Data Usability Reviews and Documentation for Texas Risk Reduction Program and Petroleum Storage Tank Projects

Based on RG-366/TRRP-13 and RG-411 TCEQ Regulatory Guidance

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Objectives

- Laboratory data review versus independent usability review
- Appropriate level of data review (dependent on decision criteria and importance)
- Laboratory data reporting requirements
- Quality Control (QC) sample information
- Documentation of data usability
  - TRRP Projects: Data Usability Summary (DUS)
  - LPST Projects: QA/QC Summary

Data Review and Reporting: 3 Steps

LABORATORY

- Data Review: Evaluate lab results relative to technical QC acceptance criteria (e.g., criteria based on lab methods and SOPs).
- Reporting: Reportable data, laboratory review checklist, and the associated exception report(s) (for TRRP) or the laboratory case narrative (for LPST).

PERSON

- Data Usability Review: Compares lab results and QC to project measurements quality objectives (MQOs). Determines usability of the data to meet the project data quality objectives (DQOs).
- Reporting: DUS (for TRRP) and QA/QC summary (for LPST).

TCEQ

- Review: Verify reviews conducted, reports completed, and data usability is justified for its intended purpose.

KEY POINT: Laboratory and method QC acceptance criteria may be different from the project specific MQOs.

Data Quality Requirements

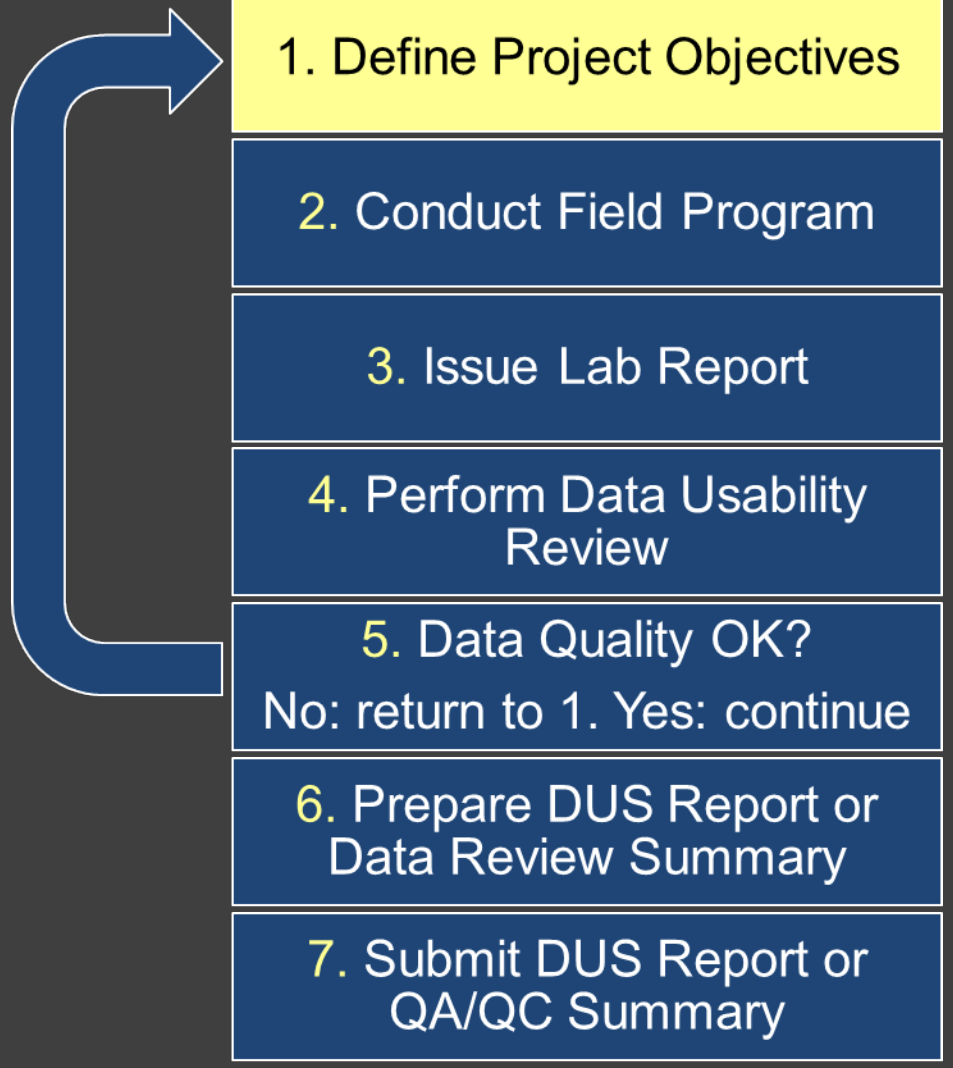
Data Quality Responsibility:

- The person (i.e., consultant, contractor) IS responsible,
- Not the TCEQ,
- Not the laboratory or sub-contractor.

Data Quality must be:

- Known (evaluated) and adequately documented,
- Adequate to meet project objectives and program requirements.

Data Quality Assessment: Process Overview (1)



Data Quality Objective (DQO) process

- Identify goals (CSM) – project & data needs
- Identify performance & acceptance criteria
- Establish minimum data quality requirements
  - Measurement performance criteria in terms of data quality indicators (DQIs) - data properties descriptors (e.g., precision, accuracy, and bias)
  - Project Measurement Quality Objectives (MQOs) (e.g., establishing data acceptance criteria)

KEY POINT: Communication with the laboratory concerning required analytical sensitivity is essential.

Key Definitions: Data Quality Indicators (DQIs)

Precision: Agreement between two or more measurements made under identical conditions, measured by relative percent difference (RPD).

Accuracy: Agreement between a measurement and a known value (is an indicator of bias in measurements).

Representativeness: Degree to which data accurately characterize sample medium.

Comparability: Confidence with which one data set can be compared to others.

Completeness: Fraction of valid data points obtained from a measurement system or method.

Sensitivity: capability of an analytical instrument to detect and quantitate an analyte at a required or specified concentration (e.g., PCL)

Project Objectives: Determining MQOs

Project specific criteria (i.e., MQOs) must be defined and the project data objectives should be developed prior to sampling. The criteria below is from highest to lowest preference:

1. Project Specific MQOs: most stringent requirements.
2. Program Specific MQOs: as specified in a program Quality Assurance Project Plan (QAPP).
3. In absence of 1 and 2; the data usability reviewer needs to provide the review criteria (i.e., MQOs) and rationale for qualifying the data based on the intended use of the data (the suggested TRRP-13 guidance for MQOs is on next slide).

Project Objectives: Determining MQOs - Cont.

The reviewer should ensure the MQOs meet the project objectives, but in general, the TRRP-13 guidance MQOs (page 22) should be acceptable as follows:

Organic analytes:

- (%Rs) between 60-140%, but not less than 10%, and RPDs within 40%.

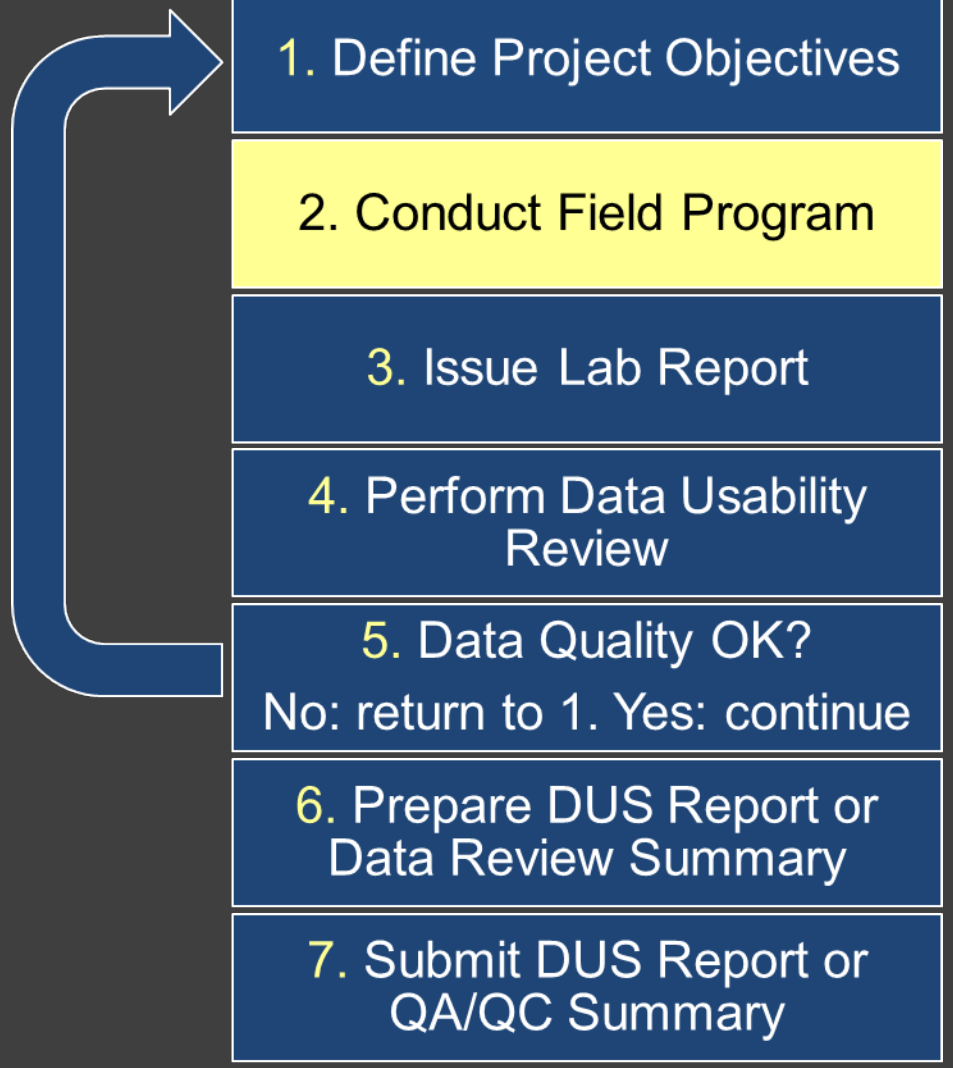
Inorganic Analytes:

- (%Rs) between 70-130%, but not less than 30%, and RPDs within 30%.

%R = percent recoveries

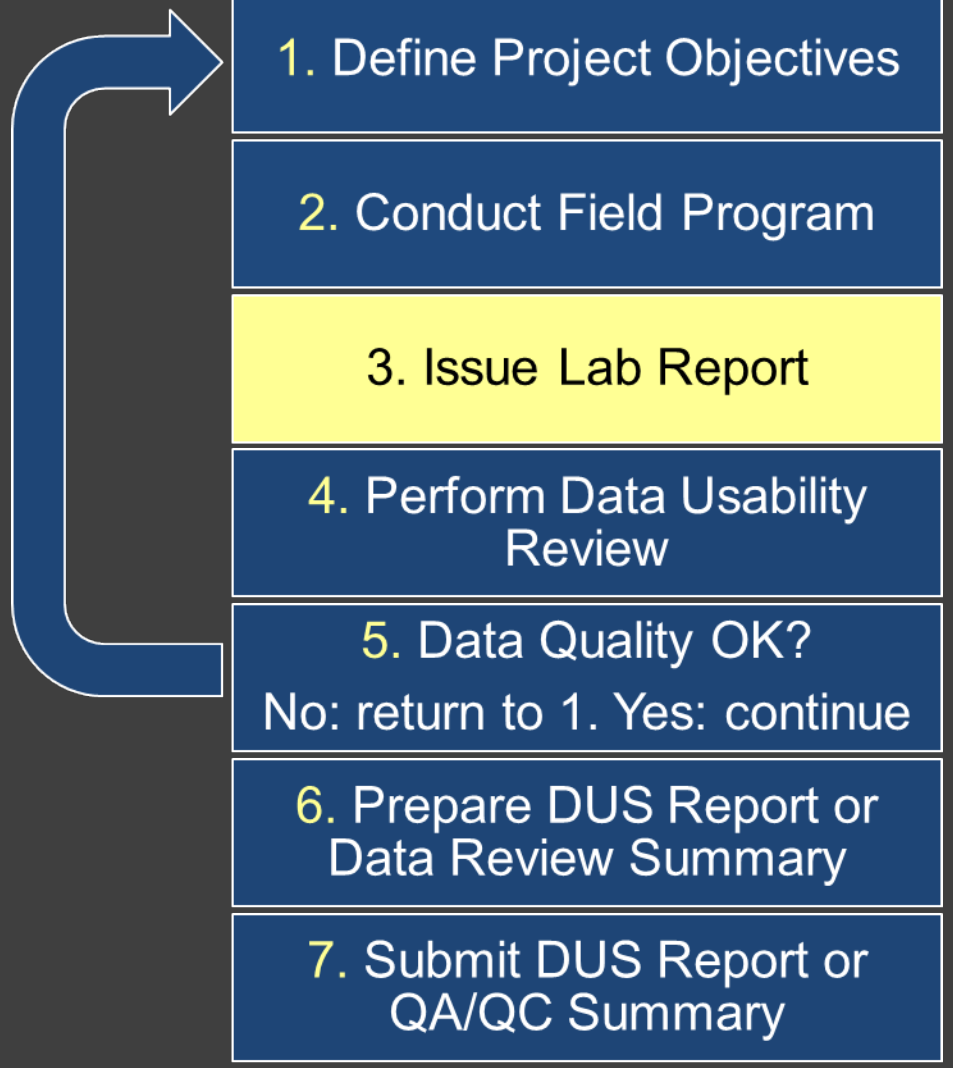
NOTE: These guidance MQOs will be used as example criteria throughout the presentation during QC examples.

Data Quality Assessment: Process Overview (2)



- Person collects samples, field QC, and measures field parameters (e.g., pH, conductivity, and temperature).
- Documented abnormalities during field activities.
- Custody documentation completed and signed for all samples (handling, preservation).

Data Quality Assessment: Process Overview (3)



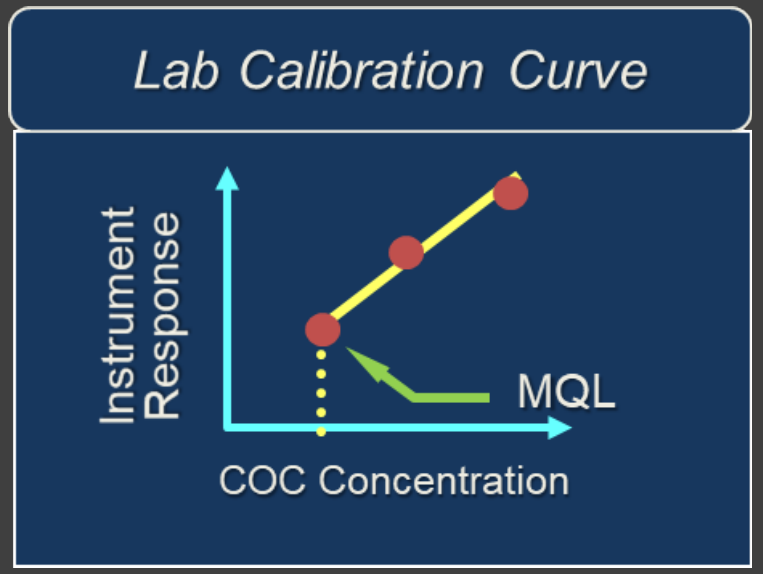
Laboratory analyzes samples

- Reviews QC data based on technical laboratory QC criteria
- Issues laboratory data package
- For TRRP Projects
  - Laboratory Review Checklist (LRC) & exception report (ER)
- For LPST Projects
  - Laboratory case narrative or Laboratory Review Checklist (LRC) & exception report (ER)

NOTE: The lab does not determine the usability of the data in regards to the project objectives

Key Definitions: Analytical Limits

Method Quantitation Limit (MQL): Lowest detectable and quantifiable concentration from the laboratory instrument calibration curve.



KEY POINT: The MQL must be less than the level of required performance (LORP) (e.g., assessment level or action level) or the person must document the MQL is obtained from the most sensitive standard method available.

Key Definitions: Analytical Limits – Cont.

Method Detection Limit (MDL)

- Minimum concentration at which a chemical can be measured.
- Statistical confidence is 99% that the concentration is distinguishable from the method blank results

Sample Detection Limit (SDL)

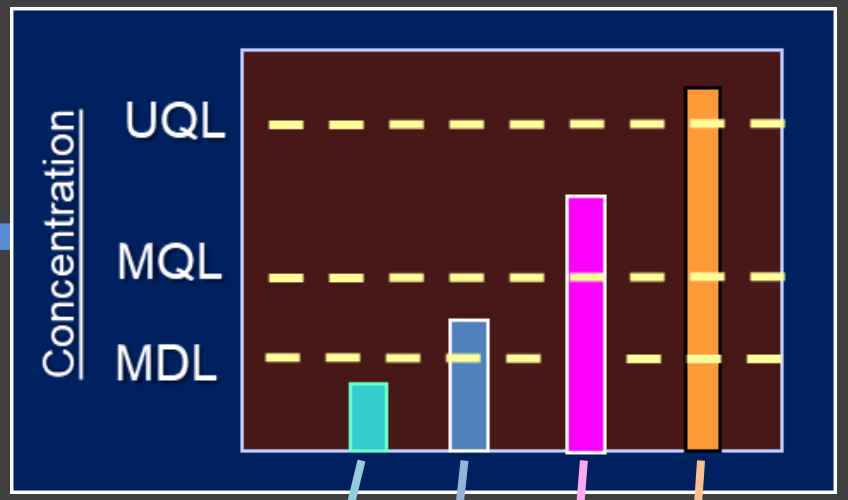
- For each COC in each sample, the SDL is equal to the MDL adjusted for dilution, sample size, and moisture content

MDL x Sample-specific factors = SDL

NOTE: The lab must report nondetected results for COCs as less than the value of the SDL.

Reporting the Results

Instrument Response	COC Concentration	What Lab Report Says
<MDL	Non-detect	"U" Flag Less than SDL
>MDL and <MQL	Detected, but estimated	"J" Flag Estimated conc.
>MQL And <UQL	Detected and quantified	Quantified concentration
>UQL	Detected, but estimated	"E" Flag Estimated conc.



Lab Data Package: Required Contents

Reportable Data

- Results of sample analyses
- Results of sample-specific QC parameters (e.g., surrogates and analytical duplicates)

LRC/ER or Laboratory Case Narrative

- Documentation or discussion of:
  - Laboratory data review;
  - Deviation from the method or lab SOPs;
  - QC failures and affected samples;
  - And corrective actions taken by the laboratory.

Lab Data Package: Reportable Data

R1 Chain-of-Custody Documentation: Field and lab forms

R2 Sample and QC Cross Reference: Field-lab correspondence

R3 Test Reports: Sample results and methods

R4 Surrogates: Percent recovery and lab QC limits

R5 Laboratory Blanks: Results for blanks (e.g., method, preparation)

R6 Laboratory Control Samples: Demonstrates capability of method

Lab Data Package: Reportable Data - Cont.

R7 Matrix Spike/Matrix Spike Duplicates: COC analytes are spiked in a field sample to determine the effect of the sample matrix on analyte recoveries. Precision is determined if the MSD is analyzed. Must be from site-specific sample.

R8 Analytical Duplicates: Laboratory duplicate to determine precision (RPDs).

R9 Method Quantitation Limits and Detectability Check Samples: Results for each COC for a given matrix and method.

R10 Other Information: Documents other problems or conditions that may impact data quality (e.g., dilutions or interferences causing the reporting limits (i.e., MQLs, SDLs) to be raised above LORP.

Laboratory Review Checklist: Contents

- Reportable data ("R" items) are generally related to sample-specific quality control parameters.
- Supporting data ("S" items) are generally related to the laboratory quality control parameters.
- Documents any technical problems with either the reportable data or the supporting data via exception reports to the LRC.

KEY POINT: The laboratory review checklist is a tool the data user can use to get a quick idea of the overall quality of the data for specific samples.

Appendix A
Laboratory Data Package Cover Page - Page 1 of 4

This data package is for Job No. _____and laboratory batch no(s). _____ and consists of:

This signature page, the laboratory review checklist, and the following reportable data:

☐ R1 - Field chain-of-custody documentation;

☐ R2 - Sample identification cross-reference;

☐ R3 - Test reports (analytical data sheets) for each environmental sample that includes:

a. Items consistent with NELAC Chapter 5,

b. dilution factors,

c. preparation methods,

d. cleanup methods, and

e. if required for the project, tentatively identified compounds (TICs).

☐ R4 - Surrogate recovery data including:

a. Calculated recovery (%R), and

b. The laboratory's surrogate QC limits.

☐ R5 - Test reports/summary forms for blank samples;

☐ R6 - Test reports/summary forms for laboratory control samples (LCSs) including:

a. LCS spiking amounts,

b. Calculated %R for each analyte, and

c. The laboratory's LCS QC limits.

☐ R7 - Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a. Samples associated with the MS/MSD clearly identified,

b. MS/MSD spiking amounts,

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Laboratory Review Checklist: Reportable Data - Page 2 of 4

Laboratory Name:			LRC Date:					
Project Name:			Laboratory Job Number:					
Reviewer Name:			Prep Batch Number(s):					
#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]	
R1	OI	**Chain-of-custody (C-O-C)**						
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?						
		Were all departures from standard conditions described in an exception report?						
R2	OI	**Sample and quality control (QC) identification**						
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?						
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?						
R3	OI	**Test reports**						
		Were all samples prepared and analyzed within holding times?						
		Other than those results < MQL, were all other raw values bracketed by calibration standards?						
		Were calculations checked by a peer or supervisor?						
		Were all analyte identifications checked by a peer or supervisor?						
		Were sample detection limits reported for all analytes not detected?						
		Were all results for soil and sediment samples reported on a dry weight basis?						
		Were % moisture (or solids) reported for all soil and sediment samples?						
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?						
		If required for the project, are TICs reported?						
R4	O	**Surrogate recovery data**						
		Were surrogates added prior to extraction?						
		Were surrogate percent recoveries in all samples within the laboratory QC limits?						
R5	OI	**Test reports/summary forms for blank samples**						

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Laboratory Review checklist: Supporting Data - Page 3 of 4

Laboratory Name:	LRC Date:
Project Name:	Laboratory Job Number:
Reviewer Name:	Prep Batch Number(s):

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	**Initial calibration (ICAL)**					
		Were response factors and/or relative response factors for each analyte within QC limits?					
		Were percent RSDs or correlation coefficient criteria met?					
		Was the number of standards recommended in the method used for all analytes?					
		Were all points generated between the lowest and highest standard used to calculate the curve?					
		Are ICAL data available for all instruments used?					
		Has the initial calibration curve been verified using an appropriate second source standard?					
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):**					
		Was the CCV analyzed at the method-required frequency?					
		Were percent differences for each analyte within the method-required QC limits?					
		Was the ICAL curve verified for each analyte?					
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?					
S3	O	**Mass spectral tuning**					
		Was the appropriate compound for the method used for tuning?					
		Were ion abundance data within the method-required QC limits?					
S4	O	**Internal standards (IS)**					
		Were IS area counts and retention times within the method-required QC limits?					
S5	OI	**Raw data (NELAC Section 5.5.10)**					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?					
		Were data associated with manual integrations flagged on the raw data?					

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Laboratory Review Checklist: Exception Reports - Page 4 of 4

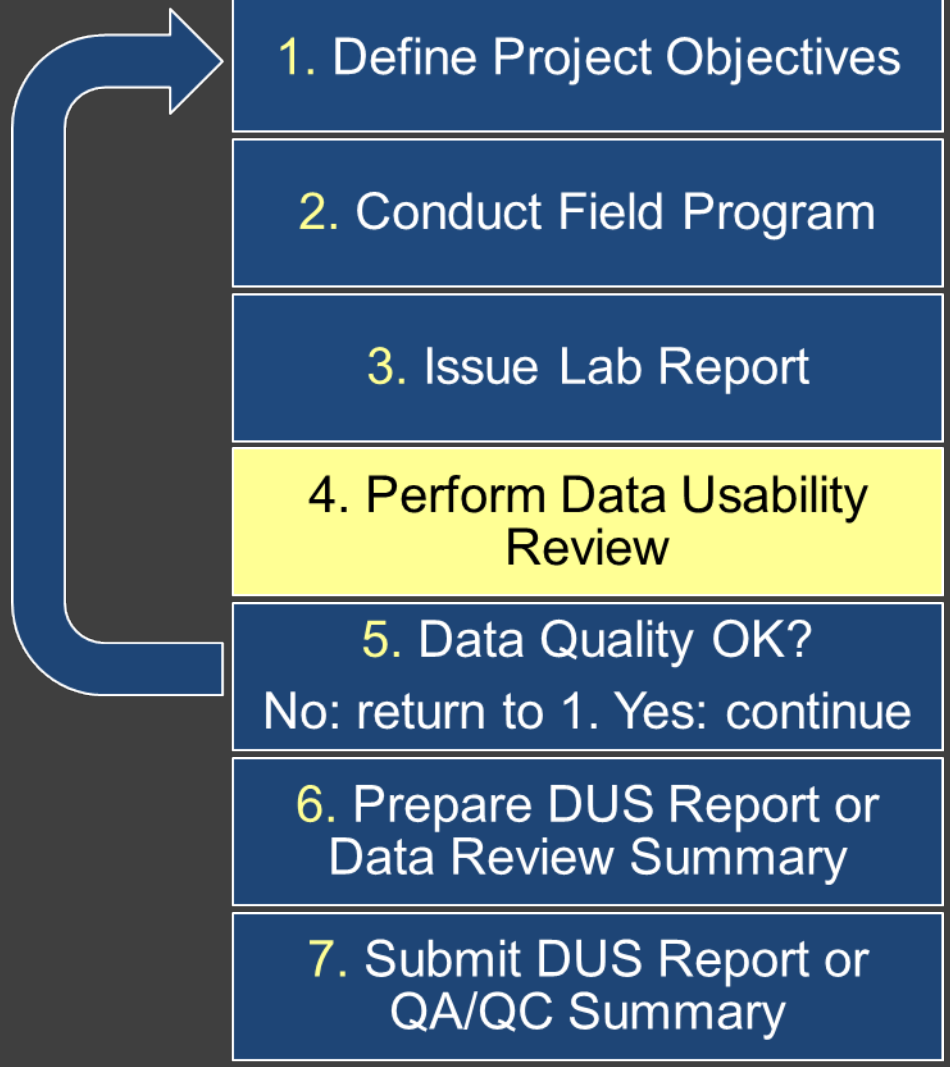
Laboratory Name:	LRC Date:
Project Name:	Laboratory Job Number:
Reviewer Name:	Prep Batch Number(s):

ER #[1]	DESCRIPTION

1. Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
2. O = organic analyses; I = inorganic analyses (and general chemistry, when applicable);
3. NA = Not applicable;
4. NR = Not reviewed;
5. ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

TRRP-13 page 36

Data Quality Assessment: Process Overview (4)



- The Person (e.g., consultant or contractor) conducts data usability review.
- Review laboratory QC, custody documents, and the field logbook (e.g., field duplicates “blind to the lab”)
- Reviews the project QC data based on the project MQOs.
- Determines the usability of the lab data for meeting the project DQOs.

NOTE: Final review qualifiers (used for project decisions) supersede lab qualifiers and are incorporated into data summary tables (e.g., DUS or QA/QC Summary)

What the Person Checks During a Data Usability Review

Field to Lab: Holding times, preservation, sample containers, sample collection, and field duplicates (representativeness and precision)

Lab Control Samples: LCS/LCSD (accuracy and precision)

Matrix Spikes: MS/MSD (accuracy and precision)

Surrogates: Percent recoveries for organics only (accuracy and representativeness)

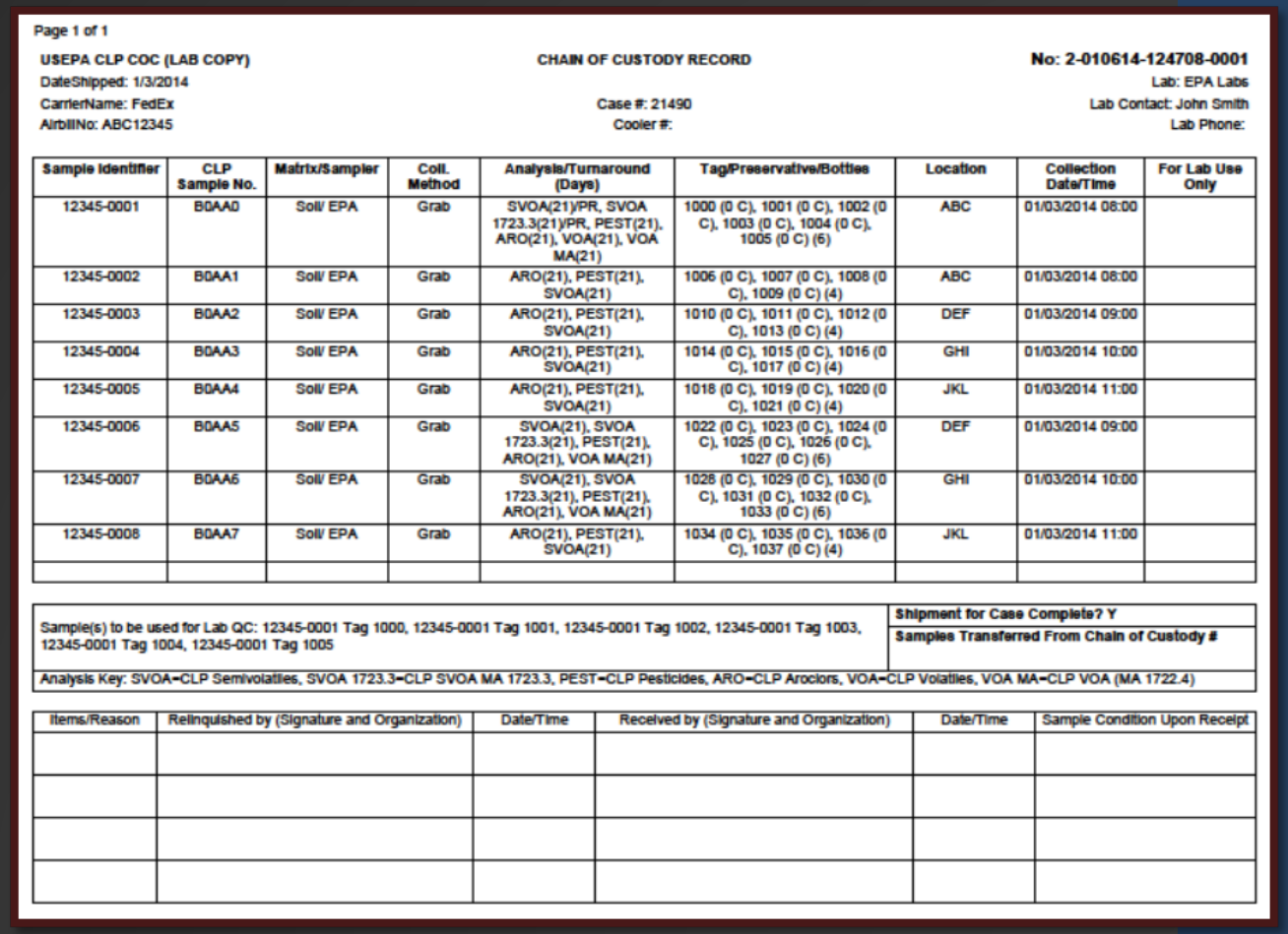
Analytical Duplicates: Relative percent differences (RPD) usually inorganics (precision)

MQLs and SDLs: Compare to LORPs and check that non-detect results are reported less than the SDL (sensitivity)

Supporting Data: Results of lab's review on the LRC (comparability)

What QC Data Tell the Data Users: Chain-of-Custody Documentation

- Custody signatures
- Location, time and type of sample collected
- Analyses requested (methods and/or COCs)
- Condition of samples upon receipt by the laboratory
- Sample preservation; chemical, thermal, light



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USEPA CLP COC (LAB COPY) — CHAIN OF CUSTODY RECORD — No: 2-010614-124708-0001

DateShipped: 1/3/2014 — Lab: EPA Labs

CarrierName: FedEx — Case #: 21490 — Lab Contact: John Smith

AirbillNo: ABC12345 — Cooler #: — Lab Phone:

Sample Identifier	CLP Sample No.	Matrix/Sampler	Coll. Method	Analysis/Turnaround (Days)	Tag/Preservative/Bottles	Location	Collection Date/Time	For Lab Use Only
12345-0001	B0AA0	Soil/ EPA	Grab	SVOA(21)/PR, SVOA 1723.3(21)/PR, PEST(21), ARO(21), VOA(21), VOA MA(21)	1000 (0 C), 1001 (0 C), 1002 (0 C), 1003 (0 C), 1004 (0 C), 1005 (0 C) (5)	ABC	01/03/2014 08:00	
12345-0002	B0AA1	Soil/ EPA	Grab	ARO(21), PEST(21), SVOA(21)	1006 (0 C), 1007 (0 C), 1008 (0 C), 1009 (0 C) (4)	ABC	01/03/2014 08:00	
12345-0003	B0AA2	Soil/ EPA	Grab	ARO(21), PEST(21), SVOA(21)	1010 (0 C), 1011 (0 C), 1012 (0 C), 1013 (0 C) (4)	DEF	01/03/2014 09:00	
12345-0004	B0AA3	Soil/ EPA	Grab	ARO(21), PEST(21), SVOA(21)	1014 (0 C), 1015 (0 C), 1016 (0 C), 1017 (0 C) (4)	GHI	01/03/2014 10:00	
12345-0005	B0AA4	Soil/ EPA	Grab	ARO(21), PEST(21), SVOA(21)	1018 (0 C), 1019 (0 C), 1020 (0 C), 1021 (0 C) (4)	JKL	01/03/2014 11:00	
12345-0006	B0AA5	Soil/ EPA	Grab	SVOA(21), SVOA 1723.3(21), PEST(21), ARO(21), VOA MA(21)	1022 (0 C), 1023 (0 C), 1024 (0 C), 1025 (0 C), 1026 (0 C), 1027 (0 C) (5)	DEF	01/03/2014 09:00	
12345-0007	B0AA6	Soil/ EPA	Grab	SVOA(21), SVOA 1723.3(21), PEST(21), ARO(21), VOA MA(21)	1028 (0 C), 1029 (0 C), 1030 (0 C), 1031 (0 C), 1032 (0 C), 1033 (0 C) (5)	GHI	01/03/2014 10:00	
12345-0008	B0AA7	Soil/ EPA	Grab	ARO(21), PEST(21), SVOA(21)	1034 (0 C), 1035 (0 C), 1036 (0 C), 1037 (0 C) (4)	JKL	01/03/2014 11:00	

Sample(s) to be used for Lab QC: 12345-0001 Tag 1000, 12345-0001 Tag 1001, 12345-0001 Tag 1002, 12345-0001 Tag 1003, 12345-0001 Tag 1004, 12345-0001 Tag 1005

Shipment for Case Complete? Y

Samples Transferred From Chain of Custody #

Analysis Key: SVOA=CLP Semivolatiles, SVOA 1723.3=CLP SVOA MA 1723.3, PEST=CLP Pesticides, ARO=CLP ArocIors, VOA=CLP Volatiles, VOA MA=CLP VOA (MA 1722.4)

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt

PASI FY2019 QAPP (QTRAK 18-513) CLP Sampler's Guide pg. 39

What QC Data Tell the Data Users: Sample and QC Cross-Reference

- Matches the field ID with the lab ID
- Links lab ID numbers to the corresponding QC data
- Facilitates locating certificates of analysis or test reports for specific samples of interest in the data package

Field Identification	Laboratory Identification
M-1	12345-001
M-2S	12345-002
M-2D	12345-003
M-2TD	12345-004
M-3S	12345-005
M-3D	12345-006
M-4S	12345-007
M-4D	12345-008
EB-1	12345-009
M-5	12345-010
FB-1	12345-011
Dup-1	12345-012
Trip Blank 1	12345-013
Trip Blank 2	12346-001
EB-2	12346-002
GP1-2'	12346-003
GP1-6'	12346-004
GP1-6' Dup	12346-005

TRRP-13 Table B-1 pg. 42

What QC Data Tell the Data Users: Laboratory Control Sample (LCS)

- LCS is an analyte free lab matrix spiked with COCs at a known concentration processed just like environmental samples.
- If the LCS fails, the validity of the environmental results associated with the LCS are of concern.
- The LCS indicates the condition of the analytical operating system when the environmental sample was analyzed.
- Typically one LCS is run per preparation batch.

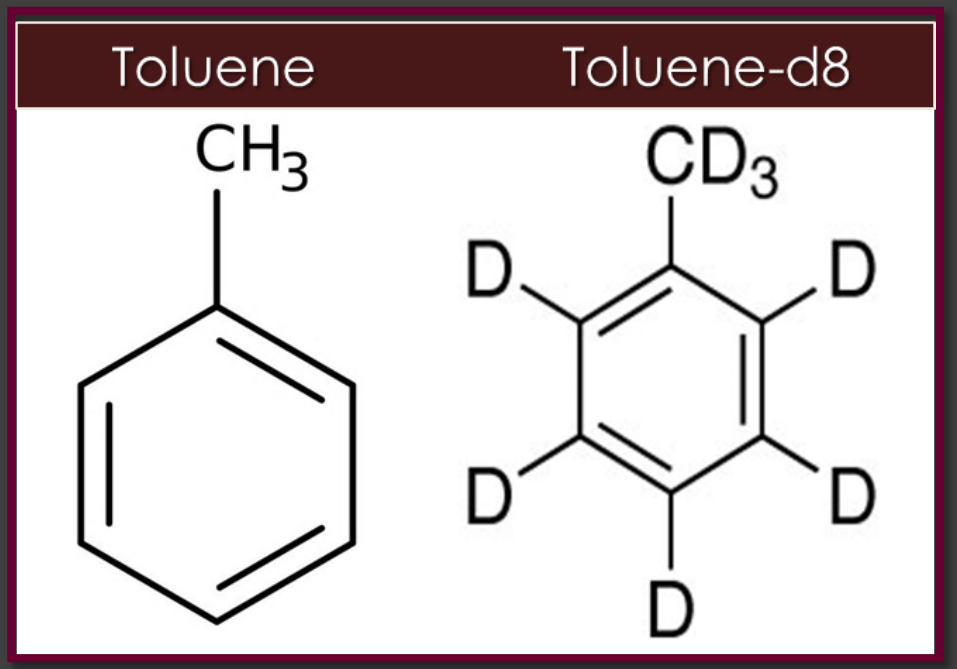
What QC Data Tell the Data Users: Matrix Spike (MS)

- Indicates the ability of the test method to generate a correct result from the environmental sample.
- Provides bias result information from sample matrix affects;
- Addition of a known amount of the COCs to a representative environmental sample (ideally a project sample).
- Typically one MS/MSD is run for every 20 project samples per matrix.

KEY POINT: If concentration in unspiked sample is greater than 4 times the concentration of the spike, the MS results are considered inappropriate for assessing accuracy.

What QC Data Tell the Data Users: Surrogates

- Indicate extraction efficiency (bias) and analytical conditions during lab sample prep and analysis
- Chemicals added to every sample, for organic analysis only
- Not naturally occurring or found in the environment
- Mimic their respective COCs and represent a chemical property
- Usually isotopically labeled



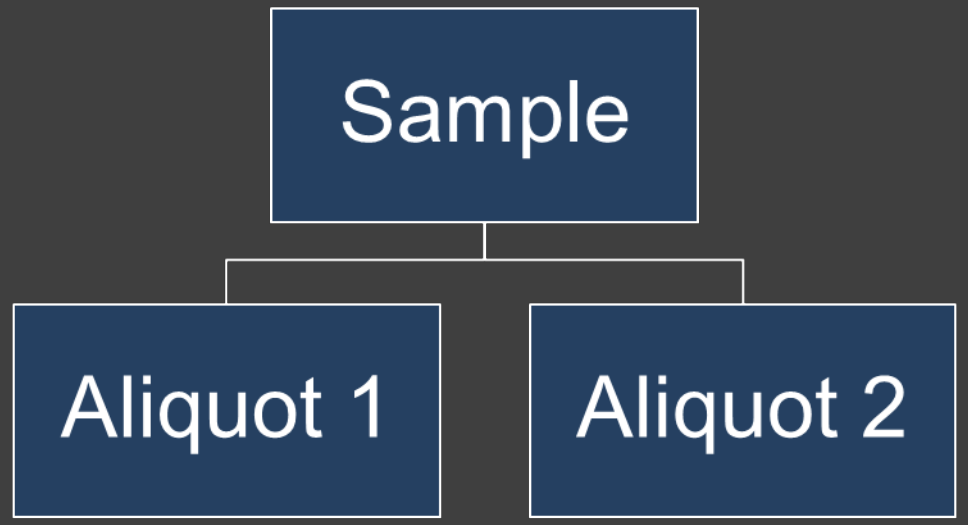
COC Surrogate

What QC Data Tell the Data Users: Blank Sample Data

- Indicates laboratory and/or field contamination introduced to the sample potentially affecting results. There are multiple types of blanks (e.g., field blanks, trip blanks, equipment blanks, method blanks etc.)
- Blank data are especially important when:
  - The data user is trying to attribute the presence of a COC at low levels to a specific environmental source or location.
  - The data user is contemplating action based on a COC being present in a sample at low levels (e.g., near report limits).

What QC Data Tell the Data Users: Analytical Duplicate Data

- Determines analytical precision.
- Preparation and analysis of two separate aliquots of the same sample (different from field duplicates).
- Measures the ability of the test to obtain the same result on repeated analysis.
- Demonstrates reproducibility of the test method.



Are results from
Aliquot 1 comparable to results from
Aliquot 2?

What QC Data Tell the Data Users: MQLs and Detectability Check Sample Results

- Unadjusted MQLs and DCSs must be submitted for all analytes in the calibration curve for each matrix associated with reported data results.
- The MQL is a measure of analytical sensitivity.
- The DCS is a reagent matrix spike (spiked at 2-3 times the calculated MDL) analyzed to demonstrate the reasonableness of the MDL.
- The DCS is spiked with COCs and carried through the sample preparation procedures at least on a quarterly basis during the period program samples are being analyzed.

KEY POINT: The DCS data must clearly demonstrate that the MDL reported for an analyte can still be achieved by the laboratory.

TRRP-13 Data Usability Review:
Data Usability Qualifiers

U	Not Detected: Analyte not detected above SDL
J	Estimated: Analyte detected above SDL, but concentration is estimated
UJ	Not Detected: Analyte not detected above SDL, but the SDL is estimated
NJ	TIC: Tentatively identified compound
R	Rejected: Data are unusable due to QC problems

KEY POINT: After data review, the data reviewer applies data usability qualifiers to the data to indicate possible data QC problems.

TRRP -13 Data Usability Review: Lab Accreditation Data Qualifiers

An X qualifier indicates the lab is not NELAP accredited for this analyte in this matrix analyzed by this method.

X1	The laboratory is an on-site or in-house laboratory, defined in 30 TAC 25, and inspected at least every 3 years.
X2	The laboratory is an on-site or in-house laboratory, defined in 30 TAC 25, is located outside of Texas, and is accredited or periodically inspected by that state.
X7	The Laboratory is not NELAC accredited under the Texas Laboratory Accreditation Program for this analyte, in this matrix, analyzed by this method. The TCEQ does not offer accreditation for this analyte, in this matrix, analyzed by this method.

TRRP-13 Data Usability Review: Bias Codes

H	High: Lab result could be higher than actual value.
L	Low: Lab result could be lower than actual value.

KEY POINT: If sufficient QC information is available, the data reviewer adds bias codes to the data usability qualifiers to give the data user an idea of the direction of bias (e.g., “JL” for an estimated, biased low result).

TRRP-13 Data Usability Review: Assignment of Data Usability Qualifiers

TRRP-13 provides QC acceptance criteria for assigning data usability qualifiers and bias codes.

- Table D-1: Inorganic Analyses

70% -130%, but not below 30%; RPD less than 30

- Table D-2: Organic Analyses

60% -140%, but not below 10%; RPD less than 40

Table D- 1. Determination of Data Usability Qualifiers for Inorganics

Step 1: Review QC Parameter and Document Finding[1,2]	Step 2: Determine Which Samples to Qualify	Step 3: Determine Which Results to Qualify	Step 4: Apply Qualifier and Bias Code[3]
Preservation (R1)			
Outside specifications	Affected samples	Detected results Non-detected results	JL UJL
Holding Times (R2)			
Outside specifications	Affected samples	Detected results Non-detected results	JL UJL
Grossly outside specifications	Affected samples	Non-detected results	R
Method Blanks (R5)			
Analyte detected above MDL	Samples in preparation batch with COC conc. ≤5X method blank	Detected results	U
Quality Control Blanks			
Analyte detected above MDL	Samples associated with field blank	Detected result within 5X blank conc.	JH
Laboratory Control Sample (LCS) (R6)			
%R above specifications	Samples in preparation batch for affected analytes	Detected results	JH
%R below specifications and greater than 30%	Samples in preparation batch for affected analytes	Detected results Non-detected results	JL UJL
%R below 30%	Samples in preparation batch for affected analytes	Detected results Non-detected results	JL R

TRRP-13 Data Usability Review: Qualifying Project Analytical Data

- The data reviewer may use the project MQOs in conjunction with TRRP-13 Tables D-1 (for inorganic analyses) and D-2 (for organic analyses) to assign data usability qualifiers to the project data.

- For example, if the data reviewer is qualifying organic analyte sample results based on LCS recoveries using the default TRRP-13 accuracy acceptance criteria of 60-140% recovery and TRRP-13 Table D-2, the QC acceptance criteria would be as follows:

TRRP-13 Data Usability Review: Qualifying Project Analytical Data – Cont.

LCS Recovery > 140%	60% > LCS Recovery ≥ 10%	LCS Recovery < 10%
Detected Results: • Data are usable • Qualified "JH" or estimated high bias	Detected Results: • Data are usable • Qualified "JL" or estimated low bias	Detected Results: • Data are usable • Qualified "JL" or estimated low bias
Non-detected Results: • Data are usable • No qualifications are needed	Non-detected Results: • Data are usable • Qualified "UJL" or non-detected estimated low bias	Non-detected Results: • Data are not usable • Qualified "R" or rejected

Lab QC Criteria vs. Project-Specific MQOs

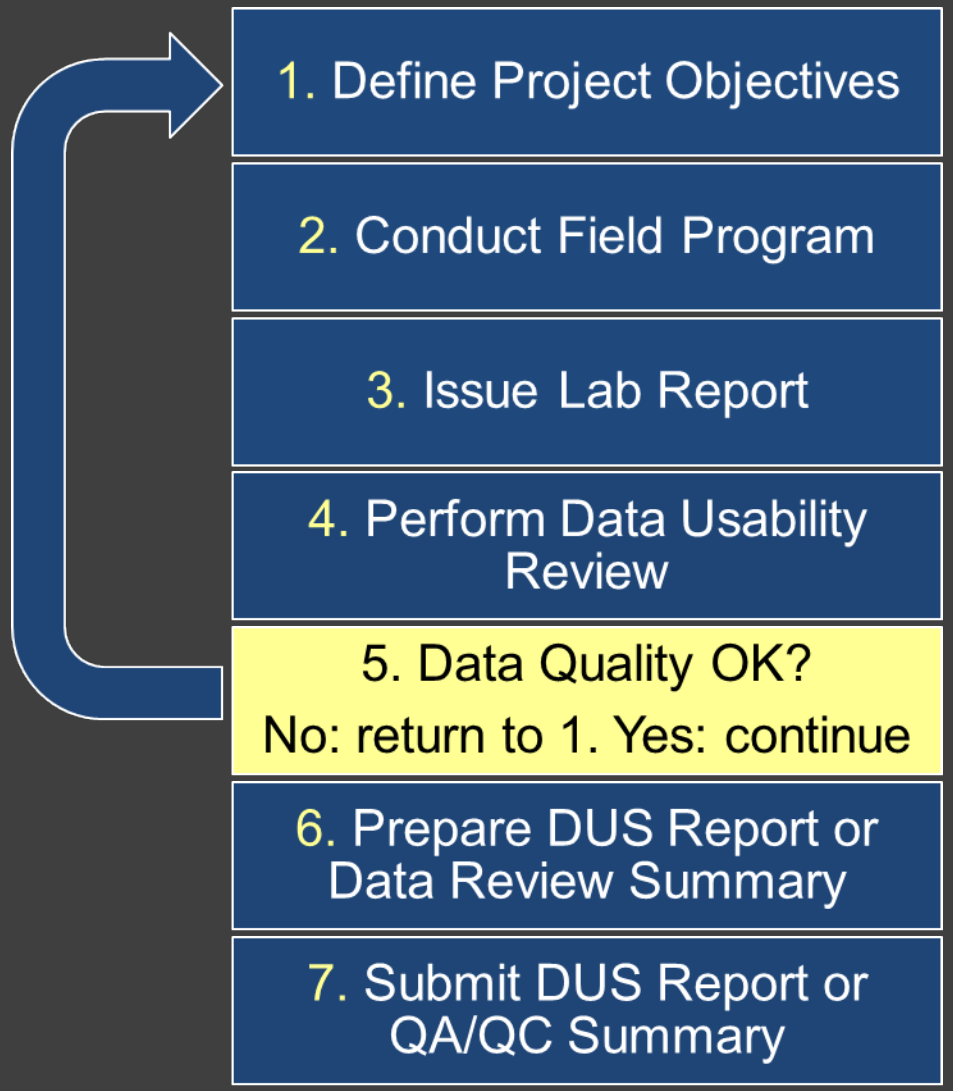
Example of Laboratory Derived QC Acceptance Criteria

COCs	LCS (%R)	MS (%R)	LCS RPD	MS RPD
Benzene	71-124	17-158	≤ 20	≤ 27
Toluene	64-120	26-147	≤ 20	≤ 23
Ethylbenzene	79-123	30-155	≤ 20	≤ 26
MTBE	68-126	28-150	≤ 20	≤ 30
Surrogates	Surrogate (%R)			
Toluene-d8	80-124			
4-BFB	77-126			
Trifluorotoluene	78-127			

TRRP-13 Measurement Quality Objectives – generally acceptable for organic analytes

COCs	LCS (%R)	MS (%R)	LCS RPD	MS RPD
All Organics	60-140	60-140	≤ 40	≤ 40

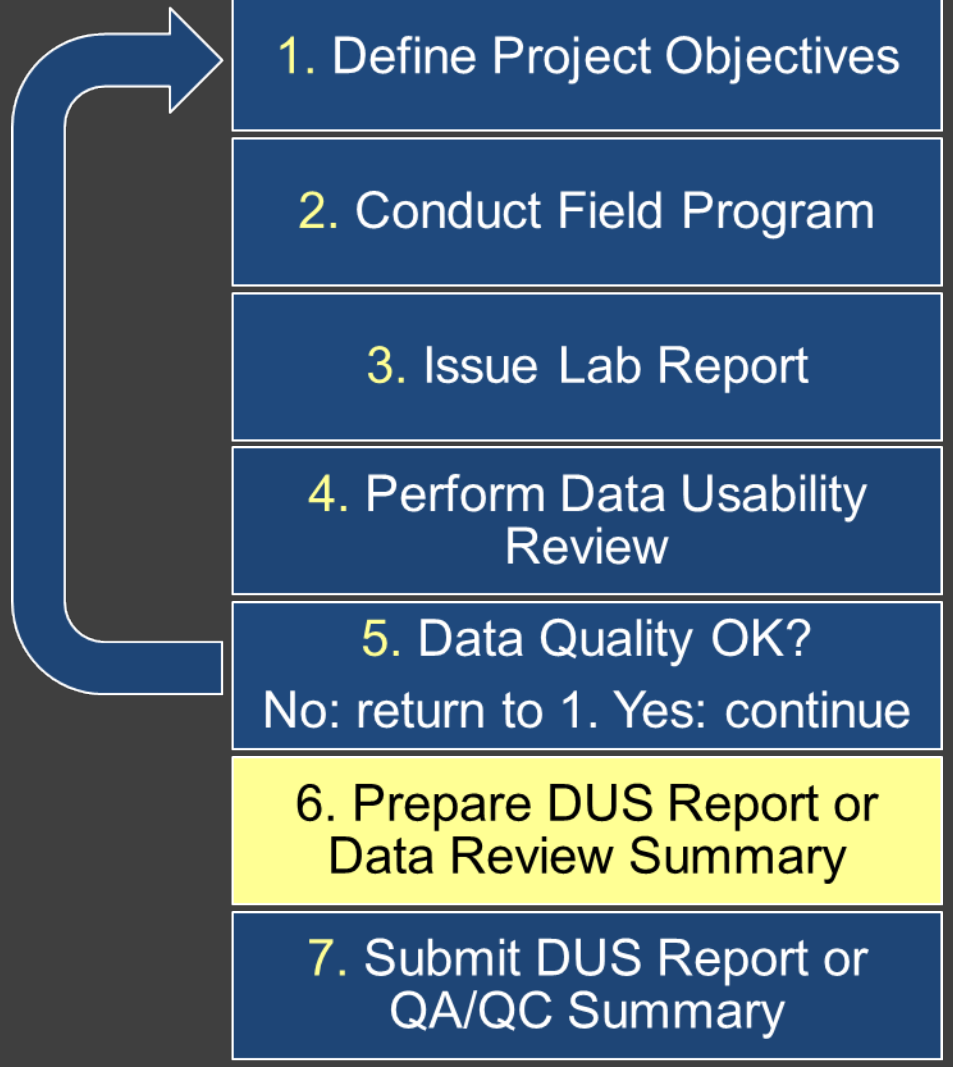
Data Quality Assessment: Process Overview (5)



Do the data meet the project objectives?

- Yes: Continue to preparing the DUS Report.
- No: Refine the project objectives and collect additional data.

Data Quality Assessment: Process Overview (6)



- The Person incorporates data and prepares the DUS report (TRRP) or the QA/QC summary (LPST)

LPST: QA/QC Summary

- Data review summary required for all LPST report submittals.
  - Documents technical review of the data and LRC.
  - Addresses problems with data and corrective actions taken.
  - Discusses usability of the data in terms of the program and project objectives.

KEY POINT: Data reviewer is not required to qualify the project data for PST projects.

TRRP: Data Usability Summary

- Documents the Person's technical review of the project data.
- Summarizes the person's findings related to data quality and the justification for using the qualified data.
- Allows for an in-depth assessment of data quality.

KEY POINT: The person knows the most about the intended use of the data collected and is required to identify the intended use in the DUS.

Data Usability Summary: Contents

Text	• Intended use of data (e.g., delineation, closure) • Results of field data review • Rationale for assigning data usability qualifiers and bias codes • Conclusions regarding data usability
Tables	• Lab methods and COCs analyzed • Cross-reference of field and lab sample IDs for each medium sampled • Evaluation of field QC results relative to QC acceptance criteria • Summary of qualified data
Attachments	• Lab data packages containing reportable data and laboratory review checklists • Laboratory NELAP accreditation certificates issued under the Texas Laboratory Accreditation Program applicable to the period during which the project data were generated

KEY POINT: The DUS must include the justification for and the potential consequence of using qualified data.

Preparing the Data Usability Summary

The data reviewer **must clearly state** in the Data Usability Summary (DUS):

- Whether the laboratory was NELAP accredited under the Texas Laboratory Accreditation Program (TLAP) at the time the data were generated and accredited for the specific:
  - Matrices
  - Methods
  - Analytes
- Intended use of the data.
- Project MQOs used to qualify the data.

Preparing the Data Usability Summary – Cont. 1

The data reviewer must:

- Evaluate and Qualify Project Data by reviewing:
  - LRCs.
  - Exception reports to the LRCs.
  - Reportable data.
  - Field Notes.
  - Adequacy of the MQLs for the COCs in all media.
  - Adequacy of the SDLs for non-detected results.
    - Compare to the action levels (e.g. LORPs).

Preparing the Data Usability Summary – Cont. 2

The data reviewer must include:

- Table summarizing qualified analytical data.
  - Provide reason(s) for the qualification.
- Table summarizing and evaluating field QC sample results
  - Field Duplicates, MS/MSD, LCS/LCSD, Blanks.
  - Use QC acceptance criteria given in Tables D-1 and D-2 of the TRRP-13 guidance (if applicable).

Preparing the Data Usability Summary – Cont. 3

The data reviewer must:

- Provide rationale for any professional judgment used.
  - Include if the data can be used to the regulatory compliance decisions being made for the project.
- Identify:
  - rejected data as a result of the data usability review.
  - unusable data for meeting project objectives.
- Discuss if rejected, unusable, or qualified sample results are considered critical for meeting project objectives.

Example Data Usability Scenario (Ex. 1)

- Action level = 0.005 mg/L
- Sample result concentration = 0.0035 mg/L (qualified JL)
- Sample result 30% below action level

- **BUT** Data Usability Reviewer found:
  - Surrogate spike recovery* = 40%
  - Potential Low Bias (magnitude 60%)

*MS or LCS recovery would also apply

- Cannot confidently conclude result is truly below action level
- Additional sampling may take place to confirm results.

Example Data Usability Scenario (Ex. 2)

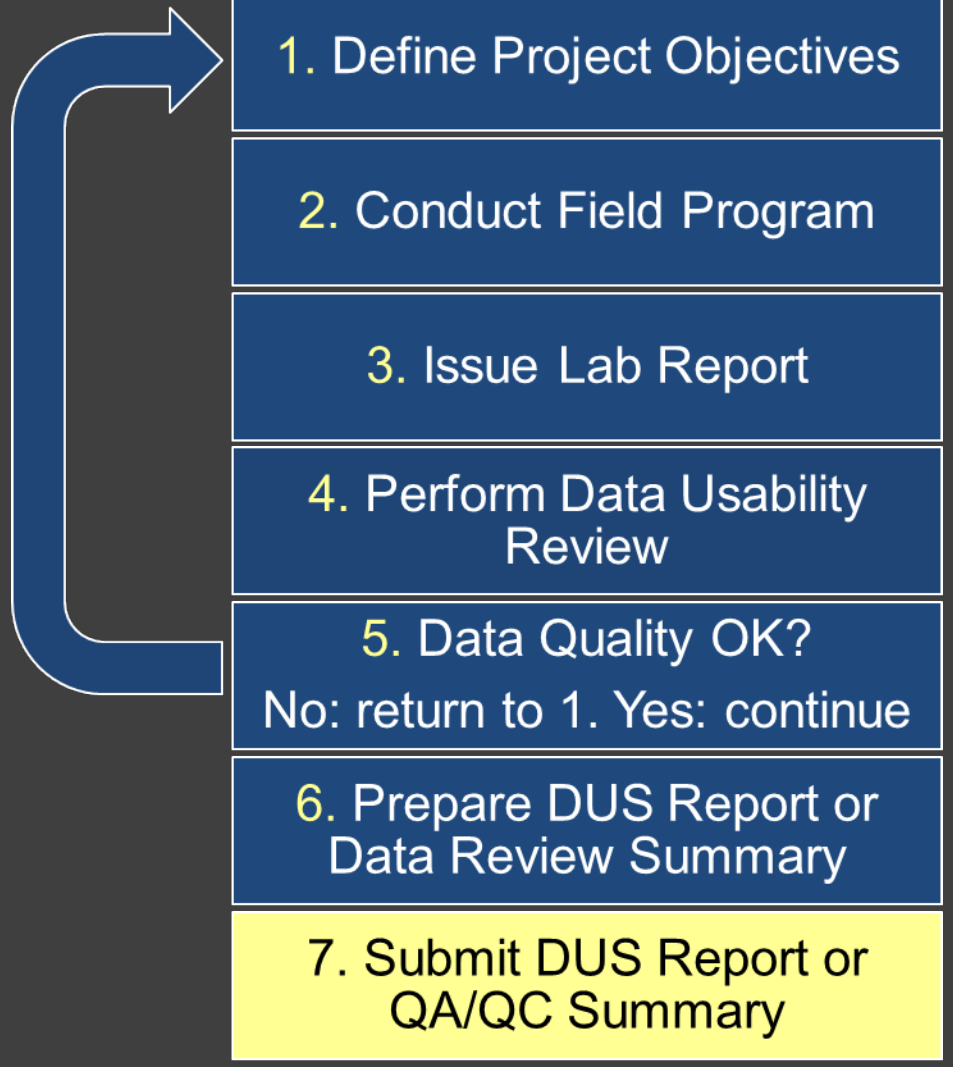
- Action level = 0.500 mg/L
- Sample result concentration = 0.0035 mg/L (qualified JL)
- Result is more than 2 orders of magnitude less than the action level.

- **BUT** Data Usability Reviewer found:
  - Surrogate spike recovery* = 40%
  - Potential Low Bias (magnitude 60%)

*MS or LCS recovery would also apply

- Result is definitely below action level.

Data Quality Assessment: Process Overview (7)



- The Person submits the DUS report or QA/QC summary and TCEQ conducts review.
  - APARs
  - RACRs,
  - RDRs,
  - ARFs.

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Questions?