NC DEQ WSS LAB
DATA QUALIFIER CODES

Symbol	Definition
A	Value reported is the mean (average) of two or more determinations. This code is to be used if the results of two or more discrete and separate samples are averaged. These samples shall have been processed and analyzed independently (e.g. field duplicates, different dilutions of the same sample). This code is not required for BOD, coliform or acute/chronic metals reporting since averaging multiple results for these parameters is fundamental to those methods or manner of reporting. 1 The reported value is an average, where at least one result is qualified with a "U". The PQL is used for the qualified result(s) to calculate the average.
B	Results based upon colony counts outside the acceptable range and should be used with caution. This code applies to microbiological tests and specifically to **membrane filter (MF)** colony counts. It is to be used if less than 100% sample was analyzed and the colony count is generated from a plate in which the number of colonies exceeds the ideal ranges indicated by the method. These ideal ranges are defined in the method as: *Fecal coliform or Enterococcus bacteria: 20-60 colonies Total coliform bacteria: 20-80 colonies* 1 Countable membranes with less than 20 colonies. Reported value is estimated or is a total of the counts on all filters reported per 100 ml. 2 Counts from all filters were zero. The value reported is based on the number of colonies per 100 ml that would have been reported if there had been one colony on the filter representing the largest filtration volume (reported as a less than "<" value). 3 Countable membranes with more than 60 or 80 colonies. The value reported is calculated using the count from the smallest volume filtered and reported as a greater than ">" value. 4 Filters have counts of both >60 or 80 and <20. Reported value is estimated or is a total of the counts on all filters reported per 100 ml. 5 Too many colonies were present; too numerous to count (TNTC). TNTC is generally defined as >150 colonies. The numeric value represents the maximum number of counts typically accepted on a filter membrane (60 for fecal or enterococcus and 80 for total), multiplied by 100 and then divided by the smallest filtration volume analyzed. This number is reported as a greater than value. 6 Estimated Value. Blank contamination evident. 7 Many non-coliform or non-enterococcus colonies or interfering non-coliform or non-enterococcus growth present. In this competitive situation, the reported value may under-represent actual density. Note: A "B" value shall be accompanied by justification for its use denoted by the numbers listed above (e.g., B1, B2, etc.). Note: A "J2" should be used for spiking failures.
C	Total residual chlorine was present in sample upon receipt in the laboratory; value is **estimated**. Generally applies to cyanide, phenol, NH3, TKN, coliform, and organics.
G	A single quality control failure occurred during biochemical oxygen demand (BOD) analysis. The sample results should be used with caution. 1 The dissolved oxygen (DO) depletion of the dilution water blank exceeded 0.2 mg/L. 2 The bacterial seed controls did not meet the requirement of a DO depletion of at least 2.0 mg/L and/or a DO residual of at least 1.0 mg/L. 3 No sample dilution met the requirement of a DO depletion of at least 2.0 mg/L and/or a DO residual of at least 1.0 mg/L. 4 Evidence of toxicity was present. This is generally characterized by a significant increase in the BOD value as the sample concentration decreases. The reported value is calculated from the highest dilution representing the maximum loading potential and should be considered an **estimated** value. 5 The glucose/ glutamic acid standard exceeded the range of 198 ± 30.5 mg/L. 7 Less than 1 mg/L DO remained for all dilutions set. The reported value is an **estimated** greater than value and is calculated for the dilution using the least amount of sample. 8 Oxygen usage is less than 2 mg/L for all dilutions set. The reported value is an **estimated** less than value and is calculated for the dilution using the most amount of sample. 9 The DO depletion of the dilution water blank produced a negative value. 10 The cBOD value is greater than the BOD value. Note: A "G" value shall be accompanied by justification for its use denoted by the numbers listed above (e.g., G1, G2, etc.).

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J	**Estimated** value; value may not be accurate. This code is to be used in the following instances: 1 Surrogate recovery limits have been exceeded. 2 The reported value failed to meet the established quality control criteria for either precision or accuracy. 3 The sample matrix interfered with the ability to make any accurate determination. 4 The data is questionable because of improper laboratory or field protocols (e.g., composite sample was collected instead of grab, plastic instead of glass container, etc.). 5 Temperature limits exceeded (samples frozen or >6°C) during transport or not verifiable (e.g., no temperature blank provided): non-reportable for NPDES compliance monitoring. 6 The laboratory analysis was from an unpreserved or improperly chemically preserved sample. The data may not be accurate. 7 This qualifier is used to identify analyte concentration exceeding the upper calibration range of the analytical instrument/method. The reported value should be considered estimated. 8 Temperature limits exceeded (samples frozen or >6ºC) during storage, the data may not be accurate. 9 The reported value is determined by a one-point estimation rather than against a regression equation. The estimated concentration is less than the laboratory PQL and greater than the laboratory method detection limit. 10 Unidentified peak; estimated value. 11 The reported value is determined by a one-point estimation rather than against a regression equation. The estimated concentration is less than the laboratory PQL and greater than the instrument noise level. This code is used when an MDL has not been established for the analyte in question. 12 The calibration verification did not meet the calibration acceptance criterion for **field parameters**. Note: A "J" value shall be accompanied by justification for its use denoted by the numbers listed above (e.g., J1, J2, etc.). A "J" value shall not be used if another code applies (e.g., N, V, M).
M	Sample and duplicate results are "out of control". The sample is non-homogenous (e.g., VOA soil). The reported value is the lower value of duplicate analyses of a sample.
N	Presumptive evidence of presence of material; **estimated** value. This code is to be used if: 1 The component has been tentatively identified based on mass spectral library search. 3 This code shall be used if the level is too low to permit accurate quantification, but the estimated concentration is less than the laboratory PQL and greater than the laboratory method detection limit. This code is not routinely used for most analyses.
P	Sample dilution occurred due to either matrix interference or target analytes being present at concentrations greater than the calibration curve. Reported target analyte values are obtained from results which were bracketed by the calibration curve. For example, "P10" in sample comments would indicate that a 10x dilution was performed to obtain the reported result.
Q	Holding time exceeded. These codes shall be used if the value is derived from a sample that was received, prepared and/or analyzed after the approved holding time restrictions for sample preparation and analysis. The value does not meet NPDES requirements. 1 Holding time exceeded prior to receipt by lab. 2 Holding time exceeded following receipt by lab.
S	Not enough sample provided to prepare and/or analyze a method-required matrix spike (MS) and/or matrix spike duplicate (MSD).
U	Indicates that the analyte was analyzed for, but not detected above the reported PQL. The number value reported with the "U" qualifier is equal to the laboratory's PQL*. If the "P" qualifier is reported with this "U" qualifier, then the reported PQL elevated.
UU	Indicates that the analyte was not detected by a screen analysis. The number value reported with the "UU" qualifier is equal to the laboratory's PQL. The number value was determined by a one-point estimation at the PQL, rather than against a regression equation.

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V	Indicates the analyte was detected in both the sample and the associated blank. Note: The value in the blank shall not be subtracted from the associated samples. 1 The analyte was detected in both the sample and the method blank. 2 The analyte was detected in both the sample and the field blank
X	Sample not analyzed for this constituent. This code is to be used if: 1 Sample not screened for this compound. 2 Sampled, but analysis lost or not performed-field error. 3 Sampled, but analysis lost or not performed-lab error. Note: an "X" value shall be accompanied by justification for its use by the numbers listed.
Y	Elevated PQL due to insufficient sample size.
Z	The sample analysis/results are not reported due to: 1 Inability to analyze the sample. 2 Questions concerning data reliability. Note: The presence or absence of the analyte cannot be verified.

Supporting Definitions listed below

MDL	A Method Detection Limit (MDL) is defined as the minimum concentration of a substance that can be measured and reported with 99 percent confidence that the true value is greater than zero and is determined in accordance with 40 CFR Part 136, Appendix B.
ML	Minimum Levels are used in some EPA methods. A Minimum Level (ML) is the lowest level at which the entire analytical system must give a recognizable signal and acceptable calibration point for the analyte. It is equivalent to the concentration of the lowest calibration standard, assuming that all method - specified sample weights, volumes, and cleanup procedures have been employed. The ML is calculated by multiplying the MDL by 3.18 and rounding the result to the nearest factor of 10 multiple (i.e., 1, 2, or 5). For example, MDL = 1.4 mg/L; ML = 1.4 mg/L x 3.18 = 4.45 rounded to the nearest factor of 10 multiple (i.e., 5) = 5.0 mg/L
PQL	The Practical Quantitation Limit (PQL) is defined as the lowest concentration that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions. PQLs are subjectively set at some multiple of typical MDLs for reagent water (generally 3 to 10 times the MDL depending upon the parameter or analyte and based on the analyst's best professional judgement, the quality and age of the instrument and the nature of the samples) rather than explicitly determined. PQLs may be nominally chosen within these guidelines to simplify data reporting and, where applicable, are generally equal to the concentration of the lowest non-zero standard in the calibration curve. PQLs are adjusted for sample size, dilution and % moisture. For parameters that are not amenable to MDL studies, the PQL may be defined by the sample volume and buret graduations for titrations or by minimum measurement values set by the method for method-defined parameters (e.g., BOD requires a minimum DO depletion of 2.0 mg/L, fecal coliform requires a minimum plate count of 20 cfu, total suspended residue requires a minimum weight gain of 2.5 mg, etc.). Additionally, some EPA methods prescribe Minimum Levels (MLs) and the lab may set the PQL equal to this method-stated ML. Determination of PQL is fully described in the laboratory's analytical Standard Operating Procedure (SOP) document.