



Testing for Water Quality:

Stephanie R. Butcher

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Coweta County Extension Coordinator

Agriculture & Natural Resources Agent

What's in *Your*
Water?





- Types of wells
- Common water quality issues
- When & how to test your well water
- What to do if you find a problem

Types of Wells: Drilled & Bored



**My Well Looks
Kind of Like This**



**My Well Looks
Kind of Like This**

Bored Well



- Shallow; Usually no deeper than 50'
- Large concrete casing 3' across
- Wells that are filled with water from “water table” aquifers
- Generally more susceptible to contamination than drilled wells
- Not much better than hand dug wells

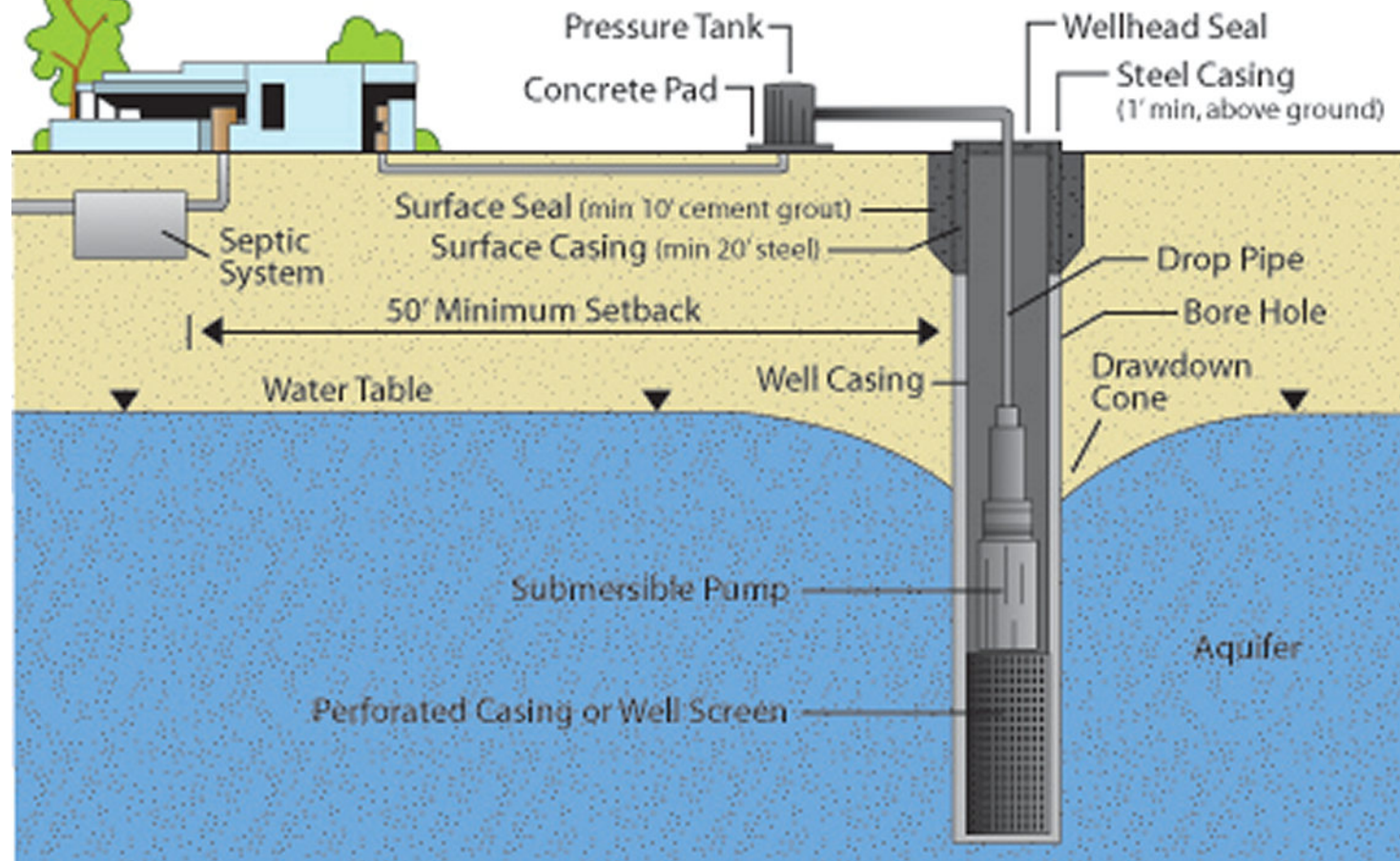
Drilled Well



**My Well Looks
Kind of Like This**

- Deep well >100'
- Small opening about 10"-12"
- Wells that obtain water from aquifers found in fractures of bedrock.
- Generally less susceptible to contamination than bored wells.
- Fewer issues with bacteria

A WELL SYSTEM



Common water quality issues



- Off taste
- Odors
- Discoloration
- Staining fixtures
- “Invisible” problems like bacteria

University of Georgia
Agricultural & Environmental Services Laboratories
Feed and Environmental Water Lab
2300 College Station Road
Athens, GA 30602-4356
(voice) 706-542-7690 (fax) 706-542-1474

County Information

Coweta County
255 Pine Road
Newnan, GA 30263
phone: 770-254-2620
email: uge2077@uga.edu

Total Coliform and *Escherichia coli* Report

Client Name and Address: Name Street City, State, Zip		County Information: County District Staff Contact		Coweta Northwest Stephanie Butcher		
Sample Information: Lab # FEW Sample ID Date sampled Date analyzed Date reported				Sample Location (if different from client address): Street City, State, Zip		
				Client Contact: Phone/Fax Email		
Results:¹	Parameter	Method²	Units³	Your Results	Standard⁴	Interpretation⁴
	Total Coliform	APHA 9223 B	MPN/100-ml	>200.5	none present	not acceptable
	<i>Escherichia coli</i> (<i>E.coli</i>)	APHA 9223 B	MPN/100-ml	5.3	none present	not acceptable

- Results and interpretations are based on the analysis of a sample collected by the client, delivered to the lab, and analyzed within 30 hours of the collection time provided by the client.
- American Public Health Association, Standard Methods for Examination of Water and Wastewater 20th Edition.
- Most Probable Number (MPN) is the statistical method for enumerating bacteria when using a multiple fermentation tube method and is equivalent to colony forming units (CFU).
- According to the Total Coliform Rule established by the U.S. Environmental Protection Agency (EPA) for small public drinking water systems, total coliform must not be present in more than 5% of samples tested (>1 in 20 samples) and *E. coli* must never be present. Private drinking water wells should conform to this rule and since less than 20 samples will be analyzed each year, total coliform and *E. coli* should not be present (absent).

Analyzed by: _____

Reported by: _____

Reviewed by: _____

“In 2019, 50% of private water wells that were analyzed for bacteria in Coweta County tested positive for coliform and/or *E. coli*.”

Down Well Camera



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Well Camera Image



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When & How to Test

- When a new well is installed
- Hasn't been tested in the past 3 years
- Someone complains of gastrointestinal problems
- Pregnancy
- Infants and/or elderly
- Noticeable difference in water following heavy rains
- Fertilizer/Pesticide/Fuel spills within 500'
- Neighbors have problems with well water

Bacteria Test Bottle

→ → → →



<https://www.epa.gov/privatewells/protect-your-homes-water>

Common Water Tests

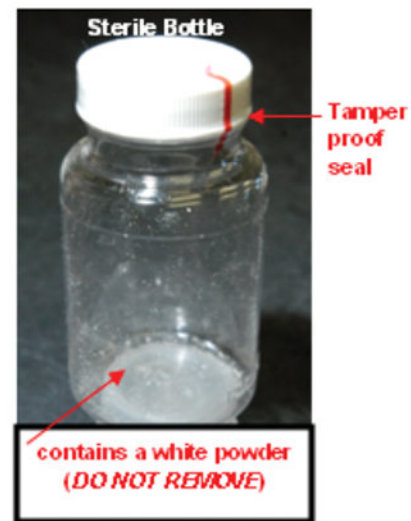
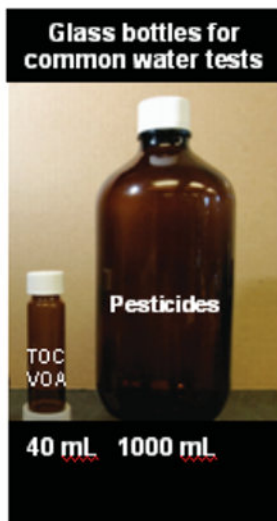
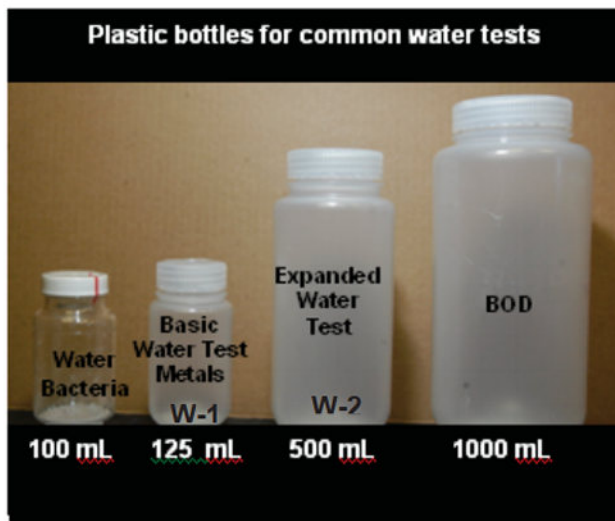
Expanded Water Test (\$60 plus shipping)

- Addresses common well water problems in Georgia such as corrosion and scaling, high levels of iron and manganese, and more.

Repeat every 3 years

Basic Water Test (\$20 plus shipping)

- Only after W2, repeat annually.



Common Water Tests

Microbiological (Bacteria) Test (\$36 plus overnight shipping)

- Tests for total coliform and *E. coli* bacteria. Repeat annually.

Lead (\$40 plus shipping)

- Initially and semi-annually if house was built before 1985 as pipes can contain solder.

Arsenic (\$40 plus shipping)

- **South Georgia** or if you have reason to be concerned.

Uranium (\$40 plus shipping)

- **North Georgia** or if you have reason to be concerned.

Radon (\$30 plus shipping)

- **North Georgia** or if you have reason to be concerned.



Common Water Tests

Recreational Water Test



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Test Results

Primary Standards (MCL)

*Based on health considerations to protect from:

- 1.) toxic pollutants: microbial pathogens,
- 2.) radioactive elements,
- 3.) organic, inorganic chemicals



Soil, Plant, and Water Laboratory
2400 College Station Road
Athens, Georgia 30602-9150
Web site: <http://aesl.ces.uga.edu>

Water Analysis Report

(CE/CSEA Signature)

Sample ID Client Information [Redacted] Sample: 01 Type: Household Well	Lab Information Lab #762 Completed: Aug 26, 2008 Printed: Oct 21, 2008	County Information Coweta County P O Box 819 Newnan, GA 30264 phone: 770-254-2620 e-mail: uge20777@uga.edu
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Results

pH: 7.0 (Desired pH range 6.5 to 8.5)

Calculated Hardness: 22 ppm (1.3 gr/gal) - Slightly Hard Water -

(Water hardness is due to the presence of certain dissolved minerals, primarily calcium and magnesium.)

Element	Concentration in Sample	EPA Maximum Level*	Element	Concentration in Sample	EPA Maximum Level*
Aluminum (Al)	negligible	0.2 ppm (S)	Sodium (Na)	7.1 ppm	No Set Maximum
Boron (B)	negligible	No Set Maximum	Zinc (Zn)	0.01 ppm	5.0 ppm (S)
Cadmium (Cd)	negligible	0.005 ppm (P)			
Calcium (Ca)	5.4 ppm	No Set Maximum			
Chromium (Cr)	negligible	0.1 ppm (P)			
Copper (Cu)	negligible	1.0 ppm (S) 1.3 ppm (P)			
Iron (Fe)	negligible	0.30 ppm (S)			
Magnesium (Mg)	2.2 ppm	No Set Maximum			
Manganese (Mn)	negligible	0.05 ppm (S)			
Molybdenum (Mo)	negligible	No Set Maximum			
Nickel (Ni)	negligible	No Set Maximum			
Phosphorus (P)	negligible	No Set Maximum			
Potassium (K)	1.1 ppm	No Set Maximum			
Silica (SiO ₂)	44.79 ppm	No Set Maximum			

* The letter (P) beside an EPA Maximum Level indicates that EPA has established a primary drinking water standard for this element. These are elements which have been shown to cause adverse health effects. The letter (S) indicates that EPA has established a secondary drinking water standard for this element. These elements are not generally considered threats to health, but can cause nuisance problems such as staining, tastes or odors.

ppm: Stands for parts per million. One part per million is equivalent to 1 pound of an element dissolved in 1,000,000 pounds of water. One part per million is the same as one milligram per liter (mg/L).

NOTE: This test does not imply that this water is safe from bacteria or other chemicals that may be present. If you have concerns in these areas, contact your County Extension Agent.

All elements tested are within the permissible limits established for drinking water.

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Test Results

Secondary Standards (MCL)

*Offensive taste, odor, color, corrosivity, foaming and staining.



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Example:

Copper (Cu)	3.13 ppm ^d	1.0 ppm (S) 1.3 ppm (P)
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^d **Copper (Cu)**

The concentration of copper in this sample exceeds EPA's regulated primary maximum contaminant level of 1.3 parts per million (ppm). **The EPA has concluded that copper levels in excess of 1.3 ppm may cause gastrointestinal distress. Long-term exposure may lead to liver or kidney damage. Those with Wilson's Disease should consult their personal doctor.**

The concentration of copper in this sample also exceeds EPA's secondary maximum contaminant level of 1.0 parts per million (ppm). Copper can cause water to have a bitter or metallic taste and also causes blue-green stains on plumbing fixtures.

Since naturally occurring copper rarely exceeds 0.2 ppm, the most likely source is corrosion of copper pipes. Although very infrequent, copper may also occur in drinking water from contamination of the water source. Contamination sources include leaching of wood preservatives or erosion of natural deposits.

Corrosion of copper and brass plumbing is greatest in acidic water with low hardness. Some plumbing fixtures that contain copper may also contain lead. The corrosion process that causes high levels of copper can also cause excessive lead levels. It is recommended that you resample the well to verify the high copper level and also request a lead test. If copper levels are found to be consistently above the EPA maximum level, steps should be taken to reduce corrosion. On resampling, use the first draw sampling procedure for the lead test.

This problem can usually be corrected by increasing the pH of water before it enters the copper pipes. Installing a neutralizing tank can increase the water pH and reduce corrosion of the plumbing. If pH neutralization is undertaken, calcium/magnesium based neutralizers are recommended.



What if you find a problem?

- If possible, locate and eliminate the source(s) of contamination
- Install an appropriate treatment system
- Install a new well with expert guidance
- Connect with a public water system (if available)
- Use bottled water



<https://www.centralpasoftwater.com/blue-green-water-stains>

Frequently Asked Questions

➤ Can you just test my water for everything?



<https://www.tvfanatic.com/2018/03/cbs-set-season-finale-dates-for-the-big-bang-theory-ncis-and-mor/>

Frequently Asked

- Can I just pour a bottle of bleach in my well every now and then and call it good?
- What does negligible mean on my water report?
- My parents have been drinking this water for 35 years and have never had it tested, so it must be okay, right?



Resources

- UGA Household Water Quality Publications
 - Testing, Filtration Systems, Shock Chlorination, Radon, Uranium, Lead, etc.
 - <http://aesl.ces.uga.edu/publications/watercirc/>
- Your Local Extension Office
 - <https://extension.uga.edu/county-offices.html>
 - 1-800-ASK-UGA1
 - Connects you to the County Extension office where your phone is registered.



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