

# Understanding Sample Test Results

## Example of a General Sample Report

For internal use by the Department

This specifies who within Department is to receive the results

The name of the person who collected the sample

Date and time sample was collected

Unique identifier assigned to each property address

The sample was tested to see if it contained substances in this column

This describes the type of sample collected

This is the type of test that was used

Missouri Department of Natural Resources  
 Environmental Services Program  
 PO Box 176 Jefferson City MO 65102-0176

**RESULTS OF SAMPLE ANALYSES**

LDPR/Job Code: [REDACTED] Program, Contact: [REDACTED]

Each sample has a unique number assigned by the sample collector

Order ID: [REDACTED]



Report Date: 5/6/2019

Date report was generated

Sample: [REDACTED] Customer #: 15129 County: Cole  
 Collect Date: [REDACTED] Site: Mine Site Collector: [REDACTED] Affiliation: ESP  
 Sample Location: [REDACTED] Project: INTEG

Comments: Grab; Well water collected from [REDACTED] spigot nearest well head in barn.  
 Addendum: Collector requested individual sample reports.

Test	Parameter/Method	Result	Units	Qualifier(s)
200.7 Metals - Direct Analysis	Iron/EPA 200.7	<5.00	µg/L	ND
200.7 Metals - Total Recoverable	Iron/EPA 200.7	18.5	µg/L	
200.8 Metals - Direct Analysis	Aluminum/EPA 200.8	<10	µg/L	ND
200.8 Metals - Direct Analysis	Arsenic/EPA 200.8	<1	µg/L	ND
200.8 Metals - Direct Analysis	Cadmium/EPA 200.8	0.48	µg/L	
200.8 Metals - Direct Analysis	Lead/EPA 200.8	<1	µg/L	ND
200.8 Metals - Direct Analysis	Manganese/EPA 200.8	<1	µg/L	ND
200.8 Metals - Total Recoverable	Aluminum/EPA 200.8	<10	µg/L	ND
200.8 Metals - Total Recoverable	Arsenic/EPA 200.8	<1	µg/L	ND
200.8 Metals - Total Recoverable	Cadmium/EPA 200.8	0.42	µg/L	
200.8 Metals - Total Recoverable	Lead/EPA 200.8	1.86	µg/L	
200.8 Metals - Total Recoverable	Manganese/EPA 200.8	<1	µg/L	ND
Field pH	Field pH/EPA 150.1	7.52	pH Units	
Field Specific Conductivity	Field Specific Conductivity/SM 2510	445 uS/cm		
Field Temperature	Field Temperature/EPA 170.1	15.1 C		
Total Suspended Solids (TSS) / NFR	Total Suspended Solids (TSS) / NFR/SM 2540-D	<5	mg/L	06, ND

County where the sample was collected

Description of sample location

The unit of measure for each test result is shown in this column. See Common Notations below.

Data qualifier code related to the value in the "Result" column. See description at bottom of report for each qualifier code.

The analysis of this sample was performed in accordance with procedures approved or recognized by the U. S. Environmental Protection Agency.

*Kevin Thoenen*  
 Kevin Thoenen,  
 Laboratory Manager  
 Environmental Services Program  
 Division of Environmental Quality

Data Qualifier(s)	Description
06	Estimated value, QC data outside limits
ND	Not detected at reported value

The results of each are shown here. The numbers are compared to either a sample from an uncontaminated area or a specific health-based standard before drawing conclusions. See Common Notations below.

### Common Notations

- < A symbol meaning "less than". It means a substance could not be detected by laboratory instruments. The number following the symbol indicates the instrument's lowest possible setting for the substance.
- µg/kg This means micrograms per kilogram. This measurement is generally used with soil samples. It is also referred to as parts per billion (ppb).
- mg/kg This means milligrams per kilogram. This measurement is generally used with soil samples. It is also referred to as parts per million (ppm).
- µg/L The means micrograms per liter. This measurement is generally used with water samples. It is also referred to as parts per billion (ppb).
- mg/L This means milligrams per liter. This measurement is generally used with water samples. It is also referred to as parts per million (ppm).

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### Missouri Department of Natural Resources

#### Understanding the “Result” Column of Sample Analysis Reports

Chemists use complex instruments to analyze samples. Sometimes the substance of concern is not present in high enough concentrations for the instrument to “see” or detect. If a substance was not detected by the laboratory’s instrument, it may be reported in one of two ways. You may see a “less than” or left pointing arrow (<) followed by a number in the results column. Alternatively, there may be a value with no arrow followed by an “ND” in the Qualifier column to the right of the number.

In each of these cases, the number in the Result column for that parameter is the Method Detection Limit (MDL) for that substance. So, for example, if the substance Trichloroethene (TCE) on the sample analysis report has “1.0” in the Results column, “ND” in the Qualifier column, and “µg/l” in the Units column, it means the lab instruments did not detect any TCE in this sample at or above 1.0 µg/L. The MDLs sometimes differ because the instruments vary in sensitivity to each substance.

If a substance was detected in the sample, you will see a number in the Results column without a “less than” arrow beside it, and without an “ND” in the Qualifier column. These numbers require careful interpretation. In order to determine whether the chemical is present at a concentration that may be of concern, the number should be compared to a specific health-based benchmark. The department staff evaluating your results will conduct these comparisons and provide more information for any chemicals detected above these benchmarks.

We hope this guide proves helpful. For more information please call the Superfund Section of the Environmental Remediation Program at 573-751-4187.