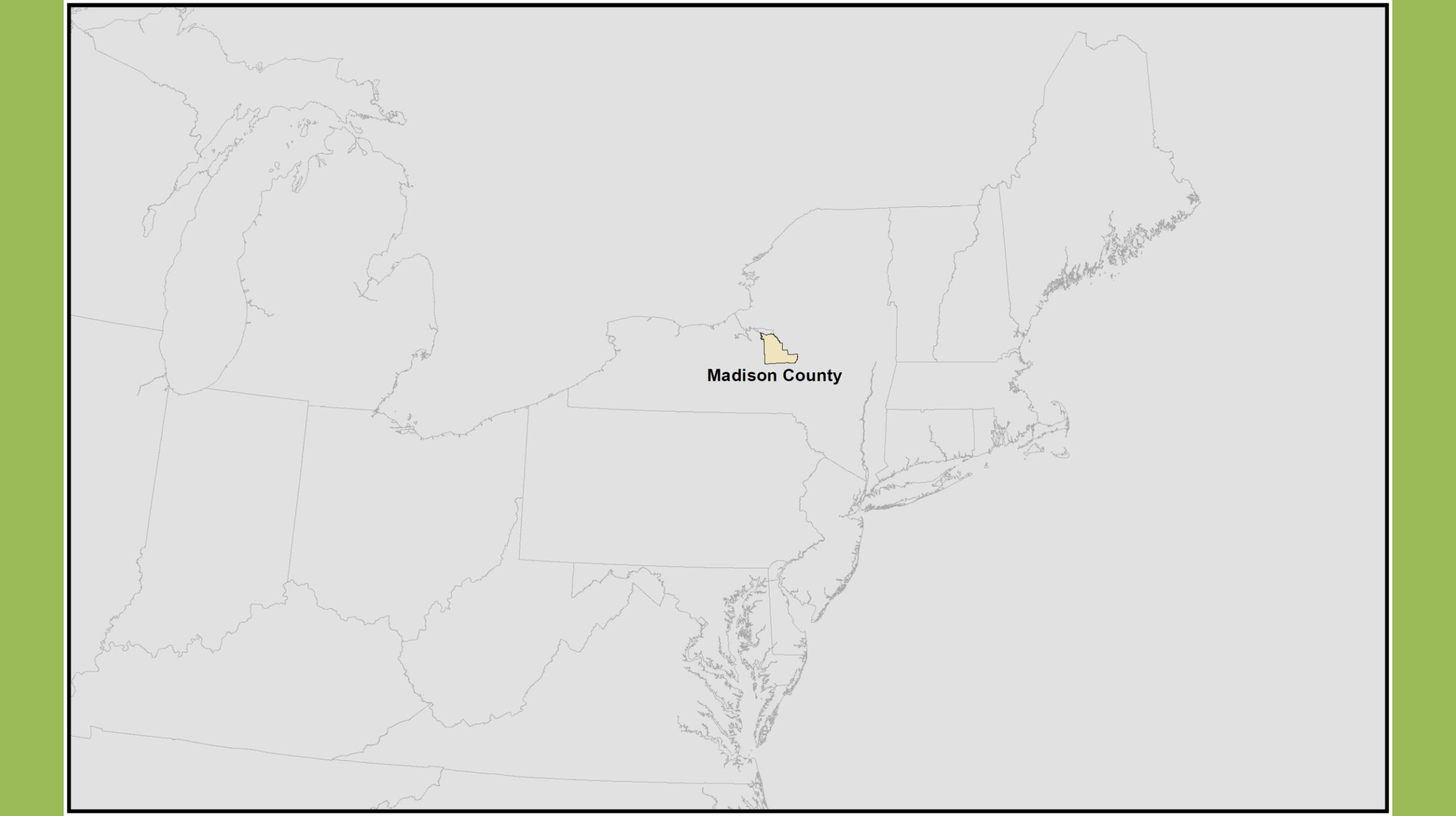


**CDC NCEH Environmental Health Services Support
for Public Drinking Water Programs to Reduce
Drinking Water Exposures Grant Project
6/26/18 Presentation to NEHA**



**Reducing Drinking Water Exposures Through
Individual Well Assessments & Outreach**

Madison County Health Department
Environmental Health Division
Madison County, New York

A map of Madison County, Virginia, highlighted in yellow. The map shows the county's location within the state of Virginia, with other counties and the state boundary visible. The text "Madison County" is printed below the highlighted area.

Madison County

Grant Testing Summary 9/30/15-4/30/18

Since obtaining the grant in September of 2015 four hundred and thirteen (413) field visits were conducted at residences requesting water testing. Table 1 below shows the breakdown of testing done

<u>Field Visits</u>	413
75C (1)	249
Bacteria	159
Nitrate	128
Nitrite	15
VOC (2)	6
SOC (3) /VOC	19
Arsenic	98
GI Referrals (4)	10

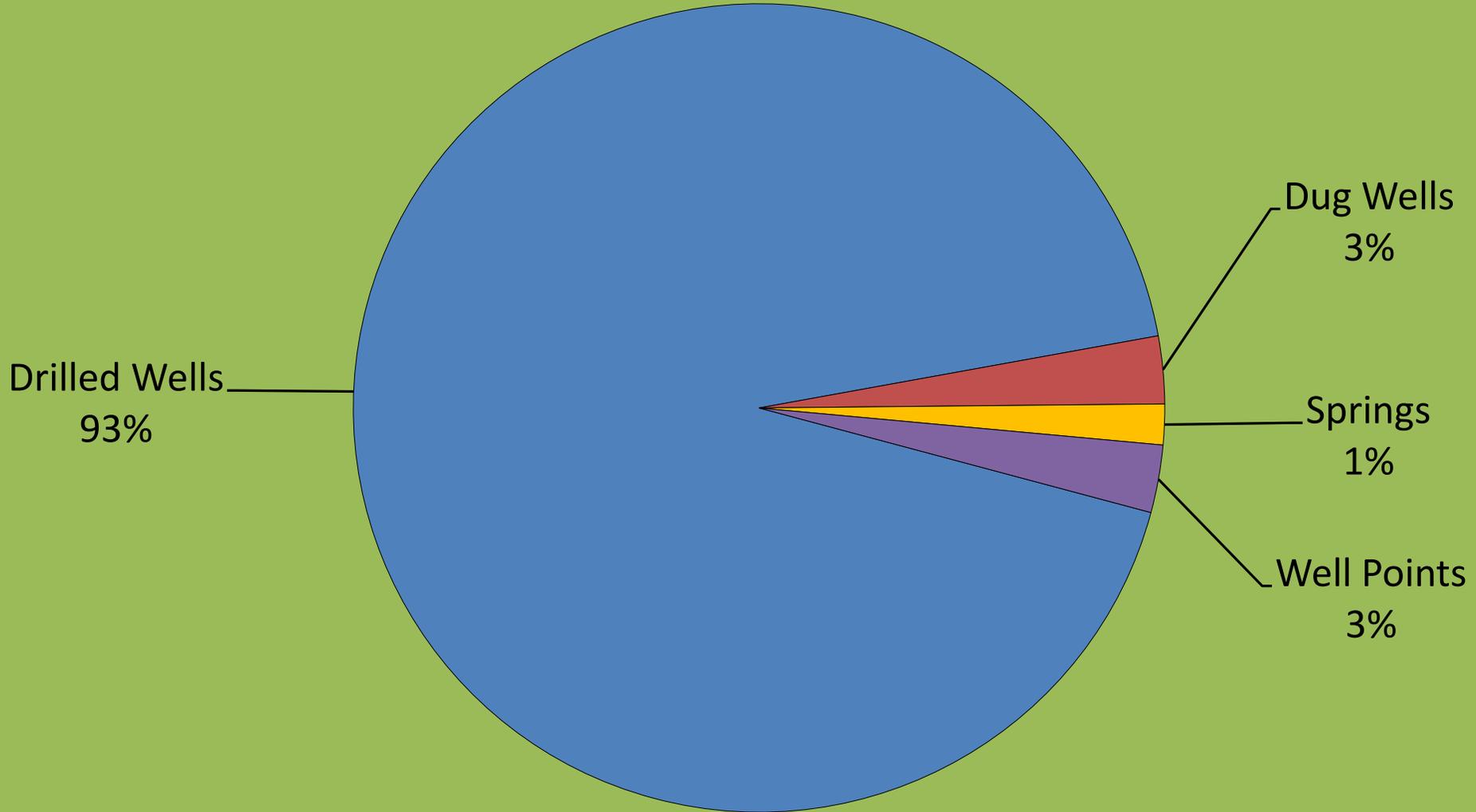
1. 75C testing parameters: Coliform, lead, nitrates, nitrites, turbidity, arsenic, iron, manganese, hardness, alkalinity, pH and sodium.
2. Volatile Organic Contaminants (VOCs),
3. Synthetic Organic Contaminants (SOCs)
4. Gastrointestinal (GI)

Table 1

Notable test result findings:

- 39% of tested water supplies were positive for total coliform bacteria
- 6% of tested water supplies were positive for E.coli
- 6 water supplies exceeded the MCL for arsenic
- Arsenic was found in 26% of tested water supplies at levels exceeding 0.001 mg/l
- 7% of tested water supplies had arsenic >0.005 mg/l
- 23% of tested water supplies had nitrate >1.0 mg/l
- 4 nitrite detects in 234 tests, 0.01 mg/l detection limit.
- 6 alkalinity tests of 219 did not exceed the MCL of 100 mg/l as CaCO₃
- 3 manganese tests of 216 exceeded the MCL of 0.3mg/l

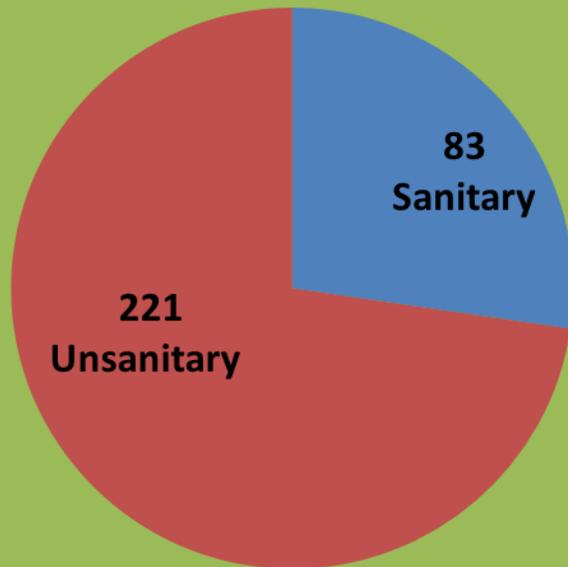
Tested IWS by type in Madison County, New York



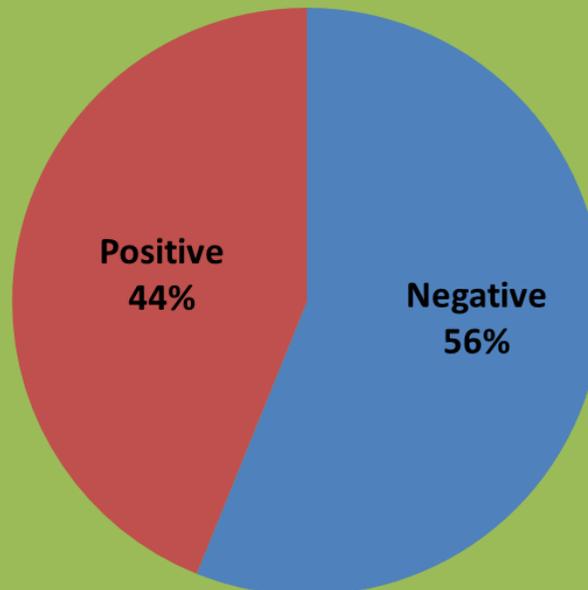
Bacteriological test results of drilled wells with unsanitary well caps or sanitary well caps

- **38%** of drilled wells tested in Madison County from 9/30/15-4/30/18 were positive for total coliform bacteria. The presence of total coliform bacteria is an indication of susceptibility to contamination.
- A well with a sanitary cap was found to be **67%** less likely to be contaminated by bacteria than a well with an unsanitary cap.
- A proper sanitary well cap and additional source protection measures can help protect well water from bacteriological contamination.

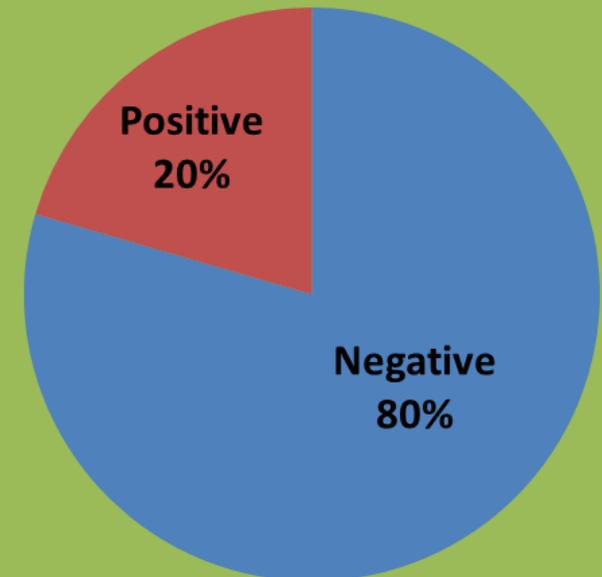
304 Tested Drilled Wells



Unsanitary Well Cap Bacteria Test Results

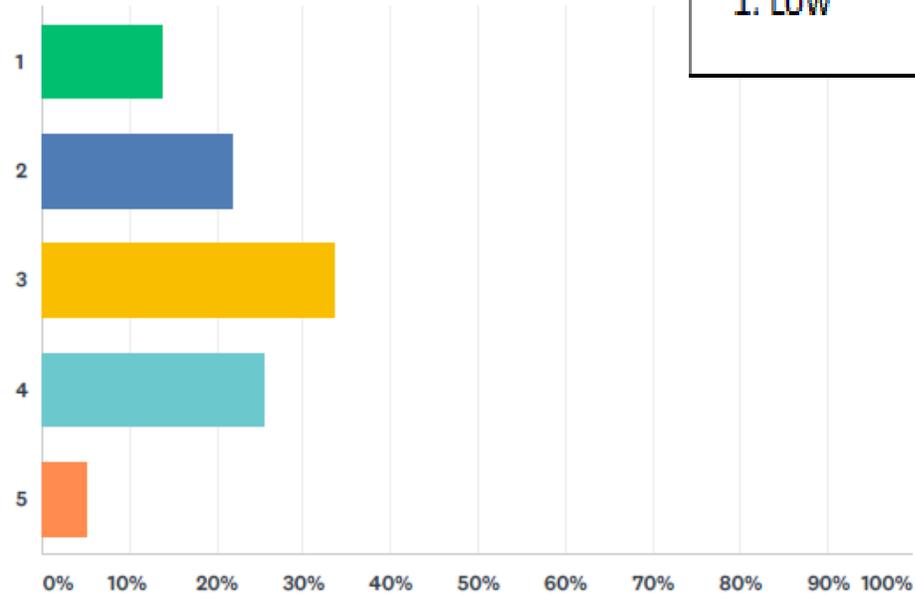


Sanitary Well Cap Bacteria Test Results



Q1 Please rate your knowledge of your water system prior to our assessment?

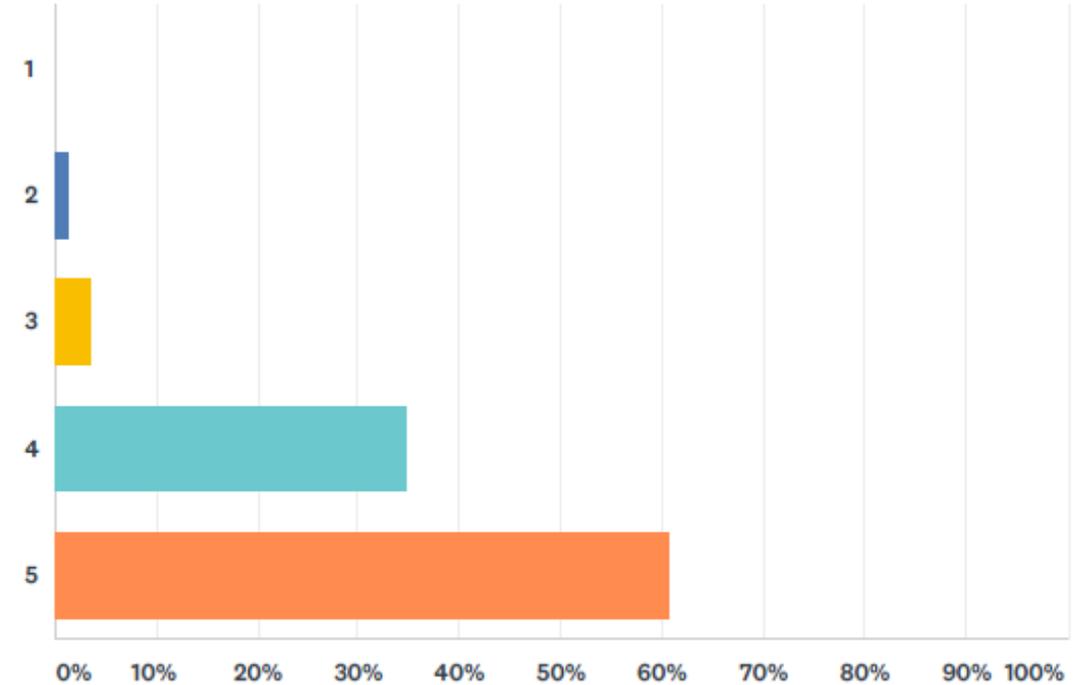
Answered: 173 Skipped: 1



1: Low 2: Medium-Low 3: Medium 4: Medium High 5: High

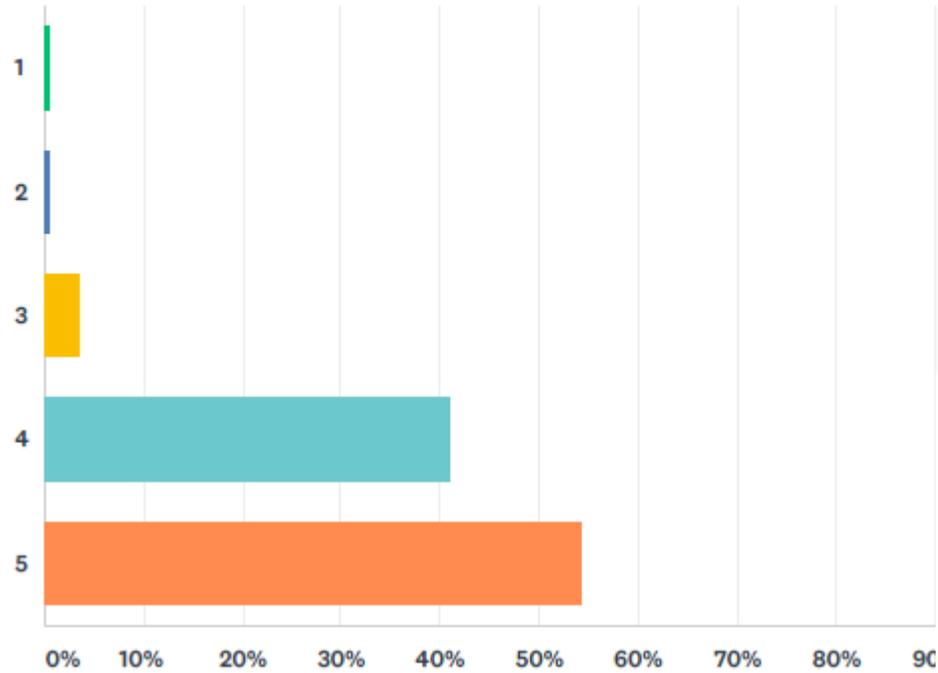
Q2 Please rate your knowledge of your water system after our assessment?

Answered: 173 Skipped: 1



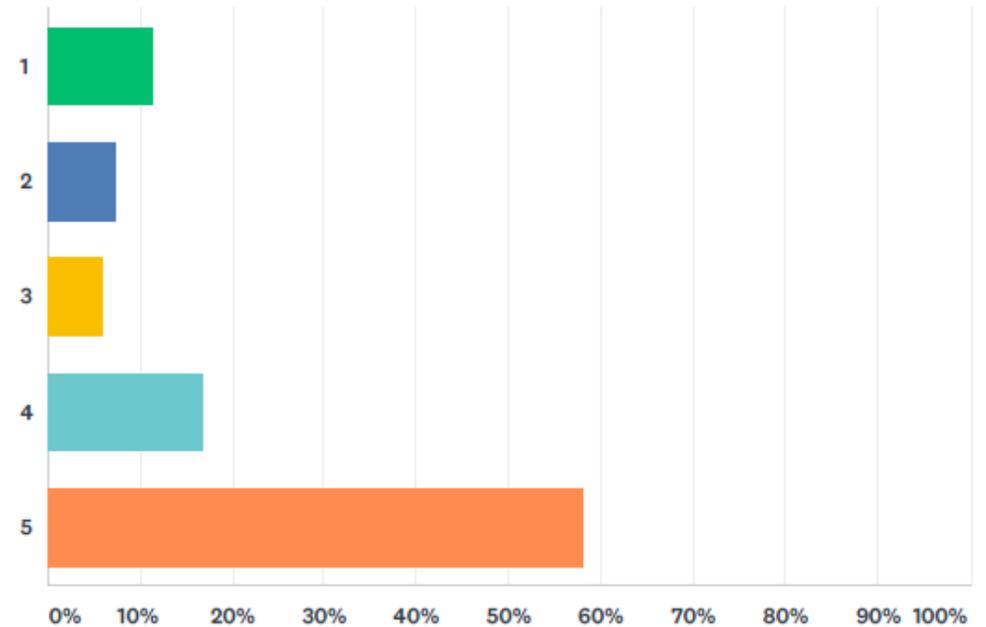
Q3 How well do you understand the results of your water test?

Answered: 173 Skipped: 1



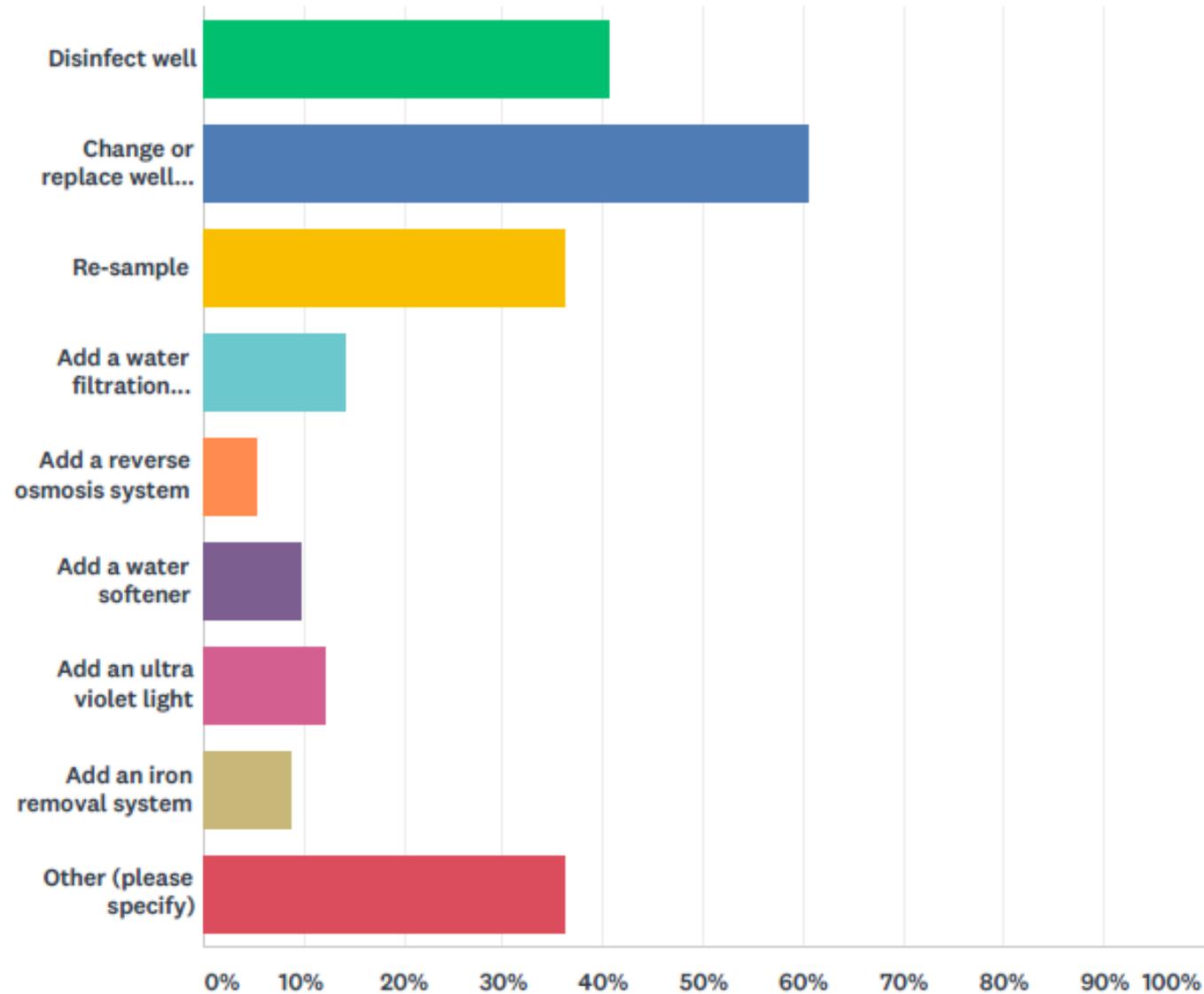
Q4 Based on our current assessment, how likely are you to make corrective changes, if any, to your water system?

Answered: 165 Skipped: 9



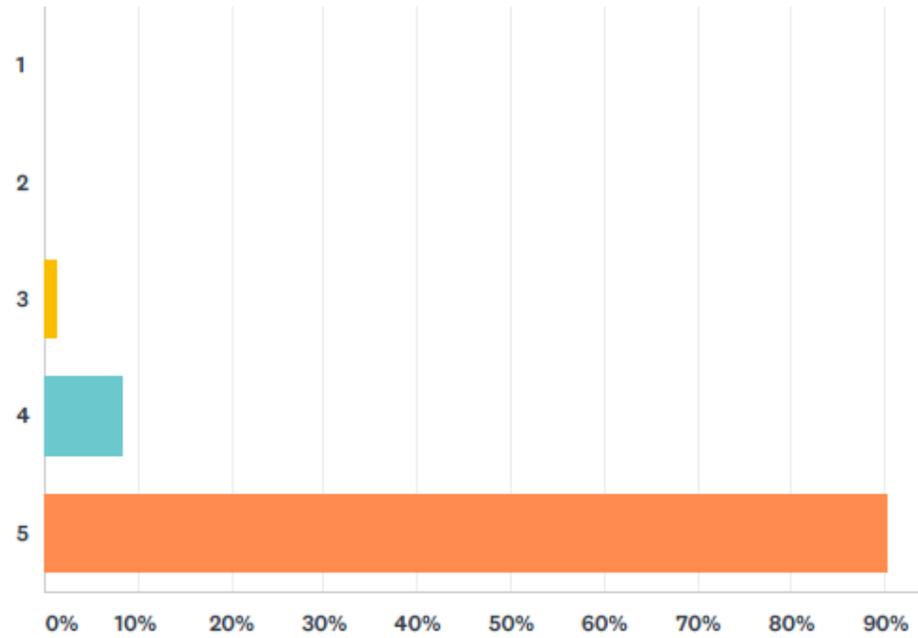
Q5 Based on our assessment what corrective changes might you make, if any, to your water system?

Answered: 91 Skipped: 83



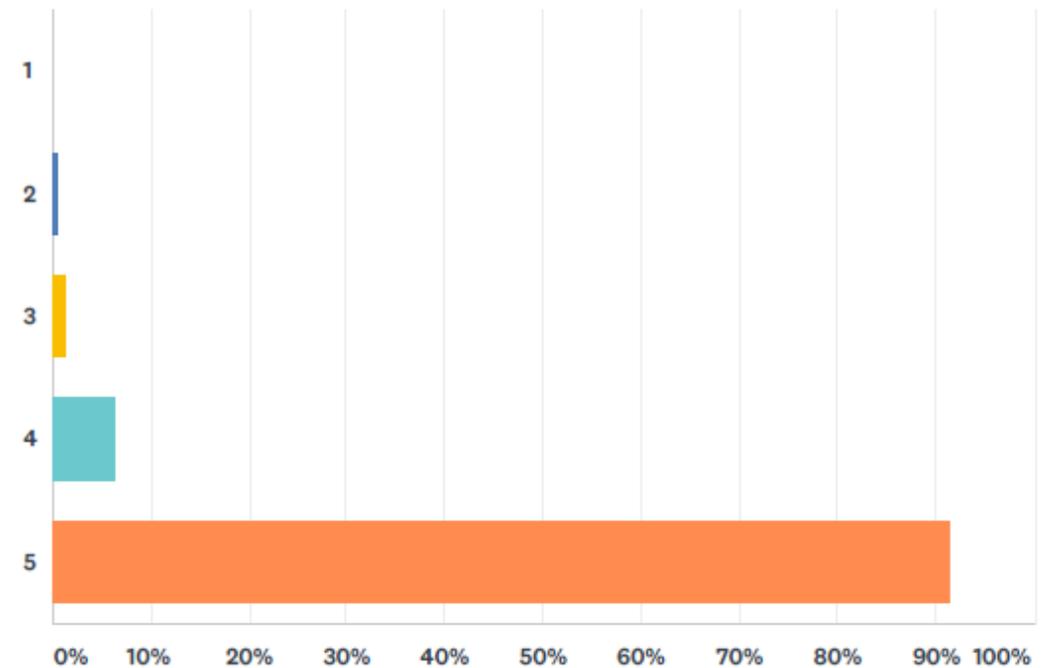
Q6 Do you feel this service was valuable and beneficial to you?

Answered: 168 Skipped: 6



Q7 How satisfied are you with the overall service provided?

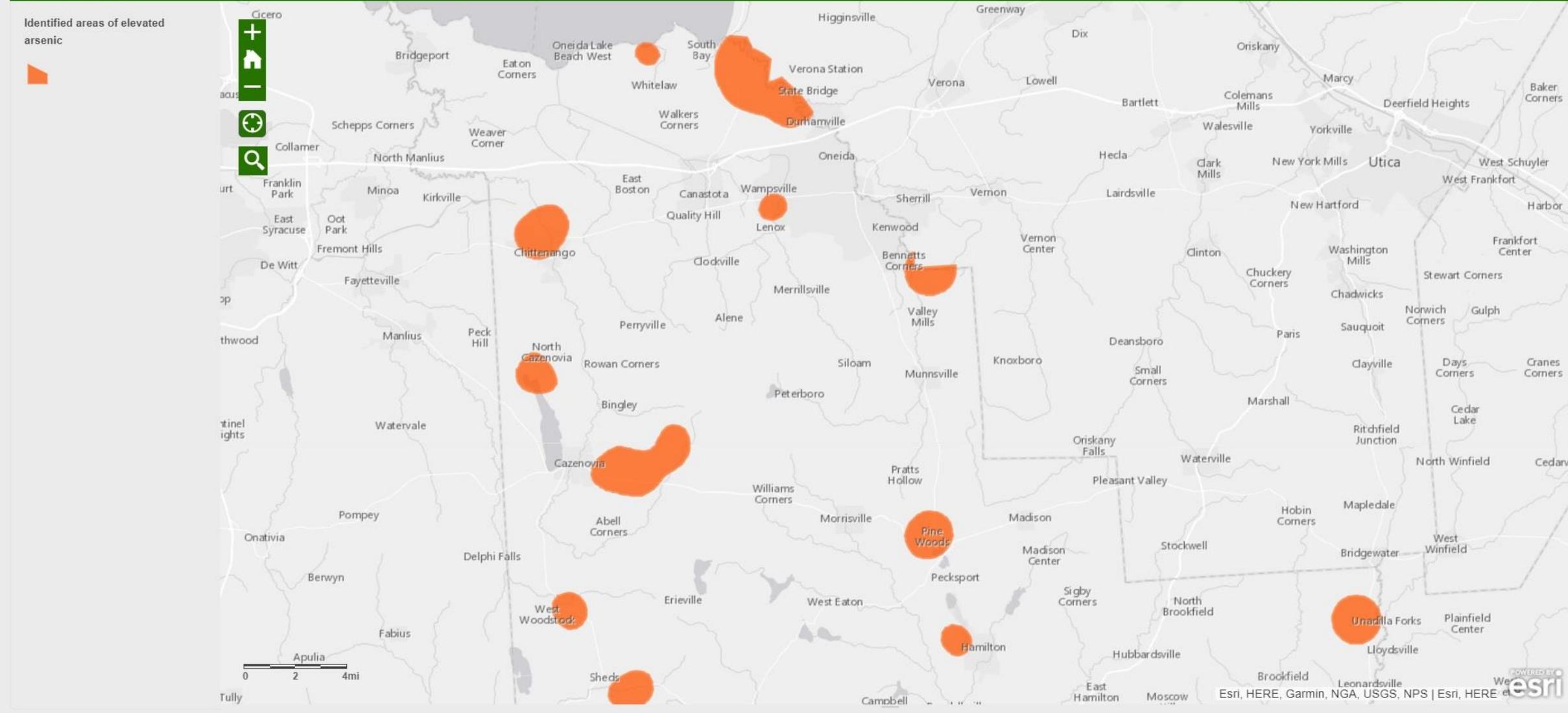
Answered: 169 Skipped: 5



Madison County Individual Water Supply Mapping

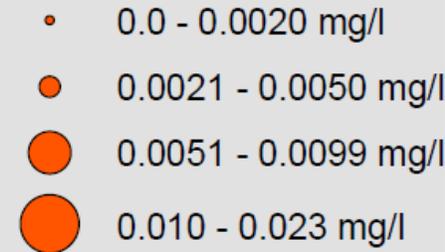
Madison County Individual Water Supply Mapping

Legend | Details | Basemaps | Layers | Print | Share | Measure

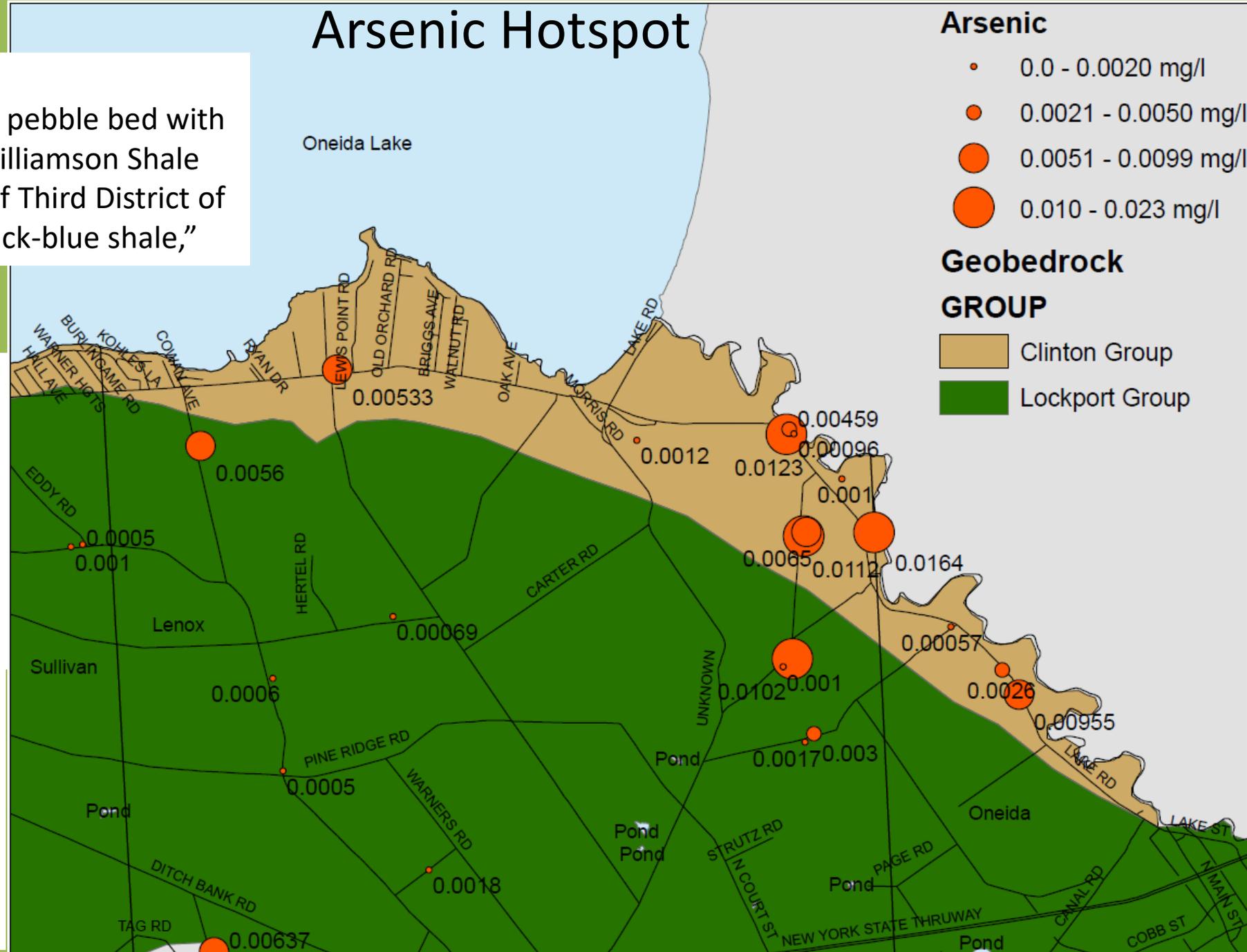
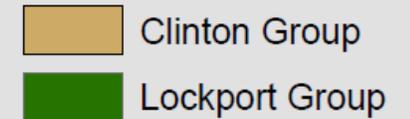


Arsenic Hotspot

Arsenic



Geobedrock GROUP



Clinton Group Comments

“a new name for a phosphatic quartz pebble bed with abundant pyrite at the base of the Williamson Shale (Lin and Brett, 1988). Clinton group of Third District of NY defined. Consists of green and black-blue shale,”

Well log within the arsenic hotspot

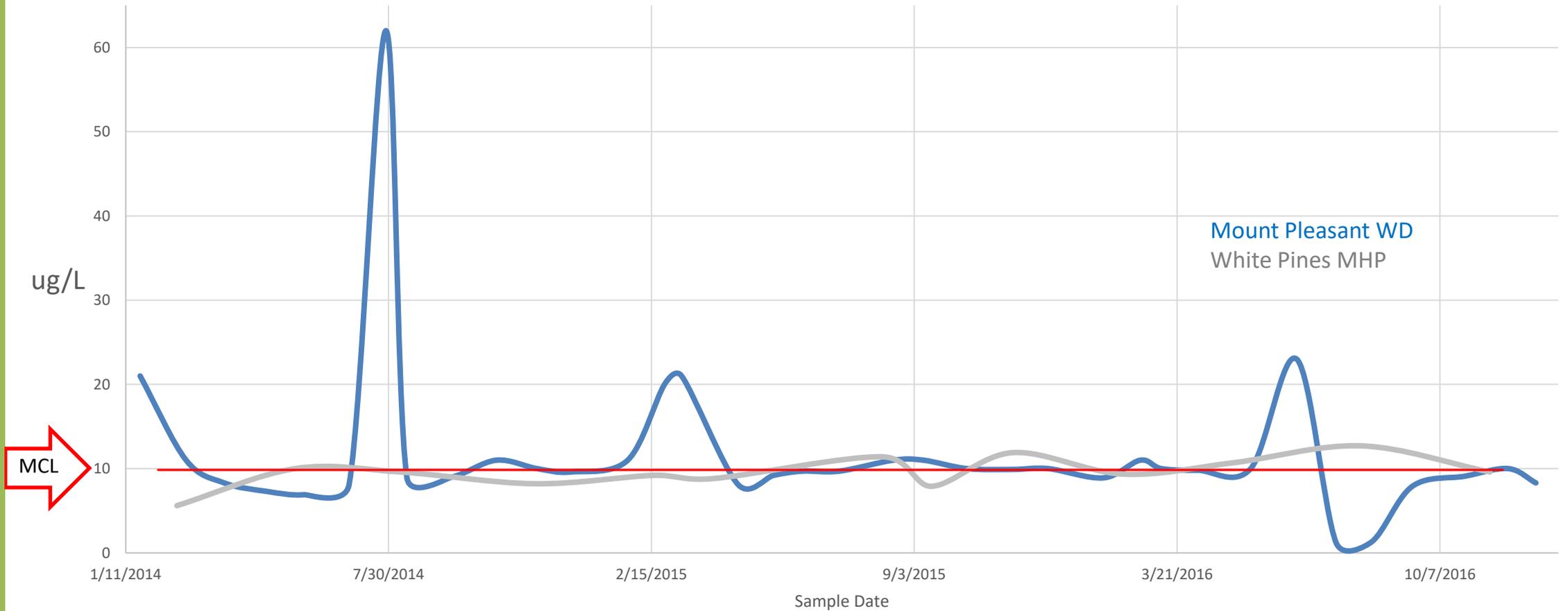
6" well 80' deep
 68'7" of 6" casing with drive shoe
 20' of 4.5" pvc .020 slot screen
 1 gallon per minute
 14' static water level

Formations:

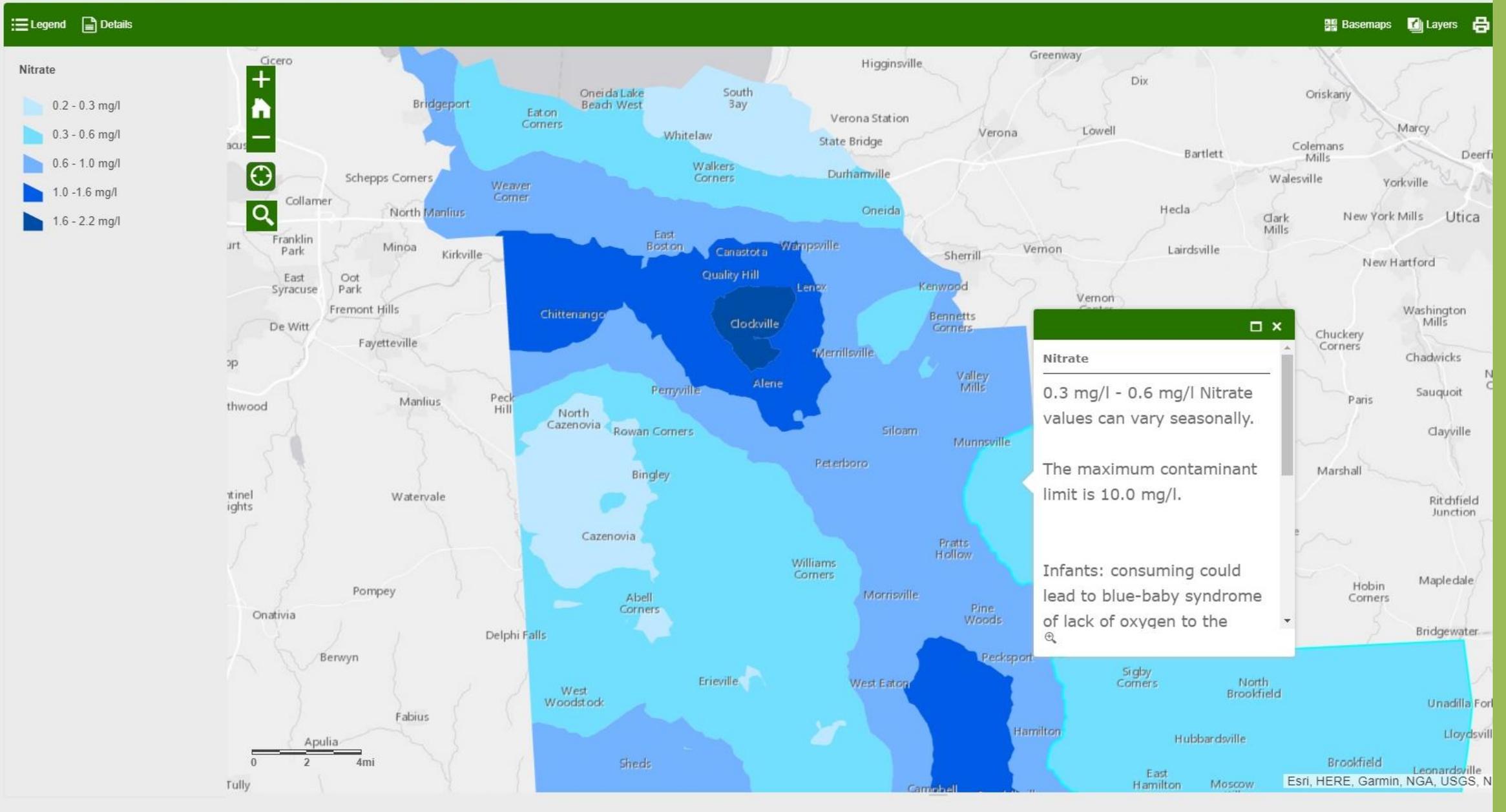
- 0-6' sandy loam
- 6-40' clay & stone
- 40-41' loose gravel & sand
- 41-64' clay, silt & stone
- 64-71' gravel, sand & clay balls
- 71-81' green shale

Testing done by the Madison County Department of Health has shown arsenic levels in groundwater over time to be highly varied.

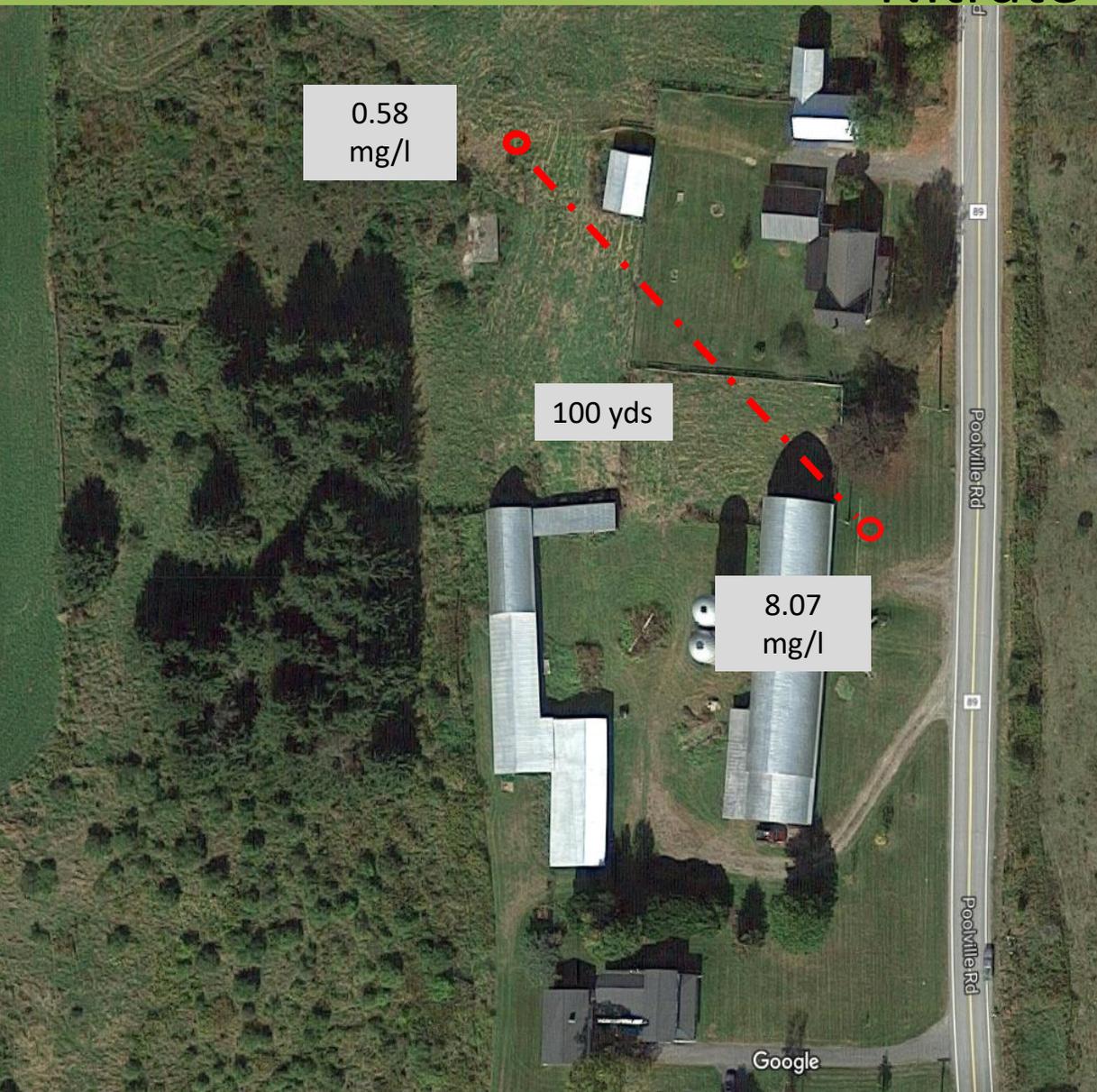
Arsenic Levels Over Time



Madison County Individual Water Supply Mapping



Nitrate Variability



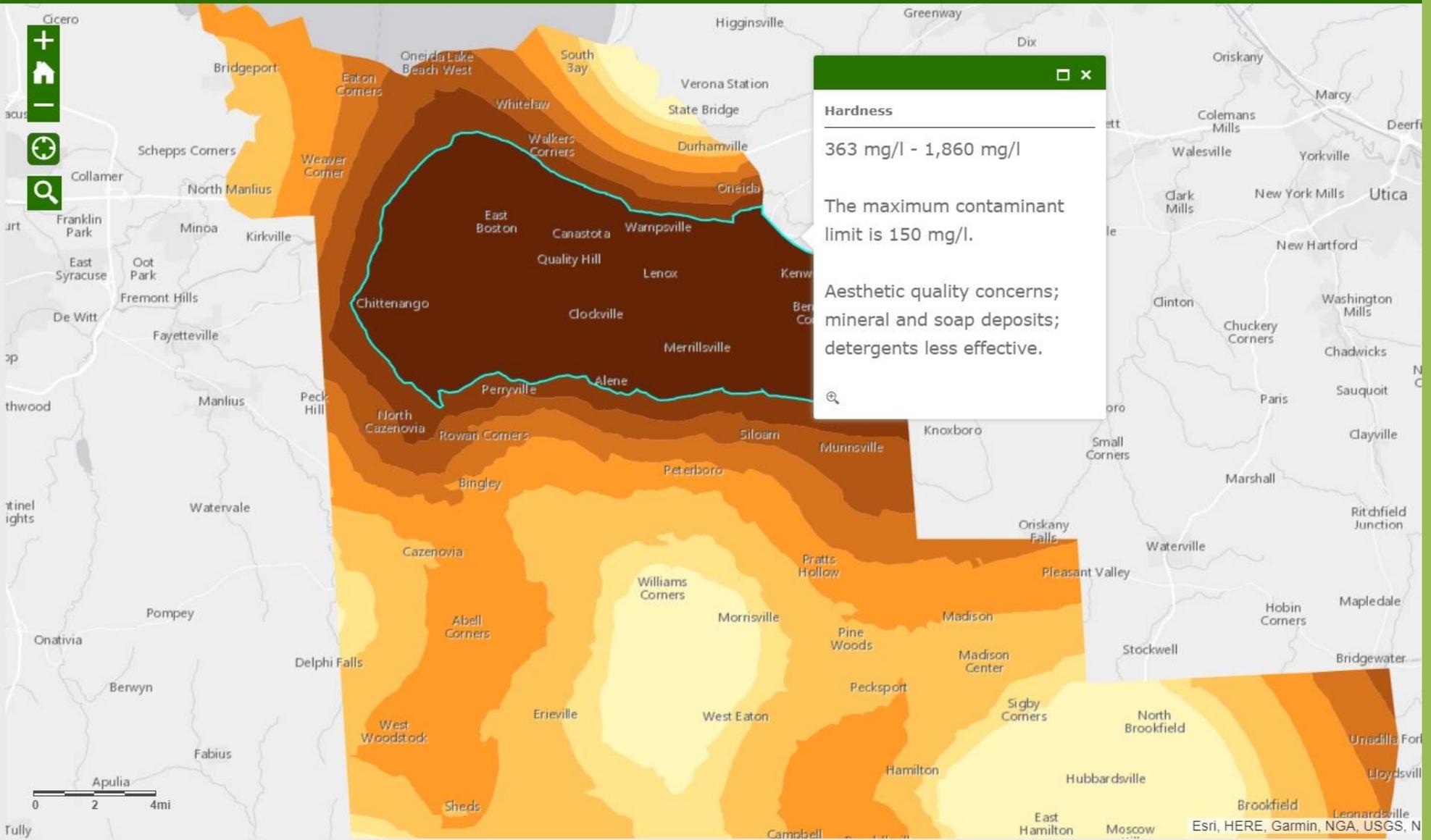
Madison County Individual Water Supply Mapping

Legend Details

Basemaps Layers

Hardness

- 56-87 mg/l
- 87-139 mg/l
- 139-155 mg/l
- 155-192 mg/l
- 192-226 mg/l
- 226-260 mg/l
- 260-307 mg/l
- 307-363 mg/l
- 363-1860 mg/l



Madison County Individual Water Supply Mapping

Legend Details

Basin

Flood Plain

Areas between limits of the 100-year flood and 500-year flood; or certain areas subject to 100-year flooding with average depths less than one (1) foot or where the contributing area is less than one square mile; or areas protected by levees from the basin



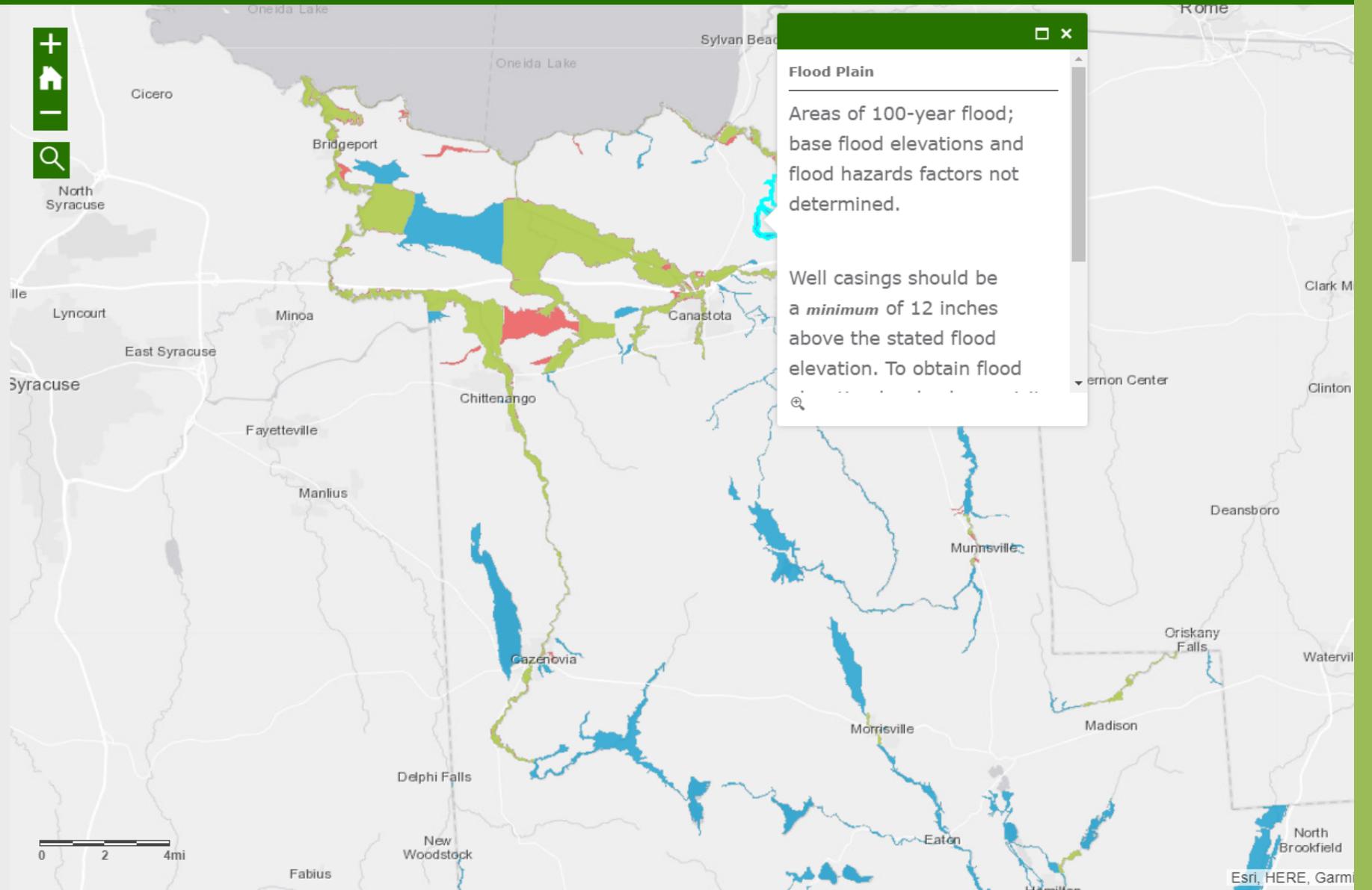
Areas of 100-year flood; base flood elevations and flood hazards factors not determined.



Areas of 100-year flood; base flood elevations and flood hazard factors determined.



Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; average depths of inundation are shown, but no flood hazard factors are determined.



Flood Plain

Areas of 100-year flood; base flood elevations and flood hazards factors not determined.

Well casings should be a *minimum* of 12 inches above the stated flood elevation. To obtain flood



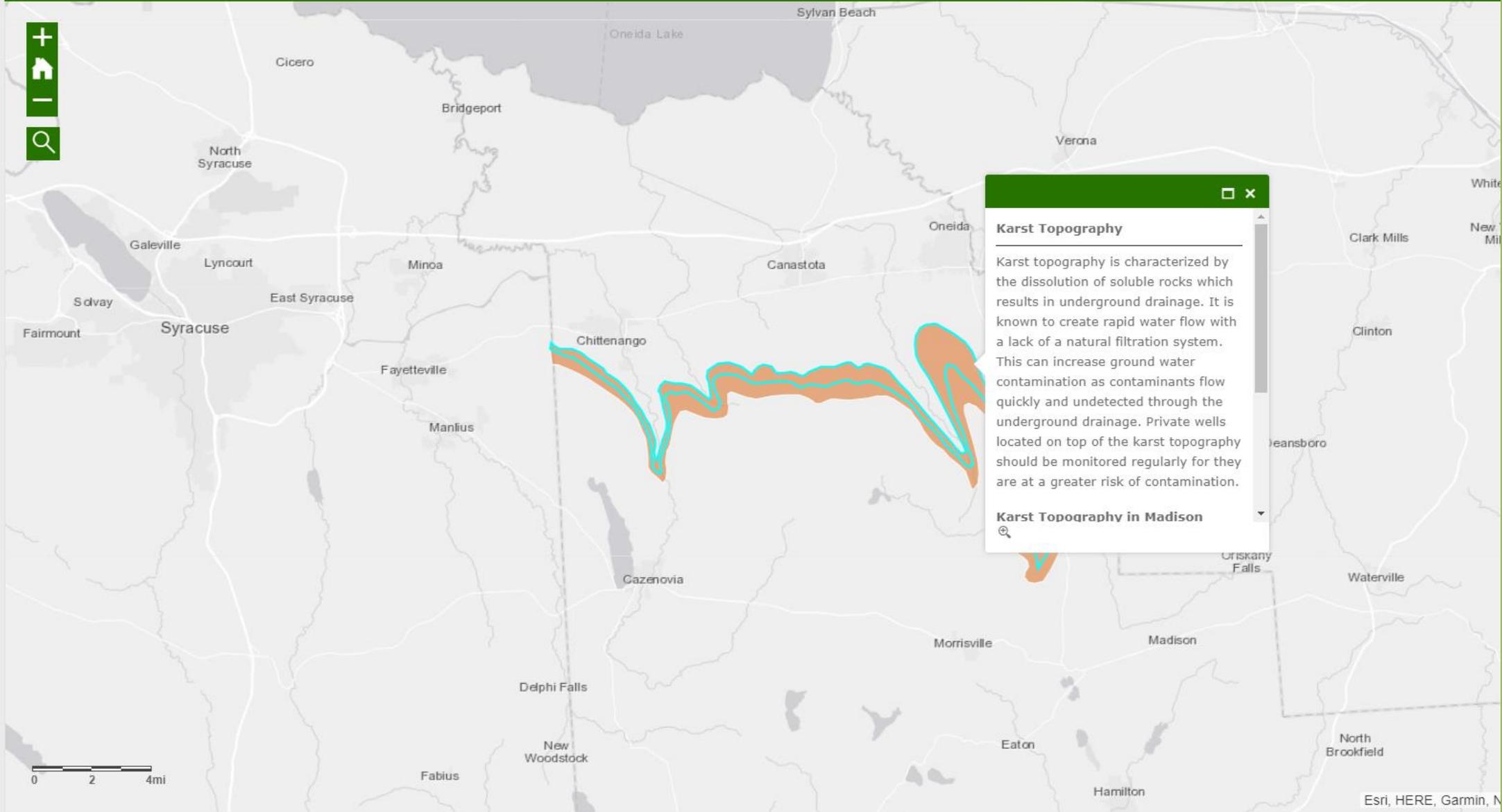
0 2 4mi

Esri, HERE, Garmin

Madison County Individual Water Supply Mapping

Legend Details

Basemaps



Karst Topography

Karst topography is characterized by the dissolution of soluble rocks which results in underground drainage. It is known to create rapid water flow with a lack of a natural filtration system. This can increase ground water contamination as contaminants flow quickly and undetected through the underground drainage. Private wells located on top of the karst topography should be monitored regularly for they are at a greater risk of contamination.

Karst Topography in Madison

🔍



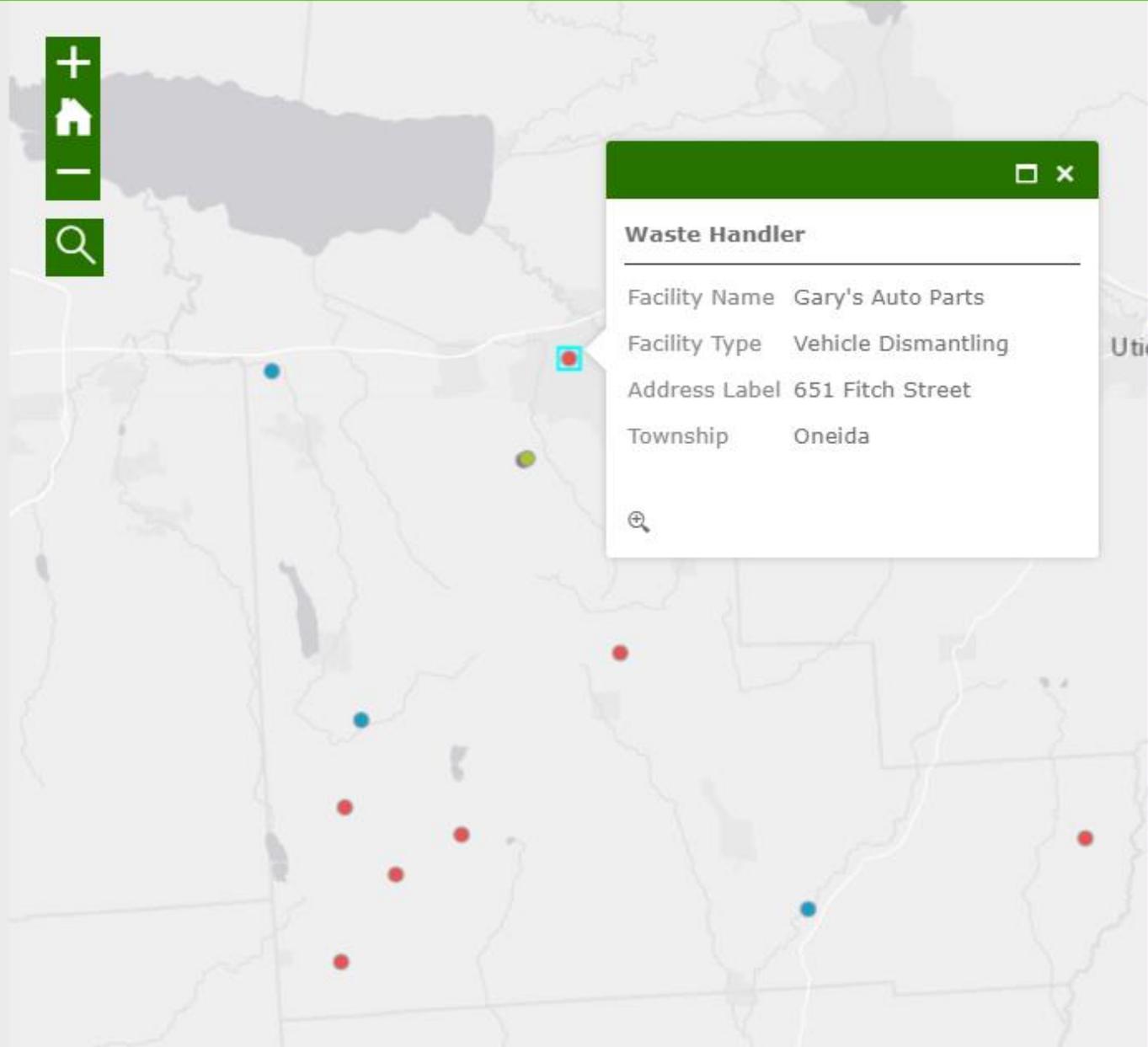


Madison County Individual Water Supply Mapping

Legend Details

Waste Handlers

- Vehicle Dismantling
- Transfer Station
- Landfill
- Recycling Facility

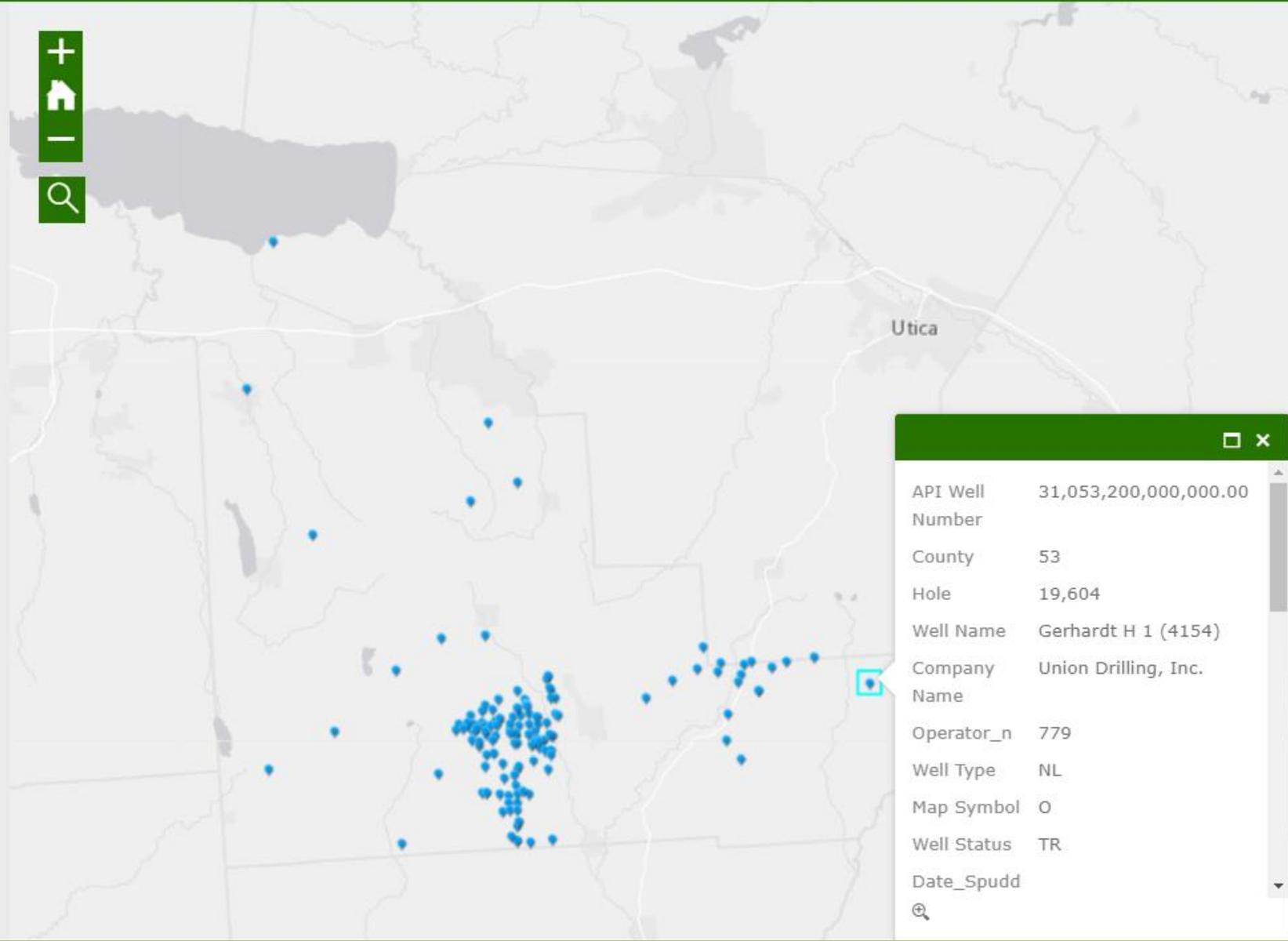


Madison County Individual Water Supply Mapping

Legend

Details

Petroleum Wells



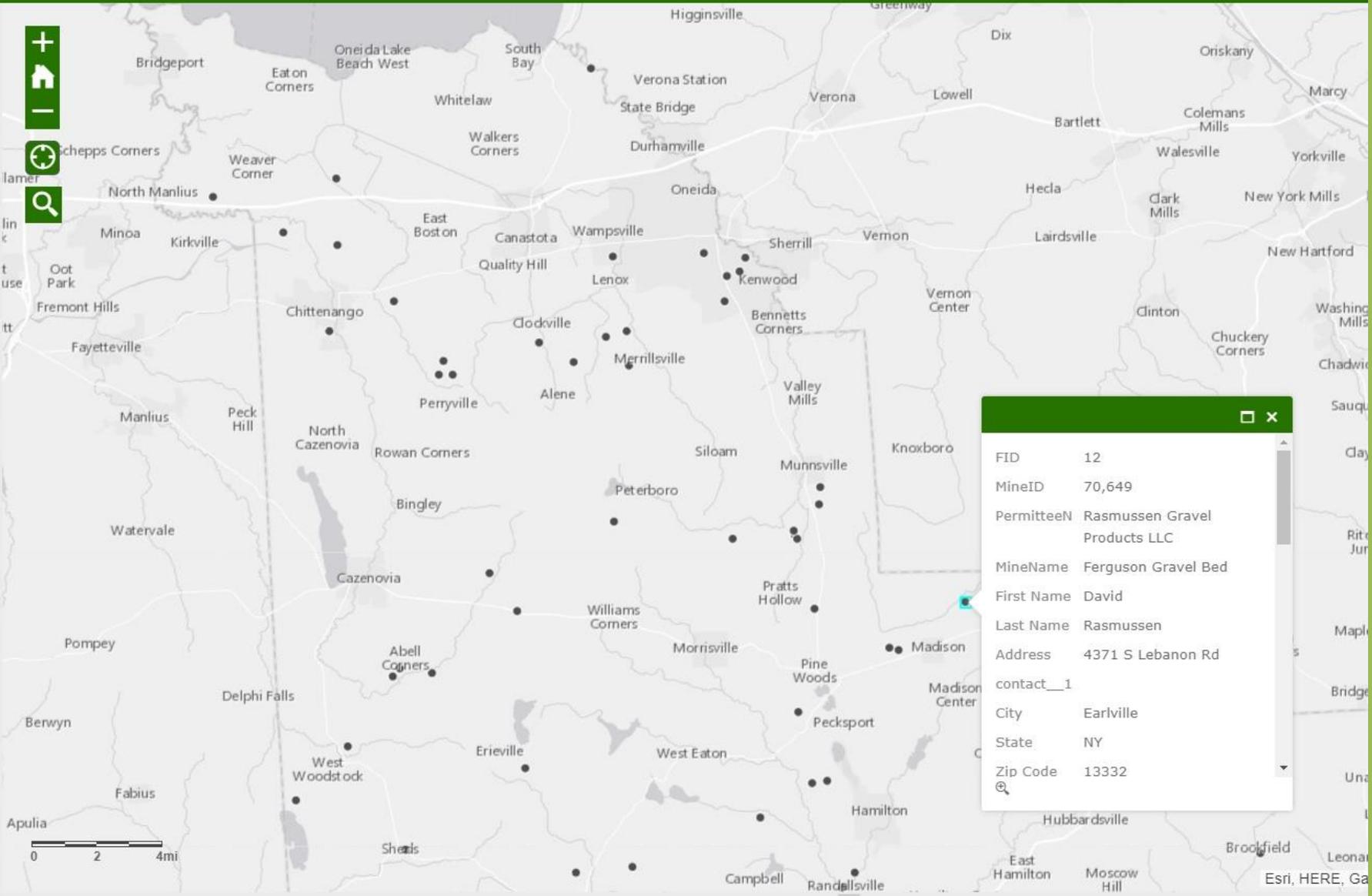
Well Details	
API Well Number	31,053,200,000,000.00
County	53
Hole	19,604
Well Name	Gerhardt H 1 (4154)
Company Name	Union Drilling, Inc.
Operator_n	779
Well Type	NL
Map Symbol	O
Well Status	TR
Date_Spudd	

Madison County Individual Water Supply Mapping

Legend Details

Basem

Mining Sites



Esri, HERE, Ga



Georgetown Spring

Analysis Report For:

Madison County Department of Health
 Environmental Health
 P.O. Box 605
 Wampsville, NY 13163

Report Number: 171273

Page 1/1

Sample Number: 06211704
Collection Date: 06/21/17
Collection Time: 10:43 am
Date Received: 06/21/17
Time Received: 11:10 am
Matrix: Potable Water
Free Chlorine: 0.00 mg/L
Preservative: None

Sample ID: IWS-Georgetown Spring

Location: Spring

Sample Collector: M. Young
 MCDOH

<u>Parameter</u>	<u>Result</u>	<u>Method</u>	<u>Analysis Date/Time</u>
Total Coliform	Positive (Too Numerous To Count)	SM 18-22 9222B	06/21/17 5:05 pm
<i>E. coli</i>	Negative	SM 18-22 9222B	06/21/17 5:05 pm



Brookfield Spring

Analysis Report For:

Madison County Department of Health
Environmental Health
P.O. Box 605
Wampsville, NY 13163

Report Number: 171532

Page 1/1

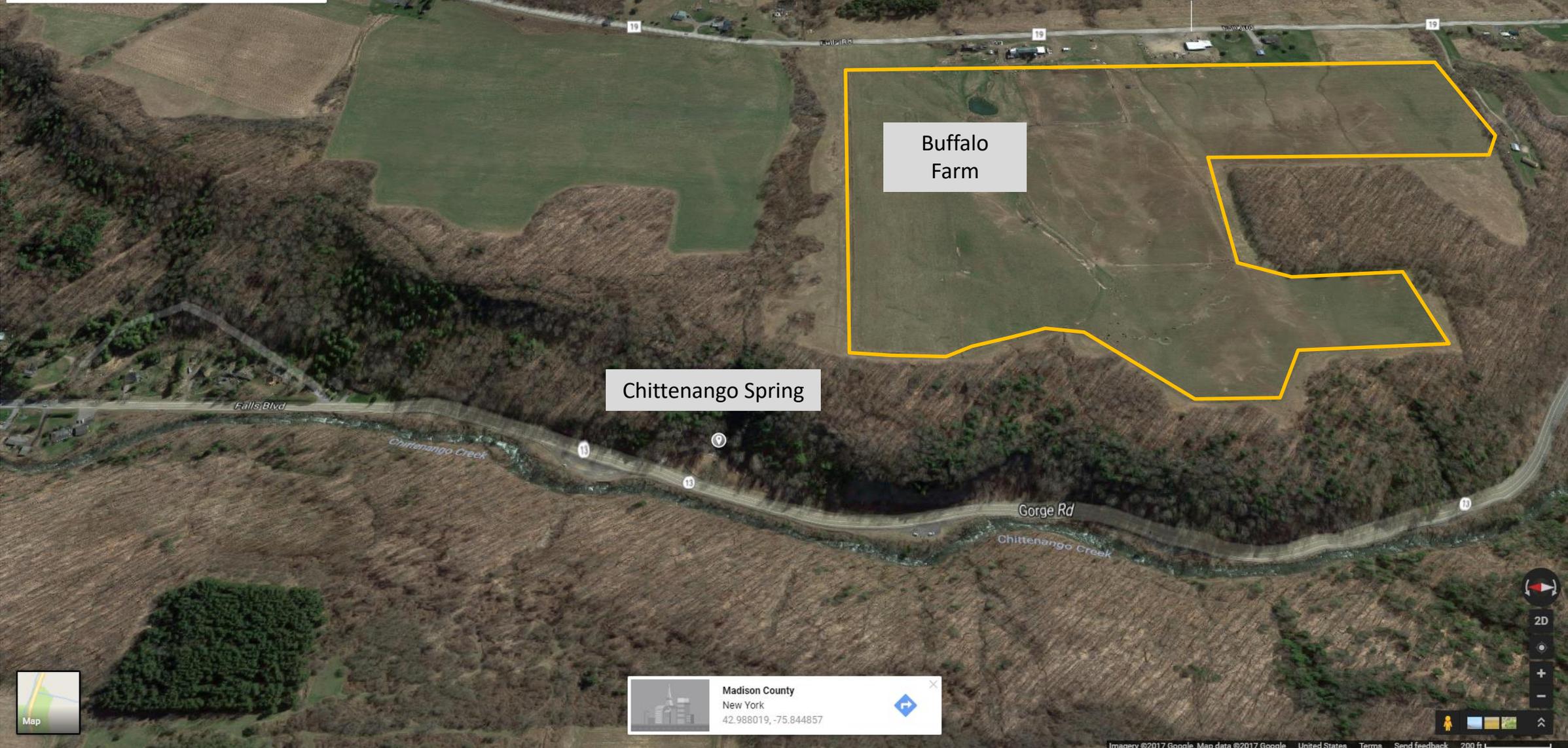
Sample Number: 07261707
Collection Date: 07/26/17
Collection Time: 10:24 am
Date Received: 07/26/17
Time Received: 11:42 am
Matrix: Potable Water
Free Chlorine: Not Reported
Preservative: None

Sample ID: IWS Brookfield Spring

Location: Spring

Sample Collector: M. Young
MCDOH

<u>Parameter</u>	<u>Result</u>	<u>Method</u>	<u>Analysis Date/Time</u>
Total Coliform	Positive (48 cfu/100 ml)	SM 18-22 9222B	07/26/17 2:08 pm
E.coli	Negative	SM 18-22 9222B	07/26/17 2:08 pm



Buffalo Farm

Chittenango Spring

Madison County
New York
42.988019, -75.844857



Chittenango Spring

Analysis Report For:

Madison County Department of Health
Environmental Health
P.O. Box 605
Wampsville, NY 13163

Report Number: 171316

Page 1/1

Sample Number: 06271704
Collection Date: 06/27/17
Collection Time: 10:45 am
Date Received: 06/27/17
Time Received: 11:07 am
Matrix: Potable Water
Free Chlorine: 0.00 mg/L
Preservative: None

Sample ID: IWS-Chittenango Spring

Location: Spring

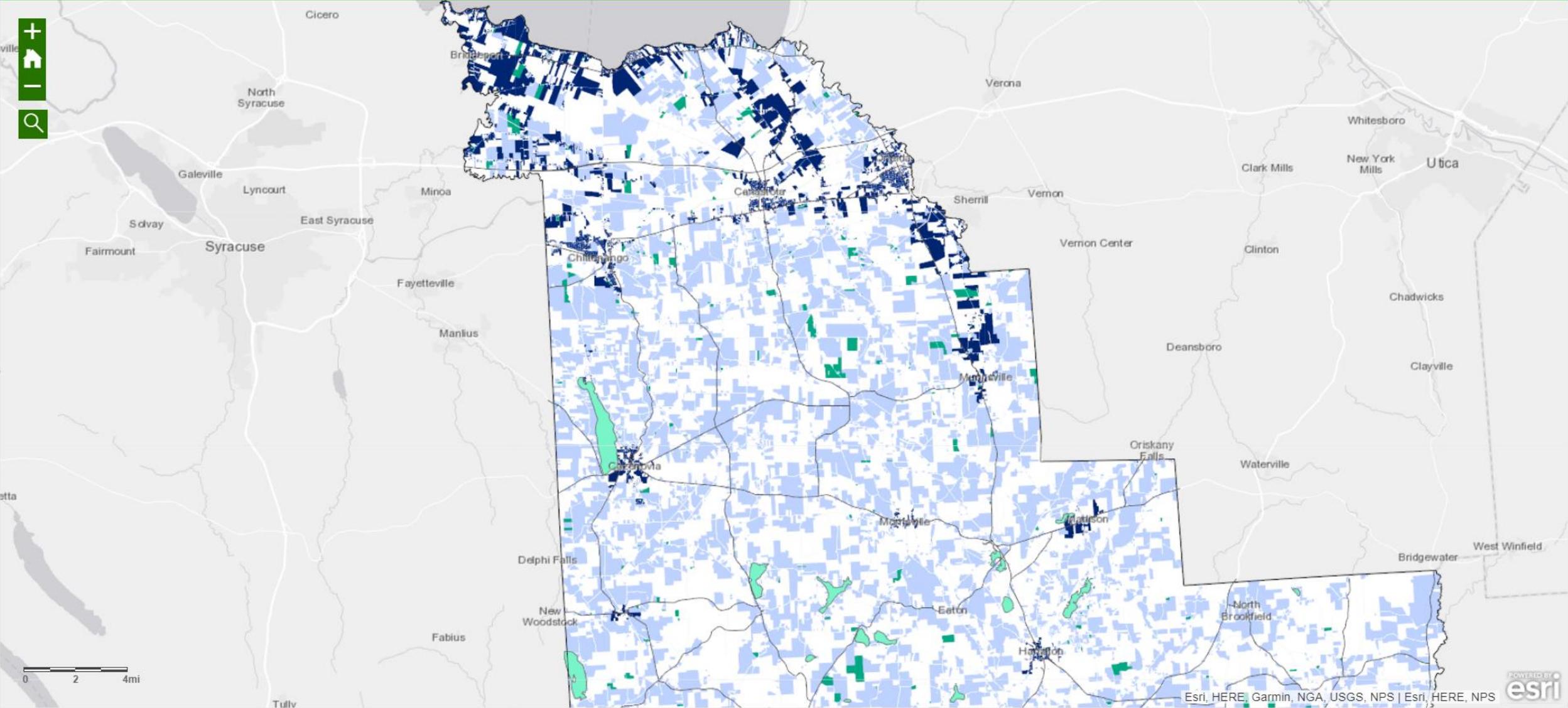
Sample Collector: M. Young
MCDOH

<u>Parameter</u>	<u>Result</u>	<u>Method</u>	<u>Analysis Date/Time</u>
Total Coliform	Positive (Too Numerous To Count)	SM 18-22 9222B	06/27/17 5:12 pm
<i>E.coli</i>	Positive	SM 18-22 9222B	06/27/17 5:12 pm

Madison County Individual Water Supply Mapping

Legend Details Basemaps Measure Share Layers Print

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Contact Information

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Mike.young@madisoncounty.ny.gov

www.healthymadisoncounty.org

Questions

