



CAP Guide to Quality Assurance and Data Grades

General Information

The data provided within AquaPortal is intended to provide general information to the public and CAP Stakeholders. It is essential for the end user to recognize the limitations and inherent variability of water quality data, as it is easily affected by sample collection and analysis methods, accuracy of sensors, and QA/QC processes. Although efforts are made to ensure the accuracy of the information contained, users should use caution when making decisions based on the data.

Grab Samples (Laboratory Analysis)

Grab samples are collected and handled by CAP Water Quality technicians based on EPA recommended techniques. Sample analyses are performed by an appropriately licensed third-party water quality laboratory.

All grab sample (lab) data presented in AquaPortal have been quality checked by laboratory QA/QC procedures. In addition, extreme outliers are identified by CAP data reviewers using both graphical and statistical (IQR x 3 method) techniques. Prior to uploading data into AquaPortal, the validity of extreme outliers is investigated. If it is determined that an outlier is "bad data", it is removed from the data set.

Parameters that are reported as Non-Detectable are assigned a value of 50% of the laboratory reporting limit (MRL).

Laboratory data does not receive a grade in AquaPortal, rather it is designated by the system default as "Unspecified". This is a system setting and currently cannot be changed - CAP is working with the software developer to modify this feature.

Field Measurements

Field data is collected simultaneously with laboratory data using a multiparameter sonde. Although sondes are calibrated each month, they are prone to data inaccuracies. The field measurements are visually error checked by CAP data reviewers prior to uploading. Similar to laboratory data, discrete field measurements are not assigned a grade code.

Continuous Monitoring (Real-Time Data)

Continuous monitoring is accomplished through multiparameter sondes and dedicated sensors. This time-series data is uploaded to AquaPortal hourly via SCADA, but has not been error-checked prior to uploading and should be interpreted with caution. All new data is assigned a grade of “Unverified” until it can be quality checked against laboratory and/or field data. Since it takes approximately 6-8 weeks for laboratory measurements to be reported, continuous data may be adjusted for inaccuracy and drift, and subsequently graded, up to 8 weeks after initial posting.

The USGS standards for grading data (see below) are used to assign grades to CAP continuous water quality data. When comparing continuous data to laboratory/field data, values that fall into the “Good” category are graded as such. If a block of data falls into the “Fair” or “Poor” categories, it is assumed that the sensor has drifted and the data is adjusted to correspond with known values. The adjusted data is assigned a grade of “Estimated - Good”. If individual points vary from known values, the appropriate grade is assigned based on the deviation from lab/field verified data.

If there are communication or sensor errors that return a value of “0”, that data is removed from the data set and is displayed as a gap in the associated chart.

	Deviation from Lab/Field Verified Data		
<i>Field Parameter</i>	Good	Fair	Poor
<i>Temperature</i>	0.0 - 0.9°F	1.0 - 1.4°F	> 1.4°F
<i>Conductivity</i>	0 - 10%	10.1 - 15%	> 15%
<i>pH</i>	0.0 - 0.5 SU	0.51 - 0.8 SU	> 0.8 SU
<i>DO</i>	0.0 - 0.5 mg/L	0.51 - 0.8 mg/L	> 0.8 mg/L
<i>TDS</i>	0 - 10%	10.1 - 15%	> 15%
<i>Turbidity</i>	0.0 - 1.0 NTU (or 10%)	1.1 - 1.5 NTU (or 15%)	>1.5 NTU (or 15%)

Additionally, continuous data is more generally categorized as “Typical CAP Range” or “Above/ Below Typical CAP Range”, which indicates if a particular value is within the historic 95th percentile range for CAP data. These categories are color-coded and are visible in legends for gauges and map values.