Tronox LLC Facility, 2009 Phase B Investigation, Henderson, Nevada Data Validation Reports LDC #21991

TPH as Extractables



Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:	Tronox LLC Facility, 2009 Phase B Investigation, Henderson, Nevada
Collection Date:	August 4, 2009
LDC Report Date:	December 1, 2009
Matrix:	Water
Parameters:	Total Petroleum Hydrocarbons as Extractables
Validation Level:	Stage 2B
Laboratory:	Columbia Analytical Services, Inc.
Sample Delivery Group (SDG):	R0904290

Sample Identification

FB080409-GW

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 8015B for Total Petroleum Hydrocarbons (TPH) as Extractables.

This review follows the Standard Operating Procedures (SOP) 40, Data Review/Validation (BRC 2009), the Quality Assurance Project Plan Tronox LLC Facility, Henderson, Nevada (June 2009), NDEP guidance (May 2006), and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review (June 2008) as there are no current guidelines for the method stated above.

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

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

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

The following are definitions of the data qualifiers:

- J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.
- J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.
- J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.
- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- B The analytical result may be a false positive totally attributable to blank contamination. This qualifier is applicable to radiochemistry analysis only.
- JB The analytical result may be biased high and partially attributable to blank contamination. This qualifier is applicable to radiochemistry analysis only.
- JK The analytical result is an estimated maximum possible concentration (EMPC).
- X The analytical result is not used for reporting because a more accurate and precise result is reported in its place.
- J-TDS The analytical result is estimated based on failure of the Total Dissolved Solids (TDS) correctness check performed in accordance with the Standard Method 1030E.
- J-CAB The analytical result is estimated based on failure of the cation-anion balance correctness check performed in accordance with Standard Method 1030E.
- J-TDS & CAB The analytical result is unreliable based on the failure of the cation-anion balance and TDS correctness check performed in accordance with standard Method 1030E.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

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

II. Calibration

a. Initial Calibration

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

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

b. Calibration Verification

Calibration verification was performed at required frequencies. The percent differences (%D) of amounts in continuing standard mixtures were within the 20.0% QC limits.

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

III. Blanks

Method blanks were reviewed for each matrix as applicable. No total petroleum hydrocarbons as extractable contaminants were found in the method blanks.

Sample FB080409-GW was identified as a field blank. No total petroleum hydrocarbons as extractable contaminants were found in this blank.

IV. Accuracy and Precision Data

a. Surrogate Recovery

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

b. Matrix Spike/Matrix Spike Duplicates

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.

c. Laboratory Control Samples

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

V. Target Compound Identification

Raw data were not reviewed for this SDG.

VI. Project Quantitation Limit

All compounds reported below the PQL were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG R0904290	All compounds reported below the PQL.	J (all detects)	A

Raw data were not reviewed for this SDG.

VII. System Performance

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

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

IX. Field Duplicates

No field duplicates were identified in this SDG.

Tronox LLC Facility, 2009 Phase B Investigation, Henderson, Nevada Total Petroleum Hydrocarbons as Extractables - Data Qualification Summary - SDG R0904290

SDG	Sample	Compound	Flag	A or P	Reason (Code)	
R0904290	FB080409-GW	All compounds reported below the PQL.	J (all detects)	A	Project Quantitation Limit (sp)	

Tronox LLC Facility, 2009 Phase B Investigation, Henderson, Nevada Total Petroleum Hydrocarbons as Extractables - Laboratory Blank Data Qualification Summary - SDG R0904290

No Sample Data Qualified in this SDG

Tronox LLC Facility, 2009 Phase B Investigation, Henderson, Nevada Total Petroleum Hydrocarbons as Extractables - Field Blank Data Qualification Summary - SDG R0904290

No Sample Data Qualified in this SDG

Notes:

21991A8W.wpd

Tronox Northgate Henderson VALIDATION COMPLETENESS WORKSHEET LDC #:<u>21991A8</u> SDG #: R0904290

Laboratory: Columbia Analytical Services

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 8/04 /09 Sampling dates: I. Technical holding times A lla. Initial calibration Á CON/IN = 20 2 IIb. Calibration verification/ICV A III. Blanks A IVa. Surrogate recovery N clim IVb. Matrix spike/Matrix spike duplicates Spec. LCS /b A IVc. Laboratory control samples V. Target compound identification Ν VI. Ν Compound Quantitation and CRQLs Ν VII. System Performance A VIII. Overall assessment of data N IX. Field duplicates FB = Field blanks ND Х.

A = Acceptable Note:

N = Not provided/applicable SW = See worksheet

Water

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

D = Duplicate TB = Trip blank EB = Equipment blank

Validated Samples:

1	FB080409-GW	11	21	31
2	93292-MB	12	22	32
3		13	23	33
4		14	24	34
5		15	25	35
6		16	26	36
7		17	27	37
8		18	28	38
9		19	29	39
10		20	30	40

METHOD: GC TPH as Extractables (EPA SW 846 Method 8015B)

Stage 2B

Page:__<u>1</u>of_ Reviewer: N. 2nd Reviewer:

Date: 11/25/09

LDC Report# 21991B8

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:	Tronox LLC Facility, 2009 Phase B Investigation, Henderson, Nevada
Collection Date:	September 8, 2009
LDC Report Date:	December 1, 2009
Matrix:	Soil/Water
Parameters:	Total Petroleum Hydrocarbons as Extractables
Validation Level:	Stage 2B
Laboratory:	Columbia Analytical Services, Inc.

Sample Delivery Group (SDG): R0905115

Sample Identification

EB090809-SO1 SA54-10B SA54-20B SA54-31B SA50-12B SA50009-12B SA50-25B SA50-36B SA170-20B SA170-31B SA170-0.5B SA170-10B SA135-0.5B SA135-10B SA135009-10B SA135-25B SA135-37B SA54-31BMS SA54-31BMSD

Introduction

This data review covers 18 soil samples and one water sample listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8015B for Total Petroleum Hydrocarbons (TPH) as Extractables.

This review follows the Standard Operating Procedures (SOP) 40, Data Review/Validation (BRC 2009), the Quality Assurance Project Plan Tronox LLC Facility, Henderson, Nevada (June 2009), NDEP guidance (May 2006), and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review (June 2008) as there are no current guidelines for the method stated above.

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

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

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

The following are definitions of the data qualifiers:

- J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.
- J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.
- J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.
- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- B The analytical result may be a false positive totally attributable to blank contamination. This qualifier is applicable to radiochemistry analysis only.
- JB The analytical result may be biased high and partially attributable to blank contamination. This qualifier is applicable to radiochemistry analysis only.
- JK The analytical result is an estimated maximum possible concentration (EMPC).
- X The analytical result is not used for reporting because a more accurate and precise result is reported in its place.
- J-TDS The analytical result is estimated based on failure of the Total Dissolved Solids (TDS) correctness check performed in accordance with the Standard Method 1030E.
- J-CAB The analytical result is estimated based on failure of the cation-anion balance correctness check performed in accordance with Standard Method 1030E.
- J-TDS & CAB The analytical result is unreliable based on the failure of the cation-anion balance and TDS correctness check performed in accordance with standard Method 1030E.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

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

II. Calibration

a. Initial Calibration

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

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

b. Calibration Verification

Calibration verification was performed at required frequencies. The percent differences (%D) of amounts in continuing standard mixtures were within the 20.0% QC limits.

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

III. Blanks

Method blanks were reviewed for each matrix as applicable. No total petroleum hydrocarbons as extractable contaminants were found in the method blanks.

Sample EB090809-SO1 was identified as an equipment blank. No total petroleum hydrocarbons as extractable contaminants were found in this blank.

Samples FB072909-SO (from SDG R0904226) and FB080309-SO (from SDG R0904279) were identified as field blanks. No total petroleum hydrocarbons as extractable contaminants were found in these blanks.

IV. Accuracy and Precision Data

a. Surrogate Recovery

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

b. Matrix Spike/Matrix Spike Duplicates

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

c. Laboratory Control Samples

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

V. Target Compound Identification

Raw data were not reviewed for this SDG.

VI. Project Quantitation Limit

All compounds reported below the PQL were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG R0905115	All compounds reported below the PQL.	J (all detects)	A

Raw data were not reviewed for this SDG.

VII. System Performance

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

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

IX. Field Duplicates

Samples SA50-12B and SA50009-12B and samples SA135-10B and SA135009-10B were identified as field duplicates. No total petroleum hydrocarbons as extractables were detected in any of the samples with the following exceptions:

Compound Diesel range organics Oil range organics	Concentrat	ion (ug/Kg)	222	Difference			
Compound	SA135-10B SA135009-10B		(Limits)	Limits)	Flags	A or P	
Diesel range organics	38000	42000U	-	4000 (≤42000)	-	-	
Oil range organics	77000	42000U	-	35000 (≤42000)	-	-	

Tronox LLC Facility, 2009 Phase B Investigation, Henderson, Nevada Total Petroleum Hydrocarbons as Extractables - Data Qualification Summary - SDG R0905115

SDG	Sample	Compound	Flag	A or P	Reason (Code)
R0905115	EB090809-SO1 SA54-10B SA54-20B SA54-20B SA50-12B SA50-25B SA50-25B SA50-25B SA170-20B SA170-20B SA170-0.5B SA170-0.5B SA135-0.5B SA135-0.5B SA135-0.5B SA135-0.5B SA135-25B SA135-25B SA135-37B	All compounds reported below the PQL.	J (ali detects)	A	Project Quantitation Limit (sp)

Tronox LLC Facility, 2009 Phase B Investigation, Henderson, Nevada Total Petroleum Hydrocarbons as Extractables - Laboratory Blank Data Qualification Summary - SDG R0905115

No Sample Data Qualified in this SDG

Tronox LLC Facility, 2009 Phase B Investigation, Henderson, Nevada Total Petroleum Hydrocarbons as Extractables - Equipment Blank Data Qualification Summary - SDG R0905115

No Sample Data Qualified in this SDG

Tronox LLC Facility, 2009 Phase B Investigation, Henderson, Nevada Total Petroleum Hydrocarbons as Extractables - Field Blank Data Qualification Summary - SDG R0905115

No Sample Data Qualified in this SDG

Tronox Northgate Henderson

VALIDATION COMPLETENESS WORKSHEET ______Stage 2B

LDC #: 21991B8 SDG #: R0905115

Laboratory: Columbia Analytical Services

Date: <u>1/30/09</u> Page: <u>1</u> of <u>1</u> Reviewer: <u>5/6</u> 2nd Reviewer:

METHOD: GC TPH as Extractables (EPA SW 846 Method 8015B)

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

	Validation Area		Comments
1.	Technical holding times	A	Sampling dates: 9/08/09
lla.	Initial calibration	A	1
IIb.	Calibration verification/ICV	A	Carkar = 202
111.	Blanks	A	
IVa.	Surrogate recovery	H_	
IVb.	Matrix spike/Matrix spike duplicates	¥	
IVc.	Laboratory control samples	A	us /p
V.	Target compound identification	N	
_VI.	Compound Quantitation and CRQLs	N	
VII.	System Performance	<u> </u>	
VIII.	Overall assessment of data	A	•
IX.	Field duplicates	SW	$+D_1 = 5, 6 D_2 = 14, 15$
X .	Field blanks	ND	FB=1 FB= FB072909-50 (frm R0904226)
			= FB080309-50 (from R0904279)

Note:

A = Acceptable N = Not provided/applicable SW = See worksheet F

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X ND = No compounds detected R = Rinsate FB = Field blank D = Duplicate TB = Trip blank EB = Equipment blank

Validated Samples:

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<u> </u>	EB090809-SO1	W	11	SA170-0.5B	21)	95622-MB	31	
2	SA54-10B	2	12	SA170-10B	22 >	95663-MB	32	
3	SA54-20B		+ 13	SA135-0.5B	23		33	
4	SA54-31B		+ 14	SA135-10B Dy	24		34	
5	SA50-12B D	7,	 15	SA135009-10B Dr	25		35	
6	SA50009-12B),	16	SA135-25B	26		36	
7	SA50-25B		17	SA135-37B	27		37	
8	SA50-36B		18	SA54-31BMS	28		38	
9	SA170-20B		19	SA54-31BMSD	29		39	
10	SA170-31B	/	20		30		40	

Notes:

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LDC #:	SDG #:

VALIDATION FINDINGS WORKSHEET **Field Duplicates**

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WETHOD: GC HPLC Y N N/A Were field duplicate pairs identified in this SDG? V N N/A Were tarnet commonings detected in the field durit

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	amples							
	Qualification	Parent only HAII S	/ (q					
	%RPD Limit		4 000 (2 42 000)	35 000				
IIS7	ug /kg)	اک	42000 N	1				
an ili nie ilein nahilcale ha	Concentration	14	2000	7 7000				
	Compound		DR0	0 RO				

	Concentration ()	%RPD	Qualification
Compound		Limit	Parent only / All Samples

LDC Report# 21991C8

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:	Tronox LLC Facility, 2009 Phase B Investigation, Henderson, Nevada
Collection Date:	September 3, 2009
LDC Report Date:	December 1, 2009
Matrix:	Soil/Water
Parameters:	Total Petroleum Hydrocarbons as Extractables
Validation Level:	Stage 2B
Laboratory:	Columbia Analytical Services, Inc.

Sample Delivery Group (SDG): R0905072

Sample Identification

SA53-10B SA53-25B SA53-32B SA106-12B SA106-20B SA106-35B **RSAU7-0.5B** RSAU7009-0.5B RSAU7-10B RSAU7-25B RSAU7-40B RSAU7-54B SA204-0.5B SA204-10B SA204009-10B SA204-30B SA204-45B EB090309-SO2 **SA53-10BMS** SA53-10BMSD

Introduction

This data review covers 19 soil samples and one water sample listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8015B for Total Petroleum Hydrocarbons (TPH) as Extractables.

This review follows the Standard Operating Procedures (SOP) 40, Data Review/Validation (BRC 2009), the Quality Assurance Project Plan Tronox LLC Facility, Henderson, Nevada (June 2009), NDEP guidance (May 2006), and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review (June 2008) as there are no current guidelines for the method stated above.

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

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

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

The following are definitions of the data qualifiers:

- J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.
- J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.
- J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.
- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- B The analytical result may be a false positive totally attributable to blank contamination. This qualifier is applicable to radiochemistry analysis only.
- JB The analytical result may be biased high and partially attributable to blank contamination. This qualifier is applicable to radiochemistry analysis only.
- JK The analytical result is an estimated maximum possible concentration (EMPC).
- X The analytical result is not used for reporting because a more accurate and precise result is reported in its place.
- J-TDS The analytical result is estimated based on failure of the Total Dissolved Solids (TDS) correctness check performed in accordance with the Standard Method 1030E.
- J-CAB The analytical result is estimated based on failure of the cation-anion balance correctness check performed in accordance with Standard Method 1030E.
- J-TDS & CAB The analytical result is unreliable based on the failure of the cation-anion balance and TDS correctness check performed in accordance with standard Method 1030E.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

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

II. Calibration

a. Initial Calibration

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

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

b. Calibration Verification

Calibration verification was performed at required frequencies. The percent differences (%D) of amounts in continuing standard mixtures were within the 20.0% QC limits.

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

III. Blanks

Method blanks were reviewed for each matrix as applicable. No total petroleum hydrocarbons as extractable contaminants were found in the method blanks.

Sample EB090309-SO2 was identified as an equipment blank. No total petroleum hydrocarbons as extractable contaminants were found in this blank with the following exceptions:

Equipment Blank ID	Sampling Date	Compound	Concentration	Associated Samples
EB090309-SO2	9/3/09	Diesel range organics	120 ug/L	RSAU7-0.5B RSAU7-009-0.5B RSAU7-10B RSAU7-25B RSAU7-40B RSAU7-54B SA204-0.5B SA204-0.5B SA204-10B SA204-09-10B SA204-30B SA204-45B

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

Samples FB072909-SO (from SDG R0904226) and FB080309-SO (from SDG R0904279) were identified as field blanks. No total petroleum hydrocarbons as extractable contaminants were found in these blanks.

IV. Accuracy and Precision Data

a. Surrogate Recovery

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

b. Matrix Spike/Matrix Spike Duplicates

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

c. Laboratory Control Samples

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

V. Target Compound Identification

Raw data were not reviewed for this SDG.

VI. Project Quantitation Limit

All compounds reported below the PQL were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG R0905072	All compounds reported below the PQL.	J (all detects)	A

Raw data were not reviewed for this SDG.

VII. System Performance

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

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

IX. Field Duplicates

Samples RSAU7-0.5B and RSAU7009-0.5B and samples SA204-10B and SA204009-10B were identified as field duplicates. No total petroleum hydrocarbons as extractables were detected in any of the samples with the following exceptions:

	Concentral	tion (ug/Kg)				
Compound	SA204-10B	SA204009-10B	(Limits)	Limits)	Flags	A or P
Diesel range organics	40000	40000	-	0 (≤42000)	-	-

Tronox LLC Facility, 2009 Phase B Investigation, Henderson, Nevada Total Petroleum Hydrocarbons as Extractables - Data Qualification Summary - SDG R0905072

SDG	Sample	Compound	Flag	A or P	Reason (Code)
R0905072	SA53-10B SA53-25B SA53-32B SA106-12B SA106-20B SA106-35B RSAU7-0.5B RSAU7-0.5B RSAU7-10B RSAU7-25B RSAU7-40B RSAU7-40B RSAU7-54B SA204-0.5B SA204-0.5B SA204-0.5B SA204-0B SA204-30B SA204-30B SA204-45B EB090309-SO2	All compounds reported below the PQL.	J (all detects)	A	Project Quantitation Limit (sp)

Tronox LLC Facility, 2009 Phase B Investigation, Henderson, Nevada Total Petroleum Hydrocarbons as Extractables - Laboratory Blank Data Qualification Summary - SDG R0905072

No Sample Data Qualified in this SDG

Tronox LLC Facility, 2009 Phase B Investigation, Henderson, Nevada Total Petroleum Hydrocarbons as Extractables - Equipment Blank Data Qualification Summary - SDG R0905072

No Sample Data Qualified in this SDG

Tronox LLC Facility, 2009 Phase B Investigation, Henderson, Nevada Total Petroleum Hydrocarbons as Extractables - Field Blank Data Qualification Summary - SDG R0905072

No Sample Data Qualified in this SDG

Tronox Northgate Henderson

VALIDATION COMPLETENESS WORKSHEET

LDC #: 21991C8 SDG #: R0905072

Laboratory: Columbia Analytical Services

Date: <u>۱۱/۶۵</u>/۵۹ Page: <u>۱</u>of <u>۱</u> Reviewer: <u>۷۲</u> 2nd Reviewer: <u>(</u>

Stage 2B

METHOD: GC TPH as Extractables (EPA SW 846 Method 8015B)

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

	Validation Area		Comments
١.	Technical holding times	A	Sampling dates: 9 103 189
lla.	Initial calibration	A	
llb.	Calibration verification/ICV	A	Car/101 6 20 2
III.	Blanks	A	
Va.	Surrogate recovery	A	
Vb.	Matrix spike/Matrix spike duplicates	A	
Vc.	Laboratory control samples	A	us b
V.	Target compound identification	N	
<u>VI.</u>	Compound Quantitation and CRQLs	N	
VII.	System Performance	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	SW	$D_1 = 7,8$ $D_2 = 14,15$
X .	Field blanks	SW.	EB=18 FB= FB072901-50 (from K09042)

Note:

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

Validated Samples:

Soil + Water

1	SA53-10B \$	11	RSAU7-40B	21	95518-MB	31
2	SA53-25B	12	RSAU7-54B	22	95415-1	32
4 3	SA53-32B	- 13	SA204-0.5B	23		33
4	SA106-12B	1 4	SA204-10B P _Y	24		34
5	SA106-20B	+ 15	SA204009-10B \mathcal{D}_{γ}	25		35
6	SA106-35B	16	SA204-30B	26		36
7	RSAU7-0.5B D	- 17	SA204-45B	27		37
8	RSAU7009-0.5B	18 18	EB090309-SO2 h	28		38
) 9	RSAU7-10B	19	SA53-10BMS S	29		39
10	RSAU7-25B	20	SA53-10BMSD	30		40

Notes:

DC # 21 491 C	× .			VALIDATIOI	V FINDINGS Field Blank	WORKSHEE <u>B</u>	ħ		C S	age: 1 of 1 ewer: 3/C
METHOD: GC Y N N/A We Y N N/A We 31ank units: We	sre field blar sre target co	nks identifie ompounds d itated sample	ed in this SDG? detected in the e unite: <u>v5</u>	fileld blanks?					2nd Revi	ewer.
rield blank type: (ci	rcle one) Fie Rinsate / I	eld Blank / Tri Equipment R	ip Blank <u>/ Atmos</u> tinsate (Equipm	pheric Blank / Ar ent Blank/ Sourc	nbient Blank se Blank / Other:	4	Associated Sam	iples: 7-17		
Compound	Blank ID	Blank ID	V			Sample ider	ntification			
	18		4	15						
DRO	120		40 000	(000 04						
)							
								•		
CROL										
Blank units:	Asso(clated samp	le units:							
Field blank type: (c	ircle one) Fit Bincete /	eld Blank / Tr	rip Blank/ Atmos	pheric Blank/ Arr	bient Blank		Associated Sami	oles:		
Compound	BIANK ID	Blank ID				Sample Ide	ntification			,
CRQL										
					and the second second second second second second					

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

FBLKASCNew.wpd

21991 C8	Ly line
LDC #	SDG #:

VALIDATION FINDINGS WORKSHEET **Field Duplicates**

Page: 1 of 1 Reviewer.______2nd reviewer.______

METHOD: -Y N N/A Y N/A

GC HPLC Were field duplicate pairs identified in this SDG? Were target compounds detected in the field duplicate pairs?

Qualification	Parent only // All Samples	(d				
CARPD		0 (< 4×00				
(no /kg-)	15	40 000				
Concentration (14	40 000	-			
		DRO				

	Concentration ()	V.RPD	Qualification
Compound			Parent only / All Samples

LDC Report# 21991D8

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:	Tronox LLC Facility, 2009 Phase B Investigation, Henderson, Nevada
Collection Date:	September 10, 2009
LDC Report Date:	December 1, 2009
Matrix:	Soil/Water
Parameters:	Total Petroleum Hydrocarbons as Extractables
Validation Level:	Stage 2B
Laboratory:	Columbia Analytical Services, Inc.

Sample Delivery Group (SDG): R0905177

Sample Identification

EB091009-SO1 EB091009-SO2 SA102-10B SA102-30B SA109-10B SA109-25B SA109-34B SA125-25B SA125-39B SA125009-39B SA125-0.5B SA125-10B SA126-0.5B SA126-10B SA126-18B SA126-25B SA126-40B SA126-40BMS SA126-40BMSD

Introduction

This data review covers 17 soil samples and 2 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8015B for Total Petroleum Hydrocarbons (TPH) as Extractables.

This review follows the Standard Operating Procedures (SOP) 40, Data Review/Validation (BRC 2009), the Quality Assurance Project Plan Tronox LLC Facility, Henderson, Nevada (June 2009), NDEP guidance (May 2006), and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review (June 2008) as there are no current guidelines for the method stated above.

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

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

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

The following are definitions of the data qualifiers:

- J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.
- J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.
- J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.
- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- B The analytical result may be a false positive totally attributable to blank contamination. This qualifier is applicable to radiochemistry analysis only.
- JB The analytical result may be biased high and partially attributable to blank contamination. This qualifier is applicable to radiochemistry analysis only.
- JK The analytical result is an estimated maximum possible concentration (EMPC).
- X The analytical result is not used for reporting because a more accurate and precise result is reported in its place.
- J-TDS The analytical result is estimated based on failure of the Total Dissolved Solids (TDS) correctness check performed in accordance with the Standard Method 1030E.
- J-CAB The analytical result is estimated based on failure of the cation-anion balance correctness check performed in accordance with Standard Method 1030E.
- J-TDS & CAB The analytical result is unreliable based on the failure of the cation-anion balance and TDS correctness check performed in accordance with standard Method 1030E.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

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

II. Calibration

a. Initial Calibration

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

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

b. Calibration Verification

Calibration verification was performed at required frequencies. The percent differences (%D) of amounts in continuing standard mixtures were within the 20.0% QC limits.

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

III. Blanks

Method blanks were reviewed for each matrix as applicable. No total petroleum hydrocarbons as extractable contaminants were found in the method blanks.

Samples EB091009-SO1 and EB091009-SO2 were identified as equipment blanks. No total petroleum hydrocarbons as extractable contaminants were found in these blanks.

Sample FB072909-SO (from SDG R0904226) was identified as a field blank. No total petroleum hydrocarbons as extractable contaminants were found in this blank.

IV. Accuracy and Precision Data

a. Surrogate Recovery

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

b. Matrix Spike/Matrix Spike Duplicates

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

c. Laboratory Control Samples

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

V. Target Compound Identification

Raw data were not reviewed for this SDG.

VI. Project Quantitation Limit

All compounds reported below the PQL were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG R0905177	All compounds reported below the PQL.	J (all detects)	A

Raw data were not reviewed for this SDG.

VII. System Performance

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

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

IX. Field Duplicates

Samples SA125-39B and SA125009-39B were identified as field duplicates. No total petroleum hydrocarbons as extractables were detected in any of the samples.

Tronox LLC Facility, 2009 Phase B Investigation, Henderson, Nevada Total Petroleum Hydrocarbons as Extractables - Data Qualification Summary - SDG R0905177

SDG	Sample	Compound	Flag	A or P	Reason (Code)
R0905177	EB091009-SO1 EB091009-SO2 SA102-10B SA102-30B SA109-10B SA109-25B SA109-34B SA125-25B SA125-39B SA125-05B SA125-0.5B SA125-0.5B SA126-0.5B SA126-10B SA126-18B SA126-25B SA126-40B	All compounds reported below the PQL.	J (all detects)	A	Project Quantitation Limit (sp)

Tronox LLC Facility, 2009 Phase B Investigation, Henderson, Nevada Total Petroleum Hydrocarbons as Extractables - Laboratory Blank Data Qualification Summary - SDG R0905177

No Sample Data Qualified in this SDG

Tronox LLC Facility, 2009 Phase B Investigation, Henderson, Nevada Total Petroleum Hydrocarbons as Extractables - Equipment Blank Data Qualification Summary - SDG R0905177

No Sample Data Qualified in this SDG

Tronox LLC Facility, 2009 Phase B Investigation, Henderson, Nevada Total Petroleum Hydrocarbons as Extractables - Field Blank Data Qualification Summary - SDG R0905177

No Sample Data Qualified in this SDG

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 9/10 /09
lla.	Initial calibration	Á	
lib.	Calibration verification/ICV	A	contra = 202
.	Blanks	A	
IVa.	Surrogate recovery	A	
IVb.	Matrix spike/Matrix spike duplicates	A	
IVc.	Laboratory control samples	A	ucs /b
V.	Target compound identification	N	
VI.	Compound Quantitation and CRQLs	N	
VII.	System Performance	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	NP	b = 9, io
Χ.	Field blanks	ND	EB = 1, 2 FB = FB072909-50 (frm A)

Note:

N = Not provided/applicable SW = See worksheet

Water +

A = Acceptable

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

Soi)

D = Duplicate TB = Trip blank EB = Equipment blank

Validated Samples:

		1 2		1	· · · · ·	
1	EB091009-SO1 W	11	SA125-0.5B S	21	95911-MB	31
2	EB091009-SO2	12	SA125-10B	22 >	95875-1	32
3	SA102-10B S	13	SA126-0.5B	23		33
4	SA102-30B	14	SA126-10B	24		34
5	SA109-10B	- 15	SA126-18B	25		35
6	SA109-25B	16	SA126-25B	26		36
7	SA109-34B	- 17	SA126-40B	27		37
8	SA125-25B	18	SA126-40BMS	28		38
9	SA125-39B D	19	SA126-40BMSD	29		39
10	SA125009-39B b	20		30		40

Notes:

Tronox Northgate Henderson VALIDATION COMPLETENESS WORKSHEET

Stage 2B

Date: <u>"/30/09</u> Page: <u>1 of </u> Reviewer: <u>______</u> 2nd Reviewer: ______

LDC #: 21991D8

METHOD: GC TPH as Extractables (EPA SW 846 Method 8015B)

Laboratory: Columbia Analytical Services

SDG #: R0905177

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:	Tronox LLC Facility, 2009 Phase B Investigation, Henderson, Nevada
Collection Date:	September 9, 2009
LDC Report Date:	December 5, 2009
Matrix:	Soil
Parameters:	Total Petroleum Hydrocarbons as Extractables
Validation Level:	Stage 4
Laboratory:	Columbia Analytical Services, Inc.

Sample Delivery Group (SDG): R0905138

Sample Identification

SA187-10B	RSAQ5-41BMS
SA187-25B	RSAQ5-41BMSD
SA187-39B	
SA45-10B	
SA45-25B	
SA45-36B	
SA186-10B	
SA186-25B	
SA186-37B	
SA188-10B	
SA188-25B	
SA188-37B	
RSAQ5-0.5B	
RSAQ5-10B	
RSAQ5-25B	
RSAQ5-41B	
SA122-0.5B	
SA122-10B	
SA122-20B	
SA122-31B	

Introduction

This data review covers 22 soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8015B for Total Petroleum Hydrocarbons (TPH) as Extractables.

This review follows the Standard Operating Procedures (SOP) 40, Data Review/Validation (BRC 2009), the Quality Assurance Project Plan Tronox LLC Facility, Henderson, Nevada (June 2009), NDEP guidance (May 2006), and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review (June 2008) as there are no current guidelines for the method stated above.

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

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

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.
- B The analytical result may be a false positive totally attributable to blank contamination. This qualifier is applicable to radiochemistry analysis only.
- JB The analytical result may be biased high and partially attributable to blank contamination. This qualifier is applicable to radiochemistry analysis only.
- JK The analytical result is an estimated maximum possible concentration (EMPC).
- X The analytical result is not used for reporting because a more accurate and precise result is reported in its place.
- J-TDS The analytical result is estimated based on failure of the Total Dissolved Solids (TDS) correctness check performed in accordance with the Standard Method 1030E.
- J-CAB The analytical result is estimated based on failure of the cation-anion balance correctness check performed in accordance with Standard Method 1030E.
- J-TDS & CAB The analytical result is unreliable based on the failure of the cation-anion balance and TDS correctness check performed in accordance with standard Method 1030E.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.
I. Technical Holding Times

All technical holding time requirements were met.

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

II. Calibration

a. Initial Calibration

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

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

b. Calibration Verification

Calibration verification was performed at required frequencies. The percent differences (%D) of amounts in continuing standard mixtures were within the 20.0% QC limits.

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

III. Blanks

Method blanks were reviewed for each matrix as applicable. No total petroleum hydrocarbons as extractable contaminants were found in the method blanks.

Sample FB072909-SO (from SDG R0904226) was identified as a field blank. No total petroleum hydrocarbons as extractable contaminants were found in this blank.

IV. Accuracy and Precision Data

a. Surrogate Recovery

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

b. Matrix Spike/Matrix Spike Duplicates

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

c. Laboratory Control Samples

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

V. Target Compound Identification

All target compound identifications were within validation criteria.

VI. Project Quantitation Limit

All project quantitation limits were within validation criteria.

All compounds reported below the PQL were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG R0905138	All compounds reported below the PQL.	J (all detects)	A

VII. System Performance

The system performance was acceptable.

VIII. Overall Assessment of Data

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

IX. Field Duplicates

No field duplicates were identified in this SDG.

Tronox LLC Facility, 2009 Phase B Investigation, Henderson, Nevada Total Petroleum Hydrocarbons as Extractables - Data Qualification Summary - SDG R0905138

SDG	Sample	Compound	Flag	A or P	Reason
R0905138	SA187-10B SA187-25B SA187-39B SA45-10B SA45-25B SA45-25B SA186-10B SA186-25B SA186-37B SA188-37B SA188-37B RSAQ5-0.5B RSAQ5-0.5B RSAQ5-10B RSAQ5-10B RSAQ5-25B RSAQ5-41B SA122-0.5B SA122-10B SA122-31B	All compounds reported below the PQL.	J (all detects)	A	Project Quantitation Limit (sp)

Tronox LLC Facility, 2009 Phase B Investigation, Henderson, Nevada Total Petroleum Hydrocarbons as Extractables - Laboratory Blank Data Qualification Summary - SDG R0905138

No Sample Data Qualified in this SDG

Tronox LLC Facility, 2009 Phase B Investigation, Henderson, Nevada Total Petroleum Hydrocarbons as Extractables - Field Blank Data Qualification Summary - SDG R0905138

No Sample Data Qualified in this SDG

Tronox Northgate Henderson

VALIDATION COMPLETENESS WORKSHEET

Stage 4

LDC # 21991E8 SDG #: R0905138

Laboratory: Columbia Analytical Services

Date: 11/30/09 Page: Reviewer: 2nd Reviewer:

METHOD: GC TPH as Extractables (EPA SW 846 Method 8015B)

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 9/00 /09
lla.	Initial calibration	A	
lib.	Calibration verification/ICV	A	Carlar E202
111.	Blanks	Á	
IVa.	Surrogate recovery	A	
IVb.	Matrix spike/Matrix spike duplicates	A	
IVc.	Laboratory control samples	A_	us b
V.	Target compound identification	A	
VI.	Compound Quantitation and CRQLs	A	
VII.	System Performance	A	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	'N	
X .	Field blanks	NØ	FB = FB072909-50 (from R0904226)

Note:

Validated Samples:

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

Valida	ated Samples:	soi)					
1	SA187-10B	11	SA188-25B	21	RSAQ5-41BMS	31	95742-MB
2	SA187-25B	12	SA188-37B	22	RSAQ5-41BMSD	32	
3	SA187-39B	13	RSAQ5-0.5B	23		33	
4	SA45-10B	14	RSAQ5-10B	24		34	
5	SA45-25B	15	RSAQ5-25B	25		35	
6	SA45-36B	16	RSAQ5-41B	26		36	
7	SA186-10B	17	SA122-0.5B	27		37	
8	SA186-25B	18	SA122-10B	28		38	·····
9	SA186-37B	19	SA122-20B	29		39	· · · · · · · · · · · · · · · · · · ·
10	SA188-10B	20	SA122-31B	30	<u> </u>	40	

Notes: (Au ND)

Method:GCHPLC			_		
Validation Area	Yes	No	NA	Findings/Comm	ents
I. Technical holding times					
All technical holding times were met.	-				
Cooler temperature criteria was met.					
II. Initial calibration					
Did the laboratory perform a 5 point calibration prior to sample analysis?					
Were all percent relative standard deviations (%RSD) < 20%?	/-				
Was a curve fit used for evaluation?		-			
Did the initial calibration meet the curve fit acceptance criteria of \geq 0.990?	ļ	ļ		[
Were the RT windows properly established?		t			
IV. Continuing calibration		1	r	T	
Was a continuing calibration analyzed daily?			<u> </u>		
Were all percent differences (%D) < 20%.0 or percent recoveries 80-120%?					
Were all the retention times within the acceptance windows?			<u> </u>		
V Blanks	1	1	T	T	
Was a method blank associated with every sample in this SDG?	/	ļ	ļ		
Was a method blank analyzed for each matrix and concentration?	//	<u></u>			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.			1		
VI. Surrogate spikes	-				
Were all surrogate %R within the QC limits?		<u> </u>			
If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R outside of criteria?				F	
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	1	1	1	1	
Was an LCS analyzed for this SDG?		<u> </u>		1	
Was an LCS analyzed per extraction batch?	+ -	1	 		
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?		\mathbf{k}			
IX. Regional Quality Assurance and Quality Control	<u> </u>	T		1	
Were performance evaluation (PE) samples performed?	<u> </u>	-	1_	/	
Were the performance evaluation (PE) samples within the acceptance limits?		<u> </u>		X	

Validation Area	Yes	No	NA	Findings/Comments
X. Target compound identification				
Were the retention times of reported detects within the RT windows?		<u> </u>		
XI. Compound quantitation/CRQLs				
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	/	ſ		
XII. System performance				
System performance was found to be acceptable.				
XIII. Overall assessment of data			generici Najeriti	
Overall assessment of data was found to be acceptable.				
XIV. Field duplicates				
Field duplicate pairs were identified in this SDG.				
Target compounds were detected in the field duplicates.			-	
XV. Field blanks				
Field blanks were identified in this SDG.	$\left \right\rangle$			
Target compounds were detected in the field blanks.				

•

23199158 SDG #: STE Care LDC #:

Initial Calibration Calculation Verification VALIDATION FINDINGS WORKSHEET

l of 2nd Reviewer: Page: Reviewer:

HPLC METHOD: GC_

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

average CF = sum of the CF/number of standards %RSD = 100 * (S/X) CF = A/C

A = Area of compound, C = Concentration of compound, S = Standard deviation of the CF X = Mean of the CFs

				Reported	Recalculated	Reported	Recalculated	Reported	Recalculated
*	Standard (D	Calibration Date	Compound	CF (/bon std)	CF (୧୮୦) std)	Average CF (initial)	Average CF (initial)	%RSD	%RSD
-	ICAL	9/18/09	DRD	12 500.0	902613	0.044 26	0,94466	4.16	4.16
						•			
2									
е									
	- <u>-</u>								
4									
		7							

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

LDC #: 3441 E8 SDG #: Sec Cover

VALIDATION FINDINGS WORKSHEET Continuing Calibration Results Verification

Page: 1 of 1 Reviewer: 5VC 2nd Reviewer: U

METHOD: GC HPLC

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

% Difference = 100 * (ave. CF - CF)/ave. CF CF = A/C

Where: ave. CF = initial calibration average CFCF = continuing calibration CF

A = Area of compound

C = Concentration of compound

xstandard IDCallbrationCallbrationCallbrationCallbrationMDWDWDWDWDWD1 $Cov q B$ $q h 2 / a h$ $q h 2 / a h$ $q h 2 / a h$ $q q - 1$ $0 - 1$ $0 - 1$ 2 $Cov l D$ $q / 2 - 7 / a h$ $q q 4 2 - 7 - 1$ $q q 4 2 - 7 - 1$ $q q - 1$ $0 - 1$ $0 - 1$ 2 $Cov l D$ $q / 2 - 7 / a h$ $q q - 1$ $q - 1$ $0 - 1$ $0 - 1$ 3 $Cov l D$ $q / 2 - 7 / a h$ $q - 1$ $q - 1$ $0 - 1$ 4 $1 / 2 - 7 / a h$ 4 $1 / 2 - 7 / a h$ $0 - 2 / a h$						Reported	Recalculated	Reported	Recalculated
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	*	Standard ID	Calibration Date	Compound .	Average CF(Ical)/ CCV Conc.	CF/Conc. CCV	CF/Conc. CCV	۵%	Q%
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	-	Cev 9B	40/24/6	DRO	944272	942 897	542897	6, 1	0.1
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$			· ·			~			
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$									
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	Я	Cev 10	4/2/4			820794	820 794	13. 1	13.1
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$			6.1/						
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$									
	6	CVII	9 / 1	. 1		547 783	585 783	6.0	5
			horer						
	4								
				-					

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 #: 21991 E &

VALIDATION FINDINGS WORKSHEET **Surrogate Results Verification**

l of / Å. Reviewer:_______2nd reviewer:_______ Page:

METHOD: _____GC ___ HPLC

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

% Recovery: SF/SS * 100

#

SF = Surrogate Found SS = Surrogate Spiked Where:

Sample ID: 🕇 /						
Surrogate	ColumnDetector	Surrogate Spiked	Surrogate Eound	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	
Hd1 ~0	2B-5	100	81.56	8	8~	0
		•				

Sample ID:

Surrogate	Column/Detector	Surrogete Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	

Sample ID:

		 	 -
Percent Difference			
Percent Recovery	Recalculated		
Percent Recovery	Reported		
Surrogate Found			
Surrogate Spiked			
Column/Detector			
Surrogate			

¢	Z
1 99 12	See
	SDG #:

VALIDATION FINDINGS WORKSHEET Matrix Spike/Matrix Spike Duplicates Results Verification

NG Page: / of / Reviewer:_ 2nd Reviewer:

METHOD: _____GC ___HPLC

The percent recoveries (%R) and relative percent differences (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using SC = Sample concentration Where the following calculation: %Recovery = 100 * (SSC - SC)/SA

RPD =(({SSCMS - SSCMSD} * 2) / (SSCMS + SSCMSD))*100 イト $\overline{\Lambda}$ MS/MSD samples:

SSC = Spiked sample concentration SA = Spike added MS = Matrix spike

MSD = Matrix spike duplicate

	ds	lke	Sample	Spike	Sample	Matrix	spike	Matrix Spike	e Duplicate	W/SM	so
Compound	1457	6 6 7	(45/b)	Conce 、 いく	ration (Cc.)	Percent	Recovery	Percent R	tecovery	RPI	
	WS	Ø MSD	0	SW		Reported	Recalc.	Reported	Recatc.	Reported	Recalc.
Gasoline (8015)											
Diesel (8015)	ajsoco	273000	0	195000	219000	17	14	80	Q9	7	7
Benzene (8021B)											
Methane (RSK-175)											
2,4-D (8151)											
Dinoseb (8151)											
Naphthalene (8310)											
Anthracene (8310)											
HMX (8330)											
2,4,6-Trinitrotoluene (8330)											
Comments: Refer to Matrix Sp	ike/Matrix	Spike Dupl	licates finding	s worksheet	for list of qualit	ications and a	ssociated san	nples when rel	ported result:	s do not agree	within 10.0%
of the recalculated results.											

401 FY	Curr
Q	See
LDC #:	SDG #:

METHOD: CGC__HPLC

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* (SSC-SC)/SA RPD = 1 LCS - LCSD 1 * 2/(LCS + LCSD)

Where: SSC = Spiked sample concentration SA = Spike added LCS = Laboratory control sample percent recovery

9 SM

9574×

LCS/LCSD samples:

SC = Concentration

LCSD = Laboratory control sample duplicate percent recovery

	SA	pike Han	Spiked	Sample		SS		SD	ΓCS	LCSD
Compound	, n ,	2/6)	う - - - - - - - - - -	2 Acc)	Percent	Recovery	Percent F	Recovery	Ľ	PD
	rcs		LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Gasoline (8015)										
Diesel (8015)	000 152	221 000	215000	218000	<u>5</u> 5	86	87	г <u>«</u>	-	-
Benzene (8021B)								>	/	
Methane (RSK-175)										
2,4-D (8151)										
Dinoseb (8151)										
Naphthalene (8310)										
Anthracene (8310)										
HMX (8330)										
2,4,6-Trinitrotoluene (8330)										
							-			
									يعتقد ومستعد ومستعد والمستعد والمست والمست والمستعد والمستوقد والمستوقد والمست والمستوقد والمستوقد والم	

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicate findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

SDG #: 3491 48

VALIDATION FINDINGS WORKSHEET Sample Calculation Verification

Page: 1 of 1 Reviewer: 37/7 2nd Reviewer: 1

		Qualifications	
eported results?	Cound Name	Recalculated Results Concentrations (
or all level IV samples? pounds within 10% of the re	E O I I	Reported Concentrations	
Its recalculated and verified for esults for detected target corr	Example: Sample ID. Concentration	Compound	
Were all reported resu Were all recalculated r	ration= (A)(Fv)(Df) (RF)(Vs or Ws)(%S/100) t or height of the compound to be measu if Volume of extract tion Factor age response factor of the compound e initial calibration at volume of the sample it weight of the sample cent Solid	Sample ID	
z z x z	oncent - Arek 고 Dilu - Dilu - Dilu - Dilu - Aver - Aver - Aver - Aver - Aver - Aver - Aver - Arek - Arex - Arex - Arex - Arex - Arex - Arex - Arex - Arex - Arex -	*	

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Comments:

SAMPCALew.wpd

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:	Tronox LLC Facility, 2009 Phase B Investigation, Henderson, Nevada
Collection Date:	September 10 trough September 16, 2009
LDC Report Date:	December 5, 2009
Matrix:	Soil
Parameters:	Total Petroleum Hydrocarbons as Extractables
Validation Level:	Stage 4
Laboratory:	Columbia Analytical Services, Inc.

Sample Delivery Group (SDG): R0905192

Sample Identification

SA102-10BSPLP2 SA102-10BSPLP3 SA102-30BSPLP2 SA102-30BSPLP3 SA30-9BSPLP2 SA30-9BSPLP3 SA128-10BSPLP2 SA128-10BSPLP2 SA128-29BSPLP2 SA128-29BSPLP3

Samples in this SDG underwent SPLP extraction

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 8015B for Total Petroleum Hydrocarbons (TPH) as Extractables.

This review follows the Standard Operating Procedures (SOP) 40, Data Review/Validation (BRC 2009), the Quality Assurance Project Plan Tronox LLC Facility, Henderson, Nevada (June 2009), NDEP guidance (May 2006), and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review (June 2008) as there are no current guidelines for the method stated above.

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

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

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.
- B The analytical result may be a false positive totally attributable to blank contamination. This qualifier is applicable to radiochemistry analysis only.
- JB The analytical result may be biased high and partially attributable to blank contamination. This qualifier is applicable to radiochemistry analysis only.
- JK The analytical result is an estimated maximum possible concentration (EMPC).
- X The analytical result is not used for reporting because a more accurate and precise result is reported in its place.
- J-TDS The analytical result is estimated based on failure of the Total Dissolved Solids (TDS) correctness check performed in accordance with the Standard Method 1030E.
- J-CAB The analytical result is estimated based on failure of the cation-anion balance correctness check performed in accordance with Standard Method 1030E.
- J-TDS & CAB The analytical result is unreliable based on the failure of the cation-anion balance and TDS correctness check performed in accordance with standard Method 1030E.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

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

II. Calibration

a. Initial Calibration

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

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

b. Calibration Verification

Calibration verification was performed at required frequencies. The percent differences (%D) of amounts in continuing standard mixtures were within the 20.0% QC limits.

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

III. Blanks

Method blanks were reviewed for each matrix as applicable. No total petroleum hydrocarbons as extractable contaminants were found in the method blanks.

No field blanks were identified in this SDG.

IV. Accuracy and Precision Data

a. Surrogate Recovery

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

b. Matrix Spike/Matrix Spike Duplicates

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.

c. Laboratory Control Samples

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

V. Target Compound Identification

All target compound identifications were within validation criteria.

VI. Project Quantitation Limit

All project quantitation limits were within validation criteria.

All compounds reported below the PQL were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG R0905192	All compounds reported below the PQL.	J (all detects)	A

VII. System Performance

The system performance was acceptable.

VIII. Overall Assessment of Data

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

IX. Field Duplicates

No field duplicates were identified in this SDG.

Tronox LLC Facility, 2009 Phase B Investigation, Henderson, Nevada Total Petroleum Hydrocarbons as Extractables - Data Qualification Summary - SDG R0905192

SDG	Sample	Compound	Flag	A or P	Reason
R0905192	SA102-10BSPLP2 SA102-10BSPLP3 SA102-30BSPLP2 SA102-30BSPLP3 SA30-9BSPLP2 SA30-9BSPLP3 SA128-10BSPLP2 SA128-10BSPLP3 SA128-29BSPLP2 SA128-29BSPLP3	All compounds reported below the PQL.	J (all detects)	A	Project Quantitation Limit (sp)

Tronox LLC Facility, 2009 Phase B Investigation, Henderson, Nevada Total Petroleum Hydrocarbons as Extractables - Laboratory Blank Data Qualification Summary - SDG R0905192

No Sample Data Qualified in this SDG

Tronox LLC Facility, 2009 Phase B Investigation, Henderson, Nevada Total Petroleum Hydrocarbons as Extractables - Field Blank Data Qualification Summary - SDG R0905192

No Sample Data Qualified in this SDG

Tronox Northgate Henderson

VALIDATION COMPLETENESS WORKSHEET LDC #: 21991F8

SDG #: R0905192

Laboratory: Columbia Analytical Services

Date: 11/30 /09 Page: of Reviewer: 2nd Reviewer:

METHOD: GC TPH as Extractables (EPA SW 846 Method 8015B)

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

Stage 4

	Validation Area		Comments
١.	Technical holding times	A	Sampling dates: 9/10/09 - 9/16/09
lla.	Initial calibration	A	
IIb.	Calibration verification/ICV	A	$CW/IW \in 202$
	Blanks	A	
IVa.	Surrogate recovery	A	
IVb.	Matrix spike/Matrix spike duplicates	N	client spec
IVc.	Laboratory control samples	A	LCS /D
V.	Target compound identification	A	
VI.	Compound Quantitation and CRQLs	A	
VII.	System Performance	A	
VIII.	Overall assessment of data	Å	
IX.	Field duplicates	N	
X .	Field blanks	N	

Note:

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

 ≤ 0 ;)

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

D = Duplicate TB = Trip blank EB = Equipment blank

Validated Samples:

+ 1 1 1	SA102-10BSPLP2	11 /	96632 - MB	21	31
+ 2	SA102-10BSPLP3	12	96548-1	22	32
3	SA102-30BSPLP2	13 3	97240-	23	33
4	SA102-30BSPLP3	14 7	97010- ł	24	34
5	SA30-9BSPLP2	15 2	SPLP-BIKI	25	35
6-3	SA30-9BSPLP3	16 1	SPLP-Blk2	26	36
7	SA128-10BSPLP2	17 4	SPIP-BIK3	27	37
8	SA128-10BSPLP3	183	SPLK-BK4	28	38
9 3	SA128-29BSPLP2	19	·	29	39
10 9	SA128-29BSPLP3	20		30	40

Notes:___

Validation Area	Yes	No	NA	Findings/Comments
. Technical holding times				
All technical holding times were met.				
Cooler temperature criteria was met.				
I. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	<			
Nere all percent relative standard deviations (%RSD) < 20%?	-		ļ	
Nas a curve fit used for evaluation?		/	Í	
Did the initial calibration meet the curve fit acceptance criteria of \geq 0.990?				
Nere the RT windows properly established?	1			<u> </u>
V. Continuing calibration		1	1	
Was a continuing calibration analyzed daily?	4			
Nere all percent differences (%D) \leq 20%.0 or percent recoveries 80-120%?	 			
Were all the retention times within the acceptance windows?			3639365	<u> </u>
/ Blanks	r	1	T	T
Was a method blank associated with every sample in this SDG?				
Was a method blank analyzed for each matrix and concentration?	-		ļ	
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.			t	
VI. Surrogate spikes	1		T	
Were all surrogate %R within the QC limits?				
If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R outside of criteria?			/	Ĺ
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?		<	1	
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?			/	
VIII. Laboratory control samples		1	1	1
Was an LCS analyzed for this SDG?	K	-		
Was an LCS analyzed per extraction batch?	1	 		
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?		<u> </u>		
IX. Regional Quality Assurance and Quality Control	r	T	7	T
Were performance evaluation (PE) samples performed?	 		1	·
Were the performance evaluation (PE) samples within the acceptance limits?				

Validation Area	Yes	No	NA	Findings/Comments
X. Target compound identification		<u></u>		
Were the retention times of reported detects within the RT windows?		[
XI. Compound quantitation/CRQLs				
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	/			
XII. System performance				
System performance was found to be acceptable.				
XIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.				
XIV. Field duplicates				
Field duplicate pairs were identified in this SDG.		/	ľ	
Target compounds were detected in the field duplicates.				
XV. Field blanks				
Field blanks were identified in this SDG.		/	ł	/
Target compounds were detected in the field blanks.				

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21 AAI F8 See Cover SDG #:

Initial Calibration Calculation Verification VALIDATION FINDINGS WORKSHEET

l of J Page: 2nd Reviewer: Reviewer:

HPLC METHOD: GC

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

CF = A/C average CF = sum of the CF/number of standards %RSD = 100 • (S/X)

A = Area of compound, C = Concentration of compound, S = Standard deviation of the CF X = Mean of the CFs

t Calibration Calibration Compound ($^{1}OTP_{dd}$) $^{1}OTP_{dd}$ ^{1}OT					Reported	Recalculated	Reported	Recalculated	Reported	Recalculated
tAL a/k b/b c, ao > 40 > 6, ao > 40 > 6, ao > 40 > 6, ad + e, c, d, i, d,		Standard ID	Calibration Date	Compound	CF (1077std)	CF () ۳۰۵ std)	Average CF (initial)	Average CF (initial)	%RSD	%RSD
$\begin{bmatrix} 1CA \ 1 \ 0 \ 0 \ 0 \ 0 \ 0 \ 0 \ 0 \ 0 \ 0$	1	ICAL	9/8	DKO	0, 403-40	0, 9030	0, 544 PG	0.444 .6	91 m	d, 16
$\left \left(AL \right) \right \left \left(\left(\left(-\frac{1}{2} A \right) \right) \right \left(\left(-\frac{1}{2} A \right) \right) \right) \left(\left(-\frac{1}{2} A \right) \right) \left(-\frac{1}{2} A \right) \left(-\frac{1}{$	T)							
$\left[c_{AL} \right] \left[c_{\delta u} / e_{\beta} \right] \xrightarrow{P \in \mathcal{O}} 0.5 \text{ vec} \left[0.4 \text{ vec} \right] \times 7 2 d_{\gamma} 2 d_{\gamma}$										
	. T	1CAL	10/01/00	D.R.D	0.5226	0.92260	1.022 66	(,on el	7 47	してい
			(na / na / -							
	1							-		
	- 1		. <u></u>							

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.

8 = 155K SDG #: See Cover

Continuing Calibration Results Verification VALIDATION FINDINGS WORKSHEET

Page: 1 of 2 Reviewer: 2nd Reviewer:

HPLC METHOD: GC_

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

% Difference = 100 * (ave. CF - CF)/ave. CF CF = A/C

Where: ave. CF = initial calibration average CFCF = continuing calibration CF

A = Area of compound C = Concentration of compound

					Reported	Recalculated	Reported	Recalculated
*	Standard ID	Calibration Date	Compound	Average CF(Ical)/ CCV Conc.	CF/Conc. CCV	CF/Conc. CCV	۵%	۵%
-	CCV 22	60/8c/6	DRD	69 275 63	896. 320 13	896320	5.1	l's
2	CW 23	9 / 20 / 2			947252	447 25Y	6.0	e, >
m	לב 27	4/20/04			404664	404 664	4.7	4.2
4	CC 29	10/10/01		\checkmark	464792	X669292	2.2	2.7

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 # 21 591 F8 SDG #: Sre Cover

Continuing Calibration Results Verification VALIDATION FINDINGS WORKSHEET

Page: Yof X 375 2nd Reviewer: Reviewer:

> HPLC METHOD: GC_

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

% Difference = 100 * (ave. CF - CF)/ave. CF CF = A/C

Where: ave. CF = initial calibration average CF CF = continuing calibration CF A = Area of compound C = Concentration of compound

* calibration base calibration base calibration base calibration correction Motion Motion Motion Motion 2 $10 h h t h h h$ $10 h h t h h h h h h h h h h h h h h h h $						Reported	Recalculated	Reported	Recalculated
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	*	Standard ID	Calibration Date	Сотроила	Average CF(Ical)/ CCV Conc.	CF/Conc. CCV	CF/Conc. CCV	۵%	0%
	-	[cv]	10/01/00	DRD	10 22456	946 247	946247	7.5	7.2
	2								
	6						•		
	4								
									

Comments: Kelet to Continuing Calibration Internate worksheet recalculated results.

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MUAL L	Ser Correr	
LDC #:	SDG #:	METHOD:

VALIDATION FINDINGS WORKSHEET Surrogate Results Verification

of Reviewer:______2nd reviewer:_____ Page:

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

% Recovery: SF/SS * 100

Sample ID:

Where: SF = Surrogate Found SS = Surrogate Spiked

Surrogate	ColumnDetector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	
0- TPH	ZB-5	6	89.75	50	66	R
		•				

Sample ID:

			Ī
Percent Difference			
Percent Recovery	Recalculated		
Percent Recovery	Reported		ومستعديات مراجع والمتعادين والمتحاط والمتعادين والمتعادين والمتعادين والمتعادين والمتعادين والمتعادين والمتعاد
Surrogate Found			
Surrogate Spiked			
Column/Detector			
Surrogate			

Sample ID:

Percent Difference			
Percent Recovery	Recalculated		
Percent Recovery	Reported		
Surrogate Found			
Surrogate Spiked			
Column/Detector			
Surrogate			

>1 991 78	See curer
LDC #:	SDG #:

METHOD: CG HPLC

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* (SSC-SC)/SA RPD = 1 LCS - LCSD 1 * 2/(LCS + LCSD)

Where: SSC = Spiked sample concentration SA = Spike added LCS = Laboratory control sample percent recovery

SC = Concentration

LCSD = Laboratory control sample duplicate percent recovery

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	0	pike	Spiked	Sample	Ľ	S	Ϊ	sD	LCS/	LCSD
Compound	۲ż	2/1)		ntration	Percent	Recovery	Percent F	Recovery	×	Da
	rcs	rcsD	rcs	rcsD	Reported	Recalc.	Reported	Recalc.	Reported	Receic
Gasoline (8015)										
Diesel (8015)	50)	(as	342	411	78	7 K	8~	ہے ا		
Benzene (8021B)						2			,	1
Methane (RSK-175)										
2,4-D (8151)										
Dinoseb (8151)										
Naphthalene (8310)										
Anthracene (8310)										
HMX (8330)										
2,4,6-Trinitrotoluene (8330)										
					-		-			

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicate findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

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*	Sample ID	Compound	Reported Concentrations	Recalculated Results Concentrations	Qualifications
				· ·	
-					
				-	
					-

Df= Dilution Factor RF≖ Average response factor of the compound In the initial calibration Vs= Initial volume of the sample Ws≖ Initial weight of the sample %S= Percent Solid	Concentration= <u>(A)(Fy)(Df)</u> (RF)(Vs or Ws)(%S/100) A= Area or height of the compound to be measured	Y N N/A Were all reported results recall Y N N/A Were all recalculated results for	METHOD:GC HPLC	SDG # <u>Sec Curr</u>
Concentration = (113823002) (1 ml) (1060 ml)	Example: Sample ID Compound Name	culated and verified for all level IV samples? or detected target compounds within 10% of the reported results?		VALIDATION FINDINGS WORKSHEET Sample Calculation Verification
(100)	DRO			
2, 113, 7 2, 11 1 15, 7				Page: <u>of</u> eviewer: <u>/</u> 2

LDC Report# 21991G8

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:	Tronox LLC Facility, 2009 Phase B Investigation, Henderson, Nevada	
Collection Date:	September 11, 2009	
LDC Report Date:	December 5, 2009	
Matrix:	Soil	
Parameters:	Total Petroleum Hydrocarbons as Extractables	
Validation Level:	Stage 2B	
Laboratory:	Columbia Analytical Services, Inc.	

Sample Delivery Group (SDG): R0905198

Sample Identification

RSAQ6-0.5B RSAQ6-10B RSAQ6-25B RSAQ6-38B RSAQ6009-38B SA41-12B SA41-25B SA41-25B SA41-38B SA40-10B SA40-25B SA40-25B SA40-41B SA114-10B SA114-30B SA40-41BMS SA40-41BMS

Introduction

This data review covers 15 soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8015B for Total Petroleum Hydrocarbons (TPH) as Extractables.

This review follows the Standard Operating Procedures (SOP) 40, Data Review/Validation (BRC 2009), the Quality Assurance Project Plan Tronox LLC Facility, Henderson, Nevada (June 2009), NDEP guidance (May 2006), and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review (June 2008) as there are no current guidelines for the method stated above.

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

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

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

The following are definitions of the data qualifiers:

- J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.
- J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.
- J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.
- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- B The analytical result may be a false positive totally attributable to blank contamination. This qualifier is applicable to radiochemistry analysis only.
- JB The analytical result may be biased high and partially attributable to blank contamination. This qualifier is applicable to radiochemistry analysis only.
- JK The analytical result is an estimated maximum possible concentration (EMPC).
- X The analytical result is not used for reporting because a more accurate and precise result is reported in its place.
- J-TDS The analytical result is estimated based on failure of the Total Dissolved Solids (TDS) correctness check performed in accordance with the Standard Method 1030E.
- J-CAB The analytical result is estimated based on failure of the cation-anion balance correctness check performed in accordance with Standard Method 1030E.
- J-TDS & CAB The analytical result is unreliable based on the failure of the cation-anion balance and TDS correctness check performed in accordance with standard Method 1030E.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

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

II. Calibration

a. Initial Calibration

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

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

b. Calibration Verification

Calibration verification was performed at required frequencies. The percent differences (%D) of amounts in continuing standard mixtures were within the 20.0% QC limits.

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

III. Blanks

Method blanks were reviewed for each matrix as applicable. No total petroleum hydrocarbons as extractable contaminants were found in the method blanks.

Sample FB072909-SO (from SDG R0904226) was identified as a field blank. No total petroleum hydrocarbons as extractable contaminants were found in this blank.

IV. Accuracy and Precision Data

a. Surrogate Recovery

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

b. Matrix Spike/Matrix Spike Duplicates

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

c. Laboratory Control Samples

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

V. Target Compound Identification

Raw data were not reviewed for this SDG.

VI. Project Quantitation Limit

All compounds reported below the PQL were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG R0905198	All compounds reported below the PQL.	J (all detects)	A

Raw data were not reviewed for this SDG.

VII. System Performance

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

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

IX. Field Duplicates

Samples RSAQ6-38B and RSAQ6009-38B were identified as field duplicates. No total petroleum hydrocarbons as extractables were detected in any of the samples.

Tronox LLC Facility, 2009 Phase B Investigation, Henderson, Nevada Total Petroleum Hydrocarbons as Extractables - Data Qualification Summary - SDG R0905198

SDG	Sample	Compound	Flag	A or P	Reason (Code)
R0905198	RSAQ6-0.5B RSAQ6-10B RSAQ6-25B RSAQ6-38B RSAQ6009-38B SA41-12B SA41-25B SA41-25B SA41-38B SA40-10B SA40-25B SA40-41B SA114-10B SA114-30B	All compounds reported below the PQL.	J (all detects)	A	Project Quantitation Limit (sp)

Tronox LLC Facility, 2009 Phase B Investigation, Henderson, Nevada Total Petroleum Hydrocarbons as Extractables - Laboratory Blank Data Qualification Summary - SDG R0905198

No Sample Data Qualified in this SDG

Tronox LLC Facility, 2009 Phase B Investigation, Henderson, Nevada Total Petroleum Hydrocarbons as Extractables - Field Blank Data Qualification Summary - SDG R0905198

No Sample Data Qualified in this SDG

Tronox Northgate Henderson

VALIDATION COMPLETENESS WORKSHEET

Stage 2B

LDC #: 21991G8 SDG #: R0905198

Laboratory: Columbia Analytical Services

Date: 12/01/04 Page: 1 of 1 Reviewer: 3/6 2nd Reviewer:

METHOD: GC TPH as Extractables (EPA SW 846 Method 8015B)

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 9/h /0 9
lla.	Initial calibration	A	
IIb.	Calibration verification/ICV	A	Car /W = 202
- 111.	Blanks	Å	
IVa.	Surrogate recovery	A	
IVb.	Matrix spike/Matrix spike duplicates	A	
IVc.	Laboratory control samples	A	ucs/p
<u>V.</u>	Target compound identification	N	
VI.	Compound Quantitation and CRQLs	N	
VII.	System Performance	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	ND	D = 4,5
Χ.	Field blanks	ND	FB= FB072909-50 (from R0904226)

Note:

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

Soil

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

D = Duplicate TB = Trip blank EB = Equipment blank

Validated Samples:

_		~		-	a (12 à		
1	RSAQ6-0.5B	11	SA40-41B	21	96120-MB	31	
2	RSAQ6-10B	12	SA114-10B	22		32	
3	RSAQ6-25B	+ 13	SA114-30B	23		33	
4	RSAQ6-38B D,	14	SA40-41BMS	24		34	
5	RSAQ6009-388 D	15	SA40-41BMSD	25		35	
6	SA41-12B	16		26		36	
7	SA41-25B	17		27		37	
8	SA41-38B	18		28		38	
9	SA40-10B	19		29		39	
10	SA40-25B	20		30		40	

Notes:

LDC Report# 21991H8

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:	Tronox LLC Facility, 2009 Phase B Investigation, Henderson, Nevada			
Collection Date:	September 14, 2009			
LDC Report Date:	December 5, 2009			
Matrix:	Soil/Water			
Parameters:	Total Petroleum Hydrocarbons as Extractables			
Validation Level:	Stage 2B			
Laboratory:	Columbia Analytical Services, Inc.			

Sample Delivery Group (SDG): R0905218

Sample Identification

EB091409-SO1 SA42-10B SA42009-10B SA42-25B SA42-38B SA43-10B SA43-25B SA43-43B SA44-10B SA44-25B SA44-42B RSAR6-37B RSAR6-25B RSAR6-0.5B RSAR6-9B RSAO8-43B RSA08-11.5B RSA08-21.5B RSAR6-37BMS RSAR6-37BMSD

Introduction

This data review covers 19 soil samples and one water sample listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8015B for Total Petroleum Hydrocarbons (TPH) as Extractables.

This review follows the Standard Operating Procedures (SOP) 40, Data Review/Validation (BRC 2009), the Quality Assurance Project Plan Tronox LLC Facility, Henderson, Nevada (June 2009), NDEP guidance (May 2006), and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review (June 2008) as there are no current guidelines for the method stated above.

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

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.
The following are definitions of the data qualifiers:

- J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.
- J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.
- J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.
- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- B The analytical result may be a false positive totally attributable to blank contamination. This qualifier is applicable to radiochemistry analysis only.
- JB The analytical result may be biased high and partially attributable to blank contamination. This qualifier is applicable to radiochemistry analysis only.
- JK The analytical result is an estimated maximum possible concentration (EMPC).
- X The analytical result is not used for reporting because a more accurate and precise result is reported in its place.
- J-TDS The analytical result is estimated based on failure of the Total Dissolved Solids (TDS) correctness check performed in accordance with the Standard Method 1030E.
- J-CAB The analytical result is estimated based on failure of the cation-anion balance correctness check performed in accordance with Standard Method 1030E.
- J-TDS & CAB The analytical result is unreliable based on the failure of the cation-anion balance and TDS correctness check performed in accordance with standard Method 1030E.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

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

II. Calibration

a. Initial Calibration

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

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

b. Calibration Verification

Calibration verification was performed at required frequencies. The percent differences (%D) of amounts in continuing standard mixtures were within the 20.0% QC limits.

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

III. Blanks

Method blanks were reviewed for each matrix as applicable. No total petroleum hydrocarbons as extractable contaminants were found in the method blanks.

Sample EB091409-SO1 was identified as an equipment blank. No total petroleum hydrocarbons as extractable contaminants were found in this blank with the following exceptions:

Equipment Blank ID	Sampling Date	Compound	Concentration	Associated Samples
EB091409-SO1	9/14/09	Diesel range organics	130 ug/L	SA42-10B SA42009-10B SA42-25B SA42-38B SA43-10B SA43-25B SA43-43B SA44-10B SA44-25B SA44-25B SA44-42B RSAR6-37B RSAR6-37B RSAR6-9B

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

Samples FB072909-SO (from SDG R0904226) and FB082809-SO (from SDG R0904894) were identified as field blanks. No total petroleum hydrocarbons as extractable contaminants were found in these blanks with the following exceptions:

Field Blank ID	Sampling Date	Compound	Concentration	Associated Samples
FB082809-SO	8/28/09	Diesel range organics	110 ug/L	RSAO8-43B RSAO8-11.5B RSAO8-21.5B

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

IV. Accuracy and Precision Data

a. Surrogate Recovery

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

b. Matrix Spike/Matrix Spike Duplicates

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

c. Laboratory Control Samples

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

V. Target Compound Identification

Raw data were not reviewed for this SDG.

VI. Project Quantitation Limit

All compounds reported below the PQL were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG R0905218	All compounds reported below the PQL.	J (all detects)	A

Raw data were not reviewed for this SDG.

VII. System Performance

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

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

IX. Field Duplicates

Samples SA42-10B and SA42009-10B were identified as field duplicates. No total petroleum hydrocarbons as extractables were detected in any of the samples with the following exceptions:

	Concentrat	ion (ug/Kg)		Difference		
Compound	SA42-10B	SA42009-10B	(Limits)	(Limits)	Flags	A or P
Diesel range organics	2200000	4100000	60 (≤50)	-	J (all detects)	А

Tronox LLC Facility, 2009 Phase B Investigation, Henderson, Nevada Total Petroleum Hydrocarbons as Extractables - Data Qualification Summary - SDG R0905218

SDG	Sample	Compound	Flag	A or P	Reason (Code)
R0905218	EB091409-SO1 SA42-10B SA42009-10B SA42-25B SA42-38B SA43-10B SA43-25B SA43-43B SA44-10B SA44-25B SA44-42B RSAR6-37B RSAR6-37B RSAR6-37B RSAR6-9B RSAR6-9B RSAO8-43B RSAO8-11.5B RSAO8-21.5B	All compounds reported below the PQL.	J (all detects)	A	Project Quantitation Limit (sp)
R0905218	SA42-10B SA42009-10B	Diesel range organics	J (all detects)	A	Field duplicates (RPD) (fd)

Tronox LLC Facility, 2009 Phase B Investigation, Henderson, Nevada Total Petroleum Hydrocarbons as Extractables - Laboratory Blank Data Qualification Summary - SDG R0905218

No Sample Data Qualified in this SDG

Tronox LLC Facility, 2009 Phase B Investigation, Henderson, Nevada Total Petroleum Hydrocarbons as Extractables - Equipment Blank Data Qualification Summary - SDG R0905218

No Sample Data Qualified in this SDG

Tronox LLC Facility, 2009 Phase B Investigation, Henderson, Nevada Total Petroleum Hydrocarbons as Extractables - Field Blank Data Qualification Summary - SDG R0905218

No Sample Data Qualified in this SDG

Tronox Northgate Henderson

VALIDATION COMPLETENESS WORKSHEET

Stage 2B

SDG #:_____

LDC #: 21991H8

Laboratory: Columbia Analytical Services

METHOD: GC TPH as Extractables (EPA SW 846 Method 8015B)

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 9/14/09
lla.	Initial calibration	A	
llb.	Calibration verification/ICV	A	CANA 6 20 2
Ш.	Blanks	A	
IVa.	Surrogate recovery	A	
IVb.	Matrix spike/Matrix spike duplicates	A	
IVc.	Laboratory control samples	A	us b
V.	Target compound identification	N	
VI.	Compound Quantitation and CRQLs	N	
VII.	System Performance	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	SW	b = 2,3
X .	Field blanks	SW	EB=1 FB=FB072909-50 (frm R0904226
Note:	A = Acceptable N = Not provided/applicable SW = See worksheet FB = Fi	o compound sate eld blank	s detected D = Duplicate TB = Trip blank EB = Equipment blank
Validate	d Samples: Water + Soil		
1 1	EB091409-SO1 W 11 SA44-42B		S 211 96290-MB 31
2 2	SA42-10B D S 12 RSAR6-37B		22 + 96 + 20 - 32

3 7	SA42009-10B D	13	RSAR6-25B	23	66218-1	33
4 7	SA42-25B	14	RSAR6-0.5B	24		34
5 -	SA42-38B	15	RSAR6-9B	25		35
ר ₆	SA43-10B	16	RSAO8-43B	26		36
ر 7	SA43-25B	17	RSAO8-11.5B	27		37
8 7	SA43-43B	18	RSAO8-21.5B	28		38
9 7	SA44-10B	19	RSAR6-37BMS	29		39
10	SA44-25B	20	RSAR6-37BMSD	30		40

Notes:

Date: <u>12/61/89</u> Page: <u>1</u> of <u>1</u> Reviewer: <u>0VL</u> 2nd Reviewer: ____

hod 8015B)

VALID/

1 166/2 :# J 441 }	<u>+</u> 8			VALIDATIC	ON FINDING	S WORKSH	HEET	Page: lof
SDG #: 74 C					Field Blan	<u>Iks</u>		2nd Reviewer: UVE
METHOD: G(V N N/A W(N N/A W(W(W(W(W(W(W(W(W(W(E HPLC ere field blan ere target col	ks identifi mpounds (ated samp	ed in this SDG detected in the le units: 46	? field blanks?				
Sampling date: <u> </u>	<u>8</u> /09 Ircle one) <mark>Ге</mark> б Rinsate / Ес	1 Blank Mr quipment R	ip Blank / Atmos insate / Equipme	ר שוווי ארום של ארום של ארום של ארום ארום של א מערים של ארום של	Ambient Blank ce Blank / Other		Associated Samples:	(P) 8 (ND)
Compound	Blank ID	Blank ID				Sample	Identification	
	FB 08 28	05-60						
DRO	011							
						-		
cRaL								
Blank units: <u>wg //</u> Sampling date: g	- Associa	ated samp	le units: MG	Arg			с С	Ţ
Field blank type: (c	ircle one) Fielc Rinsate / E	d Blank / Tr quipment F	rip Blank/ Atmos Rinsate (Equipm	pheric Blank/ Ar lent Blank/ Soul	nbient Blank rce Blank / Other		Associated Samples:	<i>ح</i> ا
Compound	Blank ID	Blank ID				Sample	Identification	
DRO	081		(AI) 1	esuits	either 1	5	> EA)	
CROL								
	FRF NOT OUA	I FIFD AL	RESULTS NOT C	IRCLED WERE C	UALIFIED BY THE	FOLLOWING ST	LATEMENT	

Samples with compound concentrations within five times the associated field blank concentration are listed above, these sample results were qualified as not detected, "U".

SDG #: 24 (1-1 LDC #: 21 691 H8

VALIDATION FINDINGS WORKSHEET Field Duplicates

3NC Page: ____of__ Reviewer: 2nd reviewer:

> GC HPLC Were field duplicate pairs identified in this SDG? Were target compounds detected in the field duplicate pairs?

			والمتعادية والمترافية والمتعارية والمتعارية والمتعارية والمتعارية والمتعادية والمتعارية والمتعارية والمتعارية		
	Concentration	(ng Kg)	%RPD	Qualification	
ompodino	2	м		Parent only) All Samples	
DRO	2 200 000	4 100 000	0)	Jaws/A (fd)	

	Concentration ()	%RPD	Qualification
Сотрочия		Limit	Parent only / All Samples

Laboratory Data Consultants, Inc. Data Validation Report

Tronox LLC Facility, 2009 Phase B Investigation, Henderson, Nevada
September 15 through September 16, 2009
December 5, 2009
Soil/Water
Total Petroleum Hydrocarbons as Extractables
Stage 2B

Laboratory:	Columbia Analytical Services, II	nc.
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Sample Delivery Group (SDG): R0905260

Sample Identification

EB091509-SO1	SA153-25BMSD
SA136-0.5B	
SA136-10B	
SA136-25B	
SA136-40B	
SA30-5B	
SA30-9B	
SA30-25B	
SA30-38B	
SA153-10B	
SA153-25B	
SA153-38B	
SA172-10B	
SA172-25B	
SA172-40B	
EB091609-SO1	
SA128-0.5B	
SA128-10B	
SA128-29B	
SA153-25BMS	

Introduction

This data review covers 19 soil samples and 2 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8015B for Total Petroleum Hydrocarbons (TPH) as Extractables.

This review follows the Standard Operating Procedures (SOP) 40, Data Review/Validation (BRC 2009), the Quality Assurance Project Plan Tronox LLC Facility, Henderson, Nevada (June 2009), NDEP guidance (May 2006), and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review (June 2008) as there are no current guidelines for the method stated above.

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

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

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

The following are definitions of the data qualifiers:

- J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.
- J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.
- J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.
- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- B The analytical result may be a false positive totally attributable to blank contamination. This qualifier is applicable to radiochemistry analysis only.
- JB The analytical result may be biased high and partially attributable to blank contamination. This qualifier is applicable to radiochemistry analysis only.
- JK The analytical result is an estimated maximum possible concentration (EMPC).
- X The analytical result is not used for reporting because a more accurate and precise result is reported in its place.
- J-TDS The analytical result is estimated based on failure of the Total Dissolved Solids (TDS) correctness check performed in accordance with the Standard Method 1030E.
- J-CAB The analytical result is estimated based on failure of the cation-anion balance correctness check performed in accordance with Standard Method 1030E.
- J-TDS & CAB The analytical result is unreliable based on the failure of the cation-anion balance and TDS correctness check performed in accordance with standard Method 1030E.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

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

II. Calibration

a. Initial Calibration

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

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

b. Calibration Verification

Calibration verification was performed at required frequencies. The percent differences (%D) of amounts in continuing standard mixtures were within the 20.0% QC limits.

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

III. Blanks

Method blanks were reviewed for each matrix as applicable. No total petroleum hydrocarbons as extractable contaminants were found in the method blanks.

Samples EB091509-SO1 and EB091609-SO1 were identified as equipment blanks. No total petroleum hydrocarbons as extractable contaminants were found in these blanks with the following exceptions:

Equipment Blank ID	Sampling Date	Compound	Concentration	Associated Samples
EB091509-SO1	9/15/09	Diesel range organics	95 ug/L	SA136-0.5B SA136-10B SA136-25B SA136-40B SA30-5B SA30-25B SA30-25B SA30-38B SA153-10B SA153-25B SA153-38B SA172-10B SA172-25B SA172-40B

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

Sample FB072909-SO (from SDG R0904226) was identified as a field blank. No total petroleum hydrocarbons as extractable contaminants were found in this blank.

IV. Accuracy and Precision Data

a. Surrogate Recovery

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

b. Matrix Spike/Matrix Spike Duplicates

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

c. Laboratory Control Samples

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

V. Target Compound Identification

Raw data were not reviewed for this SDG.

VI. Project Quantitation Limit

All compounds reported below the PQL were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG R0905260	All compounds reported below the PQL.	J (all detects)	A

Raw data were not reviewed for this SDG.

VII. System Performance

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

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

IX. Field Duplicates

No field duplicates were identified in this SDG.

Tronox LLC Facility, 2009 Phase B Investigation, Henderson, Nevada Total Petroleum Hydrocarbons as Extractables - Data Qualification Summary - SDG R0905260

SDG	Sample	Compound	Flag	A or P	Reason (Code)
R0905260	EB091509-SO1 SA136-0.5B SA136-10B SA136-25B SA136-40B SA30-5B SA30-9B SA30-25B SA30-25B SA30-38B SA153-10B SA153-25B SA153-38B SA172-10B SA172-25B SA172-40B EB091609-SO1 SA128-0.5B SA128-10B SA128-29B	All compounds reported below the PQL.	J (all detects)	A	Project Quantitation Limit (sp)

Tronox LLC Facility, 2009 Phase B Investigation, Henderson, Nevada Total Petroleum Hydrocarbons as Extractables - Laboratory Blank Data Qualification Summary - SDG R0905260

No Sample Data Qualified in this SDG

Tronox LLC Facility, 2009 Phase B Investigation, Henderson, Nevada Total Petroleum Hydrocarbons as Extractables - Equipment Blank Data Qualification Summary - SDG R0905260

No Sample Data Qualified in this SDG

Tronox LLC Facility, 2009 Phase B Investigation, Henderson, Nevada Total Petroleum Hydrocarbons as Extractables - Field Blank Data Qualification Summary - SDG R0905260

No Sample Data Qualified in this SDG

Tronox Northgate Henderson

VALIDATION COMPLETENESS WORKSHEET

Stage 2B

LDC #: 2199118 SDG #: R0905260

Laboratory: Columbia Analytical Services

Date: 12/01/09 Page: 1 of 1 Reviewer: JV4 2nd Reviewer: _____

METHOD: GC TPH as Extractables (EPA SW 846 Method 8015B)

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

	Validation Area		Comments
Ι.	Technical holding times	A	Sampling dates: 9/15 - 16 /09
lla.	Initial calibration	A	
IIb.	Calibration verification/ICV	Â	$ca/au \leq 20$ 2
III.	Blanks	A	
IVa.	Surrogate recovery	A	
IVb.	Matrix spike/Matrix spike duplicates	A	
IVc.	Laboratory control samples	A	LLS /3
V.	Target compound identification	N	
VI.	Compound Quantitation and CRQLs	N	
VII.	System Performance	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	× ×
Х.	Field blanks	SW	EB = 1,16" FB = FB072909-50 (from Reg

Note:

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

Water + Soil

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

D = Duplicate TB = Trip blank EB = Equipment blank

Validated Samples:

1	l	EB091509-SO1 W	/	ን 11	SA153-25B 🗲	21	SA153-25BMSD	31	96290-MB
2	2	SA136-0.5B	•	12 3	SA153-38B	22		32 `	96218-
3 .	ะ	SA136-10B		13 ³	SA172-10B	23		33 2	96 4 4 3 -
4	z	SA136-25B		3 14	SA172-25B	24		34	
5	v	SA136-40B		15 3	SA172-40B	25		35	
6	r	SA30-5B		- 16	EB091609-SO1 W	26		36	
7 7	r	SA30-9B		F 3	SA128-0.5B S	27		37	
8	r	SA30-25B		- 18 3	SA128-10B	28		38	
9	r	SA30-38B		- 19 >	SA128-29B	29		39	
10	~	SA153-10B	И	20	SA153-25BMS	30		40	

Notes:

1158	Curr
219	3
LDC #:	SDG #

VALIDATION FINDINGS WORKSHEET

Field Blanks

Page: of 2nd Reviewer: Reviewer:_

Y N N/A **METHOD:**

GC HPLC Were field blanks identified in this SDG?

Were target compounds detected in the field blanks? Associated sample units: <u>W5</u> Blank units: √n n/A

Field blank type: (circle one) Field Blank / Trip Blank / Atmospheric Blank / Ambient Blank 12 6 Sampling date:

2-15 Associated Samples:

(an)

Blank / Other:								
	Intification							
	Sample Ide							
nt Blank/ Source								
nsate Equipmer								
quipment Ri	Blank ID							
Rinsate / E	Blank ID		22					
	Compound		DRD					CBOI
	الجيسيين	لنسبعد		-	 _	-	-	_

Blank units:

Associated sample units:

Sampling date:

Field blank type: (circle one) Field Blank / Trip Blank/ Atmospheric Blank/ Ambient Blank

Associated Samples:

Rinsate / Equipment Rinsate / Equipment Blank / Source Blank / Other

Compound	Blank ID	Blank ID		Sample Ide	ntification		
CRQL							

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

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:	Tronox LLC Facility, 2009 Phase B Investigation, Henderson, Nevada
Collection Date:	September 17, 2009
LDC Report Date:	December 5, 2009
Matrix:	Soil
Parameters:	Total Petroleum Hydrocarbons as Extractables
Validation Level:	Stage 2B
Laboratory:	Columbia Analytical Services, Inc.

Sample Delivery Group (SDG): R0905331

Sample Identification

SA165-0.5B SA165-10B SA165-28B SA151-0.5B SA151-10B SA151-25B SA151-39B SA151009-39B SA51-10B SA51009-10B SA51-25B SA51-25B SA51-36B SA165-10BMS SA165-10BMSD

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 8015B for Total Petroleum Hydrocarbons (TPH) as Extractables.

This review follows the Standard Operating Procedures (SOP) 40, Data Review/Validation (BRC 2009), the Quality Assurance Project Plan Tronox LLC Facility, Henderson, Nevada (June 2009), NDEP guidance (May 2006), and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review (June 2008) as there are no current guidelines for the method stated above.

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

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

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

The following are definitions of the data qualifiers:

- J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.
- J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.
- J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.
- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- B The analytical result may be a false positive totally attributable to blank contamination. This qualifier is applicable to radiochemistry analysis only.
- JB The analytical result may be biased high and partially attributable to blank contamination. This qualifier is applicable to radiochemistry analysis only.
- JK The analytical result is an estimated maximum possible concentration (EMPC).
- X The analytical result is not used for reporting because a more accurate and precise result is reported in its place.
- J-TDS The analytical result is estimated based on failure of the Total Dissolved Solids (TDS) correctness check performed in accordance with the Standard Method 1030E.
- J-CAB The analytical result is estimated based on failure of the cation-anion balance correctness check performed in accordance with Standard Method 1030E.
- J-TDS & CAB The analytical result is unreliable based on the failure of the cation-anion balance and TDS correctness check performed in accordance with standard Method 1030E.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

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

II. Calibration

a. Initial Calibration

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

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

b. Calibration Verification

Calibration verification was performed at required frequencies. The percent differences (%D) of amounts in continuing standard mixtures were within the 20.0% QC limits.

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

III. Blanks

Method blanks were reviewed for each matrix as applicable. No total petroleum hydrocarbons as extractable contaminants were found in the method blanks.

Sample FB072909-SO (from SDG R0904226) was identified as a field blank. No total petroleum hydrocarbons as extractable contaminants were found in this blank.

IV. Accuracy and Precision Data

a. Surrogate Recovery

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

b. Matrix Spike/Matrix Spike Duplicates

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

c. Laboratory Control Samples

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

V. Target Compound Identification

Raw data were not reviewed for this SDG.

VI. Project Quantitation Limit

All compounds reported below the PQL were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG R0905331	All compounds reported below the PQL.	J (all detects)	A

Raw data were not reviewed for this SDG.

VII. System Performance

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

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

IX. Field Duplicates

Samples SA151-39B and SA151009-39B and samples SA51-10B and SA51009-10B were identified as field duplicates. No total petroleum hydrocarbons as extractables were detected in any of the samples.

Tronox LLC Facility, 2009 Phase B Investigation, Henderson, Nevada Total Petroleum Hydrocarbons as Extractables - Data Qualification Summary - SDG R0905331

SDG	Sample	Compound	Flag	A or P	Reason (Code)
R0905331	SA165-0.5B SA165-10B SA165-28B SA151-0.5B SA151-10B SA151-25B SA151-39B SA151009-39B SA51-10B SA51-10B SA51-25B SA51-25B SA51-36B	All compounds reported below the PQL.	J (all detects)	A	Project Quantitation Limit (sp)

Tronox LLC Facility, 2009 Phase B Investigation, Henderson, Nevada Total Petroleum Hydrocarbons as Extractables - Laboratory Blank Data Qualification Summary - SDG R0905331

No Sample Data Qualified in this SDG

Tronox LLC Facility, 2009 Phase B Investigation, Henderson, Nevada Total Petroleum Hydrocarbons as Extractables - Field Blank Data Qualification Summary - SDG R0905331

No Sample Data Qualified in this SDG

Tronox Northgate Henderson

VALIDATION COMPLETENESS WORKSHEET

Stage 2B

LDC #: 21991J8 SDG #: R0905331

Date: <u>12/01/09</u> Page: <u>1</u> of <u>1</u> Reviewer: <u>V6</u> 2nd Reviewer: <u> </u>

Laboratory: Columbia Analytical Services

METHOD: GC TPH as Extractables (EPA SW 846 Method 8015B)

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 9/17/09
lla.	Initial calibration	A	
llb.	Calibration verification/ICV	A	CONTRON E 202
- 111.	Blanks	A	
IVa.	Surrogate recovery	A	
IVb.	Matrix spike/Matrix spike duplicates	A	
IVc.	Laboratory control samples	A	LCS 10
V.	Target compound identification	N	
VI.	Compound Quantitation and CRQLs	N	
VII.	System Performance	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	ND	$D_{1} = 7.8$ $D_{2} = 9.0$
Χ.	Field blanks	ND	FB = FB 172909-SO (from R0904276)

Note: A = Acceptable

N = Not provided/applicable

SW = See worksheet

Soi)

ND = No compounds detected D = Duplicate

R = Rinsate FB = Field blank TB = Trip blank EB = Equipment blank

Validated Samples:

+1	SA165-0.5B	<u> </u>	SA51-25B	$\frac{1}{21}$	97150-MB	31	
2 2	SA165-10B	ī22	SA51-36B	22	96443. L	32	
37	SA165-28B	13	SA165-10BMS	23		33	
4 >	SA151-0.5B	14	SA165-10BMSD	24		34	
- 5 Y	SA151-10B	15		25		35	
6	SA151-25B	16		26		36	
77	SA151-39B D,	17		27		37	
ک 8	SA151009-39B Ø,	18		28		38	
`9 ∽	SA51-10B Dr	19		29		39	
10 Y	SA51009-10B	20		30		40	

Notes:___

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:	Tronox LLC Facility, 2009 Phase B Investigation, Henderson, Nevada
Collection Date:	September 18, 2009
LDC Report Date:	December 5, 2009
Matrix:	Soil
Parameters:	Total Petroleum Hydrocarbons as Extractables
Validation Level:	Stage 2B
Laboratory:	Columbia Analytical Services, Inc.

Sample Delivery Group (SDG): R0905348

Sample Identification

SA117-0.5B SA117-9B SA117-25B SA117-41B SA117-9BMS SA117-9BMSD

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 8015B for Total Petroleum Hydrocarbons (TPH) as Extractables.

This review follows the Standard Operating Procedures (SOP) 40, Data Review/Validation (BRC 2009), the Quality Assurance Project Plan Tronox LLC Facility, Henderson, Nevada (June 2009), NDEP guidance (May 2006), and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review (June 2008) as there are no current guidelines for the method stated above.

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

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

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

The following are definitions of the data qualifiers:

- J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.
- J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.
- J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.
- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- B The analytical result may be a false positive totally attributable to blank contamination. This qualifier is applicable to radiochemistry analysis only.
- JB The analytical result may be biased high and partially attributable to blank contamination. This qualifier is applicable to radiochemistry analysis only.
- JK The analytical result is an estimated maximum possible concentration (EMPC).
- X The analytical result is not used for reporting because a more accurate and precise result is reported in its place.
- J-TDS The analytical result is estimated based on failure of the Total Dissolved Solids (TDS) correctness check performed in accordance with the Standard Method 1030E.
- J-CAB The analytical result is estimated based on failure of the cation-anion balance correctness check performed in accordance with Standard Method 1030E.
- J-TDS & CAB The analytical result is unreliable based on the failure of the cation-anion balance and TDS correctness check performed in accordance with standard Method 1030E.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

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

II. Calibration

a. Initial Calibration

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

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

b. Calibration Verification

Calibration verification was performed at required frequencies. The percent differences (%D) of amounts in continuing standard mixtures were within the 20.0% QC limits.

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

III. Blanks

Method blanks were reviewed for each matrix as applicable. No total petroleum hydrocarbons as extractable contaminants were found in the method blanks.

Sample FB072909-SO (from SDG R0904226) was identified as a field blank. No total petroleum hydrocarbons as extractable contaminants were found in this blank.

IV. Accuracy and Precision Data

a. Surrogate Recovery

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

b. Matrix Spike/Matrix Spike Duplicates

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

c. Laboratory Control Samples

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

V. Target Compound Identification

Raw data were not reviewed for this SDG.

VI. Project Quantitation Limit

All compounds reported below the PQL were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG R0905348	All compounds reported below the PQL.	J (all detects)	A

Raw data were not reviewed for this SDG.

VII. System Performance

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

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

IX. Field Duplicates

No field duplicates were identified in this SDG.

Tronox LLC Facility, 2009 Phase B Investigation, Henderson, Nevada Total Petroleum Hydrocarbons as Extractables - Data Qualification Summary - SDG R0905348

SDG	Sample	Compound	Flag	A or P	Reason (Code)
R0905348	SA117-0.5B SA117-9B SA117-25B SA117-41B	All compounds reported below the PQL.	J (all detects)	A	Project Quantitation Limit (sp)

Tronox LLC Facility, 2009 Phase B Investigation, Henderson, Nevada Total Petroleum Hydrocarbons as Extractables - Laboratory Blank Data Qualification Summary - SDG R0905348

No Sample Data Qualified in this SDG

Tronox LLC Facility, 2009 Phase B Investigation, Henderson, Nevada Total Petroleum Hydrocarbons as Extractables - Field Blank Data Qualification Summary - SDG R0905348

No Sample Data Qualified in this SDG

Tronox Northgate Henderson

VALIDATION COMPLETENESS WORKSHEET Stage 2B

LDC #: 21991K8 SDG #: R0905348

Laboratory: Columbia Analytical Services

Date: <u>12/01/69</u> Page: <u>1of 1</u> Reviewer: <u>W</u> 2nd Reviewer: <u></u>

METHOD: GC TPH as Extractables (EPA SW 846 Method 8015B)

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

	Validation Area		Comments
<u> </u>	Technical holding times	A	Sampling dates: 9/18/5+09
lla.	Initial calibration	Ą	
lib.	Calibration verification/ICV	A.	Cav/100 6202
	Blanks	Ă	
IVa.	Surrogate recovery	A	
IVb.	Matrix spike/Matrix spike duplicates	A	
IVc.	Laboratory control samples	A	us 4
V.	Target compound identification	N	
VI.	Compound Quantitation and CRQLs	N	
<u></u> VII.	System Performance	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X .	Field blanks	ND	FB = FB 072901-50 (from R0904226)

Note:

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

Soil

ND = No compounds detected R = Rinsate FB = Field blank D = Duplicate TB = Trip blank EB = Equipment blank

Validated Samples:

1 ~	SA117-0.5B	11	96745-MB	21	31	
2	SA117-9B	12	-	22	 32	
3 -	SA117-25B	13		23	33	
4-	SA117-41B	14		24	34	
5	SA117-9BMS	15		25	35	
6	SA117-9BMSD	16	· · · · · · · · · · · · · · · · · · ·	26	36	
7		17		27	37	
8		18		28	 38	
9		19		29	39	
10		20		30	40	

Notes:

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:	Tronox LLC Facility, 2009 Phase B Investigation, Henderson, Nevada					
Collection Date:	September 21, 2009					
LDC Report Date:	December 1, 2009					
Matrix:	Soil					
Parameters:	Total Petroleum Hydrocarbons as Extractables					
Validation Level:	Stage 2B					
Laboratory:	Columbia Analytical Services, Inc.					

Sample Delivery Group (SDG): R0905387

Sample Identification

SA32-0.5B SA32-9B SA32-25B SA32009-25B SA32-37B SA66-0.5B SA66009-0.5B SA66-10B SA66-28B SA129-10B SA129-29B RSAT4-0.5B RSAT4-10B RSAT4-25B RSAT4-40B RSAT4-53B

Introduction

This data review covers 16 soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8015B for Total Petroleum Hydrocarbons (TPH) as Extractables.

This review follows the Standard Operating Procedures (SOP) 40, Data Review/Validation (BRC 2009), the Quality Assurance Project Plan Tronox LLC Facility, Henderson, Nevada (June 2009), NDEP guidance (May 2006), and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review (June 2008) as there are no current guidelines for the method stated above.

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

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

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

The following are definitions of the data qualifiers:

- J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.
- J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.
- J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.
- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- B The analytical result may be a false positive totally attributable to blank contamination. This qualifier is applicable to radiochemistry analysis only.
- JB The analytical result may be biased high and partially attributable to blank contamination. This qualifier is applicable to radiochemistry analysis only.
- JK The analytical result is an estimated maximum possible concentration (EMPC).
- X The analytical result is not used for reporting because a more accurate and precise result is reported in its place.
- J-TDS The analytical result is estimated based on failure of the Total Dissolved Solids (TDS) correctness check performed in accordance with the Standard Method 1030E.
- J-CAB The analytical result is estimated based on failure of the cation-anion balance correctness check performed in accordance with Standard Method 1030E.
- J-TDS & CAB The analytical result is unreliable based on the failure of the cation-anion balance and TDS correctness check performed in accordance with standard Method 1030E.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

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

II. Calibration

a. Initial Calibration

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

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

b. Calibration Verification

Calibration verification was performed at required frequencies. The percent differences (%D) of amounts in continuing standard mixtures were within the 20.0% QC limits.

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

III. Blanks

Method blanks were reviewed for each matrix as applicable. No total petroleum hydrocarbons as extractable contaminants were found in the method blanks.

Samples FB072909-SO (from SDG R0904226) and FB080309-SO (from SDG R0904279) were identified as field blanks. No total petroleum hydrocarbons as extractable contaminants were found in these blanks.

IV. Accuracy and Precision Data

a. Surrogate Recovery

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

b. Matrix Spike/Matrix Spike Duplicates

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.

c. Laboratory Control Samples

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

V. Target Compound Identification

Raw data were not reviewed for this SDG.

VI. Project Quantitation Limit

All compounds reported below the PQL were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG R0905387	All compounds reported below the PQL.	J (all detects)	А

Raw data were not reviewed for this SDG.

VII. System Performance

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

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

IX. Field Duplicates

Samples SA32-25B and SA32009-25B and samples SA66-0.5B and SA66009-0.5B were identified as field duplicates. No total petroleum hydrocarbons as extractables were detected in any of the samples with the following exceptions:

	000	D/#				
Compound	SA66-0.5B	SA66009-0.5B	(Limits)	Limits)	Flags	A or P
Diesel range organics	490000	470000	4 (≤50)	-	-	-
Oil range organics	84000	95000	-	11000 (≤44000)	-	-
Tronox LLC Facility, 2009 Phase B Investigation, Henderson, Nevada Total Petroleum Hydrocarbons as Extractables - Data Qualification Summary - SDG R0905387

SDG	Sample	Compound	Flag	A or P	Reason (Code)
R0905387	SA32-0.5B SA32-9B SA32-25B SA32-25B SA32-37B SA66-0.5B SA66-0.5B SA66-10B SA66-28B SA129-10B SA129-29B RSAT4-0.5B RSAT4-0.5B RSAT4-25B RSAT4-25B RSAT4-25B RSAT4-33B	All compounds reported below the PQL.	J (all detects)	A	Project Quantitation Limit (sp)

Tronox LLC Facility, 2009 Phase B Investigation, Henderson, Nevada Total Petroleum Hydrocarbons as Extractables - Laboratory Blank Data Qualification Summary - SDG R0905387

No Sample Data Qualified in this SDG

Tronox LLC Facility, 2009 Phase B Investigation, Henderson, Nevada Total Petroleum Hydrocarbons as Extractables - Field Blank Data Qualification Summary - SDG R0905387

No Sample Data Qualified in this SDG

Tronox Northgate Henderson

VALIDATION COMPLETENESS WORKSHEET

Stage 2B

SDG #: R0905387

LDC #: 21991L8

Laboratory: Columbia Analytical Services

Date: 1/25/19 Page: 1 of) Reviewer: 2/6 2nd Reviewer:

METHOD: GC TPH as Extractables (EPA SW 846 Method 8015B)

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

	Validation Area		Comments
1.	Technical holding times	A	Sampling dates: 9 /21 /0 9
lla.	Initial calibration	A	
lib.	Calibration verification/ICV	A	COV/W 2202
	Blanks	Â	
IVa.	Surrogate recovery	A	
IVb.	Matrix spike/Matrix spike duplicates	N	client spec
IVc.	Laboratory control samples	A	LCS 10
<u>v</u> .	Target compound identification	N	
<u>VI.</u>	Compound Quantitation and CRQLs	<u>N</u>	
VII.	System Performance	N	
VIII.	Overall assessment of data	A	L
<u>IX.</u>	Field duplicates	SW	$\pi D_1 = 3, 4$ $D_2 = 6, 7$
X .	Field blanks	ND	FB = FB072909-50 (fm R0904226)
			1 = FB080309-SO (from R0904279)

Note:

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

Soil

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

D = Duplicate TB = Trip blank EB = Equipment blank

Validated Samples:

] 1	SA32-0.5B	11	SA129-29B	21	96745-MB	31
+ 2	SA32-9B	12	RSAT4-0.5B	22		32
3	SA32-25B D1	13	RSAT4-10B	23		33
4	SA32009-25B <i>p</i> ,	14	RSAT4-25B	24		34
5	SA32-37B	15	A RSAT4-20B	25		35
+ 6	SA66-0.5B Dy	16	RSAT4-53B	26		36
7	SA66009-0.5B 2	17	the strengt of	27		37
8	SA66-10B	18		28	· · · · · · · · · · · · · · · · · · ·	38
≮ 9	SA66-28B	19		29		39
10	SA129-10B	20		30		40

Notes:

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2199	Jee
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ро Гро	SDG

VALIDATION FINDINGS WORKSHEET **Field Duplicates**

376 Page: | of] Reviewer: 2nd reviewer:

GC ______HPLC Were field duplicate pairs identified in this SDG? METHOD: Y N N/A Y/N N/A

Were target compounds detected in the field duplicate pairs?

	Concentration (in the 1	%RPD	Qualification
	e	7		Parent only / Ail Samples
DRO	490 000	470 000	12 2,057) 1	- (a
O KO	84000	95 000	11000 (= 44000	- (0

Qualification	Parent only / All Samples					
04%						
Concentration ()						
, , , , , , , , , , , , , , , , , , ,						

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:	Tronox LLC Facility, 2009 Phase B Investigation, Henderson, Nevada
Collection Date:	September 24 through September 25, 2009
LDC Report Date:	December 5, 2009
Matrix:	Soil/Water
Parameters:	Total Petroleum Hydrocarbons as Extractables
Validation Level:	Stage 2B
Laboratory:	Columbia Analytical Services, Inc.

Sample Delivery Group (SDG): R0905464

Sample Identification

SA205-0.5B SA205-10B SA205-25B SA205-41B SA84-0.5B SA84-10B SA84009-10B SA84-25B SA84-43B EB092509-SO1A2 EB092509-SO2A4 SA101-0.5B SA101-10B SA101-25B SA101-42B SA121-0.5B SA121009-0.5B SA121-10B SA121-25B SA121-44B

SA208-0.5B SA208-7B SA101-0.5BMS SA101-0.5BMSD

Introduction

This data review covers 22 soil samples and 2 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8015B for Total Petroleum Hydrocarbons (TPH) as Extractables.

This review follows the Standard Operating Procedures (SOP) 40, Data Review/Validation (BRC 2009), the Quality Assurance Project Plan Tronox LLC Facility, Henderson, Nevada (June 2009), NDEP guidance (May 2006), and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review (June 2008) as there are no current guidelines for the method stated above.

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

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

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

The following are definitions of the data qualifiers:

- J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.
- J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.
- J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.
- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- B The analytical result may be a false positive totally attributable to blank contamination. This qualifier is applicable to radiochemistry analysis only.
- JB The analytical result may be biased high and partially attributable to blank contamination. This qualifier is applicable to radiochemistry analysis only.
- JK The analytical result is an estimated maximum possible concentration (EMPC).
- X The analytical result is not used for reporting because a more accurate and precise result is reported in its place.
- J-TDS The analytical result is estimated based on failure of the Total Dissolved Solids (TDS) correctness check performed in accordance with the Standard Method 1030E.
- J-CAB The analytical result is estimated based on failure of the cation-anion balance correctness check performed in accordance with Standard Method 1030E.
- J-TDS & CAB The analytical result is unreliable based on the failure of the cation-anion balance and TDS correctness check performed in accordance with standard Method 1030E.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

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

II. Calibration

a. Initial Calibration

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

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

b. Calibration Verification

Calibration verification was performed at required frequencies. The percent differences (%D) of amounts in continuing standard mixtures were within the 20.0% QC limits.

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

III. Blanks

Method blanks were reviewed for each matrix as applicable. No total petroleum hydrocarbons as extractable contaminants were found in the method blanks.

Samples EB092509-SO1A2 and EB092509-SO2A4 were identified as equipment blanks. No total petroleum hydrocarbons as extractable contaminants were found in these blanks with the following exceptions:

Equipment Blank ID	Sampling Date	Compound	Concentration	Associated Samples
EB092509-SO1A2	9/25/09	Diesel range organics	94 ug/L	SA208-0.5B SA208-7B
EB092509-SO2A4	9/25/09	Diesel range organics	120 ug/L	SA101-0.5B SA101-10B SA101-25B SA101-42B SA121-0.5B SA121009-0.5B SA121-08 SA121-25B SA121-44B

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

Samples FB072909-SO (from SDG R0904226), FB080309-SO (from SDG R0904279), and FB080309-SORE (from SDG R0904279) were identified as field blanks. No total petroleum hydrocarbons as extractable contaminants were found in these blanks.

IV. Accuracy and Precision Data

a. Surrogate Recovery

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

b. Matrix Spike/Matrix Spike Duplicates

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

c. Laboratory Control Samples

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

V. Target Compound Identification

Raw data were not reviewed for this SDG.

VI. Project Quantitation Limit

All compounds reported below the PQL were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG R0905464	All compounds reported below the PQL.	J (all detects)	A

Raw data were not reviewed for this SDG.

VII. System Performance

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

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

IX. Field Duplicates

Samples SA84-10B and SA84009-10B and samples SA121-0.5B and SA121009-0.5B were identified as field duplicates. No total petroleum hydrocarbons as extractables were detected in any of the samples.

Tronox LLC Facility, 2009 Phase B Investigation, Henderson, Nevada Total Petroleum Hydrocarbons as Extractables - Data Qualification Summary - SDG R0905464

SDG	Sample	Compound	Flag	A or P	Reason (Code)
R0905464	SA205-0.5B SA205-10B SA205-25B SA205-25B SA205-41B SA84-0.5B SA84-10B SA84-09-10B SA84-25B SA84-43B EB092509-S01A2 EB092509-S01A2 EB092509-S02A4 SA101-0.5B SA101-0.5B SA101-0.5B SA101-25B SA101-42B SA121-0.5B SA121-0.5B SA121-0B SA121-25B SA121-25B SA121-44B SA208-0.5B SA208-7B	All compounds reported below the PQL.	J (all detects)	A	Project Quantitation Limit (sp)

Tronox LLC Facility, 2009 Phase B Investigation, Henderson, Nevada Total Petroleum Hydrocarbons as Extractables - Laboratory Blank Data Qualification Summary - SDG R0905464

No Sample Data Qualified in this SDG

Tronox LLC Facility, 2009 Phase B Investigation, Henderson, Nevada Total Petroleum Hydrocarbons as Extractables - Equipment Blank Data Qualification Summary - SDG R0905464

No Sample Data Qualified in this SDG

Tronox LLC Facility, 2009 Phase B Investigation, Henderson, Nevada Total Petroleum Hydrocarbons as Extractables - Field Blank Data Qualification Summary - SDG R0905464

No Sample Data Qualified in this SDG

Tronox Northgate Henderson

LDC #: 21991N8 VALIDATION COMPLETENESS WORKSHEET

SDG #: R0905464

Laboratory: Columbia Analytical Services

Date: <u>12/61/64</u> Page: <u>16f</u> Reviewer: <u>04</u> 2nd Reviewer: <u>-</u>

METHOD: GC TPH as Extractables (EPA SW 846 Method 8015B)

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

Stage 2B

	Validation Are	ea				C	omme	nts_		
Ι.	Technical holding times		A	Sampli	ng dates:	9/24-2	5/09		<u></u>	
lla.	Initial calibration		A			,				
llb.	Calibration verification/ICV		<u> </u>	C	When	6202		_		
Ш.	Blanks	- 	A							
IVa.	Surrogate recovery		A							
IVb.	Matrix spike/Matrix spike duplica	ates	A							
IVc.	Laboratory control samples		A	1	es/b		- 10° 50°			
V.	Target compound identification		N							
<u>VI.</u>	Compound Quantitation and CF	RQLs	N							
_ VII.	System Performance		N			· ·· <u></u>				
VIII.	Overall assessment of data		A	ļ						
IX.	Field duplicates		ND	<u>t</u>), = 6.	7 Dr:	= 16,	<u>y</u>		
Х.	Field blanks		SW	X7P	= FB	072909-50	<u> (f</u>	rm	R0904226)	TB = 11
Note: √alidate	A = Acceptable N = Not provided/applicable SW = See worksheet ed Samples:	¥ND = N R = Rin FB = Fi Water	o compound sate eid blank	s detect	ed Fe	D = Duplicate D = Duplicate TB = Trip blank EB = Equipme	₹E nt blank		J	
1	SA205-0.5B 5 1-	1 7 EB092509-S	D2A4	W	21 ³ SA20)8-0.5B	2	31	97150-M	в
2	SA205-10B 12	2 SA101-0.5B		S	22 3 SA20)8-7B		32 X	97237-	
3	SA205-25B 13	3 SA101-10B			23 SA10)1-0.5BMS		33 2	97335-	
4	SA205-41B 14	4 SA101-25B			24 SA10	01-0.5BMSD		34		
↓ 5	SA84-0.5B 15	5 SA101-42B			25			35		
6	SA84-10B b , 16	5 SA121-0.5B	Dr		26			36		
7	SA84009-10B D, 11	7 SA121009-0.	5B D~		27			37		
8	SA84-25B	8 SA121-10B			28			38		
9	SA84-43B	9 SA121-25B			29	<u></u>		39		
10	EB092509-SO1A2 b) 20	0 SA121-44B		\downarrow	30			40		

Notes:_____

LDC #: 21 991 A SDG #: 566 C	A start		VALIDATION FINDINGS WORKSHEET Field Blanks	Page: 1 of 1 Reviewer: 376
METHOD: G(<u>Y N N/A</u> <u>N N/A</u> W	C HPLC ere field bla ere target c	C anks identific ompounds c siated sample	ed in this SDG? detected in the fjeld blanks? le units:	2nd Reviewer
Sampling date: Field blank type: (c	<mark>タノス5/</mark> 09 ircle one) Fié Rinsate / E	∍ld Blank / Tri Equipment Rì	ip Blank / Atmospheric Blank / Ambient Blank Associated Samples:	21, 22 (KD)
Compound	Blank ID	Blank ID	Sample Identification	
	10			
DRO	94			
crat				
Blank units: 45 /	L, Assoc	ciated sampl	le units: 45 /ks	
Sampling date: Field blank type: (c	1/25/09 ircle one) Fié Dincate /	eld Blank / Tri Equipment R	ip Blank/ Atmospheric Blank/ Ambient Blank Associated Samples:	XX 12-20
Jonnor	Blank ID	Blank ID	Sample Identification	
	-			
DRO	021		330800	

 CRQL
 CRQL
 Image: CRQL
 Image: CRQL
 Image: CRQLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:

 CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
 Image: CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:

 Samples with compound concentrations within five times the associated field blank concentration are listed above, these sample results were qualified as not detected, "U"

FBLKASCNew.wpd