

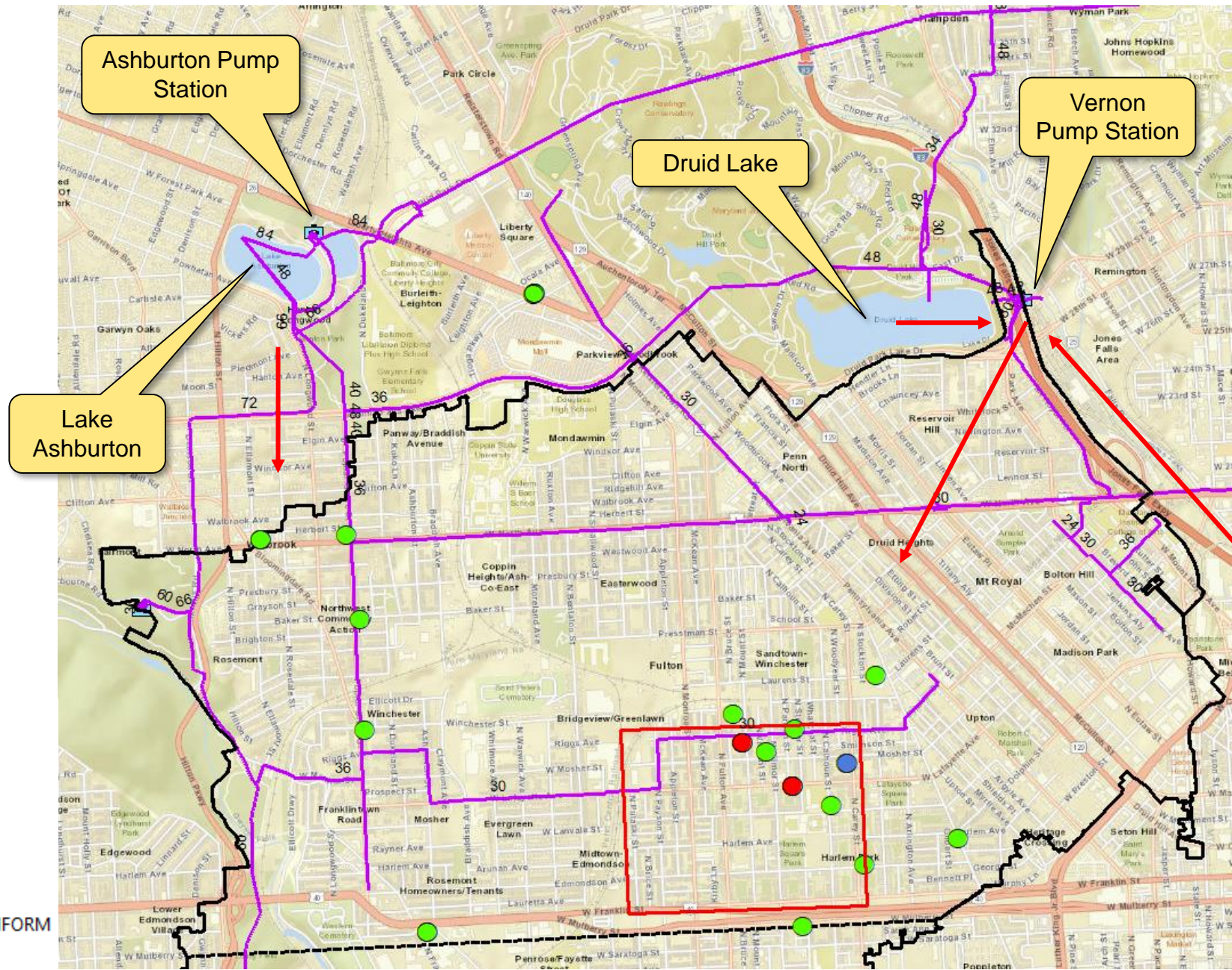


DEPARTMENT OF PUBLIC WORKS



Engineering Assessment

- Two infrastructure emergencies eliminate source of water for Vernon Pumping Station
- To avoid drawdown of the other source of water (Druid Lake), Vernon taken offline August 26
- Lake Ashburton becomes source of water to impact area
- Infrastructure emergency at Lake Ashburton reduced redundancy and blending



Impact Area

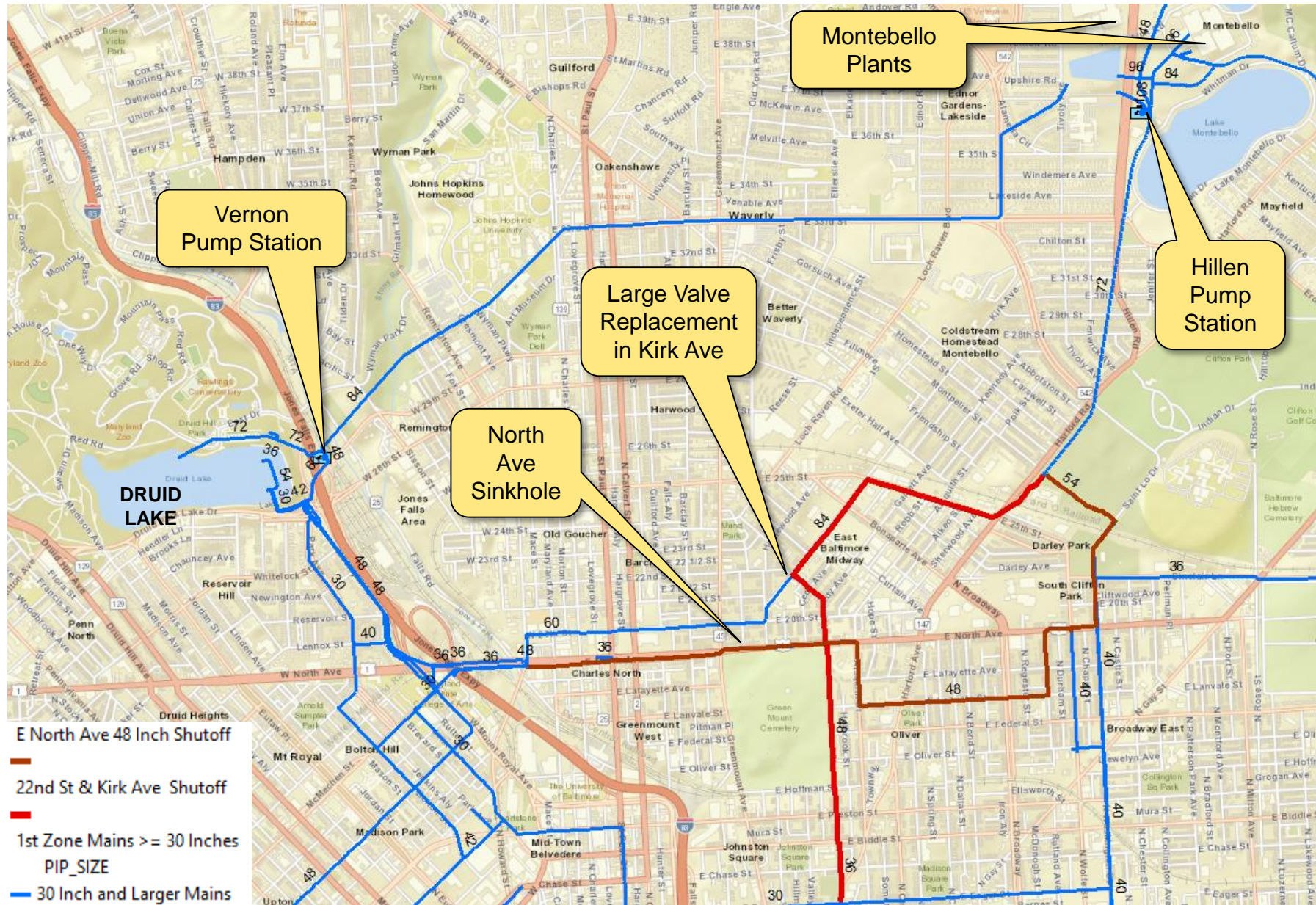
- Impact Area
- Precautionary Boil Water Advisory
- 2nd Zone Mains \geq 30 Inches
- 30 Inch and Larger Mains

Station_Address

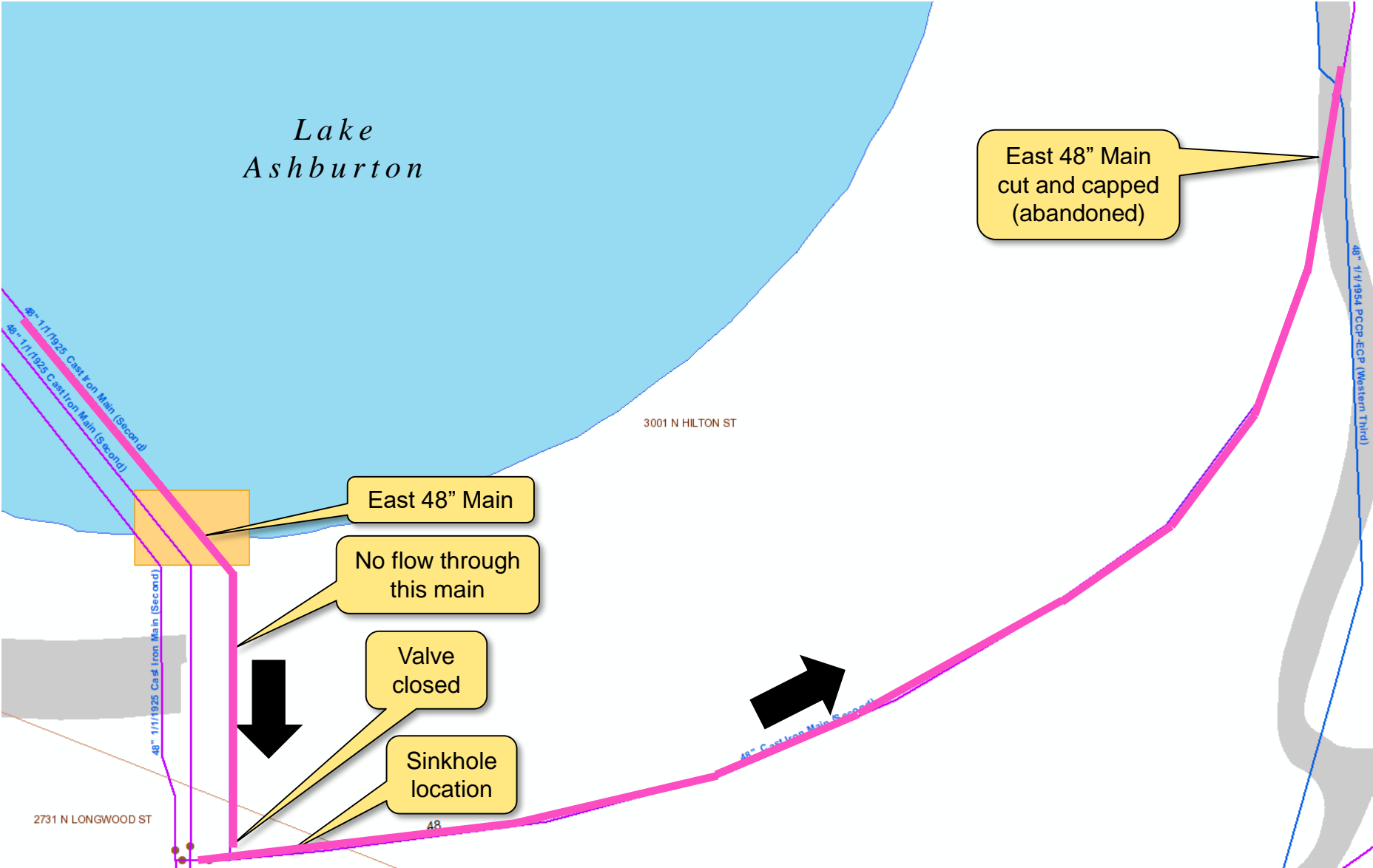
- NEGATIVE
- NEGATIVE E.COLI / POSTIVE TOTAL COLIFORM
- POSITIVE E.COLI

Vernon Pump Station

- Sinkhole on North Avenue
- Valve repair on Kirk Avenue
- Subsequent shut down of Vernon Pumping Station



Lake Ashburton



East 48" Main cut and capped (abandoned)

East 48" Main

No flow through this main

Valve closed

Sinkhole location

Lake Ashburton

- Sinkhole at toe of dam at Lake Ashburton
- Less redundancy and blending of water

Multiple Contributing Factors

- **Large water mains out of service in 1st Zone**
 - Due to urgent need valve repair on Kirk Avenue (installed 1915)
 - Due to Sinkhole on 700 block of North Ave (installed 1898)
- Operational decision made: Vernon Pump Station shutoff to protect water quality in Druid Lake
- Result: Impact area fed primarily from Lake Ashburton

- **Resolved (February 2022) sinkhole at toe of dam Ashburton Lake due to leak on East 48”**
- Operational decision made: Abandonment of East 48” main (installed 1925)
- Result: Less redundancy and blending in system

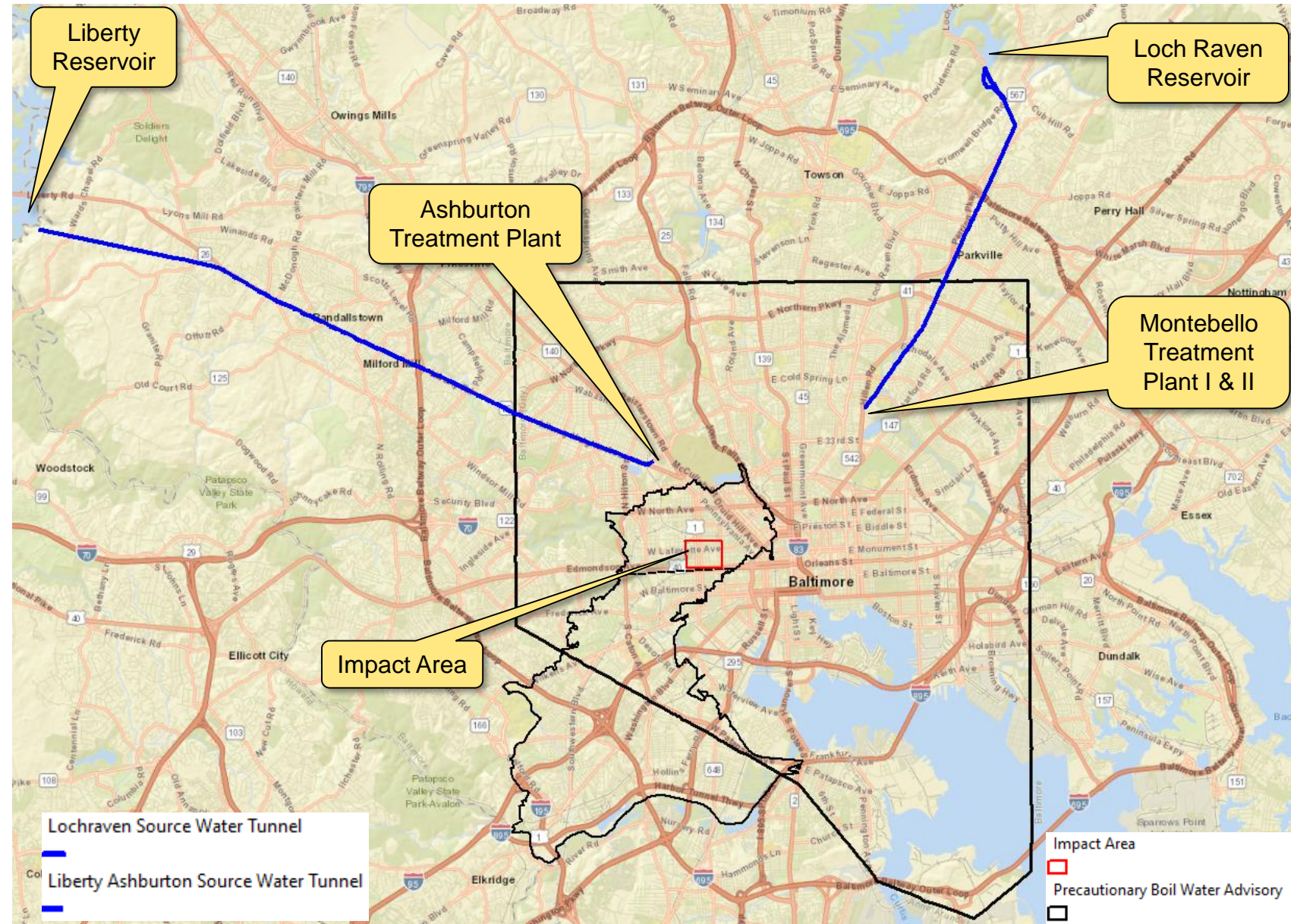
- **Combined impact:** Lower than normal chlorine levels

System Troubleshooting and Current Status

- DPW began troubleshooting exercise early in the crisis
- Vernon Pumping Station was restarted on September 5, 2022 to supply water to 2nd Zone just like prior to shutoff on August 26, 2022
- Lake Ashburton 48" Main valve closed on September 7, 2022; no more flow out of lake
- Kirk Ave & 22nd Street 1st Zone 84"/60" main was put back in service after repairs on September 12, 2022.

Observations

- Effective monitoring system
- Very complex and highly redundant distribution system
- Ripple effect of asset failure
- Criticality of planned improvements to further protect our water



Planned Improvements – Covered Tanks



WC 1204 to replace open Druid Lake with covered tanks

- Very low risk of contamination
- Higher “turnover” of water with better quality
- Planned startup in early 2024
- Estimated cost \$135M

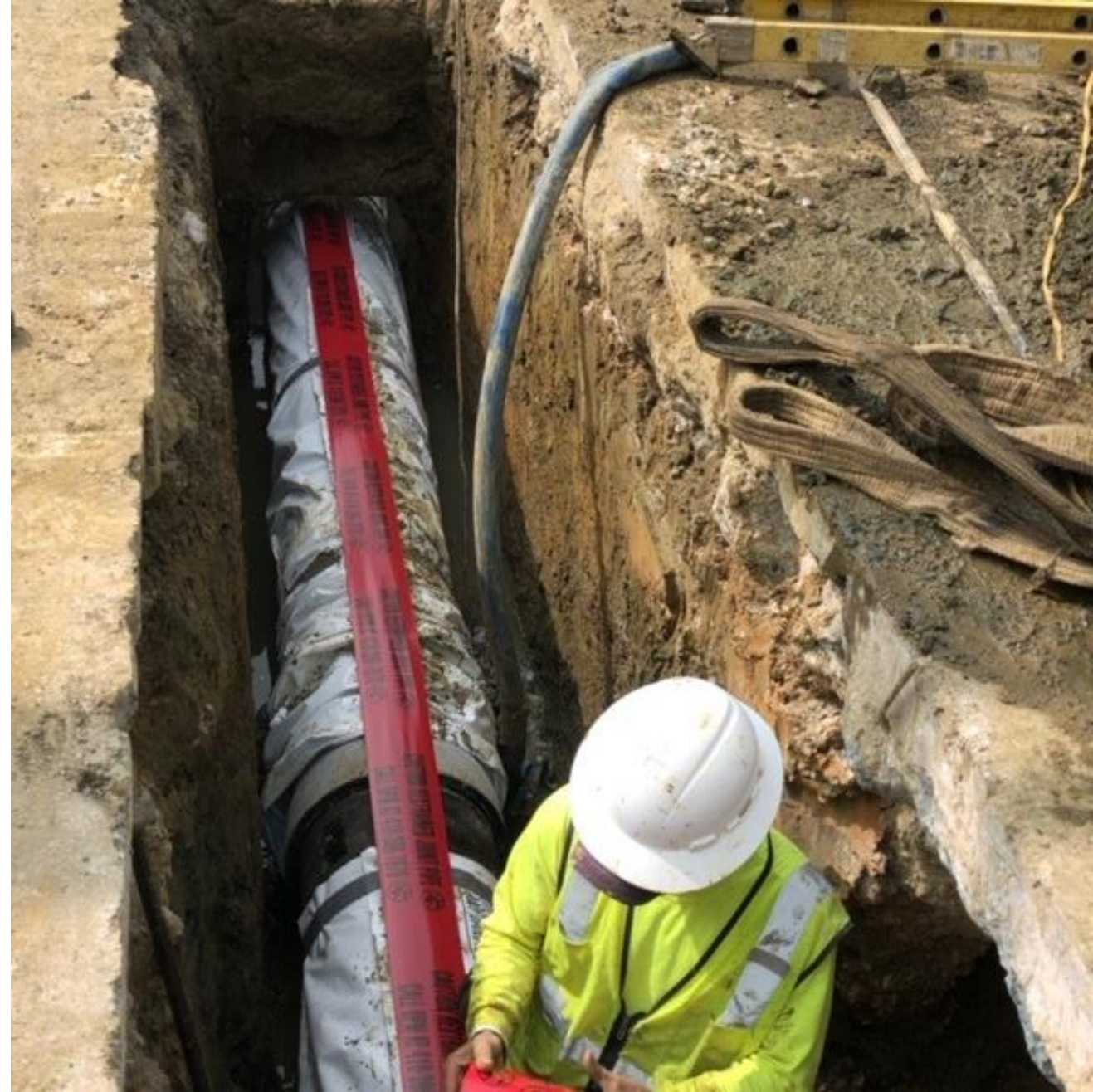


WC 1211 to replace open Lake Ashburton with covered tanks

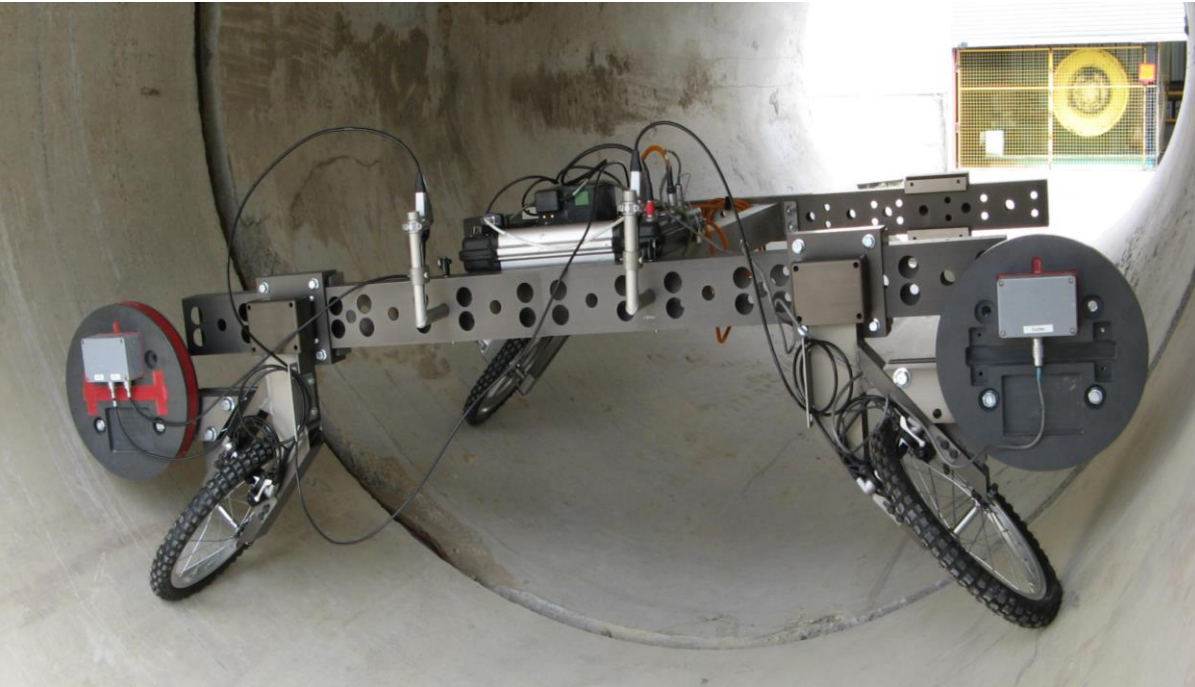
- Very low risk of contamination
- Higher turnover of water with better quality
- Planned completion in early 2023
- Estimated cost \$137M

Planned Improvements – Utility Infrastructure

- Accelerated Assessments and replacement in West Baltimore Impact Area for CIP projects inclusion
 - Water Main leak detection
 - Water Main replacements
 - Water valves and appurtenances replacements
- Initiate Anode Retrofit Pilot program
 - Selectively install anodes along water mains
 - Slow down water main breaks over time



Preventive Maintenance



Electromagnetic Pipe Walker Platform tool for out-of-service pipe inspections



Pipe Diver tool shown for Electromagnetic in-service pipe inspections

Questions