M67001.AR.006914
MCB CAMP LEJUENE
5090.3a

VALIDATED DATA PACKAGE, 1507005, MCB CAMP LEJUENE NC
8/15/2015
DATAQUAL ENVIRONMENTAL SERVICES, LLC

DataQual

Environmental Services, LLC

CH2M HILL
14120 Ballantyne Corporate Place
Suite 200
Charlotte, NC 28277

August 15, 2015
SDG# 1507005, Empirical
MCB Camp Lejeune-CTO-WE9A

Dear Ms. Kleist,

The following Data Validation report is provided as requested for the parameters noted in the table below for SDG #1507005. The data validation was performed in accordance with the SW846 Methods 8260B for volatiles, as well as good professional judgment. Also used in the validation of these samples were The National Functional Guidelines for Organic Data Review (June, 2008) as applicable. All areas of concern are discussed in the body of the report and a summary of data qualifications is provided.

Sample ID	Lab ID	Matrix	VOA
IR06-GW86-15B	1507005-01	water	X
IR06-GW87UCH-15B	1507005-02	water	X
IR06-GW90LCH-15B	1507005-03	water	X
IR06-TB-062515	1507005-04	water	X

The following quality control samples were provided with this SDG: sample IR06-TB-062515 -trip blank.

The samples were evaluated based on the following criteria:

- Data Completeness *
- Technical Holding Times *
- GC/MS Tunes *
- Initial/Continuing Calibrations *
- Blanks *
- GC/MS Internal Standards *
- Surrogates *
- Laboratory Control Samples *
- Matrix Spike Recoveries NA
- Matrix Spike Duplicate RPDs NA
- Field Duplicates NA
- Identification/Quantitation *
- Reporting Limits *

* - indicates that no qualifications were required based on this criteria

Overall Evaluation of Data/Potential Usability Issues

A summary of qualifications applied to the sample results are noted below for the fractions validated. Specific details regarding qualification of the data are addressed in the Specific Evaluation section of this narrative. If an issue is not addressed there were no actions required based on unmet quality criteria. When more than one qualifier is associated with a compound/analyte the validator has chosen the qualifier that best indicates possible bias in the results and flagged the data accordingly. However, information regarding all quality control issues is provided in the body of the report and on the qualification summary page. Please note that when a compound or analyte is flagged due to blank contamination the BL qualifier code takes precedence over all other qualifier codes except a code that explains rejected data.

VOA

No qualifications were required to the data.

Specific Evaluation of Data

Data Completeness

The SDG was received complete and intact. Resubmissions were not required.

Technical Holding Times

According to chain of custody records, sampling was performed on 6/25-30/15and samples were received at the laboratory between 7/1/15. All sample preparation and analysis was performed within method holding time requirements.

A summary of qualifications required is provided on the following page. Please do not hesitate to contact DataQual ES with any questions regarding this validation report.

Sincerely,

Laura Maschhoff
President

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Summary of Data Qualifications

VOA

Sample ID	Compound	Results	Q-Flag	Q Code
no qualifications				

Glossary of Qualification Flags and Abbreviations

Qualification Flags (Q-Flags)

U	not detected above the reported sample quantitation limit
J	estimated value
UJ	reported quantitation limit is qualified as estimated
R	result is rejected; the presence or absence of the analyte cannot be verified
NJ	analyte has been tentatively identified, estimated value
L/J-	analyte present, biased low
UL	not detected, quantitation limit is probably higher
K/J+	analyte present, biased high

Inorganic Field/Lab Blank Qualification Flags (Q-Flags)

NA	The sample result for the blank contaminant is greater than the sample RL and is greater than 10X the blank value. The sample result for the blank contaminant is not qualified with any blank qualifiers.
RL-U	The sample result for the blank contaminant is less than the sample RL and the result is raised to the RL and flagged U.
R or J_+	The blank contaminant concentration was greater than the RL and the sample result is greater than the RL but less than 10X the blank contaminant concentration. The reported results are flagged either as rejected R or biased high J+ based on the professional judgment of the validator.

Organic Field/Lab Blank Qualification Flags (Q-Flags)

NA	The sample result for the blank contaminant is greater than the sample RL. The sample result for the blank contaminant is not qualified with any blank qualifiers.
RL-U	The sample result for the blank contaminant is less than the sample RL, so the result is raised to the RL and flagged U.

General Abbreviations

RL	reporting limit
DL	detection limit
LOD	limit of detection
LOQ	limit of quantitation
Q Code	qualifier code
+ / -	positive result/non-detect result

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QUALIFIER CODE REFERENCE

Qualifier	Description
TN	Tune
BSL	Blank Spike/LCS - High Recovery
BSH	Blank Spike/LCS - Low Recovery
BD	Blank Spike/Blank Spike Duplicate (LCS/LCSD) Precision
BRL	Below Reporting Limit
ISL	Internal Standard - Low Recovery
ISH	Internal Standard - High Recovery
MSL	Matrix Spike and/or Matrix Spike Duplicate - Low Recovery
MSH	Matrix Spike and/or Matrix Spike Duplicate - High Recovery
MI	Matrix interference obscuring the raw data
MDP	Matrix Spike/Matrix Spike Duplicate Precision
2S	Second Source - Bad reproducibility between tandem detectors
SSL	Spiked Surrogate - Low Recovery
SSH	Spiked Surrogate - High Recovery
SD	Serial Dilution Reproducibility
ICL	Initial Calibration - Low Relative Response Factors (RRF)
ICH	Initial Calibration - High Relative Response Factors (RRF)
ICB	Initial Calibration - Bad Linearity or Curve Function
CCL	Continuing Calibration - Low Recovery or %Difference
CCH	Continuing Calibration - High Recovery or %Difference
CC	Continuing Calibration
LD	Lab Duplicate Reproducibility
HT	Holding Time
PD	Pesticide Degradation
2C	Second Column - Poor Dual Column Reproducibility
LR	Concentration Exceeds Linear Range
BL	Blank Contamination (MBL, EBL, FBL, TBL)
RE	Redundant Result - due to Re-analysis or Re-extraction
DL	Redundant Result - due to Dilution
FD	Field Duplicate
OT	Other - explained in data validation report
%SOL	High moisture content

ANALYSIS DATA SHEET

IR06-GW86-15B

Laboratory: Empirical Laboratories, LLC SDG: 1507005

Client: ENCO Project: Lejeune CTO-WE9A

Matrix: Water Laboratory ID: 1507005-01 File ID: 0700501B.D

Sampled: 06/25/15 15:20 Prepared: 07/01/15 12:06 Analyzed: 07/01/15 12:06

Solids: Preparation: 5030B Dilution: 1

Batch: 5G01010 Sequence: 5G19404 Calibration: 5119001 Instrument: MS-VOA6

CAS NO.	COMPOUND	CONC. (ug/L)	DL	LOD	LOQ	Q
71-43-2	Benzene		0.250	0.500	1.00	U
108-90-7	Chlorobenzene		0.250	0.500	1.00	U
67-66-3	Chloroform		0.250	0.500	1.00	U
74-87-3	Chloromethane		0.250	0.500	1.00	U
106-46-7	1,4-Dichlorobenzene		0.250	0.500	1.00	U
107-06-2	1,2-Dichloroethane		0.250	0.500	1.00	U
75-35-4	1,1-Dichloroethene		0.250	0.500	1.00	U
156-59-2	cis-1,2-Dichloroethene		0.250	0.500	1.00	U
156-60-5	trans-1,2-Dichloroethene		0.250	0.500	1.00	U
78-87-5	1,2-Dichloropropane		0.250	0.500	1.00	U
100-41-4	Ethylbenzene		0.250	0.500	1.00	U
79-34-5	1,1,2,2-Tetrachloroethane		0.250	0.500	1.00	U
127-18-4	Tetrachloroethene		0.250	0.500	1.00	U
79-00-5	1,1,2-Trichloroethane		0.250	0.500	1.00	U
79-01-6	Trichloroethene		0.250	0.500	1.00	U
75-01-4	Vinyl chloride		0.250	0.500	1.00	U

Total Target Analytes Reported 16 Project Analytes: 16

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
Bromofluorobenzene	30.00	29.99	100	85 - 114	
Dibromofluoromethane	30.00	31.77	106	80 - 119	
1,2-Dichloroethane-d4	30.00	30.29	101	81 - 118	
Toluene-d8	30.00	29.54	98.5	89 - 112	

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ANALYSIS DATA SHEET

IR06-GW87UCH-15B

Laboratory:	Empirical Laboratories, LLC			SDG:	1507005
Client:	ENCO			Project:	Lejeune CTO-WE9A
Matrix:	Water	Laboratory ID:	1507005-02	File ID:	0700502B.D
Sampled:	06/25/15 16:00	Prepared:	07/01/15 13:04	Analyzed:	07/01/15 13:04
Solids:		Preparation:	5030B	Dilution:	5
Batch:	5G01010	Sequence:	5G19404	Calibration:	5119001
Instrument:	MS-VOA6				

CAS NO.	COMPOUND	CONC. (ug/L)	DL	LOD	LOQ	Q
71-43-2	Benzene	**89.1**	1.25	2.50	5.00	D
108-90-7	Chlorobenzene		1.25	2.50	5.00	U
67-66-3	Chloroform	**4.28**	1.25	2.50	5.00	JD
74-87-3	Chloromethane		1.25	2.50	5.00	U
106-46-7	1,4-Dichlorobenzene		1.25	2.50	5.00	U
107-06-2	1,2-Dichloroethane		1.25	2.50	5.00	U
75-35-4	1,1-Dichloroethene	**1.93**	1.25	2.50	5.00	JD
156-59-2	cis-1,2-Dichloroethene	**751**	1.25	2.50	5.00	D
156-60-5	trans-1,2-Dichloroethene	**3.14**	1.25	2.50	5.00	JD
78-87-5	1,2-Dichloropropane		1.25	2.50	5.00	U
100-41-4	Ethylbenzene		1.25	2.50	5.00	U
79-34-5	1,1,2,2-Tetrachloroethane		1.25	2.50	5.00	U
127-18-4	Tetrachloroethene		1.25	2.50	5.00	U
79-00-5	1,1,2-Trichloroethane		1.25	2.50	5.00	U
79-01-6	Trichloroethene	**15.1**	1.25	2.50	5.00	D
75-01-4	Vinyl chloride	**25.6**	1.25	2.50	5.00	D

Total Target Analytes Reported 16 Project Analytes: 16

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
Bromofluorobenzene	30.00	30.04	100	85 - 114	
Dibromofluoromethane	30.00	31.83	106	80 - 119	
1,2-Dichloroethane-d4	30.00	30.49	102	81 - 118	
Toluene-d8	30.00	29.41	98.0	89 - 112	

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007

ANALYSIS DATA SHEET

IR06-GW90LCH-15B

Laboratory:	Empirical Laboratories, LLC			SDG:	1507005
Client:	ENCO			Project:	Lejeune CTO-WE9A
Matrix:	Water	Laboratory ID:	1507005-03	File ID:	0700503B.D
Sampled:	06/30/15 10:30	Prepared:	07/01/15 12:35	Analyzed:	07/01/15 12:35
Solids:		Preparation:	5030B	Dilution:	1
Batch:	5G01010	Sequence:	5G19404	Calibration:	5119001
Instrument:	MS-VOA6				

CAS NO.	COMPOUND	CONC. (ug/L)	DL	LOD	LOQ	Q
71-43-2	Benzene		0.250	0.500	1.00	U
108-90-7	Chlorobenzene		0.250	0.500	1.00	U
67-66-3	Chloroform	**0.738**	0.250	0.500	1.00	J
74-87-3	Chloromethane		0.250	0.500	1.00	U
106-46-7	1,4-Dichlorobenzene		0.250	0.500	1.00	U
107-06-2	1,2-Dichloroethane		0.250	0.500	1.00	U
75-35-4	1,1-Dichloroethene		0.250	0.500	1.00	U
156-59-2	cis-1,2-Dichloroethene	**0.250**	0.250	0.500	1.00	J
156-60-5	trans-1,2-Dichloroethene		0.250	0.500	1.00	U
78-87-5	1,2-Dichloropropane		0.250	0.500	1.00	U
100-41-4	Ethylbenzene		0.250	0.500	1.00	U
79-34-5	1,1,2,2-Tetrachloroethane		0.250	0.500	1.00	U
127-18-4	Tetrachloroethene		0.250	0.500	1.00	U
79-00-5	1,1,2-Trichloroethane		0.250	0.500	1.00	U
79-01-6	Trichloroethene		0.250	0.500	1.00	U
75-01-4	Vinyl chloride		0.250	0.500	1.00	U

Total Target Analytes Reported 16 Project Analytes: 16

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
Bromofluorobenzene	30.00	29.69	99.0	85 - 114	
Dibromofluoromethane	30.00	31.39	105	80 - 119	
1,2-Dichloroethane-d4	30.00	31.38	105	81 - 118	
Toluene-d8	30.00	28.80	96.0	89 - 112	

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ANALYSIS DATA SHEET

IR06-TB-062515

Laboratory: Empirical Laboratories, LLC SDG: 1507005

Client: ENCO Project: Lejeune CTO-WE9A

Matrix: Water Laboratory ID: 1507005-04 File ID: 0700504A.D

Sampled: 06/25/15 00:00 Prepared: 07/01/15 11:37 Analyzed: 07/01/15 11:37

Solids: Preparation: 5030B Dilution: 1

Batch: 5G01010 Sequence: 5G19404 Calibration: 5119001 Instrument: MS-VOA6

CAS NO.	COMPOUND	CONC. (ug/L)	DL	LOD	LOQ	Q
71-43-2	Benzene		0.250	0.500	1.00	U
108-90-7	Chlorobenzene		0.250	0.500	1.00	U
67-66-3	Chloroform		0.250	0.500	1.00	U
74-87-3	Chloromethane		0.250	0.500	1.00	U
106-46-7	1,4-Dichlorobenzene		0.250	0.500	1.00	U
107-06-2	1,2-Dichloroethane		0.250	0.500	1.00	U
75-35-4	1,1-Dichloroethene		0.250	0.500	1.00	U
156-59-2	cis-1,2-Dichloroethene		0.250	0.500	1.00	U
156-60-5	trans-1,2-Dichloroethene		0.250	0.500	1.00	U
78-87-5	1,2-Dichloropropane		0.250	0.500	1.00	U
100-41-4	Ethylbenzene		0.250	0.500	1.00	U
79-34-5	1,1,2,2-Tetrachloroethane		0.250	0.500	1.00	U
127-18-4	Tetrachloroethene		0.250	0.500	1.00	U
79-00-5	1,1,2-Trichloroethane		0.250	0.500	1.00	U
79-01-6	Trichloroethene		0.250	0.500	1.00	U
75-01-4	Vinyl chloride		0.250	0.500	1.00	U

Total Target Analytes Reported 16 Project Analytes: 16

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
Bromofluorobenzene	30.00	29.58	98.6	85 - 114	
Dibromofluoromethane	30.00	31.53	105	80 - 119	
1,2-Dichloroethane-d4	30.00	30.21	101	81 - 118	
Toluene-d8	30.00	29.52	98.4	89 - 112	

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003

Data Completeness

The data package was received complete and intact. Resubmissions were not required. (SW846 Method 8260B)

Laboratory: Empirical Laboratories

Holding Times

Sampling Date: 6/25 and 30/15
Received Date: 7/1/15
Analysis Dates: 7/1/15
Cooler Temp: -0.6°C

All holding time requirements were met.

Calibrations

Mass assignments were verified by the injection of BFB.

No qualifications were required for the initial or continuing calibrations.

Internal Standards

All criteria were met.

Blank Summary

Blank qualification guidelines:

- No action is taken if a compound is found in the blank but not in the sample.
- Sample weight, volume or dilution factor must be taken into consideration when applying criteria.
- Qualification/Action codes where applied as stated in table below:

Blank Type	Blank Result	Sample Result	Action for Samples
Method, Field	Detects	Not detected	No qualifications
	< LOD*	< LOD*	Report LOD value with a U
		≥ LOD*	Use professional judgment
	> LOD*	< LOD*	Report LOD value with a U
		≥ LOD* and < blank concentration	Report the concentration for the sample with a U, or qualify the data as unusable R
		≥ LOD* and ≥ blank concentration	Use professional judgment
	= LOD*	< LOD*	Report LOD value with a U
		≥ LOD*	Use professional judgment
	Gross contamination	Detects	Qualify results as unusable R

*2x the LOD for methylene chloride, 2-butanone and acetone

No contamination was exhibited in the method blanks. Associated QC blanks: IR82-TB-062515- trip blank (no positive results) and IR82-EB-062615 (no positive results)- equipment blank.

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Blank Contamination and Qualification Summaries

Blank ID	Compound	Concentration	Reporting Limit (LOD)

Associated samples and required qualifications are noted in the following table.

Sample ID	Compound	Q Flag	Qual Code
no qualifications			

Surrogates

All criteria were met.

Laboratory Control Sample

All criteria were met.

Matrix Spike/Spike Duplicate Samples

An MS/MSD was not submitted for this data package.

Field Duplicate Sample

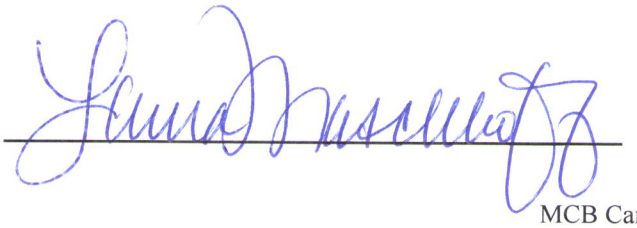
A field duplicate was not submitted for this data package.

Specific Comments:

All sample results were reported within the calibration range of the instruments.

Detection limits were acceptable. Raw data and calculations were verified.

We have limited the supporting documentation, found with these worksheets, to those forms that indicate qualifications were required.

Validator Signature:  **Date:** 8/15/15

1507005

EMPIRICAL LABORATORIES, LLC - CHAIN OF CUSTODY RECORD

SHIP TO: 621 Mainstream Drive, Suite 270 ♦ Nashville, TN 37228 ♦ 877-345-1113 ♦ (fax) 866-417-0548

26632

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Send Results to:	Send Invoice to:
Name Bianca Kleist	Name Bianca Kleist
Company CH2M HILL	Company CH2M HILL
Address 14120 Ballantyne Corporate	Address 14120 Ballantyne Corporate
City Charlotte	City Charlotte
State, Zip NC, 28277	State, Zip NC, 28277
Phone 704-543-3274	Phone 704-543-3274
Fax	Fax
E-mail Bianca.Kleist@ch2m.com Serge.Camus@ch2m.com	E-mail
Project No./Name:	**Sampler's (Signature):**

Analysis Requirements: VOCs (8260B)

Lab Use Only:

VOA Headspace	Y	N	NA
Field Filtered	Y	N	NA
Correct Containers	Y	N	NA
Discrepancies	Y	N	NA
Cust. Seals Intact	Y	N	NA
Containers Intact	Y	N	NA

Airbill #:

CAR #:

Lab Use Only Lab #	Date/Time Sampled	Sample Description	Sample Matrix	Comments	No. of Bottles	Lab Use Only Containers/Pres.
01	6/25/15	IR#6-MW86-15B	GW		3	
02	6/25/15	IR#6-MW87UCH-15B	GW		3	
03	6/30/15	IR#6-MW90LCH-15B	GW		3	
04	Lab	Trip Blank	TB		2	
	Lab	Temp Blank				

	Date/Time	Received By: (Signature)
Sample Kit Prep'd by: (Signature)	6/30/15	
Relinquished by: (Signature)	6/30/15	Received By: (Signature)
Relinquished by: (Signature)	Date/Time	Received By: (Signature)
Received for Laboratory by: (Signature)	7/1/15 855	Temperature -0.6

REMARKS:

Details:

Page 1 of 1

Cooler No. ____ of ____

Date Shipped ____

Shipped By ____

Turnaround ____

Distribution: Original and yellow copies accompany sample shipment to laboratory; Pink retained by samplers.

1507005 Summ Package

II. EMPIRICAL LABORATORIES
COOLER RECEIPT FORM

Cooler Received/Opened On: 07/01/15 @ 0855 Work order# 1507005

1. Tracking # 9448 (last 4 digits, FedEx)

   Courier: FedEx

2. Temperature of rep. sample or temp blank when opened: -0.6 °C + correction factor(-0.0) = -0.6 °C

3. If item #2 temperature is 0°C or less, was the representative sample or temp blank frozen? YES NO...NA

4. Were custody seals on outside of cooler? YES...NO...NA

   If yes, how many and where: 1 on front

5. Were the seals intact, signed, and dated correctly? YES...NO...NA

6. Were custody papers inside cooler? YES...NO...NA

   I certify that I opened the cooler and answered questions 1-6 (initial/date) JG 7/1/15

7. Were custody seals on containers: YES NO and Intact YES...NO...NA

   Were these signed and dated correctly? YES...NO...NA

8. Packing material used? Bubble wrap Plastic bag Peanuts Vermiculite Foam insert Paper Other None

9. Cooling process: Ice Ice-pack Ice (direct contact) Dry ice Other None

10. Did all containers arrive in good condition (unbroken)? YES...NO...NA

11. Were all container labels complete (#, date, signed, pres., etc)? YES...NO...NA

12. Did all container labels and tags agree with custody papers? YES...NO...NA

13. a. Were VOA vials received? YES...NO...NA

    b. Was there observable headspace present in any VOA vial (>5mm-6mm)? YES...NO...NA

14. Was there a Trip Blank in this cooler (custody seals present/intact)? YES...NO...NA...Comments_____
    If multiple coolers, sequence #_____

    I certify that I unloaded the cooler and answered questions 7-14 (initial/date) TH 7/1/15

15. a. On pres'd bottles, did pH test strips suggest preservation reached the correct pH level? YES...NO...NA

    b. Did the bottle labels indicate that the correct preservatives were used? YES...NO...NA

16. Was residual chlorine present? YES...NO...NA

    I certify that I checked for chlorine and pH as per SOP and answered questions 15-16 (initial/date) TH 7/1/15

17. Were custody papers properly filled out (ink, signed, etc)? YES...NO...NA

18. Did you sign the custody papers in the appropriate place? YES...NO...NA

19. Were correct containers used for the analysis requested? YES...NO...NA If not, PM notified? YES...NO...NA

20. Was sufficient amount of sample sent in each container? YES...NO...NA If not, PM notified? YES...NO...NA

21. Were there Non-Conformance issues at login? YES...NO...NCR#_____

I certify that I entered this project into LIMS and answered questions 17-21 (initial/date) TH 7/1/15

I certify that I attached a label with the unique LIMS number to each container (initial/date) TH 7/1/15

I certify that I notified the laboratory of any short holding time or RUSH parameters (initial/date) TH 7/1/15

C:\Users\jgross\Desktop\Cooler Receipt Updated 2014.doc

II. EMPIRICAL LABORATORIES
COOLER RECEIPT FORM (Continued)

LIMS Data Entry Second Check Work order# 1507005

22. Cooler Receipt Form issues reviewed and communicated to PM? YES...NO...(NA)

23. Client and Project verified to match the COC/CRF in LIMS Project Screen? (YES)..NO...NA

24. Following items verified to items verified to match the COC/CRF in LIMS Receipt Screen:

a. Received Date/Received By (YES)..NO...NA

b. TAT (COC specified different?) (YES)..NO...NA

c. Shipping Container Temperatures (corrected temps) (YES)..NO ...NA

d. Condition Items (seals, intact, labels, preservation, ROI) (YES)..NO...NA

25. Following LIMS Sample Information verified against COC for each sample:

a. Name (YES)..NO...NA

b. QC Source YES...NO..(NA)

c. Matrix (YES)..NO...NA

d. Sample Type (YES)..NO...NA

e. Sampled Date/Time (Correct Time Zone) (YES)..NO...NA

f. Work Analyses/Versions (if applicable) (YES)..NO...NA

g. Sample issues included in comments (limited volume, concentration warnings, etc.)? YES...NO..(NA)

h. Unpreserved VOA holding time set to 7 days? YES...NO..(NA)

26. Containers consistent with tests requested? (YES)..NO...NA

27. Field data entered and matching COC? (YES)..NO...NA

I certify that I have verified the LIMS data entry and answered questions 23-27 above (initial/date): JTG 7/1/15

Additional Details:

Sample Delivery Group Case Narrative

Receipt Information:

The samples were received within the preservation guidelines for the associated methods. The information associated with sample receipt and the Sample Delivery Group (SDG) are included within section 4 of this package, which also provides information on the link between the client sample ID listed on the COC and laboratory's assigned unique sample ID or WorkOrder #. The sample is tracked through the laboratory for all analysis via the assigned WorkOrder #.

All samples that were received were analyzed and none of the samples were placed on hold without analyses. There were no subcontracted analyses for this SDG.

The following issues were discovered with the COC and/or samples upon log-in:

1. As per the client, the sample listed on the COC as Trip Blank should have the client ID of IR82-TB-062515.
2. No sampling times were listed on the COC. The client indicated the sampling times are as follows: IR06-MW86-15B at 15:20, IR06-MW87UCH-15B at 16:00, IR06-MW90LCH-15B at 10:30, and IR82-TB-062515 at 00:00.

Changes to the Revision:

Revision 01: The package was revised to change the client IDs for the samples listed on the COC from IR06-MW86-15B to IR06-GW86-15B, from IR06-MW87UCH-15B to IR06-GW87UCH-15B, from IR06-MW90LCH-15B to IR06-GW90LCH-15B, and from IR82-TB-062515 to IR06-TB-062515.

Analytical Information:

All samples were prepped (where applicable) and analyzed within the standard allowed holding times, unless noted within the exceptions listed below. The laboratory analyzed all samples within the program and method guidelines. Sample preparation and dilution information is provided within the final results report and at the beginning of each form set. The following information is provided specific to individual methods:

SW8260B:

Note – Sample 1507005-02 was analyzed at a 5x due to high concentrations of target analytes detected during screening. No lower analysis was performed.

No additional anomalies or deviations are noted.

Data Qualifiers:

As applicable and where required, the following general qualifiers are associated with the sample results. Additional qualifiers will be specified within the reporting sections of the data package or within the body of the Case Narrative.

Analytical Report Terms and Qualifiers

DL: The detection limit (DL) is defined as the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero. The DL is supported by the method detection limit (MDL) which is determined from analysis of a sample containing the analyte in a given matrix.

LOD: The Limit of Detection is an estimate of the minimum amount of a substance that an analytical process can reliably detect. An LOD is analyte- and matrix-specific and may be laboratory-dependent. This definition is further clarified in the DoD QSM 5.0 revisions as the smallest amount or concentration of a substance that must be present in a sample in order to be detected at a high level of confidence (99%). At the LOD, the false negative rate (Type II error) is 1%.

LOQ: The Limit of Quantitation is the minimum level, concentration, or quantity of a target variable (e.g., target analyte) that can be reported with a specified degree of confidence. This term is further clarified within the DoD QSM 5.0 as the lowest concentration that produces a quantitative result within specified limits of precision and bias.

***:** Exceeding quality control criteria are associated with the reported result.

B: The presence of a "B" to the right of an analytical value indicates that this compound was also detected in the method blank and the data should be interpreted with caution. One should consider the possibility that the correct sample result might be less than the reported result and, perhaps, zero.

D: When a sample (or sample extract) is rerun diluted because one of the compound concentrations exceeded the highest concentration range for the standard curve, all of the values obtained in the dilution run will be flagged with a "D".

E: The concentration for any compound found which exceeds the highest concentration level on the standard curve for that compound will be flagged with an "E". Usually the sample will be rerun at a dilution to quantitate the flagged compound. For Metals, the qualifier indicates that the serial dilution was outside of the control limits and the compound should be considered estimated due to the presence of interference.

H1: The result was analyzed outside of the EPA recommended holding time.

H2: The result was extracted outside of the EPA recommended holding time.

H3: The sample for this analyte was received outside of the EPA recommended holding time.

J: The presence of a "J" to the right of an analytical result indicates that the reported result is estimated. The mass spectral data pass the identification criteria showing that the compound is present, but the calculated result is less than the LOQ. One should feel confident that the result is greater than zero and less than the LOQ.

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M: Indicates that the sample matrix interfered with the quantitation of the analyte. In dual column analysis the result is reported from the column with the lower concentration. In inorganics, it indicates that the parameters DL/LOD/LOQ have been raised.

N: The MS/MSD accuracy and/or precision are outside criteria. The predigested spike recovery is not within control limits for the associated parameter.

P: The associated numerical value is an estimated quantity. There is greater than a 40% difference between the two GC columns for the detected concentrations. The higher of the two values is reported unless matrix interference is obvious or for HPLC analysis where the primary column is reported.

Q: The relative percent difference (RPD) and/or percent recovery exceeded limits in the associated Blank Spike and/or Blank Spike Duplicate.

S: The associated internal standard exceeded criteria.

U: The presence of a "U" indicates that the analyte was analyzed for but was not detected or the concentration of the analyte quantitated below the DL.

X: The parameter shows a potential positive bias on a reported concentration due to an ICV or CCV exceeding the upper control limit on the high side.

Y: The parameter shows a potential negative bias on a reported concentration due to an ICV or CCV exceeding the lower control limit on the low side.

Z: The parameter shows lack of confirmation/detection, which may be due to a negative bias in the ICV or CCV which exceeds the lower control limit.

Chromatographic Flags for Manual Integration:

The following letters are used to denote manual integrations on the laboratory's raw data in association with chromatographic integrations:

A: The peak was manually integrated as it was not integrated in the original chromatogram.

B: The peak was manually integrated due to resolution or co-elution issues in the original chromatogram.

C: The peak was manually integrated to correct the baseline from the original chromatogram.

D: The peak was manually integrated to identify the correct peak as the wrong peak was identified in the original chromatogram.

E: The peak was manually integrated to include the entire peak as the original chromatogram only integrated part of the peak.

LIMS Definitions / Naming Conventions:

The following are general naming conventions that are used throughout the laboratory; however, on a method by method basis, there are additional QAQC items that are named in a consistent format.

BLK: LIMS assigns a unique identifier to the Method Blank by naming it as the letters BLK

appended to the Batch ID. A Method Blank is an analyte-free matrix to which all reagents are added in the same volumes or proportions as used in sample processing. The Method Blank is used to assess for possible contamination during preparation and/or analysis steps. Method Blanks within a Batch or Analytical sequence will be appended with a numerical value beginning with 1 that will increase incrementally.

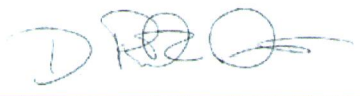
BS: LIMS assigns a unique identifier to the Blank Spike by naming it as the letters BS appended to the Batch ID. The Blank Spike or Lab Control Sample is a controlled analyte-free matrix, which is spiked with known and verified concentrations of target analytes. Spiking concentrations can be referenced in the method SOP. The BS is used to evaluate the viability of analytes taken through the entire prep (when applicable) and analytical process. Blank Spikes within a Batch or Analytical sequence will be appended with a numerical value beginning with 1 that will increase incrementally. A duplicate Blank Spike will be designated as a BSD.

MS: The LIMS assigns each Client sample with a unique identifier. The Matrix Spike is designated with a MS at the end of the sample's unique identifier. The Matrix Spike sample is used to assess the effect of the sample matrix on the precision and accuracy of the results generated using the selected method. A duplicate Matrix Spike will be designated as a MSD.

IDs: The LIMS assigns each Client sample with a unique identifier. The letter "RE" may potentially be appended to the end of the LIMS Sample ID. And "**RE**" implies that the sample was either re-prepped, re-analyzed straight, or re-analyzed at a dilution. Subsequent re-analysis for the sample will be appended with a numerical value beginning with 1 that will increase incrementally. Eg: RE1, RE2, RE3, etc.

Statement of Data Authenticity:

I certify that, based upon my inquiry of those individuals immediately responsible for obtaining the information and to the best of my knowledge, the data package is in compliance with the terms and conditions of the contract, both technically and for completeness, with the exception of the conditions detailed in this Case Narrative, as verified by my signature below. During absences, the Data Quality Manager, Technical Directors or Project Managers are authorized to sign this Statement of Data Authenticity.



Mr. Rick D. Davis
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