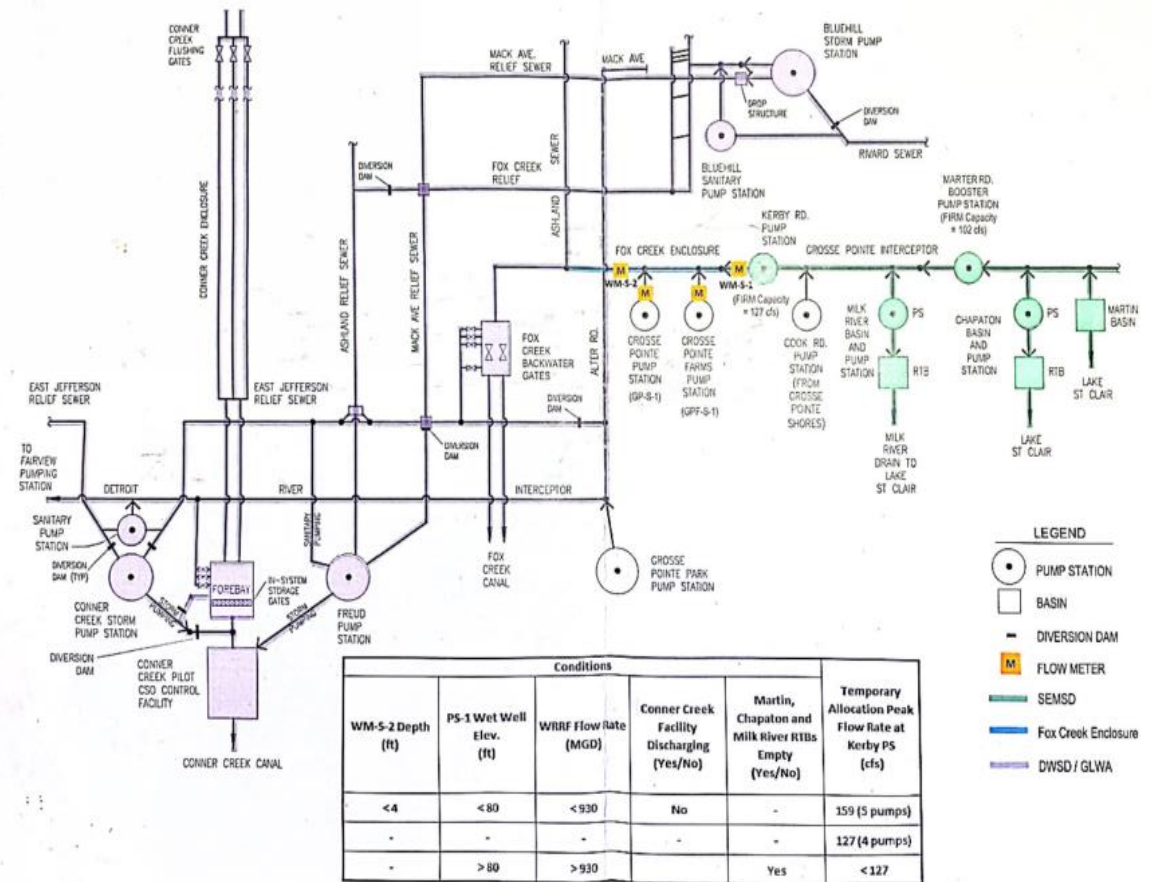




# Downstream of the Neff Road Pump Station

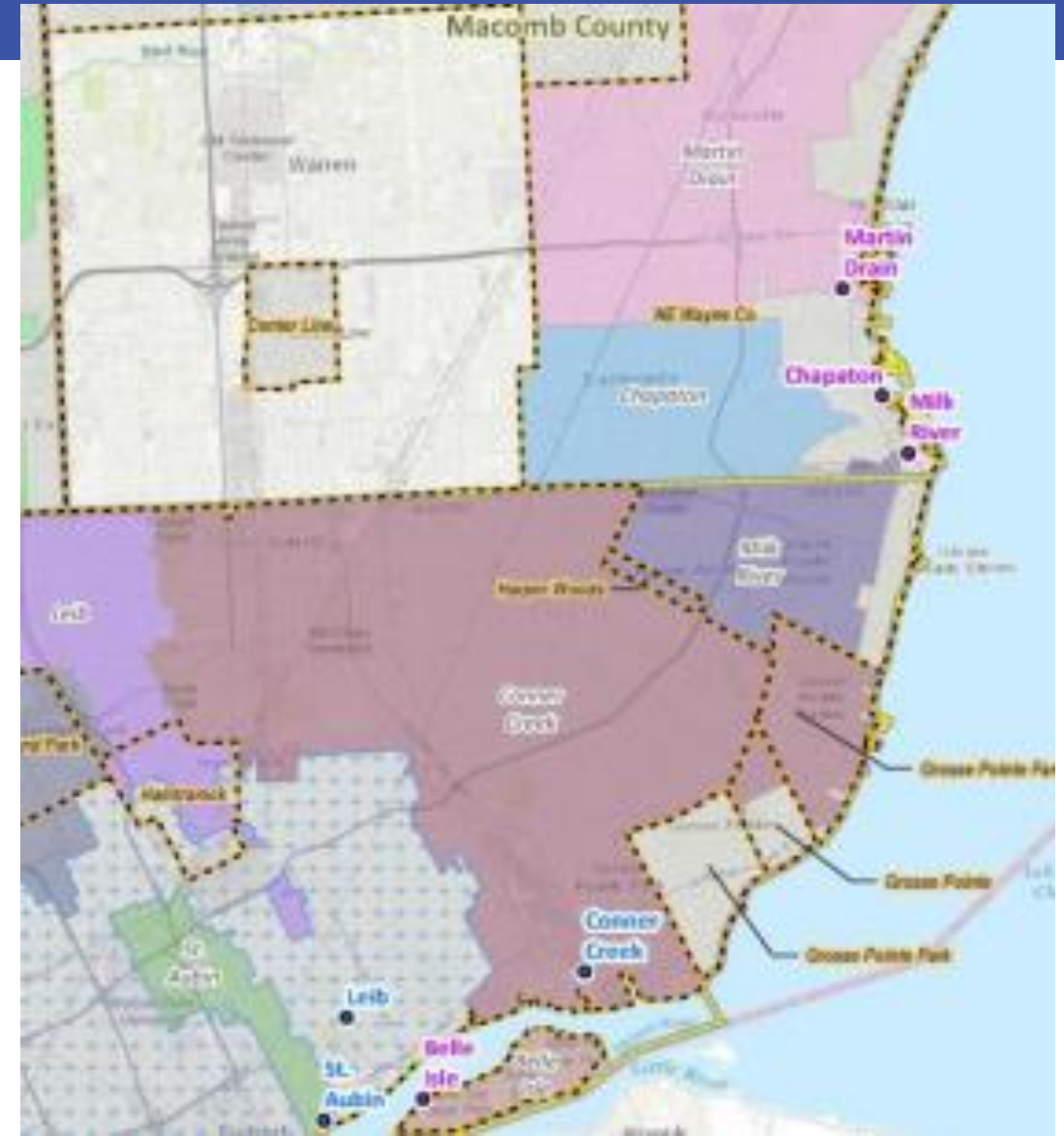
- After leaving the Neff Road Pump Station, the sewer discharges to the Fox Creek Enclosure
- The Fox Creek Enclosure is a 16' x 11'-7" arch sewer that is under the jurisdiction of Great Lakes Water Authority (GLWA)
- The Fox Creek Enclosure services an area of 8,420 acres including Parts of Detroit, Grosse Pointe, Grosse Pointe Farms, Harper Woods, Grosse Pointe Woods, and Grosse Pointe Shores

EAST SIDE SCHEMATIC AND PRELIMINARY SEMSD LOOK-UP TABLE



# Downstream of the Neff Road Pump Station

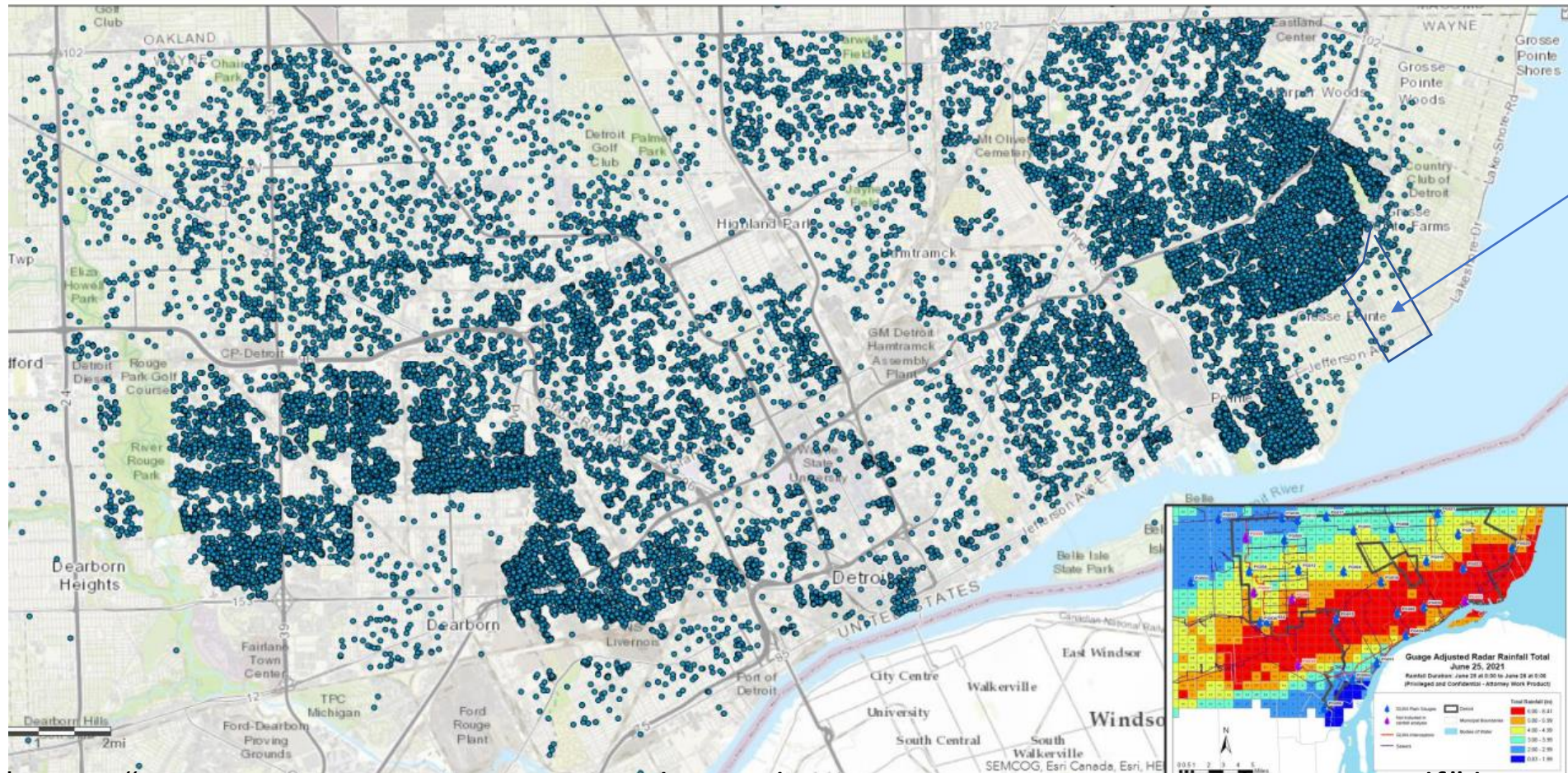
- Low flow in the Fox Creek Enclosure is routed to the Detroit River Interceptor via the East Jefferson Relief Sewer and the Conner Creek pump station
- Excess combined flow in the Fox Creek Enclosure is routed to the Conner Creek and the Freud Pumping Station
- The Conner Creek and Freud Pump Stations are part of the Conner Creek Combined Sewer Overflow (CSO) Facility owned by the GLWA
- The CSO is a large basin that stores excess sewage during heavy rain events. When the basin reaches capacity, the sewage is chlorinated and released into the Detroit River



# Preliminary Map of GLWA Claimants from 6/26/21 Event

## Preliminary Mapping of Claimants

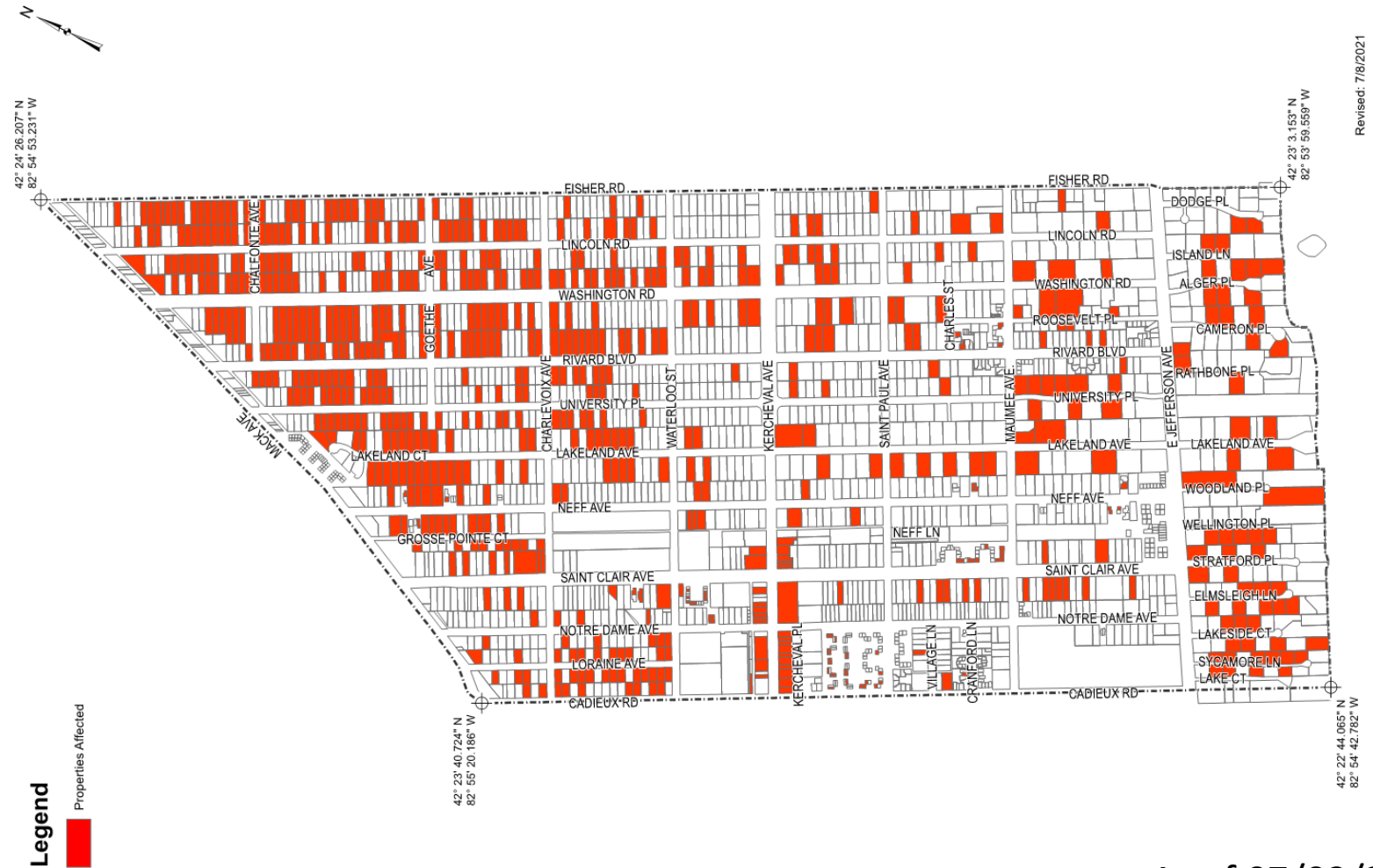
Preliminary, subject to further investigation and analysis



Grosse Pointe

\* From "June-Rain-Event\_Post-Event-Analysis-Preliminary-Report\_GLWA-Board-210901.pdf" by Wade Trim

# Map of Grosse Pointe Flood Notices from 6/26/21 Event



As of 07/02/21

# What can be done to improve the system?

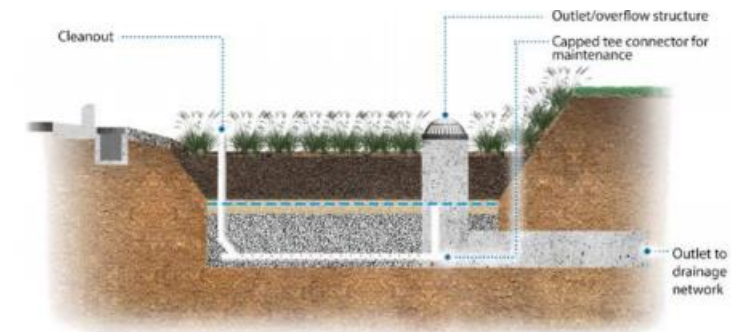
- Make sure existing system is working and maintained properly
- Slow or reduce the amount of water entering the system
- Increase the capacity of the existing system
- Make Improvements to Individual homes and businesses

# Make sure Existing System is working properly

1. Maintain Neff Pump Station
  - Continue to inspect, clean and test electrical equipment (every 5 years) – scheduled for this fall, last completed in 2016
  - Continue to inspect pumps annually
  - Adopt best practice of documenting operational and maintenance procedures in a written manual
2. Evaluate the feasibility of adding a generator to be able to power all storm pumps (current generator runs pumps 3 and 7)
3. TV sewers to confirm conditions and make repairs to medium priority needs identified in 2007. Critical and High Repairs completed in 2014 at a cost of \$3M
4. Develop a program to clean and televise the remainder of the Sanitary sewer system and to make any needed repairs - \$600,000 to \$1,000,000
5. Develop a program to clean and televise the storm sewer system - \$1,000,000 to \$2,000,000
  - Have TV'd sewers on slow draining streets
  - Have found areas with roots, cracks and deposits
6. Eliminate Fats, Oils and Grease from the sanitary system
  - Implement a grease trap inspection program where grease traps exist
  - Work with food service businesses that do not have a grease trap to have one installed
  - Modify existing ordinance to clarify enforcement authority
7. Ensure Frequent Street Cleaning
8. Maintain catch basin cleaning program

# Slow or Reduce the amount of water entering the system

- Disconnect downspouts
  - All downspouts or roof drains connected to a sanitary sewer should be disconnected
  - All downspouts or roof drains connected to a storm sewer that drains to the Neff pump station should be disconnected
- Incorporate Green Infrastructure when possible
  - Permeable pavement – driveways, streets and parking
  - Rain Gardens
  - Rain Barrels
  - Bio-swales
  - Infiltration Basins and Trenches
  - Water Harvesting
  - Green Roofs for flat roofs



Linear Bioswale along a Street

# Increase the Capacity of the Existing System

- Redirect storm sewer north of Waterloo from the Pump Station To Lake St. Clair \$15M to \$20M
- Underground detention system at Elworthy Park \$40M to \$110M\*
  - 3.29 Inches (10 year event) \$40M to \$55M
  - 3.96 inches (25 year event) \$46M to \$64M
  - 4.52 inches (50 year event) \$52M to \$73M
  - 5.11 inches (100 year event) \$59M to \$81M
  - 6.7 inches\*\* (June 2021 event) \$78M to \$110M

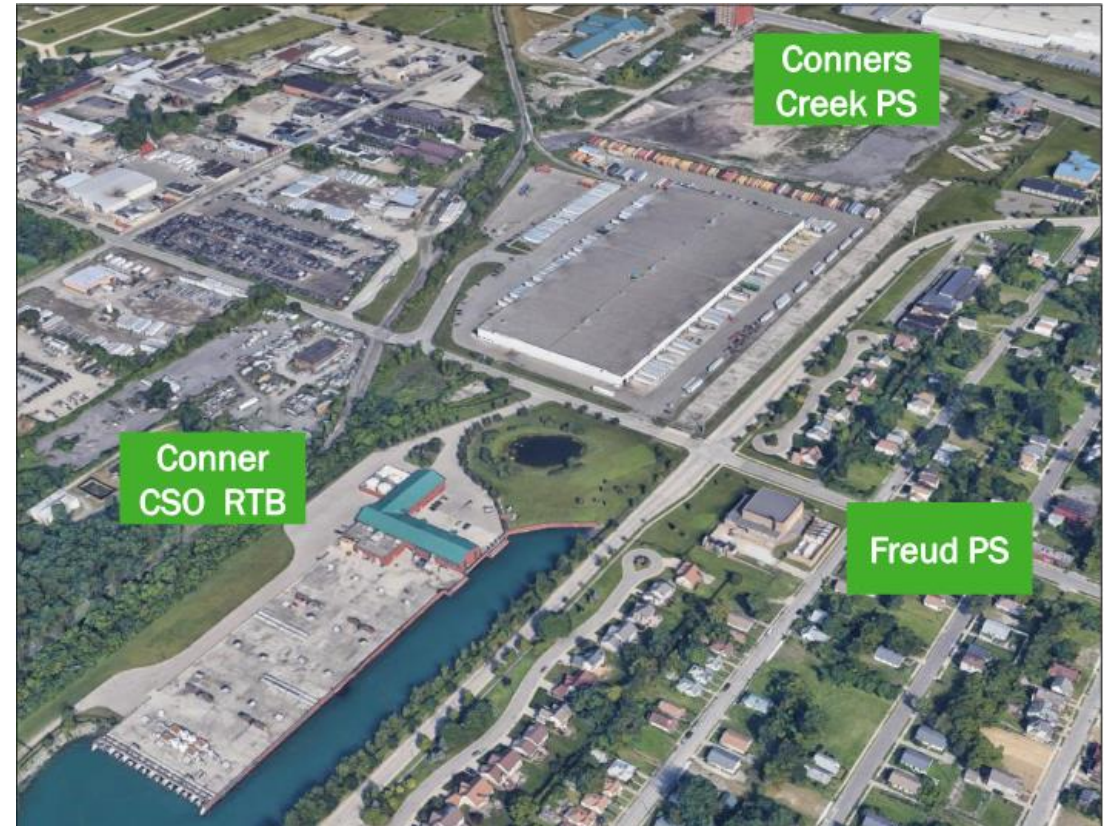
\* estimates include 25% for engineering, inspection and contingencies plus \$5M to \$7M to replace the ball fields

\*\* from gauge adjusted radar rainfall data from Vieux and Associates



# Regional System Improvements

- Upgrade GLWA Facilities at Conner Creek. GLWA is planning replacement of the Conner Creek Pumping Station
- Regional collaboration to improve operations (East Side Member Partner Group – First meeting scheduled for 9/29/21)
- What level of capacity is being planned?
- What changes will be required of the Cities?



# Improvements that can be made to individual Homes/Businesses

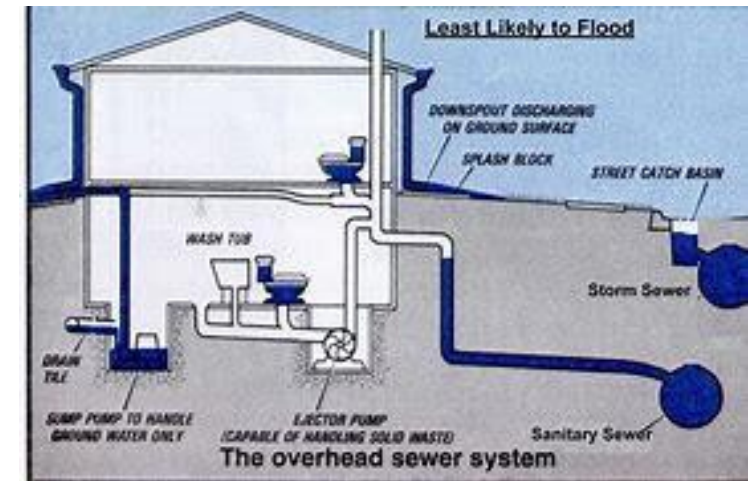
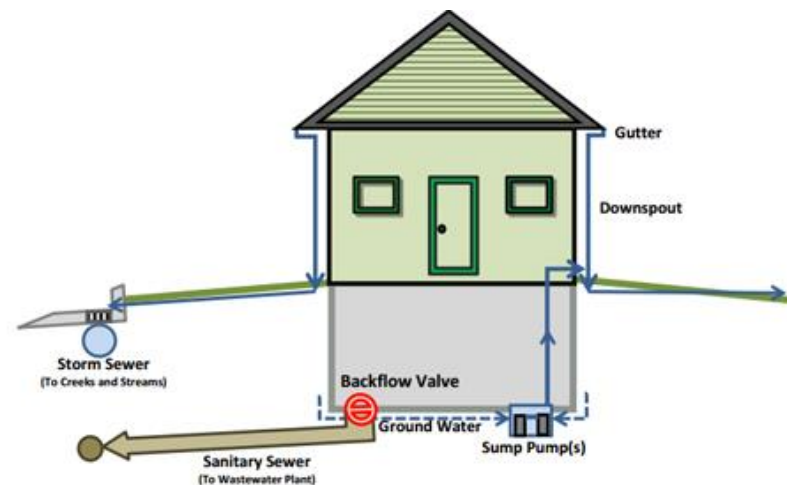
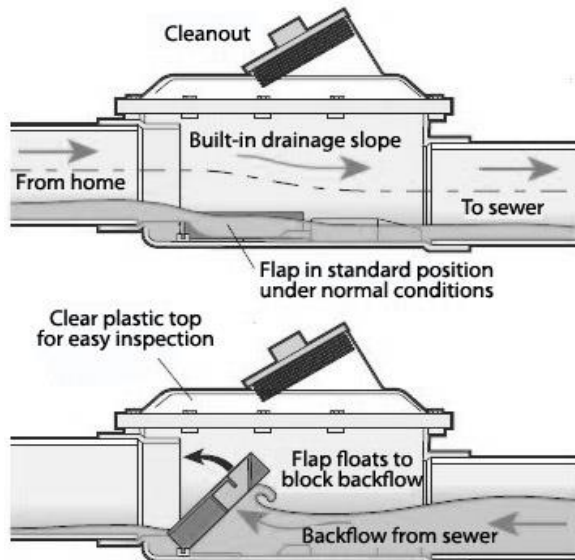
- Install Backflow preventers
- Install Sump pump
- Disconnect footing drains and downspouts
- Elevate Plumbing and install sump pump
- Install and/or maintain a grease trap in food establishments

\$1,500 to \$4,000 per house

\$1,000 to \$2,000 per house

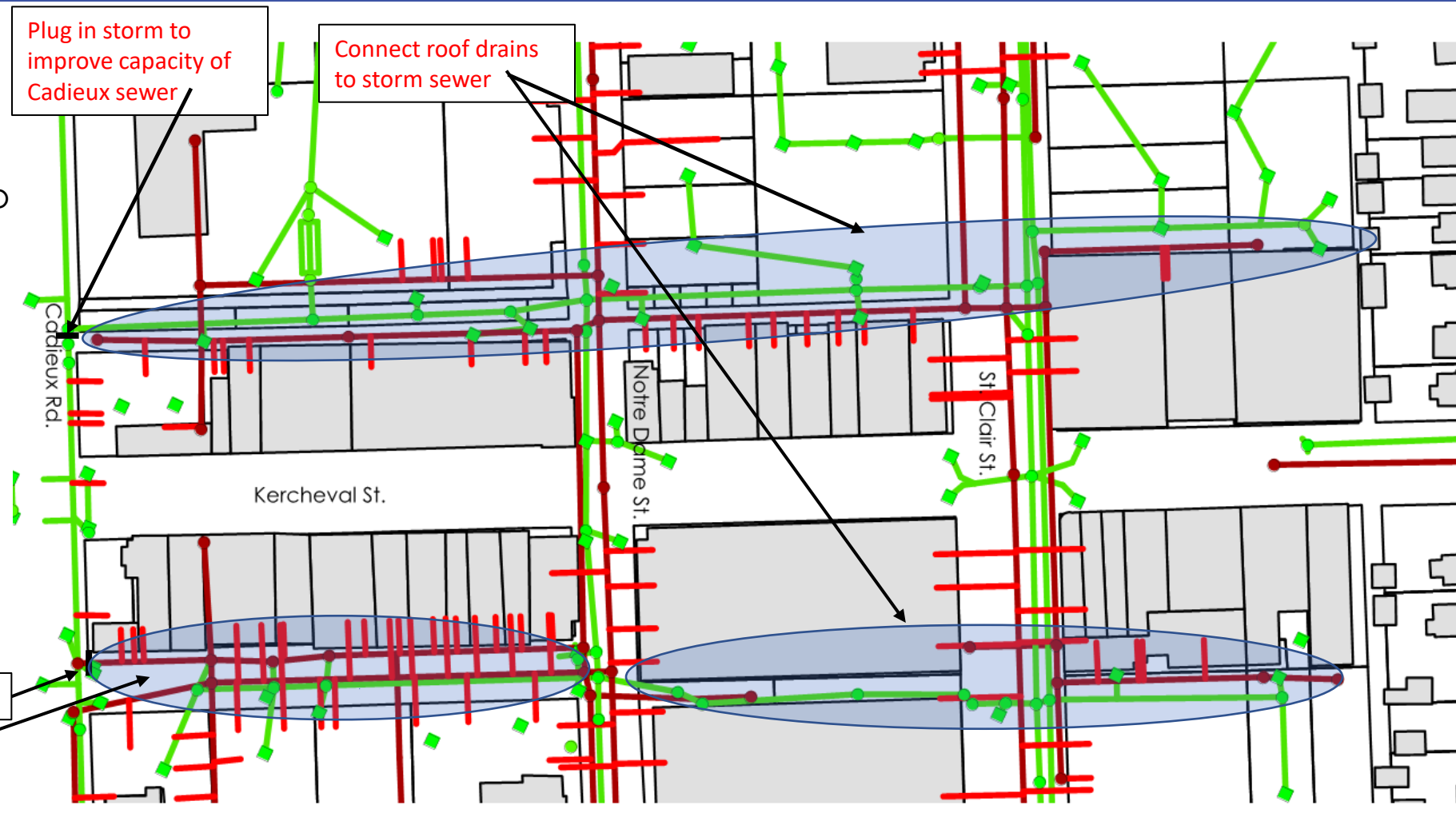
\$0 to \$3,000 per house

\$7,000 to \$10,000 per house



# Village System Improvements

- Hybrid system of storm sewers leading to the lake and combined sewers leading to the pump station
- Expand existing storm sewer to eliminate combined sewers
- Disconnect roof drains that are currently connected to the sanitary sewer and connect them to the storm sewer
- Install backflow preventers and sump pumps
- Investigate catch basin lead sizes and condition on Kercheval and replace and expand as needed



Green lines drain to lake, Red lines drain to pump station



# Questions?

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