



Village of Hoosick Falls Municipal Water Supply Study: Supplemental Investigation “Data Gap Area” Groundwater Source Option

OCTOBER 2020



Honeywell

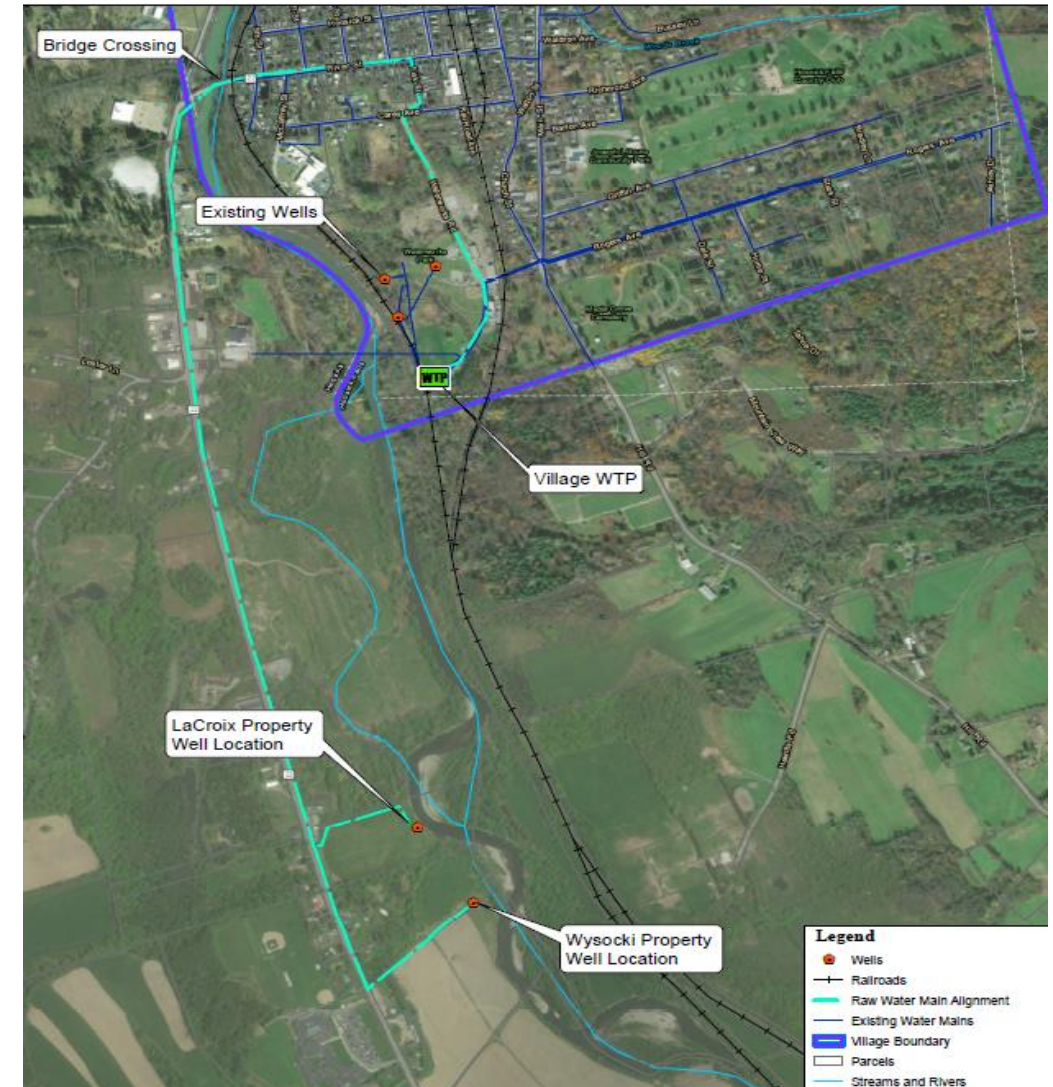
MUNICIPAL WATER SUPPLY STUDY (MWSS) GROUNDWATER SOURCE OPTION (1A, 1B)

Primary Considerations

- Viability – Does source produce sufficient volume of water?
- Quality - Short and long-term sustainable groundwater quality

Key Findings

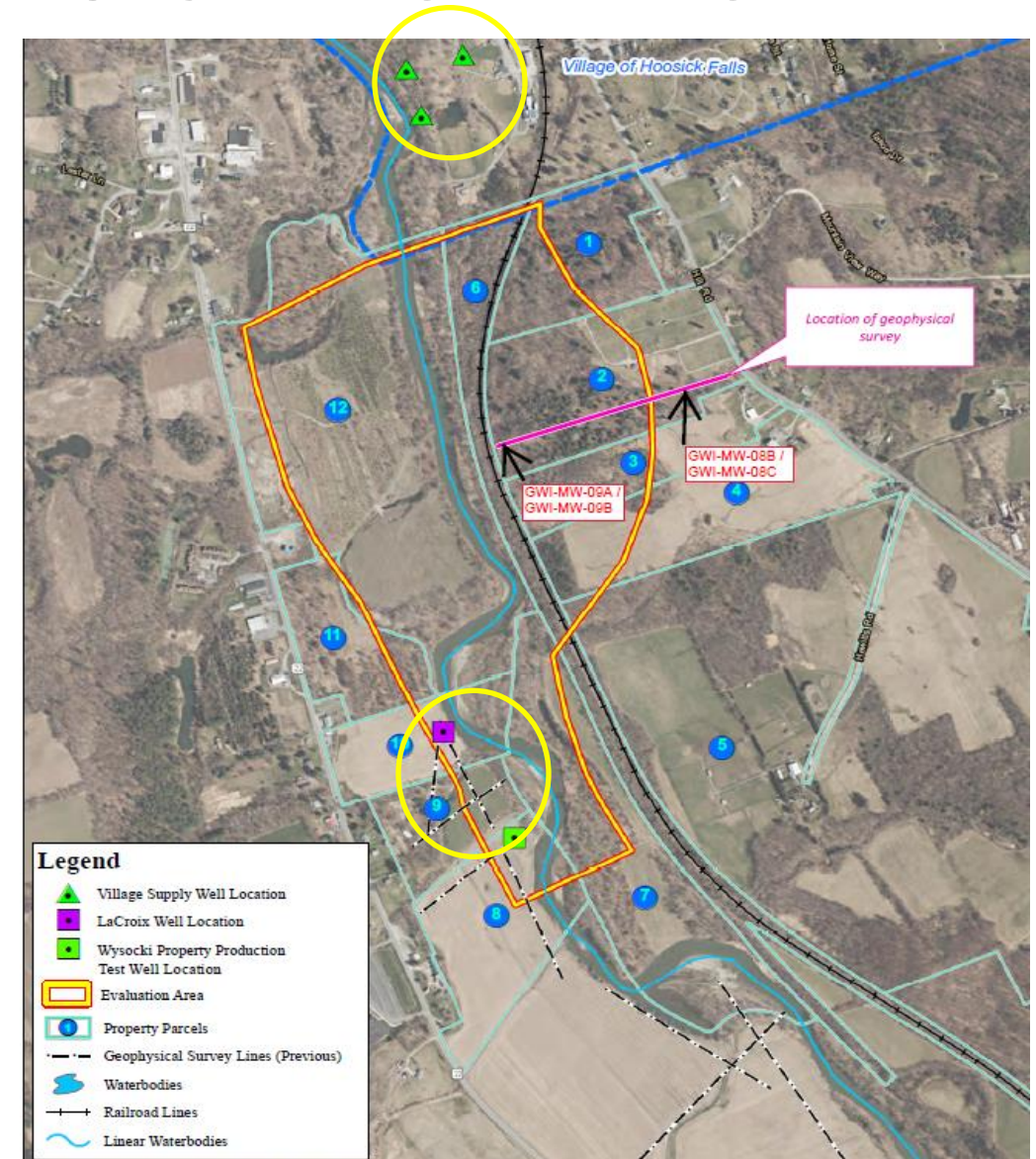
- Wysocki/LaCroix test wells meet current and conceptual future demand
- Water quality of Wysocki/LaCroix test wells before and after 72-hour test satisfies consideration as a potential groundwater source



HYDROGEOLOGIC FINDINGS BETWEEN VILLAGE WELLS AND WYSOCKI/LACROIX TEST WELLS

Evidence of Separation

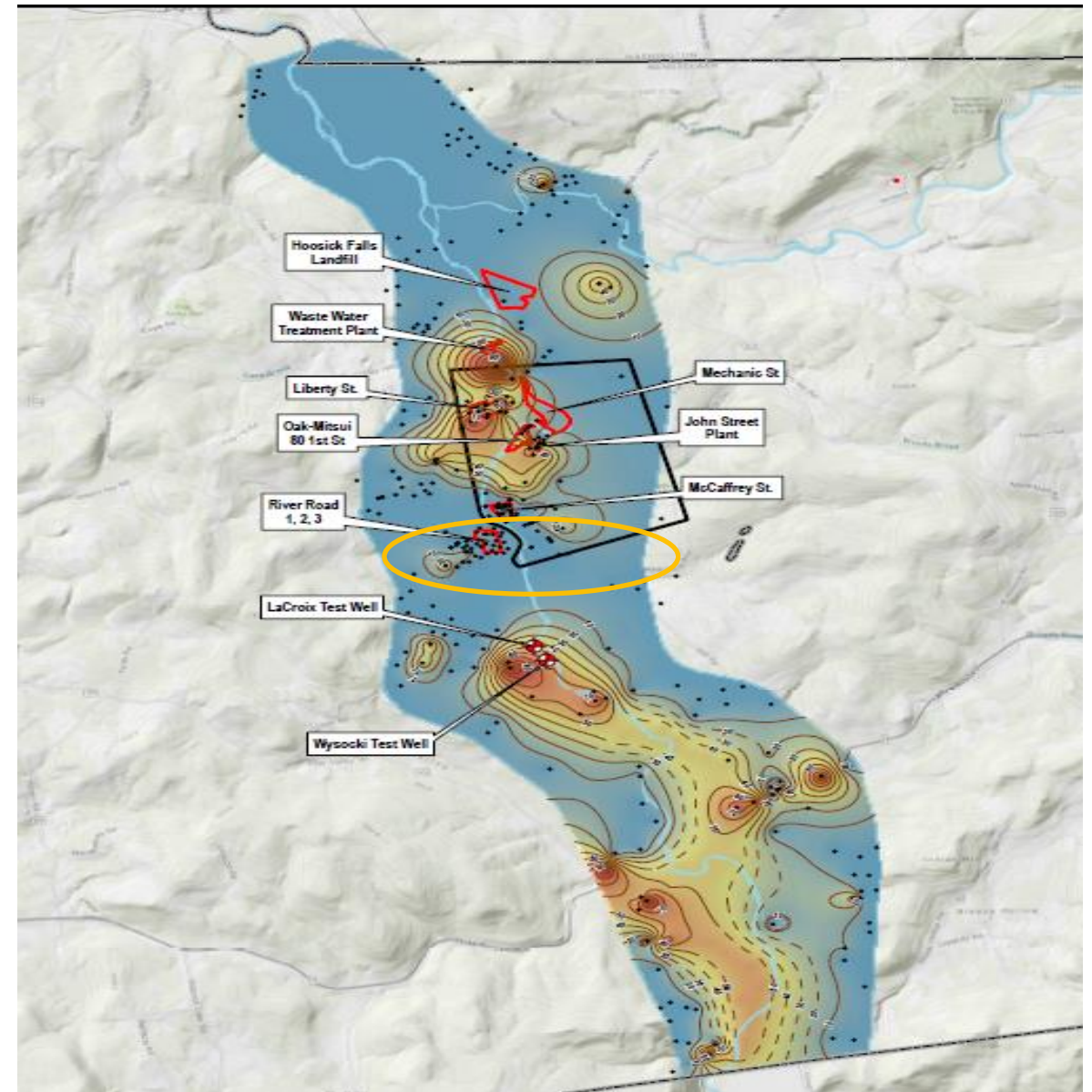
- Groundwater elevations (levels) are ~ 7 ft higher at LaCroix v. Village wells
- Pumping of Village well #7 did not affect water levels at LaCroix test well
- Pumping of LaCroix test well did not affect water levels at Village wells
- Clay/silt confining unit separates shallow and deep groundwater units



HYDROGEOLOGY BETWEEN VILLAGE WELLS AND WYSOCKI/LACROIX TEST WELLS

North/South Geology

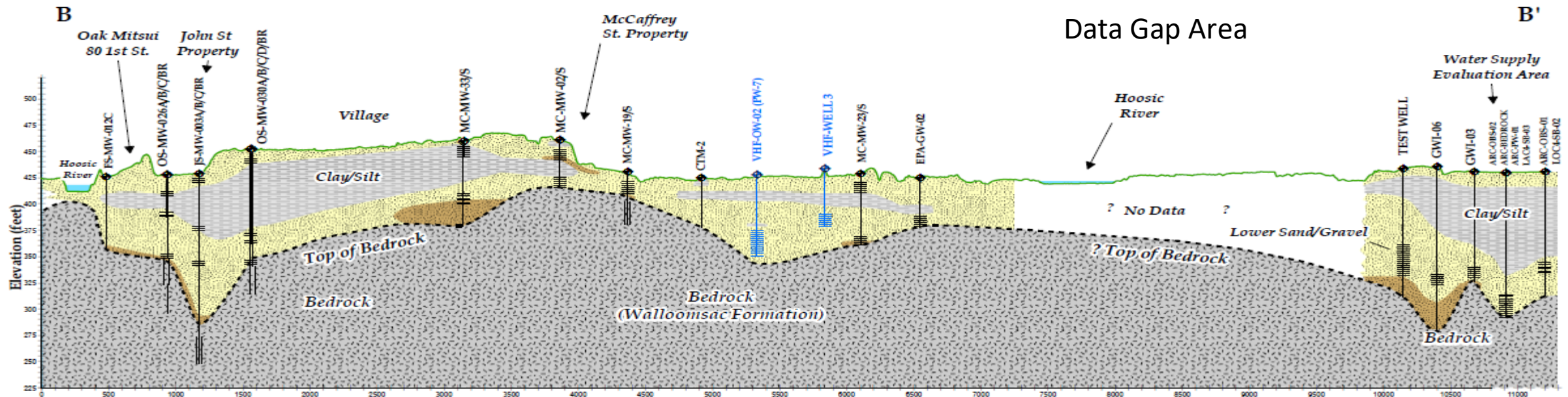
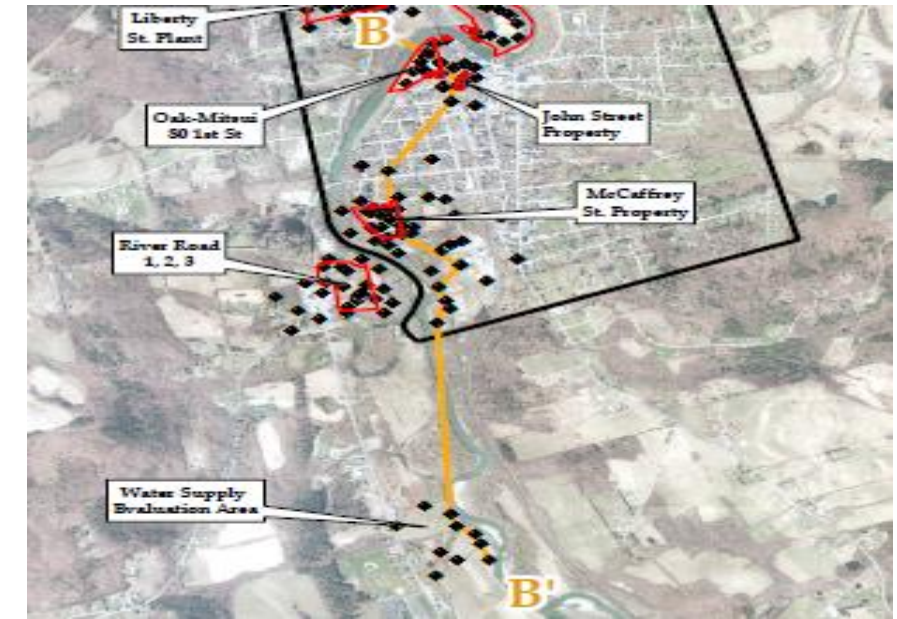
- Alternating deposits of lower-permeability (clay and silt) and higher-permeability (sand and gravel) materials over bedrock
- Groundwater flow (above confining unit) generally follows topography
- Clay/silt layers at Wysocki/LaCroix test well locations act as confining units



WHY FURTHER INVESTIGATION

Geologic Evaluation in MWSS

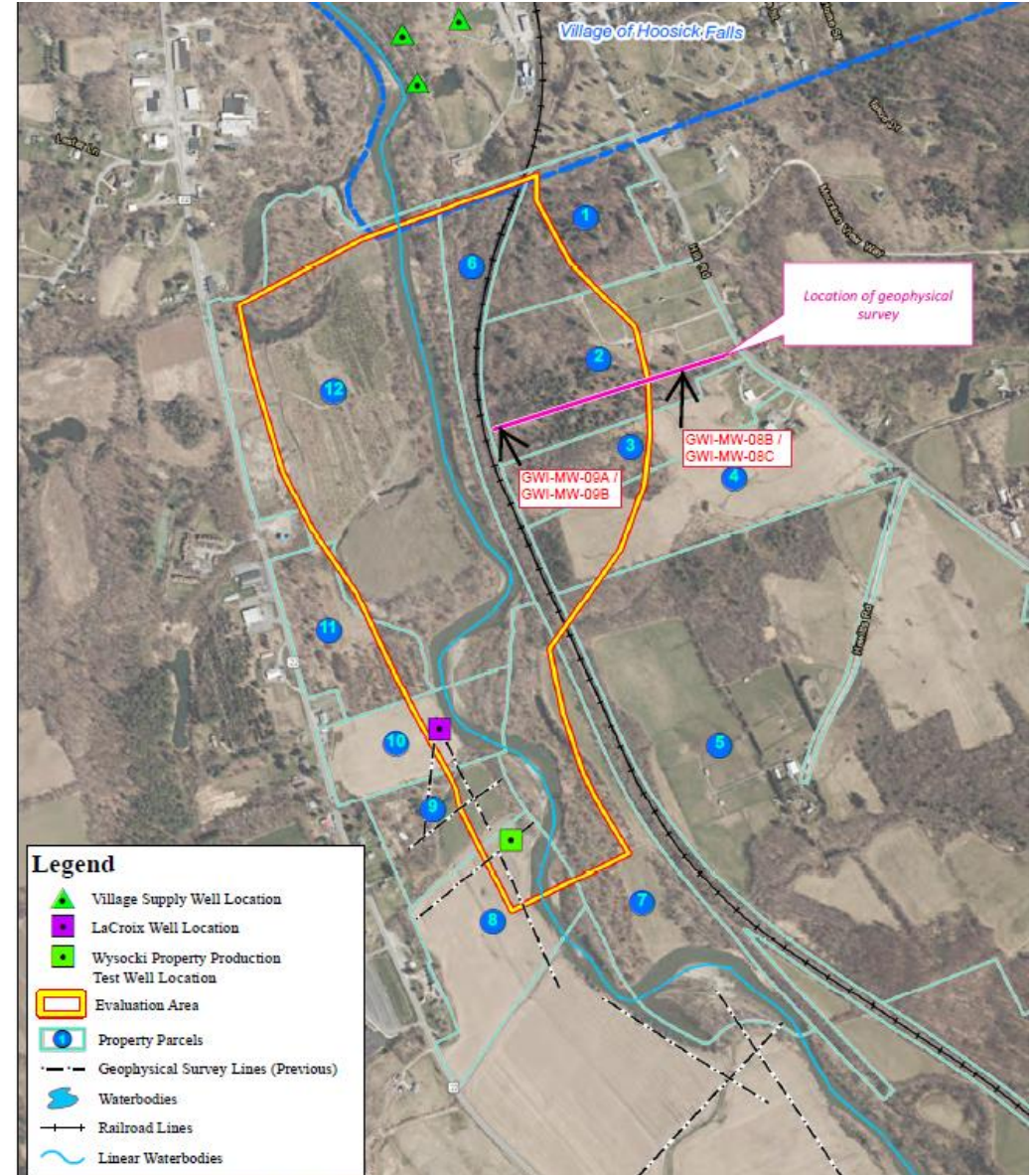
- Originally based on 17 borings
- Clay/silt confining layer between upper and deeper zones
- Addressing Data Gap Area



DATA GAP INVESTIGATION

Scope of Work

- More geologic information north of Wysocki/LaCroix test wells
- Indirect technique (geophysical survey) to locate test borings at two locations
- Shallow and deep monitoring well pairs (within the same borehole) at each location above and below confining unit
- Groundwater quality tests (21 different PFAS)



GEOPHYSICAL SURVEY INVESTIGATION RESULTS

Seismic Survey → 3 layers

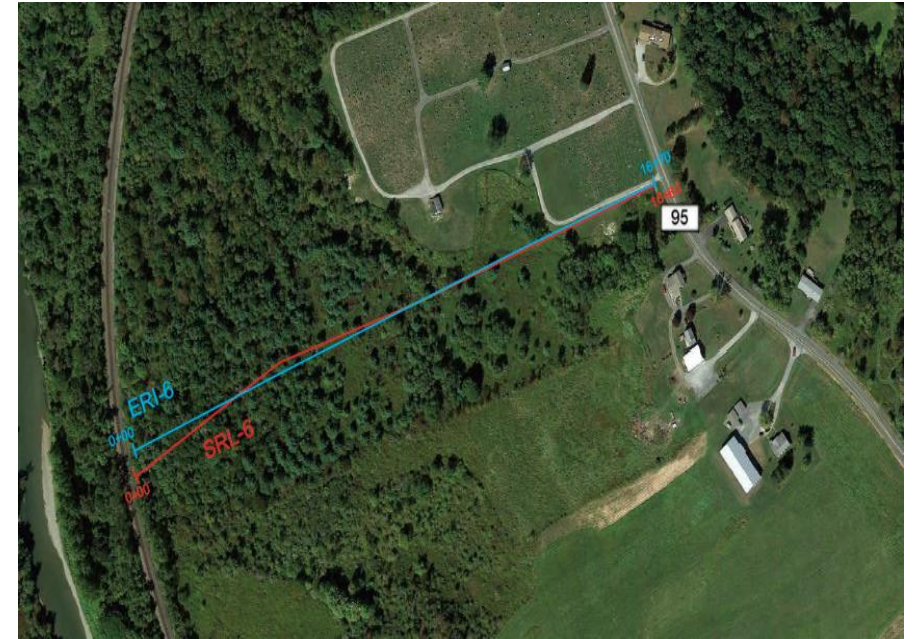
- Upper: no groundwater
- Intermediate: groundwater
- Lower: bedrock (groundwater in fractures)

Resistivity Profile

- Upper zone increases in clay and silt content from west to east
- Deeper sand with less clay and silt

Data Use

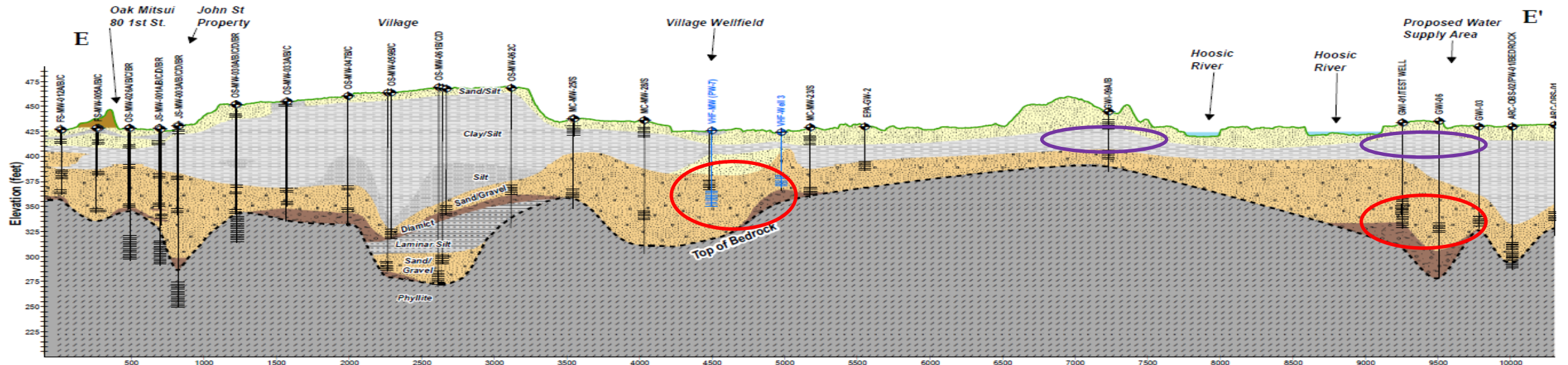
- Select boring locations to obtain actual observation of geologic composition



UPDATED GEOLOGIC INFORMATION

Extent of Clay/Silt Confining Unit Confirmed

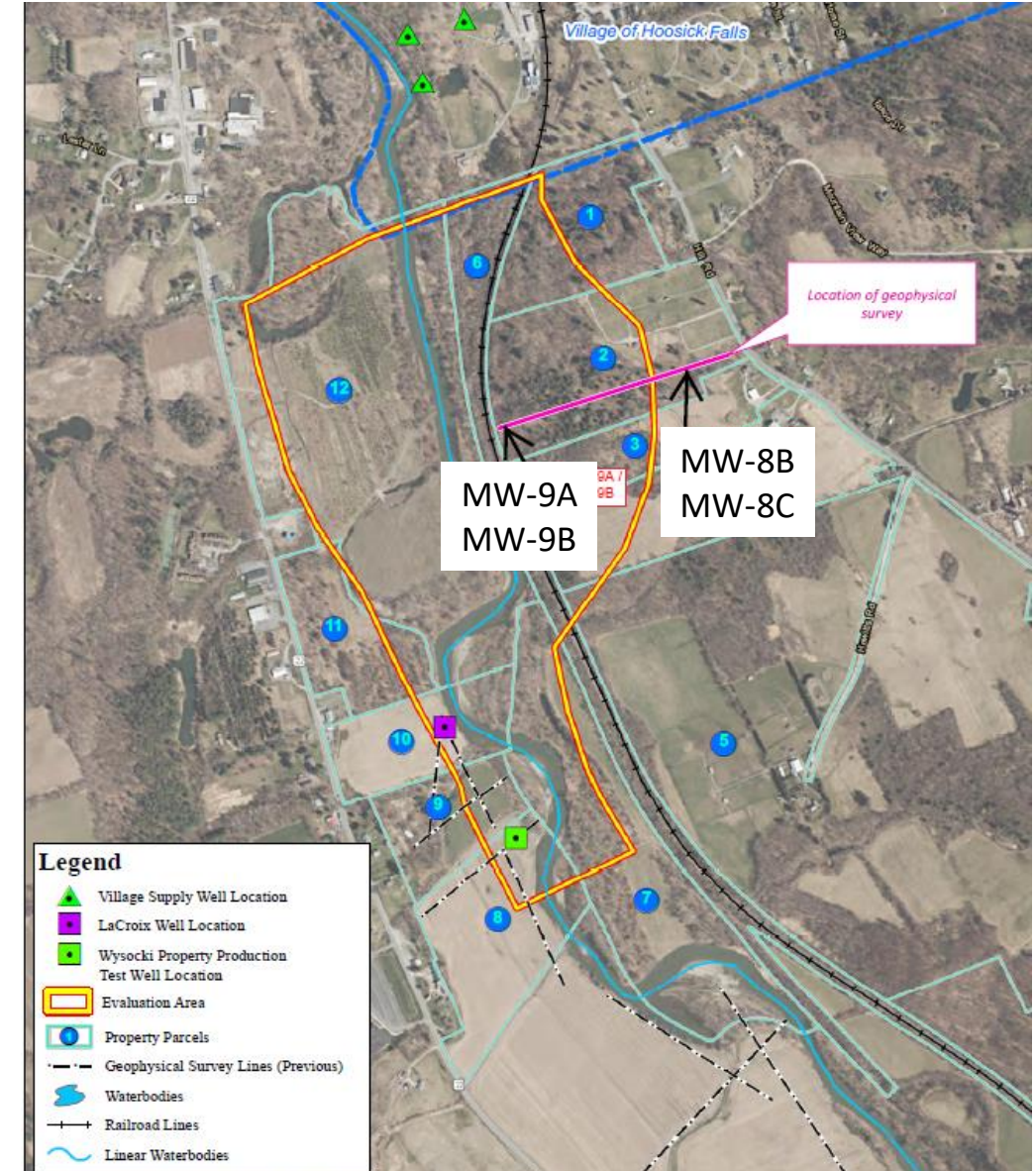
- Based on 23 boring logs
- Village wells and Wysocki/LaCroix test wells: similar deep sand/gravel deposits in bedrock troughs
- **Clay/silt confining unit** at test well locations *is also present* in “data gap area”
- “Data gap area”
 - Deeper deposits are thinner and contain a greater amount of finer grained materials
 - Bedrock surface at higher elevation



GROUNDWATER SAMPLE RESULTS

Location/PFAS Detection (ppt)	Western End		Eastern End	
	MW-9A Shallower	MW-9B Deeper	MW-8B Shallower	MW-8C Deeper
PFBS	0.32 J	ND	ND	ND
PFBA	ND	ND	ND	9
PFHpA	13	0.26 J	ND	ND
PFHxA	6.3	ND	ND	0.53 J
PFOA	530 J	2.5	ND	ND
PFPeA	0.69 J	0.42 J	ND	ND
6 2 fluorotelomer sulfonic acid	ND	2.2J	ND	6.4 J

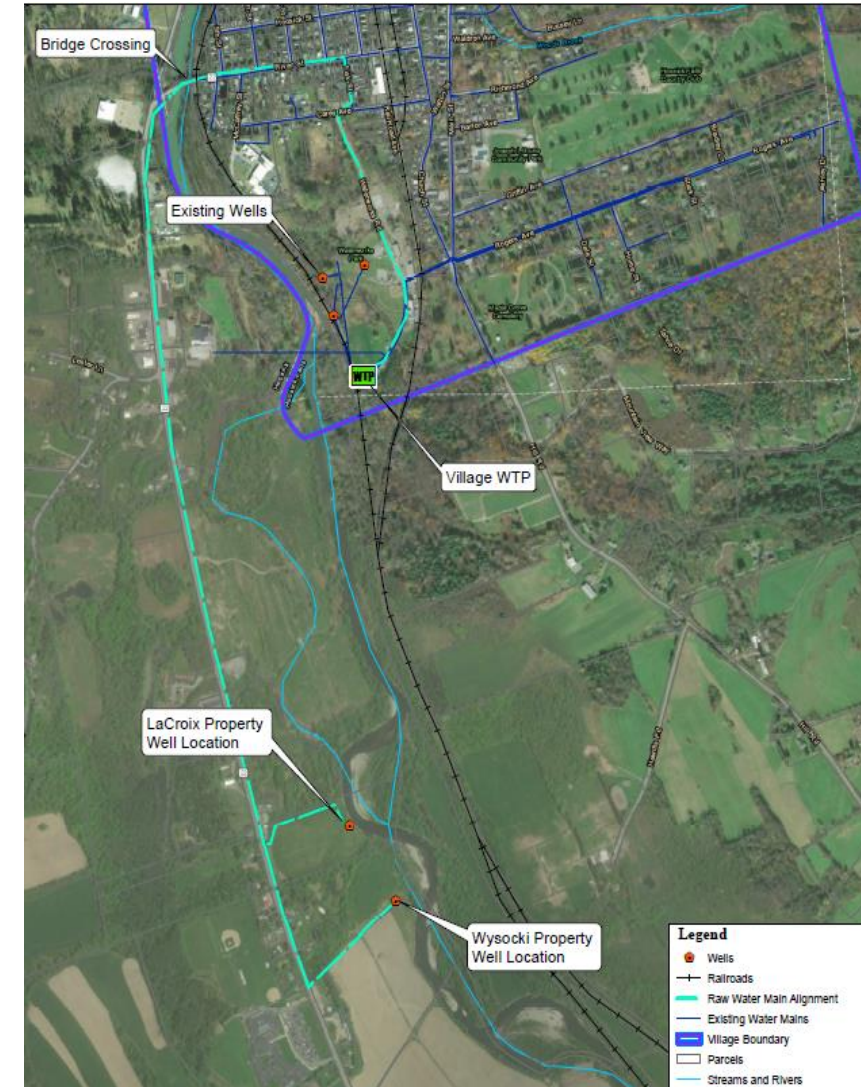
Note: ND is not detected
J is estimated value"



HYDROGEOLOGIC INVESTIGATION UPDATE

Additional Evidence for Hydraulic Separation

- Higher potentiometric water elevations at test well locations versus Village well field
- No observable water level effects from pumping Village Well #7 or 72-hour pump test at LaCroix test well
- ~ 1-mile separation between Village wells and test wells
- Clay/silt confining unit at Wysocki/LaCroix test well locations **also present ~2,000 ft north in the “Data Gap Area”**
- PFOA concentrations in MW 9A and 9B (one well pair) shows confining unit significantly limits vertical groundwater transmission



FINDINGS & INVESTIGATION IMPLICATIONS

WYSOCKI/LACROIX IS VIABLE GROUNDWATER SOURCE

- Wysocki/LaCroix test wells meet current and conceptual future demand
- Water quality before and after 72-hour constant pumping test satisfies consideration as a potential groundwater source

- Wysocki/LaCroix well field draws largely from depression in bedrock that is filled with gravel/sand
- Data Gap Area (2,000 feet north of Wysocki/LaCroix test wells) has confining clay/silt layer indicating further protection
- Data Gap Area aquifer is thinner, more fine-grained, and with shallower bedrock - likely reason drawdown from Village well #7 wasn't detected at Wysocki/LaCroix
- Similarly, drawdown from LaCroix test well was not detected by Village monitoring wells

