Information Item

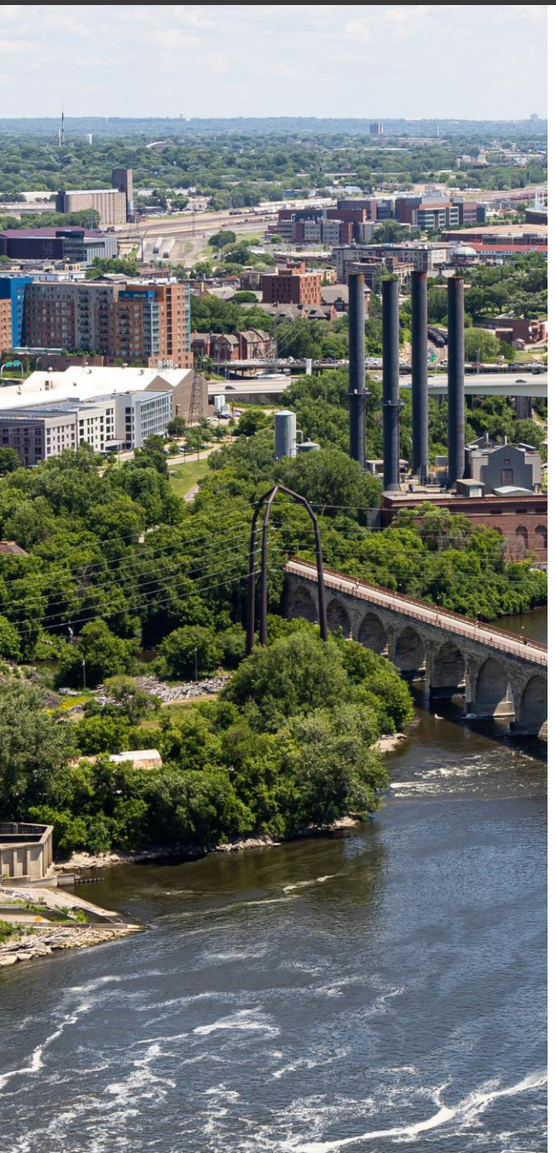
East Bethel Water Reclamation Facility (WRF) Performance Update

METROPOLITAN COUNCIL

Environment Committee: October 25, 2022

Karla Karls, Jason Peterson, Dan Henely

Agenda



East Bethel Demonstration

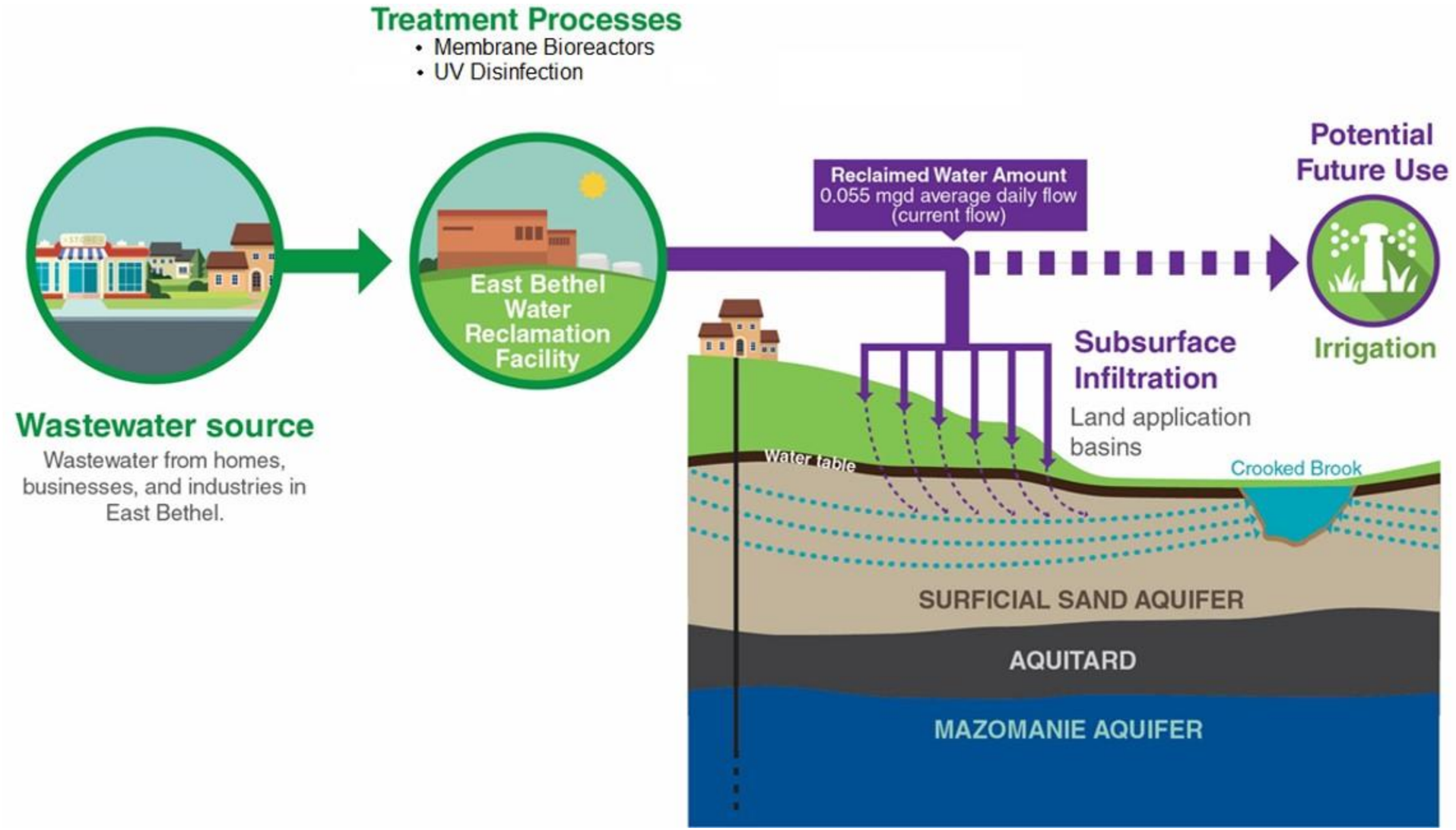
- Background
- Treatment Performance
- Groundwater Monitoring
- Conclusions
- Questions

Background

Karla Karls

Assistant Business Unit Manager, Operations

Wastewater Source, Treatment and Discharge



East Bethel Water Reclamation Facility

Location Map

Mechanical Facility

LAB E Effluent Infiltration Site

Metropolitan Council

Minnesota Pollution Control Agency (MPCA) Reuse Treatment Requirements

Irrigation

Disinfected Secondary 200 Most Probable Number (MPN)

Secondary, disinfection

200 MPN/100 Milliliter (mL) Fecal Coliform.

Industrial Use

Disinfected Secondary 23 (MPN)

Secondary, disinfection

23 MPN/100 mL Total Coliform.

Toilet Flushing

Disinfected Tertiary

Secondary, filtration, disinfection

2.2 MPN/100 mL Total Coliform

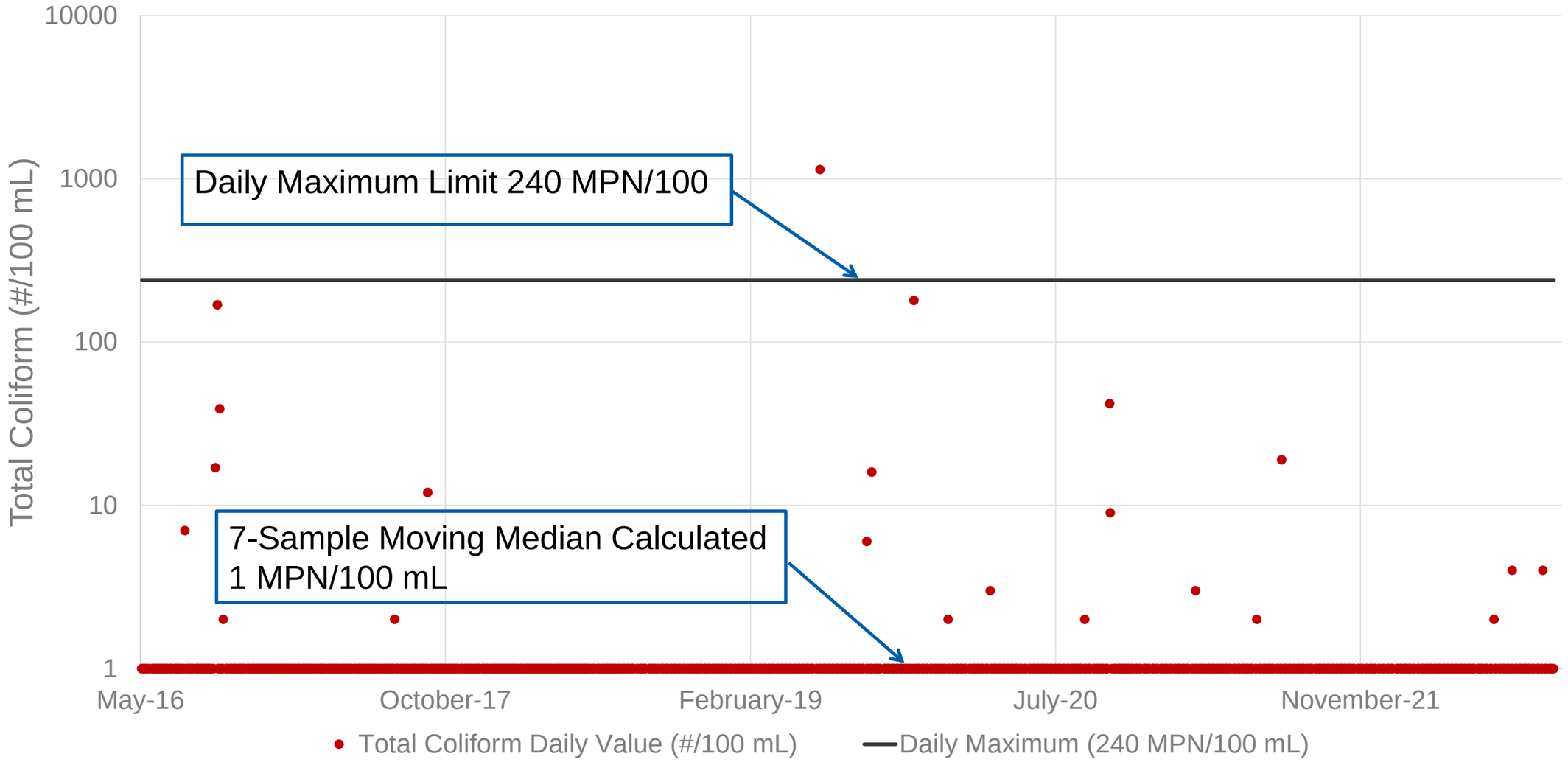
2 Nephelometric Turbidity Units (NTU) daily average; 10 (NTU) daily maximum turbidity

Treatment Performance

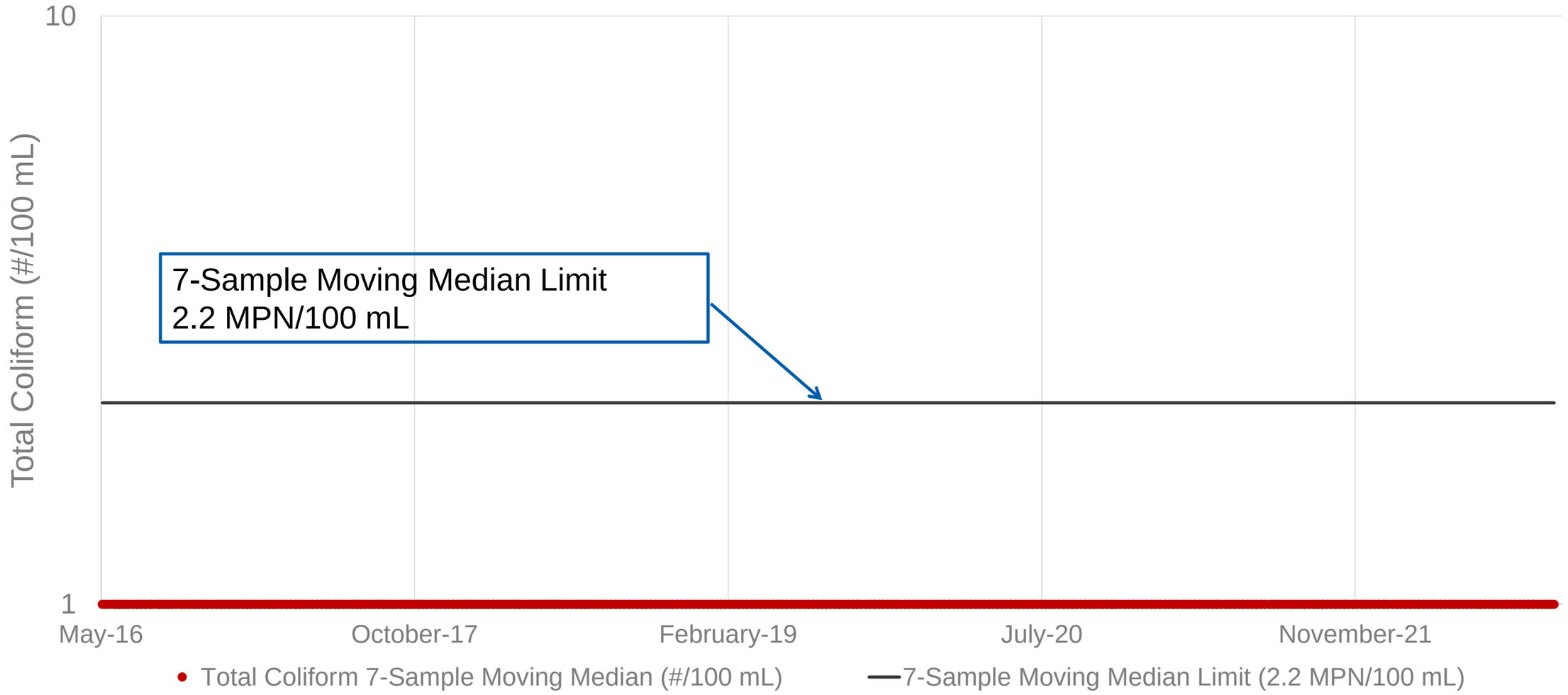
Jason Peterson
Principal Engineer,
Plant Engineering

Disinfection Upgrades

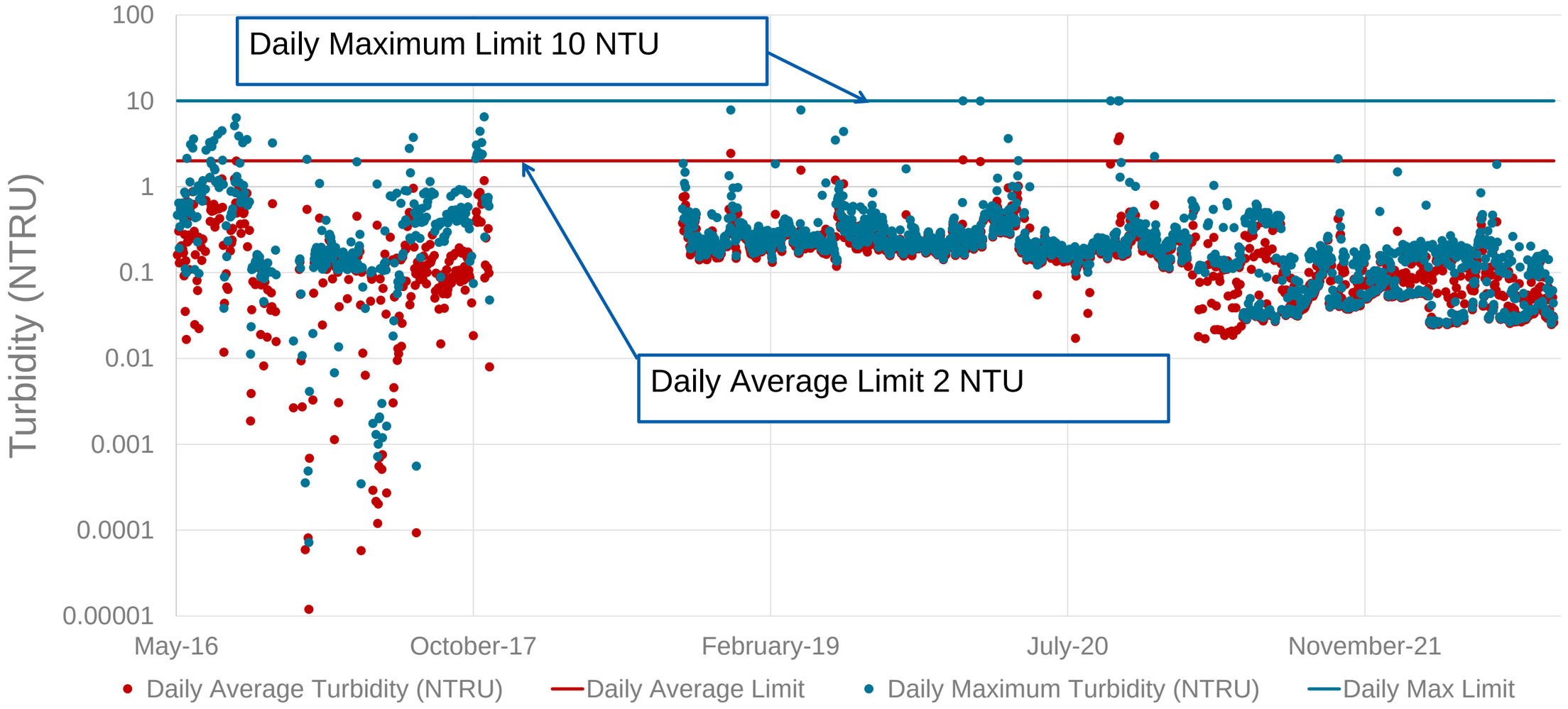
Total Coliform, Daily Maximum Concentration



Total Coliform, Moving Median Limit



Turbidity

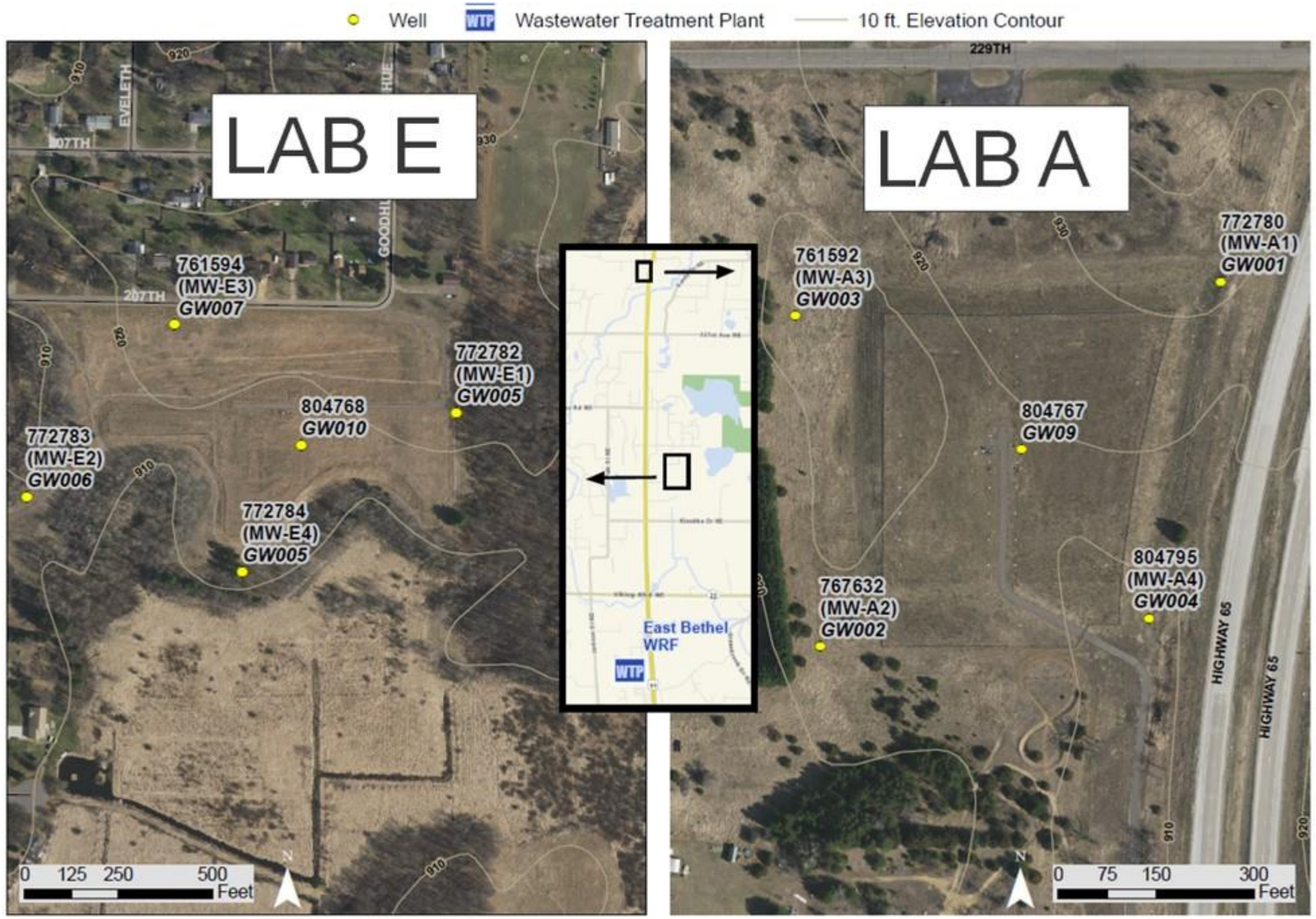

Daily Maximum Limit 10 NTU
Daily Average Limit 2 NTU
Turbidity (NTRU)
100
10
1
0.1
0.01
0.001
0.0001
0.00001
May-16
October-17
February-19
July-20
November-21
Daily Average Turbidity (NTRU)
Daily Average Limit
Daily Maximum Turbidity (NTRU)
Daily Max Limit

Groundwater Monitoring

Dan Henely

Assistant Manager,
Water Resources

Groundwater Overview



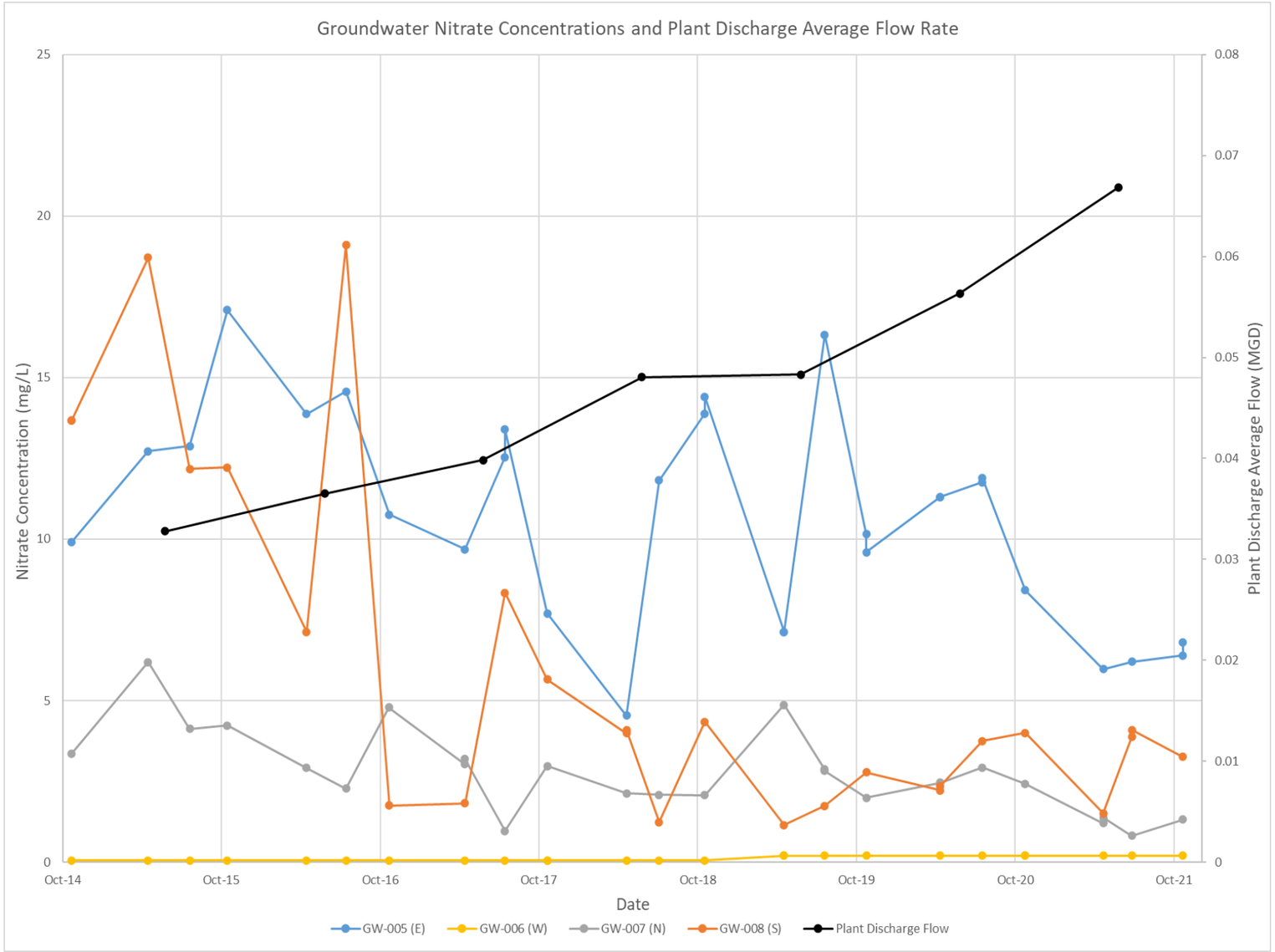
Surficial Aquifer Groundwater (GW) Quality

- GW-005 (East) and GW-008 (South) have higher average Nitrate levels than other wells. (Total Kjeldahl Nitrogen (TKN), Ammonia, Total Phosphorous (TP) all consistently low)

Well #	GW-005	GW-006	GW-007	GW-008
Nitrate Concentration (mg/L)	11.0	<Reduced Levels (RL)	3.1	6.9

- All wells are downstream of the reclaimed water discharge mound with a steeper gradient to the Southeast
- 2007 Minnesota Pollution Control Agency (MPCA) report on Nitrate levels in the Anoka Sand Plain estimated expected concentrations by land use
  - Non-sewered residential = 6 Milligrams per Liter (mg/L)
  - Irrigated agriculture = 15 mg/L

Groundwater Nitrate Concentrations and Plant Discharge Average Flow Rate



Groundwater Quality Conclusions

- **Recent data show nitrate levels in the wells decreasing or consistent while plant flows increased over same period.**
  - This suggests the plant discharge is not the primary driver of nitrate levels in LAB E

<u>Looking Forward</u>

- Metropolitan Council Environmental Services (MCES) will continue to monitor and evaluate impacts annually.
- MCES will reassess need for more comprehensive studies as plant flow increases or annual data review points to need
  - Further evaluation of non-point sources of Nitrate in the area may also be necessary (example: fertilizer use, septic tanks)

Conclusions

Karla Karls

Assistant Business Unit Manager, Operations

Conclusion

Demonstration Component	Outcome
1. Gain permitting capability	• Successfully demonstrated
2. Meet disinfected tertiary level of treatment	• Successfully demonstrated without exception since September 2019
3. Evaluate impacts, if any, of effluent infiltration on groundwater or surface water	• Successfully demonstrated subsurface infiltration with no observable negative impacts on the surficial aquifer.

questions

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