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Standard Operating Procedure for Data Comments

Access to this SOP shall be available within the laboratory for reference purposes; the official copy of this SOP resides on the official Georgia EPD website at https://epd.georgia.gov/about-us/epd-laboratory-operations. Printed copies of this SOP will contain a watermark indicating the copy is an uncontrolled copy.

1 Scope and Application

1.1 EPD Laboratories provides data reports for many different applications. These reports are used for compliance and enforcement purposes and require an extraordinary amount of quality control (QC). When a problem arises that requires an explanation, these comments must be concise and consistent.

1.2 In order to provide consistent comments, a list of common responses to QC problems has been provided. These comments require minimal editing from the analyst before entering them in the LIMS report's comments section for the client.

1.3 Comments will generally be placed under the test code of the analysis failure, such as $R_$826BW for Matrix Spike recovery comments. However, extraction and/or digestion test codes are not reportable. The comments under these test codes will not show up on the final report. The most common comment that is left out is; "Insufficient Sample for MS/MSD". To remedy this, place any extraction/digestion comments under the test code for the analysis ($8081H, $827CW, $ICP_S, etc).

2 Definitions

2.1 Refer to Section 4, **Procedure** for a list of comment examples, and to Chapter 3 of the Georgia EPD Laboratory Quality Assurance Manual for Quality Control Definitions.

3 Quality Control

3.1 Defined by appropriate method referenced in report.

4 Procedure

4.1 The list in Appendix A is a general outline of comments for common problems associated with a specific laboratory's analyses. It is important to follow the structure of the comment and add only necessary information. All comments are designed to be as consistent as possible. Therefore, only additions of recovery amounts, limits, or analyte names should be added, except in unusual circumstances. If a comment for a sample or QC is required that is not covered in the Appendix A list, it should be approved by the QA Manager or appropriate Laboratory Manager in his absence before validating the package. It should be sent as an e-mail. This will allow compilation of comments that will expand the list in the next revision of this SOP.

4.2 Comments should have a Test Code at the beginning. This code is usually the analysis test code, LCS recovery test code, LCS precision test code, MS recovery test code, MS precision test code, or the Blank test code. The comment should always be placed under "test comments" or "analysis comments". Never use "sample comments". This has two purposes. It localizes the comment to the sample in question and provides a consistent location for easy editing.

4.3 If a qualifier flag(s) (such as E, J or B) is used, it should be defined as an estimated value, etc. and the reason for the flag. Separate qualifier flags with commas or spaces. Do not use quotes or double quotes around qualifier flags because these will interfere with data exports.

4.4 If an analyte (a spike, surrogate, or internal standard compound) has a value outside established control limits, it should be listed in the comment with control limits. For example:

> $R_8260W –EPA8260C - Matrix Spike had one compound, benzene (45% recovery, limits 84-115%), with a percent recovery outside acceptable control limits due to matrix interferences. LCS results were within acceptable control limits. 7-100401-51

The reason for the failing result should also be given, if known. A notation that the LCS results were within acceptable control limits is also necessary, if they pass. If the LCS is outside acceptable limits, this part of the comment should be omitted.

4.5 The Corrective Action number should be placed at the end of the comment. Do not identify the number with a "CA" or any other label. See Section 9.0 of the Laboratory Quality Assurance Plan for further information on generating a Corrective Action.

4.6 If a LCS (recovery) or LCSD (precision) fails, all samples in the associated QC batch must be commented. The comment will be either for recovery failure or precision failure. If all compounds of interest are analyzed by the LCS/LCSD (Drinking Water analyses), the comments and flags can be for individual compounds. Usually the results are marked

as "not analyzed" or <J> flagged as estimated. However, if only a representative mix of compounds are in the LCS/LCSD all compounds accuracy and precision must be within acceptable QC limits or all compounds are flagged with a <J> as estimated. A statement recommending resampling if used for enforcement purposes, is also required in the comment. As mentioned above, all failing compounds must be listed in the comment with measured recoveries and/or precisions, and acceptable limits.

4.7 In contrast, MS or MSD failures are for the QC sample only. All samples in the batch are not commented, unless the method specifically requires the MS/MSD pass. As mentioned above, all failing compounds must be listed in the comment with measured recoveries/precisions, and acceptable limits.

4.8 Dilutions are a special case. If a sample is diluted and analyzed again on the same day, there is no need to flag the compound diluted for with a <D>. However, the comment; "Reporting limits were elevated due to high levels of target and/or non-target compounds" should still be used. The <D> flag is used exclusively if the sample was reanalyzed on a different day than the date of the QC in Labworks. If no indication is made, an audit will show that we reported the result for a dilution on a different day than the analysis set in Labworks. This would be a deficiency. For example, a sample is analyzed for volatiles on 3/4/02 and it requires a dilution for acetone. The sample is analyzed again at a dilution on 3/5/02 and this result is entered in Labworks along with the rest of the compounds. The problem is that Labworks will only enter a single analysis date. Our rule is to use the date with the most compounds analyzed. In order to signify that the acetone was **not analyzed on the same day** a <D> is added to the qualifier column for acetone. A comment is made in the sample analysis test code (in this case, $8260S) stating the following:

<D> - Sample required dilution for this compound. Analyzed on 3/5/02 with all QC in compliance. Reporting Limits elevated due to high levels of target and/or non-target compounds.

OR

<D>- Sample required dilution and elevated Reporting Limits due to high concentrations of target and/or non-target compounds in the sample. Analyzed on 2/19/02 with all QC in compliance.

4.8.1 For samples requiring multiple dilutions the following example comment can be used:

$8081S – EPA8081A - <D1>-analyzed on 4/5/18; <D2>-analyzed on 4/6/18; and <D3>-analyzed on 4/7/18, with all QC in compliance. Reporting limits elevated

due to high concentrations of target and/or non-target compounds in the sample.

4.8.2 Where there are multiple test codes for the same analysis requiring the <D> qualifier the following example comment can be used.

> $508B – EPA 508 - <D> - Test codes $LS508B, $LD508B, $S_508B and $D_508B were analyzed on 4/3/18 with all QC in compliance.

Note that NO corrective action is generated. This is standard methodology for analyses.

4.9 Do not use quotes or double quotes in data fields or comment fields of Labworks. The presence of quotes or double quotes will corrupt exported data if the export format uses quotes/double quotes as field delimiters.

Appendix A

The following list consists of comments for common problems encountered in all laboratories. Do not change the structure or wording if possible. It is important that comments be consistent. There will be exceptions and also commented problems that are not "common". However, using the following structures as a guide will maintain consistency within all laboratories.
Note that the test codes are simply for demonstration. However, the "type" of test code is correct. For example, a low recovery in the matrix spike has the test code for the recovery of the spike, usually $R_xxxx. This number is also a reference for where the comment actually resides in the LIMS (Labworks). It is very time consuming trying to find a comment for editing without this consistency.

For Blank Problems:

$B_8260W – EPA8260B – <B> – Blank has one compound, methylene chloride, with a concentration above the reporting limit (10 ug/L). All associated samples with positive results for methylene chloride will be flagged with a <B> indicating result may be from contamination. 7-021402-001

$8260W – EPA8260B – <B> – Blank contamination, all compounds flagged with a <B> have positive concentrations in the blank that may be from contamination. 7-021402-002

PBTSP-EQL-0995-110 <LB> Laboratory Filter Blank above MDL at 0.898ug/filter. MDL=0.438ug/filter. 2-030218-074

For LCS/LCSD Problems:

$LR8270W – EPA8270C – LCS has 2 compounds, Phenol (10% recovery, limits 16.1-75.3%) and 4-Nitrophenol (6% recovery, limits 10-73.5%) with recoveries outside acceptable control limits. All samples associated with these QC standards will be flagged with a <J> for estimated value. If data is used for enforcement purposes, resampling is recommended. 7-021802-123

$LP8270W - EPA8270C – LCS/LCSD had one compound, Pentachlorophenol (59% RPD, limits ≤ 30%) with a precision outside acceptable control limits. All samples associated with these QC standards will be flagged with a <J> for estimated value. If data is used for enforcement purposes, resampling is recommended. 7-021802-123

For MS/MSD Problems:

NITNAT – EPA 353.2 – Matrix spike recovery of 85.0% is outside control limits of 90-110% due to sample result above MDL but below reporting limit. LCS recovery is within acceptable limits 3-032818

$R_515E – EPA 515.4 – MS had two compounds, Dicamba (151% recovery, limits 70-130%) and Silvex (141% recovery, limits 70-130%), with percent recoveries outside the acceptable control limits due to matrix interferences. LCS results were within acceptable control limits 1-081417-475

EPA Method 508 requires both a MS/MSD for the individual pesticides and a MS/MSD for the multi-peak components such as Toxaphene, Chlordane and PCBs. The following example comment will be used to specify which sample in the batch was spiked for the multi-peak component MS/MSD.

$508 – EPA 508 – PCT spike associated with sample AJ84590.

$3510E – EPA3510 – Insufficient sample for MS/MSD analysis. 1-021802-100

$551T – EPA 551.1 – Insufficient sample available for 2nd MS/MSD. 1-020818-057

$R_1623: EPA Method 1623: Matrix Spike fell below range; however, system is not out of compliance due to LT2 Rule. 8-012115-61

Problems with individual samples:

$8081H – EPA8081A – Sample had one surrogate, DCB (38.6% recovery, limits 40-145%), with a recovery outside the acceptable control limits. TCMX was within acceptable limits. 1-021318-067

$8270W - EPA8270C – Sample had two surrogates, 2-Fluorophenol (0% recovery, limits 10-76.2%) and Phenol-d5 (4% recovery, limits 11-49.6%) with recoveries outside acceptable control limits due to matrix interferences. LCS results are within acceptable control limits. 7-021802-127

SUSSOL-SM2540D – Insufficient sample residue due to insufficient sample filtration volume. 3-021902-156 *For suspended solids residue that is less than 2.5 mg, unless 1000 ml of sample is filtered.

$8260W – EPA8260B – Sample had two internal standards, Fluorobenzene 44% response (limit 50-200%) and Chlorobenzene-d_5 37% response (limit 50-200%) with responses outside acceptable control limits due to matrix interferences. All associated compounds are flagged with a <J>, for estimated values. LCS results are within acceptable control limits. 7-021802-128

BOD – SM5210B – <J> - Estimated value. Dilution insufficient for concentration of demand. 3-021802-021

BOD – SM5210B - <J> - Value Estimated. Sample was analyzed outside of the recommended temperature range due to incubator failure. 3-021902-156

$8260S – EPA8260B - <E> - Estimated value, amount above calibration curve limits. Unable to perform dilution on Encore sampler, calculated amount is above calibration curve limits. 7-021802-130

$8270W – EPA8270C - <D>- Sample required dilution due to high concentrations of target and/or non-target compounds. Reporting Limits elevated due to high levels of target and/or non-target compounds in the sample. Analyzed on 2/19/02 with all QC in compliance.

$8270W – EPA8270C - Reporting Limits elevated due to high concentrations of target and/or non-target compounds in the sample.

$IMS_W – EPA200.8 - Reporting Limit for Zinc elevated due to possible laboratory contamination. Insufficient sample available for reanalysis. LCS results were within acceptable control limits. 2-040101-457

OPHOS – EPA 365.1 - <J> Value Estimated. Results obtained are estimated due to refractive indices likely caused by brackish or saltwater. The analytical method is designed for freshwater samples. 3-021902-156

TURB – EPA 180.1 – <J> - Value Estimated. Sample analyzed outside of method recommended holding time due to laboratory delivery error. 3-021902-157

TURB – EPA 180.1 - <J> - Value Estimated. Sample analyzed outside of method recommended holding time due to UPS delivery error. 3-021902-158

SOURCE-PH-SM4500-H+B – <J> - Value Estimated. pH analysis should be performed in the field immediately after sample collection (Manual for the Certification of Laboratories Analyzing Drinking Water, Table IV-6 Sample Containers, Preservation and Holding Times for Regulated Parameters). 3-121213-497

$8260W – EPA8260B - <J> - Estimated value. Sample received at temperature higher than 4° C. Results are for reference purposes only. If data is intended for enforcement purposes, resampling is recommended. 7-021802-135

$8260W – EPA8260B - <J> - Estimated value. Sample received with excessive headspace in vials. If data is intended for enforcement purposes, resampling is recommended. 7-021802-140

524U – EPA524.2 - <J> - Estimated values, all results flagged with <J> are considered estimated values. Mid-level CCV run after 10 samples had one compound, Nitrobenzene (49% recovery, limits 80% to 120%) with a recovery outside acceptable control limits as stated in UCMR QC manual. 7-021902-156

$8260S - EPA8260B - The non-spiked sample, AD42679, contained no positive detection of acetone and cis-1,2-Dichloroethene. The matrix spike and matrix spike duplicate sample contained concentrations of acetone (74 ug/Kg, 88 ug/Kg) and cis-1,2-Dichloroethene (12 ug/Kg,18 ug/Kg) respectively due to the non-homogenous nature of the Encore soil samples collected.

$8270T – EPA8270C - <D> - Sample required dilution for this compound. Analyzed on 8/14/00 with all QC in compliance. Reporting limit elevated due to high level of target and/or non-target analyte.

$PAMS – EPAPAMS - Compound Not analyzed due to large baseline peak at retention time of target compounds. 7-021902-225

$ICP-F – EPA200.7 - Reporting Limits elevated due to elevated concentrations of target and/or non-target compounds.

$548 – EPA548.1 - <J> - Estimated value, all results flagged with a <J> are considered estimated values. Mid-level CCV, run after 10 samples had a recovery outside acceptable control limits as stated in UCMR QC manual. 1-021902-156

$8081S – EPA8081A - <B> - Lab contamination of DDT in laboratory blank. Reporting Limits elevated to compensate for laboratory blank contamination. 1-081800-211

TCLPV – EPA1311/8260B - Sample unable to reach TCLP regulatory levels due to dilutions required to overcome high levels of target and/or non-target compounds. 7-022602-310

$TO-14 – EPATO14 - Canister Travel Blank for Utoy Creek, taken evacuated to field and returned then filled with zero air in the lab.

1623NF: EPA Method1623: Sample not analyzed due to filter clogging resulting in a filtered volume below requirement. 8-090215-71

EC1623: SM 9223: E-coli sample temperature received outside of the required range. System asked to resubmit. 8-101817-143

FCOL-SM9221-<J> Estimated value. Sample received outside of recommended 8 hour holding time.

FCOL-SM9221-<J> Estimated value. Sample received outside of recommended 24 hour holding time.

TCOL-SM9223-Insufficient holding time. 5-032117-111

The above examples give an idea of what type of information should be included in the comments entered in Labworks. Note that all comments go under the "Analysis Comments" section of the sample report. Also, if there are 6 spike compounds out, each must be listed with the recovery and control limits.