

LABORATORY DATA CONSULTANTS, INC. 7750 El Camino Real, Suite 2L Carlsbad, CA 92009 Phone: 760/634-0437 Fax: 760/634-0439

ERM

January 25, 2008

2525 Natomas Park Drive, Suite 350

Sacramento, CA 95833

ATTN: Ms. Maria Barajas-Albalawi

SUBJECT: BRC Tronox Parcel C/D/F/G, Data Validation

Dear Ms. Barajas-Albalawi

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

SDG#	LDC#	<u>Fraction</u>
IQK1137	18036B6	Wet Chemistry
IQK1480	18036D6	Wet Chemistry
IQK1979	18036Q6	Wet Chemistry

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

Sincerely,

Erlinda T. Rauto

Operations Manager/Senior Chemist



LABORATORY DATA CONSULTANTS, INC.

7750 El Camino Real, Suite 2L Carlsbad, CA 92009 Phone: 760/634-0437 Fax: 760/634-0439

ERM

January 22, 2008

2525 Natomas Park Drive, Suite 350 Sacramento, CA 95833 ATTN: Ms. Maria Barajas-Albalawi

SUBJECT: BRC Tronox Parcel C/D/F/G, Data Validation

Dear Ms. Barajas-Albalawi

Enclosed are the final validation reports for the fractions listed below. These SDGs were received on January 2, 2008. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project # 18036:

SDG#

Fraction

IQK1136, IQK1137, IQK1433, IQK1480, 2,2'-/4,4'-Dichlorobenzil, IQK1509, IQK1512, IQK1514, IQK1726, Wet Chemistry IQK1728, IQK1853, IQK1872, IQK1873, IQK1956, IQK1976, IQK1977, IQK1978, IQK1979, IQK2275, IQK2276, IQK2277

The data validation was performed under EPA Level III and Level IV 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

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

Sincerely,

Erlinda T. Rauto

Operations Manager/Senior Chemist

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BRC Tronox Parcel C/D/F/G Data Validation Reports LDC# 18036

Dichlorobenzil

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

BRC Tronox Parcel C/D/F/G

Collection Date:

November 9, 2007

LDC Report Date:

January 15, 2008

Matrix:

Soil

Parameters:

2,2'-/4,4'-Dichlorobenzil

Validation Level:

EPA Level IV

Laboratory:

TestAmerica, Inc.

Sample Delivery Group (SDG): IQK1137

Sample Identification

TSB-CR-07-0'

TSB-CR-07-10'

TSB-CR-08-0'

TSB-CR-08-0'-FD

TSB-CJ-08-10'

TSB-CJ-04-0'

TSB-CJ-04-10'

TSB-CJ-07-0'

TSB-CJ-07-10'

TSB-CJ-03-0'

TSB-CJ-03-10'

TSB-CJ-08-10'MS

TSB-CJ-08-10'MSD

Introduction

This data review covers 13 soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8270C for 2,2'-/4,4'-Dichlorobenzil.

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.

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/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 30.0% for all compounds.

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

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

All of the continuing calibration percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were less than or equal to 25.0%.

The percent differences (%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 validation criteria.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No 2,2'-/4,4'-Dichlorobenzil was 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

All target compound identifications were within validation criteria.

XII. Compound Quantitation and CRQLs

All compound quantitation and CRQLs were within validation criteria.

XIII. Tentatively Identified Compounds (TICs)

Tentatively identified compounds were not reported by the laboratory.

XIV. System Performance

The system performance was acceptable.

XV. Overall Assessment

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

XVI. Field Duplicates

Samples TSB-CR-08-0' and TSB-CR-08-0'-FD were identified as field duplicates. No 2,2'-/4,4'-Dichlorobenzil was detected in any of the samples.

BRC Tronox Parcel C/D/F/G 2,2'-/4,4'-Dichlorobenzil - Data Qualification Summary - SDG IQK1137

No Sample Data Qualified in this SDG

BRC Tronox Parcel C/D/F/G 2,2'-/4,4'-Dichlorobenzil - Laboratory Blank Data Qualification Summary - SDG IQK1137

No Sample Data Qualified in this SDG

BRC Tronox Parcel C/D/F/G 2,2'-/4,4'-Dichlorobenzil - Field Blank Data Qualification Summary - SDG IQK1137

No Sample Data Qualified in this SDG

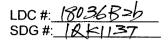
SDG # Labora	t: 18036B2b t: IQK1137 atory: Test America IOD: GC/MS 2,2'-/4,4'-D	_	_	l	Level I\	/	WORKSHEET	7	Date: ///4/08 Page: //of/ Reviewer: 0 2nd Reviewer: 1
	amples listed below were tion findings worksheets.		ewed for ea	ch of the f	ollowing	validati	on areas. Validati	on find	lings are noted in attached
	Validation	Area					Comr	nents	
<u> </u>	Technical holding times			A	Sampling	dates:	11/9/07		
11.	GC/MS Instrument performa	ance c	heck	A					
111.	Initial calibration			A			LI LI	0 0	akopa
IV.	Continuing calibration/ICV			\rightarrow	101	$\leq \gamma$	570.		<i>\mathcal{V}</i>
V.	Blanks			A					
VI.	Surrogate spikes			A					
VII.	Matrix spike/Matrix spike du	plicate	es	♦					
VIII.	Laboratory control samples			\triangle	10	9			
IX.	Regional Quality Assurance	and C	Quality Control	N	ļ				
Χ.	Internal standards			4					
XI.	Target compound identificat	ion		4					
XII.	Compound quantitation/CR0	QLs		A					
XIII.	Tentatively identified compo	unds	(TICs)	N					
XIV.	System performance			\forall					
XV.	Overall assessment of data			A					
XVI.	Field duplicates			ND	カニュ	3+4			
XVII.	Field blanks			N					
Note:	A = Acceptable N = Not provided/applicable SW = See worksheet ed Samples:		R = Rin	o compound sate eld blank	s detected		D = Duplicate TB = Trip blank EB = Equipment bla	nk	
	TSB-CR-07-0'	11	TSB-CJ-03-10	יי יי	/ 21	يد ابو-	2065-341	31	
	TSB-CR-07-10'	12	TSB-CJ-08-10		22	1(5)		32	
	TSB-CR-08-0'	13	TSB-CJ-08-10		23			33	
	TSB-CR-08-0'-FD	14	1.02 30 00-10		24			34	
	TSB-CJ-08-10'	15			25			35	
	TSB-CJ-0X-0'	16			26			36	
	TSB-ÇJ-04-10'	17			27			37	
	TSB-CJ-07-0'	18			28			38	

30

40

TSB-CJ-07-10'

TSB-CJ-03-0'



VALIDATION FINDINGS CHECKLIST

Page: _/of __ Reviewer: ___ 2nd Reviewer: ___

Method: Semivolatiles (EPA SW 846 Method 8270C)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				"一个一个一个
All technical holding times were met.				
Cooler temperature criteria was met.	/			
II. GC/MS Instrument performance check				Andrew Control of the
Were the DFTPP performance results reviewed and found to be within the specified criteria?				
Were all samples analyzed within the 12 hour clock criteria?			2000000	
III. Initial calibration				the control of the property of the second
Did the laboratory perform a 5 point calibration prior to sample analysis?			<u> </u>	
Were all percent relative standard deviations (%RSD) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?				
Was a curve fit used for evaluation?			<u> </u>	
Did the initial calibration meet the curve fit acceptance criteria of ≥ 0.990?				
Were all percent relative standard deviations (%RSD) ≤ 30% and relative response factors (RRF) ≥ 0.05?				
IV. Continuing calibration		,		
Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?				
Were all percent differences (%D) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?				
Were all percent differences (%D) ≤ 25% and relative response factors (RRF) ≥ 0.05?				
V. Blanks	T			
Was a method blank associated with every sample in this SDG?		<u> </u>	\bigsqcup	
Was a method blank analyzed for each matrix and concentration?				
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.				
VI. Surrogate spikes				AND REMEDIATE PROPERTY OF THE
Were all surrogate %R within QC limits?				
If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?				
If any %R was less than 10 percent, was a reanalysis performed to confirm %R?				
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.				
Was a MS/MSD analyzed every 20 samples of each matrix?				
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?				
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?				

LDC #: 1803/8-b SDG #: 1861/37

VALIDATION FINDINGS CHECKLIST

Page: of 2 Reviewer: 2nd Reviewer:

Validation Area	Yes	No	NA	Findings/Comments
Was an LCS analyzed per extraction batch?				
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?				
IX. Regional Quality Assurance and Quality Control	17		7	The state of the s
Were performance evaluation (PE) samples performed?			<u> </u>	
Were the performance evaluation (PE) samples within the acceptance limits?				
X. Internal standards				 A Print Description of the Print Ballion (Artist) A Print Ballion (Artist Conference on the Print Ballion Conference on the Print Ballion (Artist Conference on the Print Ballion (A
Were internal standard area counts within -50% or +100% of the associated calibration standard?				
Were retention times within <u>+</u> 30 seconds from the associated calibration standard? XI. Target compound identification	/			
Were relative retention times (RRTs) within ± 0.06 RRT units of the standard?	/			
Did compound spectra meet specified EPA "Functional Guidelines" criteria?		ļ		
Were chromatogram peaks verified and accounted for?				1
XII. Compound quantitation/CRCLs	ı			
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?				
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?				
XIII. Tentatively identified compounds (TICs)				
Were the major ions (> 10 percent relative intensity) in the reference spectrum evaluated in sample spectrum?				
Were relative intensities of the major ions within \pm 20% between the sample and the reference spectra?				
Did the raw data indicate that the laboratory performed a library search for all required peaks in the chromatograms (samples and blanks)?				
XIV. System performance				en de la companya de
System performance was found to be acceptable.				
XV. Overall assessment of data				
Overall assessment of data was found to be acceptable.				
XVI. Field duplicates				
Field duplicate pairs were identified in this SDG.				
Target compounds were detected in the field duplicates.				
XVII. Field blanks				
Field blanks were identified in this SDG.				
Target compounds were detected in the field blanks.				

VALIDATION FINDINGS WORKSHEET

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

											T			
III. Benzo(a)pyrene**	JJJ. Indeno(1,2,3-cd)pyrene	KKK. Dibenz(a,h)anthracene	LLL. Benzo(g,h,i)perylene	MMM. Bis(2-Chloroisopropyl)ether	NNN. Aniline	OOO. N-Nitrosodimethylamine	PPP. Benzoic Acid	QQQ. Benzyi alcohol	RRR. Pyridine	SSS. Benzidine	TT.	uuu.	ww.	www.
TT. Pentachiorophenoi**	UU. Phenanthrene	VV. Anthracene	WW. Carbazole	XX. Di-n-butylphthalate	YY. Fluoranthene**	ZZ. Pyrene	AAA. Butylbenzylphthalate	BBB. 3,3'-Dichlorobenzidine	CCC. Benzo(a)anthracene	DDD. Chrysene	EEE. Bis(2-ethylhexyl)phthalate	FFF, Di-n-octylphthalate**	GGG. Benzo(b)fluoranthene	HHH. Benzo(k)fluoranthene
EE. 2,6-Dinitrotoluene	FF. 3-Nitroaniline	GG. Acenaphthene**	HH. 2,4-Dinitrophenol*	II. 4-Nitrophenol*	JJ. Dibenzofuran	KK. 2,4-Dinitrotoluene	LL. Diethylphthalate	MM. 4-Chlorophenyl-phenyl ether	NN. Fluorene	00. 4-Nitroaniline	PP. 4,6-Dinitro-2-methylphenol	QQ. N-Nitrosodiphenylamine (1)**	RR. 4-Bromophenyl-phenylether	SS. Hexachlorobenzene
P. Bis(2-chloroethoxy)methane	Q. 2,4-Dichlorophenol**	R. 1,2,4-Trichlorobenzene	S. Naphthalene	T. 4-Chloroaniline	U. Hexachlorobutadiene**	V. 4-Chloro-3-methylphenol**	W. 2-Methylnaphthalene	X. Hexachlorocyclopentadiene*	Y. 2,4,6-Trichlorophenol**	Z. 2,4,5-Trichlorophenol	AA. 2-Chioronaphthalene	BB. 2-Nitroaniline	CC. Dimethylphthalate	DD. Acenaphthylene
A. Phenol**	B. Bis (2-chloroethyl) ether	C. 2-Chlorophenol	D. 1,3-Dichlorobenzene	E. 1,4-Dichlorobenzene**	F. 1,2-Dichlorobenzene	G. 2-Methylphenol	H. 2,2'-Oxybis(1-chloropropane)	l. 4-Methylphenol	J. N-Nitroso-di-n-propylamine*	K. Hexachloroethane	L. Nitrobenzene	M. Isophorone	N. 2-Nitrophenol**	O. 2,4-Dimethylphenol

36826	1137
#:180	#18K
	SDG

VALIDATION FINDINGS WORKSHEET Initial Calibration Calculation Verification

Page: /of / Reviewer:

Reviewer:

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

The Relative Response Factor (RRF), average RRF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

 $RRF = (A_{\nu})(C_{\mu})/(A_{\mu})(C_{\nu})$ average RRF = sum of the RRFs/number of standards %RSD = 100 * (S/X)

 $A_{\mathbf{k}} = Area$ of compound, $A_{\mathbf{k}} = Area$ of compound, $C_{\mathbf{k}} = Area$ $C_{\mathbf{k}} = Area$ $C_{\mathbf{k}} = Area$ $C_{\mathbf{k}} = Area$ $C_{\mathbf{k}} = A$

A_k = Area of associated internal standard
C_k = Concentration of internal standard
-s, X = Mean of the RRFs

L									
				Reported	Recalculated	Reported	Recalculated	Reported	Recalculated
*	Standard ID	Calibration Date	Compound (Reference Internal Standard)	RRF (Æ std)	RRF (& C std)	Average RRF (initial)	Average RRF (initial)	%RSD	%RSD
-	(Ac	19/07	Phenol (Rinkernal standard) 7 7	1617	1.191	1.18-1	1.15/	5.83	18-5
		10/11/10	Naphthalene (2nd internal standard)						
			Fluorene (3rd internal standard)						
			Pentachlorophenol (4th internal standard)						
		······································	Bis(2-ethylhexyl)phthalate (5th internal standard)						
			Benzo(a)pyrene (6th internal standard)						
2	CAL	11/18/07	Phenol (1st internal standard) 7 7 7	1.722	1.122	Ch01	1.047	10'6	101
			Naphthalene (2nd internal standard)						
			Fluorene (3rd internal standard)						
		· · · ·	Pentachlorophenol (4th internal standard)						
		1	Bis(2-ethylhexyl)phthalate (5th internal standard)						
			Benzo(a)pyrene (6th internal standard)						
၈			Phenol (1st internal standard)						
		 1	Naphthalene (2nd internal standard)						
			Fluorene (3rd internal standard)						
			Pentachlorophenol (4th internal standard)						
			Bis(2-ethylhexyl)phthalate (5th internal standard)						
			Benzo(a)pyrene (6th internal standard)						

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: <u>/8036/3</u>4 SDG #: <u>/8K//37</u>

Continuing Calibration Results Verification VALIDATION FINDINGS WORKSHEET

2nd Reviewer: Reviewer:

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

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

ave. RRF = initial calibration average RRF RRF = continuing calibration RRF

 $A_x = Area$ of compound, $C_x = Concentration$ of compound,

 $A_{\rm b}=$ Area of associated internal standard $C_{\rm b}=$ Concentration of internal standard

Where: % Difference = 100 * (ave. RRF - RRF)/ave. RRF RRF = $(A_{\nu}(C_{\nu})/(A_{\nu})(C_{\nu})$

			Wanted The Control of					
					Reported	Recalculated	Reported	Recalculated
*	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Average RRF (initial)	RRF (CC)	RRF (CC)	Q %	0%
	55TD050	11/12/07	Phenoi (154 internal standard) 7777	1.15/	89€./	1.368	78.9	18.0
		, ,	Naphthalene (2nd internal standard)					
			Fluorene (3rd internal standard)					
			Pentachlorophenol (4th internal standard)					
			Bis(2-ethylhexyl)phthalate (5th internal standard)					
			Benzo(a)pyrene (6th internal standard)					
2	STORE	11/16/07	Phenol (1st internal standard)	1.151	1.183-	1./87	3.0	S. O. O.
		/ /	Naphthalene (2nd internal standard)					
			Fluorene (3rd internal standard)					
			Pentachlorophenol (4th internal standard)					
			Bis(2-ethylhexyl)phthalate (5th internal standard)					
			Benzo(a)pyrene (6th internal standard)					
ი	SSTDOSTA	11/15/07	Phenel (1st internal standard)	1.047	1.117	1.117	6.7	ハソ
		/ ./ .	Naphthalene (2nd internal standard)				/	
			Fluorene (3rd internal standard)					
			Pentachlorophenol (4th internal standard)					
			Bis(2-ethylhexyl)phthalate (5th internal standard)					
-	SSTORED	11/19/27	Benzo(a)pyrene (Bit) internal standard)	1.047	1.047	1.047	00	100

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results. LDC #: 18036132b SDG #:/&k1137

VALIDATION FINDINGS WORKSHEET <u>Surrogate Results Verification</u>

Page:_	/of/
Reviewer:	4
2nd reviewer:	

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

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found

SS = Surrogate Spiked

Sample ID:____/____

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5	50	32.74	65-	65	a
2-Fluorobiphenyl	/	32.74 36.15	72	72	/
Terphenyl-d14		44.43	89	89	V
Phenol-d5				/	
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenoi-d4					
1,2-Dichlorobenzene-d4					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl		-			
Terphenyl-d14					
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

LDC #: 18036826 SDG #/8K1/37

Matrix Spike/Matrix Spike Duplicates Results Verification VALIDATION FINDINGS WORKSHEET

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

The percent recoveries (%R) and Relative Percent Difference (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SSC - SC)/SA

Where:

SC = Sample concentation

SSC = Spiked sample concentration SA = Spike added

MSD = Matrix spike duplicate percent recovery

RPD = I MS - MSD I * 2/(MS + MSD)

MS = Matrix spike percent recovery

MS/MSD samples:

3

	Š	ike	Sample	Spiked S	ample	Matrix Spike	Spike	Matrix Spike Duplicate	Duplicate	MS/MSD	g;
Compound	X	Added (Sylve)	Concentration (1993)	Concentration	tration (Sec)	Percent Recovery	ecovery	Percent Recovery	ecovery	RPD	
	MS	MSD		MS	MSD	Reported	Recalc	Renorted	Recalc	Reported	Recalculated
Phenol											
N-Nitroso-di-n-propylamine											
4-Chloro-3-methylphenol											
Acenaphthene											
Pentachlorophenoi											
Pyrene						,					
111	3330	3330	000	2870	32/0	78	98	96	96		
·											

Comments: Refer to Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

SDG #: 18K1137 LDC #: 18036

Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification VALIDATION FINDINGS WORKSHEET

2nd Reviewer: Reviewer:__

Page:

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

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SC/SA

SSC = Spike concentration SA = Spike added Where:

RPD = I LCS - LCSD | * 2/(LCS + LCSD)

LCSD = Laboratory control sample duplicate percent recovery LCS = Laboratory control sample percent recovery

LCS/LCSD samples: 71 2065-

	ďS	oike	ds	ike	01	CS	3 T	l CSD	/SD	CS/I CSD
Compound	PA 3	Adoled	Conce	Concentration	Percent Recovery	Recovery	Percent Recovery	Recovery	<u> </u>	RPD
	/ I CS	I CSD	SUL	TCSD	Reported	Recaic	Reported	Recalc	Reported	Recalculated
Phenol										
N-Nitroso-di-n-propylamine										
4-Chloro-3-methylphenol										
Acenaphthene										
Pentachlorophenol										
Pyrene										
	3330	λN	3171	XX	38	25				

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results. LDC #: 180 36B26 SDG #: 18K1137

VALIDATION FINDINGS WORKSHEET Sample Calculation Verification

Page:	<u></u> /of
Reviewer:_	9
2nd reviewer:_	

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

K	N	N/A
[Y/	N	N/A

Were all reported results recalculated and verified for all level IV samples?

Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

Conc	entratio	on = $(A_{-})(I_{+})(V_{+})(DF)(2.0)$ $(A_{-})(RRF)(V_{-})(V_{+})(%S)$	Example:	٦.					
A _x	=	Area of the characteristic ion (EICP) for the compound to be measured	Sample I.D	_N⊅,_	<u> </u>				
A _{is}	==	Area of the characteristic ion (EICP) for the specific internal standard							
i,	=	Amount of internal standard added in nanograms (ng)	Conc. = (()()()()()()
V _o	=	Volume or weight of sample extract in milliliters (ml) or grams (g).							
V,	=	Volume of extract injected in microliters (ul)	=						
V,	=	Volume of the concentrated extract in microliters (ul)							
Df	=	Dilution Factor.							
%S	=	Percent solids, applicable to soil and solid matrices only.							
20	=	Factor of 2 to account for GPC cleanup							

2.0	= Factor of 2 to accou	unt for GPC cleanup				
#	Sample ID	Compound		Reported Concentration ()	Calculated Concentration ()	Qualification
			·			
						•
		·				

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

BRC Tronox Parcel C/D/F/G

Collection Date:

November 13, 2007

LDC Report Date:

January 15, 2008

Matrix:

Water

Parameters:

2,2'-/4,4'-Dichlorobenzil

Validation Level:

EPA Level III

Laboratory:

TestAmerica, Inc.

Sample Delivery Group (SDG): IQK1433

Sample Identification

RINSATE 2

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 8270C for 2.2'-/4.4'-Dichlorobenzil.

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.
- 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 30.0% for all compounds.

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

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

All of the continuing calibration percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were less than or equal to 25.0%.

The percent differences (%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 validation criteria.

V. Blanks

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

Sample "Rinsate 2" was identified as a rinsate. No 2,2'-/4,4'-Dichlorobenzil was 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

The laboratory has indicated that there was insufficient sample volume for analysis of the matrix spike and matrix spike duplicate.

VIII. Laboratory Control Samples (LCS)

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

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 C/D/F/G 2,2'-/4,4'-Dichlorobenzil - Data Qualification Summary - SDG IQK1433

No Sample Data Qualified in this SDG

BRC Tronox Parcel C/D/F/G 2,2'-/4,4'-Dichlorobenzil - Laboratory Blank Data Qualification Summary - SDG IQK1433

No Sample Data Qualified in this SDG

BRC Tronox Parcel C/D/F/G 2,2'-/4,4'-Dichlorobenzil - Field Blank Data Qualification Summary - SDG IQK1433

No Sample Data Qualified in this SDG

SDG#	:: 18036C2b #: IQK1433 atory: <u>Test Ame</u> r	rica	_VAI	_IDATION _		LET _eve		ESS WORK	SHEET		Date: /// / / o. Page: / of / Reviewer: 2 2nd Reviewer: 1
WETH	IOD: GC/MS 2,2	2'-/4,4'-Di	ichlre	benzil (EPA	SW 846	Meth	od 82	270C)			Zila Neviewoi.
Γhe sa ∕alidat	amples listed be tion findings wor	low were rksheets.	revie	wed for eac	h of the fo	iwollد	ng va	lidation areas	. Validation f	findi	ngs are noted in attached
	Va	lidation <i>l</i>	Area						Commen	ıts	
I.	Technical holding	ı times			A	Samr	pling da	ates: //	13/07		
II.	GC/MS Instrumer		nce ch	ieck	4_			/	/ /		
111.	Initial calibration				\triangleleft				No co	<u>-</u>	& SPCC
IV.	Continuing calibra	ation/ICV			\overline{A}	_\{		\$ 2570 ·			d'
V.	Blanks				4	<u> </u>					
VI.	Surrogate spikes		_		∌				_		
VII.	Matrix spike/Matr		olicates	s	I N	\bar{m}	suff	Hicient	sample	<u>. </u>	
VIII.	Laboratory contro				A		105	18	/		
IX.	Regional Quality		and Q	uality Control	N			7			
X.	Internal standard				A						
XI.	Target compound		ion		N						
XII.	Compound quant				N						
XIII.	Tentatively identi			TiCs)	N						
XIV.	-				N						
<u> </u>	Overall assessme				1	 					
XV.		ent or uata			1	+-					
XVI.					IN-	+		1			
XVII.	Field blanks				L NA	<u> *</u>	=				
Note:	A = Acceptable N = Not provided SW = See works	d/applicable sheet	1	R = Rins	lo compound isate ield blank	ls dete	ected	D = Dup TB = Tri _l EB = Eq			
Validate	ted Samples:										
1	RINSATE 2	W	11	7K1509	59-Bd	<u>/_/</u>	21		3	1	
2			12				22		3:	32	
3			13				23		3	33	
4			14				24		3	34	
5			15				25		3	35	
6			16				26		3	36	
7			17				27		3	37	
8			18				28		3	38	

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

BRC Tronox Parcel C/D/F/G

Collection Date:

November 13, 2007

LDC Report Date:

January 15, 2008

Matrix:

Soil

Parameters:

2,2'-/4,4'-Dichlorobenzil

Validation Level:

EPA Level IV

Laboratory:

TestAmerica, Inc.

Sample Delivery Group (SDG): IQK1480

Sample Identification

TSB-DR-06-0'

TSB-DR-06-10'

TSB-DR-05-0'

TSB-DR-05-0'-FD

TSB-DR-05-10'

TSB-DR-03-0'

TSB-DR-03-0'MS/MSD

TSB-DR-03-10'

TSB-DJ-01-0'

TSB-DJ-01-10'

TSB-DR-04-0'

TSB-DR-04-10'

TSB-DR-03-0'MS/MSDMS

TSB-DR-03-0'MS/MSDMSD

Introduction

This data review covers 14 soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8270C for 2,2'-/4,4'-Dichlorobenzil.

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.

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/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 30.0% for all compounds.

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

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

All of the continuing calibration percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were less than or equal to 25.0%.

The percent differences (%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 validation criteria.

V. Blanks

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

Sample "Rinsate 2" (from SDG IQK1433) was identified as a rinsate. No 2,2'-/4,4'-Dichlorobenzil was 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. 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

All target compound identifications were within validation criteria.

XII. Compound Quantitation and CRQLs

All compound quantitation and CRQLs were within validation criteria.

XIII. Tentatively Identified Compounds (TICs)

Tentatively identified compounds were not reported by the laboratory.

XIV. System Performance

The system performance was acceptable.

XV. Overall Assessment

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

XVI. Field Duplicates

Samples TSB-DR-05-0' and TSB-DR-05-0'-FD were identified as field duplicates. No 2,2'-/4,4'-Dichlorobenzil was detected in any of the samples.

BRC Tronox Parcel C/D/F/G 2,2'-/4,4'-Dichlorobenzil - Data Qualification Summary - SDG IQK1480

No Sample Data Qualified in this SDG

BRC Tronox Parcel C/D/F/G 2,2'-/4,4'-Dichlorobenzil - Laboratory Blank Data Qualification Summary - SDG IQK1480

No Sample Data Qualified in this SDG

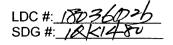
BRC Tronox Parcel C/D/F/G 2,2'-/4,4'-Dichlorobenzil - Field Blank Data Qualification Summary - SDG IQK1480

No Sample Data Qualified in this SDG

SDG Laboi	#: 18036D2b #: IQK1480 ratory: Test America	_	ALIDATIOI a)	L	_evel	IV		RKSHEET		Date: ///4/o Page:/of / Reviewer: 2nd Reviewer:/
	HOD: GC/MS 2,2'-/4,4'-D							aa Validatia	n fin	dia sa aya satad is attach a
	ation findings worksheets.		ewed for ead	on or the ro	Ollowii	ng va	alidation are	as. Validatio	on tine	dings are noted in attached
	Validation	Area	<u> </u>					Comm	ents	
I.	Technical holding times			4	Samp	ling d	ates:	1/13/07		
11.	GC/MS Instrument performa	ance c	heck	A	ļ					
111.	Initial calibration			Ą				no	ec	e & spec
IV.	Continuing calibration/ICV			\Rightarrow	10	4≤	: 25%			d'
V.	Blanks			₩	<u> </u>					
VI.	Surrogate spikes			A						
VII.	Matrix spike/Matrix spike du	plicate	es	\blacksquare	ļ					
VIII.	Laboratory control samples			=	20	15	2			
IX.	Regional Quality Assurance	and C	Quality Control	N	ļ					
Χ.	Internal standards			\rightarrow			····	***************************************		
XI.	Target compound identificat	ion		ϕ						
XII.	Compound quantitation/CR0	QLs		4						
XIII.	Tentatively identified compo	unds ((TICs)	N	:					
XIV.	. System performance			A						
XV.	Overall assessment of data	Overall assessment of data								
XVI.	Field duplicates	NP			3+4					
XVII	. Field blanks			NO	R	= 1	Pinsat	lez (/	ØK	(1433)
Note: Validat	A = Acceptable N = Not provided/applicable SW = See worksheet ted Samples:	;	R = Rins	o compounds sate eld blank	s detec	eted	TB = T	uplicate Frip blank Equipment blan	k	
M:	S0:\s	_	<u> </u>		· · · · · · · · · · · · · · · · · · ·				l I	I
1	TSB-DR-06-0'	11	TSB-DR-04-0	•		21	TO 13:		31	
2	TSB-DR-06-10'	12	TSB-DR-04-1	0'		22	741704	46-BA	32	
3	TSB-DR-05-0'	13	TSB-DR-03-0	'MS/MSDMS	3	23			33	
4	TSB-DR-05-0'-FD	14	TSB-DR-03-0	'MS/MSDMS	SD	24			34	
5	TSB-DR-05-10'	15				25			35	
6	TSB-DR-03-0'	16				26			36	
7	TSB-DR-03-0'MS/MSD	17				27			37	
8	TSB-DR-03-10'	18			1	28			38	

TSB-DJ-01-0'

TSB-DJ-01-10'

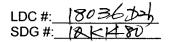


VALIDATION FINDINGS CHECKLIST

Page: /of >
Reviewer: 9
2nd Reviewer: ______

Method: Semivolatiles (EPA SW 846 Method 8270C)

Validation Area	Yes	No	NA	Findings/Comments
). Technical holding times				The second se
All technical holding times were met.				
Cooler temperature criteria was met.				
III. GC/MS Instrument performance check 🐃 🖑			·	
Were the DFTPP performance results reviewed and found to be within the specified criteria?	(
Were all samples analyzed within the 12 hour clock criteria?				
III. Initial calibration			1	
Did the laboratory perform a 5 point calibration prior to sample analysis?	<u> </u>	<u> </u>	<u> </u>	
Were all percent relative standard deviations (%RSD) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?				
Was a curve fit used for evaluation?	<u> </u>		<u> </u>	
Did the initial calibration meet the curve fit acceptance criteria of > 0.990?	<u> </u>		/	
Were all percent relative standard deviations (%RSD) ≤ 30% and relative response factors (RRF) ≥ 0.05?				
IV. Continuing calibration				
Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?		-		
Were all percent differences (%D) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?				
Were all percent differences (%D) \leq 25% and relative response factors (RRF) \geq 0.05?				
V. Blanks	H			
Was a method blank associated with every sample in this SDG?	4	\square		
Was a method blank analyzed for each matrix and concentration?	/_	 		
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.	_	/		
VI. Surrogate spikes	~			
Were all surrogate %R within QC limits?	/			
If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?	M			
If any %R was less than 10 percent, was a reanalysis performed to confirm %R?	W			
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.				
Was a MS/MSD analyzed every 20 samples of each matrix?				
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?				
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?				



VALIDATION FINDINGS CHECKLIST

Page: ___of___ Reviewer: _____ 2nd Reviewer: ______

Validation Area	Yes	No	NA	Findings/Comments
Was an LCS analyzed per extraction batch?				
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?				
IX Regional Quality Assurance and Quality Control		14		en de l'imperior de la company
Were performance evaluation (PE) samples performed?				
Were the performance evaluation (PE) samples within the acceptance limits?				
X. Internal standards			,	
Were internal standard area counts within -50% or +100% of the associated calibration standard?	1			
Were retention times within ± 30 seconds from the associated calibration standard?	7			
XI. Target compound identification				44
Were relative retention times (RRT's) within ± 0.06 RRT units of the standard?	4			
Did compound spectra meet specified EPA "Functional Guidelines" criteria?				
Were chromatogram peaks verified and accounted for?	/			
XII. Compound quantitation/CRQLs				The second secon
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	/			
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?				
XIII. Tentatively identified compounds (TICs)				
Were the major ions (> 10 percent relative intensity) in the reference spectrum evaluated in sample spectrum?				
Were relative intensities of the major ions within \pm 20% between the sample and the reference spectra?				
Did the raw data indicate that the laboratory performed a library search for all required peaks in the chromatograms (samples and blanks)?				
XIV. System performance				ent in the second of the second
System performance was found to be acceptable.				
XV Overall assessment of data				
Overall assessment of data was found to be acceptable.				
XVI. Field duplicates we disselve the second				
Field duplicate pairs were identified in this SDG.				
Target compounds were detected in the field duplicates.		7		
XVII. Field blanks				18 Year 1770 And San Control of the San Control of
Field blanks were identified in this SDG.				
Target compounds were detected in the field blanks.		1		

VALIDATION FINDINGS WORKSHEET

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

A, Phenoi**	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-Chiorophenol	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. Aniiine
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. Benzyi 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	TIT. 2.2/4.4 - Dich(wo benzi)
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	ww.
O. 2,4-Dimethylphenol	DD. Acenaphthylene	SS. Hexachlorobenzene	HHH. Benzo(k)fluoranthene	WWW.

LDC #: 18036

Initial Calibration Calculation Verification VALIDATION FINDINGS WORKSHEET

2nd Reviewer:__ Page: Reviewer:

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

The Relative Response Factor (RRF), average RRF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

RRF = $(A_{\nu})(C_{k})/(A_{k})(C_{\nu})$ average RRF = sum of the RRFs/number of standards %RSD = 100 * (S/X)

 $A_{\rm k}$ = Area of associated internal standard $C_{\rm k}$ = Concentration of internal standard X = Mean of the RRFs $\begin{aligned} A_x &= \text{Area of compound,} \\ C_x &= \text{Concentration of compound,} \\ S &= \text{Standard deviation of the RRFs,} \end{aligned}$

L				<u> </u>					
				Reported	Recalculated	Renorted	Donalminatord	1000	
		_			BONDOIDO	Delloden	necalculated	Deported	Hecalculated
*	Standard ID	Calibration Date	Compound (Reference Internal Standard)	RRF (350 std)	RRF (SZ std)	Average RRF (initial)	Average RRF (initial)	%RSD	%RSD
	19/	0/2/21	Phenol (4st internal standard)	C5/1/	1.122	(401	C+01	102	10.7
		1ak11,	Naphthalene (2nd internal standard)						
			Fluorene (3rd internal standard)						
			Pentachlorophenol (4th internal standard)						
			Bis(2-ethylhexyl)phthalate (5th internal standard)						
			Benzo(a)pyrene (6th internal standard)						
2	141	1 0/08/11		1.35%	1.35/	1.345-	1.345	4/4	8.15
		/ 1/2/	Naphthalene (2nd internal standard)						
			Fluorene (3rd internal standard)						
			Pentachlorophenol (4th internal standard)						
			Bis(2-ethylhexyl)phthalate (5th internal standard)						
			Benzo(a)pyrene (6th internal standard)						
ო			Phenol (1st internal standard)						
			Naphthalene (2nd internal standard)						
			Fluorene (3rd internal standard)						
			Pentachlorophenol (4th internal standard)						
			Bis(2-ethylhexyl)phthalate (5th internal standard)						
			Benzo(a)pyrene (6th internal standard)						

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10,0% of the recalculated results.

LDC #:*18036124*) SDG #:*184481*

Continuing Calibration Results Verification VALIDATION FINDINGS WORKSHEET

2nd Reviewer: Page: Reviewer:

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

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave, RRF - RRF)/ave, RRF RRF = $(A_{\nu})(C_{k})/(A_{k})(C_{\nu})$

ave, RRF = initial calibration average RRF RRF = continuing calibration RRF Where:

 $A_{\mathbf{k}}=$ Area of associated internal standard $C_{\mathbf{k}}=$ Concentration of internal standard $A_x = Area$ of compound, $C_x = Concentration$ of compound,

					Reported	Recalculated	Reported	Recalculated
*	≠ Standard ID	Calibration Date	Compound (Reference Internal Standard)	Average RRF (Initial)	RRF (CC)	RRF (CC)	Q%	Q%
	SSTDOSO	19/6/1	Phenol (1st internal standard) 7777	1.047	(to.1	Ctro-1	0	0
	•	/ / /	Naphthalene (2nd internal standard)					
			Fluorene (3rd internal standard)					
			Pentachlorophenol (4th internal standard)					
			Bis(2-ethylhexyl)phthalate (5th internal standard)					
			Benzo(a)pyrene (6th internal standard)					
27	2 50/10V2	11/20/07	Phenol (Tst-Internal standard)	1.3465	1.268	1.268	5.7	イン
	\	/	Naphthalene (2nd internal standard)					
			Fluorene (3rd internal standard)					
			Pentachlorophenol (4th internal standard)					
			Bis(2-ethylhexyl)phthalate (5th internal standard)					
			Benzo(a)pyrene (6th internal standard)					
М			Phenol (1st internal standard)					
			Naphthalene (2nd internal standard)					
			Fluorene (3rd internal standard)					
			Pentachlorophenol (4th internal standard)					
			Bis(2-ethylhexyl)phthalate (5th internal standard)					
			Benzo(a)pyrene (6th internal standard)					

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results. LDC #: 18036000b SDG #:/8 161480

VALIDATION FINDINGS WORKSHEET Surrogate Results Verification

Page:	
Reviewer:_	9
nd reviewer:_	9

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

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using	the following	calculation:
--	---------------	--------------

% Recovery: SF/SS * 100

Where: SF = Surrogate Found

SS = Surrogate Spiked

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5	50	38.07	76	76	0
2-Fluorobiphenyl	/	43.62	87	87	/
Terphenyl-d14		38.07 43.62 41.98	84	84	
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

Sample ID:_

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

LDC #: 1803/2006 SDG #: 18K1481

Matrix Spike/Matrix Spike Duplicates Results Verification VALIDATION FINDINGS WORKSHEET

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

The percent recoveries (%R) and Relative Percent Difference (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SSC - SC)/SA

SSC = Spiked sample concentration SA = Spike added Where:

SC = Sample concentation

RPD = I MS - MSD I * 2/(MS + MSD)

MS = Matrix spike percent recovery

MSD = Matrix spike duplicate percent recovery

MS/MSD samples: _

	os		Sample		ample	Matrix Snike	Snike	Matrix Soike Duolicate	Duplicate	MS/MSD	SD
Compound	Ad)	Added US(15)	Concept ation	Conceptration (C)	ration 3	Percent Recovery	ecovery	Percent Recovery	ecovery	RPD	
ii.	MS	MSD		WS	MSD	Reported	Recalc	Reported	Recalc	Reported	Recalculated
Phenol											
N-Nitroso-di-n-propylamine											
4-Chloro-3-methylphenol											
Acenaphthene											
Pentachlorophenol											
Pyrene											
777	3330 3330	3330	8	2508	319	j	18	36	1/4	7	A
									-		٠

Comments: Refer to Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC#:128360-16 SDG#:18K1424

Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification VALIDATION FINDINGS WORKSHEET

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Page:_	Reviewer:	nd Reviewer:

7

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

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SC/SA

SSC = Spike concentration SA = Spike added Where:

RPD = I LCS - LCSD I * 2/(LCS + LCSD)

LCSD = Laboratory control sample duplicate percent recovery LCS = Laboratory control sample percent recovery

LCS/LCSD samples: 7/4/4046-

	żs	oik)	ďs	ike	SUI	y,	Ül	ıcsp	103/	CS/I CSD
Compound	A S	Added Colored	Conce	Concentration	Percent Recovery	Recovery	Percent Recovery	Recovery	R	RPD
The second secon	/ 831	I CSD	10.8	I CSD	Renorted	Recalc	Renorted	Recalc	Renorted	Recalculated
Phenol										
N-Nitroso-di-n-propylamine										
4-Chloro-3-methylphenol										
Acenaphthene										
Pentachlorophenol										
Pyrene										
777	3330	NA	3360	NA	101	101				

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results. LDC #: 18036026 SDG #: 18 1480

VALIDATION FINDINGS WORKSHEET Sample Calculation Verification

Page:	
Reviewer:	9
2nd reviewer:	· ·

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

N)	N	N/A
[Y	N	N/A

Were all reported results recalculated and verified for all level IV samples?
Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

Conce	entratio	$n = \frac{(A_{*})(1,)(V_{*})(DF)(2.0)}{(A_{*})(RRF)(V_{*})(V_{*})(%S)}$	Example:	l mi				
A _x	=	Area of the characteristic ion (EICP) for the compound to be measured	Sample I.D	<u>√0</u> , _	:			
A _{is}	=	Area of the characteristic ion (EICP) for the specific internal standard						
l,	=	Amount of internal standard added in nanograms (ng)	Conc. = (()()()()()()
V _°	=	Volume or weight of sample extract in milliliters (ml) or grams (g).						
V,	=	Volume of extract injected in microliters (ul)	=					
V,	=	Volume of the concentrated extract in microliters (ul)						
Df	=	Dilution Factor.						÷
%S	=	Percent solids, applicable to soil and solid matrices only.						
2.0	=	Factor of 2 to account for GPC cleanup						

2.0	= Factor of 2 to accou	unt for GPC cleanup			
#	Sample ID	Compound	Reported Concentration ()	Calculated Concentration ()	Qualification
		11-44-1			
					<u> </u>

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

BRC Tronox Parcel C/D/F/G

Collection Date:

November 13, 2007

LDC Report Date:

January 15, 2008

Matrix:

Soil

Parameters:

2,2'-/4,4'-Dichlorobenzil

Validation Level:

EPA Level III

Laboratory:

TestAmerica, Inc.

Sample Delivery Group (SDG): IQK1509

Sample Identification

TSB-CR-04-0'

TSB-CR-04-10'

TSB-CR-05-0'

TSB-CR-05-10'

TSB-CR-06-0'

TSB-CR-06-10'

Introduction

This data review covers 6 soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8270C for 2,2'-/4,4'-Dichlorobenzil.

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.
- 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 30.0% for all compounds.

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

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

All of the continuing calibration percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were less than or equal to 25.0%

The percent differences (%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 validation criteria.

V. Blanks

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

Sample "Rinsate 2" (from SDG IQK1433) was identified as a rinsate. No 2,2'-/4,4'-Dichlorobenzil was 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. 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 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

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 C/D/F/G 2,2'-/4,4'-Dichlorobenzil - Data Qualification Summary - SDG IQK1509

No Sample Data Qualified in this SDG

BRC Tronox Parcel C/D/F/G 2,2'-/4,4'-Dichlorobenzil - Laboratory Blank Data Qualification Summary - SDG IQK1509

No Sample Data Qualified in this SDG

BRC Tronox Parcel C/D/F/G 2,2'-/4,4'-Dichlorobenzil - Field Blank Data Qualification Summary - SDG IQK1509

No Sample Data Qualified in this SDG

LDC #: 18036E2b VALIDATION COMPLETENESS WORKSHEET Level III SDG #: IQK1509 Laboratory: Test America 2nd Reviewer: METHOD: GC/MS 2.2'-/4.4'-Dichkobenzil (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 Sampling dates: Technical holding times GC/MS Instrument performance check II. Ш. Initial calibration Continuing calibration/ICV IV. V. Blanks VI. Surrogate spikes VII. Matrix spike/Matrix spike duplicates 105 VIII. Laboratory control samples Ν Regional Quality Assurance and Quality Control IX. X. Internal standards N Target compound identification XI. Compound quantitation/CRQLs Ν XII. Ν XIII. Tentatively identified compounds (TICs) Ν System performance XIV. XV. Overall assessment of data XVI. Field duplicates Rinsafe 2 (10K1433) NO Field blanks XVII. D = Duplicate ND = No compounds detected A = Acceptable Note: TB = Trip blank N = Not provided/applicable R = Rinsate EB = Equipment blank SW = See worksheet FB = Field blank Validated Samples: 7K17046-Bck1 21 31 11 TSB-CR-04-0' 32 22 12 TSB-CR-04-10' 23 33 13 TSB-CR-05-0' 24 34 14 TSB-CR-05-10' 25 35 TSB-CR-06-0' 15 5 36 26 TSB-CR-06-10' 16 6 27 37 17

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Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

BRC Tronox Parcel C/D/F/G

Collection Date:

November 12, 2007

LDC Report Date:

January 15, 2008

Matrix:

Soil

Parameters:

2,2'-/4,4'-Dichlorobenzil

Validation Level:

EPA Level III

Laboratory:

TestAmerica, Inc.

Sample Delivery Group (SDG): IQK1512

Sample Identification

TSB-CR-03-0'

TSB-CR-03-10'

TSB-CJ-05-0'

TSB-CJ-05-10'

TSB-CJ-06-0'

TSB-CJ-06-0'-FD

TSB-CJ-06-10'

Introduction

This data review covers 7 soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8270C for 2,2'-/4,4'-Dichlorobenzil.

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.
- 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 30.0% for all compounds.

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

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

All of the continuing calibration percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were less than or equal to 25.0%.

The percent differences (%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 validation criteria.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No 2,2'-/4,4'-Dichlorobenzil was 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 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

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

XVI. Field Duplicates

Samples TSB-CJ-06-0' and TSB-CJ-06-0'-FD were identified as field duplicates. No 2,2'-/4,4'-Dichlorobenzil was detected in any of the samples.

BRC Tronox Parcel C/D/F/G 2,2'-/4,4'-Dichlorobenzil - Data Qualification Summary - SDG IQK1512

No Sample Data Qualified in this SDG

BRC Tronox Parcel C/D/F/G 2,2'-/4,4'-Dichlorobenzil - Laboratory Blank Data Qualification Summary - SDG IQK1512

No Sample Data Qualified in this SDG

BRC Tronox Parcel C/D/F/G 2,2'-/4,4'-Dichlorobenzil - Field Blank Data Qualification Summary - SDG IQK1512

No Sample Data Qualified in this SDG

SDG # _abora	: 18036F2b #: IQK1512 atory: Test America	-		L	.eve			ORKSHEET		Date: ///4/e,9 Page: // of/ Reviewer: 2nd Reviewer:		
METH	OD: GC/MS 2,2'-/4,4'-D	ichlre	benzil (EPA	SW 846 I	Meth	od 82	270C)					
	amples listed below were tion findings worksheets.	revie	ewed for eac	h of the fo	llowi	ng va	lidation	areas. Validatio	n finc	lings are noted in attached		
	Validation	Validation Area				Comments						
1.	Technical holding times			A	Sampling dates: ///١٥/٥٦							
11.	GC/MS Instrument performa	4										
111.	Initial calibration	*	w cac & space									
IV.	Continuing calibration/ICV	Continuing calibration/ICV			101≤25%. +							
V.	Blanks			<u> </u>			,					
VI.	Surrogate spikes											
VII.	Matrix spike/Matrix spike du	olicate	s									
VIII.	Laboratory control samples			A	20	20	>					
IX.	Regional Quality Assurance	N										
X.	Internal standards			A								
XI.	Target compound identification			N								
XII.	Compound quantitation/CRQLs			N								
XIII.	Tentatively identified compo	N										
XIV.	System performance	N										
		1		····								
XV.	Overall assessment of data			#								
XVI.	Field duplicates	NP	>	= 5	+6	2						
XVII.	Field blanks				. 44							
Note:	A = Acceptable N = Not provided/applicable SW = See worksheet ed Samples:	:	R = Rins	o compounds sate eld blank	s dete	cted	Т) = Duplicate B = Trip blank B = Equipment blar	nk			
Щ	Seil 3	1	1				T		7			
1	TSB-CR-03-0'	11	TK1709	6-BK		21			31			
2	TSB-CR-03-10'	12	7K1905	4-134	/	22			32			
3	TSB-CJ-05-0'	13	,	,		23			33			
4	TSB-CJ-05-10'	14				24			34			
5 /	TSB-CJ-06-0'	15				25			35			
6	TSB-CJ-06-0'-FD	16				26			36			
7	TSB-CJ-06-10'	17				27			37			
8		18				28			38			
9		19				29			39			

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

BRC Tronox Parcel C/D/F/G

Collection Date:

November 12, 2007

LDC Report Date:

January 15, 2008

Matrix:

Soil

Parameters:

2,2'-/4,4'-Dichlorobenzil

Validation Level:

EPA Level III

Laboratory:

TestAmerica, Inc.

Sample Delivery Group (SDG): IQK1514

Sample Identification

TSB-CJ-02-0'

TSB-CJ-02-10'

TSB-CJ-01-0'

TSB-CJ-01-10'

TSB-CJ-01-0'-FD

TSB-CR-02-0'

TSB-CR-02-10'

TSB-CR-01-0'

TSB-CR-01-0'-MS/MSD

TSB-CR-01-10'

TSB-CR-01-0'-MS/MSDMS

TSB-CR-01-0'-MS/MSDMSD

Introduction

This data review covers 12 soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8270C for 2,2'-/4,4'-Dichlorobenzil.

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 aş 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/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 30.0% for all compounds.

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

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

All of the continuing calibration percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were less than or equal to 25.0%.

The percent differences (%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 validation criteria.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No 2,2'-/4,4'-Dichlorobenzil was 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 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

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

XVI. Field Duplicates

Samples TSB-CJ-01-0' and TSB-CJ-01-0'-FD were identified as field duplicates. No 2,2'-/4,4'-Dichlorobenzil was detected in any of the samples.

BRC Tronox Parcel C/D/F/G 2,2'-/4,4'-Dichlorobenzil - Data Qualification Summary - SDG IQK1514

No Sample Data Qualified in this SDG

BRC Tronox Parcel C/D/F/G 2,2'-/4,4'-Dichlorobenzil - Laboratory Blank Data Qualification Summary - SDG IQK1514

No Sample Data Qualified in this SDG

BRC Tronox Parcel C/D/F/G 2,2'-/4,4'-Dichlorobenzil - Field Blank Data Qualification Summary - SDG IQK1514

No Sample Data Qualified in this SDG

VALIDATION COMPLETENESS WORKSHEET LDC #: 18036G2b Level III SDG #: IQK1514 Reviewer: Laboratory: Test America 2nd Reviewer: METHOD: GC/MS 2,2'-/4,4'-Dichlippenzil (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. <u>Comments</u> Validation Area Sampling dates: Technical holding times II. GC/MS Instrument performance check III. Initial calibration Continuing calibration/ICV IV. Blanks V. Surrogate spikes VI. VII. Matrix spike/Matrix spike duplicates LC9 VIII. Laboratory control samples Regional Quality Assurance and Quality Control Ν IX. X. Internal standards Target compound identification Ν XI. Ν Compound quantitation/CRQLs XII. Ν Tentatively identified compounds (TICs) XIII. N XIV. System performance Overall assessment of data XV. XVI. Field duplicates XVII. Field blanks D = Duplicate ND = No compounds detected A = Acceptable Note: TB = Trip blank R = Rinsate N = Not provided/applicable EB = Equipment blank SW = See worksheet FB = Field blank Validated Samples: 3019 1K19054-BA 21 TSB-CR-01-0'-MS/MSDMS TSB-CJ-02-0' 11 32 TSB-CR-01-0'-MS/MSDMSD 12 2 TSB-CJ-02-10' 33 23 TSB-CJ-01-0' 13 3 34 24 14 TSB-CJ-01-10' 4 25 35 TSB-CJ-01-0'-FD 15 5 36 26 TSB-CR-02-0' 16 6 37 27 17 TSB-CR-02-10' 38 28 18 8 TSB-CR-01-0'

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TSB-CR-01-0'-MS/MSD

TSB-CR-01-10'

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Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

BRC Tronox Parcel C/D/F/G

Collection Date:

November 14, 2007

LDC Report Date:

January 15, 2008

Matrix:

Soil

Parameters:

2,2'-/4,4'-Dichlorobenzil

Validation Level:

EPA Level III

Laboratory:

TestAmerica, Inc.

Sample Delivery Group (SDG): IQK1726

Sample Identification

TSB-DR-01-0'

TSB-DR-01-10'

TSB-DR-02-0'

TSB-DR-02-0'-FD

TSB-DR-02-10'

JB-NWDITCH-01-0'

JB-NWDITCH-01-10'

Introduction

This data review covers 7 soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8270C for 2,2'-/4,4'-Dichlorobenzil.

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.
- 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 30.0% for all compounds.

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

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

All of the continuing calibration percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were less than or equal to 25.0%.

The percent differences (%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 validation criteria.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No 2,2'-/4,4'-Dichlorobenzil was 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) and relative percent differences (RPD) 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 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

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

XVI. Field Duplicates

Samples TSB-DR-02-0' and TSB-DR-02-0'-FD were identified as field duplicates. No 2,2'-/4,4'-Dichlorobenzil was detected in any of the samples.

BRC Tronox Parcel C/D/F/G 2,2'-/4,4'-Dichlorobenzil - Data Qualification Summary - SDG IQK1726

No Sample Data Qualified in this SDG

BRC Tronox Parcel C/D/F/G 2,2'-/4,4'-Dichlorobenzil - Laboratory Blank Data Qualification Summary - SDG IQK1726

No Sample Data Qualified in this SDG

BRC Tronox Parcel C/D/F/G 2,2'-/4,4'-Dichlorobenzil - Field Blank Data Qualification Summary - SDG IQK1726

No Sample Data Qualified in this SDG

VALIDATION COMPLETENESS WORKSHEET LDC #: 18036H2b Level III SDG #: IQK1726 Reviewer: Laboratory: Test America 2nd Reviewer: **METHOD:** GC/MS 2,2'-/4,4'-Dichlipbenzil (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 Sampling dates: Technical holding times GC/MS Instrument performance check II. Ш. Initial calibration Continuing calibration/ICV IV. V. Blanks VI. Surrogate spikes Matrix spike/Matrix spike duplicates VII. VIII. Laboratory control samples Regional Quality Assurance and Quality Control N Internal standards X. Ν XI. Target compound identification Ν Compound quantitation/CRQLs XII. Tentatively identified compounds (TICs) N XIII. Ν XIV. System performance Overall assessment of data XV. B XVI. Field duplicates XVII. Field blanks D = Duplicate ND = No compounds detected A = Acceptable Note: R = Rinsate TB = Trip blank N = Not provided/applicable EB = Equipment blank FB = Field blank SW = See worksheet Validated Şamples: 20,9 21 31 11 TSB-DR-01-0' 32 TSB-DR-01-10' 22 12 33 23 3 ! TSB-DR-02-0' 13 34 24 TSB-DR-02-0'-FD 14 25 35 TSB-DR-02-10' 15 5 36 26 6 JB-NWDITCH-01-0' 16 27 37 JB-NWDITCH-01-10' 17 28 38 18 8 39 29 19 9

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Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

BRC Tronox Parcel C/D/F/G

Collection Date:

November 14, 2007

LDC Report Date:

January 21, 2008

Matrix:

Soil

Parameters:

2,2'-/4,4'-Dichlorobenzil

Validation Level:

EPA Level III

Laboratory:

TestAmerica, Inc.

Sample Delivery Group (SDG): IQK1728

Sample Identification

TSB-FR-01-0'

TSB-FR-01-10'

TSB-FJ-07-0'

TSB-FJ-07-10'

TSB-FJ-06-0'

TSB-FJ-06-0'-FD

TSB-FJ-06-10'

TSB-FJ-05-0'

TSB-FJ-05-10'

TSB-FR-01-0'MS

TSB-FR-01-0'MSD

Introduction

This data review covers 11 soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8270C for 2,2'-/4,4'-Dichlorobenzil.

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.
- 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 30.0% for all compounds.

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

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

All of the continuing calibration percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were less than or equal to 25.0%.

The percent differences (%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 validation criteria.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No 2,2'-/4,4'-Dichlorobenzil was 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 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

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

XVI. Field Duplicates

Samples TSB-FJ-06-0' and TSB-FJ-06-0'-FD were identified as field duplicates. No 2,2'-/4,4'-Dichlorobenzil was detected in any of the samples.

BRC Tronox Parcel C/D/F/G 2,2'-/4,4'-Dichlorobenzil - Data Qualification Summary - SDG IQK1728

No Sample Data Qualified in this SDG

BRC Tronox Parcel C/D/F/G 2,2'-/4,4'-Dichlorobenzil - Laboratory Blank Data Qualification Summary - SDG IQK1728

No Sample Data Qualified in this SDG

BRC Tronox Parcel C/D/F/G 2,2'-/4,4'-Dichlorobenzil - Field Blank Data Qualification Summary - SDG IQK1728

No Sample Data Qualified in this SDG

VALIDATION COMPLETENESS WORKSHEET LDC #: 18036I2b Level III SDG #: IQK1728 Reviewer: Laboratory: Test America METHOD: GC/MS 2,2'-/4,4'-Dichlrobenzib(EPA SW 846 Method 8270C) 2nd Reviewer: 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 Sampling dates: Technical holding times GC/MS Instrument performance check II. III. Initial calibration Continuing calibration/ICV IV. Blanks V. VI. Surrogate spikes Matrix spike/Matrix spike duplicates VII. 100 VIII. Laboratory control samples Regional Quality Assurance and Quality Control Ν IX. Internal standards X. XI. Target compound identification Ν Ν Compound quantitation/CRQLs XII. Ν Tentatively identified compounds (TICs) XIII. Ν XIV. System performance Overall assessment of data XV. D=5+6 XVI. Field duplicates XVII. Field blanks ND = No compounds detected D = Duplicate A = Acceptable Note: TB = Trip blank N = Not provided/applicable R = Rinsate EB = Equipment blank SW = See worksheet FB = Field blank Validated Samples: 501 9 7×19063-B401 TSB-FR-01-0'MSD 21 31 TSB-FR-01-0' 22 32 2 TSB-FR-01-10' 12 23 33 3 TSB-F#J-07-0' 13 TSB-FJ-07-10' 14 24 34 35 TSB-FJ-06-0' 15 25 36 16 26 6 TSB-FJ-06-0'-FD 17 27 37 TSB-FJ-06-10' 28 38 18 8 TSB-FJ-05-0'

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TSB-FJ-05-10'

TSB-FR-01-0'MS

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Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

BRC Tronox Parcel C/D/F/G

Collection Date:

November 15, 2007

LDC Report Date:

January 15, 2008

Matrix:

Water

Parameters:

2,2'-/4,4'-Dichlorobenzil

Validation Level:

EPA Level III

Laboratory:

TestAmerica, Inc.

Sample Delivery Group (SDG): IQK1853

Sample Identification

RINSATE 3

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 8270C for 2,2'-/4,4'-Dichlorobenzil.

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.
- 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 30.0% for all compounds.

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

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

All of the continuing calibration percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were less than or equal to 25.0%.

The percent differences (%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 validation criteria.

V. Blanks

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

Sample "Rinsate 3" was identified as a rinsate. No 2,2'-/4,4'-Dichlorobenzil was 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

The laboratory has indicated that there was insufficient sample volume for analysis of the matrix spike and matrix spike duplicate.

VIII. Laboratory Control Samples (LCS)

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

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 C/D/F/G 2,2'-/4,4'-Dichlorobenzil - Data Qualification Summary - SDG IQK1853

No Sample Data Qualified in this SDG

BRC Tronox Parcel C/D/F/G 2,2'-/4,4'-Dichlorobenzil - Laboratory Blank Data Qualification Summary - SDG IQK1853

No Sample Data Qualified in this SDG

BRC Tronox Parcel C/D/F/G 2,2'-/4,4'-Dichlorobenzil - Field Blank Data Qualification Summary - SDG IQK1853

No Sample Data Qualified in this SDG

VALIDATION COMPLETENESS WORKSHEET LDC #: 18036J2b Level III SDG #: IQK1853 Reviewer: Laboratory: Test America METHOD: GC/MS 2,2'-/4,4'-Dichlrobenzil (EPA SW 846 Method 8270C) 2nd Reviewer: 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 Sampling dates: Technical holding times GC/MS Instrument performance check 11. Mecco Ш. Initial calibration Continuing calibration/ICV IV. Blanks VI. Surrogate spikes VII. Matrix spike/Matrix spike duplicates VIII. Laboratory control samples Regional Quality Assurance and Quality Control IX. X. Internal standards Target compound identification Ν XI. Ν XII. Compound quantitation/CRQLs Tentatively identified compounds (TICs) Ν XIII. System performance Ν XIV. Overall assessment of data XV. Field duplicates XVI. ムク XVII. Field blanks D = Duplicate ND = No compounds detected A = Acceptable Note: TB = Trip blank N = Not provided/applicable R = Rinsate EB = Equipment blank SW = See worksheet FB = Field blank Validated Samples: 7K18034-BOK 31 W 21 RINSATE 3 32 22 12 33 23 13 34 24 14 4 35 15 25 5 36 26 16 6 37 27 17 28 38 8 18

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Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

BRC Tronox Parcel C/D/F/G

Collection Date:

November 15, 2007

LDC Report Date:

January 15, 2008

Matrix:

Soil

Parameters:

2,2'-/4,4'-Dichlorobenzil

Validation Level:

EPA Level III

Laboratory:

TestAmerica, Inc.

Sample Delivery Group (SDG): IQK1872

Sample Identification

TSB-FJ-03-0'

TSB-FJ-03-0'-FD

TSB-FJ-03-10'

TSB-FJ-10-0'

TSB-FJ-10-10'

TSB-FJ-4-0'

TSB-FJ-4-10'

TSB-FJ-02-0'

TSB-FJ-02-0'-FD

TSB-FJ-02-10'

Introduction

This data review covers 10 soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8270C for 2,2'-/4,4'-Dichlorobenzil.

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.
- 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 30.0% for all compounds.

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

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

All of the continuing calibration percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were less than or equal to 25.0%.

The percent differences (%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 validation criteria.

V. Blanks

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

Sample "Rinsate 3" (from SDG IQK1853) was identified as a rinsate. No 2,2'-/4,4'-Dichlorobenzil was 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. 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 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

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

XVI. Field Duplicates

Samples TSB-FJ-03-0' and TSB-FJ-03-0'-FD and samples TSB-FJ-02-0' and TSB-FJ-02-0'-FD were identified as field duplicates. No 2,2'-/4,4'-Dichlorobenzil was detected in any of the samples.

BRC Tronox Parcel C/D/F/G 2,2'-/4,4'-Dichlorobenzil - Data Qualification Summary - SDG IQK1872

No Sample Data Qualified in this SDG

BRC Tronox Parcel C/D/F/G 2,2'-/4,4'-Dichlorobenzil - Laboratory Blank Data Qualification Summary - SDG IQK1872

No Sample Data Qualified in this SDG

BRC Tronox Parcel C/D/F/G 2,2'-/4,4'-Dichlorobenzil - Field Blank Data Qualification Summary - SDG IQK1872

No Sample Data Qualified in this SDG

VALIDATION COMPLETENESS WORKSHEET LDC #: 18036K2b I evel III SDG #: IQK1872 Reviewer: (Laboratory: Test America Dicklarabe uzi | METHOD: GC/MS 2,2'-/4,4'-Dichlarabenzi (EPA SW 846 Method 8270C) 2nd Reviewer: The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets. Comments Validation Area Sampling dates: Technical holding times GC/MS Instrument performance check 11. Initial calibration III. Continuing calibration/ICV IV. V Blanks Surrogate spikes VI. VII. Matrix spike/Matrix spike duplicates VIII. Laboratory control samples Regional Quality Assurance and Quality Control IX. X. Internal standards Ν Target compound identification XI. Compound quantitation/CRQLs Ν XII. Ν Tentatively identified compounds (TICs) XIII. Ν XIV. System performance Overall assessment of data XV. XVI. Field duplicates XVII. Field blanks D = Duplicate ND = No compounds detected Note: A = Acceptable TB = Trip blank R = Rinsate N = Not provided/applicable EB = Equipment blank FB = Field blank SW = See worksheet Validated Samples: W/5019 TK19063-13-K 31 21 TSB-FJ-03-0' 32 22 TSB-FJ-03-0'-FD 12 33 23 13 TSB-FJ-03-10' 24 14 TSB-FJ-10-0' 35 25 15 5 TSB-FJ-10-10' 26 16 TSB-FJ-4-0' 6 37 27 TSB-FJ-4-10' 17 38 28 TSB-FJ-02-0' 18

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TSB-FJ-02-0'-FD

TSB-FJ-02-10'

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Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

BRC Tronox Parcel C/D/F/G

Collection Date:

November 15, 2007

LDC Report Date:

January 15, 2008

Matrix:

Soil

Parameters:

2,2'-/4,4'-Dichlorobenzil

Validation Level:

EPA Level III

Laboratory:

TestAmerica, Inc.

Sample Delivery Group (SDG): IQK1873

Sample Identification

TSB-FR-02-0'

TSB-FR-02-10'

TSB-FJ-09-0'

TSB-FJ-09-10'

TSB-FR-03-0'

TSB-FR-03-10'

TSB-FR-02-0'MS

TSB-FR-02-0'MSD

Introduction

This data review covers 8 soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8270C for 2,2'-/4,4'-Dichlorobenzil.

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.
- 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 30.0% for all compounds.

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

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

All of the continuing calibration percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were less than or equal to 25.0%.

The percent differences (%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 validation criteria.

V. Blanks

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

Sample "Rinsate 3" (from SDG IQK1853) was identified as a rinsate. No 2,2'-/4,4'-Dichlorobenzil was 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. 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) and relative percent differences (RPD) 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 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

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 C/D/F/G 2,2'-/4,4'-Dichlorobenzil - Data Qualification Summary - SDG IQK1873

No Sample Data Qualified in this SDG

BRC Tronox Parcel C/D/F/G 2,2'-/4,4'-Dichlorobenzil - Laboratory Blank Data Qualification Summary - SDG IQK1873

No Sample Data Qualified in this SDG

BRC Tronox Parcel C/D/F/G 2,2'-/4,4'-Dichlorobenzil - Field Blank Data Qualification Summary - SDG IQK1873

No Sample Data Qualified in this SDG

VALIDATION COMPLETENESS WORKSHEET LDC #: 18036L2b I evel III SDG #: IQK1873 Reviewer: Laboratory: Test America Dicklarabenzil 2nd Reviewer: METHOD: GC/MS 2,2'-/4,4'-Dichlrebenzil (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. Comments Validation Area Sampling dates: Technical holding times GC/MS Instrument performance check 11. Initial calibration 111. Continuing calibration/ICV IV. V. Blanks Surrogate spikes VI. VII. Matrix spike/Matrix spike duplicates VIII. Laboratory control samples Regional Quality Assurance and Quality Control Ν IX. X. Internal standards Ν Target compound identification XI. XII. Compound quantitation/CRQLs Ν Ν XIII. Tentatively identified compounds (TICs) Ν XIV. System performance Overall assessment of data XV. XVI. Field duplicates le3 (1&K1853) ID XVII. Field blanks D = Duplicate ND = No compounds detected Note: A = Acceptable N = Not provided/applicable TB = Trip blank R = Rinsate FB = Field blank EB = Equipment blank SW = See worksheet Validated Samples: M 505 TSB-FR-02-0' 32 2 TSB-FR-02-10' 12 13 23 33 3 TSB-FJ-09-0' 24 34 14 TSB-FJ-09-10' 4 25 35 15 5 TSB-FR-03-0' 36 16 26 6 TSB-FR-03-10' 37 27 TSB-FR-02-0'MS 17 38 TSB-FR-02-0'MSD 18 28 8 39 29 19 9

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Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

BRC Tronox Parcel C/D/F/G

Collection Date:

November 16, 2007

LDC Report Date:

January 15, 2008

Matrix:

Water

Parameters:

2,2'-/4,4'-Dichlorobenzil

Validation Level:

EPA Level III

Laboratory:

TestAmerica, Inc.

Sample Delivery Group (SDG): IQK1956

Sample Identification

RINSATE 4

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 8270C for 2,2'-/4,4'-Dichlorobenzil.

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.
- 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 30.0% for all compounds.

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

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

All of the continuing calibration percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were less than or equal to 25.0%.

The percent differences (%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 validation criteria.

V. Blanks

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

Sample "Rinsate 4" was identified as a rinsate. No 2,2'-/4,4'-Dichlorobenzil was 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

The laboratory has indicated that there was insufficient sample volume for analysis of the matrix spike and matrix spike duplicate.

VIII. Laboratory Control Samples (LCS)

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

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 C/D/F/G 2,2'-/4,4'-Dichlorobenzil - Data Qualification Summary - SDG IQK1956

No Sample Data Qualified in this SDG

BRC Tronox Parcel C/D/F/G 2,2'-/4,4'-Dichlorobenzil - Laboratory Blank Data Qualification Summary - SDG IQK1956

No Sample Data Qualified in this SDG

BRC Tronox Parcel C/D/F/G 2,2'-/4,4'-Dichlorobenzil - Field Blank Data Qualification Summary - SDG IQK1956

No Sample Data Qualified in this SDG

VALIDATION COMPLETENESS WORKSHEET LDC #: 18036M2b Level III SDG #: IQK1956 Reviewer: Laboratory: Test America Dickino ben3i | METHOD: GC/MS 2,2'-/4,4'-Dichlrobenzil (EPA SW 846 Method 8270C) 2nd Reviewer: 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 Sampling dates: Technical holding times GC/MS Instrument performance check II. III. Initial calibration Continuing calibration/ICV IV. V. Blanks VI. Surrogate spikes monticient sample Matrix spike/Matrix spike duplicates VII. VIII. Laboratory control samples Regional Quality Assurance and Quality Control Internal standards X. XI. Target compound identification Ν Ν Compound quantitation/CRQLs XII. Ν Tentatively identified compounds (TICs) XIII. Ν XIV. System performance Overall assessment of data XV. XVI. Field duplicates 5 XVII. Field blanks A = Acceptable ND = No compounds detected D = Duplicate Note: N = Not provided/applicable TB = Trip blank R = Rinsate EB = Equipment blank SW = See worksheet FB = Field blank Validated Samples: 7K19096B4 21 31 11 RINSATE 4 32 22 12 33 23 3 13 24 34 14 25 35 5 15 36 16 26 6 37 17 27 7 28 38 18 8

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Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

BRC Tronox Parcel C/D/F/G

Collection Date:

November 16, 2007

LDC Report Date:

January 15, 2008

Matrix:

Soil

Parameters:

2,2'-/4,4'-Dichlorobenzil

Validation Level:

EPA Level III

Laboratory:

TestAmerica, Inc.

Sample Delivery Group (SDG): IQK1976

Sample Identification

TSB-FJ-08-0'

TSB-FJ-08-10'

TSB-FR-05-0'

TSB-FR-05-10'

TSB-FR-04-0'

TSB-FR-04-0'-FD

TSB-FR-04-10'

Introduction

This data review covers 7 soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8270C for 2,2'-/4,4'-Dichlorobenzil.

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.
- 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 30.0% for all compounds.

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

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

All of the continuing calibration percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were less than or equal to 25.0%.

The percent differences (%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 validation criteria.

V. Blanks

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

Sample "Rinsate 4" (from SDG IQK1956) was identified as a rinsate. No 2,2'-/4,4'-Dichlorobenzil was 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. 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 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

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

XVI. Field Duplicates

Samples TSB-FR-04-0' and TSB-FR-04-0'-FD were identified as field duplicates. No 2,2'-/4,4'-Dichlorobenzil was detected in any of the samples.

BRC Tronox Parcel C/D/F/G 2,2'-/4,4'-Dichlorobenzil - Data Qualification Summary - SDG IQK1976

No Sample Data Qualified in this SDG

BRC Tronox Parcel C/D/F/G 2,2'-/4,4'-Dichlorobenzil - Laboratory Blank Data Qualification Summary - SDG IQK1976

No Sample Data Qualified in this SDG

BRC Tronox Parcel C/D/F/G 2,2'-/4,4'-Dichlorobenzil - Field Blank Data Qualification Summary - SDG IQK1976

No Sample Data Qualified in this SDG

	#: <u>18036N2b</u> #: IQK1976	_VA	LIDATION		LETE _evel		ESS WOR	KSHEET		Date: <u>1/14/</u>
laho	# <u>IQK1976</u> ratory: <u>Test America</u> HOD: GC/MS 2,2'-/4,4'-6	- Pickli Pichlin	Nabenzil (EPA				270C)			Page: _/of / Reviewer: 2nd Reviewer:
	amples listed below were ation findings worksheets.		ewed for eac	ch of the fo	ollowing	g va	alidation area	s. Validatio	n find	dings are noted in attached
	Validation	Comments								
I.	Technical holding times	A	Sampling dates: 11/16/07							
11.	GC/MS Instrument performa	<u> </u>			, , , , , , , , , , , , , , , , , , ,					
III.	Initial calibration	\$	ho acc & stac							
IV.	Continuing calibration/ICV	\bigcirc	1c/2570.							
V.	Blanks	Ą			/					
VI.	Surrogate spikes	Ą								
VII.	Matrix spike/Matrix spike du	₽								
VIII.	Laboratory control samples	A	108							
IX.	Regional Quality Assurance	N								
X.	Internal standards	_A_								
XI.	Target compound identificat	N								
XII.	Compound quantitation/CRO	N								
XIII.	Tentatively identified compo	N								
XIV.	System performance	N								
XV.	Overall assessment of data	A								
ΧVI	Field duplicates	NO	D=5+6							
XVII	. Field blanks	ND	Rinsado 4 (18×1956)							
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									
M	Seil 5	<u> </u>	·						1	
1	TSB-FJ-08-0'	11	TK2600	6-BA	2	21			31	
2	TSB-FJ-08-10'	12	1		2	22			32	
3	TSB-FR-05-0'	13			2	23			33	
4	TSB-FR-05-10'	14			2	24			34	
5	TSB-FR-04-0'	15			2	25			35	
6	TSB-FR-04-0'-FD	16			2	26			36	
7	TSB-FR-04-10'	17			2	27			37	
8		18			2	28			38	
9		19			2	29			39	

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

BRC Tronox Parcel C/D/F/G

Collection Date:

November 16, 2007

LDC Report Date:

January 15, 2008

Matrix:

Soil

Parameters:

2,2'-/4,4'-Dichlorobenzil

Validation Level:

EPA Level III

Laboratory:

TestAmerica, Inc.

Sample Delivery Group (SDG): IQK1977

Sample Identification

TSB-FJ-01-0'

TSB-FJ-01-10'

TSB-FJ-01-0'MS

TSB-FJ-01-0'MSD

Introduction

This data review covers 4 soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8270C for 2,2'-/4,4'-Dichlorobenzil.

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.
- 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 30.0% for all compounds.

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

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

All of the continuing calibration percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were less than or equal to 25.0%.

The percent differences (%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 validation criteria.

V. Blanks

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

Sample "Rinsate 4" (from SDG IQK1956) was identified as a rinsate. No 2,2'-/4,4'-Dichlorobenzil was 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. 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 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

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 C/D/F/G 2,2'-/4,4'-Dichlorobenzil - Data Qualification Summary - SDG IQK1977

No Sample Data Qualified in this SDG

BRC Tronox Parcel C/D/F/G 2,2'-/4,4'-Dichlorobenzil - Laboratory Blank Data Qualification Summary - SDG IQK1977

No Sample Data Qualified in this SDG

BRC Tronox Parcel C/D/F/G 2,2'-/4,4'-Dichlorobenzil - Field Blank Data Qualification Summary - SDG IQK1977

No Sample Data Qualified in this SDG

VALIDATION COMPLETENESS WORKSHEET LDC #: 18036O2b Level III SDG #: IQK1977 Laboratory: Test America Reviewer: o METHOD: GC/MS 2,2'-/4,4'-Dichlrobenzil (EPA SW 846 Method 8270C) 2nd Reviewer: 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 Sampling dates: Technical holding times 11. GC/MS Instrument performance check Ш. Initial calibration IV. Continuing calibration/ICV V. Blanks VI. Surrogate spikes VII. Matrix spike/Matrix spike duplicates VIII. Laboratory control samples IX. Regional Quality Assurance and Quality Control Ν X. Internal standards Target compound identification Ν XI. Compound quantitation/CRQLs Ν XII. XIII. Tentatively identified compounds (TICs) Ν Ν XIV. System performance XV. Overall assessment of data XVI. Field duplicates Rinsate 4 (10K1956) 0 XVII. Field blanks ND = No compounds detected D = Duplicate A = Acceptable Note: N = Not provided/applicable R = Rinsate TB = Trip blank SW = See worksheet FB = Field blank EB = Equipment blank Validated Samples: TSB-FJ-01-0' 31 12 22 32 TSB-FJ-01-10' 23 TSB-FJ-01-0'MS 13 33 24 34 TSB-FJ-01-0'MSD 14 5 15 25 35 6 16 26 36 17 27 37

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Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

BRC Tronox Parcel C/D/F/G

Collection Date:

November 16, 2007

LDC Report Date:

January 15, 2008

Matrix:

Soil

Parameters:

2,2'-/4,4'-Dichlorobenzil

Validation Level:

EPA Level III

Laboratory:

TestAmerica, Inc.

Sample Delivery Group (SDG): IQK1978

Sample Identification

TSB-GR-01-0'

TSB-GR-01-5'

TSB-GJ-06-0'

TSB-GJ-06-5'

Introduction

This data review covers 4 soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8270C for 2,2'-/4,4'-Dichlorobenzil.

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.
- 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 30.0% for all compounds.

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

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

All of the continuing calibration percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were less than or equal to 25.0%.

The percent differences (%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 validation criteria.

V. Blanks

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

Sample "Rinsate 4" (from SDG IQK1956) was identified as a rinsate. No 2,2'-/4,4'-Dichlorobenzil was 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. 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 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

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 C/D/F/G 2,2'-/4,4'-Dichlorobenzil - Data Qualification Summary - SDG IQK1978

No Sample Data Qualified in this SDG

BRC Tronox Parcel C/D/F/G 2,2'-/4,4'-Dichlorobenzil - Laboratory Blank Data Qualification Summary - SDG IQK1978

No Sample Data Qualified in this SDG

BRC Tronox Parcel C/D/F/G 2,2'-/4,4'-Dichlorobenzil - Field Blank Data Qualification Summary - SDG IQK1978

No Sample Data Qualified in this SDG

LDC #: 18036P2b VALIDATION COMPLETENESS WORKSHEET I evel III SDG #: IQK1978 Laboratory: Test America Reviewer: METHOD: GC/MS 2,2'-/4,4'-Dichlrobenzil-(EPA SW 846 Method 8270C) 2nd Reviewer: 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 Sampling dates: Technical holding times II. GC/MS Instrument performance check III. Initial calibration 101825 IV. Continuing calibration/ICV V. Blanks VI. Surrogate spikes VII. Matrix spike/Matrix spike duplicates 100 VIII. Laboratory control samples Regional Quality Assurance and Quality Control IX. X. Internal standards XI. Target compound identification Ν XII. Compound quantitation/CRQLs Ν Ν Tentatively identified compounds (TICs) XIII. XIV. System performance N XV. Overall assessment of data XVI. Field duplicates Rinsale 4 (18+1956) んの XVII. Field blanks ND = No compounds detected D = Duplicate A = Acceptable Note: TB = Trip blank N = Not provided/applicable R = Rinsate EB = Equipment blank SW = See worksheet FB = Field blank Validated Samples: 7k26006-13de 21 31 TSB-GR-01-0' 11 12 22 32 TSB-GR-01-5' 23 33 TSB-GJ-06-0' 13 3 24 34 TSB-GJ-06-5' 14 25 35 5 15 16 26 36 6 27 37 17 38 8 18 28

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Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

BRC Tronox Parcel C/D/F/G

Collection Date:

November 16, 2007

LDC Report Date:

January 15, 2008

Matrix:

Soil

Parameters:

2,2'-/4,4'-Dichlorobenzil

Validation Level:

EPA Level III

Laboratory:

TestAmerica, Inc.

Sample Delivery Group (SDG): IQK1979

Sample Identification

TSB-GJ-01-0' TSB-GJ-01-5'

Introduction

This data review covers 2 soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8270C for 2,2'-/4,4'-Dichlorobenzil.

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.
- 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 30.0% for all compounds.

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

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

All of the continuing calibration percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were less than or equal to 25.0%.

The percent differences (%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 validation criteria.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No 2,2'-/4,4'-Dichlorobenzil was 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 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

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 C/D/F/G 2,2'-/4,4'-Dichlorobenzil - Data Qualification Summary - SDG IQK1979

No Sample Data Qualified in this SDG

BRC Tronox Parcel C/D/F/G 2,2'-/4,4'-Dichlorobenzil - Laboratory Blank Data Qualification Summary - SDG IQK1979

No Sample Data Qualified in this SDG

BRC Tronox Parcel C/D/F/G 2,2'-/4,4'-Dichlorobenzil - Field Blank Data Qualification Summary - SDG IQK1979

No Sample Data Qualified in this SDG

VALIDATION COMPLETENESS WORKSHEET LDC #: 18036Q2b Page: // of / Reviewer: 9 SDG #: IQK1979 Level III Laboratory: Test America METHOD: GC/MS 2,2'-/4,4'-Dichirobenzii (EPA SW 846 Method 8270C) 2nd Reviewer: 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 Sampling dates: Technical holding times H. GC/MS Instrument performance check NO ccc III. Initial calibration Continuing calibration/ICV IV. V. Blanks VI. Surrogate spikes VII. Matrix spike/Matrix spike duplicates 100 VIII. Laboratory control samples IX. Regional Quality Assurance and Quality Control Ν X. Internal standards Target compound identification Ν XI. XII. Compound quantitation/CRQLs Ν XIII. Tentatively identified compounds (TICs) Ν XIV. Ν System performance XV. Overall assessment of data XVI. Field duplicates XVII. Field blanks A = Acceptable ND = No compounds detected D = Duplicate Note: N = Not provided/applicable R = Rinsate TB = Trip blank SW = See worksheet FB = Field blank EB = Equipment blank Validated Samples: TSB-**B**J-01-0' 7K26006-BA 21 31 11 32 TSB-BJ-01-5' 12 22 23 33 3 13 24 34 14 5 15 25 35 6 16 26 36 17 27 37 8 18 28 38

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Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

BRC Tronox Parcel C/D/F/G

Collection Date:

November 19, 2007

LDC Report Date:

January 15, 2008

Matrix:

Soil

Parameters:

2,2'-/4,4'-Dichlorobenzil

Validation Level:

EPA Level III

Laboratory:

TestAmerica, Inc.

Sample Delivery Group (SDG): IQK2275

Sample Identification

TSB-GJ-02-0'

TSB-GJ-02-0'-FD

TSB-GJ-02-5'

TSB-GJ-07-0'

TSB-GJ-07-5'

TSB-GJ-05-0'

TSB-GJ-05-5'

TSB-GJ-03-0'

TSB-GJ-03-5'

Introduction

This data review covers 9 soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8270C for 2,2'-/4,4'-Dichlorobenzil.

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.
- 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 30.0% for all compounds.

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

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

All of the continuing calibration percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were less than or equal to 25.0%.

The percent differences (%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 validation criteria.

V. Blanks

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

Sample "Rinsate 5" (from SDG IQK2277) was identified as a rinsate. No 2,2'-/4,4'-Dichlorobenzil was 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. 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 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

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

XVI. Field Duplicates

Samples TSB-GJ-02-0' and TSB-GJ-02-0'-FD were identified as field duplicates. No 2,2'-/4,4'-Dichlorobenzil was detected in any of the samples.

BRC Tronox Parcel C/D/F/G 2,2'-/4,4'-Dichlorobenzil - Data Qualification Summary - SDG IQK2275

No Sample Data Qualified in this SDG

BRC Tronox Parcel C/D/F/G 2,2'-/4,4'-Dichlorobenzil - Laboratory Blank Data Qualification Summary - SDG IQK2275

No Sample Data Qualified in this SDG

BRC Tronox Parcel C/D/F/G 2,2'-/4,4'-Dichlorobenzil - Field Blank Data Qualification Summary - SDG IQK2275

No Sample Data Qualified in this SDG

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LDC#	: <u> </u>		Level III	Page: /of/
	- L		LCVCI III	Reviewer: d
	Diaktrope			2nd Reviewer:
METH	OD: GC/MS 2,2'-/4,4'-Dichlrobenzit (E	PA SW 846	Method 8270C)	
	amples listed below were reviewed for	each of the f	following validation areas. Validatio	n findings are noted in attached
validat	ion findings worksheets. Validation Area		Comm	ents
validat	T	A	Comm Sampling dates: ///9/07	ents 7
l.	Validation Area	A	1 . / . / -	ents 7
1.	Validation Area Technical holding times		Sampling dates: ///9/07	ents 7 Ccc & SACC
1.	Validation Area Technical holding times GC/MS Instrument performance check		Sampling dates: ///9/07	7

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XVI.	Field duplicates	NO I)=1+2
XVII.	Field blanks	NO	Ringale 5 (10+2277)
Note:	A = Acceptable N = Not provided/applicable SW = See worksheet	ND = No compounds de R = Rinsate FB = Field blank	tected D = Duplicate TB = Trip blank EB = Equipment blank

Validated Samples:

VI.

VII.

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XII.

XIII.

XIV.

XV.

Surrogate spikes

Internal standards

System performance

Overall assessment of data

Matrix spike/Matrix spike duplicates

Regional Quality Assurance and Quality Control

Laboratory control samples

Target compound identification

Compound quantitation/CRQLs

Tentatively identified compounds (TICs)

<u>m</u>	50.19				
1 /	TSB-GJ-02-0'	11 7K2	6129-1340/21	31	
2	TSB-GJ-02-0'-FD	12	22	32	
3	TSB-GJ-02-5'	13	23	33	
4	TSB-GJ-07-0'	14	24	34	
5	TSB-GJ-07-5'	15	25	35	
6	TSB-GJ-05-0'	16	26	36	
7	TSB-GJ-05-5'	17	27	37	
8	TSB-GJ-03-0'	18	28	38	
9	TSB-GJ-03-5'	19	29	39	
10		20	30	40	

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

BRC Tronox Parcel C/D/F/G

Collection Date:

November 19, 2007

LDC Report Date:

January 15, 2008

Matrix:

Soil

Parameters:

2,2'-/4,4'-Dichlorobenzil

Validation Level:

EPA Level III

Laboratory:

TestAmerica, Inc.

Sample Delivery Group (SDG): IQK2276

Sample Identification

TSB-GR-02-0'

TSB-GR-02-0'-FD

TSB-GR-02-5'

TSB-GJ-04-0'

TSB-GJ-04-0'-MS/MSD

TSB-GJ-04-5'

TSB-GJ-04-0'-MS/MSDMS

TSB-GJ-04-0'-MS/MSDMSD

Introduction

This data review covers 8 soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8270C for 2,2'-/4,4'-Dichlorobenzil.

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.
- 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 30.0% for all compounds.

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

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

All of the continuing calibration percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were less than or equal to 25.0%.

The percent differences (%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 validation criteria.

V. Blanks

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

Sample "Rinsate 5" (from SDG IQK2277) was identified as a rinsate. No 2,2'-/4,4'-Dichlorobenzil was 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. 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 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

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

XVI. Field Duplicates

Samples TSB-GR-02-0' and TSB-GR-02-0'-FD were identified as field duplicates. No 2,2'-/4,4'-Dichlorobenzil was detected in any of the samples.

BRC Tronox Parcel C/D/F/G 2,2'-/4,4'-Dichlorobenzil - Data Qualification Summary - SDG IQK2276

No Sample Data Qualified in this SDG

BRC Tronox Parcel C/D/F/G 2,2'-/4,4'-Dichlorobenzil - Laboratory Blank Data Qualification Summary - SDG IQK2276

No Sample Data Qualified in this SDG

BRC Tronox Parcel C/D/F/G 2,2'-/4,4'-Dichlorobenzil - Field Blank Data Qualification Summary - SDG IQK2276

No Sample Data Qualified in this SDG

LDC #: 18036S2b VALIDATION COMPLETENESS WORKSHEET Level III SDG #: IQK2276 Reviewer: C Laboratory: Test America METHOD: GC/MS 2,2'-/4,4'-Dichlrobenzil (EPA SW 846 Method 8270C) 2nd Reviewer: 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** Sampling dates: Technical holding times 11. GC/MS Instrument performance check Initial calibration III. ICV = 23 IV. Continuing calibration/ICV Blanks V. **4**) VI. Surrogate spikes VII. Matrix spike/Matrix spike duplicates 209 VIII. Laboratory control samples Ν IX. Regional Quality Assurance and Quality Control X. Internal standards Target compound identification Ν XI. XII. Compound quantitation/CRQLs Ν XIII. Tentatively identified compounds (TICs) Ν Ν XIV. System performance XV. Overall assessment of data 7=1+2 XVI. Field duplicates XVII. Field blanks D = Duplicate ND = No compounds detected Note: A = Acceptable N = Not provided/applicable R = Rinsate TB = Trip blank EB = Equipment blank SW = See worksheet FB = Field blank Validated Samples: 60:19 7K26129-BA 21 31 TSB-GR-02-0' 11 2 12 22 32 TSB-GR-02-0'-FD 33 23 TSB-GR-02-5' 13 TSB-GR-04-0' 34 14 24 5 TSB-GR-04-0'-MS/MSD 15 25 35 TSB-GF-04-5' 26 36 6 16 27 37 TSB-GR-04-0'-MS/MSDMS 17 38 8 TSB-GR-04-0'-MS/MSDMSD 18 28 29 39 9 19

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Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

BRC Tronox Parcel C/D/F/G

Collection Date:

November 19, 2007

LDC Report Date:

January 15, 2008

Matrix:

Water

Parameters:

2,2'-/4,4'-Dichlorobenzil

Validation Level:

EPA Level III

Laboratory:

TestAmerica, Inc.

Sample Delivery Group (SDG): IQK2277

Sample Identification

RINSATE 5

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 8270C for 2,2'-/4,4'-Dichlorobenzil.

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.
- 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 30.0% for all compounds.

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

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

All of the continuing calibration percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were less than or equal to 25.0%.

The percent differences (%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 validation criteria.

V. Blanks

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

Sample "Rinsate 5" was identified as a rinsate. No 2,2'-/4,4'-Dichlorobenzil was 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

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

VIII. Laboratory Control Samples (LCS)

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

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 C/D/F/G 2,2'-/4,4'-Dichlorobenzil - Data Qualification Summary - SDG IQK2277

No Sample Data Qualified in this SDG

BRC Tronox Parcel C/D/F/G 2,2'-/4,4'-Dichlorobenzil - Laboratory Blank Data Qualification Summary - SDG IQK2277

No Sample Data Qualified in this SDG

BRC Tronox Parcel C/D/F/G 2,2'-/4,4'-Dichlorobenzil - Field Blank Data Qualification Summary - SDG IQK2277

No Sample Data Qualified in this SDG

VALIDATION COMPLETENESS WORKSHEET LDC #: 18036T2b I evel III SDG #: IQK2277 Reviewer: Laboratory: Test America METHOD: GC/MS 2,2'-/4,4'-Dichlrobenzil (EPA SW 846 Method 8270C) 2nd Reviewer: 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 Sampling dates: Technical holding times GC/MS Instrument performance check 11. 9DC III. Initial calibration IV. Continuing calibration/ICV Blanks VI. Surrogate spikes VII. Matrix spike/Matrix spike duplicates Laboratory control samples VIII. Regional Quality Assurance and Quality Control IX. X. Internal standards Target compound identification Ν XI. Compound quantitation/CRQLs Ν XII. Ν XIII. Tentatively identified compounds (TICs) Ν XIV. System performance XV. Overall assessment of data Field duplicates XVI. 2-1 XVII. Field blanks A = Acceptable ND = No compounds detected D = Duplicate Note: TB = Trip blank N = Not provided/applicable R = Rinsate EB = Equipment blank SW = See worksheet FB = Field blank Validated Samples: 31 21 RINSATE 5 32 22 12 33 23 13 3 24 34 14 4 35 15 25 5 36 26 16 6 37 27 17 38 28 18 8

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BRC Tronox Parcel C/D/F/G Data Validation Reports LDC# 18036

Wet Chemistry

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

BRC Tronox Parcel C/D/F/G

Collection Date:

November 9, 2007

LDC Report Date:

January 7, 2008

Matrix:

Water

Parameters:

Wet Chemistry

Validation Level:

EPA Level III

Laboratory:

TestAmerica, Inc.

Sample Delivery Group (SDG): IQK1136

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 Method 300.1 for Chlorite and EPA SW 846 Method 7196A for Hexavalent Chromium.

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 X.

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.

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

IV. Surrogate Recovery

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

V. 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.

VI. Duplicates

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

VII. Laboratory Control Samples

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

VIII. Sample Result Verification

Raw data were not reviewed for this SDG.

IX. Overall Assessment of Data

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

X. Field Duplicates

No field duplicates were identified in this SDG.

BRC Tronox Parcel C/D/F/G
Wet Chemistry - Data Qualification Summary - SDG IQK1136

No Sample Data Qualified in this SDG

BRC Tronox Parcel C/D/F/G Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG IQK1136

No Sample Data Qualified in this SDG

BRC Tronox Parcel C/D/F/G Wet Chemistry - Field Blank Data Qualification Summary - SDG IQK1136

No Sample Data Qualified in this SDG

SDG#	#:18036A6 #:IQK1136 atory:_Test America	VA I 	LIDATION		PLETE Level		3 WORK	(SHEET		Date: 1 3 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5
The sa	HOD: Chlorite (EPA Methorship) amples listed below were tion findings worksheets.	e revie	,							ngs are noted in attached
	Validation	Area						Comme	ents	
l.	Technical holding times			Α	Sampli	ling dates:	: 11 9	2.5		
lla.	Initial calibration			A						
IIb.	Calibration verification			Α						
III.	Blanks			A	<u> </u>					
IV	Matrix Spike/Matrix Spike Du	uplicat	es	Α	<u> </u>	nsln	۵۶,			
V	Duplicates			~						
VI.	Laboratory control samples			A	رد	٤				
VII.	Sample result verification			N						
VIII.	Overall assessment of data			A						
IX.	Field duplicates		<u></u>	N	<u> </u>					
x	Field blanks			20	R:	= \				
Note: Validate	A = Acceptable N = Not provided/applicable SW = See worksheet sed Samples:	e M	R = Rins	lo compounds isate eld blank	s detect	red	D = Dup TB = Tri _l EB = Eq		K	
1	RINSATE 1	11				21			31	
	RINSATE 1MS	12				22			32	
	RINSATE 1MSD	13				23			33	
	PB	14				24			34	
5		15				25			35	
6		16				26			36	
7		17				27			37	
8		18				28			38	
								,	1 1	

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Notes: 300.1

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Surr:

LDC #: 18036A6 SDG #: Takn36

VALIDATION FINDINGS WORKSHEET Sample Specific Analysis Reference

Page:_	of
Reviewer:_	1
2nd reviewer:_	

All circled methods are applicable to each sample.

Sample ID	Parameter
\	PH TDS CI F NO, NO, SO, PO, ALK CN' NH, TKN TOC (CR) (CLI)
	PH TDS CI F NO, NO, SO, PO, ALK CN' NH, TKN TOC CRe+
2-3	PH TDS CI F NO, NO, SO, PO, ALK CN' NH, TKN TOC (CRe+)
	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN' NH3 TKN TOC CR°+
	ph tds cif no₃ no₂ so₄ po₄ alk cnº nh₃ tkn toc cr³+
	ph TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR8+
	pH TDS CI F NO $_3$ NO $_2$ SO $_4$ PO $_4$ ALK CN' NH $_3$ TKN TOC CR $^{6+}$
	ph tds cif no3 no2 so4 po4 alk cn. nh3 tkn toc cr8+
	pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CRS+
	ph tds ci f NO3 NO2 SO4 PO4 ALK CN' NH3 TKN TOC CR8+
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN' NH ₃ TKN TOC CR ⁸⁺
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁸⁺
	pH TDS CI F NO ₈ NO ₂ SO ₄ PO ₄ ALK CN ⁻ NH ₃ TKN TOC CR ⁶⁺
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN' NH ₃ TKN TOC CR ⁶⁺
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN' NH ₃ TKN TOC CR ⁶⁺
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN' NH ₃ TKN TOC CR ⁶⁺
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺
	pH TDS CI F NO3 NO2 SO4 PO4 ALK CN' NH3 TKN TOC CR8+
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN' NH ₃ TKN TOC CR ⁶⁺
	ph tds ci f No ₃ No ₂ So ₄ Po ₄ Alk Cn' NH ₃ TKN TOC CR ⁶⁺
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN' NH ₃ TKN TOC CR ⁶⁺
	ph tds ci f No, No, So, Po, Alk Cn NH, TKN toc CR6+
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN' NH ₃ TKN TOC CR ⁶⁺
	pH TDS CI F NO, NO, SO, PO, ALK CN NH, TKN TOC CRe+

	l bu	IDS	U	1	INO3	1102	004	104	,,,,,,,		3				 		
	рН	TDS	CI	F	NO ₃	NO,	SO,	PO₄	ALK	CN ⁻	NHa	TKN	TOC	CR ⁶⁺	 	 	
Comments:												क्षेत्र				 	
														 .	 	 	

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LDC Report# 18036B6

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

BRC Tronox Parcel C/D/F/G

Collection Date:

November 9, 2007

LDC Report Date:

January 25, 2008

Matrix:

Soil

Parameters:

Wet Chemistry

Validation Level:

EPA Level IV

Laboratory:

TestAmerica, Inc.

Sample Delivery Group (SDG): IQK1137

Sample Identification

TSB-CR-07-0'

TSB-CR-07-10'

TSB-CR-08-0'

TSB-CR-08-0'-FD

TSB-CJ-08-10'

TSB-CJ-04-0'

TSB-CJ-04-10'

TSB-CJ-07-0'

TSB-CJ-07-10'

TSB-CJ-03-0'

TSB-CJ-03-10'

TSB-CR-07-0'MS

TSB-CR-07-0'MSD

Introduction

This data review covers 13 soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 300.1 for Chlorite and EPA SW 846 Method 7196A for Hexavalent Chromium.

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 X.

The following are definitions of the data qualifiers:

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- 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 were met.

b. Calibration Verification

Calibration verification frequency and analysis criteria were met.

III. Blanks

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

Sample "RINSATE 1" (from SDG IQK1136) was identified as a rinsate. No contaminant concentrations were found in this blank.

*IV. 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	Surrogate	%R (Limits)	Analyte	Flag	A or P
TSB-CR-07-10'	Dichloroacetate	87.44 (90-115)	Chlorite	J- (all detects) UJ (all non-detects)	Р
TSB-CR-08-0'-FD	Dichloroacetate	83.75 (90-115)	Chlorite	J- (all detects) UJ (all non-detects)	Р
TSB-CJ-08-10'	Dichloroacetate	89.73 (90-115)	Chlorite	J- (all detects) UJ (all non-detects)	Р
TSB-CJ-04-0'	Dichloroacetate	88.87 (90-115)	Chlorite	J- (all detects) UJ (all non-detects)	Р
TSB-CJ-04-10'	Dichloroacetate	68.94 (90-115)	Chlorite	J- (all detects) UJ (all non-detects)	Р

Sample	Surrogate	%R (Limits)	Analyte	Flag	A or P
TSB-CJ-07-0'	Dichloroacetate	89.70 (90-115)	Chlorite	J- (all detects) UJ (all non-detects)	P.
TSB-CJ-07-10'	Dichloroacetate	87.88 (90-115)	Chlorite	J- (all detects) UJ (all non-detects)	P
TSB-CJ-03-0'	Dichloroacetate	83.64 (90-115)	Chlorite	J- (all detects) UJ (all non-detects)	Р

^{*}Corrected affected analyte from "All TCL compounds" to Chlorite.

V. 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.

VI. Duplicates

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

VII. Laboratory Control Samples

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

VIII. Sample Result Verification

All sample result verifications were acceptable.

IX. Overall Assessment of Data

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

X. Field Duplicates

Samples TSB-CR-08-0' and TSB-CR-08-0'-FD were identified as field duplicates. No contaminant concentrations were detected in any of the samples.

*BRC Tronox Parcel C/D/F/G Wet Chemistry - Data Qualification Summary - SDG IQK1137

SDG	Sample	*Analyte	Flag	A or P	Reason
IQK1137	TSB-CR-07-10' TSB-CR-08-0'-FD TSB-CJ-08-10' TSB-CJ-04-0' TSB-CJ-04-10' TSB-CJ-07-0' TSB-CJ-07-10' TSB-CJ-03-0'	Chlorite	J- (all detects) UJ (all non-detects)	Р	Surrogate recovery (%R)

^{*}Corrected affected analyte from "All TCL compounds" to Chlorite in above Surrogate recovery (%R) finding.

BRC Tronox Parcel C/D/F/G

Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG IQK1137

No Sample Data Qualified in this SDG

BRC Tronox Parcel C/D/F/G

Wet Chemistry - Field Blank Data Qualification Summary - SDG IQK1137

No Sample Data Qualified in this SDG

SDG#	:: 18036B6 #: IQK1137 atory: <u>Test America</u>	. VA -	LIDATIO		PLETE Level I		S WORK	SHEET	Date:		
The sa	OD: Chlorite (EPA Methamples listed below were tion findings worksheets.	e revi							ndings are noted in attached		
Valida	Validation							Comment	s		
I.	Technical holding times			А	Samplin	ng date	s: 11 9) 07-			
IIa.	Initial calibration			A							
IIb.	Calibration verification			A							
III.	Blanks			A							
IV	Matrix Spike/Matrix Spike Duplicates				12 m	5	450				
V	Duplicates					<u>'</u>					
VI.	Laboratory control samples			A	4	<u> </u>					
VII.	Sample result verification			Α_							
VIII.	Overall assessment of data			Α							
IX.	Field duplicates			ND		D: 3+4					
×	Field blanks			120	R:	Riw	rati I	(for Ia)	41136)		
Note: Validate	A = Acceptable N = Not provided/applicable SW = See worksheet	: LU	R = Rin	o compound sate eld blank	ls detecte	:d	D = Dupli TB = Trip EB = Equ				
			TSB-CJ-03-1		2	$\overline{\top}$		31			
	TSB-CR-07-0'	11	TSB-CJ-03-1		2:			32			
	TSB-CR-07-10'	13	TSB-CR-07-0		2:			33			
	TSB-CR-08-0' TSB-CR-08-0'-FD	14	PB		2			34			
	TSB-CJ-08-10'	15			2			35			

? Notes:_	300.1	Jury:	<u>ں، د</u>	 	 	

TSB-C+-0' TSB- C5-04-0 16

TSB-CJ-04-10'

TSB-CJ-07-0'

TSB-CJ-07-10'

TSB-CJ-03-0'

Page: 1 of 2 Reviewer: 41 2nd Reviewer:

Method:Inorganics (EPA Method S., Com.)				
Validation Area	Ye	No	NA	Findings/Comments
1 Technical holding times.				
All technical holding times were met.	/			A Company of the Comp
Coolor temporature criteria was met.				
III, Calibration 201				
Were all instruments calibrated daily, each set-up time?				
Were the proper number of standards used?	/			
Were all initial calibration correlation coefficients > 0.995?	/			
Were all initial and continuing calibration verification %Rs within the 90-110% QC limits?	/			·
Were titrant checks performed as required? (Level IV only)				
Were balance checks performed as required? (Level IV only)				
ille Slacks 1985 per per per supplier and the supplier su				
Was a method blank associated with every sample in this SDG?	-			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		/		
IX-Maux spike/Matrix spike duplicates and Duplicates				
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.	-			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.	/			
Were the MS/MSD or duplicate relative percent differences (RPD) ≤ 20% for waters and ≤ 35% for soil samples? A control limit of ≤ CRDL(≤ 2X CRDL for soil) was used for samples that were ≤ 5X the CRDL, including when only one of the duplicate sample values were ≤ 5X the CRDL.	/			
V. Laboratory control samples (*)				
Was an LCS anaylzed for this SDG?	1		T	And the second motion of the second of the s
Was an LCS analyzed per extraction batch?	1			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 80-120% (85-115% for Method 300.0) QC limits?	/			
/LiRegional Quality Assurance and Quality Control Survey				
Were performance evaluation (PE) samples performed?	1	1		
Vere the performance evaluation (PE) samples within the acceptance limits?		1		

LDC #: 18036 BL SDG #: TQX1137

VALIDATION FINDINGS CHECKLIST

Page: 2 of 2
Reviewer: 41
2nd Reviewer:

	7	7	7	
Validation Area	Yes	No		Findings/Comments
VII-Sample Result/Vertication				である。 では、大学のでは、 では、 では、 では、 では、 では、 では、 では、
Were RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	-			
Were detection limits < RL?	/			
VIII Overall assessment pedarat 22 EL				
Overall assessment of data was found to be acceptable.	/			
D. Fleili, duplicates)				
Field duplicate pairs were identified in this SDG.	_			
Target analytes were detected in the field duplicates.		/		
X Field blanks and the state of				
Field blanks were identified in this SDG.	1			
Farget analytes were detected in the field blanks.		/		

LDC #: 1803686 SDG #: TQL1137

VALIDATION FINDINGS WORKSHEET Sample Specific Analysis Reference

Page: of Reviewer: 2nd reviewer:

All circled methods are applicable to each sample.

Sample ID	Parameter
1-11	PH TDS CI F NO, NO, SO, PO, ALK CN' NH, TKN TOC (R) (Chianith)
	PH TDS CI F NO, NO, SO, PO, ALK CN' NH, TKN TOC CR -
12-13	ph tos ci f no, no, so, po, alk cn' nh, tkn toc (ch) (la: h)
	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN' NH3 TKN TOC CRO*
	PH TDS CI F NO, NO, SO, PO, ALK CN' NH, TKN TOC CR6+
	PH TDS CI F NO, NO, SO, PO, ALK CN' NH, TKN TOC CRO+
	PH TDS CI F NO, NO, SO, PO, ALK CN NH, TKN TOC CR8+
	PH TDS CI F NO, NO, SO, PO, ALK CN' NH, TKN TOC CRS+
	PH TDS CI F NO, NO, SO, PO, ALK CN' NH, TKN TOC CRS+
	PH TDS CI F NO, NO, SO, PO, ALK CN' NH, TKN TOC CR"
	ph. TDS CIF NO, NO, SO, PO, ALK CN' NH, TKN TOC CR"+
	PH TDS CI F NO, NO, SO, PO, ALK CN NH, TKN TOC CR8+
	PH TDS CI F NO, NO, SO, PO, ALK CN NH, TKN TOC CR8+
	PH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺
	PH TDS CI F NO, NO, SO, PO, ALK CN' NH, TKN TOC CR".
	PH TDS CI F NO, NO, SO, PO, ALK CN' NH, TKN TOC CRO+
	PH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN' NH ₃ TKN TOC CR ⁵⁺
	PH TDS CI F NO, NO, SO, PO, ALK CN' NH, TKN TOC CR8+
	PH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁸⁺
	PH TDS CI F NO _s NO ₂ SO ₄ PO ₄ ALK CN' NH ₃ TKN TOC CR ⁶⁺
	PH TDS CI F NO, NO, SO, PO, ALK CN NH, TKN TOC CRS+
	PH TDS CI F NO, NO, SO, PO, ALK CN NH, TKN TOC CRS+
	PH TDS CI F NO, NO, SO, PO, ALK CN NH, TKN TOC CR8+
	PH TDS CI F NO, NO, SO, PO, ALK CN NH, TKN TOC CR8+
	ph tos cif no, no, so, po, alk cn nh, tkn toc cr*+

Comments:	 ·		 je	•	· · · · · · · · · · · · · · · · · · ·	
	 		 ·			
······································	 		 			

LDC #: 18036B6 SDG #: IONNER

VALIDATION FINDINDS WORKSHEET Surrogate Recovery

Page: 1 of 1 Reviewer: AL 2nd Reviewer:

METHOD: Chlorite (EPA 300.1)

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".

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

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

DEPOSITOR OF THE PARTY OF THE P						α	
				e	Dichloroacetate	٨	
Comments	Recovery QC Limits (Water)	Recovery QC Limits (Soil) Ro	Recove	Surrogate Compound	Surrogate	Letter Designation	etter
		()					
		()					
		_			- 2		
	٤	X6.71 (as-115)			^E X		
to good (ac)	7	89.72 (90-115)			5		
		()					
1	0/1	83.64 (👈)	->		07	:	
	6	(↑) 88.48	1		9		
		()					
	æ	(↑) २.18	\		80		
		(
7	<u>r</u> +	(^) hb·3 7	>		<i>,</i> +		
->	9	(1) ts.33	→		ں		
	THE PROPERTY OF THE PROPERTY O						
->	S	84.78 ()	-3		И		
د	Ţ	83.75 (†)	7		ժ		
		(
50/ W5 / A P	7	87.44 (90-115)	А		2		
Qualifications	Associated Samples	%R (Limits)	Surrogate Compound	Column	Lab iD/Reference		Date
					2000	ı	

SDG #: IGK 1137 LDC #: 18036 BC

VALIDATION FINDINGS WÖRKSHEET

Initial and Continuing Calibration Calculation Verification

Page: of Reviewer: A. 2nd Reviewer:

METHOD: Inorganics, Method

The correlation coefficient (t) for the calibration of CLIS. Was recalculated. Calibration date: 11

An initial or continuing calibration verification percent recovery (%R) was recalculated for each type of analysis using the following formula;

Found = concentration of each analyte measured in the analysis of the ICV or CCV solution True = concentration of each analyte in the ICV or CCV source Where,

%R = Found x 100

Type of Analysis	Anahita		(2) (2)		Recalculated	Reported	
	Almin's	·	Crose (units)	Avea (units)	1 or \$1		Acceptable
Initial calibration		Blank	C	;;		1 of 24R	(Y/N)
Calibration verification		Standard 1	20	1501			
		Standard 2	00)	25.6767			
	ひしていれ	Stendard 3	2.00	52, 856, 70		, de la companya de l	
		Standard 4	207	126.46.20.2	0.999899	20.0	ア
-		Standard 5	ţ	7 + 7 9 1 9 24			•
		Standard 6					
		Stendard 7					
Calibration varilland							
	Chlinit	49.3284	501	·	99.3%	017	7
Calibration verification						(
	ئ ل	0.3173Y	0.00		(05.87	2	7
Calibration verification							7-
						·	

Comments: Refer to Calibration Verification findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0%

LDC #: 1803 CBC SDG #: I ak 1137

VALIDATION FINDINGS WORKSHEET Level IV Recalculation Worksheet

Page: of Reviewer: AL 2nd Reviewer:

METHOD: Inorganics, Method_

Percent recoveries (%R) for a laboratory control sample and a matrix spike sample were recalculated using the following formula:

%R = Found x 100 Where,

concentration of each analyte <u>measured</u> in the analysis of the sample. For the matrix spike calculation, Found = SSR (spiked sample result) - SR (sample result). concentration of each analyte in the source. Found = True =

A sample and duplicate relative percent difference (RPD) was recalculated using the following formula:

RPD = <u>!S-D!</u> x 100 Where, (S+D)/2

|| || O

Original sample concentration Duplicate sample concentration

							į
			Form	į	Recalculated	Reported	
Sample ID	Type of Analysis	Element	(units)	irde / D (units)	%R / RPD	%R/RPD	Acceptable
	Laboratory confrol sample						(1/14)
7k19101.851		Chlorit	102.4456	c	1.801	7,801	Γ
	Matrix enils comple						
74 16 13 118	pirilitae avide vinous	,	(SSR-SR)				
16W-0211121		; }	0.34116	٦.٥	1,5.58	1.98	ア
	Duplicate sample						
7619120-MSD		<u>ئ</u> ك	0.34083	0.34523			7
							•

Comments: Refer to appropriate worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated

TOTCLC.6

LDC #: 18036B6

VALIDATION FINDINGS WORKSHEET

Page:_	<u>\</u> of\
Reviewer:_	AA
2nd reviewer:	1

SDG #: Takiis?	Sample Calculation Verification	Reviewer: 2nd reviewer:
METHOD: Inorganics, Metho	d Su Com	
	ow for all questions answered "N". Not applicable questions been reported and calculated correctly? ithin the calibrated range of the instruments? ion limits below the CRQL?	are Identified as "N/A".
Compound (analyte) results for recalculated and verified usin	orrep g the following equation:	orted with a positive detect were
Concentration =	Recelculation:	

AU NO

	#	Sample ID	Analyte	Reported Concentration ()	Calculated Concentration ()	Acceptable (Y/N)
L						-
		·				
_						
·			·		-	
-						
-						
-						
 						
-	_					
 	_					
-	_					
-	4					
-	\dashv					
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<u> </u> -	\dashv					
⊩	\dashv					
<u> </u>			<u>.</u>			1

Note		
•		

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

BRC Tronox Parcel C/D/F/G

Collection Date:

November 13, 2007

LDC Report Date:

January 8, 2008

Matrix:

Water

Parameters:

Wet Chemistry

Validation Level:

EPA Level III

Laboratory:

TestAmerica, Inc.

Sample Delivery Group (SDG): IQK1433

Sample Identification

RINSATE 2 RINSATE 2MS RINSATE 2MSD

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 300.1 for Chlorite and EPA SW 846 Method 7196A for Hexavalent Chromium.

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 X.

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 with the following exceptions:

Sample	Analyte	Total Time From Sample Collection Until Analysis	Required Holding Time From Sample Collection Until Analysis	Flag	A or P
RINSATE 2 RINSATE 2MS RINSATE 2MSD	Hexavalent chromium	30 hrs	24 hrs	J- (all detects) UJ (all non-detects)	Р

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.

Sample "RINSATE 2" 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 2	11/13/07	Hexavalent chromium	0.0046 mg/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 (>5X blank contaminants) than the concentrations found in the associated field blanks.

IV. Surrogate Recovery

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

V. 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.

VI. Duplicates

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

VII. Laboratory Control Samples

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

VIII. Sample Result Verification

Raw data were not reviewed for this SDG.

IX. Overall Assessment of Data

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

X. Field Duplicates

No field duplicates were identified in this SDG.

BRC Tronox Parcel C/D/F/G Wet Chemistry - Data Qualification Summary - SDG IQK1433

SDG	Sample	Analyte	Flag	A or P	Reason
IQK1433	RINSATE 2	Hexavalent chromium	J- (all detects) UJ (all non-detects)	Р	Technical holding times

BRC Tronox Parcel C/D/F/G
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG IQK1433

No Sample Data Qualified in this SDG

BRC Tronox Parcel C/D/F/G Wet Chemistry - Field Blank Data Qualification Summary - SDG IQK1433

No Sample Data Qualified in this SDG

SDG#	#: 18036C6 #: IQK1433 atory: Test America	VAI _	LIDATIOI		PLETEN Level III		S WORK	SHEET		Date: \(\lambda\) \(\sigma\) Page: \(\lambda\) of \(\lambda\) Reviewer: \(\delta\)
	HOD: Chlorite (EPA Metho									lings are noted in attached
	ampies listed below were tion findings worksheets.		Wed to ear	JI OF UTO 10	JIIOWIIIG	Valide	Illon areas). Valluado.	111110	IIIgs are noted in account
	Validation	Area						Comme	ents	
l.	Technical holding times			5W	Sampling	dates	: 11 13	3 57		
lla.	Initial calibration			A			,			
Ilb.	Calibration verification			Α						
III.	Blanks			Α						
IV	Matrix Spike/Matrix Spike Du	uplicate	es	A	13m	5 / 1	450			
V	Duplicates			7)					
VI.	Laboratory control samples			A	LCS					
VII.	Sample result verification			N						
VIII.	Overall assessment of data			A						
IX.	Field duplicates			2						
L _X	Field blanks			3 W	R: 1	\				
Note:	A = Acceptable N = Not provided/applicable SW = See worksheet	;	R = Rin	lo compound nsate ield blank	is detected	1	D = Dup TB = Tri EB = Eq		<	
Validat	ted Samples:		water							
1	RINSATE 2	11			21				31	
2	RINSATE 2MS	12			22	:			32	
3	RINSATE 2MSD	13			23	<u>, </u>			33	
4	PB	14			24	<u>, </u>			34	
5		15			25	<u>. </u>			35	
		16	1		26	.			36	

Notes: 300.1 Surr : A

LDC #: 18036C6 SDG #: <u>Tak 1433</u>

VALIDATION FINDINGS WORKSHEET Sample Specific Analysis Reference

Page:_	of	
Reviewer:_	al	
2nd reviewer:_	V	_

All circled methods are applicable to each sample.

	Downwood-
Sample ID	Parameter Caramater Carama
١	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN' NH3 TKN TOC (CRE) (CLINITY)
	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR8+
2-3	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN' NH3 TKN TOC (CH)
	PH TDS CIF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR° +
	PH TDS CIF NO3 NO2 SO4 PO4 ALK CN'NH3 TKN TOC CR8+
	PH TDS CIF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR8+
	ph tds cif NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR8+
	ph tds cif no3 no2 so4 po4 alk cn nh3 tkn toc cr6+
	ph tds cif no, no, so, po, alk cn nh, tkn toc cr
	ph tds cif No3 No2 SO4 PO4 ALK CN NH3 TKN TOC CR8+
	ph tds cif No ₃ No ₂ So ₄ Po ₄ Alk Cn Nh ₃ TKN Toc CR ⁶⁺
	pH TDS CI F NO3 NO2 SO4 PO4 ALK CN' NH3 TKN TOC CR6+
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺
	pH TDS CI F NO3 NO2 SO4 PO4 ALK CN' NH3 TKN TOC CR8+
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN' NH ₃ TKN TOC CR ⁸⁺
	pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+
	PH TDS CI F NO, NO, SO, PO, ALK CN' NH, TKN TOC CR8+
	pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR8+
	pH TDS CI F NO3 NO2 SO4 PO4 ALK CN' NH3 TKN TOC CR6+
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺
	PH TDS CI F NO, NO, SO, PO, ALK CN NH, TKN TOC CR6+
	pH TDS CI F NO, NO, SO, PO, ALK CN NH, TKN TOC CR6+
	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+
·	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+
	pH TDS CI F NO, NO, SO, PO, ALK CN' NH, TKN TOC CR6+

Comments:	

LDC #: 18036C6 SDG #: <u>Takin3</u>3

VALIDATION FINDINGS WORKSHEET Technical Holding Times

Page: __of___ Reviewer:___d 2nd reviewer:___

All circled dates have exceeded the technical holding time.

| Y N N/A | Were all samples preserved as applicable to each method?
| Y N N/A | Were all cooler temperatures within validation criteria?

Y N N/A Were all	COOLET TEMPERA	ures within van				<u> </u>	T
Method:		7196A					-
Parameters:		Crex					
Technical holding tir	ne:	24 14-5					<u> </u>
Sample ID	Sampling date	Analysis date	Analysis date	Analysis date	Analysis date	Analysis date	Qualifier
1-3	11 13/07	11/14/22		(30	hrs)		J-/45/1
	1450	2047					
							·
				·			
·							

LDC #: 18 03 6 CG SDG #: I Quitas

VALIDATION FINDINGS WORKSHEET Field Blanks

Page: __of Reviewer: 2nd Reviewer:

lorganics, EPA Method	Were field blanks identified in this SDG?	Were target analytes detected in the field blanks?
METHOD: Inorganics, E	ON N/A	ON NA

Were field blanks identified in this SDG? Were target analytes detected in the field blanks?

Blank units: Associated sample units:
Sampling date: 1113 | 57 | Soil factor applied
Field blank type: (circle one) Field Blank / Rinsate / Other:

Associated Samples:

Analyte	Blank ID	Blank				Sample Identification	ntification		
	1	Action Limit							
3	D.0046	0:483							
								•	
Blank units: Associated sam		Associate	Associated sample units:	ts:					
Sampling da	ate:			Soil factor applied					
Field blank	type: (circle	one) Field		Rinsate / Other:	Assot	Associated Samples:	les:		
	TOTAL CONTROL OF THE PARTY NAMED IN		The second secon						

		 ,			
ıtification					
Sample Identification					
Blank	Action				
Blank ID					
Analyte					

CHOLED 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".

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

BRC Tronox Parcel C/D/F/G

Collection Date:

November 13, 2007

LDC Report Date:

January 25, 2008

Matrix:

Soil

Parameters:

Wet Chemistry

Validation Level:

EPA Level IV

Laboratory:

TestAmerica, Inc.

Sample Delivery Group (SDG): IQK1480

Sample Identification

TSB-DR-06-0'

TSB-DR-06-10'

TSB-DR-05-0'

TSB-DR-05-0'-FD

TSB-DR-05-10'

TSB-DR-03-0'

TSB-DR-03-0'MS/MSD

TSB-DR-03-10'

TSB-DJ-01-0'

TSB-DJ-01-10'

TSB-DR-04-0'

TSB-DR-04-10'

TSB-DR-03-0'MS/MSDMS

TSB-DR-03-0'MS/MSDMSD

Introduction

This data review covers 14 soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 300.1 for Chlorite and EPA SW 846 Method 7196A for Hexavalent Chromium.

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 X.

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 were met.

b. Calibration Verification

Calibration verification frequency and analysis criteria were met.

III. Blanks

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

Sample "RINSATE 2" (from SDG IQK1433) 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 2	11/13/07	Hexavalent chromium	0.0046 mg/L	All samples in SDG IQK1480

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

*IV. 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	Surrogate	%R (Limits)	Analyte	Flag	A or P
TSB-DR-05-0'-FD	Dichloroacetate	80.88 (90-115)	Chlorite	J- (all detects) UJ (all non-detects)	Р

^{*}Corrected affected analyte from "All TCL compounds" to Chlorite.

V. 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.

VI. Duplicates

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

VII. Laboratory Control Samples

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

VIII. Sample Result Verification

All sample result verifications were acceptable.

IX. Overall Assessment of Data

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

X. Field Duplicates

Samples TSB-DR-05-0' and TSB-DR-05-0'-FD were identified as field duplicates. No contaminant concentrations were detected in any of the samples with the following exceptions:

	Concentra	tion (mg/Kg)	
Analyte	TSB-DR-05-0'	TSB-DR-05-0'-FD	Difference (Limits)
Hexavalent chromium	1.0U	1.3	0.3 (≤1.0)

*BRC Tronox Parcel C/D/F/G Wet Chemistry - Data Qualification Summary - SDG IQK1480

SDG	Sample	*Analyte	Flag	A or P	Reason
IQK1480	TSB-DR-05-0'-FD	Chlorite	J- (all detects) UJ (all non-detects)	Р	Surrogate recovery (%R)

^{*}Corrected affected analyte from "All TCL compounds" to Chlorite in above Surrogate recovery (%R) finding.

BRC Tronox Parcel C/D/F/G Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG IQK1480

No Sample Data Qualified in this SDG

BRC Tronox Parcel C/D/F/G Wet Chemistry - Field Blank Data Qualification Summary - SDG IQK1480

No Sample Data Qualified in this SDG

SDG	#:18036D6 #:IQK1480 atory:_Test America		LIDATIO		LETE Level I		S WOR	KSH	IEET		Date: 1 3 59 Page: 1 of 1 Reviewer: 44 2nd Reviewer: 1
	HOD: Chlorite (EPA Meth										dings are noted in attached
ne s valida	ampies listed below were tion findings worksheets.		ewed for eac	on or the re	Jiiowirig	vallu	alion area	25. VC	alluation	11110	unigs are noted in attached
	Validation	Area							Comme	nts	
l.	Technical holding times			A	Samplin	g dates	s: 11 <u> </u> 1	5	57		
lla.	Initial calibration			Δ							
IIb.	Calibration verification			SWO/Y							
III.	Blanks			٨							
IV	Matrix Spike/Matrix Spike D	uplicat	es	Α	ZMS	/M	31)				
V	Duplicates			2)						
VI.	Laboratory control samples			_ A	LLS						
VII.	Sample result verification			A							
VIII.	Overall assessment of data			_ A							
IX.	Field duplicates			3W		3+4					<u> </u>
x	Field blanks			Sw	2=1	Rinse	at 2	(f.,	~ Ial	لاا	433)
Note: √alidat	A = Acceptable N = Not provided/applicable SW = See worksheet ed Samples:	Ai	R = Rin: FB = Fie	o compounds sate eld blank	s detected	d	D = Duj TB = Tr EB = Ed	ip blar			
1	TSB-DR-06-0'	11	TSB-DR-04-0	1	21				3	11	
2	TSB-DR-06-10'	12	TSB-DR-04-1	-	22	:			3	2	
3	TSB-DR-05-0'	13	TSB-DR-03-0		23				3	3	
4	TSB-DR-05-0'-FD	14	TSB-DR-03-0						3	4	
5	TSB-DR-05-10'	15	PB		25	j			3	5	
6	TSB-DR-03-0'	16			26				3	6	
7	TSB-DR-03-0'MS/MSD	17			27	,			3	7	

Notes:	300.1	s w	

TSB-DR-03-10'

TSB-DJ-01-0'

TSB-DJ-01-10'

Page: __of_2 Reviewer: _____ 2nd Reviewer: _____

Method:Inorganics (EPA Method Suc (now)				
Validation Area	Ye	в Но	NA	Findings/Comments
8. Technical holding times:				
All technical holding times were met.				
Coolor temporature criteria was met.				
II. Callbiation				
Were all instruments calibrated daily, each set-up time?	1			
Were the proper number of standards used?				
Were all initial calibration correlation coefficients > 0.995?	1-			
Were all initial and continuing calibration verification %Rs within the 90-110% QC limits?	Van	W		Pt-1157. + 310-1
Were titrant checks performed as required? (Level IV only)			_	
Were balance checks performed as required? (Level IV only)			_	
tub Blanks Stein, Stein Stein, St. 1889 - Stein Stein Stein St. 1889 - St. 1889				
Was a method blank associated with every sample in this SDG?				
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.				·
IV:Maux:spike/Matrixispike dupiicates and ouplicates				
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water,				
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.	/			
Nere the MS/MSD or duplicate relative percent differences (RPD) ≤ 20% for vaters and ≤ 35% for soil samples? A control limit of \leq CRDL(\leq 2X CRDL for soil) was used for samples that were \leq 5X the CRDL, including when only one of the luplicate sample values were \leq 5X the CRDL.				
Laboratory control samples:				
/as an LCS anayized for this SDG?	-			
/as an LCS analyzed per extraction batch?				
/ere the LCS percent recoveries (%R) and relative percent difference (RPD) ithin the 80-120% (85-115% for Method 300.0) QC limits?	1			
Regional Quality Assurance and Quality Control				
ere performance evaluation (PE) samples performed?				The state of the s
ere the performance evaluation (PF) samples within the acceptance limits?		1		

VALIDATION FINDINGS CHECKLIST

Page: 2 of 2
Reviewer: 44
2nd Reviewer: 4

	T			
Validation Area	Yes	No	NA	Findings/Comments
vil. Sample Result Werification				
Were RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	/			7,000,000
Were detection limits < RL?	/			
VIII Overall assessment of delating at 1997.				
Overall assessment of data was found to be acceptable.	/			
ix rielkdunicales (g. 1988)				
Field duplicate pairs were identified in this SDG.	/			
Target analytes were detected in the field duplicates.	1			
Karrieldiblanks)				
ield blanks were identified in this SDG.	1		T	
arget analytes were detected in the field blanks.	1			

LDC #: 18036 36 SDG #: Dak 1480

VALIDATION FINDINGS WORKSHEET Sample Specific Analysis Reference

Page:	of
Reviewer:_	
2nd reviewer:_	

All circled methods are applicable to each sample.

Sample ID	Parameter
1-12	PH TDS CI F NO, NO, SO, PO, ALK CN' NH, TKN TOC (R) (Chia.)
	PH TDS CI F NO, NO, SO, PO, ALK CN' NH, TKN TOC CRS+
13-14	ph tos ci f no, no, so, po, alk ch nh, tkn toc crot (chinit)
	PH TDS CI F NO, NO, SO, PO, ALK CN' NH, TKN TOC CR"+
	PH TDS CI F NO, NO, SO, PO, ALK CN' NH, TKN TOC CR6+
·	ph tos ci f no, no, so, po, alk cn nh, tkn toc cr
	PH TDS CI F NO, NO, SO, PO, ALK CN' NH, TKN TOC CR8+
	ph tds ci f no, no, so, po, alk cn nh, tkn toc cre+
	PH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN' NH ₃ TKN TOC CR ⁵⁺
	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN' NH3 TKN TOC CRS+
	ph tds ci f No _s No ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁵⁺
_	ph TDS CI F NO, NO, SO, PO, ALK CN' NH, TKN TOC CR°+
	ph tos cif No, No, so, Po, alk cn NH, tkn toc crs+
	PH TDS CI F NO, NO, SO, PO, ALK CN NH, TKN TOC CRO+
	PH TDS CLF NO ₃ NO ₂ SO ₄ PO ₄ ALK CN' NH ₃ TKN TOC CR ⁸⁺
	PH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺
	PH TDS CI F NO, NO, SO, PO, ALK CN NH, TKN TOC CRS+
	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CRS+
	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR5+
	ph TDS CI F NO _s NO ₂ SO ₄ PO ₄ ALK CN' NH ₃ TKN TOC CR ⁸⁺
	ph TDS CI F NO, NO, SO, PO, ALK CN' NH, TKN TOC CR°+
·	PH TDS CI F NO, NO, SO, PO, ALK CN' NH, TKN TOC CRS+
	PH TDS CI F NO, NO, SO, PO, ALK CN' NH, TKN TOC CRS+
	PH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN' NH ₃ TKN TOC CR ⁹⁺
	ph TDS CI F NO, NO, SO, PO, ALK CN NH, TKN TOC CR8+

Comments:	i r,	•	
		 	

METHODS.6

LDC #: 1803 6 0 G SDG #: IBKINGO

VALIDATION FINDINGS WORKSHEET

Field Blanks

2nd Reviewer:

Page: of Reviewer: 221

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		(

METHOD: Inorganics, EPA Method

Note field blanks identified in this SDG?

Note target analytes detected in the field blanks? (© N N/A Were field © N N/A Were targing of the second of

(W P V PL Associated Samples: Blank units: mg /L Associated sample units: mg /L Sampling date: 11 13 | 57 Soil factor applied Field blank / Rinsate / Other:

		·								
-										
tification									3S:	
Sample Identification									Associated Samples:	
									Assoc	
							S:	applied	> / Other:	
			·				sample unit	Soil factor	lank / Rinsati	
Blank	Umit	0.3563					Associated		ne) Field B	
Blank ID	Sirant 2	D.0046 0:353					,	e:	/pe: (circle c	
Analyte	3	C. 6. 1					lank units:	ampling dat	ield blank type: (circle one) Field Blank / Rinsate / Other:	

Sample Identification Blank Action Limit Blank ID Analyte

HECLED 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".

LDC #: 18036DG SDG #: IGKINS

VALIDATION FINDINGS WORKSHEET Surrogate Recovery

2nd Reviewer: Reviewer:

METHOD: Chlorite (EPA 300.1)

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".

Were surrogates spiked into all samples and blanks?

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

F									The state of the s
#	Date	Lab ID/Reference	ference	Column	Surrogate Compound	%R (Limits)		Associated Samples	Qualifications
H		7			٧	80.88 (90	90-115)	T	5 - F-3 - F
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\neg)	_		
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\exists)	^		
\neg)	(
))		
	Letter Designation	gnation	Surrogate Compound	Compound	Recover	Recovery QC Limits (Soil)	Œ	Recovery QC Limits (Water)	Comments
	¥		Dichloroacetate						
	В								

LDC#:<u>18036D6</u> SDG#:<u>See Cover</u>

VALIDATION FINDINGS WORKSHEET

Field Duplicates

Page:_	of
Reviewer:_	B1
2nd Reviewer:_	<u> </u>

Inorganics, Method See Cover

ØN NA WN NA Were field duplicate pairs identified in this SDG?
Were target analytes detected in the field duplicate pairs?

	Concentrat	ion (mg/Kg)	hilleren
Analyte	3	4	RPD
Chromium VI	1.0U	1.3	200-3(=10)

V:\FIELD DUPLICATES\FD_inorganic\18036D6.wpd

LDC #: 1 Pv 3 c D 6 SDG #: IA K 1480

VALIDATION FINDINGS WORKSHEET Initial and Continuing Calibration Calculation Verification

Page: of Reviewer: A 2nd Reviewer:

METHOD: Inorganics, Method

The correlation coefficient (i) for the calibration of __

An initial or continuing calibration verification percent recovery (%R) was recalculated for each type of analysis using the following formula: was recalculated. Calibration date: 11 | 21

Found = concentration of each analyte measured in the analysis of the ICV or CCV solution True = concentration of each analyte in the ICV or CCV source Where,

%R = Found x 100

	-						
Type of Analysis	Analyte		(3) (2)		Recalculated	Reported	
	nai) va		Conc (units)	Are (units)	r or %R	ror %D	Acceptable
Initial calibration		Blank	О	Q			(A/N)
Calibration verification		Standard 1	0.01	0.60			
		Standard 2	0.025	8.0.0			
	;	Standard 3	9.1	7.50			
		Standard 4	N.0	7.00	0.999973	0.99997	Τ
		Standard 5					
		Standard 6					
		Standard 7					
Calibration verification							
	ئ ى ك	0.30469	n o	·	101.67	21.2	7
Calibration verification						<u> </u>	_
	Chlrit	93. 7350	000		93.7.1.	014	ナ
Calibration varification						¥ 2.	_

Comments: Refer to Calibration Verification findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 18036 DC SDG #: 12 × 1450

VALIDATION FINDINGS WORKSHEET Level IV Recalculation Worksheet

Page: 1 of Reviewer: A 2nd Reviewer:

METHOD: Inorganics, Method

Percent recoveries (%R) for a laboratory control sample and a matrix spike sample were recalculated using the following formula:

Where, %R = Found x 100

Found =

True =

concentration of each analyte <u>measured</u> in the analysis of the sample. For the matrix spike calculation, Found = SSR (spiked sample result) - SR (sample result). concentration of each analyte in the source.

A sample and duplicate relative percent difference (RPD) was recalculated using the following formula:

 $RPD = \underbrace{1S-D_1}_{(S+D)/2} \times 100 \text{ Where,}$

‼ Ⅱ S Q

Original sample concentration Duplicate sample concentration

	-		Found / S	7 and	Recalculated	Reported	
Sample IU	Type of Analysis	Element	(units)	(anits)	%R / RPD	%R/RPD	Acceptable (Y/N)
	Laboratory control sample						
7420143-851		;)	0.35838	1.0	89.6%	90.1	ア
-	Matrix spike sample		(00-00)				
7K19101-452		Chlorit	,	6		õ	•
			10111)	<i>:</i>		Τ
	Duplicate sample						
7619101-ASDZ		Chlair	ph20.74	\$ 1.1402	1/2	Ь	7
							7

Comments: Refer to appropriate worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated

TOTCLC.6

LDC #: 130360 C SDG #: Takinh

VALIDATION FINDINGS WORKSHEET

Sample Calculation Verification

Page:	of
Reviewer:	N
2nd reviewer:	.,_

		2nd reviewer:
METHOD: Inor	ganics, Method _ Su Con	
Please see qua N N N/A N N/A N N/A N N/A	difications below for all questions answered "N". Not applicable question Have results been reported and calculated correctly? Are results within the calibrated range of the instruments? Are all detection limits below the CRQL?	s are identified as "N/A".
Compound (and	alyte) results forrep	corted with a positive detect were
recalculated an	d verified using the following equation:	·
Concentration =	Recalculation:	
C-6+	= (0.03315m/L) (50mL)(10) = 1.326m/g = 1.326	7 /kg

	#	Sample ID	Analyte	Reported Concentration (~1/4)	Calculated Concentration	Acceptable (Y/N)
		4	Cr6+	1.3	1.326	7
L						
L						
					·	
L						
L						
L						
\Vdash						
F						
L						
L	_					
L						·
-	_					
-	\dashv					
\Vdash	_					
L	_				·	
L						

Note:		·	
		,	

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

BRC Tronox Parcel C/D/F/G

Collection Date:

November 13, 2007

LDC Report Date:

January 8, 2008

Matrix:

Soil

Parameters:

Wet Chemistry

Validation Level:

EPA Level III

Laboratory:

TestAmerica, Inc.

Sample Delivery Group (SDG): IQK1509

Sample Identification

TSB-CR-04-0'

TSB-CR-04-10'

TSB-CR-05-0'

TSB-CR-05-10'

TSB-CR-06-0'

TSB-CR-06-10'

TSB-CR-04-0'MS

TSB-CR-04-0'MSD

Introduction

This data review covers 8 soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 300.1 for Chlorite and EPA SW 846 Method 7196A for Hexavalent Chromium.

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 X.

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.

Sample "RINSATE 2" (from SDG IQK1433) 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 2	11/13/07	Hexavalent chromium	0.0046 mg/L	All samples in SDG IQK1509

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

IV. Surrogate Recovery

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

V. 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.

VI. Duplicates

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

VII. Laboratory Control Samples

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

VIII. Sample Result Verification

Raw data were not reviewed for this SDG.

IX. Overall Assessment of Data

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

X. Field Duplicates

No field duplicates were identified in this SDG.

BRC Tronox Parcel C/D/F/G Wet Chemistry - Data Qualification Summary - SDG IQK1509

No Sample Data Qualified in this SDG

BRC Tronox Parcel C/D/F/G Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG IQK1509

No Sample Data Qualified in this SDG

BRC Tronox Parcel C/D/F/G Wet Chemistry - Field Blank Data Qualification Summary - SDG IQK1509

No Sample Data Qualified in this SDG

SDG#	:18036E6 #:IQK1509 atory:_Test America	_ VALI - 	DATIO		PLETEN Level III		S WORKSHE	ET	Date: 1 3 0 1 Page: 1 of 1 Reviewer: 21 2nd Reviewer: 2
METH	IOD: Chlorite (EPA Met	hod 300.	1), Hexa	valent Chr	omium (I	ΞΡΑ	SW846 Method	7196A)	
	amples listed below wer tion findings worksheets		ed for ea	ch of the f	ollowing	valid	ation areas. Vali	dation find	lings are noted in attached
	Validation	n Area					Co	omments	
I.	Technical holding times			Α	Sampling	dates	5: 11 13 07		
IIa.	Initial calibration			A					
IIb.	Calibration verification			Α_					
III.	Blanks			A					
IV	Matrix Spike/Matrix Spike [Duplicates		A	3 m	5/	MSS		
V	Duplicates			2					
VI.	Laboratory control samples	3		A_	LCS				
VII.	Sample result verification			N					
VIII.	Overall assessment of data	a		A					
IX.	Field duplicates			12					
X	Field blanks			٤ω	R. R	insa	. L 2 (from	. IQKI	433)
Note: Validate	A = Acceptable N = Not provided/applicab SW = See worksheet ed Samples:	le u so	R = Rin FB = Fi	o compound isate eld blank	ds detected	100.00	D = Duplicate TB = Trip blank EB = Equipmen		
1	TSB-CR-04-0'	11			21			31	
2	TSB-CR-04-10'	12			22			32	
	TSB-CR-05-0'	13		-	23			33	
4	TSB-CR-05-10'	14			24			34	
5	TSB-CR-06-0'	15			25			35	
6	TSB-CR-06-10'	16			26			36	
7	TSB-CR-04-0'MS	17			27			37	
8	TSB-CR-04-0'MSD	18			28			38	
9	PB	19			29			39	

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Surr: A

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LDC #: 1803 6 EG SDG #: I 2 K1509

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VALIDATION FINDINGS WORKSHEET Sample Specific Analysis Reference

Page:_	<u>\</u> of <u>\</u>
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All circled methods are applicable to each sample.

	Parameter
Sample ID	
1-6	ph 103 Ct F 103 102 004 104 7/21 011 1113
	PH TDS CLE NO NO SO PO ALK CN NH, TKN TOC CR ⁶⁺
8-F	ph 103 of 1 No ₃ No ₂ co ₄ 1 o ₄ / mix of 1 mg
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR°+
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN' NH ₃ TKN TOC CR ⁶⁺
	ph TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+
	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+
	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN' NH3 TKN TOC CR8+
	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN' NH3 TKN TOC CR6+
	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR8+
	PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR8+
	ph tds ci f no3 no2 so4 po4 alk cn. nh3 tkn toc cr6+
	pH TDS CI F NO3 NO2 SO4 PO4 ALK CN' NH3 TKN TOC CR8+
	ph tds ci f no3 no2 so4 po4 alk cn. nh3 tkn toc cr8+
	ph tds ci f No ₃ No ₂ So ₄ Po ₄ Alk Cn Nh ₃ TKN TOC CR ⁸⁺
	pH TDS CI F NO3 NO2 SO4 PO4 ALK CN' NH3 TKN TOC CR8+
	PH TDS CI F NO, NO, SO, PO, ALK CN NH, TKN TOC CR8+
	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN' NH3 TKN TOC CR8+
	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN' NH3 TKN TOC CR6+
	PH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN' NH ₃ TKN TOC CR ⁸⁺
	PH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺
	PH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺
	ph tds ci f No ₃ No ₂ So ₄ Po ₄ Alk CN NH ₃ TKN TOC CR ⁶⁺
	PH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺
	pH TDS CI F NO, NO, SO, PO, ALK CN NH, TKN TOC CR6+

Comments:	34	

LDC #: 18 03 6 EL SDG #: I Q K 1509

VALIDATION FINDINGS WORKSHEET

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Associated Samples: Were target analytes detected in the field blanks? Associated sample units: ma | k Sampling date: 11/13 | 54 Soil factor applied Field blank type: (circle one) Field Blank / Alfreds / Other: Were field blanks identified in this SDG? METHOD: Inorganics, EPA Method

(**O N N/A**) Were field blanks ide

(**O N N/A**) Were target analytes

Elank units: **N Associated

Analyte	Blank ID	Blank				Sample Identification	ntification			
	Rinsak2	Action Limit								
C. C.	D.0046 0000	2							·	
			·							
Blank units: Sampling da	ate:	Associated samp	d sample units:	s: applied						
Field blank	type: (circle (one) Field	Field blank type: (circle one) Field Blank / Rinsate / Other:	/ Other:	Assor	Associated Samples:_	les:			

Analyte Blank ID Bl	Blank Action Limit		Sample Identification	tification		
	Action Limit					

CHCLED 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".

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

BRC Tronox Parcel C/D/F/G

Collection Date:

November 12, 2007

LDC Report Date:

January 7, 2008

Matrix:

Soil

Parameters:

Wet Chemistry

Validation Level:

EPA Level III

Laboratory:

TestAmerica, Inc.

Sample Delivery Group (SDG): IQK1512

Sample Identification

TSB-CR-03-0'

TSB-CR-03-10'

TSB-CJ-05-0'

TSB-CJ-05-10'

TSB-CJ-06-0'

TSB-CJ-06-0'-FD

TSB-CJ-06-10'

TSB-CR-03-0'MS

TSB-CR-03-0'MSD

Introduction

This data review covers 9 soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 300.1 for Chlorite and EPA SW 846 Method 7196A for Hexavalent Chromium.

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 X.

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.

No field blanks were identified in this SDG.

IV. Surrogate Recovery

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

V. 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.

VI. Duplicates

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

VII. Laboratory Control Samples

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

VIII. Sample Result Verification

Raw data were not reviewed for this SDG.

IX. Overall Assessment of Data

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

X. Field Duplicates

Samples TSB-CJ-06-0' and TSB-CJ-06-0'-FD were identified as field duplicates. No contaminant concentrations were detected in any of the samples.

BRC Tronox Parcel C/D/F/G
Wet Chemistry - Data Qualification Summary - SDG IQK1512

No Sample Data Qualified in this SDG

BRC Tronox Parcel C/D/F/G
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG IQK1512

No Sample Data Qualified in this SDG

BRC Tronox Parcel C/D/F/G Wet Chemistry - Field Blank Data Qualification Summary - SDG IQK1512

No Sample Data Qualified in this SDG

SDG ;	#: <u>18036F6</u> #: <u>IQK1512</u> ratory: <u>Test America</u>	_ VAL 	.IDATIOI		PLETEN Level II		S WORKSHE	ET	Page: ١ و د اله
VIETH	HOD: Chlorite (EPA Met	thod 30(J.1), Hexa	valent Chr	romium (EPA S	W846 Method	7196A)	
Γhe s ∕alida	amples listed below wer tion findings worksheets	re reviev s.	wed for ea	ch of the f	following	valida	tion areas. Valid	dation findi	ings are noted in attached
	Validation	n Area					Co	mments	
I.	Technical holding times			A	Sampling	ي dates:	11/12/07	+	
lla.	Initial calibration			_ A_					
Ilb.	Calibration verification			L_A_					
111.	Blanks			A					
IV	Matrix Spike/Matrix Spike I	Duplicate	s	A	13 Ms	Im	2 12		
V	Duplicates			2		,			
VI.	Laboratory control samples	<u>s</u>		A	LLS				
VII.	Sample result verification			N					
VIII.	Overall assessment of dat	ta		A					
IX.	Field duplicates			ND	D : S	<u>ما + 5</u>			
_x	Field blanks			7					
Note: Validat	A = Acceptable N = Not provided/applicab SW = See worksheet ted Samples:		R = Rin	No compound nsate iield blank	ds detected		D = Duplicate TB = Trip blank EB = Equipment		
1	TSB-CR-03-0'	11			21			31	
2	TSB-CR-03-10'	12			22			32	
3	TSB-CJ-05-0'	13	1		23			33	
4	TSB-CJ-05-10'	14			24			34	
5	TSB-CJ-06-0'	15	1		25	,		35	
6	TSB-CJ-06-0'-FD	16	i		26	, <u> </u>		36	
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A	Dhrv : A	<u> 300.\</u>	→Notes:_
		•	

TSB-CR-03-0'MS

TSB-CR-03-0'MSD

LDC #: 18036 FG SDG #: Tak1512

VALIDATION FINDINGS WORKSHEET Sample Specific Analysis Reference

Page: ___ of __ Reviewer: ______ 2nd reviewer: ______

All circled methods are applicable to each sample.

	Parameter
Sample ID	
1-7	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR CLICIAN
	PH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN' NH ₃ TKN TOC CR ⁶⁺
8-9	PH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺
	PH TDS CIF NO3 NO2 SO4 PO4 ALK CN'NH3 TKN TOC CR°+
	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN' NH3 TKN TOC CR8+
	PH TDS CIF NO3 NO2 SO4 PO4 ALK CN'NH3 TKN TOC CR8+
	ph tds ci f NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺
	ph tds cif no, no, so, po, alk cn nh, tkn toc cr the
	pH TDS CI F NO3 NO2 SO4 PO4 ALK CN' NH3 TKN TOC CR6+
	ph tds cif No ₃ No ₂ So ₄ Po ₄ Alk cn Nh ₃ TKN toc CR ⁸⁺
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺
	PH TDS CI F NO, NO, SO, PO, ALK CN' NH, TKN TOC CR6+
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN' NH ₃ TKN TOC CR ⁶⁺
	PH TDS CI F NO, NO, SO, PO, ALK CN' NH, TKN TOC CR8+
	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN' NH3 TKN TOC CR6+
	ph tds ci f No3 No2 SO4 PO4 ALK CN' NH3 TKN TOC CR8+
	pH TDS CI F NO3 NO2 SO4 PO4 ALK CN' NH3 TKN TOC CR8+
	ph tds ci f NO3 NO2 SO4 PO4 ALK CN' NH3 TKN TOC CR8+
	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN' NH3 TKN TOC CR8+
	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR8+
	ph tds ci f No ₃ No ₂ So ₄ Po ₄ Alk CN NH ₃ TKN TOC CR ⁶⁺
	ph tds ci f No ₃ No ₂ So ₄ Po ₄ Alk Cn NH ₃ TKN TOC CR ⁶⁺
	PH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁸⁺
	ph TDS CI F NO, NO, SO, PO, ALK CN NH, TKN TOC CR6+

Comments:	

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

BRC Tronox Parcel C/D/F/G

Collection Date:

November 12, 2007

LDC Report Date:

January 7, 2008

Matrix:

Soil

Parameters:

Wet Chemistry

Validation Level:

EPA Level III

Laboratory:

TestAmerica, Inc.

Sample Delivery Group (SDG): IQK1514

Sample Identification

TSB-CJ-02-0'

TSB-CJ-02-10'

TSB-CJ-01-0'

TSB-CJ-01-10'

TSB-CJ-01-0'-FD

TSB-CR-02-0'

TSB-CR-02-10'

TSB-CR-01-0'

TSB-CR-01-0'-MS/MSD

TSB-CR-01-10'

TSB-CR-01-0'-MS/MSDMS

TSB-CR-01-0'-MS/MSDMSD

Introduction

This data review covers 12 soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 300.1 for Chlorite and EPA SW 846 Method 7196A for Hexavalent Chromium.

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 X.

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.

No field blanks were identified in this SDG.

IV. Surrogate Recovery

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

V. 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.

VI. Duplicates

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

VII. Laboratory Control Samples

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

VIII. Sample Result Verification

Raw data were not reviewed for this SDG.

IX. Overall Assessment of Data

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

X. Field Duplicates

Samples TSB-CJ-01-0' and TSB-CJ-01-0'-FD were identified as field duplicates. No contaminant concentrations were detected in any of the samples.

BRC Tronox Parcel C/D/F/G
Wet Chemistry - Data Qualification Summary - SDG IQK1514

No Sample Data Qualified in this SDG

BRC Tronox Parcel C/D/F/G
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG IQK1514

No Sample Data Qualified in this SDG

BRC Tronox Parcel C/D/F/G Wet Chemistry - Field Blank Data Qualification Summary - SDG IQK1514

No Sample Data Qualified in this SDG

SDG#	:18036G6 t:IQK1514 atory:_Test America	VA 	LIDATION		LETI _evel		ESS WORKS	SHEET	Date: 1/1/0 Page: _, of _ Reviewer:
The sa	OD: Chlorite (EPA Methormoles listed below were ion findings worksheets.	e revie	• .			·			dings are noted in attached
	Validation	Area						Comments	
1.	Technical holding times			A	Sampl	ling d	ates: 11 12	107	
lla.	Initial calibration			A				`	
Ilb.	Calibration verification			A					
III.	Blanks			A	<u>_</u>				
IV	Matrix Spike/Matrix Spike Du	uplicat	es		17.	Ms	MSD		
	Duplicates			2)				
VI.	Laboratory control samples			A	LC	2,			
VII.	Sample result verification			N					
VIII.	Overall assessment of data				<u> </u>				
IX.	Field duplicates			ND	<i>p</i> :	: 3 -	+5		
Lx_	Field blanks			2	<u> </u>				
Note: Validate	A = Acceptable N = Not provided/applicable SW = See worksheet ed Samples:	e (&	R = Rin: FB = Fid	lo compounds nsate ield blank	s detec	ted	D = Duplic TB = Trip I EB = Equi _l		
1 -	TSB-CJ-02-0'		TSB-CR-01-0	O' MS/MSDM!		21		31	
	TSB-CJ-02-0'	12		0'-MS/MSDMS		22		32	
\vdash	TSB-CJ-01-0' ►	13	PB	7-1410/		23		33	
	TSB-CJ-01-10'	14	`		T	24		34	
1	TSB-CJ-01-0'-FD ^D	15				25	-	35	
	TSB-CR-02-0'	16				26		36	
	TSB-CR-02-10'	17				27		37	

Notes:	300.1	Show i	Α	
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TSB-CR-01-0'

TSB-CR-01-10'

TSB-CR-01-0'-MS/MSD

LDC #: 18036 G 6 SDG #: IQUISIM

VALIDATION FINDINGS WORKSHEET Sample Specific Analysis Reference

Page:_	1	_of_	
Reviewer:		AL	
2nd reviewer:			

All circled methods are applicable to each sample.

Samula ID	Parameter
Sample ID	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN' NH ₃ TKN TOC (B) (CL) - 1+
1-10	ph TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺
11-12	
	PH TDS CLF NO, NO, SO, PO, ALK CN' NH, TKN TOC CR°+
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN' NH ₃ TKN TOC CR ⁶⁺
	ph tos ci f no ₃ no ₂ so ₄ po ₄ alk cn nh ₃ tkn toc cr ⁶⁺
	ph tds ci f No ₃ No ₂ so ₄ Po ₄ Alk cn NH ₃ TKN TOC CR ⁶⁺
	ph tos ci f no ₃ no ₂ so ₄ po ₄ alk cn nh ₃ tkn toc cr ⁶⁺
	PH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺
	PH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺
	ph tds ci f No ₃ No ₂ So ₄ Po ₄ Alk cn Nh ₃ TKN toc CR ⁵⁺
	PH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺
	ph TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺
	PH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺
	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR8+
	PH TDS CIF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+
	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR8+
	PH TDS CIF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR8+
	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN' NH3 TKN TOC CR8+
	PH TDS CLF NO3 NO2 SO4 PO4 ALK CN' NH3 TKN TOC CR8+
	PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR8+
	ph TDS CI F NO3 NO2 SO4 PO4 ALK CNT NH3 TKN TOC CR8+
	PH TDS CIF NO, NO, SO, PO, ALK CN NH, TKN TOC CR6+
	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR8+
	ph TDS CLF NO, NO, SO, PO, ALK CN NH, TKN TOC CR6+

Comments:	
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Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

BRC Tronox Parcel C/D/F/G

Collection Date:

November 14, 2007

LDC Report Date:

January 7, 2008

Matrix:

Soil

Parameters:

Wet Chemistry

Validation Level:

EPA Level III

Laboratory:

TestAmerica, Inc.

Sample Delivery Group (SDG): IQK1726

Sample Identification

TSB-DR-01-0'

TSB-DR-01-10'

TSB-DR-02-0'

TSB-DR-02-0'-FD

TSB-DR-02-10'

JB-NWDITCH-01-0'

JB-NWDITCH-01-10'

Introduction

This data review covers 7 soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 300.1 for Chlorite and EPA SW 846 Method 7196A for Hexavalent Chromium.

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 X.

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.

No field blanks were identified in this SDG.

IV. Surrogate Recovery

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

V. 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.

VI. Duplicates

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

VII. Laboratory Control Samples

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

VIII. Sample Result Verification

Raw data were not reviewed for this SDG.

IX. Overall Assessment of Data

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

X. Field Duplicates

Samples TSB-DR-02-0' and TSB-DR-02-0'-FD were identified as field duplicates. No contaminant concentrations were detected in any of the samples.

BRC Tronox Parcel C/D/F/G
Wet Chemistry - Data Qualification Summary - SDG IQK1726

No Sample Data Qualified in this SDG

BRC Tronox Parcel C/D/F/G Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG IQK1726

No Sample Data Qualified in this SDG

BRC Tronox Parcel C/D/F/G
Wet Chemistry - Field Blank Data Qualification Summary - SDG IQK1726

No Sample Data Qualified in this SDG

DC #: 18036H6 VAL SDG #: IQK1726 aboratory: Test America			LIDATION COMPLETENESS WORKSHEET Level III							Page: \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	
The sa	OD: Chlorite (EPA Met amples listed below wertion findings worksheets	re revie	·							ings are noted in attached	
	Validation	<u>ı Area</u>			 	Comments					
<u> </u>	Technical holding times			A	Sampl	Sampling dates: ١١ ١੫ ᠪᠯ					
Ila.	Initial calibration			Α							
IIb.	Calibration verification			_A_							
III.	Blanks				<u> </u>						
IV	Matrix Spike/Matrix Spike Duplicates			A_	13_	fra	Lauis	214 E3	417	28 Tak1873	
V	Duplicates			2	<u> </u>					•	
VI.	Laboratory control samples		A	ردع	<u>s</u>						
VII.	Sample result verification			N	<u> </u>						
VIII.	Overall assessment of data			A							
IX.	Field duplicates			ND	1):	D:3+4					
x	Field blanks			2		*****					
Note: Validate	A = Acceptable N = Not provided/applicab SW = See worksheet ed Samples:		R = Rin	o compound sate eld blank	ds detec	ted	D = Dupl TB = Trip EB = Equ		(
1	TSB-DR-01-0'	11				21			31		
	TSB-DR-01-10'	12				22			32		
	TSB-DR-02-0'	13				23			33		
	TSB-DR-02-0'-FD	14				24			34		
5	TSB-DR-02-10'	15				25			35		
6	JB-NWDITCH-01-0'	16				26			36		
7	JB-NWDITCH-01-10'	17				27			37		
8	PB	18				28	ı		38		

Notes: <u>300.1</u>

LDC #: 1803646 SDG #: takith

VALIDATION FINDINGS WORKSHEET Sample Specific Analysis Reference

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مــــــــــــــــــــــــــــــــــــــ	
	AL

All circled methods are applicable to each sample.

Sample ID	Parameter
1-7	PH TDS CI F NO, NO, SO, PO, ALK CN' NH, TKN TOC CR CLINIT
	PH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN' NH ₃ TKN TOC CR ⁶⁺
	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN' NH3 TKN TOC CR8+
	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CROT
	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR8+
	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+
	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+
	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR8+
	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+
	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR8+
	ph tds cif No3 No2 SO4 PO4 ALK CN NH3 TKN TOC CR8+
	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN' NH3 TKN TOC CR8+
	pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR8+
	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN' NH3 TKN TOC CR8+
	pH TDS CI F NO3 NO2 SO4 PO4 ALK CN' NH3 TKN TOC CR8+
	ph tds cif NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR8+
	PH TDS CIF NO, NO, SO, PO, ALK CN' NH, TKN TOC CR8+
	pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR8+
	ph tds ci f No3 No2 SO4 PO4 ALK CN' NH3 TKN TOC CR6+
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN' NH ₃ TKN TOC CR ⁶⁺
	pH TDS CI F NO3 NO2 SO4 PO4 ALK CN' NH3 TKN TOC CR6+
	pH TDS CI F NO3 NO2 SO4 PO4 ALK CNT NH3 TKN TOC CR6+
	ph tds cif no, no, so, po, alk cn nh, tkn toc cr6+
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺
	pH TDS CI F NO, NO, SO, PO, ALK CN' NH, TKN TOC CR6+

Comments:	

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

BRC Tronox Parcel C/D/F/G

Collection Date:

November 14, 2007

LDC Report Date:

January 8, 2008

Matrix:

Soil

Parameters:

Wet Chemistry

Validation Level:

EPA Level III

Laboratory:

TestAmerica, Inc.

Sample Delivery Group (SDG): IQK1728

Sample Identification

TSB-FR-01-0'

TSB-FR-01-10'

TSB-FFJ-07-0'

TSB-FJ-07-10'

TSB-FJ-06-0'

TSB-FJ-06-0'-FD

TSB-FJ-06-10'

TSB-FJ-05-0'

TSB-FJ-05-10'

TSB-FR-01-0'MS

TSB-FR-01-0'MSD

Introduction

This data review covers 11 soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 300.1 for Chlorite and EPA SW 846 Method 7196A for Hexavalent Chromium.

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 X.

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.

No field blanks were identified in this SDG.

IV. Surrogate Recovery

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

V. Matrix Spike/Matrix Spike Duplicates

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

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
TSB-FR-02-0'MS/MSD (TSB-FJ-05-0' TSB-FJ-05-10')	Chlorite	-	74 (75-125)	-	J- (all detects) UJ (all non-detects)	А

VI. Duplicates

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

VII. Laboratory Control Samples

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

VIII. Sample Result Verification

Raw data were not reviewed for this SDG.

IX. Overall Assessment of Data

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

X. Field Duplicates

Samples TSB-FJ-06-0' and TSB-FJ-06-0'-FD were identified as field duplicates. No contaminant concentrations were detected in any of the samples.

BRC Tronox Parcel C/D/F/G Wet Chemistry - Data Qualification Summary - SDG IQK1728

SDG	Sample	Anaiyte	Flag	A or P	Reason
IQK1728	TSB-FJ-05-0' TSB-FJ-05-10'	Chlorite	J- (all detects) UJ (all non-detects)	А	Matrix spike/Matrix spike duplicates (%R)

BRC Tronox Parcel C/D/F/G
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG IQK1728

No Sample Data Qualified in this SDG

BRC Tronox Parcel C/D/F/G Wet Chemistry - Field Blank Data Qualification Summary - SDG IQK1728

No Sample Data Qualified in this SDG

LDC #: 18036I6	VALIDATION COMPLETENESS WORKSHEET	Date: <u>\ ५ / ठव</u>
SDG #: IQK1728	_ Level III	Page:of
Laboratory: Test America	<u> </u>	Reviewer: 🚜
<u> </u>		2nd Reviewer:

METHOD: Chlorite (EPA Method 300.1), Hexavalent Chromium (EPA SW846 Method 7196A)

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
1.	Technical holding times	A	Sampling dates: ハー・ロート
lla.	Initial calibration	A	
IIb.	Calibration verification	A	
111.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	နယ	(MS/MSD
V	Duplicates	2	,
VI.	Laboratory control samples	A	LLS
VII.	Sample result verification	N	
VIII.	Overall assessment of data	Α	
IX.	Field duplicates	No	D: 5+ 6
x	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:

		A11 30	1:0			
1	TSB-FR-01-0'	11	TSB-FR-01-0'MSD	21	31	
2	TSB-FR-01-10'	12	PB	22	32	
3	TSB-F#J-07-0'	13		23	33	
4	TSB-FJ-07-10'	14		24	34	
5	TSB-FJ-06-0'	15		25	35	
6	TSB-FJ-06-0'-FD	16		26	36	
7	TSB-FJ-06-10'	17		27	37	
8	TSB-FJ-05-0'	18		28	38	
9	TSB-FJ-05-10'	19		29	39	
10	TSB-FR-01-0'MS	20		30	40	

Notes:	3.0.1	S : A		
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LDC #: 18036I6 SDG #: IQL1728

VALIDATION FINDINGS WORKSHEET Sample Specific Analysis Reference

Page:_	of
Reviewer:_	AL
2nd reviewer:_	1~

All circled methods are applicable to each sample.

	Parameter
Sample ID	Parameter
1-9	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN' NH3 TKN TOC CRB (CLIEVE)
	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN' NH3 TKN TOC CR8+
10-11	PH TDS CI F NO, NO, SO, PO, ALK CN' NH, TKN TOC (CR) (CLICIL)
	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CROT
	PH TDS CIF NO3 NO2 SO4 PO4 ALK CN' NH3 TKN TOC CR8+
	ph tds cif no₃ no₂ so₄ po₄ alk cn nh₃ tkn toc cr®+
	PH TDS CIF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR8+
	pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR8+
	pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+
	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+
	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CRS+
	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN' NH3 TKN TOC CR8+
	pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR8+
	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN' NH3 TKN TOC CR8+
	PH TDS CI F NO, NO, SO, PO, ALK CN' NH, TKN TOC CR8+
	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN' NH3 TKN TOC CR6+
	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR8+
	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN' NH3 TKN TOC CR6+
	ph tds ci f No3 No2 SO4 PO4 ALK CN' NH3 TKN TOC CR6+
	PH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN' NH ₃ TKN TOC CR ⁶⁺
	ph tds ci f No ₃ No ₂ so ₄ Po ₄ Alk cn Nh ₃ TKN toc cr ⁶⁺
	ph tds ci f No ₃ No ₂ So ₄ Po ₄ Alk Cn' NH ₃ TKN TOC CR ⁶⁺
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN' NH ₃ TKN TOC CR ⁶⁺
	ph tds ci f No ₃ No ₂ So ₄ Po ₄ Alk Cn' Nh ₃ TKN TOC CR ⁶⁺
	pH TDS CI F NO, NO, SO, PO, ALK CN' NH, TKN TOC CR6+

Comments:	er.	

SDG #: IOKIALX LDC #: 18036 IL

Matrix Spike/Matrix Spike Duplicates VALIDATION FINDINGS WORKSHEET

2nd Reviewer: Page: 1 of 1 ঠ Reviewer:

METHOD: Inorganics, EPA Method_

Were matrix spike percent recoveries (%R) within the control limits of 75-125? If the sample concentration exceeded the spike concentration by a factor K) N/A

of 4 or more, no action was taken. Were all duplicate samples and \leq 35% for soil samples?

Y N MA W.

Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations. Y N MA

GI QSW/SW #	OI C	Matrix	Analyte	MS %Recovery	MSD %Recovery	RPD (Limits)	Associated Samples	Qualifications
15.0	22-0'Ms/	S	Chlorit		T _t		8-9	J- MJ A
	N N	1						
Commonte.								
Collinents.								

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

BRC Tronox Parcel C/D/F/G

Collection Date:

November 15, 2007

LDC Report Date:

January 8, 2008

Matrix:

Water

Parameters:

Wet Chemistry

Validation Level:

EPA Level III

Laboratory:

TestAmerica, Inc.

Sample Delivery Group (SDG): IQK1853

Sample Identification

RINSATE 3 RINSATE 3MS RINSATE 3MSD

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 300.1 for Chlorite and EPA SW 846 Method 7196A for Hexavalent Chromium.

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 X.

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 with the following exceptions:

Sample	Analyte	Total Time From Sample Collection Until Analysis	Required Holding Time From Sample Collection Until Analysis	Flag	A or P
RINSATE 3 RINSATE 3MS RINSATE 3MSD	Hexavalent chromium	30 hrs	24 hrs	J- (all detects) UJ (all non-detects)	P

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.

Sample "RINSATE 3" was identified as a rinsate. No contaminant concentrations were found in this blank.

IV. Surrogate Recovery

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

V. 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.

VI. Duplicates

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

VII. Laboratory Control Samples

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

VIII. Sample Result Verification

Raw data were not reviewed for this SDG.

IX. Overall Assessment of Data

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

X. Field Duplicates

No field duplicates were identified in this SDG.

BRC Tronox Parcel C/D/F/G Wet Chemistry - Data Qualification Summary - SDG IQK1853

SDG	Sample	Analyte	Flag	A or P	Reason
IQK1853	RINSATE 3	Hexavalent chromium	J- (all detects) UJ (all non-detects)	Р	Technical holding times

BRC Tronox Parcel C/D/F/G Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG IQK1853

No Sample Data Qualified in this SDG

BRC Tronox Parcel C/D/F/G Wet Chemistry - Field Blank Data Qualification Summary - SDG IQK1853

No Sample Data Qualified in this SDG

SDG:	#: 18036J6 #: IQK1853 atory: Test America		PLETI Level		SS WORKS	HEET	Date: 1 4 Page: 10f Reviewer: 41		
	HOD: Chlorite (EPA Meth amples listed below were		•					·	ngs are noted in attache
	tion findings worksheets.		JW04 10, CL.		0110 111.	9	idadori arcac.	validation inta	igo aro notos in attasmo
	Validation	Area			ļ			Comments	
<u>I.</u>	Technical holding times			Sω	Sampli	ing da	tes: 11 15	57	
lla.	Initial calibration			А			1		
llb.	Calibration verification			Α					
111.	Blanks			A					
IV	Matrix Spike/Matrix Spike Du	uplicat	es	A	17 m	15/1	MSD		
V	Duplicates	<u>.</u>		2	$\bot \rangle$	•			
VI.	Laboratory control samples			A	Les	<u>. </u>			
VII.	Sample result verification			N					
VIII.	Overall assessment of data			٨					
IX.	Field duplicates			2					
x	Field blanks			20	R=	1			
Note: Validat	A = Acceptable N = Not provided/applicable SW = See worksheet ed Samples:		R = Rin	o compound sate eld blank	ds detect	ed	D = Duplica TB = Trip b EB = Equip	lank	
1	RINSATE 3	11			2	21		31	
2	RINSATE 3MS	12			2	22		32	
3	RINSATE 3MSD	13				23		33	
4	PB	14				24		34	
5		15				25		35	
6		16				26		36	
7		17				27		37	
8		18				28		38	

Notes: 300,1

Sare : A

LDC #: 1803636 SDG #: 1241853

VALIDATION FINDINGS WORKSHEET Sample Specific Analysis Reference

Page: ___of __ Reviewer: ______ 2nd reviewer: _____

All circled methods are applicable to each sample.

	Parameter
Sample ID	PH TDS CI F NO, NO, SO, PO, ALK CN' NH, TKN TOC CR (CLI)
	PH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺
	pH TDS CI F NO ₃ NO ₂ SO ₄ FO ₄ ALK ON NIII ₅ TIST TO CR ⁶⁺ (Ll ₂ (A)
2 - 3	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN' NH ₃ TKN TOC CR ⁶⁺
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN ⁵ NH ₃ TKN TOC CR ⁶⁺
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN' NH ₃ TKN TOC CR ⁶⁺
	ph tds ci f NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁸⁺
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺
	pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR8+
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺
	PH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺
,	PH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN' NH ₃ TKN TOC CR ⁶⁺
	PH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN' NH ₃ TKN TOC CR ⁶⁺
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺
	PH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN' NH ₃ TKN TOC CR ⁶⁺
	ph tds ci f No ₃ No ₂ So ₄ Po ₄ Alk cn' Nh ₃ TKN toc cr ⁶⁺
	ph tds ci f No ₃ No ₂ So ₄ Po ₄ Alk Cn' NH ₃ TKN TOC CR ⁶⁺
	ph tds ci f No ₃ No ₂ So ₄ Po ₄ Alk Cn' NH ₃ TKN TOC CR ⁸⁺
	PH TDS CI F NO, NO, SO, PO, ALK CN NH, TKN TOC CR8+
	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN' NH3 TKN TOC CR6+
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN' NH ₃ TKN TOC CR ⁸⁺
	ph TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN' NH ₃ TKN TOC CR ⁶⁺
	ph tds ci f No ₃ No ₂ So ₄ Po ₄ Alk cn Nh ₃ TKN toc cr ⁶⁺
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺
	PH IDS CIF NO. NO. CO. 102 TO. THE COLUMN

METHODS.6

Comments:_

LDC #: 1803656 SDG #: ILLLE53

VALIDATION FINDINGS WORKSHEET Technical Holding Times

Page:___of_ Reviewer: 2nd reviewer:

All circled dates have exceeded the technical holding time.

Were all samples preserved as applicable to each method?
Were all cooler temperatures within validation criteria?______

Y) N N/A Were all Method:	· 1	7196A					
Parameters:		Cr6+					
Technical holding tin	ne:	24 14.					
	Sampling date	Analysis date	Analysis date	Analysis date	Analysis date	Analysis date	Qualifier
Sample ID				(30	hus)		J-/uj/
1-3	11 15/07	11/10/57		100	1		1
	1315	1917					
							<u> </u>
						<u> </u>	
							<u> </u>

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

BRC Tronox Parcel C/D/F/G

Collection Date:

November 15, 2007

LDC Report Date:

January 8, 2008

Matrix:

Soil

Parameters:

Wet Chemistry

Validation Level:

EPA Level III

Laboratory:

TestAmerica, Inc.

Sample Delivery Group (SDG): IQK1872

Sample Identification

TSB-FJ-03-0'

TSB-FJ-03-0'-FD

TSB-FJ-03-10'

TSB-FJ-10-0'

TSB-FJ-10-10'

TSB-FJ-4-0'

TSB-FJ-4-10'

TSB-FJ-02-0'

TSB-FJ-02-0'-FD

TSB-FJ-02-10'

TSB-FJ-03-0'MS

TSB-FJ-03-0'MSD

Introduction

This data review covers 12 soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 300.1 for Chlorite and EPA SW 846 Method 7196A for Hexavalent Chromium.

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 X.

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.

Sample "RINSATE 3" (from SDG IQK1853) was identified as a rinsate. No contaminant concentrations were found in this blank.

IV. Surrogate Recovery

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

V. Matrix Spike/Matrix Spike Duplicates

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

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
TSB-FR-02-0'MS/MSD (All samples in SDG IQK1872)	Chlorite	·	74 (75-125)	-	J- (all detects) UJ (all non-detects)	А

VI. Duplicates

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

VII. Laboratory Control Samples

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

VIII. Sample Result Verification

Raw data were not reviewed for this SDG.

IX. Overall Assessment of Data

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

X. Field Duplicates

Samples TSB-FJ-03-0'-FD and TSB-FJ-03-0'-FD, and samples TSB-FJ-02-0' and TSB-FJ-02-0'-FD were identified as field duplicates. No contaminant concentrations were detected in any of the samples.

BRC Tronox Parcel C/D/F/G Wet Chemistry - Data Qualification Summary - SDG IQK1872

SDG	Sample	Analyte	Flag	A or P	Reason
IQK1872	TSB-FJ-03-0' TSB-FJ-03-0'-FD TSB-FJ-10-0' TSB-FJ-10-10' TSB-FJ-4-0' TSB-FJ-4-10' TSB-FJ-02-0' TSB-FJ-02-0'-FD TSB-FJ-02-10'	Chlorite	J- (all detects) UJ (all non-detects)	А	Matrix spike/Matrix spike duplicates (%R)

BRC Tronox Parcel C/D/F/G Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG IQK1872

No Sample Data Qualified in this SDG

BRC Tronox Parcel C/D/F/G Wet Chemistry - Field Blank Data Qualification Summary - SDG IQK1872

No Sample Data Qualified in this SDG

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SDG #: IQK1872	Level III	Page
_aboratory:_Test America	<u>-</u>	Reviewe
•		2nd Review

METHOD: Chlorite (EPA Method 300.1), Hexavalent Chromium (EPA SW846 Method 7196A)

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
l	Technical holding times	A	Sampling dates: (1 (17 07
IIa.	Initial calibration	Δ	
IIb.	Calibration verification	A	·
111.	Blanks		
IV	Matrix Spike/Matrix Spike Duplicates	SW	} MS/MSD
V	Duplicates	N	
VI.	Laboratory control samples	A	LLS
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	NO	D.: 1+2 Dz: 8+9
_x	Field blanks	120	R: Ringt 3 (for Iak 1853)

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:

Vanac	A. A.	N	1:02			
1	TSB-FJ-03-0'	11	TSB-FJ-03-0'MS	21	31	
2	TSB-FJ-03-0'-FD	12	TSB-FJ-03-0'MSD	22	32	
3	TSB-FJ-03-10'	13	PB	23	33	
4	TSB-FJ-10-0'	14		24	34	
5	TSB-FJ-10-10'	15		25	35	
6	TSB-FJ-4-0'	16		26	36	
7	TSB-FJ-4-10'	17		27	37	
8	TSB-FJ-02-0'	18		28	38	
9	TSB-FJ-02-0'-FD	19		29	39	
10	TSB-FJ-02-10'	20		30	40	

Notes:_	300.1	Sum:	Ą		
					—

LDC #: 1803 + 46 SDG #: TQ k 1872

QC sample

VALIDATION FINDINGS WORKSHEET Sample Specific Analysis Reference

Page:	<u>of</u>	
Reviewer:_	AL	
2nd reviewer:_	1	

All circled methods are applicable to each sample.

	Parameter.
Sample ID	Parameter
1-10	PH TDS CI F NO, NO, SO, PO, ALK CN' NH, TKN TOC CR (CLINIA)
	ph tds ci f no ₃ no ₂ so ₄ po ₄ alk cn nh ₃ tkn toc cr ⁶⁺
11-12	pH TDS CI F NO, NO, SO, PO, ALK CN' NH, TKN TOC (CR)
	ph tds ci f No3 No2 So4 Po4 Alk cn. NH3 tkn toc cr.
	ph tds cif No3 No2 SO4 PO4 ALK CN' NH3 TKN TOC CR6+
	pH TDS CI F NO3 NO2 SO4 PO4 ALK CN' NH3 TKN TOC CR8+
	pH TDS CI F NO3 NO2 SO4 PO4 ALK CN' NH3 TKN TOC CR8+
	pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR8+
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁵⁺
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN' NH ₃ TKN TOC CR ⁸⁺
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN' NH ₃ TKN TOC CR ⁸⁺
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN' NH ₃ TKN TOC CR ⁶⁺
	ph tds cif No, No, So, Po, Alk CN' NH, TKN toc CR6+
	ph tds ci f No3 No2 SO4 PO4 ALK CN' NH3 TKN TOC CR6+
	PH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN' NH ₃ TKN TOC CR ⁸⁺
	ph tds ci f No ₃ No ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺
	ph tds ci f No3 No2 SO4 PO4 ALK CN' NH3 TKN TOC CR6+
	ph tds ci f No3 No2 SO4 PO4 ALK CN' NH3 TKN TOC CR6+
	ph tds ci f NO ₃ NO ₂ SO ₄ PO ₄ ALK CN' NH ₃ TKN TOC CR ⁶⁺
	ph tds ci f No3 No2 SO4 PO4 ALK CN NH3 TKN TOC CR6+
	ph tds ci f No ₃ No ₂ So ₄ Po ₄ Alk Cn' NH ₃ TKN toc CR ⁶⁺
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺
	ph tds ci f No, No, So, Po, Alk CN NH, TKN TOC CR6+

Comments:	

SDG #: IOK 1872 LDC #: 18036 KL

Matrix Spike/Matrix Spike Duplicates VALIDATION FINDINGS WORKSHEET

Page: 1 of 1 2nd Reviewer: Reviewer:

METHOD: Inorganics, EPA Method

N N/A

Were matrix spike percent recoveries (%R) within the control limits of 75-125? If the sample concentration exceeded the spike concentration by a factor (N)N/A

Were all duplicate sample relative percent differences (RPD) < 20% for water samples and <35% for soil samples? of 4 or more, no action was taken.

Y N M/B We LEVEL IV ONLY:

Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations. N N

l									ſ
#	OI OSW/SW	Matrix	Analyte	MS %Recovery	MSD %Recovery	RPD (Limits)	Associated Samples	Qualifications	
	TSR- FR-02-0'MS		15.15		7+		46	J-/45/A	
	3	9							
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Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

BRC Tronox Parcel C/D/F/G

Collection Date:

November 15, 2007

LDC Report Date:

January 8, 2008

Matrix:

Soil

Parameters:

Wet Chemistry

Validation Level:

EPA Level III

Laboratory:

TestAmerica, Inc.

Sample Delivery Group (SDG): IQK1873

Sample Identification

TSB-FR-02-0'

TSB-FR-02-10'

TSB-FJ-09-0'

TSB-FJ-09-10'

TSB-FR-03-0'

TSB-FR-03-10'

TSB-FR-02-0'MS

TSB-FR-02-0'MSD

Introduction

This data review covers 8 soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 300.1 for Chlorite and EPA SW 846 Method 7196A for Hexavalent Chromium.

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 X.

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.

Sample "RINSATE 3" (from SDG IQK1853) was identified as a rinsate. No contaminant concentrations were found in this blank.

IV. Surrogate Recovery

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

V. Matrix Spike/Matrix Spike Duplicates

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

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
TSB-FR-02-0'MS/MSD (All samples in SDG IQK1873)	Chlorite	-	74 (75-125)	-	J- (all detects) UJ (all non-detects)	А

VI. Duplicates

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

VII. Laboratory Control Samples

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

VIII. Sample Result Verification

Raw data were not reviewed for this SDG.

IX. Overall Assessment of Data

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

X. Field Duplicates

No field duplicates were identified in this SDG.

BRC Tronox Parcel C/D/F/G Wet Chemistry - Data Qualification Summary - SDG IQK1873

SDG	Sample	Analyte	Flag	A or P	Reason
IQK1873	TSB-FR-02-0' TSB-FR-02-10' TSB-FJ-09-0' TSB-FJ-09-10' TSB-FR-03-0' TSB-FR-03-10'	Chlorite	J- (all detects) UJ (all non-detects)	А	Matrix spike/Matrix spike duplicates (%R)

BRC Tronox Parcel C/D/F/G Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG IQK1873

No Sample Data Qualified in this SDG

BRC Tronox Parcel C/D/F/G Wet Chemistry - Field Blank Data Qualification Summary - SDG IQK1873

No Sample Data Qualified in this SDG

SDG #	t: 18036L6 #: IQK1873 atory: <u>Test America</u>	_ VAI 	LIDATIO		PLETE Level		SS WOR	RKSHEE	ΕT	Date: المراب ال
	IOD: Chlorite (EPA Met									"atad in attached
	amples listed below wel		wed for ead	ch of the i	ollowing	g vai	idation are	as. Vallud	ation iiiu	lings are noted in attached
	Validation	n Area						Con	nments	
1.	Technical holding times			Δ	Samplin	ng dat	es: 1\ 1	र य		
lla.	Initial calibration			A						
IIb.	Calibration verification			Α_						
III.	Blanks		:	A	<u> </u>					
IV	Matrix Spike/Matrix Spike	Duplicate	es	SW	17 M	5/	MSD			
V	Duplicates			2						
VI.	Laboratory control sample	es		A	LLS			* u		
VII.	Sample result verification			N						
VIII.	Overall assessment of dat	ta		Δ						
IX.	Field duplicates			2						
x	Field blanks			20	R:	Rin	5at 3	(fm	Iau	(853)
Note: /alidate	A = Acceptable N = Not provided/applicab SW = See worksheet ed Samples:	ble	R = Rin FB = Fi	o compound sate eld blank	ds detecte	ed	TB = ⁻	uplicate Trip blank Equipment l	olank 	
1	TSB-FR-02-0'	11]2	21			31	
	TSB-FR-02-10'	12				22			32	
	TSB-FJ-09-0'	13				23			33	
4	TSB-FJ-09-10'	14				24			34	
5	TSB-FR-03-0'	15			2	25			35	
6	TSB-FR-03-10'	16			2	26			36	
7	TSB-FR-02-0'MS	17			2	27			37	
8	TSB-FR-02-0'MSD	18			2	28			38	

Y_{Notes:} 300.1 Sarr: A

PB

LDC #: 18036 LL SDG #: <u>IQV187</u>3

VALIDATION FINDINGS WORKSHEET Sample Specific Analysis Reference

Page:_	of	1
Reviewer:	A	ļ
2nd reviewer:		_

All circled methods are applicable to each sample.

	Parameter
Sample ID	
1-6	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN' NH3 TKN TOC CRO CLASED
	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN' NH3 TKN TOC CR6+
7-8	pH TDS CI F NO, NO, SO, PO, ALK CN' NH, TKN TOC (F) (CL lange)
	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CROT
	PH TDS CIF NO3 NO2 SO4 PO4 ALK CN' NH3 TKN TOC CR6+
	pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR8+
	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR8+
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁸⁺
	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+
	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR8+
	PH TDS CI F NO, NO, SO, PO, ALK CN' NH, TKN TOC CR°+
	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN' NH3 TKN TOC CR8+
	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR8+
	PH TDS CI F NO, NO, SO, PO, ALK CN' NH, TKN TOC CR8+
	PH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN' NH ₃ TKN TOC CR ⁸⁺
	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+
	PH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁸⁺
	PH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺
	ph tds ci f No3 No2 SO4 PO4 ALK CN' NH3 TKN TOC CR6+
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN' NH ₃ TKN TOC CR ⁶⁺
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN' NH ₃ TKN TOC CR ⁶⁺
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN' NH ₃ TKN TOC CR ⁶⁺
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN' NH ₃ TKN TOC CR ⁶⁺
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺
	pH TDS CI F NO, NO, SO, PO, ALK CN' NH, TKN TOC CR6+
	pri rus or i rios rios cos ros rios rias estadas estad

		•	
Comments:	 		

LDC #: (8036 LC SDG #: IQ 1833

VALIDATION FINDINGS WORKSHEET Matrix Spike/Matrix Spike Duplicates

Page: 1 of 1.
Reviewer: A.L.
2nd Reviewer:

METHOD: Inorganics, EPA Method Su Cov

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A". <u>XDN N/A</u> Was a matrix spike analyzed for each matrix in this SDG?

Were matrix spike percent recoveries (%R) within the control limits of 75-125? If the sample concentration exceeded the spike concentration by a factor Y (N) N/A

of 4 or more, no action was taken. Were all duplicate samples and \leq 35% for soil samples?

Y N NO Were LEVEL IV ONLY:

Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations. V N MOD

				MS	MSD				
*	MS/MSD ID	Matrix	Analyte	%Recovery	%Recovery	RPD (Limits)	Associated Samples	Qualifications	٦٢
	8/t	So	Chlorit		ታተ		AL	J-/M5/A	T
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3	Comments:								
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Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

BRC Tronox Parcel C/D/F/G

Collection Date:

November 16, 2007

LDC Report Date:

January 8, 2008

Matrix:

Water

Parameters:

Wet Chemistry

Validation Level:

EPA Level III

Laboratory:

TestAmerica, Inc.

Sample Delivery Group (SDG): IQK1956

Sample Identification

RINSATE 4

Introduction

This data review covers one water sample listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 300.1 for Chlorite and EPA SW 846 Method 7196A for Hexavalent Chromium.

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 X.

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 with the following exceptions:

Sample	Sample Analyte		Required Holding Time From Sample Collection Until Analysis	Flag	A or P
RINSATE 4	Hexavalent chromium	25 hrs	24 hrs	J- (all detects) UJ (all non-detects)	Р

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.

Sample "RINSATE 4" was identified as a rinsate. No contaminant concentrations were found in this blank.

IV. Surrogate Recovery

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

V. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

VI. Duplicates

The laboratory has indicated that there were no duplicate (DUP) analyses specified for the samples in this SDG, and therefore duplicate analyses were not performed for this SDG.

VII. Laboratory Control Samples

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

VIII. Sample Result Verification

Raw data were not reviewed for this SDG.

IX. Overall Assessment of Data

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

X. Field Duplicates

No field duplicates were identified in this SDG.

BRC Tronox Parcel C/D/F/G Wet Chemistry - Data Qualification Summary - SDG IQK1956

SDG	Sample	Analyte	Flag	A or P	Reason
IQK1956	RINSATE 4	Hexavalent chromium	J- (all detects) UJ (all non-detects)	Р	Technical holding times

BRC Tronox Parcel C/D/F/G Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG IQK1956

No Sample Data Qualified in this SDG

BRC Tronox Parcel C/D/F/G Wet Chemistry - Field Blank Data Qualification Summary - SDG IQK1956

No Sample Data Qualified in this SDG

SDG#	:18036M6 t:IQK1956 atory:_Test America	VAI	LIDATION		PLETE _evel		SS WORKSH	EET	Date: \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \
METH	OD: Chlorite (EPA Metho	od 30	0.1), Hexav	alent Chro	omium	(EP	A SW846 Method	d 7196A)	
Γhe sa ∕alidat	amples listed below were tion findings worksheets.	revie	wed for eac	h of the fo	ollowing	g val	idation areas. Va	ilidation findir	ngs are noted in attached
	Validation	Area					(Comments	
I.	Technical holding times			sw	Sampli	ng da	tes: 11 16 3	7	
IIa.	Initial calibration			Α					
IIb.	Calibration verification			Δ					
III.	Blanks			<u> </u>					
IV	Matrix Spike/Matrix Spike Du	plicate	es	7	30	مناخ	m+ Specifi	مط	
V	Duplicates			2			*		
VI.	Laboratory control samples			A	LCS	<u> </u>			
VII.	Sample result verification			N				AME	
VIII.	Overall assessment of data			A					
IX.	Field duplicates			2					
x	Field blanks			20	R:	1			
Note: Validat	A = Acceptable N = Not provided/applicable SW = See worksheet ed Samples: A IL		R = Rin: FB = Fid	o compound sate eld blank	ds detect	ed	D = Duplicate TB = Trip blar EB = Equipm	nk	
1	RINSATE 4	11				21		31	
2	PB	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	

³Notes: <u>300.\</u>

Surr: A

LDC #: 10036 M6 SDG #: IQK1956

VALIDATION FINDINGS WORKSHEET Sample Specific Analysis Reference

Page:___of___ Reviewer:__d^___ 2nd reviewer:_____

All circled methods are applicable to each sample.

Sample ID	Parameter
(PH TDS CI F NO3 NO2 SO4 PO4 ALK CN' NH3 TKN TOC (R) (CLIMIT)
	PH TDS CI F NO, NO, SO, PO, ALK CN' NH, TKN TOC CR8+
	PH TDS CI F NO, NO, SO, PO, ALK CN NH, TKN TOC CR8+
	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN' NH3 TKN TOC CROT
	PH TDS CI F NO, NO, SO, PO, ALK CN' NH, TKN TOC CR6+
	pH TDS CI F NO3 NO2 SO4 PO4 ALK CN' NH3 TKN TOC CR6+
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺
	pH TDS CI F NO, NO, SO, PO, ALK CN' NH, TKN TOC CR8+
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺
	PH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺
	PH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺
	PH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺
	PH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN' NH ₃ TKN TOC CR ⁶⁺
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN' NH ₃ TKN TOC CR ⁶⁺
	ph TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺
	ph tds ci f No ₃ No ₂ So ₄ Po ₄ Alk Cn' NH ₃ TKN TOC CR ⁶⁺
	PH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN' NH ₃ TKN TOC CR ⁶⁺
	ph tds ci f NO ₃ NO ₂ SO ₄ PO ₄ ALK CN' NH ₃ TKN TOC CR ⁶⁺
	PH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN' NH ₃ TKN TOC CR ⁶⁺
	ph TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN' NH ₃ TKN TOC CR ⁶⁺
	ph TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺
	ph TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺
	PH TDS CI F NO, NO, SO, PO, ALK CN' NH, TKN TOC CR6+

Comments:	

LDC #: 18036ML SDG #: I2 41956

VALIDATION FINDINGS WORKSHEET Technical Holding Times

Page:_	of
Reviewer:_	01
2nd reviewer:_	

All circled dates have exceeded the technical holding time.

Were all samples preserved as applicable to each method?
Were all cooler temperatures within validation criteria?_____

Y) N N/A Were all	Cooler remperar	ures Within Valid					
Method:		7196A					
Parameters:	Cr6+						
Technical holding tin	ne:	24 hrs					
Sample ID	Sampling date	Analysis date	Analysis date	Analysis date	Analysis date	Analysis date	Qualifier
	11/16/2	11/17/07		(25 hr	5)		J-/45/P
	1400	1500					
					·		
·						<u> </u>	
			<u> </u>		 	-	
					 		
				-	<u> </u>	-	-
						<u> </u>	

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

BRC Tronox Parcel C/D/F/G

Collection Date:

November 16, 2007

LDC Report Date:

January 7, 2008

Matrix:

Soil

Parameters:

Wet Chemistry

Validation Level:

EPA Level III

Laboratory:

TestAmerica, Inc.

Sample Delivery Group (SDG): IQK1976

Sample Identification

TSB-FJ-08-0'

TSB-FJ-08-10'

TSB-FR-05-0'

TSB-FR-05-10'

TSB-FR-04-0'

TSB-FR-04-0'-FD

TSB-FR-04-10'

TSB-FJ-08-0'MS

TSB-FJ-08-0'MSD

Introduction

This data review covers 9 soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 300.1 for Chlorite and EPA SW 846 Method 7196A for Hexavalent Chromium.

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 X.

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.

Sample "RINSATE 4" (from SDG IQK1956) was identified as a rinsate. No contaminant concentrations were found in this blank.

IV. Surrogate Recovery

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

V. 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.

VI. Duplicates

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

VII. Laboratory Control Samples

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

VIII. Sample Result Verification

Raw data were not reviewed for this SDG.

IX. Overall Assessment of Data

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

X. Field Duplicates

Samples TSB-FR-04-0' and TSB-FR-04-0'-FD were identified as field duplicates. No contaminant concentrations were detected in any of the samples.

BRC Tronox Parcel C/D/F/G
Wet Chemistry - Data Qualification Summary - SDG IQK1976

No Sample Data Qualified in this SDG

BRC Tronox Parcel C/D/F/G Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG IQK1976

No Sample Data Qualified in this SDG

BRC Tronox Parcel C/D/F/G Wet Chemistry - Field Blank Data Qualification Summary - SDG IQK1976

No Sample Data Qualified in this SDG

SDG#	#:18036N6 #:IQK1976 atory:_Test America	VALIDATIO		PLETENESS WO Level III	RKSHEET	Date: Page: of
The sa	IOD: Chlorite (EPA Metho amples listed below were tion findings worksheets.	e reviewed for eac				indings are noted in attached
	Validation A	<u>Area</u>			Comment	ts
l.	Technical holding times		A	Sampling dates: ۱۱	16/07	
lla.	Initial calibration		A		·	
IIb.	Calibration verification		Α			
III.	Blanks		А			
IV	Matrix Spike/Matrix Spike Du	uplicates	A] MS/NSD		
V	Duplicates		2]		
VI.	Laboratory control samples		A	LLS		
VII.	Sample result verification		N			
VIII.	Overall assessment of data		Α			
IX.	Field duplicates		70	D:5+6		
x	Field blanks		ND	R: Rinsch L	1 (toom I)	ak 1956)
Note:	A = Acceptable N = Not provided/applicable SW = See worksheet ed Samples:	R = Rin	lo compounds nsate ïeld blank	ТВ	Duplicate Trip blank Equipment blank	
V GIIGGE		/\ >				
1 -	TSB-FJ-08-0'	11		21	31	
2	TSB-FJ-08-10'	12		22	32	2
3	TSB-FR-05-0'	13		23	33	3
4	TSB-FR-05-10'	14		24	34	1
I		1 1				

				i
1	TSB-FJ-08-0'	11	21	31
2	TSB-FJ-08-10'	12	22	32
3	TSB-FR-05-0'	13	23	33
4	TSB-FR-05-10'	14	24	34
5	TSB-FR-04-0'	15	25	35
6	TSB-FR-04-0'-FD	16	26	36
7	TSB-FR-04-10'	17	27	37
8	TSB-FJ-08-0'MS	18	28	38
9	TSB-FJ-08-0'MSD	19	29	39
10	PIS	20	30	40

Notes:	300.1	Sur : A	 	

LDC #: 18036 NC SDG #: TOK 1974

Q.C. Sample

VALIDATION FINDINGS WORKSHEET Sample Specific Analysis Reference

Page: 1 of 1
Reviewer: 41
2nd reviewer: 1

All circled methods are applicable to each sample.

	Bt
Sample ID	Parameter
1-7	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN' NH3 TKN TOC (CRO+) (Chinit)
	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+
8-9	pH TDS CI F NO3 NO2 SO4 PO4 ALK CN' NH3 TKN TOC CR8+ (CL121)
	ph tds ci f no3 no2 so4 po4 alk cn. nh3 tkn toc cr6+
	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN' NH3 TKN TOC CR8+
	ph tds cif NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR8+
	pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR8+
	pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR8+
	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+
	PH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁸⁺
	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN' NH3 TKN TOC CR8+
	pH TDS CI F NO3 NO2 SO4 PO4 ALK CN' NH3 TKN TOC CR6+
	pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CRS+
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN' NH ₃ TKN TOC CR ⁶⁺
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN' NH ₃ TKN TOC CR ⁶⁺
	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR8+
	PH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN' NH ₃ TKN TOC CR ⁶⁺
	PH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺
	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN' NH3 TKN TOC CR6+
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN' NH ₃ TKN TOC CR ⁸⁺
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN' NH ₃ TKN TOC CR ⁶⁺
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN' NH ₃ TKN TOC CR ⁶⁺
	ph tds ci f No ₃ No ₂ so ₄ po ₄ alk cn Nh ₃ tkn toc cr ⁶⁺
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺
	pH TDS CI F NO, NO, SO, PO, ALK CN' NH, TKN TOC CR6+
L	MI 100 - 1103 - 1 - 1

Comments:

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

BRC Tronox Parcel C/D/F/G

Collection Date:

November 16, 2007

LDC Report Date:

January 7, 2008

Matrix:

Soil

Parameters:

Wet Chemistry

Validation Level:

EPA Level III

Laboratory:

TestAmerica, Inc.

Sample Delivery Group (SDG): IQK1977

Sample Identification

TSB-FJ-01-0'

TSB-FJ-01-10'

TSB-FJ-01-0'MS

TSB-FJ-01-0'MSD

Introduction

This data review covers 4 soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 300.1 for Chlorite and EPA SW 846 Method 7196A for Hexavalent Chromium.

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 X.

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.

Sample "Rinsate 4" (from SDG IQK1956) was identified as a rinsate. No contaminant concentrations were found in this blank.

IV. Surrogate Recovery

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

V. 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.

VI. Duplicates

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

VII. Laboratory Control Samples

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

VIII. Sample Result Verification

Raw data were not reviewed for this SDG.

IX. Overall Assessment of Data

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

X. Field Duplicates

No field duplicates were identified in this SDG.

BRC Tronox Parcel C/D/F/G
Wet Chemistry - Data Qualification Summary - SDG IQK1977

No Sample Data Qualified in this SDG

BRC Tronox Parcel C/D/F/G Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG IQK1977

No Sample Data Qualified in this SDG

BRC Tronox Parcel C/D/F/G
Wet Chemistry - Field Blank Data Qualification Summary - SDG IQK1977

No Sample Data Qualified in this SDG

SDG #	:1803606 t:IQK1977 atory:_Test America	LIDATIO		Level		SS WOR	KSHEET		Page: 1 4 Page: 1 of Reviewer: 21d Reviewer: 21d	
Γhe sa	OD: Chlorite (EPA Me amples listed below we ion findings workshee	ere revie								gs are noted in attach
	Validatio	n Area						Comme	nts	
I.	Technical holding times			A	Sampli	ing da	ites:	107		
IIa.	Initial calibration			A						
IIb.	Calibration verification			A						
111.	Blanks			A						
IV	Matrix Spike/Matrix Spike	Duplicate	s	A	13 1	45	MSD			
>	Duplicates			7)					
VI.	Laboratory control sample	es		A	LCS					
VII.	Sample result verification)		N						
VIII.	Overall assessment of da	ata		A						
IX.	Field duplicates			~						
x	Field blanks			120	R:	Rin	rate 4	(from t	2 K 19	56)
Note: √alidate	A = Acceptable N = Not provided/applica SW = See worksheet ed Samples:	•	R = Rir	lo compound sate ield blank	ds detect	ed		iplicate rip blank Equipment blank		
1	TSB-FJ-01-0'	11			2	21			31	
2	TSB-FJ-01-10'	12			2	22			32	
3	TSB-FJ-01-0'MS	13			2	23			33	
4	TSB-FJ-01-0'MSD	14			2	24			34	
5	PB	15			2	25			35	
6		16			2	26			36	
7		17			2	27			37	
8		18			2	28			38	

Notes: 300.1

Sarr : A

LDC #: 1803606 SDG #: Iak 1977

Qc sample

VALIDATION FINDINGS WORKSHEET Sample Specific Analysis Reference

Page: __of__ Reviewer: __A/k 2nd reviewer: __

All circled methods are applicable to each sample.

	Parameter
Sample ID	
1-2	pH TDS CI F NO ₃ NO ₂ SO ₄ FO ₄ ALK OK King 113.
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN' NH ₃ TKN TOC CR ⁶⁺
3-4	PH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR CL I~: L
	pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺
	PH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺
	ph tds ci f No3 No2 SO4 PO4 ALK CN NH3 TKN TOC CR6+
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺
	PH TDS CI F NO, NO, SO, PO, ALK CN' NH, TKN TOC CR6+
	PH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺
	PH TDS CI F NO3 NO2 SO4 PO4 ALK CNT NH3 TKN TOC CR8+
	PH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁸⁺
	ph tds ci f NO ₃ NO ₂ SO ₄ PO ₄ ALK CN' NH ₃ TKN TOC CR ⁸⁺
	ph tds ci f No ₃ No ₂ So ₄ Po ₄ Alk Cn' NH ₃ TKN TOC CR ⁶⁺
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN' NH ₃ TKN TOC CR ⁸⁺
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN' NH ₃ TKN TOC CR ⁶⁺
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN' NH ₃ TKN TOC CR ⁶⁺
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN' NH ₃ TKN TOC CR ⁸⁺
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN' NH ₃ TKN TOC CR ⁶⁺
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺
	PH TUS CI F NO ₃ NO ₂ SO ₄ FO ₄ ALK CNT NH TKN TOC CR ⁶⁺
	pH TDS CI F NO, NO, SO, PO, ALK CN NH, TKN TOC CR8+

	•
Comments:	

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

BRC Tronox Parcel C/D/F/G

Collection Date:

November 16, 2007

LDC Report Date:

January 7, 2008

Matrix:

Soil

Parameters:

Wet Chemistry

Validation Level:

EPA Level III

Laboratory:

TestAmerica, Inc.

Sample Delivery Group (SDG): IQK1978

Sample Identification

TSB-GR-01-0'

TSB-GR-01-5'

TSB-GJ-06-0'

TSB-GJ-06-5'

Introduction

This data review covers 4 soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 300.1 for Chlorite and EPA SW 846 Method 7196A for Hexavalent Chromium.

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 X.

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.

Sample "Rinsate 4" (from SDG IQK1956) was identified as a rinsate. No contaminant concentrations were found in this blank.

IV. Surrogate Recovery

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

V. 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.

VI. Duplicates

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

VII. Laboratory Control Samples

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

VIII. Sample Result Verification

Raw data were not reviewed for this SDG.

IX. Overall Assessment of Data

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

X. Field Duplicates

No field duplicates were identified in this SDG.

BRC Tronox Parcel C/D/F/G
Wet Chemistry - Data Qualification Summary - SDG IQK1978

No Sample Data Qualified in this SDG

BRC Tronox Parcel C/D/F/G Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG IQK1978

No Sample Data Qualified in this SDG

BRC Tronox Parcel C/D/F/G Wet Chemistry - Field Blank Data Qualification Summary - SDG IQK1978

No Sample Data Qualified in this SDG

LDC #: 18036P6 VALIDATION SDG #: IQK1978 Laboratory: Test America					PLETE Level		ESS WORKS	HEET	Page: _ رابيل عم Page: _ رام Reviewer: _ <u>عالم</u> 2nd Reviewer:
	HOD: Chlorite (EPA Me		•			·		·	oro notod in attached
	amples listed below we tion findings workshee		Wed IOI ca	CN OI UIC II	OllOwn	g va	IIIdation areas. v	Valluation mun	ngs are noted in attached
	Validatio	n Area						Comments	
1.	Technical holding times			A	Sampli	ng da	ates: ۱۱ ۱۵	23	
IIa.	Initial calibration			A					
IIb.	Calibration verification	***		A					
III.	Blanks			Α	<u> </u>				
IV	Matrix Spike/Matrix Spike	Duplicate	es	Α	} frm Iau 1977 Iak 2275				
V	Duplicates			N	}				
VI.	Laboratory control sample	es		Α_	LLS)			
VII.	Sample result verification			N					,
VIII.	Overall assessment of da	ıta		<u>A</u>				****	
IX.	IX. Field duplicates			N					
x	Field blanks			ND	R:	R ;	noat 4 (1	For Iaki	1956)
Note: Validat	A = Acceptable N = Not provided/applica SW = See worksheet ed Samples:	ble 44 =	R = Rin FB = Fi	o compound sate eld blank	ds detecte	ed	D = Duplica TB = Trip bl EB = Equipr	ank	
1	TSB-GR-01-0'	11			2	21		31	
2	TSB-GR-01-5'	12			2	22		32	
3	TSB-GJ-06-0'	13			2	23		33	
4	TSB-GJ-06-5'	14			2	24		34	
5	PB	15			2	25		35	
6		16			2	26		36	
7		17			2	27		37	
8		18			2	28		38	

Notes: 3 . 0.1

LDC #: 18036 PG SDG #: TOK 1979

VALIDATION FINDINGS WORKSHEET Sample Specific Analysis Reference

Page:_	of
Reviewer:_	<u> </u>
2nd reviewer:_	1

All circled methods are applicable to each sample.

,							
Sample ID	Parameter						
1-4	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC (R) (C415-14)						
	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN' NH3 TKN TOC CR6+						
	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR8+						
	PH TDS CI F NO, NO, SO, PO, ALK CN NH, TKN TOC CR°+						
	PH TDS CIF NO, NO, SO, PO, ALK CN NH, TKN TOC CR6+						
	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN' NH3 TKN TOC CR8+						
	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN' NH3 TKN TOC CR6+						
	PH TDS CI F NO, NO, SO, PO, ALK CN' NH, TKN TOC CR8+						
	ph tds cif NO3 NO2 SO4 PO4 ALK CN' NH3 TKN TOC CR6+						
	PH TDS CI F NO, NO, SO, PO, ALK CN NH, TKN TOC CR						
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN' NH ₃ TKN TOC CR ⁶⁺						
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN' NH ₃ TKN TOC CR ⁶⁺						
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁸⁺						
	pH TDS CI F NO3 NO2 SO4 PO4 ALK CN' NH3 TKN TOC CR6+						
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN' NH ₃ TKN TOC CR ⁶⁺						
	pH TDS CI F NO3 NO2 SO4 PO4 ALK CN' NH3 TKN TOC CR6+						
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN' NH ₃ TKN TOC CR ⁶⁺						
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁸⁺						
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN' NH ₃ TKN TOC CR ⁶⁺						
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN' NH ₃ TKN TOC CR ⁶⁺						
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺						
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺						
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺						
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺						
	pH TDS CI F NO, NO, SO, PO, ALK CN' NH, TKN TOC CR6+						

Comments:	 ·

LDC Report# 18036Q6

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

BRC Tronox Parcel C/D/F/G

Collection Date:

November 16, 2007

LDC Report Date:

January 25, 2008

Matrix:

Soil

Parameters:

Wet Chemistry

Validation Level:

EPA Level III

Laboratory:

TestAmerica, Inc.

Sample Delivery Group (SDG): IQK1979

Sample Identification

TSB-GJ-01-0' TSB-GJ-01-5'

Introduction

This data review covers 2 soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 300.1 for Chlorite and EPA SW 846 Method 7196A for Hexavalent Chromium.

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 X.

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.

Sample "Rinsate 4" (from SDG IQK1956) was identified as a rinsate. No contaminant concentrations were found in this blank.

*IV. 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	Surrogate	%R (Limits)	Analyte	Flag	A or P
TSB-GJ-01-5'	Dichloroacetate	85.38 (90-115)	Chlorite	J- (all detects) UJ (all non-detects)	Р

^{*}Removed Hexavalent chromium from above finding.

V. 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.

VI. Duplicates

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

VII. Laboratory Control Samples

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

VIII. Sample Result Verification

Raw data were not reviewed for this SDG.

IX. Overall Assessment of Data

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

X. Field Duplicates

No field duplicates were identified in this SDG.

*BRC Tronox Parcel C/D/F/G Wet Chemistry - Data Qualification Summary - SDG IQK1979

SDG	Sample	Analyte	Flag	A or P	Reason
IQK1979	TSB-GJ-01-5'	Chlorite	J- (all detects) UJ (all non-detects)	Р	Surrogate recovery (%R)

^{*}Removed Hexavalent chromium from above Surrogate recovery (%R) finding.

BRC Tronox Parcel C/D/F/G Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG IQK1979

No Sample Data Qualified in this SDG

BRC Tronox Parcel C/D/F/G Wet Chemistry - Field Blank Data Qualification Summary - SDG IQK1979

No Sample Data Qualified in this SDG

LDC #: 18036Q6	VALIDATION COMPLETENESS WORKSHEET	Date: 1/4/98
SDG #: IQK1979	Level III	Page:tof
Laboratory: Test America	_	Reviewer: <u>A.k.</u> 2nd Reviewer: —

METHOD: Chlorite (EPA Method 300.1), Hexavalent Chromium (EPA SW846 Method 7196A)

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
l.	Technical holding times	Δ_	Sampling dates: 11 16 07
IIa.	Initial calibration	A	
Ilb.	Calibration verification	A	
111.	Blanks	_A_	
IV	Matrix Spike/Matrix Spike Duplicates	A	from Iakiatz Iakzzzs
V	Duplicates	N]
VI.	Laboratory control samples	A	LLS
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	12	
¥	Field blanks	ND	R. Riniah 4 (from Iak 1956)

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

Validated Samples:	ALL SOIL			
1 TSB-#J-01-0'	11	21	31	
2 TSB-\$J-01-5'	12	22	32	
3 PB	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:_	300.1	Smil SW	

LDC #: 18036Q6 SDG #: IQE1979

VALIDATION FINDINGS WORKSHEET Sample Specific Analysis Reference

Page:of
Reviewer:
2nd reviewer:

All circled methods are applicable to each sample.

Sample ID	Parameter
1-2	PH TDS CI F NO, NO, SO, PO, ALK CN' NH, TKN TOC ER (LICIE)
	ph tds ci f no, no, so, po, alk cn nh, tkn toc cro+
	ph tds ci f no3 no2 so4 po4 alk cn' nh3 tkn toc cr°+
	ph tds ci f no, no, so, po, alk cn nh, tkn toc cr°+
	PH TDS CIF NO3 NO2 SO4 PO4 ALK CN' NH3 TKN TOC CR6+
	PH TDS CIF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+
	PH TDS CIF NO, NO, SO, PO, ALK CN' NH, TKN TOC CR6+
	ph tds cif No3 No2 So4 Po4 Alk CN" NH3 TKN TOC CR8+
	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+
	PH TDS CIF NO, NO, SO, PO, ALK CN NH, TKN TOC CRa+
	PH TDS CIF NO, NO, SO, PO, ALK CN' NH, TKN TOC CRS+
	ph tos cif no, no, so, po, alk cn nh, tkn toc cr*
	ph tos cif no, no, so, po, alk cn nh, tkn toc cr*
	ph tos cif no, no, so, po, alk cn nh, tkn toc cr
	PH TDS CIF NO, NO, SO, PO, ALK CN' NH, TKN TOC CR°+
	PH TDS CLF NO3 NO2 SO4 PO4 ALK CNT NH3 TKN TOC CR8+
	PH TDS CIF NO, NO, SO, PO, ALK CN' NH, TKN TOC CR8+
	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR8+
	PH TDS CIF NO3 NO2 SO4 PO4 ALK CN' NH3 TKN TOC CR8+
	PH TDS CI F NO, NO, SO, PO, ALK CN' NH, TKN TOC CR8+
	PH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN' NH ₃ TKN TOC CR ⁶⁺
	ph tds ci f no, no, so, po, alk cn nh, tkn toc cr
	PH TDS CIF NO, NO, SO, PO, ALK CN' NH, TKN TOC CR°+
	PH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺
	ph tos cif no, no, so, po, alk cn nh, tkn toc cre+

Comments:	

SDG#: IOKB35 LDC #: 18036 QL

VALIDATION FINDINDS WORKSHEET Surrogate Recovery

Page: of Reviewer: 41

2nd Reviewer:

METHOD: Chlorite (EPA 300.1)

Are surrogates required by the method? Yes <

Are surrogates required by the method? Yes / or No___. Please see qualifications are identified as "N/A".

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

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

I								
#	Date	Lab ID/Reference	Column	Surrogate Compound	%R (Limits)	mits)	Associated Samples	Qualifications
		7		4	85.38	90-115	2	3-/45/P
)	(
)	(
)	(
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	Letter Designation		Surrogate Compound	Recove	Recovery QC Limits (Soil)		Recovery QC Limits (Water)	Comments
	¥	Dichloroacetate	etate					
	മ							

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

BRC Tronox Parcel C/D/F/G

Collection Date:

November 19, 2007

LDC Report Date:

January 7, 2008

Matrix:

Soil

Parameters:

Wet Chemistry

Validation Level:

EPA Level III

Laboratory:

TestAmerica, Inc.

Sample Delivery Group (SDG): IQK2275

Sample Identification

TSB-GJ-02-0'

TSB-GJ-02-0'-FD

TSB-GJ-02-5'

TSB-GJ-07-0'

TSB-GJ-07-5'

TSB-GJ-05-0'

TSB-GJ-05-5'

TSB-GJ-03-0'

TSB-GJ-03-5'

TSB-GJ-02-0'MS

TSB-GJ-02-0'MSD

Introduction

This data review covers 11 soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 300.1 for Chlorite and EPA SW 846 Method 7196A for Hexavalent Chromium.

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 X.

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.

Sample "RINSATE 5" (from SDG IQK2277) was identified as a rinsate. No contaminant concentrations were found in this blank.

IV. Surrogate Recovery

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

V. 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.

VI. Duplicates

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

VII. Laboratory Control Samples

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

VIII. Sample Result Verification

Raw data were not reviewed for this SDG.

IX. Overall Assessment of Data

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

X. Field Duplicates

Samples TSB-GJ-02-0' and TSB-GJ-02-0'-FD were identified as field duplicates. No contaminant concentrations were detected in any of the samples.

BRC Tronox Parcel C/D/F/G
Wet Chemistry - Data Qualification Summary - SDG IQK2275

No Sample Data Qualified in this SDG

BRC Tronox Parcel C/D/F/G Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG IQK2275

No Sample Data Qualified in this SDG

BRC Tronox Parcel C/D/F/G Wet Chemistry - Field Blank Data Qualification Summary - SDG IQK2275

No Sample Data Qualified in this SDG

SDG#	::18036R6 #:IQK2275 atory:_Test America		LIDATIO	N COMPLETENESS WORKSHEET Level III					2nd	Page:of Reviewer: Reviewer:	
	IOD: Chlorite (EPA Meth		•						•		
	amples listed below were tion findings worksheets.	revi	ewed for ead	ch of the r	ollowing	g va	idation are	as. Vallda	ition final	ngs are	noted in attache
	Validation	Area						Con	ments		
I.	Technical holding times			Α	Samplin	ng da	tes: II \	9/07			
IIa.	Initial calibration			Α							
IIb.	Calibration verification			Α	ļ						
III.	Blanks			Α	<u> </u>						
IV	Matrix Spike/Matrix Spike Du	uplicat	tes	A	17 1	s / i	450				
V	Duplicates			77	<u> </u>	1					
VI.	Laboratory control samples			A	رده						
VII.	Sample result verification			N							
VIII.	Overall assessment of data			A							
IX.	Field duplicates			ND D:1+2							
X	Field blanks			20	2.	Ri	wat 5	(f-m	FUL1	1277)	
Note: Validate	A = Acceptable N = Not provided/applicable SW = See worksheet ed Samples:		R = Rin	o compound sate eld blank	ls detecte	ed	TB = 1	uplicate Trip blank Equipment b	lank		
		<u>~</u>	5.:1			- 1			 		
1	TSB-GJ-02-0'	11	TSB-GJ-02-0	MSD	2	1			31		
2	TSB-GJ-02-0'-FD	12	PB	2:	2			32			
3	TSB-GJ-02-5'	13			2	3			33		
4	TSB-GJ-07-0'	14			2.	4			34		
5	TSB-GJ-07-5'	15			2	5			35		
6	TSB-GJ-05-0'	16		***************************************	2	6			36		
7	TSB-GJ-05-5'	17			2	7			37		
R	TSB-G.I-03-0'	18			12	۱			38		

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TSB-GJ-03-5'

Notes: <u>500.1</u>

TSB-GJ-02-0'MS

19

20

Surr: A

LDC #: 18036 26 SDG #: I 2 k2275

VALIDATION FINDINGS WORKSHEET Sample Specific Analysis Reference

Page: (_of_(_
Reviewer: A
2nd reviewer:

All circled methods are applicable to each sample.

	Parameter
Sample ID	
1-9	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN' NH ₃ TKN TOC CRY (CALA: L)
	PH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN' NH ₃ TKN TOC CR ⁹⁺
10-11	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR8+ (Ch.Ch.L)
	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR°+
	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR8+
	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+
	ph tds ci f no3 no2 so4 po4 alk cn nh3 tkn toc cr6+
	ph tds ci f no ₃ no ₂ so ₄ po ₄ alk cn nh ₃ tkn toc cr ⁶⁺
	pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+
	ph tds ci f no3 no2 so4 po4 alk cn nh3 tkn toc cr6+
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CNT NH ₃ TKN TOC CR ⁶⁺
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN' NH ₃ TKN TOC CR ⁸⁺
	pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR8+
	pH TDS CI F NO3 NO2 SO4 PO4 ALK CN' NH3 TKN TOC CR8+
	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN' NH3 TKN TOC CR8+
	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN' NH3 TKN TOC CR6+
	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR8+
	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR8+
	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN' NH3 TKN TOC CR8+
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN' NH ₃ TKN TOC CR ⁶⁺
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN' NH ₃ TKN TOC CR ⁶⁺
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN' NH ₃ TKN TOC CR ⁶⁺
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN' NH ₃ TKN TOC CR ⁶⁺
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺
	pH TDS CI F NO, NO, SO, PO, ALK CN' NH, TKN TOC CR6+

Comments:	·

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

BRC Tronox Parcel C/D/F/G

Collection Date:

November 19, 2007

LDC Report Date:

January 7, 2008

Matrix:

Soil

Parameters:

Wet Chemistry

Validation Level:

EPA Level III

Laboratory:

TestAmerica, Inc.

Sample Delivery Group (SDG): IQK2276

Sample Identification

TSB-GR-02-0'

TSB-GR-02-0'-FD

TSB-GR-02-5'

TSB-GJ-04-0'

TSB-GJ-04-0'-MS/MSD

TSB-GJ-04-5'

TSB-GJ-04-0'-MS/MSDMS

TSB-GJ-04-0'-MS/MSDMSD

Introduction

This data review covers 8 soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 300.1 for Chlorite and EPA SW 846 Method 7196A for Hexavalent Chromium.

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 X.

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

The following are definitions of the data qualifiers:

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- 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.

Sample "RINSATE 5" (from SDG IQK2277) was identified as a rinsate. No contaminant concentrations were found in this blank.

IV. Surrogate Recovery

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

V. 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.

VI. Duplicates

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

VII. Laboratory Control Samples

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

VIII. Sample Result Verification

Raw data were not reviewed for this SDG.

IX. Overall Assessment of Data

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

X. Field Duplicates

Samples TSB-GR-02-0' and TSB-GR-02-0'-FD were identified as field duplicates. No contaminant concentrations were detected in any of the samples.

BRC Tronox Parcel C/D/F/G
Wet Chemistry - Data Qualification Summary - SDG IQK2276

No Sample Data Qualified in this SDG

BRC Tronox Parcel C/D/F/G Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG IQK2276

No Sample Data Qualified in this SDG

BRC Tronox Parcel C/D/F/G Wet Chemistry - Field Blank Data Qualification Summary - SDG IQK2276

No Sample Data Qualified in this SDG

DC #: 18036S6 VALIDATION SDG #: IQK2276 Laboratory: Test America				PLETE Level		ESS WOR	KSHEET		Date: المراجة Page: مام Reviewer: كلا 2nd Reviewer:	
The s	IOD: Chlorite (EPA Meth amples listed below were tion findings worksheets.	revie				•			-	dings are noted in attached
	Validation	Area						Comm	ents	
I.	Technical holding times			A	Sampli	ng da	ates: () ()	3 07		
lla.	Initial calibration			Α						
IIb.	Calibration verification			Α						
III.	Blanks			Α	:					
IV	Matrix Spike/Matrix Spike Du	uplicate	es	Α	7 1	۸۶	/msn			
V	Duplicates			2	}		•			·
VI.	Laboratory control samples			A	LLS					
VII.	Sample result verification			N						
VIII.	Overall assessment of data			A						
IX.	Field duplicates			120	0.	1 +	2			
X	Field blanks			20	R.	R:-	sat 5	(tom I	ن لا	2277)
Note: √alidat	A = Acceptable N = Not provided/applicable SW = See worksheet ed Samples:		R = Rins	o compound sate eld blank	ds detecte	ed	D = Dup TB = Tr EB = Ec		k	
1	TSB-GR-02-0'	11			2	1			31	
2	TSB-GR-02-0'-FD	12			2	2			32	
1 1	TSB-GR-02-5'	13			2	23			33	
4	TSB-G K -04-0'	14			2	24			34	
5	TSB-GK-04-0'-MS/MSD	15			2	25			35	
6	TSB-G F -04-5'	16			2	26			36	
7	TSB-GR-04-0'-MS/MSDMS	17			2	7			37	
8	TSB-GF-04-0'-MS/MSDMSD	18			2	8.			38	
LĪ	D B					_				

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Surr: A

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Notes: 300.1

LDC #: 180365 C SDG #: <u>Lak217</u>6

VALIDATION FINDINGS WORKSHEET Sample Specific Analysis Reference

Page:_	<u> </u>
Reviewer:	\sim
2nd reviewer:	

All circled methods are applicable to each sample.

	Parameter
Sample ID	Parameter Crew Classic
1-6	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CRY (LINIL)
	PH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺
7-8	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁹⁺) (Ch lo-ita)
	pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CRO+
	pH TDS CI F NO3 NO2 SO4 PO4 ALK CN' NH3 TKN TOC CR6+
	ph tds ci f NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR8+
	pH TDS CI F NO3 NO2 SO4 PO4 ALK CN' NH3 TKN TOC CR8+
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN' NH ₃ TKN TOC CR ⁶⁺
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN' NH ₃ TKN TOC CR ⁶⁺
	pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR8+
	pH TDS CI F NO3 NO2 SO4 PO4 ALK CN' NH3 TKN TOC CR8+
	ph tds ci f NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN' NH ₃ TKN TOC CR ⁶⁺
	PH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN' NH ₃ TKN TOC CR ⁶⁺
	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN' NH3 TKN TOC CR6+
	ph tds ci f No ₃ No ₂ So ₄ Po ₄ Alk CN NH ₃ TKN TOC CR ⁶⁺
	PH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺
	ph tds ci f No ₃ No ₂ So ₄ Po ₄ Alk CN' NH ₃ TKN TOC CR ⁶⁺
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN' NH ₃ TKN TOC CR ⁶⁺
	ph tds ci f NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺
	pH TDS CI F NO, NO, SO, PO, ALK CN' NH, TKN TOC CR6+
	PIL 100 OL 1 100 100 - 4 1 - 4 1 - 4 1

Comments:	

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

BRC Tronox Parcel C/D/F/G

Collection Date:

November 19, 2007

LDC Report Date:

January 8, 2008

Matrix:

Water

Parameters:

Wet Chemistry

Validation Level:

EPA Level III

Laboratory:

TestAmerica, Inc.

Sample Delivery Group (SDG): IQK2277

Sample Identification

RINSATE 5 RINSATE 5MS RINSATE 5MSD

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 300.1 for Chlorite and EPA SW 846 Method 7196A for Hexavalent Chromium.

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 X.

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 with the following exceptions:

Sample	Analyte	Total Time From Sample Collection Until Analysis	Required Holding Time From Sample Collection Until Analysis	Flag	A or P
RINSATE 5 RINSATE 5MS RINSATE 5MSD	Hexavalent chromium	33.5 hrs	24 hrs	J- (all detects) UJ (all non-detects)	Р

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.

Sample "RINSATE 5" was identified as a rinsate. No contaminant concentrations were found in this blank.

IV. Surrogate Recovery

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

V. 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.

VI. Duplicates

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

VII. Laboratory Control Samples

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

VIII. Sample Result Verification

Raw data were not reviewed for this SDG.

IX. Overall Assessment of Data

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

X. Field Duplicates

No field duplicates were identified in this SDG.

BRC Tronox Parcel C/D/F/G Wet Chemistry - Data Qualification Summary - SDG IQK2277

SDG	Sample	Analyte	Flag	A or P	Reason
IQK2277	RINSATE 5	Hexavalent chromium	J- (all detects) UJ (all non-detects)	Р	Technical holding times

BRC Tronox Parcel C/D/F/G
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG IQK2277

No Sample Data Qualified in this SDG

BRC Tronox Parcel C/D/F/G Wet Chemistry - Field Blank Data Qualification Summary - SDG IQK2277

No Sample Data Qualified in this SDG

_DC #:18036T6	VALIDATION COMPLETENESS WORKSHEET	Date: <u>) 4</u>
SDG #: IQK2277	Level III	Page: <u> of </u>
_aboratory: <u>Test America</u>		Reviewer: 4/k
		2nd Reviewer:

METHOD: Chlorite (EPA Method 300.1), Hexavalent Chromium (EPA SW846 Method 7196A)

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	Sw	Sampling dates: II I 9 53
IIa.	Initial calibration		
IIb.	Calibration verification	A	
111.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	Α	(MS/MSD
V	Duplicates	N)
VI.	Laboratory control samples	A	LCS
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	2	
_ x	Field blanks	170	R=1

Note:

A = Acceptable

ND = No compounds detected

D = Duplicate TB = Trip blank

N = Not provided/applicable SW = See worksheet R = Rinsate FB = Field blank

EB = Equipment blank

Validated Samples:

		AN water			
1	RINSATE 5	11	21	31	
2	RINSATE 5MS	12	22	32	
3	RINSATE 5MSD	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:	300.1	Surv: A	Δ
_			

LDC #: 1803676 SDG #: ID 4 2277

VALIDATION FINDINGS WORKSHEET Sample Specific Analysis Reference

Page:_	of
Reviewer:_	01
2nd reviewer:_	1

All circled methods are applicable to each sample.

0110	Parameter
Sample ID	
l l	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC (CR) (C412-14)
	ph TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺
2-3	pH TDS CI F NO₃ NO₂ SO₄ PO₄ ALK CN' NH₃ TKN TOC (CR°+)
	PH TDS CIF NO3 NO2 SO4 PO4 ALK CN'NH3 TKN TOC CR°+
	ph tds cif no₃ no₂ so₄ po₄ alk cnº nh₃ tkn toc crº+
	ph tds cif no3 no2 so4 po4 alk cnt nh3 tkn toc cr8+
	ph tds cif No ₃ No ₂ So ₄ Po ₄ Alk CN NH ₃ TKN TOC CR ⁶⁺
	ph tds cif no, no, so, po, alk cn nh, tkn toc cre+
	PH TDS CIF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+
	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR8+
·	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR8+
	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN' NH3 TKN TOC CR6+
	ph TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR8+
	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN' NH3 TKN TOC CR6+
	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN' NH3 TKN TOC CR8+
	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR8+
	PH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁸⁺
	PH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺
	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR8+
	ph tos ci f No ₃ No ₂ So ₄ Po ₄ Alk Cn Nh ₃ TKN TOC CR ⁶⁺
	PH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺
	ph TDS CLF NO, NO, SO, PO, ALK CN NH, TKN TOC CR6+

Comments:	**	

LDC #: 1803676 SDG #: IQU 2277

VALIDATION FINDINGS WORKSHEET Technical Holding Times

of
al_
1

All circled dates have exceeded the technical holding time.

N N/A

Were all samples preserved as applicable to each method?

N N/A

Were all cooler temperatures within validation criteria?

N N/A Were all	cooler tempera	tures within van	ration cinena:_			1	
Method:		7196A					
Parameters:		Cr64					ļ
Technical holding tir	Technical holding time:					<u> </u>	
Sample ID	Sampling date	Analysis date	Analysis date	Analysis date	Analysis date	Analysis date	Qualifier
1-3	11/19/07	11/20/07		(33,	5 hrs)		J-/45/P
	1240	2216			· ·		,
							ļ
					·		