



**LABORATORY DATA CONSULTANTS, INC.**

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ERM

2525 Natomas Park Drive, Suite 350

Sacramento, CA 95833

ATTN: Ms. Maria Barajas-Albalawi

August 11, 2008

SUBJECT: BRC Tronox Parcel G, Data Validation

Dear Ms. Barajas-Albalawi

Enclosed are the final validation reports for the fractions listed below. These SDGs were received on July 11, 2008. Attachment 1 is a summary of the samples that were reviewed for each analysis.

**LDC Project # 19097:**

**SDG #**

**Fraction**

F8F120137,	Volatiles, Semivolatiles, Chlorinated Pesticides, Polychlorinated
F8F120167	Biphenyls, Metals, Wet Chemistry, Gasoline Range Organics, Diesel Range Organics, Polynuclear Aromatic Hydrocarbons, Dioxins/Dibenzofurans

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

- USEPA, Contract Laboratory Program National Functional Guidelines for Organic Data Review, October 1999
- USEPA, Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, October 2004
- 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,

Erlinda T. Rauto

Operations Manager/Senior Chemist

**LDC #19097 (ERM-Sacramento / BRC Tronox, Parcel G)**

80/20 EDD

LDC	SDG#	DATE REC'D	(3) DATE DUE	VOA (8260B)		SVOA (8270C)		Pest. (8031A)		PCBs (8082)		Metals (SW846)		GRO (8015)		DRO (8015)		PAHs (8310)		Dioxins (8290)		Bromide Chloride Chlorate Fluoride		NO <sub>x</sub> NO <sub>2</sub> O-OP <sub>4</sub>		SO <sub>4</sub> (300.0)		O&G (9071B 1664A)		
				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	W
A	F8F120137	07/11/08	08/01/08	2	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	
B	F8F120167	07/11/08	08/01/08	1	2	0	2	0	2	0	2	0	2	0	3	0	2	0	2	0	2	0	2	0	2	0	2	0	2	
B	F8F120167	07/11/08	08/01/08	0	2	0	2	0	2	0	2	0	2	0	2	0	2	0	2	0	2	0	2	0	2	0	2	0	2	
				3	4	1	4	1	4	1	4	1	4	1	5	1	4	1	4	1	4	1	4	1	4	1	4	1	4	
Total																														
T/LR																														

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

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:** BRC Tronox Parcel G

**Collection Date:** June 11, 2008

**LDC Report Date:** July 22, 2008

**Matrix:** Water

**Parameters:** Volatiles

**Validation Level:** EPA Level III

**Laboratory:** TestAmerica, Inc.

**Sample Delivery Group (SDG):** F8F120137

RINSATE 1  
TB-3

## Introduction

This data review covers 2 water 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 a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999) as there are no current guidelines for the method stated above.

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.

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

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

The following are definitions of the data qualifiers:

- J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.
- J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.
- J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.
- R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.
- 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 each individual compound and less than or equal to 30.0% for calibration check compounds (CCCs).

In the case where %RSD was greater than 15.0%, the laboratory used a calibration curve to evaluate the compound. All coefficients of determination ( $r^2$ ) were greater than or equal to 0.990 .

For the purposes of technical evaluation, all compounds were evaluated against the 30.0% (%RSD) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

Average relative response factors (RRF) for all volatile target compounds and system performance check compounds (SPCCs) 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 calibration check compounds (CCCs).

For the purposes of technical evaluation, all compounds were evaluated against the 25.0% (%D) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria with the following exceptions:

Date	Compound	%D	Associated Samples	Flag	A or P
6/19/08 (LCAL0317)	Iodomethane	67.71684	TB-3 F8F200000-125	J+ (all detects)	A
6/20/08 (LCAL0344)	Bromomethane	30.34074	RINSATE 1 F8F200000-539	J+ (all detects)	A

The percent differences (%D) of the second source calibration standard were less than or equal to 25.0% for all compounds with the following exceptions:

Date	Compound	%D	Associated Samples	Flag	A or P
5/28/08 (LICV9881)	Iodomethane	31.67513	All samples in SDG F8F120137	J+ (all detects)	A
5/28/08 (LICV9881)	2-Hexanone	25.04476	All samples in SDG F8F120137	J- (all detects) UJ (all non-detects)	A

All of the continuing calibration RRF values 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.

Sample TB-3 was identified as a trip blank. No volatile contaminants were found in this blank with the following exceptions:

Trip Blank ID	Sampling Date	Compound	Concentration	Associated Samples
TB-3	6/11/08	Acetone Chloroform	3.1 ug/L 0.12 ug/L	RINSATE 1

Sample "RINSATE 1" was identified as a rinsate. No volatile contaminants were found in this blank with the following exceptions:

Rinsate Blank ID	Sampling Date	Compound	Concentration	Associated Samples
RINSATE 1	6/11/08	Dichloromethane	3.3 ug/L	No associated samples in this SDG

Sample concentrations were compared to concentrations detected in the field blanks. The sample concentrations were either not detected or were significantly greater (>10X for common contaminants, >5X for other contaminants) than the concentrations found in the associated field blanks.

## 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	Surrogate	%R (Limits)	Compound	Flag	A or P
RINSATE 1	Bromofluorobenzene	116 (66-115)	All TCL compounds	J+ (all detects)	A
F8F200000-125	Bromofluorobenzene	117 (79-115)	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. Although the MS/MSD relative percent differences (RPD) were not within QC limits for one compound, the MS/MSD percent recoveries (%R) were within QC limits and no data were qualified.

## VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Although the percent recoveries (%R) and relative percent differences (RPD) for some compounds in the LCS/D were not within QC limits, the LCS and MS/MSD percent recoveries (%R) were within QC limits and no data were qualified.

## 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 and CRQLs

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**

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

### **XVI. Field Duplicates**

No field duplicates were identified in this SDG.

**BRC Tronox Parcel G  
Volatiles - Data Qualification Summary - SDG F8F120137**

SDG	Sample	Compound	Flag	A or P	Reason
F8F120137	TB-3	Iodomethane	J+ (all detects)	A	Continuing calibration (%D)
F8F120137	RINSATE 1	Bromomethane	J+ (all detects)	A	Continuing calibration (%D)
F8F120137	RINSATE 1 TB-3	Iodomethane	J+ (all detects)	A	Continuing calibration (ICV %D)
F8F120137	RINSATE 1 TB-3	2-Hexanone	J- (all detects) UJ (all non-detects)	A	Continuing calibration (ICV %D)
F8F120137	RINSATE 1	All TCL compounds	J+ (all detects)	A	Surrogate recovery (%R)

**BRC Tronox Parcel G  
Volatiles - Laboratory Blank Data Qualification Summary - SDG F8F120137**

No Sample Data Qualified in this SDG

**BRC Tronox Parcel G  
Volatiles - Field Blank Data Qualification Summary - SDG F8F120137**

No Sample Data Qualified in this SDG

LDC #: 19097A1  
 SDG #: F8F120137  
 Laboratory: Test America

**VALIDATION COMPLETENESS WORKSHEET**

Level III

Date: 7/20/08

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: 6/11/08
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	% PSD, r <sup>2</sup> 20.990
IV.	Continuing calibration/ICV	SW	
V.	Blanks	A	
VI.	Surrogate spikes	SW	
VII.	Matrix spike/Matrix spike duplicates	SW	Rinsate - 2
VIII.	Laboratory control samples	SW	LCSD
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	A	
XI.	Target compound identification	N	
XII.	Compound quantitation/CRQLs	N	
XIII.	Tentatively identified compounds (TICs)	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	
XVI.	Field duplicates	A	
XVII.	Field blanks	SW	R = 1 TB = 2

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: water

1	RINSATE 1	11		21		31
2	3 = Nonanal TB-3	12		22		32
3	F8F200000-539	13	8172539	23	6/20	33
4	F8F200000-175	14	8172125	24	6/19	34
5	F8F200000-361	15	8172361	25	6/19	35
6		16		26		36
7		17		27		37
8		18		28		38
9		19		29		39
10		20		30		40



SDG #: 1707171  
per cover

Page: 1  
Reviewer: [Signature]  
2nd Reviewer: [Signature]

**Field Blanks**

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)  
X N / N/A Were field blanks identified in this SDG?  
Y N / N/A Were target compounds detected in the field blanks?  
Blank units: ug/L Associated sample units: ug/L  
Field blank type: (circle one) Field Blank / Rinsate / Trip Blank / Other: R Associated Samples: none

Compound	Blank ID 1	Blank ID	Sample Identification
<del>Methylene chloride</del>	<u>6/11/08</u>		
Dichloromethane	<u>3.3</u>		
Acetone			
Chloroform			
CRQL			

Blank units: ug/L Associated sample units: ug/L # 1 (ND)  
Field blank type: (circle one) Field Blank / Rinsate / Trip Blank / Other: TB Associated Samples:

Compound	Blank ID 2	Blank ID	Sample Identification
<del>Methylene chloride</del>	<u>6/11/08</u>		
Methylene chloride			
Acetone	<u>3.1</u>		
Chloroform	<u>0.12</u>		
CRQL			

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:  
Common contaminants such as Methylene chloride, Acetone, 2-Butanone and Carbon disulfide that were detected in samples within ten times the associated field blank concentration were qualified as not detected, "U". Other contaminants within five times the field blank concentration were also qualified as not detected, "U".









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

**Project/Site Name:** BRC Tronox Parcel G

**Collection Date:** June 11, 2008

**LDC Report Date:** July 23, 2008

**Matrix:** Water

**Parameters:** Semivolatiles

**Validation Level:** EPA Level III

**Laboratory:** TestAmerica, Inc.

**Sample Delivery Group (SDG):** F8F120137

**Sample Identification**

RINSATE 1  
RINSATE 1MS  
RINSATE 1MSD

## Introduction

This data review covers 3 water 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 a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999) as there are no current guidelines for the method stated above.

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.

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

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

The following are definitions of the data qualifiers:

- J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.
- J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.
- J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.
- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.
- UU 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 each individual compound and less than or equal to 30.0% for calibration check compounds (CCCs).

In the case where %RSD was greater than 15.0%, the laboratory used a calibration curve to evaluate the compound. All coefficients of determination ( $r^2$ ) were greater than or equal to 0.990 .

For the purposes of technical evaluation, all compounds were evaluated against the 30.0% (%RSD) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

Average relative response factors (RRF) for all semivolatiles target compounds and system performance check compounds (SPCCs) were greater than or equal to 0.05 as required with the following exceptions:

Date	Compound	RRF (Limits)	Associated Samples	Flag	A or P
6/18/08	Phthalic acid	0.01422 ( $\geq 0.05$ )	All samples in SDG F8F120137	J (all detects)	A
	n-(Hydroxymethyl)phthalimide	0.04408 ( $\geq 0.05$ )		UJ (all non-detects)	
				J (all detects)	
				UJ (all non-detects)	

## 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 calibration check compounds (CCCs).

For the purposes of technical evaluation, all compounds were evaluated against the 25.0% (%D) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria with the following exceptions:

Date	Compound	%D	Associated Samples	Flag	A or P
6/19/08	Phthalic acid	25.06818	RINSATE 1 RINSATE 1MS RINSATE 1MSD	J- (all detects) UJ (all non-detects)	A

The percent difference (%D) of the second source calibration standard were less than or equal to 25.0% for all compounds.

All of the continuing calibration RRF values were within method and validation criteria with the following exceptions:

Date	Compound	RRF (Limits)	Associated Samples	Flag	A or P
6/18/08	Phthalic acid n-(Hydroxymethyl)phthalimide	0.01330 ( $\geq 0.05$ ) 0.04331 ( $\geq 0.05$ )	F8F130000-441	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A
6/19/08	Phthalic acid n-(Hydroxymethyl)phthalimide	0.01066 ( $\geq 0.05$ ) 0.04523 ( $\geq 0.05$ )	RINSATE 1 RINSATE 1MS RINSATE 1MSD	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A

## V. Blanks

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

Sample "RINSATE 1" was identified as a rinsate. No semivolatile contaminants were found in this blank.

## 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. Although the MS/MSD percent recoveries (%R) and relative percent differences (RPD) were not within QC limits for some compounds, the MS/MSD and LCS percent recoveries (%R) were within QC limits and no data were qualified.

**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 with the following exceptions:

Sample	Internal Standards	Area (Limits)	Compound	Flag	A or P
RINSATE 1	Perylene-d12	243167 (281395-1125580)	Di-n-octylphthalate Benzo(b)fluoranthene Benzo(k)fluoranthene Benzo(a)pyrene Indeno(1,2,3-cd)pyrene Dibenz(a,h)anthracene Benzo(g,h,i)perylene	J (all detects) UJ (all non-detects)	A

**XI. Target Compound Identifications**

Raw data were not reviewed for this SDG.

**XII. Compound Quantitation and CRQLs**

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**

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

**XVI. Field Duplicates**

No field duplicates were identified in this SDG.

**BRC Tronox Parcel G  
Semivolatiles - Data Qualification Summary - SDG F8F120137**

SDG	Sample	Compound	Flag	A or P	Reason
F8F120137	RINSATE 1	Phthalic acid n-(Hydroxymethyl)phthalimide	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A	Initial calibration (RRF)
F8F120137	RINSATE 1	Phthalic acid	J- (all detects) UJ (all non-detects)	A	Continuing calibration (%D)
F8F120137	RINSATE 1	Phthalic acid n-(Hydroxymethyl)phthalimide	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A	Continuing calibration (RRF)
F8F120137	RINSATE 1	Di-n-octylphthalate Benzo(b)fluoranthene Benzo(k)fluoranthene Benzo(a)pyrene Indeno(1,2,3-cd)pyrene Dibenz(a,h)anthracene Benzo(g,h,i)perylene	J (all detects) UJ (all non-detects)	A	Internal standards (area)

**BRC Tronox Parcel G  
Semivolatiles - Laboratory Blank Data Qualification Summary - SDG F8F120137**

No Sample Data Qualified in this SDG

**BRC Tronox Parcel G  
Semivolatiles - Field Blank Data Qualification Summary - SDG F8F120137**

No Sample Data Qualified in this SDG

LDC #: 19097A2

## VALIDATION COMPLETENESS WORKSHEET

SDG #: F8F120137

Level III

Laboratory: Test America

Date: 7/2/08

Page: 6 of 7

Reviewer: TR

2nd Reviewer: TR

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: 6/11/08
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	SW	% RSD, $r^2$ 20.990
IV.	Continuing calibration/ICV	SW	ICV $\leq 25$
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	SW	
VIII.	Laboratory control samples	A	LC3
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	SW	
XI.	Target compound identification	N	
XII.	Compound quantitation/CRQLs	N	
XIII.	Tentatively identified compounds (TICs)	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	
XVI.	Field duplicates	N	
XVII.	Field blanks	ND	R = 1

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:

Water

1	RINSATE 1	11	F8F13000-44/	21	816544/	31
2	RINSATE 1MS	12		22		32
3	RINSATE 1MSD	13		23		33
4		14		24		34
5		15		25		35
6		16		26		36
7		17		27		37
8		18		28		38
9		19		29		39
10		20		30		40

# VALIDATION FINDINGS WORKSHEET

*PRY*

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

A. Phenol**	P. Bis(2-chloroethoxy)methane	EE. 2,6-Dinitrotoluene	TT. Pentachlorophenol**	III. Benzo(a)pyrene**
B. Bis (2-chloroethyl) ether	Q. 2,4-Dichlorophenol**	FF. 3-Nitroaniline	UU. Phenanthrene	JJJ. Indeno(1,2,3-cd)pyrene
C. 2-Chlorophenol	R. 1,2,4-Trichlorobenzene	GG. Acenaphthene**	VV. Anthracene	KKK. Dibenz(a,h)anthracene
D. 1,3-Dichlorobenzene	S. Naphthalene	HH. 2,4-Dinitrophenol*	WW. Carbazole	LLL. Benzo(g,h,i)perylene
E. 1,4-Dichlorobenzene**	T. 4-Chloroaniline	II. 4-Nitrophenol*	XX. Di-n-butylphthalate	MMM. Bis(2-Chloroisopropyl)ether
F. 1,2-Dichlorobenzene	U. Hexachlorobutadiene**	JJ. Dibenzofuran	YY. Fluoranthene**	NNN. Aniline
G. 2-Methylphenol	V. 4-Chloro-3-methylphenol**	KK. 2,4-Dinitrotoluene	ZZ. Pyrene	OOO. N-Nitrosodimethylamine
H. 2,2'-Oxybis(1-chloropropane)	W. 2-Methylnaphthalene	LL. Diethylphthalate	AAA. Butylbenzylphthalate	PPP. Benzoic Acid
I. 4-Methylphenol	X. Hexachlorocyclopentadiene*	MM. 4-Chlorophenyl-phenyl ether	BBB. 3,3'-Dichlorobenzidine	QQQ. Benzyl alcohol
J. N-Nitroso-di-n-propylamine*	Y. 2,4,6-Trichlorophenol**	NN. Fluorene	CCC. Benzo(a)anthracene	RRR. Pyridine
K. Hexachloroethane	Z. 2,4,5-Trichlorophenol	OO. 4-Nitroaniline	DDD. Chrysene	SSS. Benzidine
L. Nitrobenzene	AA. 2-Chloronaphthalene	PP. 4,6-Dinitro-2-methylphenol	EEE. Bis(2-ethylhexyl)phthalate	TTT.
M. Isophorone	BB. 2-Nitroaniline	QQ. N-Nitrosodiphenylamine (1)**	FFF. Di-n-octylphthalate**	UUU
N. 2-Nitrophenol**	CC. Dimethylphthalate	RR. 4-Bromophenyl-phenylether	GGG. Benzo(b)fluoranthene	VVV.
O. 2,4-Dimethylphenol	DD. Acenaphthylene	SS. Hexachlorobenzene	HHH. Benzo(k)fluoranthene	WWW.

Notes: \* = System performance check compound (SPCC) for RRF; \*\* = Calibration check compound (CCC) for %RSD.











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

**Project/Site Name:** BRC Tronox Parcel G

**Collection Date:** June 11, 2008

**LDC Report Date:** August 11, 2008

**Matrix:** Water

**Parameters:** Chlorinated Pesticides

**Validation Level:** EPA Level III

**Laboratory:** TestAmerica, Inc.

**Sample Delivery Group (SDG):** F8F120137

**Sample Identification**

RINSATE 1  
RINSATE 1MS  
RINSATE 1MSD

## Introduction

This data review covers 3 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8081A for Chlorinated Pesticides.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999) as there are no current guidelines for the method stated above.

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.

Blank results are summarized in Section V.

Field duplicates are summarized in Section XIV.

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

The following are definitions of the data qualifiers:

- J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.
- J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.
- J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.
- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.
- 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/ECD Instrument Performance Check**

Instrument performance was acceptable unless noted otherwise under initial calibration and continuing calibration sections.

## **III. Initial Calibration**

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

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

## **IV. Continuing Calibration**

Continuing calibration was performed at required frequencies.

The percent differences (%D) of calibration factors in continuing standard mixtures were within the 15.0% QC limits.

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

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

## **V. Blanks**

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

Sample "RINSATE 1" was identified as a rinsate. No chlorinated pesticide contaminants were found in this blank.

## **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	Surrogate	%R (Limits)	Compound	Flag	A or P
F8F170000-189	Tetrachloro-m-xylene	58 (72-135)	All TCL compounds	J- (all detects) UJ (all non-detects)	P

## 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. Pesticide Cleanup Checks

### a. Florisil Cartridge Check

Florisil cleanup was not required and therefore not performed in this SDG.

### b. GPC Calibration

GPC cleanup was not required and therefore not performed in this SDG.

## XI. Target Compound Identification

Raw data were not reviewed for this SDG.

## XII. Compound Quantitation and Reported CRQLs

Raw data were not reviewed for this SDG.

## XIII. Overall Assessment of Data

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

## XIV. Field Duplicates

No field duplicates were identified in this SDG.



**BRC Tronox Parcel G  
Chlorinated Pesticides - Data Qualification Summary - SDG F8F120137**

No Sample Data Qualified in this SDG

**BRC Tronox Parcel G  
Chlorinated Pesticides - Laboratory Blank Data Qualification Summary - SDG  
F8F120137**

No Sample Data Qualified in this SDG

**BRC Tronox Parcel G  
Chlorinated Pesticides - Field Blank Data Qualification Summary - SDG  
F8F120137**

No Sample Data Qualified in this SDG

LDC #: 19097A3a  
 SDG #: F8F120137  
 Laboratory: Test America

**VALIDATION COMPLETENESS WORKSHEET**

Level III

Date: 7/20/08  
 Page: 1 of 1  
 Reviewer: [Signature]  
 2nd Reviewer: [Signature]

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

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: 6/11/08
II.	GC/ECD Instrument Performance Check	A	
III.	Initial calibration	A	
IV.	Continuing calibration/ICV	SW	ICV ≤ 15
V.	Blanks	A	
VI.	Surrogate spikes	SW	
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples	A	LCS
IX.	Regional quality assurance and quality control	N	
Xa.	Florisil cartridge check	N	
Xb.	GPC Calibration	N	
XI.	Target compound identification	N	
XII.	Compound quantitation and reported CRQLs	N	
XIII.	Overall assessment of data	A	
XIV.	Field duplicates	N	
XV.	Field blanks	ND	R = 1

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: Water

1	RINSATE 1	11	F&F 170000-189	21	8/69/89	31
2	RINSATE 1MS	12		22		32
3	RINSATE 1MSD	13		23		33
4		14		24		34
5		15		25		35
6		16		26		36
7		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.
B. beta-BHC	J. 4,4'-DDE	R. Endrin aldehyde	Z. Aroclor-1248	HH.
C. delta-BHC	K. Endrin	S. alpha-Chlordane	AA. Aroclor-1254	II.
D. gamma-BHC	L. Endosulfan II	T. gamma-Chlordane	BB. Aroclor-1260	JJ.
E. Heptachlor	M. 4,4'-DDD	U. Toxaphene	CC. DB 608	KK.
F. Aldrin	N. Endosulfan sulfate	V. Aroclor-1016	DD. DB 1701	LL.
G. Heptachlor epoxide	O. 4,4'-DDT	W. Aroclor-1221	EE.	MM.
H. Endosulfan I	P. Methoxychlor	X. Aroclor-1232	FF.	NN.

Notes:



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

**Project/Site Name:** BRC Tronox Parcel G  
**Collection Date:** June 11, 2008  
**LDC Report Date:** July 22, 2008  
**Matrix:** Water  
**Parameters:** Polychlorinated Biphenyls  
**Validation Level:** EPA Level III  
**Laboratory:** TestAmerica, Inc.  
**Sample Delivery Group (SDG):** F8F120137

**Sample Identification**

RINSATE 1  
RINSATE 1MS  
RINSATE 1MSD

## Introduction

This data review covers 3 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8082 for Polychlorinated Biphenyls.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999) as there are no current guidelines for the method stated above.

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.

Blank results are summarized in Section V.

Field duplicates are summarized in Section XIV.

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

The following are definitions of the data qualifiers:

- J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.
- J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.
- J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.
- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.
- 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/ECD Instrument Performance Check**

Instrument performance was acceptable unless noted otherwise under initial calibration and continuing calibration sections.

## **III. Initial Calibration**

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

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

## **IV. Continuing Calibration**

Continuing calibration was performed at required frequencies.

The percent differences (%D) of calibration factors in continuing standard mixtures were within the 15.0% QC limits.

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

## **V. Blanks**

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

Sample "RINSATE 1" was identified as a rinsate. No polychlorinated biphenyl contaminants were found in this blank.

## **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. Although the MS/MSD relative percent difference (RPD) was not within QC limits for one compound, the MS/MSD percent recoveries (%R) were within QC limits and no data were qualified.

## **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. Pesticide Cleanup Checks**

### **a. Florisil Cartridge Check**

Florisil cleanup was not required and therefore not performed in this SDG.

### **b. GPC Calibration**

GPC cleanup was not required and therefore not performed in this SDG.

## **XI. Target Compound Identification**

Raw data were not reviewed for this SDG.

## **XII. Compound Quantitation and Reported CRQLs**

Raw data were not reviewed for this SDG.

## **XIII. Overall Assessment of Data**

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

## **XIV. Field Duplicates**

No field duplicates were identified in this SDG.



**BRC Tronox Parcel G  
Polychlorinated Biphenyls - Data Qualification Summary - SDG F8F120137**

No Sample Data Qualified in this SDG

**BRC Tronox Parcel G  
Polychlorinated Biphenyls - Laboratory Blank Data Qualification Summary - SDG  
F8F120137**

No Sample Data Qualified in this SDG

**BRC Tronox Parcel G  
Polychlorinated Biphenyls - Field Blank Data Qualification Summary - SDG  
F8F120137**

No Sample Data Qualified in this SDG

LDC #: 19097A3b  
 SDG #: F8F120137  
 Laboratory: Test America

**VALIDATION COMPLETENESS WORKSHEET**

Level III

Date: 7/20/08  
 Page: 1 of 1  
 Reviewer: [Signature]  
 2nd Reviewer: [Signature]

**METHOD:** GC Polychlorinated Biphenyls (EPA SW 846 Method 8082)

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>6/11/08</u>
II.	GC/ECD Instrument Performance Check	NA	
III.	Initial calibration	A	
IV.	Continuing calibration/ICV	A	<u>ICV = 15</u>
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	SW	
VIII.	Laboratory control samples	A	<u>LCS</u>
IX.	Regional quality assurance and quality control	N	
Xa.	Florisil cartridge check	N	
Xb.	GPC Calibration	N	
XI.	Target compound identification	N	
XII.	Compound quantitation and reported CRQLs	N	
XIII.	Overall assessment of data	A	
XIV.	Field duplicates	N	
XV.	Field blanks	ND	<u>R = 1</u>

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: Water

1	RINSATE 1	11		21		31	
2	RINSATE 1MS	12		22		32	
3	RINSATE 1MSD	13		23		33	
4	<u>F8F170000-093</u>	14	<u>8169093</u>	24		34	
5		15		25		35	
6		16		26		36	
7		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.
B. beta-BHC	J. 4,4'-DDE	R. Endrin aldehyde	Z. Aroclor-1248	HH.
C. delta-BHC	K. Endrin	S. alpha-Chlordane	AA. Aroclor-1254	II.
D. gamma-BHC	L. Endosulfan II	T. gamma-Chlordane	BB. Aroclor-1260	JJ.
E. Heptachlor	M. 4,4'-DDD	U. Toxaphene	CC. DB 608	KK.
F. Aldrin	N. Endosulfan sulfate	V. Aroclor-1016	DD. DB 1701	LL.
G. Heptachlor epoxide	O. 4,4'-DDT	W. Aroclor-1221	EE.	MM.
H. Endosulfan I	P. Methoxychlor	X. Aroclor-1232	FF.	NN.

Notes:



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

**Project/Site Name:** BRC Tronox Parcel G

**Collection Date:** June 11, 2008

**LDC Report Date:** July 24, 2008

**Matrix:** Water

**Parameters:** Metals

**Validation Level:** EPA Level III

**Laboratory:** TestAmerica, Inc.

**Sample Delivery Group (SDG):** F8F120137

**Sample Identification**

RINSATE 1  
RINSATE 1MS  
RINSATE 1MSD

## **Introduction**

This data review covers 3 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Methods 6010B, 6020, and 7000 for Metals. The metals analyzed were Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Mercury, Nickel, Niobium, Palladium, Phosphorus, Platinum, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Sulfur, Thallium, Tin, Titanium, Tungsten, Uranium, Vanadium, Zinc, and Zirconium.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as there are no current guidelines for the methods stated above.

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.

Blanks are summarized in Section III.

Field duplicates are summarized in Section XIII.

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

The following are definitions of the data qualifiers:

- J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.
- J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.
- J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.
- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.
- UU 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. Calibration

An initial calibration was performed.

The frequency and analysis criteria of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met with the following exceptions:

Date	Lab. Reference/ID	Analyte	%R (Limits)	Associated Samples	Flag	A or P
6/25/08	CCV (2230)	Thallium Uranium	113.4 (90-110) 115.8 (90-110)	All samples in SDG F8F120137	J+ (all detects) J+ (all detects)	P

## III. Blanks

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

Method Blank ID	Analyte	Maximum Concentration	Associated Samples
PB (prep blank)	Antimony Iron	0.89 ug/L 21.5 ug/L	All samples in SDG F8F120137
ICB/CCB	Antimony Cadmium Vanadium	1.3 ug/L 0.1 ug/L 2.7 ug/L	All samples in SDG F8F120137

Sample concentrations were compared to concentrations detected in the method blanks as required by the QAPP. No sample data was qualified.

Sample "RINSATE 1" was identified as a rinsate. No metal contaminants were found in this blank with the following exceptions:



Rinsate ID	Sampling Date	Analyte	Concentration	Associated Samples
RINSATE 1	6/11/08	Calcium Iron Magnesium Manganese Silicon Sodium Strontium	131 ug/L 154 ug/L 17.9 ug/L 0.84 ug/L 38.6 ug/L 39.2 ug/L 1.5 ug/L	No associated samples in this SDG

#### IV. ICP Interference Check Sample (ICS) Analysis

The frequency of analysis was met.

The criteria for analysis were met with the following exceptions:

ICS ID	Analyte	%R (Limits)	Associated Samples	Flag	A or P
ICSAB	Sulfur	120.2 (80-120)	All samples in SDG F8F120137	None	P

#### V. Matrix Spike Analysis

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.

#### VI. Duplicate Sample Analysis

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable.

#### VII. Laboratory Control Samples (LCS)

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

LCS ID	Analyte	%R (Limits)	Associated Samples	Flag	A or P
LCS	Palladium	81.0 (85-115)	All samples in SDG F8F120137	J- (all detects) UJ (all non-detects)	P

#### VIII. Internal Standards (ICP-MS)

Raw data were not reviewed for this SDG.

## **IX. Furnace Atomic Absorption QC**

Graphite furnace atomic absorption was not utilized in this SDG.

## **X. ICP Serial Dilution**

ICP serial dilution analysis was performed by the laboratory. The analysis criteria were met.

## **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.

**BRC Tronox Parcel G  
Metals - Data Qualification Summary - SDG F8F120137**

SDG	Sample	Analyte	Flag	A or P	Reason
F8F120137	RINSATE 1	Thallium Uranium	J+ (all detects) J+ (all detects)	P	Calibration (%R)
F8F120137	RINSATE 1	Sulfur	None	P	ICP interference check (%R)
F8F120137	RINSATE 1	Palladium	J- (all detects) UJ (all non-detects)	P	Laboratory control samples (%R)

**BRC Tronox Parcel G  
Metals - Laboratory Blank Data Qualification Summary - SDG F8F120137**

No Sample Data Qualified in this SDG

**BRC Tronox Parcel G  
Metals - Field Blank Data Qualification Summary - SDG F8F120137**

No Sample Data Qualified in this SDG

LDC #: 19097A4  
 SDG #: F8F120137  
 Laboratory: Test America

**VALIDATION COMPLETENESS WORKSHEET**

Level III

Date: 7/23/08  
 Page: 1 of 1  
 Reviewer: [Signature]  
 2nd Reviewer: [Signature]

**METHOD:** Metals (EPA SW 846 Method 6020/6010B/7000)

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: 6/11/08
II.	Calibration	SW	
III.	Blanks	SW	
IV.	ICP Interference Check Sample (ICS) Analysis	SW	
V.	Matrix Spike Analysis	A	3 MS/MSD
VI.	Duplicate Sample Analysis	N	
VII.	Laboratory Control Samples (LCS)	SW	Leg
VIII.	Internal Standard (ICP-MS)	N	Not reviewed
IX.	Furnace Atomic Absorption QC	N	Not utilized
X.	ICP Serial Dilution	A	
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	N	
XIV.	Field Blanks	SW	R=1

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: A2

1	RINSATE 1	11		21		31	
2	RINSATE 1MS	12		22		32	
3	RINSATE 1MSD	13		23		33	
4	PB	14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_







# VALIDATION FINDINGS WORKSHEET

## Field Blanks

**METHOD:** Trace Metals (EPA SW846 6010B/6020/7000)

**Y**  **N**  **N/A** Were field blanks identified in this SDG?

**Y**  **N**  **N/A** Were target analytes detected in the field blanks?

**Blank units:** ug/L **Associated sample units:** \_\_\_\_\_

**Sampling date:** 6/11/08 Soil factor applied: \_\_\_\_\_

**Field blank type:** (circle one) Field Blank / Rinsate / Other: R Associated Samples: none

Analyte	Blank ID	Action Level	Sample Identification																		
	1																				
Ca	131																				
Fe	154																				
Mg	17.9																				
Mn	0.84																				
Si	38.6																				
Na	39.2																				
Sr	1.5																				

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:  
Samples with analyte concentrations within five times the associated field blank concentration are listed above, these sample results were qualified as not detected, "U".

19097AFB.wpd







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

**Project/Site Name:** BRC Tronox Parcel G

**Collection Date:** June 11, 2008

**LDC Report Date:** July 23, 2008

**Matrix:** Water

**Parameters:** Wet Chemistry

**Validation Level:** EPA Level III

**Laboratory:** TestAmerica, Inc.

**Sample Delivery Group (SDG):** F8F120137

**Sample Identification**

RINSATE 1  
RINSATE 1MS  
RINSATE 1DUP

## **Introduction**

This data review covers 3 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 300.0 for Bromide, Bromine, Chlorate, Chloride, Chlorine, Fluoride, Nitrate as Nitrogen, Nitrite as Nitrogen, Orthophosphate as Phosphorus, and Sulfate and EPA Method 1664A for Oil & Grease.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as there are no current guidelines for the method stated above.

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.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

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

The following are definitions of the data qualifiers:

- J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.
- J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.
- J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.
- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.
- 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. Calibration

### a. Initial Calibration

All criteria for the initial calibration of each method were met.

### b. Calibration Verification

Calibration verification frequency and analysis criteria were met for each method when applicable.

## III. Blanks

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

Method Blank ID	Analyte	Concentration	Associated Samples
ICB/CCB	Orthophosphate as P	0.167 mg/L	All samples in SDG F8F120137

Sample concentrations were compared to concentrations detected in the method blanks as required by the QAPP. No sample data was qualified.

Sample "RINSATE 1" was identified as a rinsate. No contaminant concentrations were found in this blank with the following exceptions:

Rinsate ID	Sampling Date	Analyte	Concentration	Associated Samples
RINSATE 1	6/11/08	Sulfate	0.12 mg/L	No associated samples in this SDG

## IV. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

## **V. Duplicates**

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Results were within QC limits.

## **VI. Laboratory Control Samples**

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

## **VII. Sample Result Verification**

Raw data were not reviewed for this SDG.

## **VIII. Overall Assessment of Data**

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

## **IX. Field Duplicates**

No field duplicates were identified in this SDG.

**BRC Tronox Parcel G  
Wet Chemistry - Data Qualification Summary - SDG F8F120137**

No Sample Data Qualified in this SDG

**BRC Tronox Parcel G  
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG F8F120137**

No Sample Data Qualified in this SDG

**BRC Tronox Parcel G  
Wet Chemistry - Field Blank Data Qualification Summary - SDG F8F120137**

No Sample Data Qualified in this SDG



LDC #: 19097A6  
 SDG #: F8F120137  
 Laboratory: Test America

**VALIDATION COMPLETENESS WORKSHEET**  
 Level III

Date: 7/23/08  
 Page: 1 of 1  
 Reviewer: [Signature]  
 2nd Reviewer: [Signature]

**METHOD: (Analyte)** Bromide, Bromine, Chlorate, Chloride, Chlorine, Fluoride, Nitrate, Nitrite, Orthophosphate-P, Sulfate (EPA Method 300.0), O & G (EPA Method 1664A)

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: 6/11/08
IIa.	Initial calibration	A	
IIb.	Calibration verification	A	
III.	Blanks	SW	
IV	Matrix Spike/Matrix Spike Duplicates	A	3 MS / DUP
V	Duplicates	A	
VI.	Laboratory control samples	A	LCs/LCSD
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X	Field blanks	SW	R=1

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:

Aa

1	RINSATE 1	11		21		31	
2	RINSATE 1MS	12		22		32	
3	RINSATE 1DUP	13		23		33	
4	MS	14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_







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

**Project/Site Name:** BRC Tronox Parcel G  
**Collection Date:** June 11, 2008  
**LDC Report Date:** July 22, 2008  
**Matrix:** Water  
**Parameters:** Gasoline Range Organics  
**Validation Level:** EPA Level III  
**Laboratory:** TestAmerica, Inc.  
**Sample Delivery Group (SDG):** F8F120137

**Sample Identification**

RINSATE 1  
RINSATE 1MS  
RINSATE 1MSD

## Introduction

This data review covers 3 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8015B for Gasoline Range Organics.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999) as there are no current guidelines for the method stated above.

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.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

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

The following are definitions of the data qualifiers:

- J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.
- J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.
- J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.
- R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.
- UU 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. Calibration**

### **a. Initial Calibration**

Initial calibration of compounds was performed as required by the method.

The percent relative standard deviations (%RSD) of calibration factors for compounds were less than 20.0% .

### **b. Calibration Verification**

Calibration verification was performed at required frequencies. The percent differences (%D) of amounts in continuing standard mixtures were within the 15.0% QC limits.

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

## **III. Blanks**

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

Sample "RINSATE 1" was identified as a rinsate. No gasoline range organic contaminants were found in this blank.

## **IV. Accuracy and Precision Data**

### **a. Surrogate Recovery**

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

### **b. 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.

### **c. Laboratory Control Samples**

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

### **V. Target Compound Identification**

Raw data were not reviewed for this SDG.

### **VI. Compound Quantitation and CRQLs**

Raw data were not reviewed for this SDG.

### **VII. System Performance**

Raw data were not reviewed for this SDG.

### **VIII. Overall Assessment of Data**

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

### **IX. Field Duplicates**

No field duplicates were identified in this SDG.



**BRC Tronox Parcel G  
Gasoline Range Organics - Data Qualification Summary - SDG F8F120137**

No Sample Data Qualified in this SDG

**BRC Tronox Parcel G  
Gasoline Range Organics - Laboratory Blank Data Qualification Summary - SDG  
F8F120137**

No Sample Data Qualified in this SDG

**BRC Tronox Parcel G  
Gasoline Range Organics - Field Blank Data Qualification Summary - SDG  
F8F120137**

No Sample Data Qualified in this SDG

LDC #: 19097A7  
 SDG #: F8F120137  
 Laboratory: Test America

**VALIDATION COMPLETENESS WORKSHEET**

Level III

Date: 7/20/08  
 Page: 1 of 1  
 Reviewer: [Signature]  
 2nd Reviewer: [Signature]

**METHOD:** GC Gasoline Range Organics (EPA SW846 Method 8015B)

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>6/11/08</u>
IIa.	Initial calibration	A	
IIb.	Calibration verification/ICV	A	<u>ICV ≤ 15</u>
III.	Blanks	A	
IVa.	Surrogate recovery	A	
IVb.	Matrix spike/Matrix spike duplicates	A	
IVc.	Laboratory control samples	A	<u>LC3</u>
V.	Target compound identification	N	
VI.	Compound Quantitation and CRQLs	N	
VII.	System Performance	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X.	Field blanks	ND	<u>R = 1</u>

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: Water

1	RINSATE 1	11	<u>F8F130000-270</u>	21	<u>8165270</u>	31	
2	RINSATE 1MS	12		22		32	
3	RINSATE 1MSD	13		23		33	
4		14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

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

**Project/Site Name:** BRC Tronox Parcel G  
**Collection Date:** June 11, 2008  
**LDC Report Date:** July 22, 2008  
**Matrix:** Water  
**Parameters:** Diesel Range Organics  
**Validation Level:** EPA Level III  
**Laboratory:** TestAmerica, Inc.  
**Sample Delivery Group (SDG):** F8F120137

**Sample Identification**

RINSATE 1  
RINSATE 1MS  
RINSATE 1MSD

## Introduction

This data review covers 3 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8015B for Diesel Range Organics.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999) as there are no current guidelines for the method stated above.

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.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

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

The following are definitions of the data qualifiers:

- J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.
- J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.
- J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.
- R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.
- UU 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. Calibration**

### **a. Initial Calibration**

Initial calibration of compounds was performed as required by the method.

The percent relative standard deviations (%RSD) of calibration factors for compounds were less than 20.0% .

### **b. Calibration Verification**

Calibration verification was performed at required frequencies. The percent differences (%D) of amounts in continuing standard mixtures were within the 15.0% QC limits.

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

## **III. Blanks**

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

Sample "RINSATE 1" was identified as a rinsate. No diesel range organic contaminants were found in this blank.

## **IV. Accuracy and Precision Data**

### **a. Surrogate Recovery**

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

### **b. 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.

### **c. Laboratory Control Samples**

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

### **V. Target Compound Identification**

Raw data were not reviewed for this SDG.

### **VI. Compound Quantitation and CRQLs**

Raw data were not reviewed for this SDG.

### **VII. System Performance**

Raw data were not reviewed for this SDG.

### **VIII. Overall Assessment of Data**

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

### **IX. Field Duplicates**

No field duplicates were identified in this SDG.

**BRC Tronox Parcel G  
Diesel Range Organics - Data Qualification Summary - SDG F8F120137**

No Sample Data Qualified in this SDG

**BRC Tronox Parcel G  
Diesel Range Organics - Laboratory Blank Data Qualification Summary - SDG  
F8F120137**

No Sample Data Qualified in this SDG

**BRC Tronox Parcel G  
Diesel Range Organics - Field Blank Data Qualification Summary - SDG  
F8F120137**

No Sample Data Qualified in this SDG

LDC #: 19097A8  
 SDG #: F8F120137  
 Laboratory: Test America

**VALIDATION COMPLETENESS WORKSHEET**

Level III

Date: 7/21/08  
 Page: 1 of 1  
 Reviewer: [Signature]  
 2nd Reviewer: [Signature]

**METHOD:** GC Diesel Range Organics (EPA SW846 Method 8015B)

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: 6/11/08
IIa.	Initial calibration	A	
IIb.	Calibration verification/ICV	A	ICV $\leq 15$
III.	Blanks	A	
IVa.	Surrogate recovery	A	
IVb.	Matrix spike/Matrix spike duplicates	A	
IVc.	Laboratory control samples	A	LCS
V.	Target compound identification	N	
VI.	Compound Quantitation and CRQLs	N	
VII.	System Performance	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X.	Field blanks	ND	R = 1

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: water

1	RINSATE 1	11		21		31	
2	RINSATE 1MS	12		22		32	
3	RINSATE 1MSD	13		23		33	
4		14	8165443	24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_



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

**Project/Site Name:** BRC Tronox Parcel G  
**Collection Date:** June 11, 2008  
**LDC Report Date:** July 22, 2008  
**Matrix:** Water  
**Parameters:** Polynuclear Aromatic Hydrocarbons  
**Validation Level:** EPA Level III  
**Laboratory:** TestAmerica, Inc.  
**Sample Delivery Group (SDG):** F8F120137

**Sample Identification**

RINSATE 1  
RINSATE 1MS  
RINSATE 1MSD

## Introduction

This data review covers 3 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8310 for Polynuclear Aromatic Hydrocarbons.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999) as there are no current guidelines for the method stated above.

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.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

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

The following are definitions of the data qualifiers:

- J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.
- J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.
- J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.
- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.
- UU 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. Calibration

### a. Initial Calibration

Initial calibration of compounds was performed as required by the method.

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

### b. Calibration Verification

Calibration verification was performed at required frequencies.

The percent differences (%D) of calibration factors in continuing standard mixtures were within the 15.0% QC limits.

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

Date	Detector	Compound	%D	Associated Samples	Flag	A or P
6/4/08	Not specified	Benzo(k)fluoranthene	16.6	All samples in SDG F8F120137	J+ (all detects)	A

## III. Blanks

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

Sample "RINSATE 1" was identified as a rinsate. No polynuclear aromatic hydrocarbon contaminants were found in this blank.

## IV. Accuracy and Precision Data

### a. 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
RINSATE 1	Not specified	p-Terphenyl	60 (70-130)	All TCL compounds	J- (all detects) UJ (all non-detects)	P
F8F170000-094	Not specified	p-Terphenyl	58 (70-130)	All TCL compounds	J- (all detects) UJ (all non-detects)	P

### b. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Although the MS/MSD percent recoveries (%R) were not within QC limits for some compounds, the MS/MSD percent recoveries (%R) were within QC limits and no data were qualified.

### c. Laboratory Control Samples

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

### V. Target Compound Identification

Raw data were not reviewed for this SDG.

### VI. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

### VII. System Performance

Raw data were not reviewed for this SDG.

### VIII. Overall Assessment of Data

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

### IX. Field Duplicates

No field duplicates were identified in this SDG.

**BRC Tronox Parcel G  
 Polynuclear Aromatic Hydrocarbons - Data Qualification Summary - SDG F8F120137**

SDG	Sample	Compound	Flag	A or P	Reason
F8F120137	RINSATE 1	Benzo(k)fluoranthene	J+ (all detects)	A	Continuing calibration (ICV %D)
F8F120137	RINSATE 1	All TCL compounds	J- (all detects) UJ (all non-detects)	P	Surrogate recovery (%R)

**BRC Tronox Parcel G  
 Polynuclear Aromatic Hydrocarbons - Laboratory Blank Data Qualification Summary  
 - SDG F8F120137**

No Sample Data Qualified in this SDG

**BRC Tronox Parcel G  
 Polynuclear Aromatic Hydrocarbons - Field Blank Data Qualification Summary -  
 SDG F8F120137**

No Sample Data Qualified in this SDG

LDC #: 19097A9  
 SDG #: F8F120137  
 Laboratory: Test America

**VALIDATION COMPLETENESS WORKSHEET**

Level III

Date: 7/20/08  
 Page: 1 of 1  
 Reviewer: [Signature]  
 2nd Reviewer: [Signature]

**METHOD:** GC Polynuclear Aromatic Hydrocarbons (EPA SW 846 Method 8310)

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	Δ	Sampling dates: <u>6/11/08</u>
IIa.	Initial calibration	Δ	
IIb.	Calibration verification/ICV	SW	
III.	Blanks	Δ	
IVa.	Surrogate recovery	SW	
IVb.	Matrix spike/Matrix spike duplicates	SW	
IVc.	Laboratory control samples	A	<u>LCS</u>
V.	Target compound identification	N	
VI.	Compound Quantitation and CRQLs	N	
VII.	System Performance	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X.	Field blanks	ND	<u>R=1</u>

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: water

1	RINSATE 1	11		21		31	
2	RINSATE 1MS	12		22		32	
3	RINSATE 1MSD	13		23		33	
4		14	<u>8169094</u>	24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

# VALIDATION FINDINGS WORKSHEET

METHOD: GC HPLC

8310	8330	8151	8141	8141 (Cont'd)	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. Tetrachlorvinphos	
N. Naphthalene	N. 4-Nitrotoluene		N. Malathion	II. Sulprofos	
O. Phenanthrene	O.		O. Chlorpyrifos		
P. Pyrene	P.		P. Fenthion		
Q.	Q		Q. Parathion-ethyl		
R.			R. Trichloronate		
S.			S. Merphos		
			T. Stirofos		
			U. Tokuthion		

Notes:

LDC #: 19091A7  
SDG #: 1410101

VALIDATION FINDINGS WORKSHEET  
Continuing Calibration

METHOD: GC HPLC

Page: 1 of 1  
Reviewer: [Signature]  
2nd Reviewer: [Signature]

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".  
What type of continuing calibration calculation was performed? %D or RPD  
Were continuing calibration standards analyzed at the required frequencies? Y  
Did the continuing calibration standards meet the %D / RPD validation criteria of ≤15.0%?  
Level IV Only  
Were the retention times for all calibrated compounds within their respective acceptance windows? Y

#	Date	Standard ID	Detector/ Column	Compound	%D / RPD (Limit ≤ 15.0)	RT (limit)	Associated Samples	Qualifications
1	6/4/00	ICV 768	not specified	H	16.6	( )	All r PK	Jr / A det



# VALIDATION FINDINGS WORKSHEET

## Surrogate Recovery

LDC #: 19097A9  
 SDG #: gsl Conrad

METHOD: GC HPLC

Are surrogates required by the method? Yes \_\_\_ or No \_\_\_

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

N  N/A Were surrogates spiked into all samples and blanks?

N  N/A Did all surrogate recoveries (%R) meet the QC limits?

#	Sample ID	Detector/Column	Surrogate Compound	%R (Limits)	Qualifications
	<u>1</u>	<u>not specified</u>	<u>p-terphenyl</u>	<u>60</u>	<u>J-7/4/1P</u>
	<u>F8F17000-094</u>	<u>↓</u>	<u>↓</u>	<u>58</u>	<u>J-7/4/1P</u>

Surrogate Compound	Surrogate Compound	Surrogate Compound	Surrogate Compound	Surrogate Compound
A Chlorobenzene (CBZ)	G Octacosane	M Benzole/Pyrene	S 1-Chloro-3-Nitrobenzene	Y Tetrachloro-m-xylene
B 4-Bromofluorobenzene (BFB)	H Ortho-Terphenyl	N Terphenyl-D14	T 3,4-Dinitrotoluene	
C a,a,a-Trifluorotoluene	I Fluorobenzene (FBZ)	O Decachlorobiphenyl (DCB)	U Tripentyltin	
D Bromochlorobenzene	J n-Triacontane	P 1-methylnaobthalene	V Tri-n-propyltin	
E 1,4-Dichlorobutane	K Hexacosane	Q Dichlorophenyl Acetic Acid (DCAA)	W Tributyl Phosphate	
F 1,4-Difluorobenzene (DFB)	L Bromobenzene	R 4-Nitrophenol	X Triphenyl Phosphate	

**VALIDATION FINDINGS WORKSHEET**  
**Matrix Spike/Matrix Spike Duplicates**

METHOD: GC HPLC

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?

Y N N/A Was an MS/MSD analyzed every 20 samples for each matrix or whenever a sample extraction was performed?

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

#	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
	243	B	69 (70-130) ↓	( )	( )	MS 1	MS Qual MSD in ↓
		N	68 ( ) ↓	( )	( )		
		L	( )	69 (70-130)	( )	MS 17 ↓	MS 17 ↓
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		

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

**Project/Site Name:** BRC Tronox Parcel G  
**Collection Date:** June 11, 2008  
**LDC Report Date:** July 23, 2008  
**Matrix:** Water  
**Parameters:** Dioxins/Dibenzofurans  
**Validation Level:** EPA Level III  
**Laboratory:** TestAmerica, Inc.  
**Sample Delivery Group (SDG):** F8F120137

**Sample Identification**  
RINSATE 1

## Introduction

This data review covers one water sample listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8290 for Polychlorinated Dioxins/Dibenzofurans.

This review follows USEPA Contract Laboratory Program National Functional Guidelines for Polychlorinated Dioxins/Dibenzofurans Data Review (September 2005) as there are no current guidelines for the method stated above.

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.

Blank results are summarized in Section V.

Field duplicates are summarized in Section XIV.

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

The following are definitions of the data qualifiers:

- J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.
- J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.
- J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.
- R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.
- UU 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. HRGC/HRMS Instrument Performance Check**

Instrument performance was checked at the required daily frequency.

Retention time windows were established for all homologues. The chromatographic resolution between 2,3,7,8-TCDD and peaks representing any other unlabeled TCDD isomer was less than or equal to 25%.

## **III. Initial Calibration**

A five point initial calibration was performed as required by the method.

Percent relative standard deviations (%RSD) were less than or equal to 20.0% for unlabeled compounds and less than or equal to 30.0% for labeled compounds.

The ion abundance ratios for all PCDDs and PCDFs were within validation criteria.

## **IV. Routine Calibration (Continuing)**

Routine calibration was performed at the required frequencies.

All of the routine calibration percent differences (%D) between the initial calibration RRF and the routine calibration RRF were less than or equal to 20.0% for unlabeled compounds and less than or equal to 30.0% for labeled compounds.

The percent differences (%D) of the second source calibration standard were less than or equal to 25.0% for all compounds.

The ion abundance ratios for all PCDDs and PCDFs were within validation criteria.

## **V. Blanks**

Method blanks were reviewed for each matrix as applicable. No polychlorinated dioxin/dibenzofuran contaminants were found in the method blanks.

Sample RINSATE 1 was identified as a rinsate. No polychlorinated dioxin/dibenzofuran contaminants were found in this blank.

## **VI. Matrix Spike/Matrix Spike Duplicates**

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable.

## **VII. Laboratory Control Samples (LCS)**

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

## **VIII. Regional Quality Assurance and Quality Control**

Not applicable.

## **IX. Internal Standards**

All internal standard recoveries were within QC limits.

## **X. Target Compound Identifications**

Raw data were not reviewed for this SDG.

## **XI. Compound Quantitation and CRQLs**

Raw data were not reviewed for this SDG.

## **XII. System Performance**

Raw data were not reviewed for this SDG.

## **XIII. Overall Assessment of Data**

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

## **XIV. Field Duplicates**

No field duplicates were identified in this SDG.

**BRC Tronox Parcel G  
Dioxins/Dibenzofurans - Data Qualification Summary - SDG F8F120137**

No Sample Data Qualified in this SDG

**BRC Tronox Parcel G  
Dioxins/Dibenzofurans - Laboratory Blank Data Qualification Summary - SDG  
F8F120137**

No Sample Data Qualified in this SDG

**BRC Tronox Parcel G  
Dioxins/Dibenzofurans - Field Blank Data Qualification Summary - SDG F8F120137**

No Sample Data Qualified in this SDG

LDC #: 19097A21  
 SDG #: F8F120137  
 Laboratory: Test America

**VALIDATION COMPLETENESS WORKSHEET**

Level III

Date: 7/19/08  
 Page: 1 of 1  
 Reviewer: [Signature]  
 2nd Reviewer: [Signature]

**METHOD:** HRGC/HRMS Dioxins/Dibenzofurans (EPA SW 846 Method 8290)

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>6/11/08</u>
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	
IV.	Routine calibration/ <u>10x 10v</u>	A	
V.	Blanks	A	
VI.	Matrix spike/Matrix spike duplicates	N	<u>FB</u>
VII.	Laboratory control samples	A	<u>LCS</u>
VIII.	Regional quality assurance and quality control	N	
IX.	Internal standards	A	
X.	Target compound identifications	N	
XI.	Compound quantitation and CRQLs	N	
XII.	System performance	N	
XIII.	Overall assessment of data	A	
XIV.	Field duplicates	N	
XV.	Field blanks	ND	<u>R=1</u>

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: Water

1	RINSATE 1	11	<u>8169432MB</u>	21		31	
2		12		22		32	
3		13		23		33	
4		14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes: \_\_\_\_\_  
 \_\_\_\_\_  
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