WATER TREATMENT PLANT SITING STUDY

September 3, 2024

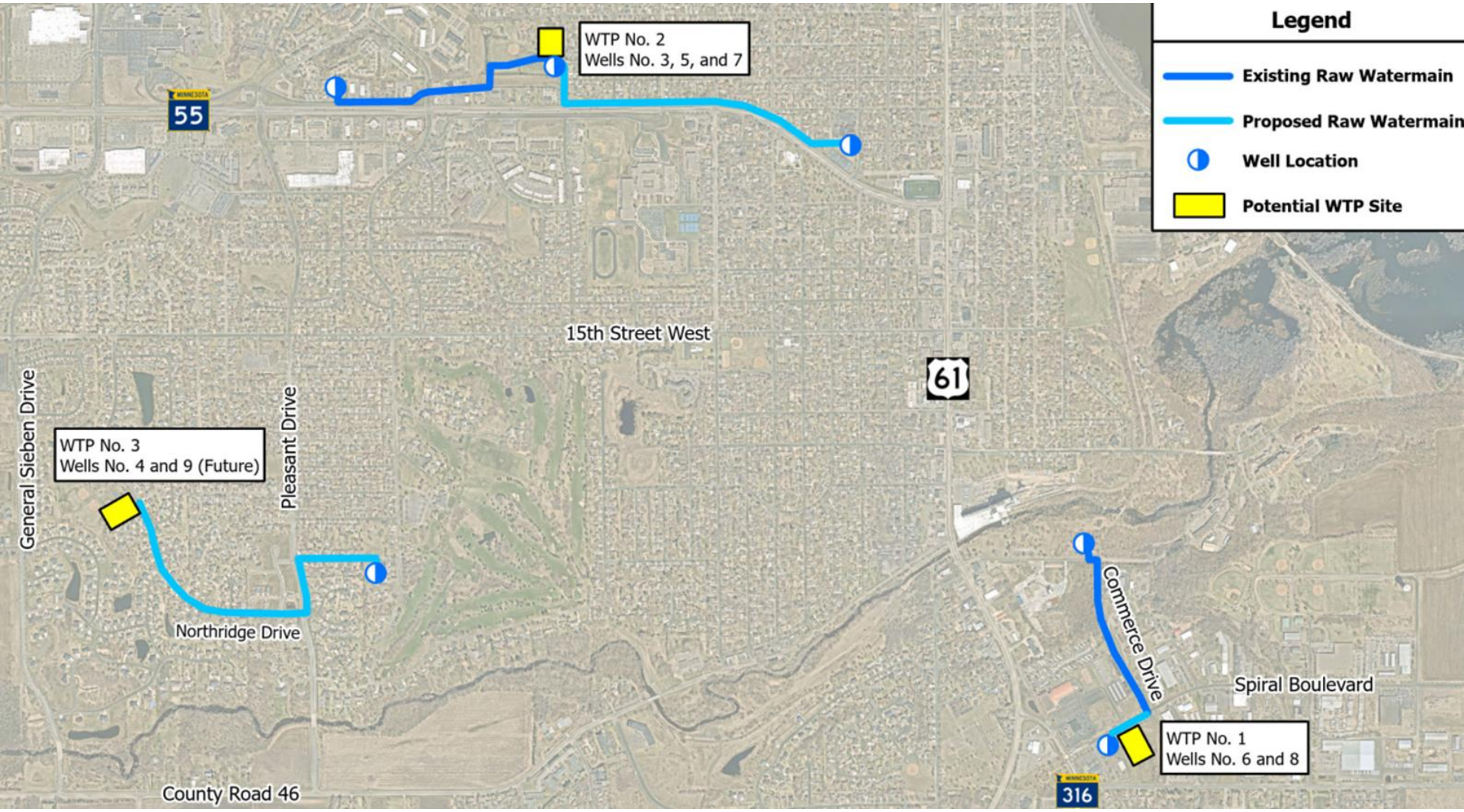
PFAS Water Treatment Plants & Interconnect Project

Since 1857 Hastings MINNESOTA

Water Treatment Plants

- 3 Decentralized Treatment Plants
  - GAC for PFAS Removal
  - IX for Nitrate Removal
- Plants to be nearly 50’ tall from floor to peak
- Need approximately 100’ X 100’ or 10,000 SF
  - Equates to 1 to 2 acres of land needed based on grading/berming, landscaping/screening, driveway, and stormwater

Feasibility Report WTP Locations



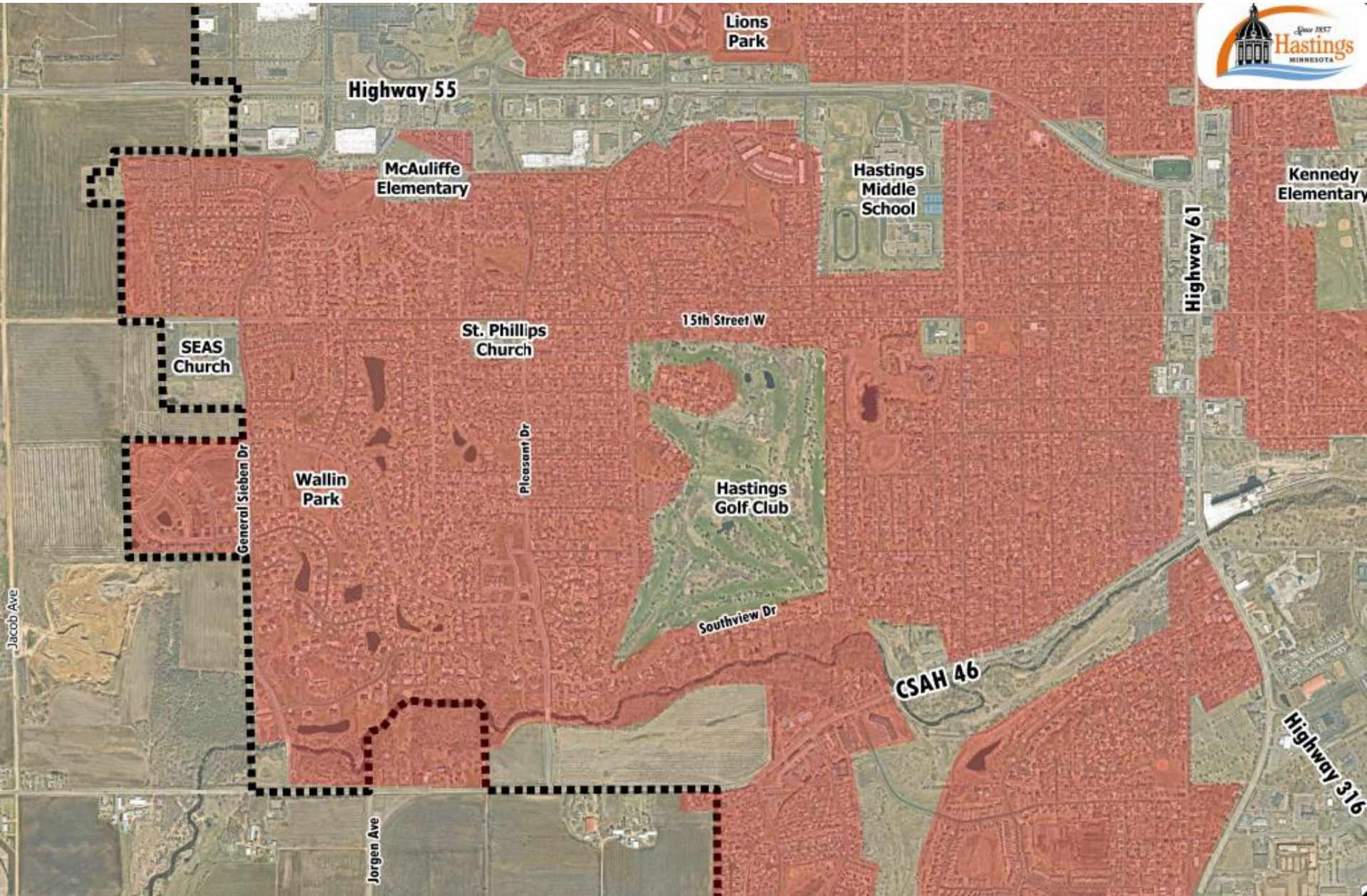
Feasibility Report Locations (continued)

- Representation of sites near wells and on City owned land
- Locations never finalized and subject to change
- Council provided strong preference to locate outside of residential neighborhoods

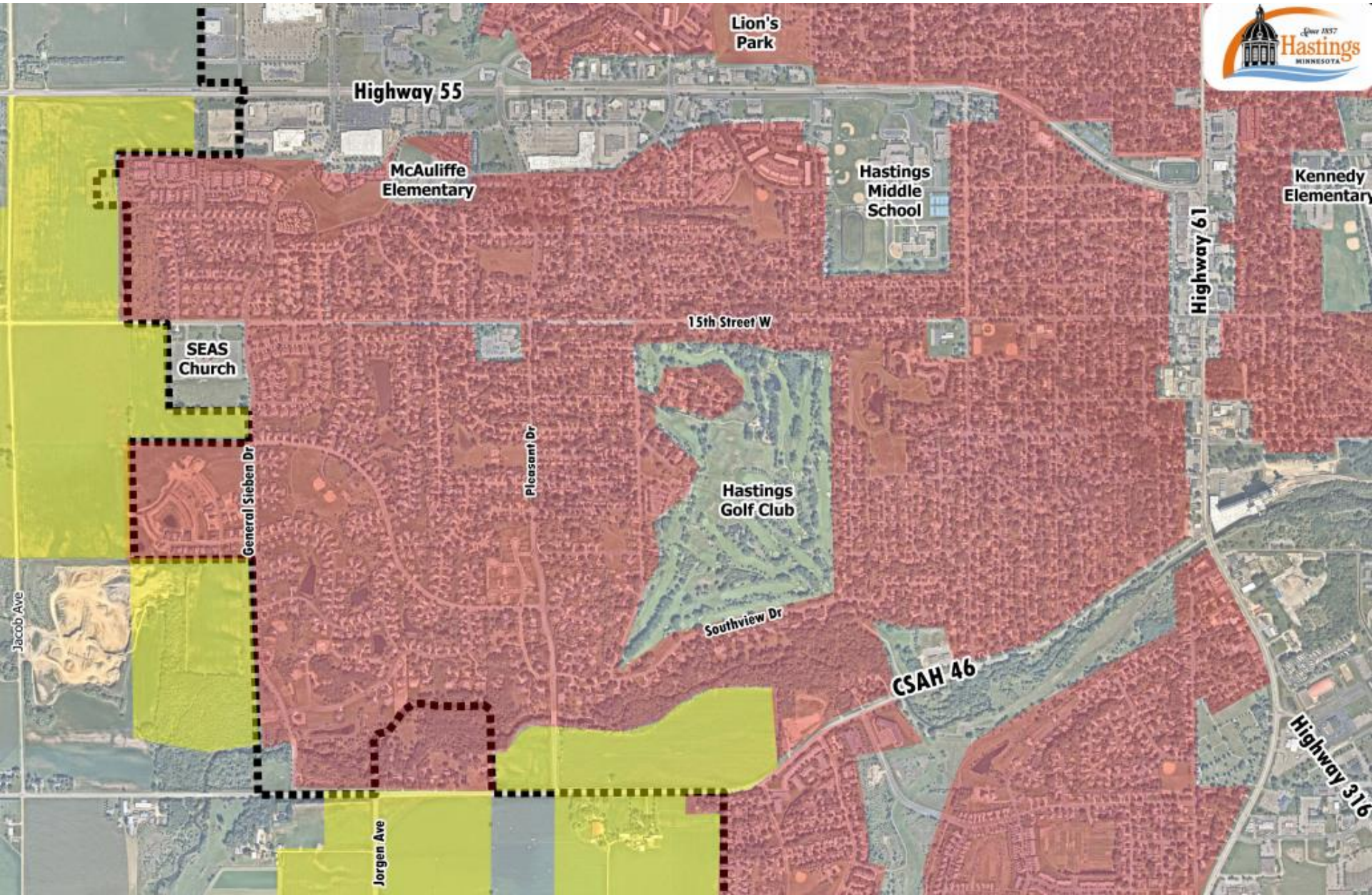
WTP Siting Factors

- Land area (owned or acquirable)
- Wells and raw water mains
- Trunk distribution water mains and storage tanks
- Pressure zone facilities (booster pumps/pressure reducing valves)
- Trunk sanitary sewers
- Transportation corridors
- Site topography

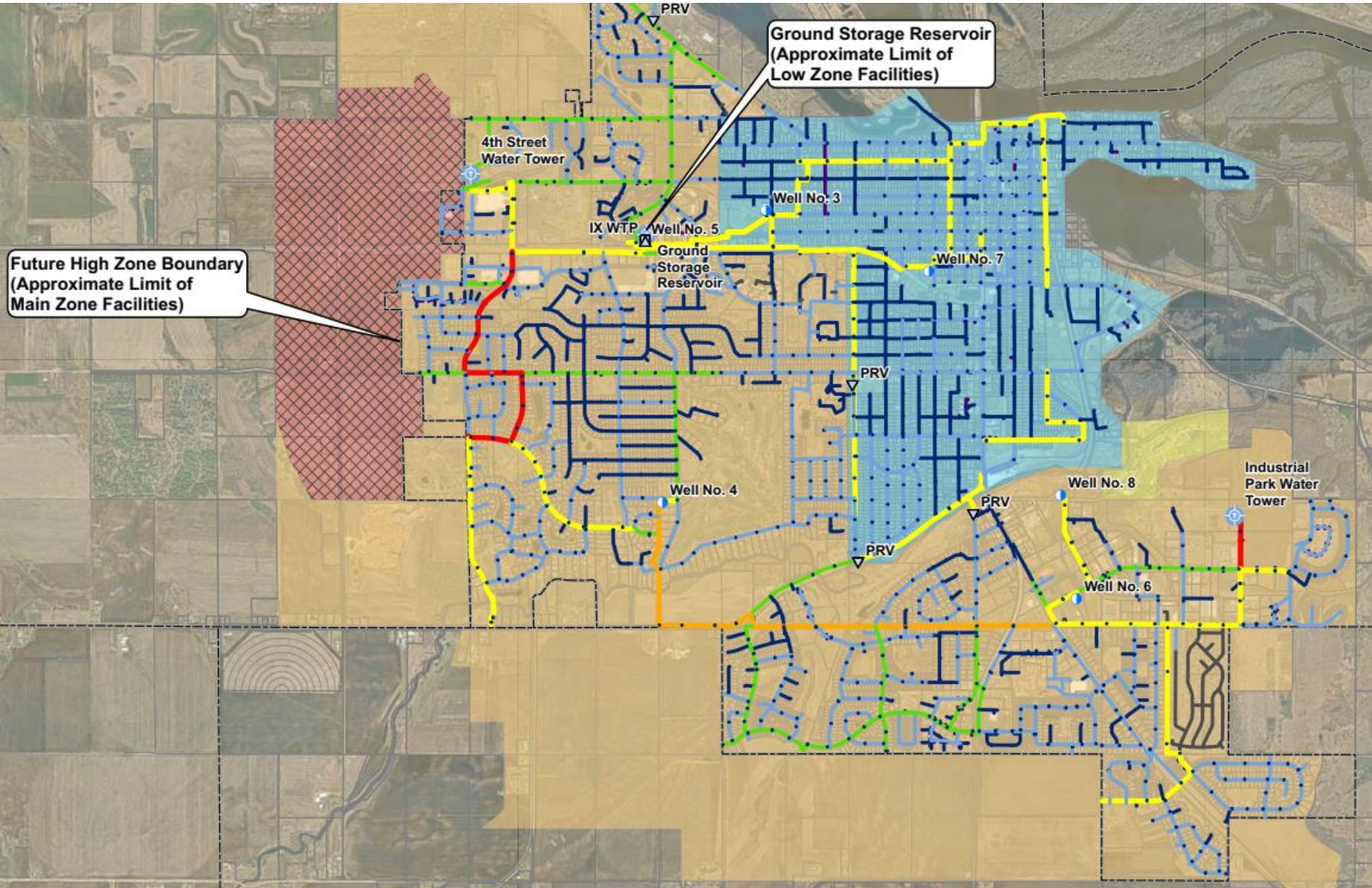
Existing Residential Neighborhoods



Future Zoned Residential



Pressure Zones



Engineering Analysis

- Hydraulically Feasible
- Minimize major losses (friction loss proportional to length)
- Impact to pumping rates from wells
- Industry standards applied for pressure surge (10psi or less)
- AWWA Standards
  - Maximum velocity less than 5ft/second
  - Head loss less than 10ft/1,000ft
- More piping (raw and distribution) not only increases capital cost and impact, but also equates to a less efficient system
  - Higher life cycle (replacement) costs
  - More operation and maintenance

WTP No. 2

- Property owner feedback
- TH 55 border
- Proximity to wells and GSR matter
- Topography factors

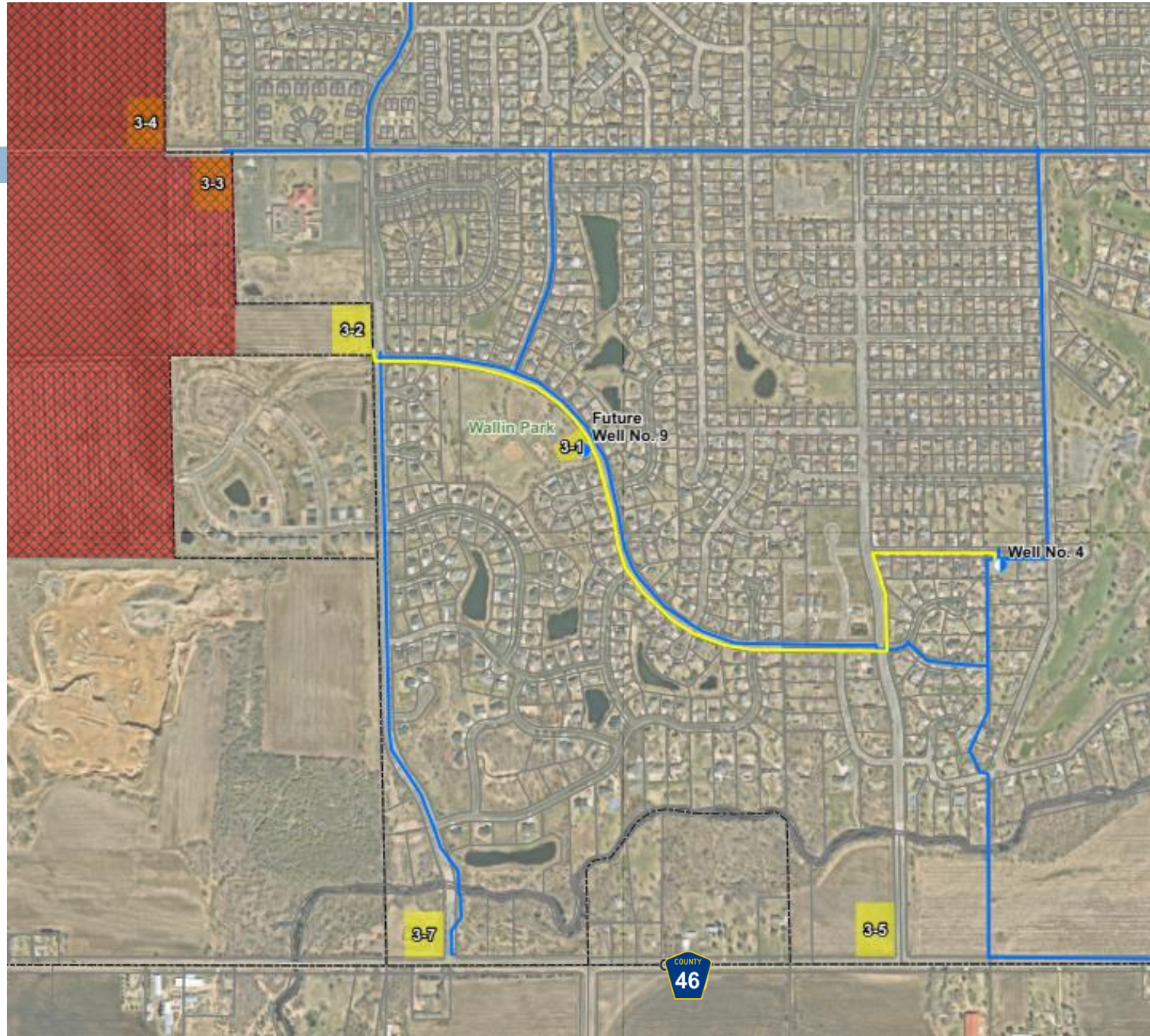
Comparison Matrix – WTP 2

Site	Advantage	Disadvantage	Added Impact	Model Results
2-1 (Lions Park)	City owned Centered Piping exists between 3 & 5 Trunk sewer	Residential Local road	N/A	PS = 1-4psi Max V = 1.5ft/s Max HL = 2.9ft/10ft^3
2-2 (Carbones)	Adjacent to IX WTP (use/expand IX) Piping exists between 3 & 5 Collector road	Site acquisition Added piping No trunk sewer	2,400 LF	PS = 1-5psi Max V = 3.8ft/s Max HL = 5.9ft/10ft^3
2-5 (County)	Near well 5 Collector road	Site acquisition Stormwater concerns Added piping No trunk sewer	3,600 LF	PS = 1-5psi Max V = 3.8ft/s Max HL = 5.9ft/10ft^3

Site 2-2

WTP No. 3

- Property owner feedback
- Proximity to Well 4 & 9
- Future High Zone
- River crossing
- Proximity to future residential



Comparison Matrix – WTP 3

Site	Advantage	Disadvantage	Added Impact	Model Results
3-1 (Wallin Park)	City owned Future Well 9 site Minimal piping Collector road	Residential No trunk sewer	N/A	PS = 2-5psi Max V = 4.0ft/s Max HL = 7.9ft/10ft^3
3-2 (SEAS)	Large site (acquire only what is needed) Height less than church 16” trunk water Collector road	Site acquisition Annexation Added piping Future residential No trunk sewer	1,800 LF	PS = 2-3psi Max V = 1.6ft/s Max HL = 1.0ft/10ft^3
3-5 (County)	Large site (acquire only what is needed) 14” trunk water Collector road	Site acquisition Future residential River crossing No trunk sewer	4,500 LF	PS = 3-4psi Max V = 2.2ft/s Max HL = 1.3ft/10ft^3
3-7 (City)	Large site, City owned Positioned for trunk water Collector road	Significant grading River crossing Earlier trunk loop No trunk sewer	5,500 LF	PS = 2-3psi Max V = 1.5ft/s Max HL = 0.9ft/10ft^3

Site 3-3

Next Steps

- Incorporate Council feedback
- Schedule a follow up at the 9/16 Council Meeting
  - Closed meeting per Mn Statutes 13D.05 subd 3(c) to develop offers for purchase of real property

Questions?

Since 1857
Hastings
MINNESOTA