



LABORATORY DATA CONSULTANTS, INC.

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GSI Pacific, Inc.
181 S. Kukui Street
Honolulu, HI 96813
ATTN: Ms. Sonia Shjegstad

July 11, 2014

SUBJECT: Makua Military Reservation, Oahu, HI, Data Validation

Dear Ms. Shjegstad

Enclosed are the final validation reports for the fractions listed below. These SDGs were received on June 17, 2014. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project #32004:

<u>SDG #</u>	<u>Fraction</u>
006613, 006619, 006620, 006621 1418004, 4033101, 4052803	Volatiles, Chlorinated Pesticides, Explosives, Metals , 2,4-Dinitrotoluene

The data validation was performed under EPA Level III guidelines. The analyses were validated using the following documents, as applicable to each method:

- Final Supplemental Marine Resources Study Sampling and Analysis Plan at Makua Military Reservation, Oahu, Hawaii, August 2013
- Final Draft Version of the U.S. Department of Defense, and Department of Energy, Consolidated Quality Systems Manual, for Environmental Laboratories, Version 5.0, March 2013
- USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review, June 2008
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998; IIIB, November 2004; Update IV, February 2007

Please feel free to contact us if you have any questions.

Sincerely,

Andrew Kong
Project Manager/Senior Chemist

Level III

LDC #32004 (GSI Pacific, Inc. - Honolulu, HI / Makua Military Reservation, Oahu, HI)

LDC	SDG#	DATE REC'D	(3) DATE DUE	VOA (8260B)		Pest. (8081B)		Metals (200.8)		Hg (1631)		Methyl Hg (1630)		As Spec. (1632M)		Expl. (8330A)		2,4-DNT (8330)																		
				W	T	W	T	W	T	W	T	W	T	W	T	W	T	W	T	W	T	W	S	W	S	W	S	W	S	W	S	W	S	W	S	
Matrix: Water/Tissue																																				
A	006613	06/17/14	07/09/14	0	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-																	
B	006619	06/17/14	07/09/14	-	-	0	16	-	-	-	-	-	-	-	-	-	0	16	-	-																
C	006620	06/17/14	07/09/14	-	-	0	5	-	-	-	-	-	-	-	-	-	0	5	-	-																
D	006621	06/17/14	07/09/14	-	-	0	8	-	-	-	-	-	-	-	-	-	0	8	-	-																
E	1418004	06/17/14	07/09/14	-	-	-	-	0	29	0	29	0	29	0	29	-	-	-	-																	
F	4033101	06/17/14	07/09/14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	16																	
G	4052803	06/17/14	07/09/14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	8																	
Total																																				206

Shaded cells indicate Level IV validation (all other cells are Level III validation). These sample counts do not include MS/MSD, and DUPs

**Laboratory Data Consultants, Inc.
Data Validation Report**

Project/Site Name: Makua Military Reservation
Collection Date: January 13 through January 14, 2014
LDC Report Date: July 1, 2014
Matrix: Tissue
Parameters: Volatiles
Validation Level: EPA Level III
Laboratory: ARDL, Inc.
Sample Delivery Group (SDG): 006613

Sample Identification

MAK101L
MAK102L
MAK105L
MAK106L
MAK108, 109, 110, 113L
MAK111L
MAK112L
MAK115L
MAK101LMS
MAK101LMSD

Introduction

This data review covers 10 tissue samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8260B for Volatiles.

This review follows the Final Supplemental Marine Resources Study Sampling and Analysis Plan at Makua Military Reservation, Oahu, Hawaii (August 2013), the Final Draft Version of the U.S. Department of Defense (DoD) and Department of Energy (DoE) Consolidated Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.0 (March 2013), and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review (June 2008).

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- NJ Presumptive evidence of presence of the compound at an estimated quantity.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 15.0% for all compounds.

Average relative response factors (RRF) for all compounds were within method and validation criteria.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

Percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were within the method criteria of less than or equal to 20.0% for all compounds.

The percent differences (%D) of the second source calibration standard were less than or equal to 20.0% for all compounds.

All of the continuing calibration relative response factors (RRF) were within method and validation criteria.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No volatile contaminants were found in the method blanks.

No field blanks were identified in this SDG.

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
MAK101LMS/MSD (MAK101L)	Styrene	20.1 (79-127)	18.2 (79-127)	-	J (all detects) UJ (all non-detects)	A
	o-Xylene	64.5 (81-128)	60.8 (81-128)	-	J (all detects) UJ (all non-detects)	

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

All internal standard areas and retention times were within QC limits.

XI. Target Compound Identifications

Raw data were not reviewed for this SDG.

XII. Compound Quantitation

Raw data were not reviewed for this SDG.

XIII. Tentatively Identified Compounds (TICs)

Raw data were not reviewed for this SDG.

XIV. System Performance

Raw data were not reviewed for this SDG.

XV. Overall Assessment of Data

The laboratory indicated sample Trip Blank was received frozen and all vials shattered, therefore no results were provided.

Data flags are summarized at the end of this report if data has been qualified.

XVI. Field Duplicates

No field duplicates were identified in this SDG.

**Makua Military Reservation
Volatiles - Data Qualification Summary - SDG 006613**

SDG	Sample	Compound	Flag	A or P	Reason
006613	MAK101L	Styrene o-Xylene	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A	Matrix spike/Matrix spike duplicate (%R)

**Makua Military Reservation
Volatiles - Laboratory Blank Data Qualification Summary - SDG 006613**

No Sample Data Qualified in this SDG

**Makua Military Reservation
Volatiles - Field Blank Data Qualification Summary - SDG 006613**

No Sample Data Qualified in this SDG

LDC #: 32004A1
 SDG #: 006613
 Laboratory: ARDL, Inc.

VALIDATION COMPLETENESS WORKSHEET

Level III

Date: 6/23/14
 Page: 1 of 1
 Reviewer: JVL
 2nd Reviewer: [Signature]

METHOD: GC/MS Volatiles (EPA SW 846 Method 8260B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/13 - 14 / 14
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	7% RSD \leq 15%
IV.	Continuing calibration/ICV	A	CCV/ICV \leq 20%
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	SW	
VIII.	Laboratory control samples	A	ICS
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	A	
XI.	Target compound identification	N	
XII.	Compound quantitation/RL/LOQ/LODs	N	
XIII.	Tentatively identified compounds (TICs)	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	TB received frozen & broken. No results reported
XVI.	Field duplicates	N	
XVII.	Field blanks	N	

Note: A = Acceptable ND = No compounds detected D = Duplicate
 N = Not provided/applicable R = Rinsate TB = Trip blank
 SW = See worksheet FB = Field blank EB = Equipment blank

Validated Samples:

Tissue

1	MAK101L	11	Blank 02/27/14	21		31	
2	MAK102L	12	02/28/14	22		32	
3	MAK105L	13	03/03/14	23		33	
4	MAK106L	14		24		34	
5	MAK108, 109, 110, 113L	15		25		35	
6	MAK111L	16		26		36	
7	MAK112L	17		27		37	
8	MAK115L	18		28		38	
9	MAK101LMS	19		29		39	
10	MAK101LMSD	20		30		40	

T, E, X, Styrene, 1,2,4-TMB

TARGET COMPOUND WORKSHEET

METHOD: VOA

A. Chloromethane	U. 1,1,2-Trichloroethane	OO. 2,2-Dichloropropane	III. n-Butylbenzene	CCCC.1-Chlorohexane
B. Bromomethane	V. Benzene	PP. Bromochloromethane	JJJ. 1,2-Dichlorobenzene	DDDD. Isopropyl alcohol
C. Vinyl chloride	W. trans-1,3-Dichloropropene	QQ. 1,1-Dichloropropene	KKK. 1,2,4-Trichlorobenzene	EEEE. Acetonitrile
D. Chloroethane	X. Bromoform	RR. Dibromomethane	LLL. Hexachlorobutadiene	FFFF. Acrolein
E. Methylene chloride	Y. 4-Methyl-2-pentanone	SS. 1,3-Dichloropropane	MMM. Naphthalene	GGGG. Acrylonitrile
F. Acetone	Z. 2-Hexanone	TT. 1,2-Dibromoethane	NNN. 1,2,3-Trichlorobenzene	HHHH. 1,4-Dioxane
G. Carbon disulfide	AA. Tetrachloroethene	UU. 1,1,1,2-Tetrachloroethane	OOO. 1,3,5-Trichlorobenzene	IIII. Isobutyl alcohol
H. 1,1-Dichloroethene	BB. 1,1,2,2-Tetrachloroethane	VV. Isopropylbenzene	PPP. trans-1,2-Dichloroethene	JJJJ. Methacrylonitrile
I. 1,1-Dichloroethane	CC. Toluene	WW. Bromobenzene	QQQ. cis-1,2-Dichloroethene	KKKK. Propionitrile
J. 1,2-Dichloroethene, total	DD. Chlorobenzene	XX. 1,2,3-Trichloropropane	RRR. m,p-Xylenes	LLLL. Ethyl ether
K. Chloroform	EE. Ethylbenzene	YY. n-Propylbenzene	SSS. o-Xylene	MMMM. Benzyl chloride
L. 1,2-Dichloroethane	FF. Styrene	ZZ. 2-Chlorotoluene	TTT. 1,1,2-Trichloro-1,2,2-trifluoroethane	NNNN. Iodomethane
M. 2-Butanone	GG. Xylenes, total	AAA. 1,3,5-Trimethylbenzene	UUU. 1,2-Dichlorotetrafluoroethane	OOOO.1,1-Difluoroethane
N. 1,1,1-Trichloroethane	HH. Vinyl acetate	BBB. 4-Chlorotoluene	VVV. 4-Ethyltoluene	PPPP.
O. Carbon tetrachloride	II. 2-Chloroethylvinyl ether	CCC. tert-Butylbenzene	WWW. Ethanol	QQQQ.
P. Bromodichloromethane	JJ. Dichlorodifluoromethane	DDD. 1,2,4-Trimethylbenzene	XXX. Di-isopropyl ether	RRRR.
Q. 1,2-Dichloropropane	KK. Trichlorofluoromethane	EEE. sec-Butylbenzene	YYY. tert-Butanol	SSSS.
R. cis-1,3-Dichloropropene	LL. Methyl-tert-butyl ether	FFF. 1,3-Dichlorobenzene	ZZZ. tert-Butyl alcohol	TTTT.
S. Trichloroethene	MM. 1,2-Dibromo-3-chloropropane	GGG. p-Isopropyltoluene	AAA. Ethyl tert-butyl ether	UUUU.
T. Dibromochloromethane	NN. Methyl ethyl ketone	HHH. 1,4-Dichlorobenzene	BBBB. tert-Amyl methyl ether	VVVV.

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

METHOD : GC/MS VOA (EPA SW 846 Method 8260B)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.

Y N N/A Was a MS/MSD analyzed every 20 samples of each matrix?

Y N N/A Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
	9/6	FF	20.1 (79-127)	18.2 (79-127)	()	1	J/US/A
		SSS	64.5 (81-128)	60.8 (81-128)	()	↓	↓
			()	()	()		
			()	()	()		
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			()	()	()		

	Compound	QC Limits (Soil)	RPD (Soil)	QC Limits (Water)	RPD (Water)
H.	1,1-Dichloroethene	59-172%	< 22%	61-145%	< 14%
S.	Trichloroethene	62-137%	< 24%	71-120%	< 14%
V.	Benzene	66-142%	< 21%	76-127%	< 11%
CC.	Toluene	59-139%	< 21%	76-125%	< 13%
DD.	Chlorobenzene	60-133%	< 21%	75-130%	< 13%

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: Makua Military Reservation
Collection Date: January 31 through March 28, 2014
LDC Report Date: July 1, 2014
Matrix: Tissue
Parameters: Chlorinated Pesticides
Validation Level: EPA Level III
Laboratory: ARDL, Inc.
Sample Delivery Group (SDG): 006619

Sample Identification

MAK109O
MAK110O
MAK111O
MAK112O
MAK113O
MAK114O
MAK115O
MAK116O
MAK117O
MAK118O
MAK119O
MAK120O
MAK121O
MAK122O
MAK123O
MAK124O
MAK111OMS
MAK111OMSD

Introduction

This data review covers 18 tissue samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8081B for Chlorinated Pesticides.

This review follows the Final Supplemental Marine Resources Study Sampling and Analysis Plan at Makua Military Reservation, Oahu, Hawaii (August 2013), the Final Draft Version of the U.S. Department of Defense (DoD) and Department of Energy (DoE) Consolidated Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.0 (March 2013), and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review (June 2008).

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- NJ Presumptive evidence of presence of the compound at an estimated quantity.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. GC Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

The individual 4,4'-DDT and Endrin breakdowns (%BD) were less than or equal to 15.0%.

III. Initial Calibration

Initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 20.0% for all compounds.

In the case where the laboratory used a calibration curve to evaluate the compounds, all coefficients of determination (r^2) were greater than or equal to 0.990 .

IV. Continuing Calibration

Continuing calibration was performed at required frequencies.

The percent differences (%D) were less than or equal to 20.0% for all compounds.

The percent differences (%D) of the second source calibration standard were less than or equal to 20.0% for all compounds.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No chlorinated pesticide contaminants were found in the method blanks.

No field blanks were identified in this SDG.

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
MAK111OMS/MSD (MAK111O)	p,p'-DDT	-	-	25.7 (≤25)	J (all detects)	A

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Florisil Cartridge Check

Florisil cleanup was not reviewed in this SDG.

XI. GPC Calibration

GPC cleanup was not reviewed in this SDG.

XII. Target Compound Identification

Raw data were not reviewed for this SDG.

XIII. Compound Quantitation

Raw data were not reviewed for this SDG.

XIV. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XV. Field Duplicates

No field duplicates were identified in this SDG.

**Makua Military Reservation
Chlorinated Pesticides - Data Qualification Summary - SDG 006619**

SDG	Sample	Compound	Flag	A or P	Reason
006619	MAK111O	p,p'-DDT	J (all detects)	A	Matrix spike/Matrix spike duplicate (RPD)

**Makua Military Reservation
Chlorinated Pesticides - Laboratory Blank Data Qualification Summary - SDG 006619**

No Sample Data Qualified in this SDG

**Makua Military Reservation
Chlorinated Pesticides - Field Blank Data Qualification Summary - SDG 006619**

No Sample Data Qualified in this SDG

LDC #: 32004B3a

VALIDATION COMPLETENESS WORKSHEET

Date: 6/26/14

SDG #: 006619

Level III

Page: 1 of 1

Laboratory: ARDL, Inc.

Reviewer: WJ
2nd Reviewer: A**METHOD:** GC Chlorinated Pesticides (EPA SW 846 Method 8081B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/31 - 3/28/14
II.	GC Instrument Performance Check	A	
III.	Initial calibration	A	% RSD \leq 20% rv
IV.	Continuing calibration/ICV	A	CV/ICV \leq 20%
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	SW	
VIII.	Laboratory control samples	A	LCS
IX.	Regional quality assurance and quality control	N	
X.	Florisil cartridge check	N	
XI.	GPC Calibration	N	
XII.	Target compound identification	N	
XIII.	Compound quantitation/RL/LOQ/LODs	N	
XIV.	Overall assessment of data	A	
XV.	Field duplicates	N	
XVI.	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet

ND = No compounds detected
R = Rinsate
FB = Field blank

D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples:

Tissue

1	MAK1090	11	MAK1190	21	B 10218-MB	31	
2	MAK1100	12	MAK1200	22		32	
3	MAK1110	13	MAK1210	23		33	
4	MAK1120	14	MAK1220	24		34	
5	MAK1130	15	MAK1230	25		35	
6	MAK1140	16	MAK1240	26		36	
7	MAK1150	17	MAK1110MS	27		37	
8	MAK1160	18	MAK1110MSD	28		38	
9	MAK1170	19		29		39	
10	MAK1180	20		30		40	

(ASU NO)

VALIDATION FINDINGS WORKSHEET

METHOD: Pesticide/PCBs (EPASW 846 Method 8081/8082)

A. alpha-BHC	I. Dieldrin	Q. Endrin ketone	Y. Aroclor-1242	GG. Chlordane
B. beta-BHC	J. 4,4'-DDE	R. Endrin aldehyde	Z. Aroclor-1248	HH. Chlordane (Technical)
C. delta-BHC	K. Endrin	S. alpha-Chlordane	AA. Aroclor-1254	II. Aroclor 1262
D. gamma-BHC	L. Endosulfan II	T. gamma-Chlordane	BB. Aroclor-1260	JJ. Aroclor 1268
E. Heptachlor	M. 4,4'-DDD	U. Toxaphene	CC. 2,4'-DDD	KK. Oxychlordane
F. Aldrin	N. Endosulfan sulfate	V. Aroclor-1016	DD. 2,4'-DDE	LL. trans-Nonachlor
G. Heptachlor epoxide	O. 4,4'-DDT	W. Aroclor-1221	EE. 2,4'-DDT	MM. cis-Nonachlor
H. Endosulfan I	P. Methoxychlor	X. Aroclor-1232	FF. Hexachlorobenzene	NN. <i>p,p'-DDT</i>

Notes: _____

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: Makua Military Reservation
Collection Date: January 31 through March 28, 2014
LDC Report Date: June 30, 2014
Matrix: Tissue
Parameters: Explosives
Validation Level: EPA Level III
Laboratory: ARDL, Inc.
Sample Delivery Group (SDG): 006619

Sample Identification

MAK109O
MAK110O
MAK111O
MAK112O
MAK113O
MAK114O
MAK115O
MAK116O
MAK117O
MAK118O
MAK119O
MAK120O
MAK121O
MAK122O
MAK123O
MAK124O
MAK111OMS
MAK111OMSD

Introduction

This data review covers 18 tissue samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8330A for Explosives.

This review follows the Final Supplemental Marine Resources Study Sampling and Analysis Plan at Makua Military Reservation, Oahu, Hawaii (August 2013), the Final Draft Version of the U.S. Department of Defense (DoD) and Department of Energy (DoE) Consolidated Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.0 (March 2013), and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review (June 2008).

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- NJ Presumptive evidence of presence of the compound at an estimated quantity.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Initial Calibration

Initial calibration of compounds was performed for the primary (quantitation) column and confirmation column as required by the method.

A curve fit, based on the initial calibration, was established for quantitation. The coefficient of determination (r^2) was greater than or equal to 0.990.

III. Continuing Calibration

Continuing calibration was performed at required frequencies.

The percent differences (%D) were less than or equal to 15.0% for all compounds.

The percent differences (%D) of the second source calibration standard were less than or equal to 15.0% for all compounds.

IV. Blanks

Method blanks were reviewed for each matrix as applicable. No explosive contaminants were found in the method blanks.

No field blanks were identified in this SDG.

V. Surrogate Recovery

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

VI. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

VIII. Target Compound Identification

Raw data were not reviewed for this SDG.

IX. Compound Quantitation

Raw data were not reviewed for this SDG.

X. System Performance

Raw data were not reviewed for this SDG.

XI. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XII. Field Duplicates

No field duplicates were identified in this SDG.

**Makua Military Reservation
Explosives - Data Qualification Summary - SDG 006619**

No Sample Data Qualified in this SDG

**Makua Military Reservation
Explosives - Laboratory Blank Data Qualification Summary - SDG 006619**

No Sample Data Qualified in this SDG

**Makua Military Reservation
Explosives - Field Blank Data Qualification Summary - SDG 006619**

No Sample Data Qualified in this SDG

LDC #: 32004B40
 SDG #: 006619
 Laboratory: ARDL, Inc.

VALIDATION COMPLETENESS WORKSHEET

Level III

Date: 6/26/14
 Page: 1 of 1
 Reviewer: JV6
 2nd Reviewer: A

METHOD: HPLC Explosives (EPA SW 846 Method 8330A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: <u>1/31 - 3/28/14</u>
II.	Initial calibration	A	<u>✓</u>
III.	Calibration verification/ICV	A	<u>COV/100 ≤ 15%</u>
IV.	Blanks	A	
V.	Surrogate recovery	A	
VI.	Matrix spike/Matrix spike duplicates	A	
VII.	Laboratory control samples	A	<u>LCS</u>
VIII.	Target compound identification	N	
IX.	Compound quantitation/RL/LOQ/LODs	N	
X.	System Performance	N	
XI.	Overall assessment of data	A	
XII.	Field duplicates	N	
XIII.	Field blanks	N	

Note: A = Acceptable ND = No compounds detected D = Duplicate
 N = Not provided/applicable R = Rinsate TB = Trip blank
 SW = See worksheet FB = Field blank EB = Equipment blank

Validated Samples:

Tissue

1	MAK109O	11	MAK119O	21	<u>B10220 MB</u>	31	
2	MAK110O	12	MAK120O	22		32	
3	MAK111O	13	MAK121O	23		33	
4	MAK112O	14	MAK122O	24		34	
5	MAK113O	15	MAK123O	25		35	
6	MAK114O	16	MAK124O	26		36	
7	MAK115O	17	MAK111OMS	27		37	
8	MAK116O	18	MAK111OMSD	28		38	
9	MAK117O	19		29		39	
10	MAK118O	20		30		40	

Notes: 2.9-OHT, RDX, NG

**Laboratory Data Consultants, Inc.
Data Validation Report**

Project/Site Name: Makua Military Reservation
Collection Date: March 27 through March 28, 2014
LDC Report Date: June 30, 2014
Matrix: Tissue
Parameters: Chlorinated Pesticides
Validation Level: EPA Level III
Laboratory: ARDL, Inc.
Sample Delivery Group (SDG): 006620

Sample Identification

MAK130L
MAK132L
MAK134L
MAK135L
MAK138L
MAK130LMS
MAK130LMSD

Introduction

This data review covers 7 tissue samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8081B for Chlorinated Pesticides.

This review follows the Final Supplemental Marine Resources Study Sampling and Analysis Plan at Makua Military Reservation, Oahu, Hawaii (August 2013), the Final Draft Version of the U.S. Department of Defense (DoD) and Department of Energy (DoE) Consolidated Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.0 (March 2013), and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review (June 2008).

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- NJ Presumptive evidence of presence of the compound at an estimated quantity.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. GC Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

The individual 4,4'-DDT and Endrin breakdowns (%BD) were less than or equal to 15.0%.

III. Initial Calibration

Initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 20.0% for all compounds.

In the case where the laboratory used a calibration curve to evaluate the compounds, all coefficients of determination (r^2) were greater than or equal to 0.990 .

IV. Continuing Calibration

Continuing calibration was performed at required frequencies.

The percent differences (%D) were less than or equal to 20.0% for all compounds with the following exceptions:

Date	Standard	Column	Compound	%D	Associated Samples	Flag	A or P
6/3/14	140603.0021	STX-CLP	delta-BHC	22	B10212-MB	J (all detects) UJ (all non-detects)	A
			Aldrin	21		J (all detects) UJ (all non-detects)	

The percent differences (%D) of the second source calibration standard were less than or equal to 20.0% for all compounds.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No chlorinated pesticide contaminants were found in the method blanks.

No field blanks were identified in this SDG.

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits with the following exceptions:

Sample	Column	Surrogate	%R (Limits)	Compound	Flag	A or P
MAK130L (2X)	STX-CLP	Tetrachloro-m-xylene	277 (25-125)	All TCL compounds	J (all detects)	A

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
MAK130LMS/MSD (MAK130L)	gamma-BHC	303.2 (51-112)	196 (51-112)	42.8 (≤25)	J (all detects)	A
	Heptachlor	-	120 (52-114)	-	J (all detects)	
	beta-BHC	138.9 (50-111)	122.8 (50-111)	-	J (all detects)	

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Florisil Cartridge Check

Florisil cleanup was not reviewed in this SDG.

XI. GPC Calibration

GPC cleanup was not reviewed in this SDG.

XII. Target Compound Identification

Raw data were not reviewed for this SDG.

XIII. Compound Quantitation

Raw data were not reviewed for this SDG.

XIV. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XV. Field Duplicates

No field duplicates were identified in this SDG.

**Makua Military Reservation
Chlorinated Pesticides - Data Qualification Summary - SDG 006620**

SDG	Sample	Compound	Flag	A or P	Reason
006620	MAK130L (2X)	All TCL compounds	J (all detects)	A	Surrogate spikes (%R)
006620	MAK130L	gamma-BHC	J (all detects)	A	Matrix spike/Matrix spike duplicate (%R)(RPD)
006620	MAK130L	Heptachlor beta-BHC	J (all detects) J (all detects)	A	Matrix spike/Matrix spike duplicate (%R)

**Makua Military Reservation
Chlorinated Pesticides - Laboratory Blank Data Qualification Summary - SDG 006620**

No Sample Data Qualified in this SDG

**Makua Military Reservation
Chlorinated Pesticides - Field Blank Data Qualification Summary - SDG 006620**

No Sample Data Qualified in this SDG

LDC #: 32004C3a

VALIDATION COMPLETENESS WORKSHEET

Date: 6/26/14

SDG #: 006620

Level III

Page: 1 of 1

Laboratory: ARDL, Inc.

Reviewer: JV2nd Reviewer: A

METHOD: GC Chlorinated Pesticides (EPA SW 846 Method 8081B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 3/27-28/14
II.	GC Instrument Performance Check	A	
III.	Initial calibration	A	? RSD \leq 20% r2
IV.	Continuing calibration/ICV	SW	CV/ICV \leq 25%
V.	Blanks	A	
VI.	Surrogate spikes	SW	
VII.	Matrix spike/Matrix spike duplicates	SW	
VIII.	Laboratory control samples	A	ICS
IX.	Regional quality assurance and quality control	N	
X.	Florisil cartridge check	N	
XI.	GPC Calibration	N	
XII.	Target compound identification	N	
XIII.	Compound quantitation/RL/LOQ/LODs	N	
XIV.	Overall assessment of data	A	
XV.	Field duplicates	N	
XVI.	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet

ND = No compounds detected
R = Rinsate
FB = Field blank

D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples:

Tissue

+		-				
1	MAK130L	11	B 10212 - MB	21		31
2	MAK132L	12		22		32
3	MAK134L	13		23		33
4	MAK135L	14		24		34
5	MAK138 L	15		25		35
6	MAK130LMS	16		26		36
7	MAK130LMSD	17		27		37
8		18		28		38
9		19		29		39
10		20		30		40

VALIDATION FINDINGS WORKSHEET

METHOD: Pesticide/PCBs (EPASW 846 Method 8081/8082)

A. alpha-BHC	I. Dieldrin	Q. Endrin ketone	Y. Aroclor-1242	GG. Chlordane
B. beta-BHC	J. 4,4'-DDE	R. Endrin aldehyde	Z. Aroclor-1248	HH. Chlordane (Technical)
C. delta-BHC	K. Endrin	S. alpha-Chlordane	AA. Aroclor-1254	II. Aroclor 1262
D. gamma-BHC	L. Endosulfan II	T. gamma-Chlordane	BB. Aroclor-1260	JJ. Aroclor 1268
E. Heptachlor	M. 4,4'-DDD	U. Toxaphene	CC. 2,4'-DDD	KK. Oxychlordane
F. Aldrin	N. Endosulfan sulfate	V. Aroclor-1016	DD. 2,4'-DDE	LL. trans-Nonachlor
G. Heptachlor epoxide	O. 4,4'-DDT	W. Aroclor-1221	EE. 2,4'-DDT	MM. cis-Nonachlor
H. Endosulfan I	P. Methoxychlor	X. Aroclor-1232	FF. Hexachlorobenzene	NN.

Notes: _____

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: Makua Military Reservation
Collection Date: March 27 through March 28, 2014
LDC Report Date: July 1, 2014
Matrix: Tissue
Parameters: Explosives
Validation Level: EPA Level III
Laboratory: ARDL, Inc.
Sample Delivery Group (SDG): 006620

Sample Identification

MAK130L
MAK132L
MAK134L
MAK135L
MAK138L
MAK130LMS
MAK130LMSD

Introduction

This data review covers 7 tissue samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8330A for Explosives.

This review follows the Final Supplemental Marine Resources Study Sampling and Analysis Plan at Makua Military Reservation, Oahu, Hawaii (August 2013), the Final Draft Version of the U.S. Department of Defense (DoD) and Department of Energy (DoE) Consolidated Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.0 (March 2013), and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review (June 2008).

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- NJ Presumptive evidence of presence of the compound at an estimated quantity.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Initial Calibration

Initial calibration of compounds was performed for the primary (quantitation) column and confirmation column as required by the method.

A curve fit, based on the initial calibration, was established for quantitation. The coefficient of determination (r^2) was greater than or equal to 0.990.

III. Continuing Calibration

Continuing calibration was performed at required frequencies.

The percent differences (%D) were less than or equal to 15.0% for all compounds.

The percent differences (%D) of the second source calibration standard were less than or equal to 15.0% for all compounds.

IV. Blanks

Method blanks were reviewed for each matrix as applicable. No explosive contaminants were found in the method blanks.

No field blanks were identified in this SDG.

V. Surrogate Recovery

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

VI. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

VIII. Target Compound Identification

Raw data were not reviewed for this SDG.

IX. Compound Quantitation

Raw data were not reviewed for this SDG.

X. System Performance

Raw data were not reviewed for this SDG.

XI. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XII. Field Duplicates

No field duplicates were identified in this SDG.

**Makua Military Reservation
Explosives - Data Qualification Summary - SDG 006620**

No Sample Data Qualified in this SDG

**Makua Military Reservation
Explosives - Laboratory Blank Data Qualification Summary - SDG 006620**

No Sample Data Qualified in this SDG

**Makua Military Reservation
Explosives - Field Blank Data Qualification Summary - SDG 006620**

No Sample Data Qualified in this SDG

LDC #: 32004C40
 SDG #: 006620
 Laboratory: ARDL, Inc.

VALIDATION COMPLETENESS WORKSHEET

Level III

Date: 6/26/14
 Page: 1 of 1
 Reviewer: SVG
 2nd Reviewer: A

METHOD: HPLC Explosives (EPA SW 846 Method 8330A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 3/27 - 28/14
II.	Initial calibration	A	rv
III.	Calibration verification/ICV	A	CV(10) = 15%
IV.	Blanks	A	
V.	Surrogate recovery	A	
VI.	Matrix spike/Matrix spike duplicates	A	
VII.	Laboratory control samples	A	LCS
VIII.	Target compound identification	N	
IX.	Compound quantitation/RL/LOQ/LODs	N	
X.	System Performance	N	
XI.	Overall assessment of data	A	
XII.	Field duplicates	N	
XIII.	Field blanks	N	

Note: A = Acceptable ND = No compounds detected D = Duplicate
 N = Not provided/applicable R = Rinsate TB = Trip blank
 SW = See worksheet FB = Field blank EB = Equipment blank

Validated Samples:

Tissue

1	MAK130L	11	B 10213 - MB	21		31	
2	MAK132L	12		22		32	
3	MAK134L	13		23		33	
4	MAK135L	14		24		34	
5	MAK138 L	15		25		35	
6	MAK130LMS	16		26		36	
7	MAK130LMSD	17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes: 2 FDNF, RDX, VG

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: Makua Military Reservation

Collection Date: March 28, 2014

LDC Report Date: June 30, 2014

Matrix: Tissue

Parameters: Chlorinated Pesticides

Validation Level: EPA Level III

Laboratory: ARDL, Inc.

Sample Delivery Group (SDG): 006621

Sample Identification

MAK121C

MAK122C

MAK123C

MAK124C

MAK125C

MAK126C

MAK127C

MAK128C

MAK123CMS

MAK123CMSD

Introduction

This data review covers 10 tissue samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8081B for Chlorinated Pesticides.

This review follows the Final Supplemental Marine Resources Study Sampling and Analysis Plan at Makua Military Reservation, Oahu, Hawaii (August 2013), the Final Draft Version of the U.S. Department of Defense (DoD) and Department of Energy (DoE) Consolidated Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.0 (March 2013), and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review (June 2008).

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- NJ Presumptive evidence of presence of the compound at an estimated quantity.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. GC Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

The individual 4,4'-DDT and Endrin breakdowns (%BD) were less than or equal to 15.0%.

III. Initial Calibration

Initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 20.0% for all compounds.

In the case where the laboratory used a calibration curve to evaluate the compounds, all coefficients of determination (r^2) were greater than or equal to 0.990 .

IV. Continuing Calibration

Continuing calibration was performed at required frequencies.

The percent differences (%D) were less than or equal to 20.0% for all compounds.

The percent differences (%D) of the second source calibration standard were less than or equal to 20.0% for all compounds.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No chlorinated pesticide contaminants were found in the method blanks.

No field blanks were identified in this SDG.

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
MAK123CMS/MSD (MAK123C)	alpha-BHC Heptachlor Heptachlor epoxide p,p'-DDT	- - - -	- - - -	27 (≤25) 26.1 (≤25) 25.6 (≤25) 27.9 (≤25)	J (all detects) J (all detects) J (all detects) J (all detects)	A

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Florisil Cartridge Check

Florisil cleanup was not reviewed in this SDG.

XI. GPC Calibration

GPC cleanup was not reviewed in this SDG.

XII. Target Compound Identification

Raw data were not reviewed for this SDG.

XIII. Compound Quantitation

Raw data were not reviewed for this SDG.

XIV. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XV. Field Duplicates

No field duplicates were identified in this SDG.

**Makua Military Reservation
Chlorinated Pesticides - Data Qualification Summary - SDG 006621**

SDG	Sample	Compound	Flag	A or P	Reason
006621	MAK123C	alpha-BHC Heptachlor Heptachlor epoxide p,p'-DDT	J (all detects) J (all detects) J (all detects) J (all detects)	A	Matrix spike/Matrix spike duplicate (RPD)

**Makua Military Reservation
Chlorinated Pesticides - Laboratory Blank Data Qualification Summary - SDG 006621**

No Sample Data Qualified in this SDG

**Makua Military Reservation
Chlorinated Pesticides - Field Blank Data Qualification Summary - SDG 006621**

No Sample Data Qualified in this SDG

LDC #: 32004D3a

VALIDATION COMPLETENESS WORKSHEET

Date: 6/26/14

SDG #: 006621

Level III

Page: 1 of 1

Laboratory: ARDL, Inc.

Reviewer: JVB

2nd Reviewer: A

METHOD: GC Chlorinated Pesticides (EPA SW 846 Method 8081B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 3/28/14
II.	GC Instrument Performance Check	A	
III.	Initial calibration	A	2 RSD \leq 20% r ²
IV.	Continuing calibration/ICV	A	CCV/ICV \leq 20%
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	SW	
VIII.	Laboratory control samples	A	LCS
IX.	Regional quality assurance and quality control	N	
X.	Florisil cartridge check	N	
XI.	GPC Calibration	N	
XII.	Target compound identification	N	
XIII.	Compound quantitation/RL/LOQ/LODs	N	
XIV.	Overall assessment of data	A	
XV.	Field duplicates	N	
XVI.	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet

ND = No compounds detected
R = Rinsate
FB = Field blank

D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples:

Tissue

1	MAK121C	11	B10216 MB	21		31	
2	MAK122C	12		22		32	
3	MAK123C	13		23		33	
4	MAK124C	14		24		34	
5	MAK125C	15		25		35	
6	MAK126C	16		26		36	
7	MAK127C	17		27		37	
8	MAK128C	18		28		38	
9	MAK123CMS	19		29		39	
10	MAK123CMSD	20		30		40	

(All ND)

VALIDATION FINDINGS WORKSHEET

METHOD: Pesticide/PCBs (EPASW 846 Method 8081/8082)

A. alpha-BHC	I. Dieldrin	Q. Endrin ketone	Y. Aroclor-1242	GG. Chlordane
B. beta-BHC	J. 4,4'-DDE	R. Endrin aldehyde	Z. Aroclor-1248	HH. Chlordane (Technical)
C. delta-BHC	K. Endrin	S. alpha-Chlordane	AA. Aroclor-1254	II. Aroclor 1262
D. gamma-BHC	L. Endosulfan II	T. gamma-Chlordane	BB. Aroclor-1260	JJ. Aroclor 1268
E. Heptachlor	M. 4,4'-DDD	U. Toxaphene	CC. 2,4'-DDD	KK. Oxychlordane
F. Aldrin	N. Endosulfan sulfate	V. Aroclor-1016	DD. 2,4'-DDE	LL. trans-Nonachlor
G. Heptachlor epoxide	O. 4,4'-DDT	W. Aroclor-1221	EE. 2,4'-DDT	MM. cis-Nonachlor
H. Endosulfan I	P. Methoxychlor	X. Aroclor-1232	FF. Hexachlorobenzene	NN. <i>p,p'-DDT</i>

Notes: _____

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: Makua Military Reservation
Collection Date: March 28, 2014
LDC Report Date: July 1, 2014
Matrix: Tissue
Parameters: Explosives
Validation Level: EPA Level III
Laboratory: ARDL, Inc.
Sample Delivery Group (SDG): 006621

Sample Identification

MAK121C
MAK122C
MAK123C
MAK124C
MAK125C
MAK126C
MAK127C
MAK128C
MAK123CMS
MAK123CMSD

Introduction

This data review covers 10 tissue samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8330A for Explosives.

This review follows the Final Supplemental Marine Resources Study Sampling and Analysis Plan at Makua Military Reservation, Oahu, Hawaii (August 2013), the Final Draft Version of the U.S. Department of Defense (DoD) and Department of Energy (DoE) Consolidated Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.0 (March 2013), and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review (June 2008).

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- NJ Presumptive evidence of presence of the compound at an estimated quantity.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Initial Calibration

Initial calibration of compounds was performed for the primary (quantitation) column and confirmation column as required by the method.

A curve fit, based on the initial calibration, was established for quantitation. The coefficient of determination (r^2) was greater than or equal to 0.990.

III. Continuing Calibration

Continuing calibration was performed at required frequencies.

The percent differences (%D) were less than or equal to 15.0% for all compounds.

The percent differences (%D) of the second source calibration standard were less than or equal to 15.0% for all compounds.

IV. Blanks

Method blanks were reviewed for each matrix as applicable. No explosive contaminants were found in the method blanks.

No field blanks were identified in this SDG.

V. Surrogate Recovery

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

VI. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

VIII. Target Compound Identification

Raw data were not reviewed for this SDG.

IX. Compound Quantitation

Raw data were not reviewed for this SDG.

X. System Performance

Raw data were not reviewed for this SDG.

XI. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XII. Field Duplicates

No field duplicates were identified in this SDG.

**Makua Military Reservation
Explosives - Data Qualification Summary - SDG 006621**

No Sample Data Qualified in this SDG

**Makua Military Reservation
Explosives - Laboratory Blank Data Qualification Summary - SDG 006621**

No Sample Data Qualified in this SDG

**Makua Military Reservation
Explosives - Field Blank Data Qualification Summary - SDG 006621**

No Sample Data Qualified in this SDG

LDC #: 32004D40
 SDG #: 006621
 Laboratory: ARDL, Inc.

VALIDATION COMPLETENESS WORKSHEET
 Level III

Date: 6/26/14
 Page: 1 of 1
 Reviewer: JVG
 2nd Reviewer: A

METHOD: HPLC Explosives (EPA SW 846 Method 8330A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 3/28/14
II	Initial calibration	A	rr
III.	Calibration verification/ICV	A	ccv/100 ≤ 15%
IV.	Blanks	A	
V	Surrogate recovery	A	
VI.	Matrix spike/Matrix spike duplicates	A	
VII.	Laboratory control samples	A	LCS
VIII.	Target compound identification	N	
IX.	Compound quantitation/RL/LOQ/LODs	N	
X.	System Performance	N	
XI.	Overall assessment of data	A	
XII.	Field duplicates	N	
XIII.	Field blanks	N	

Note: A = Acceptable ND = No compounds detected D = Duplicate
 N = Not provided/applicable R = Rinsate TB = Trip blank
 SW = See worksheet FB = Field blank EB = Equipment blank

Validated Samples: Tissue

1	MAK121C	11	B 10217-MB	21		31	
2	MAK122C	12		22		32	
3	MAK123C	13		23		33	
4	MAK124C	14		24		34	
5	MAK125C	15		25		35	
6	MAK126C	16		26		36	
7	MAK127C	17		27		37	
8	MAK128C	18		28		38	
9	MAK123CMS	19		29		39	
10	MAK123CMSD	20		30		40	

Notes: 2,4-DNT, RDX, NG

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: Makua Military Reservation
Collection Date: January 31 through March 28, 2014
LDC Report Date: June 27, 2014
Matrix: Tissue
Parameters: Metals
Validation Level: EPA Level III
Laboratory: Brooks Rand Labs

Sample Delivery Group (SDG): 1418004

Sample Identification

MAK109O	MAK138L	MAK138LDUP
MAK110O	MAK121C	MAK121CMS
MAK111O	MAK122C	MAK121CMSD
MAK112O	MAK123C	MAK121CDUP
MAK113O	MAK124C	MAK112OMS
MAK114O	MAK125C	MAK112OMSD
MAK115O	MAK126C	MAK112ODUP
MAK116O	MAK127C	
MAK117O	MAK128C	
MAK118O	MAK109OMS	
MAK119O	MAK109OMSD	
MAK120O	MAK109ODUP	
MAK121O	MAK119OMS	
MAK122O	MAK119OMSD	
MAK123O	MAK119ODUP	
MAK124O	MAK130LMS	
MAK130L	MAK130LMSD	
MAK132L	MAK130LDUP	
MAK134L	MAK138LMS	
MAK135L	MAK138LMSD	

Introduction

This data review covers 47 tissue samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 200.8 for Metals, EPA Method 1631 Appendix for Mercury, EPA Method 1630 for Methyl Mercury, and EPA Method 1632 Modified for Arsenic Speciation. The metals analyzed were Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt, Copper, Iron, Lead, Manganese, Selenium, Silver, Thallium, Vanadium, and Zinc.

This review follows the Final Supplemental Marine Resources Study Sampling and Analysis Plan at Makua Military Reservation, Oahu, Hawaii (August 2013), the Final Draft Version of the U.S. Department of Defense (DoD) and Department of Energy (DoE) Consolidated Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.0 (March 2013), and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review (January 2010).

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- NJ Presumptive evidence of presence of the compound at an estimated quantity.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. ICPMS Tune

The mass calibration was within 0.1 AMU and the percent relative standard deviation (%RSD) was less than or equal to 5%.

III. Calibration

The initial and continuing calibrations were performed at the required frequency.

The calibration standards criteria were met.

IV. Blanks

Method blanks were reviewed for each matrix as applicable. No metal contaminants were found in the initial, continuing and preparation blanks with the following exceptions:

Method Blank ID	Analyte	Maximum Concentration	Associated Samples
PB (prep blank)	Lead	0.008 mg/Kg	All samples in SDG 1418004
ICC/CCB	Aluminum	0.45 ug/L	MAK109O MAK110O MAK111O MAK112O MAK113O MAK114O MAK115O MAK116O MAK117O MAK118O MAK119O MAK120O MAK121O MAK122O MAK123O
ICC/CCB	Aluminum	0.43 ug/L	MAK124O MAK130L MAK132L MAK134L MAK135L MAK138L MAK121C

Method Blank ID	Analyte	Maximum Concentration	Associated Samples
ICC/CCB	Aluminum	0.45 ug/L	MAK122C MAK123C MAK124C MAK125C MAK126C MAK127C MAK128C
ICC/CCB	Mercury	5.04 pg/L	MAK109O
ICC/CCB	Mercury	5.14 pg/L	MAK110O MAK111O MAK112O MAK113O MAK114O MAK115O MAK116O MAK117O MAK118O MAK119O MAK120O MAK121O MAK122O MAK123O MAK124O MAK130L MAK132L
ICC/CCB	Mercury	48.9 pg/L	MAK134L MAK135L MAK138L MAK121C
ICC/CCB	Mercury	7.16 pg/L	MAK122C MAK123C MAK124C MAK125C MAK126C MAK127C MAK128C
ICC/CCB	Iron	0.23 ug/L	All samples in SDG 1418004
ICC/CCB	Selenium	0.27 ug/L	MAK109O MAK110O MAK111O MAK112O MAK113O MAK114O MAK115O MAK116O MAK117O MAK118O MAK119O MAK120O MAK121O MAK122O MAK123O MAK124O

Data qualification by the initial, continuing and preparation blanks (ICB/CCB/PBs) was based on the maximum contaminant concentration in the ICB/CCB/PBs in the analysis of each analyte. The sample concentrations were either not detected or were significantly greater (>5X blank contaminants) than the concentrations found in the associated method blanks with the following exceptions:

Sample	Analyte	Reported Concentration	Modified Final Concentration
MAK109O	Aluminum Selenium	0.14 mg/Kg 0.17 mg/Kg	0.14U mg/Kg 0.17U mg/Kg
MAK110O	Aluminum Lead Selenium	0.95 mg/Kg 0.031 mg/Kg 0.22 mg/Kg	0.95U mg/Kg 0.031U mg/Kg 0.22U mg/Kg
MAK111O	Aluminum Selenium	1.08 mg/Kg 0.17 mg/Kg	1.08U mg/Kg 0.17U mg/Kg
MAK112O	Aluminum Lead Selenium	0.97 mg/Kg 0.015 mg/Kg 0.16 mg/Kg	0.97U mg/Kg 0.015U mg/Kg 0.16U mg/Kg
MAK113O	Aluminum Selenium	0.32 mg/Kg 0.15 mg/Kg	0.32U mg/Kg 0.15U mg/Kg
MAK114O	Aluminum Lead Selenium	0.94 mg/Kg 0.034 mg/Kg 0.15 mg/Kg	0.94U mg/Kg 0.034U mg/Kg 0.15U mg/Kg
MAK115O	Selenium	0.24 mg/Kg	0.24U mg/Kg
MAK116O	Aluminum Selenium	0.21 mg/Kg 0.19 mg/Kg	0.21U mg/Kg 0.19U mg/Kg
MAK117O	Aluminum Selenium	0.21 mg/Kg 0.15 mg/Kg	0.21U mg/Kg 0.15U mg/Kg
MAK118O	Aluminum Selenium	1.16 mg/Kg 0.29 mg/Kg	1.16U mg/Kg 0.29U mg/Kg
MAK119O	Aluminum Lead Selenium	0.77 mg/Kg 0.005 mg/Kg 0.14 mg/Kg	0.77U mg/Kg 0.005U mg/Kg 0.14U mg/Kg
MAK120O	Aluminum Lead Selenium	0.56 mg/Kg 0.030 mg/Kg 0.17 mg/Kg	0.56U mg/Kg 0.030U mg/Kg 0.17U mg/Kg
MAK121O	Aluminum Selenium	0.61 mg/Kg 0.28 mg/Kg	0.61U mg/Kg 0.28U mg/Kg

Sample	Analyte	Reported Concentration	Modified Final Concentration
MAK122O	Aluminum Lead Selenium	0.43 mg/Kg 0.025 mg/Kg 0.16 mg/Kg	0.43U mg/Kg 0.025U mg/Kg 0.16U mg/Kg
MAK123O	Aluminum Lead Selenium	0.15 mg/Kg 0.031 mg/Kg 0.14 mg/Kg	0.15U mg/Kg 0.031U mg/Kg 0.14U mg/Kg
MAK124O	Aluminum Selenium	0.18 mg/Kg 0.17 mg/Kg	0.18U mg/Kg 0.17U mg/Kg
MAK134L	Mercury	2.40 ng/g	2.40U ng/g
MAK135L	Mercury	2.47 ng/g	2.47U ng/g
MAK138L	Mercury	2.72 ng/g	2.72U ng/g
MAK121C	Aluminum Lead Mercury	0.28 mg/Kg 0.016 mg/Kg 0.31 ng/g	0.28U mg/Kg 0.016U mg/Kg 0.31U ng/g
MAK122C	Lead Mercury	0.020 mg/Kg 0.31 ng/g	0.020U mg/Kg 0.31U ng/g
MAK123C	Aluminum Mercury	1.53 mg/Kg 0.14 ng/g	1.53U mg/Kg 0.14U ng/g
MAK124C	Mercury	0.40 ng/g	0.40U ng/g
MAK125C	Mercury	0.42 ng/g	0.42U ng/g
MAK126C	Mercury	0.49 ng/g	0.49U ng/g
MAK127C	Mercury	0.49 ng/g	0.49U ng/g
MAK128C	Lead Mercury	0.031 mg/Kg 0.35 ng/g	0.031U mg/Kg 0.35U ng/g

No field blanks were identified in this SDG.

V. ICP Interference Check Sample (ICS) Analysis

ICP Interference check sample analysis was not required by the methods.

VI. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
MAK109OMS/MSD (MAK109O MAK110O MAK111O MAK112O MAK113O MAK114O MAK115O MAK116O MAK117O MAK118O MAK119O MAK120O MAK121O MAK122O MAK123O MAK124O)	Zinc	-34 (70-130)	-20 (70-130)	-	J (all detects) R (all non-detects)	A
MAK109OMS/MSD (MAK109O MAK110O MAK111O MAK112O MAK113O MAK114O MAK115O MAK116O MAK117O MAK118O MAK119O MAK120O MAK121O MAK122O MAK123O MAK124O)	Mercury	-	49 (70-130)	57 (≤30)	J (all detects) UJ (all non-detects)	A
MAK130LMS/MSD (MAK130L MAK132L MAK134L MAK135L MAK138L)	Barium	-	173 (70-130)	-	J (all detects)	A
MAK121CMS/MSD (MAK121C MAK122C MAK123C MAK124C MAK125C MAK126C MAK127C MAK128C)	Mercury	-	228 (70-130)	71 (≤30)	J (all detects) UJ (all non-detects)	A

For MAK109OMS/MSD, no data were qualified for Copper and Arsenic percent recoveries outside the QC limits since the parent sample results were greater than 4X the spike concentration.

For MAK130LMS/MSD, no data were qualified for Arsenic and Aluminum percent recoveries outside the QC limits since the parent sample results were greater than 4X the spike concentration.

VII. Duplicate Sample Analysis

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Results were within QC limits with the following exceptions:

DUP ID (Associated Samples)	Analyte	RPD (Limits)	Difference (Limits)	Flag	A or P
MAK109ODUP (MAK109O MAK110O MAK111O MAK112O MAK113O MAK114O MAK115O MAK116O MAK117O MAK118O MAK119O MAK120O MAK121O MAK122O MAK123O MAK124O)	Copper Zinc Lead	80 (≤35) 48 (≤35) 87 (≤35)	- - -	J (all detects) UJ (all non-detects)	A
MAK121CDUP (MAK121C MAK122C MAK123C MAK124C MAK125C MAK126C MAK127C MAK128C)	Iron	-	6.51 mg/Kg (≤1.52)	J (all detects) UJ (all non-detects)	A

VIII. Laboratory Control Samples (LCS)/Standard Reference Material (SRM)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

Percent recoveries (%R) of the standard reference material (SRM) were within QC limits with the following exceptions:

SRM ID	Analyte	%R (Limits)	Associated Samples
SRM1 (TORT-3)	Chromium	71 (75-125)	All samples in SDG 1418004

SRM ID	Analyte	%R (Limits)	Associated Samples
SRM3 (DORM-4)	Lead	51 (75-125)	All samples in SDG 1418004

Although Chromium and Lead were outside control limits of 75-125%, these are new SRMs to BRL and do not have historical data to compare recoveries. The recoveries of the blank spike, other SRMs and all matrix spikes met acceptance criteria and no qualifications were necessary.

IX. Internal Standards (ICP-MS)

Raw data were not reviewed for this SDG.

X. ICP Serial Dilution

ICP serial dilution was not performed for this SDG.

XI. Sample Result Verification

Raw data were not reviewed for this SDG.

XII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XIII. Field Duplicates

No field duplicates were identified in this SDG.

**Makua Military Reservation
Metals - Data Qualification Summary - SDG 1418004**

SDG	Sample	Analyte	Flag	A or P	Reason
1418004	MAK109O MAK110O MAK111O MAK112O MAK113O MAK114O MAK115O MAK116O MAK117O MAK118O MAK119O MAK120O MAK121O MAK122O MAK123O MAK124O	Zinc	J (all detects) R (all non-detects)	A	Matrix spike/Matrix spike duplicate (%R)
1418004	MAK109O MAK110O MAK111O MAK112O MAK113O MAK114O MAK115O MAK116O MAK117O MAK118O MAK119O MAK120O MAK121O MAK122O MAK123O MAK124O	Mercury	J (all detects) UJ (all non-detects)	A	Matrix spike/Matrix spike duplicate (%R)(RPD)
1418004	MAK130L MAK132L MAK134L MAK135L MAK138L	Barium	J (all detects)	A	Matrix spike/Matrix spike duplicate (%R)
1418004	MAK121C MAK122C MAK123C MAK124C MAK125C MAK126C MAK127C MAK128C	Mercury	J (all detects) UJ (all non-detects)	A	Matrix spike/Matrix spike duplicate (%R)(RPD)

SDG	Sample	Analyte	Flag	A or P	Reason
1418004	MAK109O MAK110O MAK111O MAK112O MAK113O MAK114O MAK115O MAK116O MAK117O MAK118O MAK119O MAK120O MAK121O MAK122O MAK123O MAK124O	Copper Zinc Lead	J (all detects) UJ (all non-detects)	A	Duplicate sample analysis (RPD)
1418004	MAK121C MAK122C MAK123C MAK124C MAK125C MAK126C MAK127C MAK128C	Iron	J (all detects) UJ (all non-detects)	A	Duplicate sample analysis (difference)

**Makua Military Reservation
Metals - Laboratory Blank Data Qualification Summary - SDG 1418004**

SDG	Sample	Analyte	Modified Final Concentration	A or P
1418004	MAK109O	Aluminum Selenium	0.14U mg/Kg 0.17U mg/Kg	A
1418004	MAK110O	Aluminum Lead Selenium	0.95U mg/Kg 0.031U mg/Kg 0.22U mg/Kg	A
1418004	MAK111O	Aluminum Selenium	1.08U mg/Kg 0.17U mg/Kg	A
1418004	MAK112O	Aluminum Lead Selenium	0.97U mg/Kg 0.015U mg/Kg 0.16U mg/Kg	A
1418004	MAK113O	Aluminum Selenium	0.32U mg/Kg 0.15U mg/Kg	A
1418004	MAK114O	Aluminum Lead Selenium	0.94U mg/Kg 0.034U mg/Kg 0.15U mg/Kg	A
1418004	MAK115O	Selenium	0.24U mg/Kg	A

SDG	Sample	Analyte	Modified Final Concentration	A or P
1418004	MAK116O	Aluminum Selenium	0.21U mg/Kg 0.19U mg/Kg	A
1418004	MAK117O	Aluminum Selenium	0.21U mg/Kg 0.15U mg/Kg	A
1418004	MAK118O	Aluminum Selenium	1.16U mg/Kg 0.29U mg/Kg	A
1418004	MAK119O	Aluminum Lead Selenium	0.77U mg/Kg 0.005U mg/Kg 0.14U mg/Kg	A
1418004	MAK120O	Aluminum Lead Selenium	0.56U mg/Kg 0.030U mg/Kg 0.17U mg/Kg	A
1418004	MAK121O	Aluminum Selenium	0.61U mg/Kg 0.28U mg/Kg	A
1418004	MAK122O	Aluminum Lead Selenium	0.43U mg/Kg 0.025U mg/Kg 0.16U mg/Kg	A
1418004	MAK123O	Aluminum Lead Selenium	0.15U mg/Kg 0.031U mg/Kg 0.14U mg/Kg	A
1418004	MAK124O	Aluminum Selenium	0.18U mg/Kg 0.17U mg/Kg	A
1418004	MAK134L	Mercury	2.40U ng/g	A
1418004	MAK135L	Mercury	2.47U ng/g	A
1418004	MAK138L	Mercury	2.72U ng/g	A
1418004	MAK121C	Aluminum Lead Mercury	0.28U mg/Kg 0.016U mg/Kg 0.31U ng/g	A
1418004	MAK122C	Lead Mercury	0.020U mg/Kg 0.31U ng/g	A
1418004	MAK123C	Aluminum Mercury	1.53U mg/Kg 0.14U ng/g	A
1418004	MAK124C	Mercury	0.40U ng/g	A
1418004	MAK125C	Mercury	0.42U ng/g	A

SDG	Sample	Analyte	Modified Final Concentration	A or P
1418004	MAK126C	Mercury	0.49U ng/g	A
1418004	MAK127C	Mercury	0.49U ng/g	A
1418004	MAK128C	Lead Mercury	0.031U mg/Kg 0.35U ng/g	A

**Makua Military Reservation
Metals - Field Blank Data Qualification Summary - SDG 1418004**

No Sample Data Qualified in this SDG

LDC #: 32004E4

VALIDATION COMPLETENESS WORKSHEET

Date: 6/20/14

SDG #: 1418004

Level III

Page: 1 of 2

Laboratory: Brooks Rand Labs

Reviewer: 2nd Reviewer:

METHOD: Metals (EPA Method 200.8), Mercury (EPA Method 1631 Appendix), Methyl Mercury (EPA Method 1630), Arsenic Speciation (EPA Method 1632M)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/31/14 - 3/28/14
II.	ICP/MS Tune	A	
III.	Calibration	A	
IV.	Blanks	SW	
V.	ICP Interference Check Sample (ICS) Analysis	N	Not required
VI.	Matrix Spike Analysis	SW	
VII.	Duplicate Sample Analysis	SW	
VIII.	Laboratory Control Samples (LCS)	SW	LCS, SRM
IX.	Internal Standard (ICP-MS)	N	Not reviewed
X.	ICP Serial Dilution	N	Not performed
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	N	
XIV.	Field Blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet

ND = No compounds detected
R = Rinsate
FB = Field blank

D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples: Tissue

1	MAK109O	11	MAK119O	21	MAK138L	31	MAK109OMSD
2	MAK110O	12	MAK120O	22	MAK121C	32	MAK109ODUP
3	MAK111O	13	MAK121O	23	MAK122C	33	MAK119OMS
4	MAK112O	14	MAK122O	24	MAK123C	34	MAK119OMSD
5	MAK113O	15	MAK123O	25	MAK124C	35	MAK119ODUP
6	MAK114O	16	MAK124O	26	MAK125C	36	MAK130LMS
7	MAK115O	17	MAK130L	27	MAK126C	37	MAK130LMSD
8	MAK116O	18	MAK132L	28	MAK127C	38	MAK130LDUP
9	MAK117O	19	MAK134L	29	MAK128C	39	MAK138LMS
10	MAK118O	20	MAK135L	30	MAK109OMS	40	MAK138LMSD

Notes: _____

LDC #: 32004E4

VALIDATION COMPLETENESS WORKSHEET

SDG #: 1418004

Level III

Laboratory: Brooks Rand Labs

Date: 6/20/14

Page: 2 of 2

Reviewer: [Signature]

2nd Reviewer: A

METHOD: Metals (EPA Method 200.8), Mercury (EPA Method 1631 Appendix), Methyl Mercury (EPA Method 1630), Arsenic Speciation (EPA Method 1632M)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times		Sampling dates:
II.	ICP/MS Tune		
III.	Calibration		
IV.	Blanks		
V.	ICP Interference Check Sample (ICS) Analysis		
VI.	Matrix Spike Analysis		
VII.	Duplicate Sample Analysis		See page 1
VIII.	Laboratory Control Samples (LCS)		
IX.	Internal Standard (ICP-MS)		
X.	ICP Serial Dilution		
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data		
XIII.	Field Duplicates		
XIV.	Field Blanks		

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet

ND = No compounds detected
R = Rinsate
FB = Field blank

D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples:

41	MAK138LDUP	51	MB	61		71	
42	MAK121CMS	52		62		72	
43	MAK121CMSD	53		63		73	
44	MAK121CDUP	54		64		74	
45	# 4 MS	55		65		75	
46	↓ MSB	56		66		76	
47	↓ MSB	57		67		77	
48		58		68		78	
49		59		69		79	
50		60		70		80	

Notes:

**VALIDATION FINDINGS WORKSHEET
PB/ICB/CCB QUALIFIED SAMPLES**

METHOD: Trace Metals (EPA 200.8/1631E/1630/1632M) Soil preparation factor applied: 800X, 0.5g to 40ml, 10X
 Sample Concentration units, unless otherwise noted: mg/Kg Associated Samples: All

					Sample Identification													
Analyte	Maximum PB ^a (mg/Kg)	Maximum PB ^a (ug/L)	Maximum ICB/CCB ^a (ug/L)	Blank Action Limit	2	4	6	11	12	14	15	22	23	29				
Pb	0.008			0.04	0.031	0.015	0.034	0.005	0.030	0.025	0.031	0.016	0.020	0.031				

Sample Concentration units, unless otherwise noted: mg/Kg Associated Samples: 1-15

					Sample Identification														
Analyte	Maximum PB ^a (mg/Kg)	Maximum PB ^a (ug/L)	Maximum ICB/CCB ^a (ug/L)	Blank Action Limit	1	2	3	4	5	6	8	9	10	11	12	13	14	15	
Al			0.45	1.8	0.14	0.95	1.08	0.97	0.32	0.94	0.21	0.21	1.16	0.77	0.56	0.61	0.43	0.15	

Sample Concentration units, unless otherwise noted: mg/Kg Associated Samples: 16-22

					Sample Identification													
Analyte	Maximum PB ^a (mg/Kg)	Maximum PB ^a (ug/L)	Maximum ICB/CCB ^a (ug/L)	Blank Action Limit	16	22												
Al			0.43	1.72	0.18	0.28												

Sample Concentration units, unless otherwise noted: mg/Kg Associated Samples: 23-29

					Sample Identification													
Analyte	Maximum PB ^a (mg/Kg)	Maximum PB ^a (ug/L)	Maximum ICB/CCB ^a (ug/L)	Blank Action Limit	24													
Al			0.45	1.8	1.53													

Samples with analyte concentrations within five times the associated ICB, CCB or PB concentration are listed above with the identifications from the Validation Completeness Worksheet. These sample results were qualified as not detected, "U".
 Note : a - The listed analyte concentration is the highest ICB, CCB, or PB detected in the analysis of each element.

VALIDATION FINDINGS WORKSHEET
PB/ICB/CCB QUALIFIED SAMPLES

METHOD: Trace Metals (EPA 200.8/1631E/1630/1632M) Soil preparation factor applied: _____
Sample Concentration units, unless otherwise noted: ng/g Associated Samples: 1 (>5X)

					Sample Identification													
Analyte	Maximum PB ^a (mg/Kg)	Maximum PB ^a (ug/L)	Maximum ICB/CCB ^a (pg)	Blank Action Limit														
Hg			5.04	25.2*														

Sample Concentration units, unless otherwise noted: ng/g Associated Samples: 2-18 (>5X)

					Sample Identification													
Analyte	Maximum PB ^a (mg/Kg)	Maximum PB ^a (ug/L)	Maximum ICB/CCB ^a (pg)	Blank Action Limit														
Hg			5.14	25.7*														

Sample Concentration units, unless otherwise noted: ng/g Associated Samples: 19-22

					Sample Identification													
Analyte	Maximum PB ^a (mg/Kg)	Maximum PB ^a (ug/L)	Maximum ICB/CCB ^a (pg)	Blank Action Limit	19	20	21	22										
Hg			48.9	244.5*	2.40	2.47	2.72	0.31										

Sample Concentration units, unless otherwise noted: ng/g Associated Samples: 23-29

					Sample Identification													
Analyte	Maximum PB ^a (mg/Kg)	Maximum PB ^a (ug/L)	Maximum ICB/CCB ^a (pg)	Blank Action Limit	23	24	25	26	27	28	29							
Hg			7.16	35.8*	0.31	0.14	0.40	0.42	0.49	0.49	0.35							

* Blank action limit is from raw data in pg.

Samples with analyte concentrations within five times the associated ICB, CCB or PB concentration are listed above with the identifications from the Validation Completeness Worksheet. These sample results were qualified as not detected, "U".
Note : a - The listed analyte concentration is the highest ICB, CCB, or PB detected in the analysis of each element.

VALIDATION FINDINGS WORKSHEET
PB/ICB/CCB QUALIFIED SAMPLES

METHOD: Trace Metals (EPA 200.8/1631E/1630/1632M) Soil preparation factor applied: 800X, 0.5g to 40ml, 10X
 Sample Concentration units, unless otherwise noted: mg/Kg Associated Samples: All (>5X)

					Sample Identification														
Analyte	Maximum PB ^a (mg/Kg)	Maximum PB ^a (ug/L)	Maximum ICB/CCB ^a (ug/L)	Blank Action Limit															
Fe			0.23	0.92															

Sample Concentration units, unless otherwise noted: mg/Kg Associated Samples: 1-16

					Sample Identification															
Analyte	Maximum PB ^a (mg/Kg)	Maximum PB ^a (ug/L)	Maximum ICB/CCB ^a (ug/L)	Blank Action Limit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Se			0.27	1.08	0.17	0.22	0.17	0.16	0.15	0.15	0.24	0.19	0.15	0.29	0.14	0.17	0.28	0.16	0.14	0.17

Samples with analyte concentrations within five times the associated ICB, CCB or PB concentration are listed above with the identifications from the Validation Completeness Worksheet. These sample results were qualified as not detected, "U".
 Note : a - The listed analyte concentration is the highest ICB, CCB, or PB detected in the analysis of each element.

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: Makua Military Reservation
Collection Date: January 13 through February 11, 2014
LDC Report Date: July 1, 2014
Matrix: Tissue
Parameters: 2,4-Dinitrotoluene
Validation Level: EPA Level III
Laboratory: USACE ERDC-EP-C
Sample Delivery Group (SDG): 4033101

Sample Identification

MAK101L
MAK102L
MAK105L
MAK106L
MAK108,109,110,113L
MAK111L
MAK112L
MAK115L
MAK120L
MAK121L
MAK122L
MAK123L
MAK124L
MAK126L
MAK127L
MAK128L
MAK101LMS
MAK101LMSD
MAK123LMS
MAK123LMSD

Introduction

This data review covers 20 tissue samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8330 for 2,4-Dinitrotoluene.

This review follows the Final Supplemental Marine Resources Study Sampling and Analysis Plan at Makua Military Reservation, Oahu, Hawaii (August 2013), the Final Draft Version of the U.S. Department of Defense (DoD) and Department of Energy (DoE) Consolidated Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.0 (March 2013), and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review (June 2008).

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- NJ Presumptive evidence of presence of the compound at an estimated quantity.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Initial Calibration

Initial calibration of compounds was performed for the primary (quantitation) column and confirmation column as required by the method.

A curve fit, based on the initial calibration, was established for quantitation. The coefficient of determination (r^2) was greater than or equal to 0.990.

III. Continuing Calibration

Continuing calibration was performed at required frequencies.

The percent differences (%D) were less than or equal to 15.0% for all compounds.

The percent differences (%D) of the second source calibration standard were less than or equal to 15.0% for all compounds.

IV. Blanks

Method blanks were reviewed for each matrix as applicable. No 2,4-dinitrotoluene was found in the method blanks.

No field blanks were identified in this SDG.

V. Surrogate Recovery

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits with the following exceptions:

Sample	Column	Surrogate	%R (Limits)	Compound	Flag	A or P
MAK101L	Not specified	1,2-Dinitrobenzene	169 (60-120)	2,4-Dinitrotoluene	J (all detects)	A
MAK102L	Not specified	1,2-Dinitrobenzene	161 (60-120)	2,4-Dinitrotoluene	J (all detects)	P
MAK105L	Not specified	1,2-Dinitrobenzene	171 (60-120)	2,4-Dinitrotoluene	J (all detects)	P
MAK106L	Not specified	1,2-Dinitrobenzene	169 (60-120)	2,4-Dinitrotoluene	J (all detects)	P
MAK108,109,110,113L	Not specified	1,2-Dinitrobenzene	179 (60-120)	2,4-Dinitrotoluene	J (all detects)	P

Sample	Column	Surrogate	%R (Limits)	Compound	Flag	A or P
MAK111L	Not specified	1,2-Dinitrobenzene	161 (60-120)	2,4-Dinitrotoluene	J (all detects)	P
MAK112L	Not specified	1,2-Dinitrobenzene	175 (60-120)	2,4-Dinitrotoluene	J (all detects)	P
MAK115L	Not specified	1,2-Dinitrobenzene	169 (60-120)	2,4-Dinitrotoluene	J (all detects)	P
MAK120L	Not specified	1,2-Dinitrobenzene	174 (60-120)	2,4-Dinitrotoluene	J (all detects)	P
MAK121L	Not specified	1,2-Dinitrobenzene	176 (60-120)	2,4-Dinitrotoluene	J (all detects)	P
MAK122L	Not specified	1,2-Dinitrobenzene	169 (60-120)	2,4-Dinitrotoluene	J (all detects)	P
MAK123L	Not specified	1,2-Dinitrobenzene	173 (60-120)	2,4-Dinitrotoluene	J (all detects)	A
MAK124L	Not specified	1,2-Dinitrobenzene	170 (60-120)	2,4-Dinitrotoluene	J (all detects)	P
MAK126L	Not specified	1,2-Dinitrobenzene	166 (60-120)	2,4-Dinitrotoluene	J (all detects)	P
MAK127L	Not specified	1,2-Dinitrobenzene	171 (60-120)	2,4-Dinitrotoluene	J (all detects)	P
MAK128L	Not specified	1,2-Dinitrobenzene	159 (60-120)	2,4-Dinitrotoluene	J (all detects)	P

VI. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
MAK123LMS/MSD (MAK123L)	2,4-Dinitrotoluene	-	-	47.7 (≤30)	J (all detects)	A

VII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

VIII. Target Compound Identification

Raw data were not reviewed for this SDG.

IX. Compound Quantitation

Raw data were not reviewed for this SDG.

X. System Performance

Raw data were not reviewed for this SDG.

XI. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XII. Field Duplicates

No field duplicates were identified in this SDG.

**Makua Military Reservation
2,4-Dinitrotoluene - Data Qualification Summary - SDG 4033101**

SDG	Sample	Compound	Flag	A or P	Reason
4033101	MAK101L MAK123L	2,4-Dinitrotoluene	J (all detects)	A	Surrogate recovery (%R)
4033101	MAK102L MAK105L MAK106L MAK108,109,110,113L MAK111L MAK112L MAK115L MAK120L MAK121L MAK122L MAK124L MAK126L MAK127L MAK128L	2,4-Dinitrotoluene	J (all detects)	P	Surrogate recovery (%R)
4033101	MAK123L	2,4-Dinitrotoluene	J (all detects)	A	Matrix spike/Matrix spike duplicate (RPD)

**Makua Military Reservation
2,4-Dinitrotoluene - Laboratory Blank Data Qualification Summary - SDG 4033101**

No Sample Data Qualified in this SDG

**Makua Military Reservation
2,4-Dinitrotoluene - Field Blank Data Qualification Summary - SDG 4033101**

No Sample Data Qualified in this SDG

LDC #: 32004F40

VALIDATION COMPLETENESS WORKSHEET

Date: 6/26/14

SDG #: 4033101

Level III

Page: 1 of 1

Laboratory: USACE ERDC-EP-C

Reviewer: JVC

2nd Reviewer: [Signature]

METHOD: HPLC 2,4-Dinitrotoluene (EPA SW 846 Method 8330)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/13 - 2/11/14
II.	Initial calibration	A	
III.	Calibration verification/ICV	A	CV/ICV $\leq 15\%$
IV.	Blanks	A	
V.	Surrogate recovery	SW	
VI.	Matrix spike/Matrix spike duplicates	SW	
VII.	Laboratory control samples	DVG SW A	LCS
VIII.	Target compound identification	N	
IX.	Compound quantitation/RL/LOQ/LODs	N	
X.	System Performance	N	
XI.	Overall assessment of data	A	
XII.	Field duplicates	N	
XIII.	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet

ND = No compounds detected
R = Rinsate
FB = Field blank

D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples:

Tissue

1	MAK101L	11	MAK122L	21	B 404023 - Blk1	31	
2	MAK102L	12	MAK123L	22		32	
3	MAK105L	13	MAK124L	23		33	
4	MAK106L	14	MAK126L	24		34	
5	MAK108,109,110,113L	15	MAK127L	25		35	
6	MAK111L	16	MAK128L	26		36	
7	MAK112L	17	MAK101LMS	27		37	
8	MAK115L	18	MAK101LMSD	28		38	
9	MAK120L	19	MAK123LMS	29		39	
10	MAK121L	20	MAK123LMSD	30		40	

Notes:

VALIDATION FINDINGS WORKSHEET

METHOD: GC HPLC

8310	8330	8151	8141	8141(Con't)	8021B
A. Acenaphthene	A. HMX	A. 2,4-D	A. Dichlorvos	V. Fensulfothion	V. Benzene
B. Acenaphthylene	B. RDX	B. 2,4-DB	B. Mevinphos	W. Bolstar	CC. Toluene
C. Anthracene	C. 1,3,5-Trinitrobenzene	C. 2,4,5-T	C. Demeton-O	X. EPN	EE. Ethyl Benzene
D. Benzo(a)anthracene	D. 1,3-Dinitrobenzene	D. 2,4,5-TP	D. Demeton-S	Y. Azinphos-methyl	SSS. O-Xylene
E. Benzo(a)pyrene	E. Tetryl	E. Dinoseb	E. Ethoprop	Z. Coumaphos	RRR. MP-Xylene
F. Benzo(b)fluoranthene	F. Nitrobenzene	F. Dichlorprop	F. Naled	AA. Parathion	GG. Total Xylene
G. Benzo(g,h,i)perylene	G. 2,4,6-Trinitrotoluene	G. Dicamba	G. Sulfotep	BB. Trichloronate	
H. Benzo(k)fluoranthene	H. 4-Amino-2,6-dinitrotoluene	H. Dalapon	H. Phorate	CC. Trichlorinate	
I. Chrysene	I. 2-Amino-4,6-dinitrotoluene	I. MCPP	I. Dimethoate	DD. Trifluralin	
J. Dibenz(a,h)anthracene	J. 2,4-Dinitrotoluene	J. MCPA	J. Diazinon	EE. Def	
K. Fluoranthene	K. 2,6-Dinitrotoluene	K. Pentachlorophenol	K. Disulfoton	FF. Prowl	
L. Fluorene	L. 2-Nitrotoluene	L. 2,4,5-TP (silvex)	L. Parathion-methyl	GG. Ethion	
M. Indeno(1,2,3-cd)pyrene	M. 3-Nitrotoluene	M. Silvex	M. Ronnel	HH. Famphur	
N. Naphthalene	N. 4-Nitrotoluene		N. Malathion	II. Phosmet	
O. Phenanthrene	O. Nitroglycerin		O. Chlorpyrifos	JJ. Tetrachlorvinphos	
P. Pyrene	P. Picric acid		P. Fenthion	KK. Demeton (total)	
Q.	Q. 2,4-Dinitrophenol		Q. Parathion-ethyl		
R.	R. 3,5-Dinitroaniline		R. Trichlorate		
S.	S. 2-Nitrophenol		S. Merphos		
	T. 4-Nitrophenol		T. Stirofos		
	U. Picramic acid		U. Tokuthion		
	V. PETN				

Notes: _____

**Laboratory Data Consultants, Inc.
Data Validation Report**

Project/Site Name: Makua Military Reservation
Collection Date: January 31 through March 28, 2014
LDC Report Date: July 1, 2014
Matrix: Tissue
Parameters: 2,4-Dinitrotoluene
Validation Level: EPA Level III
Laboratory: USACE ERDC-EP-C
Sample Delivery Group (SDG): 4052803

Sample Identification

MAK116L
MAK117L
MAK118L
MAK130L
MAK132L
MAK134L
MAK135L
MAK138L
MAK130LMS
MAK130LMSD

Introduction

This data review covers 10 tissue samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8330 for 2,4-Dinitrotoluene.

This review follows the Final Supplemental Marine Resources Study Sampling and Analysis Plan at Makua Military Reservation, Oahu, Hawaii (August 2013), the Final Draft Version of the U.S. Department of Defense (DoD) and Department of Energy (DoE) Consolidated Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.0 (March 2013), and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review (June 2008).

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- NJ Presumptive evidence of presence of the compound at an estimated quantity.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Initial Calibration

Initial calibration of compounds was performed for the primary (quantitation) column and confirmation column as required by the method.

A curve fit, based on the initial calibration, was established for quantitation. The coefficient of determination (r^2) was greater than or equal to 0.990.

III. Continuing Calibration

Continuing calibration was performed at required frequencies.

The percent differences (%D) were less than or equal to 15.0% for all compounds.

The percent differences (%D) of the second source calibration standard were less than or equal to 15.0% for all compounds.

IV. Blanks

Method blanks were reviewed for each matrix as applicable. No 2,4-dinitrotoluene was found in the method blanks.

No field blanks were identified in this SDG.

V. Surrogate Recovery

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits with the following exceptions:

Sample	Column	Surrogate	%R (Limits)	Compound	Flag	A or P
MAK116L	Not specified	1,2-Dinitrobenzene	176 (60-120)	2,4-Dinitrotoluene	J (all detects)	P
MAK117L	Not specified	1,2-Dinitrobenzene	171 (60-120)	2,4-Dinitrotoluene	J (all detects)	P
MAK118L	Not specified	1,2-Dinitrobenzene	176 (60-120)	2,4-Dinitrotoluene	J (all detects)	P
MAK130L	Not specified	1,2-Dinitrobenzene	165 (60-120)	2,4-Dinitrotoluene	J (all detects)	A
MAK132L	Not specified	1,2-Dinitrobenzene	171 (60-120)	2,4-Dinitrotoluene	J (all detects)	P

Sample	Column	Surrogate	%R (Limits)	Compound	Flag	A or P
MAK134L	Not specified	1,2-Dinitrobenzene	171 (60-120)	2,4-Dinitrotoluene	J (all detects)	P
MAK135L	Not specified	1,2-Dinitrobenzene	177 (60-120)	2,4-Dinitrotoluene	J (all detects)	P
MAK138L	Not specified	1,2-Dinitrobenzene	171 (60-120)	2,4-Dinitrotoluene	J (all detects)	P
B406040-BIk1	Not specified	1,2-Dinitrobenzene	196 (60-120)	2,4-Dinitrotoluene	J (all detects)	P

VI. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

VIII. Target Compound Identification

Raw data were not reviewed for this SDG.

IX. Compound Quantitation

Raw data were not reviewed for this SDG.

X. System Performance

Raw data were not reviewed for this SDG.

XI. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XII. Field Duplicates

No field duplicates were identified in this SDG.

**Makua Military Reservation
2,4-Dinitrotoluene - Data Qualification Summary - SDG 4052803**

SDG	Sample	Compound	Flag	A or P	Reason
4052803	MAK116L MAK117L MAK118L MAK132L MAK134L MAK135L MAK138L	2,4-Dinitrotoluene	J (all detects)	P	Surrogate recovery (%R)
4052803	MAK130L	2,4-Dinitrotoluene	J (all detects)	A	Surrogate recovery (%R)

**Makua Military Reservation
2,4-Dinitrotoluene - Laboratory Blank Data Qualification Summary - SDG 4052803**

No Sample Data Qualified in this SDG

**Makua Military Reservation
2,4-Dinitrotoluene - Field Blank Data Qualification Summary - SDG 4052803**

No Sample Data Qualified in this SDG

LDC #: 32004G40

VALIDATION COMPLETENESS WORKSHEET

Date: 6/26/14

SDG #: 4052803

Level III

Page: 1 of 1

Laboratory: USACE ERDC-EP-C

Reviewer: SVG
2nd Reviewer: [Signature]

METHOD: HPLC 2,4-Dinitrotoluene (EPA SW 846 Method 8330)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/31 - 3/28/14
II	Initial calibration	A	r ²
III.	Calibration verification/ICV	A	CV/100 ≤ 15?
IV.	Blanks	A	
V	Surrogate recovery	SW	
VI.	Matrix spike/Matrix spike duplicates	A	
VII.	Laboratory control samples	A	LCS
VIII.	Target compound identification	N	
IX.	Compound quantitation/RL/LOQ/LODs	N	
X.	System Performance	N	
XI.	Overall assessment of data	A	
XII.	Field duplicates	N	
XIII.	Field blanks	N	

Note: A = Acceptable ND = No compounds detected D = Duplicate
 N = Not provided/applicable R = Rinsate TB = Trip blank
 SW = See worksheet FB = Field blank EB = Equipment blank

Validated Samples:

Tissue

1	MAK116L	11	BA06040-BLK1	21		31	
2	MAK117L	12		22		32	
3	MAK118L	13		23		33	
4	MAK130L	14		24		34	
5	MAK132L	15		25		35	
6	MAK134L	16		26		36	
7	MAK135L	17		27		37	
8	MAK138L	18		28		38	
9	MAK130LMS	19		29		39	
10	MAK130LMSD	20		30		40	

Notes: _____

