LCRA Environmental Laboratory Services

Understanding Lab Analytical Reports January 7, 2015

Topics

- Common Laboratory Definitions
- Review Analytical Results
- Review QC Data
- Qualifiers
- Laboratory Challenges

Laboratory Definitions

Practical Quantitation Limit (PQL): The PQL is the lowest concentration that can be reliably achieved within specified limits of precison and accuracy during routine laboratory operating conditions.

LOD Limit(s) of Detection (LOD): A laboratory's estimate of the minimum amount of an analyte in a given matrix that an analytical process can reliably detect in their facility.

Limit(s) of Quantitation (LOQ): The minimum levels, concentrations, or quantities of a target variable (e.g., target analyte) that can be reported with a specified degree of confidence.

Limit(s) of Quantitation (LOQ) Check Sample: An LOQ check sample consists of a sample matrix (e.g. deionized water) free from the analytes of interest spiked with verified known amounts of analytes. It is used to establish intralaboratory bias to assess the performance of the measurement system at the lower limits of analysis. Note: The LOQ check sample is analyzed without consideration of dilution factor, whereas actual field sample results may be adjusted for dilution factor based on sample matrix interferences.

Matrix Spike (MS, spiked sample or fortified sample): A sample prepared, taken through all sample preparation and analytical steps of the procedure unless otherwise noted in a referenced method, by adding a known amount of target analyte to a specified amount of sample for which an independent test result of target analyte concentration is available. Matrix spikes are used, for example, to determine the effect of the matrix on a method's recovery efficiency. **Note:** Matrix spike recoveries are compared to the acceptance criteria published in the mandated test method or in absence of method criteria, by laboratory derived acceptance criteria.



LCRA Environmental Laboratory Services 3505 Montopolis Drive Austin, TX 78744 Phone: (512)356-6021 Fax: (512)356-6021

ANALYTICAL RESULTS

Workorder: Q	1460319	121814 Date Received: 12/18/2014 Matrix: Aqueous Date Collected: 12/18/2014 Matrix: Aqueous Storet Results Units PQL LOD LOQ DF Prepared By Analyzed By Qual E300.0, Anions Analytical Method: E300.0, Anions Analytical Method: E300.0, Anions Multical Method: E300.0, Anions Malytical Method: E300.0, Alice Prep Analytical Method: E305.4 / E351.2 Water Prep <th colspan="4</th>											
Lab ID: Sample ID:	Q1460319001					C C	Date Rece Date Colle	ived: cted:	12/18/2014 12/17/2014	Matrix:	Aqueous		
Parameters		Storet	Results	Units	PQL	LOD	LOQ	DF	Prepared	Ву	Analyzed	Ву	Qual
INORGANICS	3												
Analysis Desc	: E300.0, Anions			Prep	aration Meth	nod: E300	.0, Anions						
				Anal	ytical Metho	d: E300.0	, Anions						
Chloride		00940	106	mg/L	5.00	2.00	5	5	12/22/14 21:09:00	ML	12/22/14 21:09:00	ML	
Sulfate		00945	65.9	mg/L	5.00	2.00	5	5	12/22/14 21:09:00	ML	12/22/14 21:09:00	ML	
TOTAL KJEL	DAHL NITROGE	N											
Analysis Desc	: E351.2 TKN by	5		Prep	aration Meth	nod: E365	.4 / E351.	2 Wate	er Prep				
SemiAuto Col				Anal	ytical Metho	d: E351.2	TKN by S	emiAu	uto Col				
Nitrogen, Kjel	dahl, Total	00625	1.40	mg/L	0.100	0.0400	0.2	1	12/19/14	MM	12/22/14	ML	
TOTAL PHOS	PHATE AS P												
Analysis Desc	: E365.4 Phosph	iorus,		Prep	aration Meth	nod: E365	.4 / E351.	2 Wate	er Prep				
Iotal				Anal	ytical Metho	d: E365.4	Phosphor	us, To	otal				
Phosphorus,	Total (As P)	00665	2.10	mg/L	0.0400	0.0160	0.02	2	12/19/14	MM	12/23/14	CM	
E-COLI by ID	EXX												
Analysis Desc	: SM9223, IDEX	×		Prep	aration Meth	nod: SM92	223, IDEX	×					
				Anal	ytical Metho	d: SM922	3, IDEXX						
Ecoli		31699	37.9	MPN	1.00	1.00	1	1	12/18/14 15:18:00	HP	12/18/14 15:18:00	HP	
CHLOROPHY	LL and PHEOP	HYTIN											
Analysis Desc	:: E445.0,			Prep	aration Meth	nod: E445	.0, Chorop	hyll/P	heophytin				
Chorophyll/Ph	leophytin			Anal	ytical Metho	d: E445.0	, Choroph	yll/Phe	eophytin				
Chlorophyll-a		70953	29.6	ug/L	2.00	0.800	2	2	12/18/14	HP	12/23/14	HP	N
Pheophytin-A		32213	3.37	ug/L	2.00	0.800	2	2	12/18/14 15:31:00	HP	12/23/14	ΗP	Ν
NITRATE AN													
Analysis Desc	: SM4500-NO3-I	Η,		Prep	aration Meth	nod: SM4	500-NO3-I	I, Nitra	ate/Nitrite				
Nitrate/Nitrite				Anal	vtical Metho	d: SM450	0-NO3-H.	Nitrate	e/Nitrite				
Nitrate/Nitrite		00630	11.2	mg/L	0.200	0.0800	0.02	10	12/23/14	ML	12/23/14	ML	

Report ID: 136314 - 1443371

Page 3 of 13

This report shall not be reproduced, except in full, without the written consent of LCRA Environmental Laboratory Services.



LCRA Environmental Laboratory Services 3505 Monitopolis Drive Austin, TX 78744 Phone: (512)356-6021 Fax: (512)356-6021

ANALYTICAL RESULTS QUALIFIERS

Workorder: Q1460319 _____121814

PARAMETER QUALIFIERS

Lab ID: Q1460319001

N Not Accredited

Lab ID: Q1460319002

N Not Accredited

Report ID: 136314 - 1443371

Page 5 of 13

3004.7.0.0



LCRA Environmental Laboratory Services 3505 Montopolis Drive Austin, TX 78744 Phone: (612)356-6021 Fax: (612)356-6021

_

QUALITY CONTROL DATA

Workorder:	O1460319	121814
rroncoluci.	21400010	121014

QC Batch: WETH	P/1824 4 / E351.2	1824 / E351.2 Water Prep			Method:	E351.	2 TKN by Se			
Associated Lab Samples:	Q146031	19001, Q1460	319002							
LABORATORY CONTROL SAMPLE: 400797										
Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limit	RPD	Max	Qualifi
Nitrogen, Kjeldahl, Total Phosphorus, Total (As P)	mg/L ma/L	1	1.04 1	.98 1.01	104 100	98.1 101	80 - 120 90 - 110	5.84	20 20	
(,										
METHOD BLANK: 400799	METHOD BLANK: 400799									
Parameter	Units	Blank Result	Reporting Limit	Qualifiers						
Nitrogen, Kjeldahl, Total Phosphorus, Total (As P)	mg/L mg/L	<0.100 <0.0200	0.100 0.0200							
MATRIX SPIKE SAMPLE: 400800 ORIGINAL: Q1460247001										
Parameter	Units	Original Result	Spike Conc.	MS Result	MS % Rec	% Rec Limit	Qualifiers			
Phosphorus, Total (As P)	mg/L	.52	1	1.54	102	80 - 120				
	SPANIF EE	Spiko	108	LCSD	109.94		% Roo			
Parameter	Units	Conc.	Result	Result	Rec	Rec	Limit	RPD	Max	Qualifi
Nitrogen, Kjeldahl, Total Rhosphonus, Total (As R)	mg/L	1	1.05	1.02	105	102	80 - 120	2.9	20	
Filoapiloida, IUdi (As F)	mg/L			1.01	35.7	101	30 3 110	1.5	20	
METHOD BLANK: 400803										
Parameter	Units	Blank Result	Reporting Limit	Qualifiers						

 Nitrogen, Kjeldahl, Total
 mg/L
 <0.100</th>
 0.100

 Phosphorus, Total (As P)
 mg/L
 <0.0200</td>
 0.0200

Report ID: 136314 - 1443371

Page 8 of 13

This report shall not be reproduced, except in full, without the written consent of LCRA Environmental Laboratory Services.

Laboratory Challenges

- Limited sample matrix information (e.g. conductivity).
- Lower reporting limit requests with same instrument technology.
- Maintaining standard analytical processes with different program requirements.
- Interpretation of sample impacts from Matrix Spike results.

Questions