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MCB CAMP LEJEUNE
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VALIDATED DATA PACKAGE, 140-3616-1, MCB CAMP LEJEUNE NC
11/2/2015
ENVIRONMENTAL DATA SERVICES

**DATA VALIDATION SUMMARY REPORT
MCB CAMP LEJEUNE, NORTH CAROLINA**

Client: CH2M HILL, Inc., Virginia Beach, Virginia
SDG: 140-3616-1
Laboratory: Test America, Knoxville, Tennessee
Site: MCB Camp Lejeune, LTM FY2015 Q4, Site 89, CTO-WE86
Date: November 2, 2015

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	IR89-SG03-15C	140-3616-1	Air
2	IR89-SG03D-15C	140-3616-2	Air
3	IR89-SG04-15C	140-3616-3	Air

Note - The Sample IDs were logged in per the client's corrections memo. The original IDs listed on the Chain-of-Custody were incorrect.

A full data validation was performed on the analytical data for three air samples collected on August 26, 2015 by CH2M HILL at the MCB Camp Lejeune in North Carolina. The samples were analyzed under "Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air, Second Edition January 1999, EPA/625/R-96/010B", Compendium Method TO-15, "Determination Of Volatile Organic Compounds (VOCs) In Air Collected In Specially-Prepared Canisters And Analyzed By Gas Chromatography/Mass Spectrometry (GC/MS)".

The data have been validated according to the protocols and quality control (QC) requirements of the analytical methods, the USEPA National Functional Guidelines for Organic Data Review in conjunction with the USEPA Region II Standard Operating Procedure (SOP) for Validating Volatile Air Samples as follows:

- The USEPA "Contract Laboratories Program National Functional Guidelines for Superfund Organic Methods Data Review," June 2008;
- The USEPA Region II Data Review Standard Operating Procedure (SOP) Number HW-31, Revision 4, October 2006: Validating Air Samples - Volatile Organic Analysis of Ambient Air in Canister;
- and the reviewer's professional judgment.

The following items/criteria were reviewed for this report:

Organics

- Holding Times and sample preservation
- Laboratory Control Sample (LCS) recoveries
- Matrix Spike/Matrix Spike Duplicate recoveries

- Surrogate Spike Recoveries
- GC/MS Tuning
- Canister Certification Blanks
- Canister Certification Pressures Differences
- Method Blank contamination
- Field Blank contamination
- Initial Calibration
- Continuing Calibration
- Compound Quantitation
- Internal Standard (IS) Area Performance
- Field Duplicate Sample Precision

A full (Level IV) data validation was performed with this review including a recalculation of 10% of the detected results in the samples.

Overall Evaluation of Data and Potential Usability Issues

There were no rejections of data.

Overall the data is acceptable for the intended purposes as qualified for the deficiencies detailed in this report.

Please note that any results qualified (U) due to blank contamination may be then qualified (J) due to another action. Therefore, the results may be qualified (UJ) due to the culmination of the blank contaminations and actions from other exceedences of QC criteria.

Volatile Organic Compounds (VOC)

Holding Times

- All samples were analyzed within 30 days for air samples.

Laboratory Control Samples

- The LCS samples exhibited acceptable percent recoveries.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recoveries

- A MS/MSD sample was not collected.

Surrogate Spike Recoveries

- All samples exhibited acceptable surrogate %R values.

GC/MS Tuning

- All criteria were met.

Canister Certification Blanks

- The batch blank checks were non-detect or < RL.

Canister Certification Pressures Differences

- All criteria were met.

Method Blank

- The method blanks were free of contamination.

Field and Trip Blanks

- Field QC samples were not collected.

Initial Calibration

- The initial calibration exhibited acceptable %RSD values and/or correlation coefficients and mean RRF values.

Continuing Calibration

- The continuing calibrations exhibited acceptable %D and RRF values.

Compound Quantitation

- EDS Sample ID #s 2 and 3 were analyzed at a dilution due to high concentrations of target compounds. The reporting limits were adjusted accordingly. No action was required.

Internal Standard (IS) Area Performance

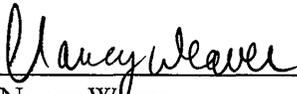
- All internal standards met response and retention time (RT) criteria.

Field Duplicate Sample Precision

- Field duplicate results are summarized below.

Compound	IR89-SG03-15C ppbv	IR89-SG03D-15C ppbv	RPD	Qualifier
cis-1,2-Dichloroethene	0.67U	0.55	0.12	None
Tetrachloroethene	12	15	22%	
trans-1,2-Dichloroethene	0.41	0.44	0.03	
Trichloroethene	110	140	24%	

Please contact the undersigned at (757) 564-0090 if you have any questions or need further information.

Signed: 
Nancy Weaver
Senior Chemist

Dated: 11/3/15

Data Qualifiers

- J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- UJ = The analyte was not detected above the sample reporting limit; and the reporting limit is approximate.
- U = The analyte was analyzed for, but was not detected above the sample reporting limit.
- R = The sample results is rejected due to serious deficiencies. The presence or absence of the analyte cannot be verified.

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Knoxville Job No.: 140-3616-1
 SDG No.: _____
 Client Sample ID: IR89-SG03-15C Lab Sample ID: 140-3616-1
 Matrix: Air Lab File ID: GH31p105.D
 Analysis Method: TO-15 Date Collected: 08/26/2015 14:35
 Sample wt/vol: 30 (mL) Date Analyzed: 08/31/2015 18:04
 Soil Aliquot Vol: _____ Dilution Factor: 1
 Soil Extract Vol.: _____ GC Column: RTX-5 ID: 0.32 (mm)
 % Moisture: _____ Level: (low/med) Low
 Analysis Batch No.: 3310 Units: ppb v/v

CAS NO.	COMPOUND NAME	MOLECULAR WEIGHT	RESULT	Q	LOQ	DL
79-34-5	1,1,2,2-Tetrachloroethane	167.85	0.67	U	1.3	0.40
79-00-5	1,1,2-Trichloroethane	133.41	0.67	U	1.3	0.35
156-59-2	cis-1,2-Dichloroethene	96.94	0.67	U	1.3	0.40
127-18-4	Tetrachloroethene	165.83	12		1.3	0.27
156-60-5	trans-1,2-Dichloroethene	96.94	0.41	J	1.3	0.33
79-01-6	Trichloroethene	131.39	110		0.67	0.23
75-01-4	Vinyl chloride	62.50	0.67	U	1.3	0.48

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	104		60-140

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AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Knoxville Job No.: 140-3616-1
 SDG No.: _____
 Client Sample ID: IR89-SG03-15C Lab Sample ID: 140-3616-1
 Matrix: Air Lab File ID: GH31p105.D
 Analysis Method: TO-15 Date Collected: 08/26/2015 14:35
 Sample wt/vol: 30 (mL) Date Analyzed: 08/31/2015 18:04
 Soil Aliquot Vol.: _____ Dilution Factor: 1
 Soil Extract Vol.: _____ GC Column: RTX-5 ID: 0.32 (mm)
 % Moisture: _____ Level: (low/med) Low
 Analysis Batch No.: 3310 Units: ug/m3

CAS NO.	COMPOUND NAME	MOLECULAR WEIGHT	RESULT	Q	LOQ	DL
79-34-5	1,1,2,2-Tetrachloroethane	167.85	4.6	U	9.2	2.7
79-00-5	1,1,2-Trichloroethane	133.41	3.6	U	7.3	1.9
156-59-2	cis-1,2-Dichloroethene	96.94	2.6	U	5.3	1.6
127-18-4	Tetrachloroethene	165.83	84		9.0	1.8
156-60-5	trans-1,2-Dichloroethene	96.94	1.6	J	5.3	1.3
79-01-6	Trichloroethene	131.39	570		3.6	1.3
75-01-4	Vinyl chloride	62.50	1.7	U	3.4	1.2

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	104		60-140

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Knoxville Job No.: 140-3616-1
 SDG No.: _____
 Client Sample ID: IR89-SG03D-15C Lab Sample ID: 140-3616-2
 Matrix: Air Lab File ID: GH31p106.D
 Analysis Method: TO-15 Date Collected: 08/26/2015 14:35
 Sample wt/vol: 45 (mL) Date Analyzed: 08/31/2015 19:27
 Soil Aliquot Vol.: _____ Dilution Factor: 1.74
 Soil Extract Vol.: _____ GC Column: RTX-5 ID: 0.32 (mm)
 % Moisture: _____ Level: (low/med) Low
 Analysis Batch No.: 3310 Units: ppb v/v

CAS NO.	COMPOUND NAME	MOLECULAR WEIGHT	RESULT	Q	LOQ	DL
79-34-5	1,1,2,2-Tetrachloroethane	167.85	0.77	U	1.5	0.46
79-00-5	1,1,2-Trichloroethane	133.41	0.77	U	1.5	0.41
156-59-2	cis-1,2-Dichloroethene	96.94	0.55	J P	1.5	0.46
127-18-4	Tetrachloroethene	165.83	15	P	1.5	0.31
156-60-5	trans-1,2-Dichloroethene	96.94	0.44	J P	1.5	0.39
79-01-6	Trichloroethene	131.39	140	P	0.77	0.27
75-01-4	Vinyl chloride	62.50	0.77	U	1.5	0.56

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	104		60-140

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 SDG No.: _____
 Client Sample ID: IR89-SG03D-15C Lab Sample ID: 140-3616-2
 Matrix: Air Lab File ID: GH31p106.D
 Analysis Method: TO-15 Date Collected: 08/26/2015 14:35
 Sample wt/vol: 45 (mL) Date Analyzed: 08/31/2015 19:27
 Soil Aliquot Vol.: _____ Dilution Factor: 1.74
 Soil Extract Vol.: _____ GC Column: RTX-5 ID: 0.32 (mm)
 % Moisture: _____ Level: (low/med) Low
 Analysis Batch No.: 3310 Units: ug/m3

CAS NO.	COMPOUND NAME	MOLECULAR WEIGHT	RESULT	Q	LOQ	DL
79-34-5	1,1,2,2-Tetrachloroethane	167.85	5.3	U	11	3.2
79-00-5	1,1,2-Trichloroethane	133.41	4.2	U	8.4	2.2
156-59-2	cis-1,2-Dichloroethene	96.94	2.2	J U	6.1	1.8
127-18-4	Tetrachloroethene	165.83	100	U	10	2.1
156-60-5	trans-1,2-Dichloroethene	96.94	1.7	J U	6.1	1.5
79-01-6	Trichloroethene	131.39	760	U	4.2	1.5
75-01-4	Vinyl chloride	62.50	2.0	U	4.0	1.4

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	104		60-140

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Knoxville Job No.: 140-3616-1
 SDG No.: _____
 Client Sample ID: IR89-SG04-15C Lab Sample ID: 140-3616-3
 Matrix: Air Lab File ID: GH28P109.D
 Analysis Method: TO-15 Date Collected: 08/26/2015 15:20
 Sample wt/vol: 79.5 (mL) Date Analyzed: 08/28/2015 22:42
 Soil Aliquot Vol.: _____ Dilution Factor: 1.59
 Soil Extract Vol.: _____ GC Column: RTX-5 ID: 0.32 (mm)
 % Moisture: _____ Level: (low/med) Low
 Analysis Batch No.: 3304 Units: ppb v/v

CAS NO.	COMPOUND NAME	MOLECULAR WEIGHT	RESULT	Q	LOQ	DL
79-34-5	1,1,2,2-Tetrachloroethane	167.85	0.40	U	0.80	0.24
79-00-5	1,1,2-Trichloroethane	133.41	0.40	U	0.80	0.21
156-59-2	cis-1,2-Dichloroethene	96.94	0.40	U	0.80	0.24
127-18-4	Tetrachloroethene	165.83	10	U	0.80	0.16
156-60-5	trans-1,2-Dichloroethene	96.94	0.20	U	0.80	0.20
79-01-6	Trichloroethene	131.39	21	U	0.40	0.14
75-01-4	Vinyl chloride	62.50	0.40	U	0.80	0.29

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	102		60-140

3

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Knoxville Job No.: 140-3616-1
 SDG No.: _____
 Client Sample ID: IR89-SG04-15C Lab Sample ID: 140-3616-3
 Matrix: Air Lab File ID: GH28P109.D
 Analysis Method: TO-15 Date Collected: 08/26/2015 15:20
 Sample wt/vol: 79.5 (mL) Date Analyzed: 08/28/2015 22:42
 Soil Aliquot Vol.: _____ Dilution Factor: 1.59
 Soil Extract Vol.: _____ GC Column: RTX-5 ID: 0.32 (mm)
 % Moisture: _____ Level: (low/med) Low
 Analysis Batch No.: 3304 Units: ug/m3

CAS NO.	COMPOUND NAME	MOLECULAR WEIGHT	RESULT	Q	LOQ	DL
79-34-5	1,1,2,2-Tetrachloroethane	167.85	2.7	U	5.5	1.6
79-00-5	1,1,2-Trichloroethane	133.41	2.2	U	4.4	1.1
156-59-2	cis-1,2-Dichloroethene	96.94	1.6	U	3.2	0.95
127-18-4	Tetrachloroethene	165.83	70	P	5.4	1.1
156-60-5	trans-1,2-Dichloroethene	96.94	0.79	U	3.2	0.79
79-01-6	Trichloroethene	131.39	110	P	2.1	0.75
75-01-4	Vinyl chloride	62.50	1.0	U	2.0	0.74

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	102		60-140