

# Tips on Understanding Your Water Test Results

**Purpose:** This document will assist you in understanding your water test results. It is offered for use as a reference document to serve as a tool for continuous improvement in our communications and stewardship with the public.

While the formatting of reports may differ depending on the laboratory doing the analysis, most will contain some of the elements discussed in this fact sheet. A laboratory report at a minimum will contain water test results and will include the name and location of the independent laboratory providing your sample results.

## Results Section - Analysis Report/Client Sample Results

- **Client Sample ID/Sample ID** is a unique number that is designated by the sample collector that follows your sample through the laboratory and reporting process.
- **Matrix** is the type of sample that was collected, for example: groundwater, surface water, etc.
- The list of the substances that is tested in the sample is typically labeled as **Analysis Name, Parameter, or Analyte**.
- Some laboratories also include a **Chemical Abstract Services (CAS) Number** which is a unique identifier for each substance.
- **Analysis Method** – Identifies the approved analytical methods used by the laboratory to analyze your sample.
- **Your Results** are presented in the column labeled “Result”.
- If there is an “ND” (nondetect) or a less than symbol (<) in front of the number, this means the substance was not detected above the **Reporting Limit (RL)** or **Quantitation Limit (QL)** (which are the lowest levels that the laboratory can report with confidence). This means the laboratory instruments did not detect this substance in your sample above this level.
- **Unit** is the unit of measurement for the amount of substance in your sample. Most water test results are reported in **mg/L** (one milligram per liter which is equal to one part per million or 1 ppm) or **ug/L** (one microgram per liter which is equal to one part per billion or 1 ppb).
- The **Qualifier/Flag** is a symbol to tell you that there are additional notes provided about that substance result. Each report should have a reference section to explain all qualifiers/ flags included in your report.
- **Additional notes:** A summary of positive detections related to your data package may be provided for convenience.
- Some Results sections may include **Surrogate Recoveries**. These are not your sample results. They are chemicals added by the laboratory for quality control purposes to measure the laboratory’s ability to detect target substances in the sample.

## Quality Control (QC) Section - QC Results/Quality Control Data

Quality control samples are used by the oil and gas operator, their consultant and the laboratory to verify the accuracy and precision of your sample results and may or may not be reported along with your water test results. Examples of quality control information that may be included in your laboratory report are:

- **Laboratory Method Blank** – This is a sample prepared by the laboratory using ultra-pure water to verify that the laboratory analytical process does not introduce the substances being measured.
- **Laboratory Control Sample (LCS)** – This is a laboratory blank sample “spiked” in the laboratory with a known amount of target substances being tested in your sample. These samples show that the laboratory can accurately detect the substances in a clean sample.
- **Matrix Spike (MS)** – This is an actual water sample, randomly selected and “spiked” in the laboratory with a known amount of the target substances being tested in your sample. These samples show that the laboratory can accurately detect the substances in an actual water sample.
- **Matrix Spike Duplicate (MSD)** – This sample is the same as the MS, but is used to show that the laboratory can accurately and precisely duplicate results in an actual water sample.
- **Duplicate (DUP)** – This is an actual water sample analyzed twice to show that the laboratory can accurately and precisely duplicate the measurement.

## Chain of Custody (COC)

This is the form that is filled out by the sample collector to provide the laboratory with information and instructions for your sample. The Client Sample ID/Sample ID on your water test results must match the number in the Sample Identification column on the COC.

- The COC documents the person who collected the sample along with the date and time of collection. It also notes the requested analysis the laboratory was to perform and shows the custody history of the sample from collection to receipt in the laboratory.

If you have specific questions about your results, you can contact the Water Systems Council - Wellcare Hotline at (888) 395-1033 or your state regulatory agency.

## References:

The following is a collection of links that can provide a solid overview of groundwater and how to get additional questions answered.

## General:

- USEPA (Private Drinking Water Wells): <http://water.epa.gov/drink/info/well/index.cfm>
- American Ground Water Trust: <https://agwt.org/>

- National Ground Water Association: <http://www.wellowner.org/>
- Water Systems Council: <http://watersystemscouncil.org>
- Master Well Owner Network: <http://mwon.cas.psu.edu/>

#### State-Specific:

##### Pennsylvania:

- Department of Environmental Protection -  
[http://www.depweb.state.pa.us/portal/server.pt/community/private\\_water\\_wells/20690](http://www.depweb.state.pa.us/portal/server.pt/community/private_water_wells/20690)
- Penn State Extension –  
<http://pubs.cas.psu.edu/freepubs/pdfs/agrslll.pdf>

##### Ohio:

- Division of Drinking & Ground Water -  
[www.epa.ohio.gov/ddagw/](http://www.epa.ohio.gov/ddagw/)
- Department of Health –  
<https://odh.ohio.gov/know-our-programs/private-water-systems-program/Private-Water-Systems-Program>

##### West Virginia:

- Department of Health & Environmental Health Services –  
<https://oehs.wvdhhr.org/phs/public-health-sanitation/individual-water-supplies/>

##### New York:

- State Department of Health –  
<http://www.health.state.ny.us/environmental/water/drinking/>
- Fact Sheets –  
[https://www.health.ny.gov/environmental/water/drinking/regulations/fact\\_sheets/](https://www.health.ny.gov/environmental/water/drinking/regulations/fact_sheets/)