

**LABORATORY DATA CONSULTANTS, INC.**  
2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

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

June 23, 2014

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

Dear Ms. Shjegstad

Enclosed are the revised validation reports for the fraction listed below. Please replace the previously submitted report with the enclosed revised report.

**LDC Project #31924:**

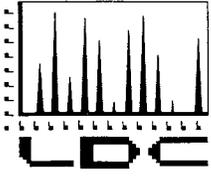
<b><u>SDG #</u></b>	<b><u>Fraction</u></b>
006619, 006620, 006621	Volatiles

- Ammended overall assessment text due to document Trip Blank received frozen and shattered.

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

Sincerely,

Andrew Kong  
Project Manager/Senior Chemist



**LABORATORY DATA CONSULTANTS, INC.**  
2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

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

June 18, 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 5, 2014. Attachment 1 is a summary of the samples that were reviewed for each analysis.

**LDC Project #31924:**

<b><u>SDG #</u></b>	<b><u>Fraction</u></b>
006619, 006620, 006621	Volatiles, Semivolatiles

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 #31924 (GSI Pacific, Inc. - Honolulu, HI / Makua Military Reservation)**

LDC	SDG#	DATE REC'D	(3) DATE DUE	VOA (8260B)		SVOA (8270C)																																
				W	T	W	S	W	S	W	T	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S							
Matrix: Water/Tissue				W	T	W	S	W	S	W	T	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	
A	006619	06/05/14	06/26/14	0	16	0	16																															
B	006620	06/05/14	06/26/14	0	5	0	5																															
C	006621	06/05/14	06/26/14	0	8	0	8																															

**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 23, 2014  
**Matrix:** Tissue  
**Parameters:** Volatiles  
**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 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.

## **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 006619**

No Sample Data Qualified in this SDG

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

No Sample Data Qualified in this SDG

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

No Sample Data Qualified in this SDG

LDC #: 31924A1  
 SDG #: 006619  
 Laboratory: ARDL, Inc.

**VALIDATION COMPLETENESS WORKSHEET**  
 Level III

Date: 6/11/14  
 Page: 1 of 1  
 Reviewer: [Signature]  
 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: 1/31/14 - 3/28/14
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	% RSD ≤ 15%
IV.	Continuing calibration/ICV	A	CCV/ICV ≤ 20%
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples	A	LCS
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	The laboratory indicated sample Trip Blank was never frozen - shattered, therefore no results were provided
XVI.	Field duplicates	N	
XVII.	Field blanks	N	

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

Validated Samples:

Tissue

1	MAK1090	11	MAK1190	21	Blk 05/05/14	31
2	MAK1100	12	MAK1200	22	05/06/14	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	MAK111OMS	27		37
8	MAK1160	18	MAK111OMSD	28		38
9	MAK1170	19		29		39
10	MAK1180	20		30		40

T, E, X, Styrene, 124-TMB

## 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 12, 2014  
**Matrix:** Tissue  
**Parameters:** Semivolatiles  
**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 8270C for Semivolatiles.

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 validation 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 semivolatile 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.

## **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**

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  
Semivolatiles - Data Qualification Summary - SDG 006619**

No Sample Data Qualified in this SDG

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

No Sample Data Qualified in this SDG

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

No Sample Data Qualified in this SDG

LDC #: 31924A2

## VALIDATION COMPLETENESS WORKSHEET

SDG #: 006619

Level III

Laboratory: ARDL, Inc.

Date: 6/11/14

Page: 1 of 1

Reviewer: JVG

2nd Reviewer: [Signature]

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270C)

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.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	? RSD ≤ 15%
IV.	Continuing calibration/ICV	A	CV/ICV ≤ 20%
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples	A	LCS
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	
XVI.	Field duplicates	N	
XVII.	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	Blk B10219	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	

Phthalates + Pyrene

**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 23, 2014  
**Matrix:** Tissue  
**Parameters:** Volatiles  
**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 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.

## **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 006620**

No Sample Data Qualified in this SDG

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

No Sample Data Qualified in this SDG

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

No Sample Data Qualified in this SDG

LDC #: 31924B1  
 SDG #: 006620  
 Laboratory: ARDL, Inc.

**VALIDATION COMPLETENESS WORKSHEET**

Level III

Date: 6/11/14  
 Page: 1 of 1  
 Reviewer: JV  
 2nd Reviewer: C

**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: <u>3/27 - 28/14</u>
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	<u>% RSD ≤ 15%</u>
IV.	Continuing calibration/ICV	A	<u>CCV/ICV ≤ 20%</u>
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples	A	<u>LCS</u>
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	<u>The laboratory indicated sample Trip Blank was received frozen &amp; shattered, therefore no results provided.</u>
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	MAK130L	<u>11</u>	<u>Blk 05/09/14</u>	21		31
2	MAK132L	<u>12</u>	<u>05/08/14</u>	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

T, E, X, Styrene, 124-TMB

## 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 17, 2014  
**Matrix:** Tissue  
**Parameters:** Semivolatiles  
**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 8270C for Semivolatiles.

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).

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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 validation 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 semivolatile 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.

## **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**

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  
Semivolatiles - Data Qualification Summary - SDG 006620**

No Sample Data Qualified in this SDG

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

No Sample Data Qualified in this SDG

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

No Sample Data Qualified in this SDG

LDC #: 31924B2

**VALIDATION COMPLETENESS WORKSHEET**

Date: 6/11/14

SDG #: 006620

Level III

Page: 1 of 1

Laboratory: ARDL, Inc.

Reviewer: *JL*  
2nd Reviewer: *[Signature]*

**METHOD:** GC/MS Semivolatiles (EPA SW 846 Method 8270C)

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/MS Instrument performance check	A	
III.	Initial calibration	A	% RSD ≤ 15 %
IV.	Continuing calibration/ICV	A	CV/100 ≤ 20 %
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples	A	
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	
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	MAK130L	11	Bik B10211	21		31
2	MAK132L	12		22		32
3	MAK134L	13		23		33
4	MAK135L	14		24		34
5	MAK138L	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

*Phthalates + Pyrene*

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

**Project/Site Name:** Makua Military Reservation  
**Collection Date:** March 28, 2014  
**LDC Report Date:** June 23, 2014  
**Matrix:** Tissue  
**Parameters:** Volatiles  
**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 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.

## **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 006621**

No Sample Data Qualified in this SDG

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

No Sample Data Qualified in this SDG

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

No Sample Data Qualified in this SDG

LDC #: 31924C1  
 SDG #: 006621  
 Laboratory: ARDL, Inc.

**VALIDATION COMPLETENESS WORKSHEET**

Level III

Date: 6/11/14  
 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: 3/28/14
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	% RSD ≤ 15 %
IV.	Continuing calibration/ICV	A	CCV/ICV ≤ 20 %
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples	A	LCS
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	The laboratory indicated sample Trip Blank was used from a shattered, therefore no results provided
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	MAK121C	11	Blank 5/02/14	21	31
2	MAK122C	12	Blank 5/05/14	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

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

## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** Makua Military Reservation  
**Collection Date:** March 28, 2014  
**LDC Report Date:** June 12, 2014  
**Matrix:** Tissue  
**Parameters:** Semivolatiles  
**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 8270C for Semivolatiles.

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 validation 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 semivolatile 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.

## **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**

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  
Semivolatiles - Data Qualification Summary - SDG 006621**

No Sample Data Qualified in this SDG

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

No Sample Data Qualified in this SDG

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

No Sample Data Qualified in this SDG

LDC #: 31924C2

## VALIDATION COMPLETENESS WORKSHEET

Date: 6/11/14

SDG #: 006621

Level III

Page: 1 of 1

Laboratory: ARDL, Inc.

Reviewer: JVG

2nd Reviewer:           

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270C)

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/MS Instrument performance check	A	
III.	Initial calibration	A	? RSD ≤ 15%
IV.	Continuing calibration/ICV	A	CCV/ICV ≤ 20%
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples	A	LCS
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	
XVI.	Field duplicates	N	
XVII.	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	Blk B10215	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	

Phthalates + Pyrene