APPENDIX H VALIDATION REPORTS



LABORATORY DATA CONSULTANTS, INC.

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

Anchor QEA, LLC 1423 3rd Avenue, Suite 300 Seattle, WA 98101-2226 ATTN: Ms. Joy Dunay April 15, 2009

SUBJECT: Port of Olympia, Data Validation

Dear Ms. Dunay,

Enclosed is the final validation report for the fraction listed below. This SDG was received on March 27, 2009. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project # 20531:

SDG#

Fraction

P1158

Dioxins/Dibenzofurans

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

 USEPA, Contract Laboratory Program National Functional Guidelines for Polychlorinated Dioxins/Diobenzofurans Data Review, September 2005

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

Sincerely,

Stella S. Cuenco

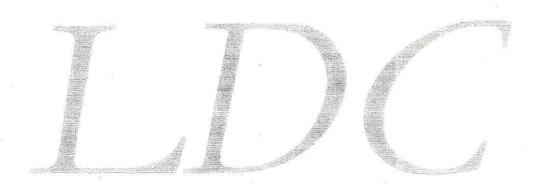
Data Validation Operations Manager/Senior Chemist

Attachment 1

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Port of Olympia Data Validation Reports LDC# 20531

Dioxins/Dibenzofurans



Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

Port of Olympia

Collection Date:

September 26, 2008

LDC Report Date:

April 9, 2009

Matrix:

Sediment

Parameters:

Dioxins/Dibenzofurans

Validation Level:

EPA Level III

Laboratory:

Analytical Perspectives

Sample Delivery Group (SDG): P1158

Sample Identification

PO-BA-24-SS-A-090226

PO-BA-25-SS-A-090226

PO-BA-26-SS-A-090226

PO-BA-27B-SS-A-090226

Introduction

This data review covers 4 sediment samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 1613B for Polychlorinated Dioxins/Dibenzofurans.

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

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

Blank results are summarized in Section V.

Field duplicates are summarized in Section XIV.

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

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

EMPC Estimated Maximum Possible Concentration

- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

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

II. HRGC/LRMS Instrument Performance Check

Instrument performance was checked at the required daily frequency.

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

III. Initial Calibration

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

Percent relative standard deviations (%RSD) were less than or equal to 20.0% for unlabeled compounds and less than or equal to 35.0% for labeled compounds.

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

IV. Routine Calibration (Continuing)

Routine calibration was performed at the required frequencies.

All of the routine calibration percent differences (%D) between the initial calibration RRF and the routine calibration RRF were within the QC limits.

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

V. Blanks

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

Method Blank ID	Extraction Date	Compound	Concentration	Associated Samples
6630-MB001	3/4/09	Total HpCDD	0.0981 pg/g	PO-BA-24-SS-A-090226 PO-BA-25-SS-A-090226
6682-MB001	3/20/09	Total TCDD	0.0973 pg/g	PO-BA-26-SS-A-090226 PO-BA-27B-SS-A-090226

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

VI. 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.

VII. Ongoing Precision Recovery (OPR)

Ongoing precision recovery samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

VIII. Regional Quality Assurance and Quality Control

Not applicable.

IX. Internal Standards

All internal standard recoveries were within QC limits.

X. Target Compound Identifications

Raw data were not reviewed for this SDG.

XI. Compound Quantitation and CRQLs

All compound quantitation and CRQLs were within validation criteria with the following exceptions:

Sample	Compound	Finding	Criteria	Flag	A or P
PO-BA-24-SS-A-090226 PO-BA-25-SS-A-090226 PO-BA-26-SS-A-090226	OCDD	Sample result exceeded calibration range.	Reported result should be within calibration range.	J (all detects)	Р
All samples in SDG P1158	2,3,7,8-TCDF	2nd column confirmation was not performed for this compound.	This compound must be confirmed on the 2nd column per the method.	None	Р

XII. System Performance

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

The analysis was conducted within all specifications of the method with the exception noted in Section XI. No data were qualified due to this laboratory oversight.

No results were rejected in this SDG.

Due to compound quantitation problems, OCDD was qualified as estimated in four samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the Level III data validation all other results are considered valid and usable for all purposes.

XIV. Field Duplicates

No field duplicates were identified in this SDG.

XV. Field Blanks

No field blanks were identified in this SDG.

J9 44/09

Port of Olympia Dioxins/Dibenzofurans - Data Qualification Summary - SDG P1158

SDG	Sample	Compound	Flag	A or P	Reason
P1158	PO-BA-24-SS-A-090226 PO-BA-25-SS-A-090226 PO-BA-26-SS-A-090226	OCDD	J (all detects)	Р	Compound quantitation and CRQLs
P1158	PO-BA-24-SS-A-090226 PO-BA-25-SS-A-090226 PO-BA-26-SS-A-090226 PO-BA-27B-SS-A-090226	2,3,7,8-TCDF	None	Р	Compound quantitation and CRQLs (2nd column)

Port of Olympia Dioxins/Dibenzofurans - Laboratory Blank Data Qualification Summary - SDG P1158

No Sample Data Qualified in this SDG

Sample ID): PO-BA-24-S	S-A-0902	26			Metho	od 1613
Client Data		Sample Data	****	Laboratory Da	nta	T	
Name:	Anchor Environmental, LLC	Matrix:	Solids /	Project No.:	P1158	Date Received:	27 Feb 09
Project ID:	080166-01	Weight/Volume:	10.08 g	Sample ID:	P1158_6630_001	Date Extracted:	04 Mar 09
Date Collected:	26 Feb 09	% Solids:	24.6 %	QC Batch No.:		Date Analyzed:	11 Mar 09
		Split:		Dilution:	Section of the second section of the se	Time Analyzed:	19:50:04
Analyte	Conc. (pg/g)	DL (pg/g)	EMPC (pg/g)	Qualifiers	Standard	ES Recoveries	Qualifiers
2,3,7,8-TCDD	EMPC	[Ra=0.633]	0.836		13C-2,3,7,8-TCDD	53.2	
1,2,3,7,8-PeCDD	5.36	-	Application for the state of th		13C-1,2,3,7,8-PeCDD	50.1	
1,2,3,4,7,8-HxCDD	10.5				13C-1,2,3,4,7,8-HxCDD	53.1	1
1,2,3,6,7,8-HxCDD	52.6		6		13C-1,2,3,6,7,8-HxCDD	51.9	Je l
1,2,3,7,8,9-HxCDD	21.8				13C-1,2,3,7,8,9-HxCDD	53.7	١
1,2,3,4,6,7,8-HpCDD	1,770		*		13C-1,2,3,4,6,7,8-HpCDD	65.5	D NO
OCDD	18,000	J>0			13C-OCDD	77.2	2 Mar
2,3,7,8-TCDF	3.76				13C-2,3,7,8-TCDF	52.8	,
1,2,3,7,8-PeCDF	3.93				13C-1,2,3,7,8-PeCDF	48.6	
2,3,4,7,8-PeCDF	7.95				13C-2,3,4,7,8-PeCDF	45.3	
1,2,3,4,7,8-HxCDF	18.9				13C-1,2,3,4,7,8-HxCDF	55.7	
1,2,3,6,7,8-HxCDF	8.5				13C-1,2,3,6,7,8-HxCDF	52.2	
2,3,4,6,7,8-HxCDF	12.6				13C-2,3,4,6,7,8-HxCDF	57.3	
1,2,3,7,8,9-HxCDF	3.7			38 Å	13C-1,2,3,7,8,9-HxCDF	56.3	
1,2,3,4,6,7,8-HpCDF	298			30	13C-1,2,3,4,6,7,8-HpCDF	57.7	
1,2,3,4,7,8,9-HpCDF	12.5			362	13C-1,2,3,4,7,8,9-HpCDF	70.1	
OCDF	673				13C-OCDF	64.8	
Totals						CS Recoveries	
TCDDs	36.3		41		37CI-2,3,7,8-TCDD	59.5	
PeCDDs	80		81.2		13C-1,2,3,4,7-PeCDD	53.3	*
HxCDDs	737		·		13C-1,2,3,4,6-PeCDF	56.8	
HpCDDs	8,060				13C-1,2,3,4,6,9-HxCDF	62.6	
		44	6		13C-1,2,3,4,6,8,9-HpCDF	76.5	
TCDFs	57.3		58.8	9		1	
PeCDFs	91.7		2 27.5.5.0			AS Recoveries	* 1
HxCDFs	367			CA Ma Ma	13C-1,3,6,8-TCDD	52.4	
HpCDFs	871	-			13C-1,3,6,8-TCDF	56.6	
Total PCDD/Fs	29,000		29,000	8.			Exchange Drive
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TEQ: ND=0	59.6		60.5				USA
TEQ: ND=DL/2	59.7		60.5	Tel: +1 910 794	-1613; Toll-Free 866 846-	8290 info	@ultratraçe.com
TEQ: ND=DL	59.7		60.5	Fax: +1 910 794	4-3919	www	w.ultratrace.com

Checkcode: 4320

Sample II): PO-BA-25-S	S-A-0902	26			Meth	od 161
Client Data	***************************************	Sample Data		Laboratory D	ata	1	
Name:	Anchor Environmental, LLC	Matrix:	Solids	Project No.:	P1158	Date Received:	27 Feb 09
Project ID:	080166-01	Weight/Volume:	10.93 g	Sample ID:	P1158_6630_002	Date Extracted:	04 Mar 09
Date Collected:	26 Feb 09	% Solids:	28.8 %	QC Batch No.:		Date Analyzed:	11 Mar 09
***		Split:	-	Dilution:		Time Analyzed:	20:40:22
Analyte	Conc. (pg/g)	DL (pg/g)	EMPC (pg/g)	Qualifiers	Standard	ES Recoveries	Qualifiers
2,3,7,8-TCDD	0.998	[Ra=0.85]	The Control of the Co		13C-2,3,7,8-TCDD	66.3	
1,2,3,7,8-PeCDD	4.88	_			13C-1,2,3,7,8-PeCDD	64.9	
1,2,3,4,7,8-HxCDD	9.72				13C-1,2,3,4,7,8-HxCDD	55.8	
1,2,3,6,7,8-HxCDD	55		is 1.f		13C-1,2,3,6,7,8-HxCDD	54.6	1
1,2,3,7,8,9-HxCDD	21.7				13C-1,2,3,7,8,9-HxCDD	56.9	111
1,2,3,4,6,7,8-HpCDD	1,420				13C-1,2,3,4,6,7,8-HpCDD	73.8	Olo
OCDD	13,600	320		*	13C-OCDD	74.5	an wa
2,3,7,8-TCDF	3.86			9.	13C-2,3,7,8-TCDF	59.2	'y M
1,2,3,7,8-PeCDF	4.22	İ		1	13C-1,2,3,7,8-PeCDF	57.5	4.
2,3,4,7,8-PeCDF	8.94				13C-2,3,4,7,8-PeCDF	54.5	
1,2,3,4,7,8-HxCDF	21.1	8	•		13C-1,2,3,4,7,8-HxCDF	59.8	
1,2,3,6,7,8-HxCDF	9.06		35		13C-1,2,3,6,7,8-HxCDF	58.7	
2,3,4,6,7,8-HxCDF	13.6				13C-2,3,4,6,7,8-HxCDF	62.9	
1,2,3,7,8,9-HxCDF	4.35				13C-1,2,3,7,8,9-HxCDF	60.4	
1,2,3,4,6,7,8-HpCDF	335				13C-1,2,3,4,6,7,8-HpCDF	59.1	
1,2,3,4,7,8,9-HpCDF	12.7	8-87 (13C-1,2,3,4,7,8,9-HpCDF	81.5	64
OCDF	686				13C-OCDF	65.4	
Totals						CS Recoveries	
TCDDs	32.1	a li	33.3		37CI-2,3,7,8-TCDD	72.2	
PeCDDs	68.9		70	1	13C-1,2,3,4,7-PeCDD	62.4	
HxCDDs	597		200 THE		13C-1,2,3,4,6-PeCDF	68.1	
HpCDDs	5,190				13C-1,2,3,4,6,9-HxCDF	65.3	
and the same of th	A roof * Symphology		1		13C-1,2,3,4,6,8,9-HpCDF	86.1	
TCDFs	55	8	56.3		2		
PeCDFs	97.4	*	97.6			AS Recoveries	
HxCDFs	410				13C-1,3,6,8-TCDD	58.7	
HpCDFs	950		6 9		13C-1,3,6,8-TCDF	60.3	4
Total PCDD/Fs	21,700		21,700				Exchange Drive
ITEF TEQs				ANA	LYTICAL PERSPECT	rives Wilmin	gton, NC 28405
TEQ: ND=0	53.9		53.9				USA
TEQ: ND=DL/2	53.9		53.9	Tel: +1 910 794	-1613; Toll-Free 866 846-	8290 info	@ultratrace.com
TEO. NO. DI	500	1					

53.9

TEQ: ND=DL Checkcode: 4282 53.9

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Fax: +1 910 794-3919

AP 20 Reviewer 20 Date

Sample ID): PO-BA-26-S	S-A-0902	26	86		Meth	od 1613
Client Data	7-7-11-2	Sample Data		Laboratory Da	ata		
Name:	Anchor Environmental, LLC	Matrix:	Solids	Project No.:	P1158	Date Received:	27 Feb 09
Project ID:	080166-01	Weight/Volume:	10.37 g	Sample ID:	P1158_6682_003	Date Extracted:	20 Mar 09
Date Collected:	26 Feb 09	% Solids:	29.0 %	QC Batch No.:		Date Analyzed:	24 Mar 09
	v.	Split:	=	Dilution:	-	Time Analyzed:	0:38:35
Analyte	Conc. (pg/g)	DL (pg/g)	EMPC (pg/g)	Qualifiers	Standard	ES Recoveries	Qualifiers
2,3,7,8-TCDD	0.979	[Ra=0.808]	70.00		13C-2,3,7,8-TCDD	89.3	
1,2,3,7,8-PeCDD	5.43				13C-1,2,3,7,8-PeCDD	86.5	
1,2,3,4,7,8-HxCDD	9.67				13C-1,2,3,4,7,8-HxCDD	82.4	
1,2,3,6,7,8-HxCDD	56.8				13C-1,2,3,6,7,8-HxCDD	77.5	/
1,2,3,7,8,9-HxCDD	20.7		20		13C-1,2,3,7,8,9-HxCDD	82.2	- k
1,2,3,4,6,7,8-HpCDD	1,640				13C-1,2,3,4,6,7,8-HpCDD	99	2 / la
OCDD	13,800	720	*	*	13C-OCDD	103	34 May
2,3,7,8-TCDF	3.71				13C-2,3,7,8-TCDF	107	يه الا
1,2,3,7,8-PeCDF	4.25	•		73	13C-1,2,3,7,8-PeCDF	105	Y
2,3,4,7,8-PeCDF	9.24				13C-2,3,4,7,8-PeCDF	102	
1,2,3,4,7,8-HxCDF	23.3			595	13C-1,2,3,4,7,8-HxCDF	81.8	
1,2,3,6,7,8-HxCDF	8.94				13C-1,2,3,6,7,8-HxCDF	76.6	
2,3,4,6,7,8-HxCDF	13.7				13C-2,3,4,6,7,8-HxCDF	81.1	T
1,2,3,7,8,9-HxCDF	4.58			1)2	13C-1,2,3,7,8,9-HxCDF	82.2	
1,2,3,4,6,7,8-HpCDF	315			1	13C-1,2,3,4,6,7,8-HpCDF	84.2	
1,2,3,4,7,8,9-HpCDF	12.8		£	20	13C-1,2,3,4,7,8,9-HpCDF	92.2	Of LEVELES
OCDF	690	0.25 32	0000000	O SAN TORAN TORAN AND PROPERTY OF THE SAN TORAN AND PROPERTY OF THE SAN THE SA	13C-OCDF	89.5	
Totals						CS Recoveries	
TCDDs	31.2		31.8		37CI-2,3,7,8-TCDD	93.1	
PeCDDs	70		72.9	*	13C-1,2,3,4,7-PeCDD	89.5	8 8
HxCDDs	680				13C-1,2,3,4,6-PeCDF	114	l _x
HpCDDs	6,530	1		*	13C-1,2,3,4,6,9-HxCDF	88.5	
		3	St 30	* *	13C-1,2,3,4,6,8,9-HpCDF	103	91
TCDFs	50.8		6(2)	12 423			
PeCDFs	103		W - 7%	2 2 2		AS Recoveries	(a) (b) (c) (c) (c) (c) (c) (c) (c) (c) (c) (c
HxCDFs	410		411		13C-1,3,6,8-TCDD	75.9	_
HpCDFs	908		915	9 8	13C-1,3,6,8-TCDF	97.7	
Total PCDD/Fs	23,300	-	23,300	8.	. н		Exchange Drive
ITEF TEQs			ALL THE STATE OF T	ANA	LYTICAL PERSPECT	TIVES Wilmin	gton, NC 28405
TEQ: ND=0	56.9		56.9		45		USA
TEQ: ND=DL/2	56.9		56.9	Tel: +1 910 794	1-1613; Toll-Free 866 846-	8290 info	@ultratrace.com
TEQ: ND=DL	56.9		56.9	Fax: +1 910 79	4-3919		w.ultratace.com

Checkcode: 0311

82.44

New US Rev Da

Reviewer Date Sample ID: PO-BA-27B-SS-A-090226

Method 161

Campic IL							Ju 101-
Client Data		Sample Data		Laboratory Da	ita .		
Name:	Anchor Environmental, LLC	Matrix:	Solids /	Project No.:	P1158	Date Received:	27 Feb 09
Project ID:	080166-01	Weight/Volume:	10.26 g	Sample ID:	P1158_6682_004	Date Extracted:	20 Mar 09
Date Collected:	26 Feb 09	% Solids:	27.6 %	QC Batch No.:	6682	Date Analyzed:	24 Mar 09
		Split:	**	Dilution:	7 -	Time Analyzed:	1:28:40
Analyte	Conc. (pg/g)	DL (pg/g)	EMPC (pg/g)	Qualifiers	Standard	ES Recoveries	Qualifiers
2,3,7,8-TCDD	EMPC	[Ra=0.904]	0.739		13C-2,3,7,8-TCDD	88.7	
1,2,3,7,8-PeCDD	4.16				13C-1,2,3,7,8-PeCDD	86.3	
1,2,3,4,7,8-HxCDD	7.97			1	13C-1,2,3,4,7,8-HxCDD	87.9	
1,2,3,6,7,8-HxCDD	43				13C-1,2,3,6,7,8-HxCDD	83.3	1 .
1,2,3,7,8,9-HxCDD	16.3				13C-1,2,3,7,8,9-HxCDD	86.9	السركورا
1,2,3,4,6,7,8-HpCDD	922				13C-1,2,3,4,6,7,8-HpCDD	108	ole Way
OCDD	7,340				13C-OCDD	120	ole of Mond
2,3,7,8-TCDF	3.31				13C-2,3,7,8-TCDF	105	•
1,2,3,7,8-PeCDF	3.55				13C-1,2,3,7,8-PeCDF	101	
2,3,4,7,8-PeCDF	7.3		in in		13C-2,3,4,7,8-PeCDF	99.1	
1,2,3,4,7,8-HxCDF	16.1				13C-1,2,3,4,7,8-HxCDF	86.4	
1,2,3,6,7,8-HxCDF	7.12	1. 2.1			13C-1,2,3,6,7,8-HxCDF	80.2	
2,3,4,6,7,8-HxCDF	10.5				13C-2,3,4,6,7,8-HxCDF	87.6	
1,2,3,7,8,9-HxCDF	3.91			0	13C-1,2,3,7,8,9-HxCDF	87.3	
1,2,3,4,6,7,8-HpCDF	247				13C-1,2,3,4,6,7,8-HpCDF	91.9	·
1,2,3,4,7,8,9-HpCDF	8.66				13C-1,2,3,4,7,8,9-HpCDF	104	
OCDF	433				13C-OCDF	104	
Totals						CS Recoveries	
TCDDs	30.7	nto .	32.8		37CI-2,3,7,8-TCDD	91.7	
PeCDDs	59.4	*	60.3		13C-1,2,3,4,7-PeCDD	88.7	
HxCDDs	354				13C-1,2,3,4,6-PeCDF	112	
HpCDDs	2,350	* *	,		13C-1,2,3,4,6,9-HxCDF	90.2	
					13C-1,2,3,4,6,8,9-HpCDF	111	
TCDFs	43.6	900	45.8				
PeCDFs	85.7	· · · · · · · · · · · · · · · · · · ·	85.9		*10.*	AS Recoveries	9 90
HxCDFs	319				13C-1,3,6,8-TCDD	86.8	¥0
HpCDFs	673		_		13C-1,3,6,8-TCDF	101	16 E)
Total PCDD/Fs	11,700		11,700	Te-	H		Exchange Drive
ITEF TEQs				ANAL	YTICAL PERSPECT	TIVES Wilmin	gton, NC 28405
TEQ: ND=0	36.3		37				USA
TEQ: ND=DL/2	36.3	1	37	Tel: +1 910 794	-1613; Toll-Free 866 846-	8290 info	@ultratrace.com
TEQ: ND=DL	36.3	#258 C	37	Fax: +1 910 794	A best of the section		w.ultratrace/com

8041409

Not Reviewer Date

	amples listed below were i ion findings worksheets.	eviewed for ea	* .**	ethod 1613l	*	s. Validation	findings	s are noted in attache
	Validation A	rea				Comme	nts	
l.	Technical holding times	8	Δ	Sampling dat	es:	2/26/09		
II.	HRGC/HRMS Instrument per	ormance check	A					
III.	Initial calibration		A	20/3	5 %			¥0
IV.	Routine calibration/IZX		A	ac	limi	<i>t</i> 5		E CONTRACTOR OF THE CONTRACTOR
V.	Blanks		SW					=
VI.	Matrix spike/Matrix spike dupl	icates	N	es				
VII.	Laboratory control samples		A	OPR	(111	
VIII.	Regional quality assurance ar	nd quality control	N					
IX.	Internal standards		Δ					
Χ.	Target compound identification	ns	AN	Not reviewed	d for Level III	/alidation.		
XI.	Compound quantitation and C		SVA	Not reviewe	d for Level III	validation.		
XII.	System performance		AN	Not reviewe	d for Level III	validation.		
XIII.	Overall assessment of data		4					
XIV.	Field duplicates		N					
			1 W					
XV. ote:	A = Acceptable N = Not provided/applicable SW = See worksheet ed Samples: ** Indicates sample SOIL Soil Soil	R = Ri FB = I e-underwent Leve	No compounds insate Field blank			plicate ip blank quipment blank		
1 1			- MBOO	/ 21	7/4	3	31	
-:-			- MB00		3/200	3	32	
		13		23			33	A CONTRACTOR OF THE CONTRACTOR
							34	
4	PO-BA-27B-SS-A-090226	14		24		10	04	

10 20 30 40 Notes;

LDC #:	2 3/	42/
SDG #:_	pe	cones

VALIDATION FIN

3S WORKSHEET

ə:	_of
Reviewer:	E
2nd Reviewer:_	

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

A. 2,3,7,8-TCDD	F. 1,2,3,4,6,7,8-HpCDD	K. 1,2,3,4,7,8-HxCDF	P. 1,2,3,4,7,8,9-HpCDF	U. Total HpCDD
B. 1,2,3,7,8-PeCDD	G. OCDD	L. 1,2,3,6,7,8-HxCDF	Q. OCDF	V. Total TCDF
C. 1,2,3,4,7,8-HxCDD	H. 2,3,7,8-TCDF	M. 2,3,4,6,7,8-HxCDF	R. Total TCDD	W. Total PeCDF
D. 1,2,3,6,7,8-HxCDD	I. 1,2,3,7,8-PeCDF	N. 1,2,3,7,8,9-HxCDF	S. Total PeCDD	X. Total HxCDF
E. 1,2,3,7,8,9-HxCDD	J. 2,3,4,7,8-PeCDF	O. 1,2,3,4,6,7,8-HpCDF	T. Total HxCDD	Y. Total HpCDF

Notes:	
	Control of the Contro

LDC #:	2053	A21
SDG #:	P1158	· ·

VALIDATION FINDINGS WORKSHEET Blanks

Page:	_6f/	
Reviewer:_	1=7	
2nd Reviewer:_	il	

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

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

N N/A Were all samples associated with a method blank?

Y N N/A Was a method blank performed for each matrix and whenever a sample extraction was performed?

Y N N/A Was the method blank contaminated?

Blank extraction date: 3/4/09 Blank analysis date: 3/11/09 Associated samples: 1, 2 (75x)

Conc. units: 19/9

Compound	Blank ID		•		S	ample Identifica	ition		- NO. OC. OF CO.	
participation of the second	6630-MB	00/								
И	0.0981									
						Service Service (Service Service Servi				

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			4						The second secon	

Market Ma				***************************************		- 2 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1	*. *		* X	
				***************************************		and the second second	Land Mark Cold	· · · · · · · · · · · · · · · · · · ·		

	0 				MT 100 1 100 100 100 100 100 100 100 100			***************************************		
		-31 - 31 - 31 - 31 - 31 - 31				parameter par incremendado	Same 1, 12 - 14 - 15			

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT: All contaminants within five times the method blank concentration were qualified as not detected, "U".

LDC# >53 A21 SDG# 158			VALIDAT	ION FIN	GS WOR	KSHEET			F Rev	6f
METHOD: HRGC/HRMS I Rlease see qualifications b Y N N/A Were all s Y N N/A Was a me	Dioxins/Dibenzo elow for all que amples associa thod blank perf	estions answere ated with a met formed for eacl	ed "N". Not a thod blank? h matrix and	pplicable que whenever a s	estions are ide	tion was perf	ormed?	3, 4	2nd Rev	iewer:
Compound	Blank ID				S	ample Identifica	tion			
	6682-MB	01								
R	0.0973									
							10.000			
						MARINE				*
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4944						www.museus.com				

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							.,	American Company		
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CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT: All contaminants within five times the method blank concentration were qualified as not detected, "U".

LDC #: 2053/42/ SDG #: PILE

VALIDATION FINDINGS WORKSHEET Compound Quantitation and Reported CRQLs

Page: _	
Reviewer: _	17
2nd Reviewer:	K

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

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

Y N N/A Y N N/A Were the correct internal standard (IS), quantitation ions and relative response factors (RRF) used to quantitate the compound? Compound quantitation and CRQLs were adjusted to reflect all sample dilutions and dry weight factors (if necessary).

#	Date	Sample ID	Finding	Associated Samples	Qualifications
		the 1-3	6 > wells range		John / P
assortati.	t resultances	Jee	If not confirmed or		text
		#	zal whenh		

Comments:	See sample calculation verification worksheet for recalculations	_



LABORATORY DATA CONSULTANTS, INC.

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

Anchor QEA, LLC 1423 3rd Avenue, Suite 300 Seattle, WA 98101-2226 ATTN: Ms. Joy Dunay

May 1, 2009

SUBJECT: Port of Olympia, Data Validation

Dear Ms. Dunay,

Enclosed is the final validation report for the fraction listed below. This SDG was received on April 8, 2009. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project # 20577:

SDG#

Fraction

580-13052-1

Wet Chemistry

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

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

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

Sincerely,

Stella S. Cuenco

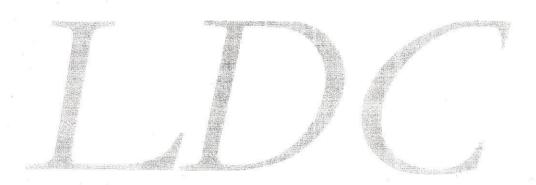
Dáta Validation Operations Manager/Senior Chemist

Attachment 1

d _y z	EDD 63 P	ages-EX	90/10		LD	C i	#20	577	' (A	nc	hor	En	vir	onr	nei	ntal	-Se	att	le V	NΑ	/ P	ort	of (Oly	mp	ia)											
LDC	SDG#	DATE REC'D	(3) DATE DUE	T(OC SEP)	S	ain ize EP)	Sol	% lids	Con	ist. Itent 216)																										
Matrix:	Water/Sedimen	t		w	s	W	s	w	S	W	s	W	s	W	s	W	S	W	S	W	s	W	S	W	s	W	s	W	s	W	S	W	s	W	S	W	S
Α	580-13052-1	04/08/09	04/29/09	0	11	0	11	0	11	0	11		ini(i																								
		trainer.																														-1/2-2004			7.50		
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Total	T/SC			0	11	0	11	0	11	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	43

Port of Olympia Data Validation Reports LDC# 20577

Wet Chemistry



Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

Port of Olympia

Collection Date:

March 13 through March 16, 2009

LDC Report Date:

April 28, 2009

Matrix:

Sediment

Parameters:

Wet Chemistry

Validation Level:

EPA Level III

Laboratory:

TestAmerica, Inc.

Sample Delivery Group (SDG): 580-13052-1

Sample Identification

PO-BA-24-SS-A-090313

PO-BA-25-SS-A-090316

PO-BA-26-SS-A-090316

PO-BA-27B-SS-A-090313

PO-UP-20-SS-A-090313

PO-UP-21-SS-A-090313

PO-UP-22-SS-A-090313

PO-UP-23B-SS-A-090313

PO-AM-28-SS-A-090313

B1-C16-SS-A-090313

B1-S37-SS-A-090313

PO-BA-24-SS-A-090313MS

PO-BA-24-SS-A-090313MSD

PO-BA-24-SS-A-090313DUP

PO-BA-25-SS-A-090316MS

PO-BA-25-SS-A-090316MSD

PO-BA-25-SS-A-090316DUP

B1-S37-SS-A-090313DUP

Introduction

This data review covers 18 sediment samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per ASTM Method D2216-90 for Moisture Content, PSEP Method for Grain Size and Total Organic Carbon and Percent Moisture Method for Percent Solids.

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

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

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:

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. Calibration

a. Initial Calibration

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

b. Calibration Verification

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

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the method blanks.

IV. 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.

V. Duplicates

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

VI. Laboratory Control Samples

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

Percent recoveries (%R) of the standard reference material were within QC limits.

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control reviewed, other than those discussed above, were met and are considered acceptable. Based upon the Level III data validation all results are considered valid and usable for all purposes.

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

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Field Blanks

No field blanks were identified in this SDG.

Port of Olympia Wet Chemistry - Data Qualification Summary - SDG 580-13052-1

No Sample Data Qualified in this SDG

Port of Olympia Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 580-13052-1

No Sample Data Qualified in this SDG

Client: Anchor Environmental LLC

Job Number: 580-13052-1

		General Che	mistry			
Client Sample ID:	PO-BA-24-SS-A-090313					
Lab Sample ID: Client Matrix:	580-13052-1 Solid			Date Sampled: Date Received:		3/2009 1530 6/2009 1540
Analyte	Result	Qual Units	MDL	RL	Dil	Method
Total Organic Carbo	900 Anly Batch: 580-41961	J mg/Kg Date Analyzed	610 03/27/2009 1202	2000	1.0 Dry\	9060_PSEP Nt Corrected: N
Analyte	Result	Qual Units	RL	RL	Dil	Method
Moisture Content	15 Anly Batch: 580-42015	% Date Analyzed	0.010 03/31/2009 1121	0.010	1.0 Dry\	D2216-90 Wt Corrected: N
Percent Solids	87 Anly Batch: 580-41722	% Date Analyzed	0.10 03/23/2009 1103	0.10	1.0	PercentMoisture
Percent Moisture	13 Anly Batch: 580-41722	% Date Analyzed	0.10 03/23/2009 1103	0.10	1.0	PercentMoisture
Client Sample ID:	PO-BA-25-SS-A-090316					
Lab Sample ID: Client Matrix:	580-13052-2 Solid			Date Sampled: Date Received:		6/2009 1320 6/2009 1540
Analyte	Result	Qual Units	MDL	RL .	Dil	Method
Total Organic Carbo	n 700 Anly Batch: 580-41986	J mg/Kg Date Analyzed	9 610 03/30/2009 1906	2000	1.0 Dryl	9060_PSEP Wt Corrected: N
Analyte	Result	Qual Units	RL	RL	Dil	Method
Moisture Content	14 Anly Batch: 580-42015	% Date Analyzed	0.010 03/31/2009 1121	0.010	1.0 Dry	D2216-90 Wt Corrected: N
Percent Solids	89 Anly Batch: 580-41722	% Date Analyzed	0.10 03/23/2009 1103	0.10	1.0	PercentMoisture
Percent Moisture	11 Anly Batch: 580-41722	% Date Analyzed	0.10 03/23/2009 1103	0.10	1.0	PercentMoisture

Midstry

Analytical Data

Client: Anchor Environmental LLC

*		General Che	mistry			
Client Sample ID:	PO-BA-26-SS-A-090316					
Lab Sample ID: Client Matrix:	580-13052-3 Solid			Date Sampled: Date Received:		16/2009 1205 16/2009 1540
Analyte	Result	Qual Units	MDL	RL	Dil	Method
Total Organic Carbo	on ND Anly Batch: 580-41986	mg/Kg Date Analyzed	610 03/30/2009 1906	2000	1.0 Dry\	9060_PSEP Wt Corrected: N
Analyte	Result	Qual Units	RL .	RL	Dil	Method
Moisture Content	18 Anly Batch: 580-42015	% Date Analyzed	0.010 03/31/2009 1121	0.010	1.0 Dry\	D2216-90 Wt Corrected: N
Percent Solids	86 Anly Batch: 580-41722	% Date Analyzed	0.10 03/23/2009 1103	0.10	1.0	PercentMoisture
Percent Moisture	14 Anly Batch: 580-41722	% Date Analyzed	0.10 03/23/2009 1103	0.10	1.0	PercentMoisture
Client Sample ID:	PO-BA-27B-SS-A-090313					
Lab Sample ID: Client Matrix:	580-13052-4 Solid			Date Sampled: Date Received:		13/2009 1616 16/2009 1540
Analyte	Result	Qual Units	MDL	RL	Dil	Method
Total Organic Carbo	on ND Anly Batch: 580-41961	mg/Kg Date Analyzed	610 03/27/2009 1202	2000	1.0 Dry\	9060_PSEP Wt Corrected: N
Analyte	Result	Qual Units	RL	RL	Dil	Method
Moisture Content	14 Anly Batch: 580-42015	% Date Analyzed	0.010 03/31/2009 1121	0.010	1.0 Dryl	D2216-90 Wt Corrected: N
Percent Solids	90 Anly Batch: 580-41722	% Date Analyzed	0.10 03/23/2009 1103	0.10	1.0	PercentMoisture
Percent Moisture	10 Anly Batch: 580-41722	% Date Analyzed	0.10 03/23/2009 1103	0.10	1.0	PercentMoisture

Client: Anchor Environmental LLC

		General Che	mistry			
Client Sample ID:	PO-UP-20-SS-A-090313					
Lab Sample ID: Client Matrix:	580-13052-5 Solid			Date Sampled: Date Received:		13/2009 1255 16/2009 1540
Analyte	Result	Qual Units	MDL	RL	Dil	Method
Total Organic Carbo	on 45000 Anly Batch: 580-41961	mg/Kg Date Analyzed	610 03/27/2009 1202	2000	1.0 Dry	9060_PSEP Wt Corrected: N
Analyte	Result	Qual Units	RL	RL	Dil	Method
Moisture Content	250 Anly Batch: 580-42015	% Date Analyzed	0.010 03/31/2009 1121	0.010	1.0 Dry	D2216-90 Wt Corrected: N
Percent Solids	27 Anly Batch: 580-41722	% Date Analyzed	0.10 03/23/2009 1103	0.10	1.0	PercentMoisture
Percent Moisture	73 Anly Batch: 580-41722	% Date Analyzed	0.10 03/23/2009 1103	0.10	1.0	PercentMoisture
Client Sample ID:	PO-UP-21-SS-A-090313					
Lab Sample ID: Client Matrix:	580-13052-6 Solid			Date Sampled: Date Received:		13/2009 1235 16/2009 1540
Analyte	Result	Qual Units	MDL	RL	Dil	Method.
Total Organic Carbo	on 35000 Anly Batch: 580-41961	mg/Kg Date Analyzed	610 03/27/2009 1202	2000	1.0 Dry	9060_PSEP Wt Corrected: N
Analyte	Result	Qual Units	RL	RL	Dil	Method
Moisture Content	210 Anly Batch: 580-42015	% Date Analyzed	0.010 03/31/2009 1121	0.010	1.0	D2216-90 Wt Corrected: N
Percent Solids	32 Anly Batch: 580-41722	% Date Analyzed	0.10 03/23/2009 1103	0.10	1.0	PercentMoisture
Percent Moisture	68 Anly Batch: 580-41722	% Date Analyzed	0.10 03/23/2009 1103	0.10	1.0	PercentMoisture

Analytical Data

Client: Anchor Environmental LLC

		General Che	mistry			
Client Sample ID:	PO-UP-22-SS-A-090313	3				
Lab Sample ID: Client Matrix:	580-13052-7 Solid			Date Sampled: Date Received:		3/2009 1220 6/2009 1540
Analyte	Result	Qual Units	MDL	RL	Dil	Method
Total Organic Carb	on 42000 Anly Batch: 580-41961	mg/Kg Date Analyzed	610 03/27/2009 1202	2000	1.0 Dry\	9060_PSEP Wt Corrected: N
Analyte	Result	Qual Units	RL	RL	Dil	Method
Moisture Content	300 Anly Batch: 580-42015	% Date Analyzed	0.010 03/31/2009 1121	0.010	1.0 Dry	D2216-90 Wt Corrected: N
Percent Solids	25 Anly Batch: 580-41722	% Date Analyzed	0.10 03/23/2009 1103	0.10	1.0	PercentMoisture
Percent Moisture	75 Anly Batch: 580-41722	% Date Analyzed	0.10 03/23/2009 1103	0.10	1.0	PercentMoisture
Client Sample ID:	PO-UP-23B-SS-A-0903	13				
Lab Sample ID: Client Matrix:	580-13052-8 Solid			Date Sampled: Date Received:		3/2009 1147 6/2009 1540
Analyte	Result	Qual Units	MDL	RL	Dil	Method .
Total Organic Carb	on 51000 Anly Batch: 580-41961	mg/Kg Date Analyzed	610 03/27/2009 1202	2000	1.0 Dry	9060_PSEP Wt Corrected: N
Analyte	Result	Qual Units	RL	RL	Dil	Method
Moisture Content	280 Anly Batch: 580-42015	% Date Analyzed	0.010 03/31/2009 1121	0.010	1.0 Dry	D2216-90 Wt Corrected: N
Percent Solids	26 Anly Batch: 580-41722	% Date Analyzed	0.10 03/23/2009 1103	0.10	1.0	PercentMoisture
Percent Moisture	74 Anly Batch: 580-41722	% Date Analyzed	0.10 03/23/2009 1103	0.10	1.0	PercentMoisture

Client: Anchor Environmental LLC

		General Che	mistry	V 450 000 000 000 000		
Client Sample ID:	PO-AM-28-SS-A-090313					
Lab Sample ID: Client Matrix:	580-13052-9 Solid			Date Sampled: Date Received		13/2009 0840 16/2009 1540
Analyte	Result	Qual Units	MDL	RL	Dil	Method
Total Organic Carbo	on 37000 Anly Batch: 580-41961	mg/Kg Date Analyzed	610 03/27/2009 1202	2000	1.0 Dry	9060_PSEP Wt Corrected: N
Analyte	Result	Qual Units	RL	RL	Dil	Method
Moisture Content	290	%	0.010	0.010	1.0	D2216-90
	Anly Batch: 580-42015	Date Analyzed	03/31/2009 1121		Dry	Wt Corrected: N
Percent Solids	26	%	0.10	0.10	1.0	PercentMoisture
	Anly Batch: 580-41722	Date Analyzed	03/23/2009 1103			r or containe local o
Percent Moisture	74	%	0.10	0.10	1.0	PercentMoisture
	Anly Batch: 580-41722	Date Analyzed	03/23/2009 1103			
Client Sample ID:	B1-C16-SS-A-090313					
Lab Sample ID:	580-13052-10			Date Sampled:	03/1	3/2009 0955
Client Matrix:	Solid			Date Received	03/1	6/2009 1540
Analyte	Result	Qual Units	MDL	RL	Dil	Method
Total Organic Carbo		mg/Kg		2000	1.0	9060_PSEP
0.000	Anly Batch: 580-41961	Date Analyzed	03/27/2009 1202		2000	Wt Corrected: N
Analyte	Result	Qual Units	RL	RL	Dil	Method
Moisture Content	240	%	0.010	0.010	1.0	D2216-90
	Anly Batch: 580-42015	Date Analyzed	03/31/2009 1121		Dryl	Wt Corrected: N
Percent Solids	27	%	0.10	0.10	1.0	PercentMoisture
	Anly Batch: 580-41722	Date Analyzed	03/23/2009 1103			
Percent Moisture	73	%	0.10	0.10	1.0	PercentMoisture
	Anly Batch: 580-41722	Date Analyzed	03/23/2009 1103			

Client: Anchor Environmental LLC

Job Number: 580-13052-1

General	Chemistry
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Units

mg/Kg

MDL

610

03/23/2009 1103

Qual

Date Analyzed

Client Sample ID:

Total Organic Carbon

B1-S37-SS-A-090313

Anly Batch: 580-41722

Result

35000

Lab Sample ID: Client Matrix:

Analyte

Solid

580-13052-11

Date Sampled:

03/13/2009 0915

RL

2000

Date Received: 03/16/2009 1540

Method

9060_PSEP

Dil

1.0

*	Anly Batch: 580-41961	Date Analyzed	03/27/2009 1202		Dry'	Wt Corrected: N
Analyte	Result	Qual Units	RL	RL	Dil	Method
Moisture Content	250 Anly Batch: 580-42015	% Date Analyzed	0.010 03/31/2009 1121	0.010	1.0 Dry	D2216-90 Wt Corrected: N
Percent Solids	28 Anly Batch: 580-41722	% Date Analyzed	0.10 03/23/2009 1103	0.10	1.0	PercentMoisture
Percent Moisture	72	%	0.10	0.10	1.0	PercentMoisture

Particle Size of Sediments by PSEP/Plumb 1981

 Client:
 Anchor Environmental LLC

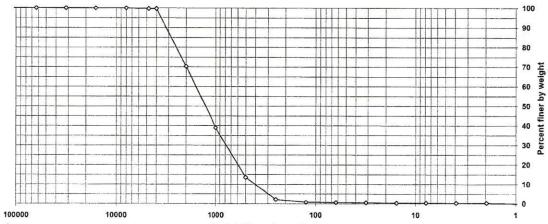
 Sample ID:
 PO-BA-24-SS-A-090313

 Lab ID:
 580-13052-A-1

Percent Solids: 87.09748% Specific Gravity: 2.650
 Date Received:
 3/16/2009

 Start Date:
 3/24/2009

 End Date:
 4/1/2009



Particle Size, microns (un

Sieve Particle size size, um		Percent finer	Incremental percent	
5 inch	125000	100.0	0.0	
2.5 inch	63000	100.0	0.0	
1.25 inch	31500	100.0	0.0	
5/8 inch	16000	100.0	0.0	
5/16 inch	8000	100.0	0.0	
#4	4750	99.7	0.3	
#5	4000	99.7	0.0	
#10	2000	70.3	29.4	
#18	1000	39.0	31.3	
#35	500	13.6	25.4	
#60	250	2.1	11.5	
#120	125	0.8	1.3	
#230	63	0.8	0.1	
Phi Size 4	63	0.6	0.1	
Phi Size 5	31.42	0.6	0.1	
Phi Size 6	15.6	0.5	0.1	
Phi Size 7	7.8	0.4	0.1	
Phi Size 8	3.9	0.4	0.0	
Phi Size 9	1.95	0.4	0.0	
Phi Size 10	0.98	0.0	0.4	
>Phi Size 10	<0.98		0.0	

Soil Classification	Percent of Total Sample			
Cobbles	0.0			
Gravel	29.7			
Sand ·	69.7			
Very Coarse Sand	31.3			
Coarse Sand	25.4			
Medium Sand	11.5			
Fine Sand	1.3			
Very Fine Sand	0.2			
Silt	0.2			
Coarse Silt	0.1			
Medium Silt	0.1			
Fine Silt	0.1			
Very Fine Silt	0.0			
Clay	0.4			
Coarse Clay	0.0			
Medium Clay	0.4			

n fryog

TestAmerica Tacoma

Sediment Grain Size	- SEF/DMEF/PSEP	
Client Client Sample ID Lab Sample ID	Anchor Environmental LLC PO-BA-24-SS-A-090313 580-13052-A-1	Date Received 3/16/2009 Start Date 3/24/2009 End Date 4/1/2009
Dry Weight Determin	nation	
Tin Weight	0 g	
Wet Sample + Tin	0 g	
Dry Sample + Tin	0.g	
% Moisture	12.90252 %	Default Soil Gravity 2.65
		SHMP test
Sample Weights	Tere Pan+Samp Samp	Standard ID 3/27/2009
Sample Weight (Wet)	830.3451	Weight of aliquot 1 (mg) 1.9
Sample Weight (dry)	717.5918	Weight of aliquot 2 (mg) 2.5
		Weight of aliquot 3 (mg) 2.3
Sample Split	Tare Pan+Samp Samp	Weight of aliquot 4 (mg) 2.9
Sample >=#230	712.7428	Weight of aliquot 5 (mg) 2.5
Sample <#230	. 4.849	Average Weight (mg) 2.42
% Passing #230	0.676	

Sample Fraction	Size (um) Pan	are	Pan+Sample	Sample	% Finer	Classification	Sub Class
5 inch	125000	0	0:	0 g	100.0	Cobbles	
2.5 inch	63000	. 0	0	0 g	100.0	Cobbles	
1.25 inch	31500	0	0	0 g	100.0	Gravel	
5/8 inch	16000	0	0	0 g	100.0	Gravel	
5/16 inch	8000	0	0	0 g	100.0	Gravel	
#4	4750	0	2.1583	2.1583 g	99.7	Gravel	
#5	4000	0	0	0 g	99.7	Gravel	
#10	2000	0	211.0181	211.0181 g	70.3	Gravel	
#18	1000	0	224.8823	224.8823 g	39.0	Sand	Coarse
#35	500	0	182.5036	182,5036 g	13.6	Sand	Medium
#60	250	0	82.2244	82.2244 g	2.1	Sand	Medium
#120	125	0	9.5022	9.5022 g	8.0	Sand	Fine
#230	63	0	0.4539	0.4539 g	0.8	Sand	Fine
				0 g	0.8	Sand	Fine
				0 g	0.8		

Number of aliquots SHMP used 1

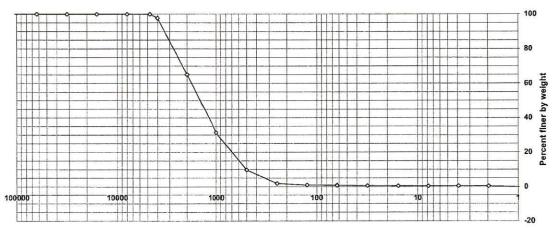
			Time	Withdra					e weight					Markey Street
Pipette Size (Phi)	Size (um)	Temp C	(hh:mm:ss)	Depth	GE L	Tare Weight	Tin + residue	SHMP		Phi Interval	ge:	% Phi Interval	% finer Classific	ation Sub Class
1	63		20 00:00:20		20	57.9008	58:0002		0.09698		0.415	0.057832322	0.6181677 Sand	Very Fine
5	31.42		20 00:01:54		10	53.4974	53.5885		0.08868		0.45	0.062709747	0.5554579 Silt	Coarse
	15.6		20 00:07:36		10	57.8609	57.943		0.07968		0.735	0.10242592	0.453032 Silt	Medium
7	7.8		20 00:30:26		10	52.7686	52.836		0.06498		0.385	0.053651672	0.3993803 Silt	Fine
3	3.9		20 02:02:00		10	57.0668	57.1265		0.05728		0.075	0.010451624	0.3889287 Silt	Very Fine
9	1.95		20 08:06:00		10	56.8901	56.9483		0.05578		0.015	-0.002090325	0.391019 Clay	Coarse
10	0.98		20 32:28:00		10	58.5161	58.5746		0.05608		2.804	0.390751399	0.0002676 Clay	Medium
			not defined	1	10									

Particle Size of Sediments by PSEP/Plumb 1981

Percent Solids: 88.34537% Specific Gravity: 2.650
 Date Received:
 3/16/2009

 Start Date:
 3/24/2009

 End Date:
 4/1/2009



Particle Size, microns (um)

Sieve size	Particle size, um	Percent finer	Incremental percent		
5 inch	125000	100.0	0.0		
2.5 inch	63000	100.0	0.0		
1.25 inch	31500	100.0	0.0		
5/8 inch	16000	100.0	0.0		
5/16 inch	8000	100.0	0.0		
#4	4750	100.0	0.0		
#5	4000	97.7	2.3		
#10	2000	65.1	32.6		
#18	1000	31.4	33.7		
#35	500	9.7	21.7		
#60	250	1.9	7.8		
#120	125	0.9	0.9		
#230	63	8.0	0.1		
Phi Size 4	63	0.7	0.2		
Phi Size 5	31.42	0.6	0.1		
Phi Size 6	15.6	0.4	0.2		
Phi Size 7	7.8	0.4	0.0		
Phi Size 8	3.9	0.4	0.0		
Phi Size 9	1.95	0.4	0.0		
Phi Size 10	0.98	0.0	0.4		
>Phi Size 10	< 0.98		0.0		

Soil Classification	Percent of Total Sample			
Cobbles	0.0			
Gravel	34.9			
Sand	64.4			
Very Coarse Sand	33.7			
Coarse Sand	21.7			
Medium Sand	7.8			
Fine Sand	0.9			
Very Fine Sand	0.3			
Sift	0.2			
Coarse Silt	0.1			
Medium Silt	0.2			
Fine Silt	0.0			
Very Fine Silt	0.0			
Clay	0.4			
Coarse Clay	0.0			
Medium Clay	0.4			

11/2409

Sediment Grain Size	- SEF/DMEF/PSEP	
Client Sample ID	Anchor Environmental LLC PO-BA-25-SS-A-090316	Date Receved 3/16/2009 Start Date 3/24/2009
Lab Sample ID	580-13052-A-2	End Date 4/1/2009
Dry Weight Determin	ation	
Tin Weight	0 g	
Wet Sample + Tin	0 g	
Dry Sample + Tin	0.g	ago compagnicam (p. 1 p. m. com to the transport of the company o
% Moisture	11.65463 %	Default Soil Gravity 2.65
		SHMP test
Sample Weights	Tare Pan+Samp Samp	Standard ID 3/27/2009
Sample Weight (Wet)	662.4243	Weight of aliquot 1 (mg) 1.9
Sample Weight (dry)	575.1439	Weight of aliquot 2 (mg) 2.5
		Weight of aliquot 3 (mg) 2.3
Sample Split	Tare Pan+Samp Samp	Weight of aliquot 4 (mg) 2.9
Sample >=#230	570.9499	Weight of aliquot 5 (mg) 2.5
Sample <#230	. 4.194	Average Weight (mg) 2.42
% Daccing #230	0.720	

Sample Fraction	Size (um) Pan	Tare 1	Pan+Sample :	Sample	% Finer Classification	Sub Class
5 inch	125000	0	0	0 g	100.0 Cobbles	
2.5 inch	63000	0	0	0.g	100.0 Cobbles	
1.25 inch	31500	0	0	0 g	100.0 Gravel	
5/8 inch	16000	. 0	0.	0 g	100.0 Gravel	
5/16 inch	8000	0	0	0 g	100.0 Gravel	
#4	4750	. 0	0	0 g	100.0 Gravel	
#5	4000	0	13.395	13.395 g	97.7 Gravel	
#10	2000	. 0	187.7708	187.7708 g	65.1 Gravel	
#18	1000	. 0	193.9957	193.9957 g	31.4 Sand	Coarse
¥35	500	0	124.9822	124.9822 g	9.7 Sand	Medium
#60	250	0	44.8715	44.8715 g	1.9 Sand	Medium
#120	125	0	5.4409	5.4409 g	0.9 Sand	Fine
#230	63	0	0.4938	0.4938 g	0.8 Sand	Fine
				0 g	0.8 Sand	Fine
				0 g	0.8	to the state of th
Remainder				0 g		

Number of aliquots SHMP used

			Withdrawai Time		Nithdrawi	al			Residu	e weight -			Chair A			
Pipette Size (Phi)	Size (um)	Temp C	(hh:mm:ss)	1	Depth		Tare Weight	Tin + residue	SHMP		Phi Interv	al	% Phi Interval	% finer	Classificatio	h Sub Class
4	63		20 00:00:20			20	59.1089	59.1952		0.08388	15 m	0.32	0.05563825	0.6733618	Sand	Very Fine
5	31.42		20 00:01:54			10	55.4559	55.5358		0.07748		0.31	0.053899555	0.6194622	Silt	Coarse
6	15.6		20 00:07:36			10	59.3683	59.442		0.07128		1.025	0.178216269	0.4412459	Silt	Medium
7	7.8		20 00:30:26			10	58.5713	58.6245		0.05078		0.17	0.02955782	0.4116881	Silt	Fine
8	3.9		20 02:02:00			10	60.6932	60.743		0.04738		-0.135	-0.023472387	0.4351605	Silt	Very Fine
9	1.95		20 08:06:00			10	59.5496	59.6021		0.05008		0.085	0.01477891	0.4203816	Clay	Coarse
10	0.98		20 32:28:00			10	58,0696	58.1204		0.04838		2.419	0.420590395	-0.0002088	Clav	Medium

11/2409

Client: Anchor Environmental LLC

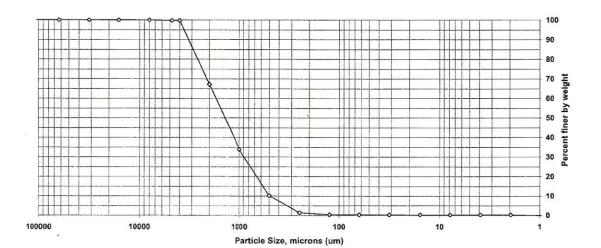
Sample ID: PO-BA-26-SS-A-090316

Lab ID: 580-13052-A-3

Percent Solids: 84.8391% Specific Gravity: 2.650
 Date Received:
 3/16/2009

 Start Date:
 3/24/2009

 End Date:
 4/1/2009



Sieve	Particle	Percent	Incremental
size	size, um	finer	percent
5 inch	125000	100.0	0.0
2.5 inch	63000	100.0	0.0
1.25 inch	31500	100.0	0.0
5/8 inch	16000	100.0	0.0
5/16 inch	8000	100.0	0.0
#4	4750	99.8	0.2
#5	4000	99.8	0.0
#10	2000	67.3	32.5
#18	1000	33.9	33.4
#35	500	10.2	23.7
#60	250	1.4	8.9
#120	125	0.5	0.9
#230	63	0.4	0.0
Phi Size 4	63	0.4	0.0
Phi Size 5	31.42	0.4	0.0
Phi Size 6	15.6	0.3	0.1
Phi Size 7	7.8	0.3	0.0
Phi Size 8	3.9	0.3	0.0
Phi Size 9	1.95	0.3	0.0
Phi Size 10	0.98	0.0	0.3
>Phi Size 10	< 0.98	Marie Assessment	0.0

Soil Classification	Percent of Total Sample
Cobbles	0.0
Gravel	32.7
Sand	66.9
Very Coarse Sand	33.4
Coarse Sand	23.7
Medium Sand	8.9
Fine Sand	0.9
Very Fine Sand	0.1
Silt	0.1
Coarse Silt	0.0
Medium Silt	0.1
Fine Silt	0.0
Very Fine Silt	0.0
Clay	0.3
Coarse Clay	0.0
Medium Clay	0.3

Rights

Client	Anchor Environmental LLC	Date Receved 3/16/2009
Client Sample ID Lab Sample ID	PO-BA-26-SS-A-090316 580-13052-A-3	Start Date 3/24/2009 End Date 4/1/2009
	The second secon	ACTION OF THE PARTY OF THE SECOND STATE OF THE
ory Weight Determina		
in Weight	0 g'	
Vet Sample + Tin	0.g	
ry Sample + Tin	0 g	
% Moisture	15.1609 %	Default Soil Gravity 2.65
		article backing designed at 17 September 19 Control of the
		SHMP test
Sample Weights	Tere Pan+Samp Samp	Standard ID 3/27/2009
Sample Weight (Wet)	662.4243	Weight of aliquot 1 (mg) 1.9
ample Weight (dry)	640,8801	Weight of aliquot 2 (mg) 2.5
	early as the training of a function of the fact that the	Weight of aliquot 3 (mg) 2.3
Sample Split	Tare Pan+Samo Samo	Weight of aliquot 4 (mg) 2.9
	638.4411	Weight of aliquot 5 (mg) 2.5
	030.4911	weight of aliquot 5 (riig)
Sample >=#230 Sample <#230	2.439	Average Weight (mg) 2.42

Sample Fraction	Size (um) Pan 1	are i	Pan+Sample	Sample	% Finer Classification	Sub Class
5 inch	125000	0	0	0 g	100.0 Cobbles	
2.5 inch	63000	0	0	0 g	100.0 Cobbles	
1.25 inch	31500	0	0	0 g	100.0 Gravel	
5/8 inch	16000	0	0	0 g	100.0 Gravel	
5/16 inch	8000	0	0	0 g	100.0 Gravel	
#4	4750	0	1.3594	1.3594 g	99.8 Gravel	
#5	4000	. 0	0	0 g	99.8 Gravel	
#10	2000	0	208.2302	208.2302 g	67.3 Gravel	
#18	1000	0	214.3585	214.3585 g	33.9 Sand	Coarse
#35	500	0	151.8758	151.8758 g	10.2 Sand	Medium
#60	250	0	56.7373	56.7373 q	1.4 Sand	Medium
#120	125	0	5.691	5.691 g	0.5 Sand	Fine
#230	63	0	0.1889	0.1889 a	0.4 Sand	Fine
				0 a	0.4 Sand	Fine
				0 g	0.4	
Remainder				0 g		

Number of aliquots SHMP used 1

		Time	Withdrawal			Residu	e weight -						
Pipelte Size (Phi)	Size (um) Temp	C (hh:mm:ss)	Depth	Tare Weight	Tin + residue	SHMP	To Consumer	Phi Interva		% Phi Interval	% finer C	lassificatio	n Sub Class
	63	20 00:00:20	20	58.591	58.6422		0.04878		-0.07	-0.01092248	0.3919225 \$	Sand	Very Fine
	31.42	20 00:01:54	10	57.9832	58.0358		0.05018		0.18	0.028086377	0.3638361 5	Silt	Coarse
	15.6	20 00:07:36	10	58.8126	58.8616		0.04658		0.655	0.102203205	0.2616329 \$	Silt	Medium
	7.8	20 00:30:26	10	58.08	58.1159		0.03348		-0.235	-0.036668325	0.2983012 5	Silt	Fine
	3.9	20 02:02:00	10	52.1677	52.2083		0.03818		-0.05	-0.007801771	0.306103 S	Silt	Very Fine
	1.95	20 08:06:00	10	55.0015	55.0431		0.03918		0.195	0.030426908	0.2756761 0	day	Coarse
)	0.98	20 32:28:00	10	57.8464	57.8841		0.03528		1.764	0.275246493	0.0004296	Clav	Medium

Potrtog

Client: Anchor Environmental LLC

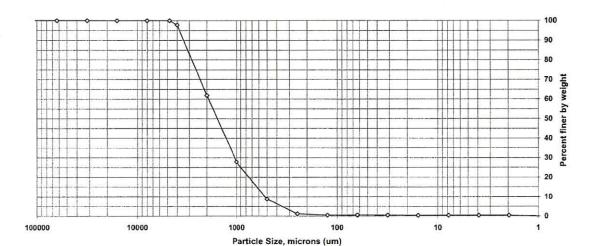
Sample ID: PO-BA-27B-SS-A-090313

Lab ID: 580-13052-A-4

Percent Solids: 87.85544% Specific Gravity: 2.650
 Date Received:
 3/16/2009

 Start Date:
 3/24/2009

 End Date:
 4/1/2009



Sieve	Particle	Percent	Incremental
size	size, um	finer	percent
5 inch	125000	100.0	0.0
2.5 inch	63000	100.0	0.0
1.25 inch	31500	100.0	0.0
5/8 inch	16000	100.0	0.0
5/16 inch	8000	100.0	0.0
#4	4750	100.0	0.0
#5	4000	97.8	2.2
#10	2000	61.9	35.9
#18	1000	27.9	34.0
#35	500	8.8	19.1
#60	250	1.2	7.6
#120	125	0.5	0.7
#230	63	0.5	0.0
Phi Size 4	63	0.5	-0.1
Phi Size 5	31.42	0.5	0.0
Phi Size 6	15.6	0.4	0.1
Phi Size 7	7.8	0.4	0.0
Phi Size 8	3.9	0.4	0.0
Phi Size 9	1.95	0.4	0.0
Phi Size 10	0.98	0.0	0.4
>Phi Size 10	<0.98	- 100-100 100-100 100	0.0

Soil Classification	Percent of Total Sample
Cobbles	0.0
Gravel	38.1
Sand-	61.4
Very Coarse Sand	34.0
Coarse Sand	19.1
Medium Sand	7.6
Fine Sand	0.7
Very Fine Sand	0.0
Silt	0.1
Coarse Silt	0.0
Medium Silt	0.1
Fine Silt	0.0
Very Fine Silt	0.0
Clay	0.4
Coarse Clay	0.0
Medium Clay	0.4

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Sediment Grain Size	SEF/DMEF/PSEP	
Client Client Sample ID Lab Sample ID	Anchor Environmental LLC PO-BA-27B-SS-A-090313 580-13052-A-4	Date Receved 3/16/2009 Start Date 3/24/2009 End Date 4/1/2009
Dry Weight Determina	ation	
Tin Weight	0 g	
Wet Sample + Tin	0 g	
Dry Sample + Tin	0 g	
% Moisture	12.14456 %	Default Soil Gravity 2.65
		SHMP test
Sample Weights	Tare Pan+Samp Samp	Standard ID 3/27/2009
Sample Weight (Wet)	662.4243	Weight of aliquot 1 (mg) 1.9
Sample Weight (dry)	676.7673	Weight of aliquot 2 (mg) 2.5
		Weight of aliquot 3 (mg) 2.3
Sample Split	Tare Pan+Samp Samp	Weight of aliquot 4 (mg) 2.9
Sample >=#230	673.0533	Weight of aliquot 5 (mg) 2.5
Sample <#230	. 3.714	Average Weight (mg) 2.42
% Passing #230	0.549	

Sample Fraction	Size (um) Pan	Taranta and the same of the sa	Pan+Sample :	Control of the Contro	% Finer Classification	Sub Class
5 inch	125000	0	0	0 g	100.0 Cobbles	
2.5 inch	63000	0	0	0 g	100.0 Cobbles	
1.25 inch	31500	. 0	0	. 0 g	100.0 Gravel	
5/8 inch	16000	0	0	0 g	100.0 Gravel	
5/16 inch	8000	0	0	0 g	100.0 Gravel	
#4	4750	0	0	. 0 g	100.0 Gravel	
#5	4000	0	14.5932	14.5932 g	97.8 Gravel	
#10	2000	0	242.6387	242.6387 g	61.9 Gravel	
#18	1000	0	230.306	230,306 g	27.9 Sand	Coarse
#35	500	. 0	129.033	129.033 g	8.8 Sand	Medium
#60	250	0	51.439	51.439 g	1.2 Sand	Medium
#120	125	0	4.8113	4.8113 g	0.5 Sand	Fine
#230	63	0	0.2321	0.2321 g	0.5 Sand	Fine
				0 g	0.5 Sand	Fine
				0 g	0.5	
Remainder				0 g		

Number of aliquots SHMP used 1

			Tima	Withdra					ue welght -				
Pipette Size (Phi)	Size (um)	Temp C	(hh:mm:ss)	Depth	Sign	Tare Weight	Tin + residue	SHMF		Phi Interval	% Phi Interval	% finer Classifica	tion Sub Class
	63	2	20 00:00:20		20	56.9211	56.9978		0.07428	-3.55271E-1	3 -5.24954E-14	0.549 Sand	Very Fine
	31.42	. 2	20 00:01:54		10	55.2095	55.2862		0.07428	0.10	5 0.015514934	0.5334851 Silt	Coarse
	15.6	. 2	20 00:07:36		10	59.6056	59.6802		0.07218	0.68	5 0.101216474	0.4322686 Slit	Medium
	7.8	2	20 00:30:26		10	58.7978	58.8587		0.05848	0.22	5 0.033246287	0.3990223 Silt	Fine
	3.9	2	20 02:02:00		10	58.0811	58.1375	4.5	0.05398	-0.1	4 -0.020686579	0.4197089 Silt	Very Fine
	1.95	2	20 08:06:00		10	58.2201	58.2793		0.05678	-0.0	3 -0.004432838	0.4241417 Clay	Coarse
0	0.98	2	20 32:28:00		10	57.2925	57.3523		0.05738	2.86	9 0.423927102	0.0002146 Clay	Medium

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Client: Anchor Environmental LLC
Sample ID: PO-UP-20-SS-A-090313

Lab ID: 580-13052-A-5

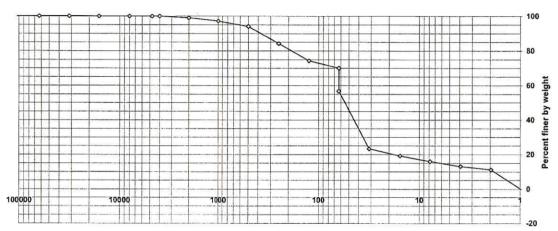
 Percent Solids:
 28.55497%

 Specific Gravity:
 2.650

 Date Received:
 3/16/2009

 Start Date:
 3/24/2009

 End Date:
 4/1/2009



Particle Size, microns (um)

Sieve size	Particle size, um	Percent finer	Incremental percent		
5 inch	125000	100.0	0.0		
2.5 inch	63000	100.0	0.0		
1.25 inch	31500	100.0	0.0		
5/8 inch	16000	100.0	0.0		
5/16 inch	8000	100.0	0.0		
#4	4750	100.0	0.0		
#5	4000	100.0	0.0		
#10	2000	99.0	1.0		
#18	1000	97.2	1.8		
#35	500	94.1	3.1		
#60	250	84.3	9.8		
#120	125	74.3	10.0		
#230	63	70.1	4.2		
Phi Size 4	63	56.8	13.3		
Phi Size 5	31.42	23.3	33.5		
Phi Size 6	15.6	19.2	4.1		
Phi Size 7	7.8	15.9	3.3		
Phi Size 8	3.9	13.1	2.8		
Phi Size 9	1.95	11.2	2.0		
Phi Size 10	0.98	0.0	11.2		
>Phi Size 10	< 0.98		0.0		

Soil Classification	Percent of Total Sample			
Cobbles	0.0			
Gravel	1.0			
Sand	42.2			
Very Coarse Sand	1.8			
Coarse Sand	3.1			
Medium Sand	9.8			
Fine Sand	10.0			
Very Fine Sand	17.5			
Silt	43.6			
Coarse Silt	33.5			
Medium Silt	4.1			
Fine Silt	3.3			
Very Fine Silt	2.8			
Clay	13.2			
Coarse Clay	2.0			
Medium Clay	11.2			

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Sediment Grain Size -	SEF/DMEF/PSEP	
Client Client Sample ID	Anchor Environmental LLC PO-UP-20-SS-A-090313	Date Received 3/16/2009 Start Date 3/24/2009
Lab Sample ID	580-13052-A-5	End Date 4/1/2009
Dry Weight Determina	ition	
Tin Weight	0 g	
Wet Sample + Tin	0 g	a - 8
Dry Sample + Tin	0 g	
% Moisture	71.44503 %	Default Soil Gravity 2.65
		SHMP test
Sample Weights	Tare Pan+Samp Samp	Standard ID 3/27/2009
Sample Weight (Wet)	99.645	Weight of aliquot 1 (mg) 1.9
Sample Weight (dry)	22.1596	Weight of aliquot 2 (mg) 2.5
		Weight of aliquot 3 (mg) 2.3
Sample Split	Tere Pan+Samp Samp	Weight of aliquot 4 (mg) 2.9
Sample >=#230	6.5956	Weight of aliquot 5 (mg) 2.5
Sample <#230	. 15.564	Average Weight (mg) 2.42
% Passing #230	70.2	THE RESERVE THE PARTY OF THE PA

Sample Fraction	Size (um) Pan	Tare Pa	an+Sample S	ample	% Finer Classification	Sub Class
5 inch	125000	. 0	0	0 g	100.0 Cobbles	
2.5 inch	63000	0	0	0 g	100.0 Cobbles	
1.25 inch	31500	. 0	0	0 g	100.0 Gravel	
5/8 inch	16000	0	0	0 g	100.0 Gravel	
5/16 inch	8000	0	0	0 g	100.0 Gravel	
#4	4750	0	0	0 g	100.0 Gravel	
#5	4000	0	. 0	0 g	100.0 Gravel	
#10	2000	0	0.2176	0.2176 g	99.0 Gravel	
#18	1000	0	0.3878	0.3878 g	97.2 Sand	Coarse
#35	500	0	0.6785	0.6785 g	94.1 Sand	Medium
#60	250	0	2.1629	2.1629 g	84.3 Sand	Medium
#120	125	0	2.2146	2.2146 g	74.3 Sand	Fine
#230	63	0	0.9342	0.9342 g	70.1 Sand	Fine
				0 g	70.1 Sand	Fine
				0 g	70.1	
Remainder				0 g		

Number of aliquots SHMP used 1

		Time	Withdra	wal			Residu	e weight -					
Pipette Size (Phl)	Size (um) Temp C	(hh:mm:ss)	Depth-		Tare Weight	in + residue	SHMP	Cin Color de	Phi Interval	% Phi Interval	% finer	Classification	on Sub Class
4	63	20 00:00:20		20	56.7029	57.0166		0.31128	2.975	13.42533259	56.774667	Sand	Very Fine
5	31.42	20 00:01:54		10	55.953	56.2072		0.25178	7.42	33.48435892	23.290308	Silt	Coarse
	15.6	20 00:07:36	S. 15. 3	10	54.6113	54.7171		0.10338	0.9	4.061445152	19.228863	Silt	Medium
	7.8	20 00:30:26		10	57.1881	57.2759	100	0.08538	0.73	3.29428329	15.93458	Silt	Fine
3	3.9	20 02:02:00		10	52.4719	52.5451		0.07078	0.62	2.797884438	13.136696	Silt	Very Fine
)	1.95	20 08:06:00		10	56.254	56.3148		0.05838	0.435	1.963031824	11.173664	Clay	Coarse
10	0.98	20 32:28:00		10	58.1026	58.1547		0.04968	2.484	11.20958862	-0.0359248	Clav	Medium
		not defined		10			11.00					10 TX+10 TX	

Royryog

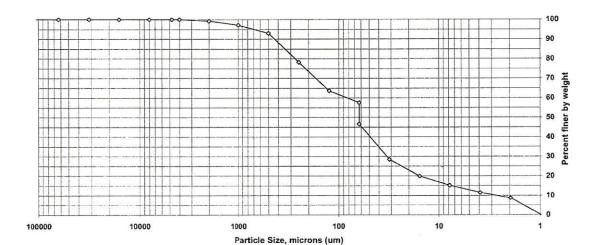
 Percent Solids:
 32.20359%

 Specific Gravity:
 2.650

 Date Received:
 3/16/2009

 Start Date:
 3/24/2009

 End Date:
 4/1/2009



Sieve size	Particle size, um	Percent finer	Incremental percent		
5 inch	125000	100.0	0.0		
2.5 inch	63000	100.0	0.0		
1.25 inch	31500	100.0	0.0		
5/8 inch	16000	100.0	0.0		
5/16 inch	8000	100.0	0.0		
#4	4750	100.0	0.0		
#5	4000	100.0	0.0		
#10	2000	99.2	0.8		
#18	1000	97.2	2.0		
#35	500	93.0	4.2		
#60	250	78.2	14.8		
#120	125	63.7	14.5		
#230	63	57.6	6.1		
Phi Size 4	63	46.6	11.0		
Phi Size 5	31.42	28.5	18.1		
Phi Size 6	15.6	19.9	8.5		
Phi Size 7	7.8	15.2	4.8		
Phi Size 8	3.9	11.5	3.7		
Phi Size 9	1.95	8.7	2.8		
Phi Size 10	0.98	0.0	8.7		
	92500 90000		12/10/20		

< 0.98

>Phi Size 10

Soil Classification	Percent of Total Sample
Cobbles	0.0
Gravel	0.8
Sand	52.6
Very Coarse Sand	2.0
Coarse Sand	4.2
Medium Sand	14.8
Fine Sand	14.5
Very Fine Sand	17.1
Silt	35.1
Coarse Silt	18.1
Medium Silt	8.5
Fine Silt	4.8
Very Fine Silt	3.7
Clay	11.4
Coarse Clay	2.8
Medium Clay	8.7

Motortog

0.0

Sediment Grain Size	- SEF/DMEF/PSEP		
Client	Anchor Environmental LLC	Date Receved 3/16/2009	
Client Sample ID	PO-UP-21-SS-A-090313	Start Date 3/24/2009	
Lab Sample ID	580-13052-A-6	End Date 4/1/2009	
Dry Weight Determina	ation		
Tin Weight	0 g	-	
Wet Sample + Tin	0 g		
Dry Sample + Tin	0 g		
% Moisture	67.79641 %	Default Soil Gravity 2.65	
		SHMP test	
Sample Weights	Tere Pan+Samp Samp	Standard ID 3/27/2009	
Sample Weight (Wet)	100.2367	Weight of aliquot 1 (mg) 1.9	
Sample Weight (dry)	29,8652	Weight of aliquot 2 (mg) 2.5	
	sad teverit ind William is wellessament.	Weight of aliquot 3 (mg) 2.3	
Sample Split	Tare Pan+Samp Samp	Weight of aliquot 4 (mg) 2.9	
Sample >=#230	12.6712	Weight of aliquot 5 (mg) 2.5	
Sample <#230	. 17.194	Average Weight (mg) 2.42	XC 115
% Passing #230	57.6	Account to the first transfer to the second to the second to the second to the second to	

Sample Fraction	Size (um) Pan Ta	re Pa	n+Sample S	ample	% Finer Classification	Sub Class
5 inch	125000	. 0	0	0 g	100.0 Cobbles	
2.5 inch	63000	0	0	0.g	100.0 Cobbles	
1.25 inch	31500	0	0	0 g	100.0 Gravel	
5/8 inch	16000	0	0	0 g	100.0 Gravel	
5/16 inch	8000	0	0	0 g	100.0 Gravel	
#4	4750	0	0	0 g	100.0 Gravel	
# 5	4000	.0	0.	0 g	100.0 Gravel	
#10	2000	0	0.2534	0.2534 g	99.2 Gravel	
#18	1000	0	0.5919	0.5919 g	97.2 Sand	Coarse
#35	500	0	1.2586	1.2586 g	93.0 Sand	Medium
#60	250	0	4.4098	4.4098 g	78.2 Sand	Medium
#120	125	0	4.3413	4.3413 g	63.7 Sand	Fine
#230	63	0	1.8162	1.8162 g	57.6 Sand	Fine
				0 g	57.6 Sand	Fine
				0.9	57.6	
Remainder				0·g		

Number of aliquots SHMP used 1

realizable subset			Time	Withdraw	al		300 Y 1 S.	Rasida	e weight -						
Pipette Size (Phi)	Size (um)	Temp C	(hhammass)	Depth		Tare Weight	Tin + residue.	SHMP		Phi Inlend	al .	% Phi Interval	% finer Class	ication !	Sub Class
	63		20 00:00:20		20	55.0374	55.3837		0.34388		3.29	11.01616597	46.583834 Sand	1	Very Fine
5	31.42		20 00:01:54		10	57.9595	58.24		0.27808		5.415	18.13147074	28.452363 Silt		Coarse
3	15.6		20 00:07:36		10	53,887	54.0592		0.16978		2.54	8.504881936	19.947481 Silt	1	Medium
	7.8		20 00:30:26		10	54.1449	54.2663		0.11898		1.42	4.754697775	15.192784 Silt	22.1	Fine
3	3.9		20 02:02:00		10	57.3745	57.4675		0.09058		1,11	3.716700374	11.476083 Silt		Very Fine
9	1.95		20 08:06:00		10	56.8852	56.956		0.06838		0.825	2,76241244	8.7136708 Clay		Coarse
10	0.98		20 32:28:00		10	58.0354	58.0897		0.05188	1000	2.594	8.685694387	0.0279764 Clay		Medium

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Client: Anchor Environmental LLC

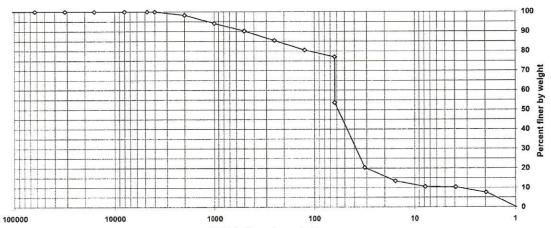
Sample ID: PO-UP-22-SS-A-090313

Lab ID: 580-13052-A-7

 Percent Solids:
 25.15368%

 Specific Gravity:
 2.650

Date Received: 3/16/2009
Start Date: 3/24/2009
End Date: 4/1/2009



Particle Size, microns (um)

Sieve	Particle	Percent	Incremental		
size	size, um	finer	percent		
5 inch	125000	100.0	0.0		
2.5 inch	63000	100.0	0.0		
1.25 inch	31500	100.0	0.0		
5/8 inch	16000	100.0	0.0		
5/16 inch	8000	100.0	0.0		
#4	4750	100.0	0.0		
#5	4000	100.0	0.0		
#10	2000	98.3	1.7		
#18	1000	94.2	4.1		
#35	500	90.3	3.9		
#60	250	85.5	4.8		
#120	125	80.5	5.0		
#230	63	77.1	3.4		
Phi Size 4	63	53.7	23.4		
Phi Size 5	31.42	20.3	33.4		
Phi Size 6	15.6	13.5	6.8		
Phi Size 7	7.8	10.6	2.9		
Phi Size 8	3.9	10.4	0.2		
Phi Size 9	1.95	7.6	2.8		
Phi Size 10	0.98	0.0	7.6		
>Phi Size 10	<0.98		0.0		

Soil Classification	Percent of Total Sample		
Cobbles	0.0		
Gravel	1.7		
Sand	44.6		
Very Coarse Sand	4.1		
Coarse Sand	3.9		
Medium Sand	4.8		
Fine Sand	5.0		
Very Fine Sand	26.8		
Silt	43.3		
Coarse Silt	33.4		
Medium Silt	6.8		
Fine Silt	2.9		
Very Fine Silt	0.2		
Clay	10.4		
Coarse Clay	2.8		
Medium Clay	7.6		

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Client	Anchor Environ	mental LI	C	Date Rec	eved	3/16/2009		201
Client Sample ID	PO-UP-22-SS-			Start Dat		3/24/2009		86. 86.
Lab Sample ID	580-13052-A-7			End Date		4/1/2009		
Dry Weight Determinal	tion							
Tin Weight	0 g	20.162.5		5				
Wet Sample + Tin	0 g							
Dry Sample + Tin	0 g			to the service to				
% Moisture	74.84632 %	88899		Default S	oil Gravity	2.65		
				SHMP te				
Sample Weights	Ture Pan-	Samp Si		Standard		/2009		
Sample Weight (Wet)	Section in the company of	consumit.	99.4388		f aliquot 1 (mg)	1.9		
Sample Weight (dry)	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		22.8116		f aliquot 2 (mg)	2.5		
Sample Split	Tare Page	POR BRIDGE STATE	SCHOOL SERVICE		f aliquot 3 (mg)	2.3		
Sample >=#230	Tare Pane	Samp S	5.2476		f aliquot 4 (mg)	2.9		1
				vveigni oi	f aliquot 5 (mg)	2.5		
Sample <#230			47 ECA				La transportation of the control of	2
			17,564 77	Average 1	Weight (mg)	2.42		2
	•			Average 1		2.42		
% Passing #230 Gravel/Sand Fraction (π		Weight (mg)	-5-0-44153		
% Passing #230 Gravel/Sand Fraction (Sample Fraction	Size (um) Pan	MANAGER CARCINGTON	77 antSample S	amole	Weight (rrig)	Ficalion		Sub Class
% Passing #230 Gravel/Sand Fraction (Sample Fraction (5 inch	Size (um) Pan 125000	0	77 en+Sample S 0	ampie de la composición della	Weight (ring) % Fire: Class 100.0 Cob	ification bles		Sub Class
% Passing #230 Gravel/Sand Fraction (Sample Fraction 5 inch 2.5 inch	Size (um) Pan 125000 63000	0	77 antSample S 0 0	ample 0 g 0 g	Weight (mg) % Finer Class 100.0 Cob 100.0 Cob	ification bles bles		Sub Class
% Passing #230 Gravel/Sand Fraction (Sample Fraction 5 inch 2.25 inch	Size (um) Pan 125000 63000 31500	0 0 0	77 sn+Sample S 0 0 0	ample 0 9 0 9 0 9 0 9	Weight (mg) % Finer Class 100.0 Cob 100.0 Cob	fication bles bles vel		Sub Class
% Passing #230 Gravel/Sand Fraction (Sample Fraction 5 Inch 1.25 Inch 1.25 Inch 1.85 Inch 1.85 Inch 1.85 Inch	Size (um) Pan 125000 63000 31500 16000	0 0 0	77 sn+Sample S 0 0 0 0	0 9 0 9 0 9 0 9 0 9 0 9 0 9 0 9 0 9	% Fine: Class 100.0 Cob 100.0 Cob 100.0 Cor 100.0 Grav 100.0 Grav	fication bles bles vel		Sub Class
% Passing #230 Gravel/Sand Fraction (Sample Fraction (5 Inch (1.25 Inch (5/16 Inch (Size (um) Pen 125000 63000 31500 16000 8000	0 0 0 0	ont-Sample S 0 0 0 0 0	0 9 0 9 0 9 0 9 0 9 0 9 0 9 0 9 0 9 0 9	% Fee Class 100.0 Cob 100.0 Gra 100.0 Gra 100.0 Gra 100.0 Grav	ification bles bles vel vel		SubClass
% Passing #230 Gravel/Sand Fraction (Sample Fraction (5 inch 2.5 inch 1.25 inch 5/6 inch 5/6 inch 44	Size (um): Pan 125000 63000 31500 16000 8000 4750	0 0 0 0 0	77 sent Sample S 0 0 0 0 0 0 0 0	0 9 0 9 0 9 0 9 0 9 0 9 0 9 0 9 0 9 0 9	% Firet Class 100.0 Cob 100.0 Cob 100.0 Grav 100.0 Grav 100.0 Grav 100.0 Grav	sfication bies bies rei rei		Sub Class
% Passing #230 Gravel/Sand Fraction (Simple Fraction (5 inch 2.5 inch 1.25 inch 5/8 inch 5/16 inch 144 145	Size (um) Pan 125000 63000 31500 16000 8000 4750 4000	0 0 0 0 0	77 sn+Sample S 0 0 0 0 0 0 0 0 0	09 09 09 09 09 09	% Finer. Class 100.0 Cob 100.0 Cob 100.0 Grav 100.0 Grav 100.0 Grav 100.0 Grav 100.0 Grav	sfication bles bles rel rel rel		Sub Class
% Passing #230 Gravel/Sand Fraction (Simple Fraction (Simple Fraction (1.25 inch (1.25 inch (1.26 inch (1.45 inch (1.4	Size (um) Pan 125000 63000 31500 16000 8000 4750 4000 2000	0 0 0 0 0 0	77 ent Sample S 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	acce 0 9 0 9 0 9 0 9 0 9 0 9 0 9 0 9 0 9 0	% Fine: Class 100.0 Cob 100.0 Cob 100.0 Grav 100.0 Grav 100.0 Grav 100.0 Grav 100.0 Grav 100.0 Grav 100.0 Grav 100.0 Grav 100.0 Grav 100.0 Grav 100.0 Grav	efication		
% Passing #230 Gravel/Sand Fraction (Simple Fraction (Simple Fraction (15 inch (1.25	Size (Jm) Pan 125000 63000 31500 16000 8000 4750 4000 2000 1000	0 0 0 0 0 0 0	77 sntSample S 0 0 0 0 0 0 0 0 0 0 0 0 0	0 9 0 9 0 9 0 9 0 9 0 9 0 9 0 9 0 9 0 9	% Firet Class 100.0 Cob 100.0 Cob 100.0 Grav 100.0 Grav 100.0 Grav 100.0 Grav 100.0 Grav 100.0 Grav 100.0 Grav 100.0 Grav 100.4 Grav 98.3 Grav 94.2 San	ification bles bles rei rei rei rei rei rei d d		Coarse
% Passing #230 Gravel/Sand Fraction (Simple Fraction (Sinch 1,25 inch 1,25 inch 1,25 inch 1,44 4,44 4,45 5,5 1,10 1,10 1,10 1,10 1,10 1,10 1,10	Size (im) Pan 125000 63000 63000 4750 4000 2000 1000 500	0 0 0 0 0 0 0 0	77 santSample S 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 9 0 9 0 9 0 9 0 9 0 9 0 9 0 9 0 9 0 9	% Finer. Class 100.0 Cob 100.0 Cob 100.0 Gra 1	ification bles ref ref ref ref ref d d d		Coarse Medium
% Passing #230 Gravel/Sand Fraction (Symple Fraction (5 Inch 2.5 Inch 1.25 Inch 5/16 Inch 5/16 Inch #4 #5 #10 #18 #35	Size (Jim) Pan' 125000 63000 63000 15000 8000 4750 4000 2000 1000 500 250	0 0 0 0 0 0 0 0	77 sn: Sample S 0 0 0 0 0 0 0 0 0 0 0 0 0	accie 0 9 0 9 0 9 0 9 0 9 0 9 0 9 0 9 0 9 0	% Fine: Class 100.0 Cob 100.0 Cob 100.0 Grav 100.0 Grav 100.0 Grav 100.0 Grav 100.0 Grav 100.0 Grav 100.0 Grav 100.0 Grav 100.0 Grav 100.0 Grav 100.0 Grav 100.3 Grav	dification bles bles bles rel rel rel rel di di di di		Coarse Medium Medium
Sample <#230 % Passing #230 Gravel/Sand Fraction (Sample Fraction) 5 inch 2.5 inch 1.25 inch 5/8 inch 5/16 inch #4 #5 #10 #18 #35 #60 #120 #230	Size (im) Pan 125000 63000 63000 4750 4000 2000 1000 500	0 0 0 0 0 0 0 0	77 santSample S 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 9 0 9 0 9 0 9 0 9 0 9 0 9 0 9 0 9 0 9	% Finer. Class 100.0 Cob 100.0 Cob 100.0 Gra 1	ification		Coarse Medium

Number of aliquots SHMP used 1

Silt/Clay Fraction (Pipette Test)

		Time ***	Withdra				Residue weight -	LATE CO				A Committee	
Pipelte Size (Phi)	Size (um) Tamp C	(hhomnuss)	Depth	Te	ire Weight Til	n + residue	SHMP	Phi Interv	d Special	6 Phi Interval	% finer	Classificatio	n Sub Class
4	63	20 00:00:20		20	54.5428	54.8965	0.35128		5.31	23.27763068	53.722369	Sand	Very Fine
5	31.42	20 00:01:54		10	55.1933	55.4408	0.24508		7.615	33.38213891	20.34023	Silt	Coarse
3	15.6	20 00:07:36		10	61.3796	61,4748	0.09278		1.55	6.794788616	13.545442	Silt	Medium
	7.8	20 00:30:26		10	61.4886	61.5528	0.06178		0.665	2.915183503	10.630258	Silt	Fine
	3.9	20 02:02:00		10	62.2752	62.3261	0.04848		0.05	0.21918673	10.411072	Silt	Very Fine
	1.95	20 08:06:00		10	59.2805	59.3304	0.04748		0.64	2.805590138			Coarse
10	0.98	20 32:28:00		10	62.7002	62.7373	0.03468		1.734	7.601395781			Medium
		not defined		10							0.00.000		

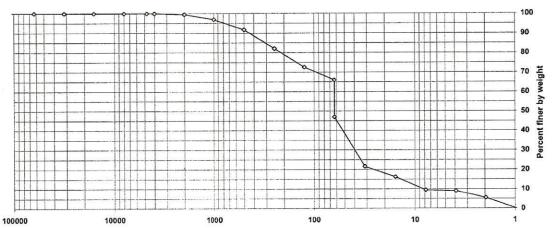
Eigzelog

Client: Anchor Environmental LLC
Sample ID: PO-UP-23B-SS-A-090313
Lab ID: 580-13052-A-8

Percent Solids: 26.17669% Specific Gravity: 2.650
 Date Received:
 3/16/2009

 Start Date:
 3/24/2009

 End Date:
 4/1/2009



Particle Size, microns (um)

Sieve size	Particle size, um	Percent finer	Incremental percent
5 inch	125000	100.0	0.0
2.5 inch	63000	100.0	0.0
1.25 inch	31500	100.0	0.0
5/8 inch	16000	100.0	0.0
5/16 inch	8000	100.0	0.0
#4	4750	100.0	0.0
#5	4000	100.0	0.0
#10	2000	99.5	0.5
#18	1000	97.0	2.5
#35	500	91.7	5.3
#60	250	82.1	9.6
#120	125	72.6	9.5
#230	63	66.0	6.6
Phi Size 4	63	47.0	19.0
Phi Size 5	31.42	21.6	25.4
Phi Size 6	15.6	16.3	5.3
Phi Size 7	7.8	9.5	6.8
Phi Size 8	3.9	9.0	0.5
Phi Size 9	1.95	5.4	3.5
Phi Size 10	0.98	0.0	5.4
>Phi Size 10	< 0.98		0.0

Soil Classification	Percent of Total Sample
Cobbles	0.0
Gravel	0,5
Sand	52.5
Very Coarse Sand	2.5
Coarse Sand	5.3
Medium Sand	9.6
Fine Sand	9.5
Very Fine Sand	25.6
Silt	38.0
Coarse Silt	25.4
Medium Silt	5.3
Fine Silt	6.8
Very Fine Silt	0.5
Clay	8.9
Coarse Clay	3.5
Medium Clay	5.4

Wipston

Sediment Grain Size -	SEF/DMEF/PSEP				
Client Client Sample ID Lab Sample ID	Anchor Environ PO-UP-23B-SS 580-13052-A-8			Date Rece Start Date End Date	ved 3/16/2009 3/24/2009 4/1/2009
Dry Weight Determina Tin Weight Wet Sample + Tin Dry Sample + Tin % Moisture	tion 0 g 0 g 0 g 73.82331 %			Default So	l Gravity 2.65
Sample Weights Sample Weight (Wet) Sample Weight (dry) Sample Split Sample >=#230 Sample <#230 % Passing #230			98.6895 22.7562	Weight of a Weight of a Weight of a	3 3/27/2009 iliquot 1 (mg) 1.9 iliquot 2 (mg) 2.5 iliquot 3 (mg) 2.3 iliquot 4 (mg) 2.9 iliquot 6 (mg) 2.9
Gravel/Sand Fraction	(Sieves)		Sample Sam		%-Finer Classification Sub-
5 inch	125000	0	0	0 g	100.0 Cobbles
2.5 inch	63000	0	0	0 g	100.0 Cobbles
1.25 inch	31500	0	0	0 g	100.0 Coobles
5/8 inch	16000	0	0	0 9	100.0 Gravel
5/16 inch	8000	0	0	0 g	100.0 Gravel

5/16 inch	8000	0	0 0 g	100.0 Gravel	
#4	4750	0	0 0 g	100.0 Gravel	
#5	4000	0	0 0 g	100.0 Gravel	
#10	2000	0	0.1217 0.1217 g	99.5 Gravel	
#18	1000	0	0.576 0.576 g	97.0 Sand	Coarse
#35	500	0	1.2065 1.2065 g	91.7 Sand	Medium
#60	250	0	2.1901 2.1901 g	82.1 Sand	Medium
#120	125	. 0	2.1564 2.1564 g	72.6 Sand	Fine
#230	63	0	1.4965 1.4965 g	66.0 Sand	Fine
			0 g	66.0 Sand	Fine
			0 g	66.0	
Remainder			0 g		

Number of aliquots SHMP used

Silt/Clay Fraction (Pipette Test)

Pipette Size (Phi) Size 4 5 6	(um) Temp C 63 31.42 15.6	(hh:mm:ss) 20 00:00:20 20 00:01:54	Depth	20 10	61.1938 60.9819	61.4964 61.1981	0.	30018	hi interval	4.32	18.98383737	47.016163 Sand	ion Sub Class Very Fine
4 5 6	31.42	20 00:01:54					December 2000		ări.				Very Fine
5 6				10	60 9819	61 1081							
6	156					01.1301	U,	21378		5.79	25.44361537	21.572547 Silt	Coarse
	10.0	20 00:07:36		10	62.0444	62.1448	0.	09798		1.2	5.273288159	16.299259 Silt	Medium
7	7.8	20 00:30:26		10	60.7791	60.8555	0.	07398		1.55	6.811330538	9.4879286 Silt	Fine
8	3.9	20 02:02:00		10	60.8079	60.8533	0.	04298		0.115	0.505356782	8.9825718 Silt	Very Fine
9	1.95	20 08:06:00		10	61.9768	62.0199	0.	04068		0.805	3.537497473	5.4450743 Clay	Coarse
10	0.98	20 32:28:00		10	61.3393	61.3663	0.	02458		1.229	5.400725956	0.0443484 Clay	Medium

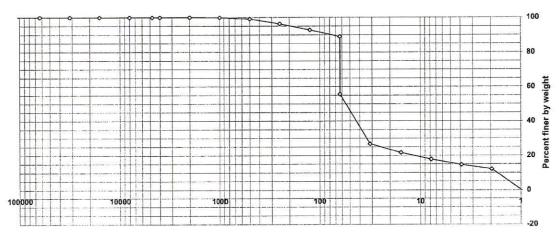
 Percent Solids:
 25.91508%

 Specific Gravity:
 2.650

 Date Received:
 3/16/2009

 Start Date:
 3/24/2009

 End Date:
 4/1/2009



Particle Size, microns (um)

Sieve	Particle	Percent . finer	Incremental
size	size, um		percent
5 inch	125000	100.0	0.0
2.5 inch	63000	100.0	0.0
1.25 inch	31500	100.0	0.0
5/8 inch	16000	100.0	0.0
5/16 inch	8000	100.0	0.0
#4	4750	100.0	0.0
#5	4000	100.0	0.0
#10	2000	100.0	0.0
#18	1000	99.9	0.1
#35	500	99.1	0.8
#60	250	96.3	2.8
#120	125	92.8	3.5
#230	63	89.0	3.8
Phi Size 4	63	55.6	33.4
Phi Size 5	31.42	26.8	28.9
Phi Size 6	15.6	21.7	5.1
Phi Size 7	7.8	17.8	4.0
Phi Size 8	3.9	14.6	3.1
Phi Size 9	1.95	12.1	2.5
Phi Size 10	0.98	0.0	12.1
>Phi Size 10	< 0.98		0.0

Soil Classification	Percent of Total Sample		
Cobbles	0.0		
Gravel	0.0		
Sand	44.4		
Very Coarse Sand	0.1		
Coarse Sand	0.8		
Medium Sand	2.8		
Fine Sand	3.5 37.2		
Very Fine Sand			
Silt	41.0		
Coarse Silt	28.9		
Medium Silt	5.1		
Fine Silt	4.0		
Very Fine Silt	3.1		
Clay	14.7		
Coarse Clay	2.5		
Medium Clay	12.1		

8042400

Client	Anchor Environ	mental I I	C	Date Rece	eved 3/16/2009	September 1997 - Commence of the Commence of t
Client Sample ID	PO-AM-28-SS-			Start Date		
Lab Sample ID	580-13052-A-9					
cau sample ID	580-13052-A-9			End Date	4/1/2009	
Dry Weight Determina	tion					
Tin Weight	0 g					
Wet Sample + Tin	0 g					
Dry Sample + Tin	0 g					
% Moisture	74.08492 %			Default So	il Gravity 2.65	
		0.57		SHMP tes	ŧ	
Sample Weights	Tare Pan+	Samp S	атр	Standard I		
Sample Weight (Wet)			101,4646		aliquot 1 (mg) 1.9	
Sample Weight (dry)			23.523		aliquot 2 (mg) 2.5	
The second secon		301	were and soldings		aliquot 3 (mg) 2.3	
Sample Split	Tare Pane	Samp S	erno		aliquot 4 (mg) 2.9	
Sample >=#230	er o o gripego y staro a	A SECTION	2.559		eliquot 5 (mg) 2.5	
Sample <#230	. 20.964				7-2-100 BEFORE STORE STANFORD	
טמווווים ארבטט			20.964	Average V	veight (mg) 2 42	
		8	20.964 89.1	Average V	Veight (mg) 2.42	
				Average V	veight (mg) 2.42	
% Passing #230	(Singer)			Average V	/eight (mg) 2.42	
% Passing #230 Gravel/Sand Fraction ((Sieves)	Γare Pi			/eight (mg) 2.42	Sinch
% Passing #230 Gravel/Sand Fraction (Sample Fraction		Tare P	89.1	ample	% Finer Classification -	Sub Class
% Passing #230 Gravel/Sand Fraction (Sample Fraction) 5 inch	Size (um) - Pan	part with the part of the first	89.1	ample 0 g	% First Glassification, 100.0 Cobbles	Sub Class
% Passing #230 Gravel/Sand Fraction (Bangle Fraction (5 inch 2.5 inch	Size (um) Pan 1 125000	0	89.1 en+Sample S 0	ample 0 g 0 g	% Finer Classification -	Sub Clase
% Passing #230 Gravel/Sand Fraction (Sample Fraction (5 inch (2.5 inch (1.25 inch (1	Size (um) Pan 1 125000 63000	0	89.1 en+Sampla S O O	angle 0 g 0 g 0 g 0 g 0 g	% Fine. Classification 100.0 Cobbles 100.0 Cobbles	Sub Class
% Passing #230 Gravel/Sand Fraction (Somple Fraction (5 inch (2.5 inch (1.25 inch (5/8 inch (Size (um) Pan 1 125000 63000 31500	0 0 0	89.1 sn+Sample S 0 0 0	angle 0 g 0 g 0 g 0 g 0 g	% Finer Classification 100.0 Cobbles 100.0 Cobbles 100.0 Gravel	Sub Class
% Passing #230 Gravel/Sand Fraction (Sample Fraction (5 inch 1.25 inch 5/16 inch 5/16 inch	Size (um) Pan 125000 63000 31500 16000	0 0 0	89.1 sn+Sample S 0 0 0	ample 0 g 0 g 0 g 0 g 0 g 0 g 0 g 0 g 0 g 0	% Finer Glassification, 100.0 Cobbles 100.0 Cobbles 100.0 Gravel 100.0 Gravel	Sub Clase
% Passing #230 Gravel/Sand Fraction (Surple Fraction (5 inch 2.5 inch 1.25 inch 5/8 inch 5/4	Size (um) Pan 125000 63000 31500 16000 8000	0 0 0 0	89.1 sh+Sample_S 0 0 0 0	angle 0 g 0 g 0 g 0 g 0 g	100.0 Cobbles 100.0 Cobbles 100.0 Cobbles 100.0 Gravel 100.0 Gravel 100.0 Gravel	Section .
% Passing #230 Gravel/Sand Fraction a Semple Fraction (2) 5 inch (2) 5 inch (3) 5 inch (5) 6 inch (5) 6 inch (5) 6 inch (5) 8 inch	Size (um) Pan 125000 63000 31500 16000 8000 4750	0 0 0 0 0	89.1 sh+Sample S 0 0 0 0 0	0 g 0 g 0 g 0 g 0 g 0 g 0 g 0 g 0 g 0 g	N First Classification 100.0 Cobbles 100.0 Cobbles 100.0 Gravel 100.0 Gravel 100.0 Gravel 100.0 Gravel	Sub Class
% Passing #230 Gravel/Sand Fraction (Sample Fraction () inch 2.5 inch 1.25 inch 5/16 inch 44 45 #10	Size (um) Pan 125000 63000 31500 16000 8000 4750 4000	0 0 0 0 0	89.1	arrole 0 9 0 9 0 9 0 9 0 9 0 9 0 9 0 9 0 9 0	S Fines Classification, 100.0 Cobbles 100.0 Crobbles 100.0 Gravel 100.0 Gravel 100.0 Gravel 100.0 Gravel 100.0 Gravel 100.0 Gravel	
% Passing #230 Gravel/Sand Fraction (Sample Fraction (5 inch 2.5 inch 1.25 inch 5/8 inch 5/8 inch #18	Size (um) Pan 125000 63000 31500 16000 8000 4750 4000 2000	0 0 0 0 0 0	89.1 MATERIAL S 0 0 0 0 0 0 0 0 0 0	0 g 0 g 0 g 0 g 0 g 0 g 0 g 0 g 0 g 0 g	10.0 Cobbles 100.0 Cobbles 100.0 Cobbles 100.0 Gravel 100.0 Gravel 100.0 Gravel 100.0 Gravel 100.0 Gravel 100.0 Gravel 100.0 Gravel 100.0 Gravel	Coarse
% Passing #230 Gravel/Sand Fraction a Semple Fraction (Semple Fraction 5.5 inch 2.5 inch 5.76 inch 5.716 inch 4.4 4.5 inch 5.718 inch 5.718 inch 5.718 inch 5.718 inch 5.718 inch 5.718 inch 6.718 in	Size (un) Pari 125000 63000 31500 16000 8000 4750 4000 2000 1000	0 0 0 0 0 0 0	89.1 0 0 0 0 0 0 0 0 0 0 0 0 0	0 9 0 9 0 9 0 9 0 9 0 9 0 9 0 9 0 9 0 9	**Tener*** Classification. 100.0 Cobbles 100.0 Gravel 100.0 Gravel 100.0 Gravel 100.0 Gravel 100.0 Gravel 100.0 Gravel 100.0 Gravel 99.9 Sand 99.1 Sand	Coarse Medium
% Passing #230 Gravel/Sand Fraction (Sample Fraction () Inch 2.5 Inch 1.25 Inch 5/16 Inch 4/4 4/5 4/10 4/18 4/10 4/18 4/10 4/18 4/10 4/18	Size (pm) Pan 125000 63000 31500 16000 8000 4750 4000 2000 1000 500	0 0 0 0 0 0 0 0	89.1 0 0 0 0 0 0 0 0 0 0 0 0 0	orgle 0 0 g 0 g 0 g 0 g 0 g 0 g 0 g 0 g 0 g	10.0 Cobbles 100.0 Cobbles 100.0 Cobbles 100.0 Gravel 100.0 Gravel 100.0 Gravel 100.0 Gravel 100.0 Gravel 100.0 Gravel 100.0 Gravel 100.0 Gravel 100.0 Gravel 100.3 Gravel 100.3 Gravel 100.3 Gravel 100.4 Gravel 100.5 Gravel 100.5 Gravel 100.6 Gravel 100.7 Gravel 100.8 Gravel 100.8 Gravel 100.8 Gravel 100.9 Gravel	Coarse Medium Medium
% Passing #230 Gravel/Sand Fraction (Semple Fraction (5 inch 2.5 inch 5/8 inch 5/8 inch 6/16 inch #4 #5 #10 #10 #18 #35	Size (un) Pari 125000 63000 31500 16000 8000 4750 4000 2000 1000 500 250	0 0 0 0 0 0 0 0 0	89.1 Sample S 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 9 0 9 0 9 0 9 0 9 0 9 0 9 0 9 0 9 0 09 0.006 9 0.0232 9 0.1831 9 0.6477 9	**Tess** Classification. 100.0 Cobbles 100.0 Gravel 100.3 Gravel 100.3 Gravel 100.4 Gravel 100.5 Gravel 100.5 Gravel 100.5 Gravel 100.7 Gravel 100.8 Gravel 100.8 Gravel 100.8 Gravel 100.9 Gravel 100.9 Gravel 100.0 Gravel 100.0 Gravel 100.0 Gravel 100.0 Gravel 100.0 Gravel 100.0 Gravel 100.0 Gravel 100.0 Gravel 100.0 Gravel 100.0 Gravel 100.0 Gravel 100.0 Gravel	Coarse Medium Medium Fine
% Passing #230 Gravel/Sand Fraction (Sample Fraction (5 inch 1.25 inch 1.25 inch 5/16 inch #4 #4 #5 #10 #10 #120	Size (pm) Pan 125000 63000 31500 16000 8000 4750 4000 2000 1000 500 250 125	0 0 0 0 0 0 0 0 0	89.1 0 0 0 0 0 0 0 0 0 0 0 0 0	0 9 0 9 0 9 0 9 0 9 0 9 0 9 0 9 0 9 0.0032 9 0.1831 9 0.6477 9 0.8157 9	**S Fines*** Classification. 100.0 Cobbles 100.0 Gravel 100.0 Gravel 100.0 Gravel 100.0 Gravel 100.0 Gravel 100.0 Gravel 100.0 Gravel 99.9 Sand 99.1 Sand 96.3 Sand 92.8 Sand 89.0 Sand	Coarse Medium Medium Fine Fine
Gravel/Sand Fraction of Surgic Fraction of Surgic Fraction 5 inch 2.5 inch 1.25 inch 5/18 inch 5	Size (pm) Pan 125000 63000 31500 16000 8000 4750 4000 2000 1000 500 250 125	0 0 0 0 0 0 0 0 0	89.1 Sample S 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 9 0 9 0 9 0 9 0 9 0 9 0 9 0 9 0 9 0 09 0.006 9 0.0232 9 0.1831 9 0.6477 9	**Tess** Classification. 100.0 Cobbles 100.0 Gravel 100.3 Gravel 100.3 Gravel 100.4 Gravel 100.5 Gravel 100.5 Gravel 100.5 Gravel 100.7 Gravel 100.8 Gravel 100.8 Gravel 100.8 Gravel 100.9 Gravel 100.9 Gravel 100.0 Gravel 100.0 Gravel 100.0 Gravel 100.0 Gravel 100.0 Gravel 100.0 Gravel 100.0 Gravel 100.0 Gravel 100.0 Gravel 100.0 Gravel 100.0 Gravel 100.0 Gravel	Coarse Medium Medium Fine

Number of aliquots SHMP used 1

Silt/Clav	Fraction	(Pipette Test)
LOSSES TRANSPORTER	MARLON CONTRACTOR INTERESTOR	1

MARKANTHA SOUTH		Time	Withdrawal			Residue weight -				
Pipette Size (Phi)	Size (um) Ti	emp C (hh:mm:ss)	Depth	Tare Weight	Tin + residue	SHMP	Phi Interval	% Phi Interval	% finer Classifica	lion Sub Class
	63	20 00:00:20	20	50.7488	51.1705	0.4192	8 7.87	33.45661693	55.643383 Sand	Very Fine
	31.42	20 00:01:54	10	55.2435	55.5078	0.2618	8 6.79	28.86536581	26,778017 Silt	Coarse
5	15.6	20 00:07:36	10	56.56	56.6885	0.1260	8 1.19	5.058878544	21.719139 Silt	Medium
,	7.8	20 00:30:26	10	52.8755	52.9802	0.1022	8 0.93	3.95357735	17.765561 Silt	Fine
3	3.9	20 02:02:00	10	53.3879	53,474	0.0836	8 0.735	3.124601454	14.64096 Silt	Very Fine
	1.95	20 08:06:00	10	54.5362	54.6076	0.0689	8 0.595	2.529439272	12.111521 Clay	Coarse
10	0.98	20 32:28:00	10	54.9822	55.0417	0.0570	8 2.854		-0.0212856 Clay	Medium

8,42409

Client: Anchor Environmental LLC

Sample ID: B1-C16-SS-A-090313

Lab ID: 580-13052-A-10

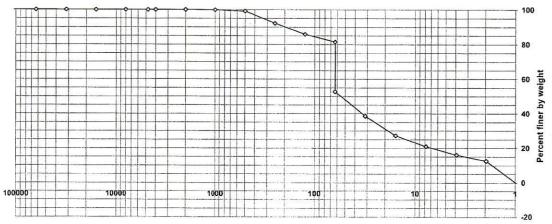
 Percent Solids:
 27.31967%

 Specific Gravity:
 2.650

 Date Received:
 3/16/2009

 Start Date:
 3/24/2009

 End Date:
 4/1/2009



Particle Size, microns (um)

Sieve	Particle	Percent	Incrementa
size	size, um	finer	percent
5 inch	125000	100.0	0.0
2.5 inch	63000	100.0	0.0
1.25 inch	31500	100.0	0.0
5/8 inch	16000	100.0	0.0
5/16 inch	8000	100.0	0.0
#4	4750	100.0	0.0
#5	4000	100.0	0.0
#10	2000	100.0	0.0
#18	1000	99.9	0.1
#35	500	99.2	0.7
#60	250	92.2	7.0
#120	125	85.9	6.3
#230	63	81.5	4.4
Phi Size 4	63	52.8	28.7
Phi Size 5	31.42	38.6	14.1
Phi Size 6	15.6	27.3	11.4
Phi Size 7	7.8	21.0	6.2
Phi Size 8	3.9	16.1	4.9
Phi Size 9	1.95	12.6	3.5
Phi Size 10	0.98	0.0	12.6
>Phi Size 10	<0.98		0.0

Soil Classification	Percent of Total Sample
Cobbles	0.0
Gravel	0.0
Sand	47.2
Very Coarse Sand	0.1
Coarse Sand	0.7
Medium Sand	7.0
Fine Sand	6.3
Very Fine Sand	33.1
Silt	36.6
Coarse Silt	14.1
Medium Silt	11.4
Fine Silt	6.2
Very Fine Silt	4.9
Clay	16.2
Coarse Clay	3.5
Medium Clay	12.6

Lofryog

Sediment Grain Size - SEF/DMEF/PSEP Anchor Environmental LLC B1-C16-SS-A-090313 580-13052-A-10 Client Client Sample ID Lab Sample ID Date Receved Start Date 3/16/2009 3/24/2009 End Date 4/1/2009 Dry Weight Determination Tin Weight Wet Sample + Tin Dry Sample + Tin % Moisture 0 g 0 g 0 g 72 68033 % Default Soil Gravity 2.65 SHMP test Standard ID Samp 100.686 24.6685 Sample Weights Sample Weight (Wet) Sample Weight (dry) Standard ID Weight of aliquot 1 (mg) Weight of aliquot 2 (mg) Weight of aliquot 3 (mg) Weight of aliquot 4 (mg) Weight of aliquot 5 (mg) Average Weight (mg) 1.9 2.5 2.3 3.4 2.4 Tare Pant Samp Samp 4.5535 . 20.115 . 81.5 Sample Split Sample >=#230 Sample <#230 % Passing #230

Sample Fraction	Siza (um) P	an Tare Pa	n+Sample 5	ample	% Finer Classification	Sub Class
5 inch	125000	0	0	0 g	100.0 Cobbles	34,038
2.5 inch	63000	0	0	0 g	100.0 Cobbles	
1.25 inch	31500	0	0	0 g	100.0 Gravel	
5/8 inch	16000	0	0	0 g	100.0 Gravel	
5/16 inch	8000	0	0	0 g	100.0 Gravel	
#4	4750	0	0	0 g	100.0 Gravel	
#5	4000	0	0	0 g	100.0 Gravel	
#10	2000	0	0	0 g	100.0 Gravel	
#18	1000	0	0.02	0.02 g	99.9 Sand	Coarse
#35	500	0	0.1754	0.1754 g	99.2 Sand	Medium
#60	250	0	1.7367	1.7367 g	92.2 Sand	Medium
#120	125	0	1.5481	1.5481 g	85.9 Sand	Fine
#230	63	0	1.0733	1.0733 g	81.5 Sand	Fine
				0 g	81.5 Sand	Fine
				0 g	81.5	
Remainder				0 g		

Number of aliquots SHMP used 1

Silt/Clay Fraction (Pipette Test)

			Time	Wilhdr		0.000		Residue	weight-	建筑地域				
Pipette Size (Phi)	Size (um)	Temp C	SELEMBORATION CONTINUES OF STREET	Depth		Tare Weight	Tin + residue	SHMP		Phi Interval		6 Phi Interval	% finer Classif	calion Sub Class
4	63		20 00:00:20		- 20	51.9275	52.3323		0.4023		7.09	28,74110708	52,758893 Sand	Very Fine
5	31,42		20 00:01:54		.10	55.6811	55.9441		0.2605		3.49	14.14759714		Coarse
	15.6		20 00:07:36		10	54.2087	54.4019		0.1907		2.8	11.35050773	27.260788 Silt	Medium
	7.8		20 00:30:26		10	54.2271	54.3643		0.1347				21.018009 Silt	Fine
)	3.9		20 02:02:00		10	52.332	52.4384		0.1039		1.21	4.905040842		Very Fine
	1.95		20 08:06:00		10	54.9587	55.0409		0.0797		0.87	3.526764903		Coarse
10	0.98		20 32:28:00		10	57.1246	57.1894		0.0623		3.115		-0.0412368 Clay	Medium

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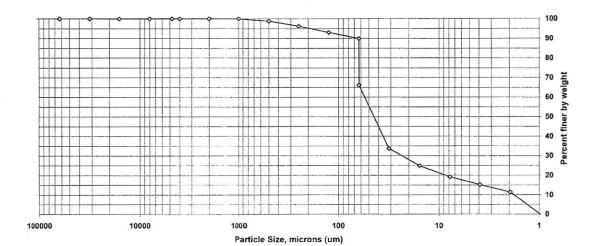
 Percent Solids:
 28.79446%

 Specific Gravity:
 2.650

 Date Received:
 3/16/2009

 Start Date:
 3/24/2009

 End Date:
 4/1/2009



Sieve	Particle	Percent	Incremental
size	size, um	finer	percent
5 inch	125000	100.0	0.0
2.5 inch	63000	100.0	0.0
1.25 inch	31500	100.0	0.0
5/8 inch	16000	100.0	0.0
5/16 inch	8000	100.0	0.0
#4	4750	100.0	0.0
#5	4000	100.0	0.0
#10	2000	100.0	0.0
#18	1000	100.0	0.0
#35	500	98.8	1.2
#60	250	96.2	2.6
#120	125	93.0	3.2
#230	63	89.9	3.1
Phi Size 4	63	66.2	23.7
Phi Size 5	31.42	33.8	32.4
Phi Size 6	15.6	24.9	8.9
Phi Size 7	7.8	19.2	5.7
Phi Size 8	3.9	15.3	3.9
Phi Size 9	1.95	11.4	3.9
Phi Size 10	0.98	0.0	11.4
>Phi Size 10	< 0.98		0.0

Soil Classification	Percent of Total Sample
Cobbles	0.0
Gravel	0.0
Sand	33.8
Very Coarse Sand	0.0
Coarse Sand	1.2
Medium Sand	2.6
Fine Sand	3.2
Very Fine Sand	26.8
Silt	50.9
Coarse Silt	32.4
Medium Silt	8.9
Fine Silt	5.7
Very Fine Silt	3.9
Clay	15.3
Coarse Clay	3.9
Medium Clay	11.4

Rofrifag

Client	Anchor Environ		LC	Date Rec		009
Client Sample ID	B1-S37-SS-A-0			Start Date	3/24/20	009
Lab Sample ID	580-13052-A-1	1		End Date	4/1/20	009
Dry Weight Determina	ation					
in Weight	0 g					
Vet Sample + Tin	0 g					
ry Sample + Tin	. 0 g			POLICE CONTRACTOR CONT		
6 Moisture	71.20554 %			Default S	oil Gravity 2	65
				SHMP te		
ample Weights	Ture Pan-	Samp S		Standard		
Sample Weight (Wet)	SAEL		101.8917			1.9
sample Weight (dry)			28.1653			2.5
ample Split	***********	Samo S				2.3
ample >=#230	Tare Pane	Samp S	amp.			2.9
			2.8763			2.5
			25.289 89.8	Average \	Weight (mg) 2.	42
	•			Average \	Veight (mg) 2.	42
Passing #230			89.8	0.000	Weight (mg) 2.	42
6 Passing #230 Gravel/Sand Fraction emple Fraction	Size (um) Pan			ample	% Finer Classification	42 Sub Cla
Passing #230 Fravel/Sand Fraction Emple Fraction Inch	Size (um) Pan 125000	. 0	89.8 an+Sample S 0	ample 0 g	% Firet Classification 100.0 Cobbles	
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6 Passing #230 6 Passing #230 6 Passing #230 6 Passing #230 6 Passing #230 6 Passing #230 6 Passing #230 6 Passing #230	Sze (um) Pân 125000 63000 31500 16000	0 0 0	89.8 en+Sample S 0 0 0	anple	% Finer Classification 100.0 Cobbles 100.0 Cobbles 100.0 Gravel 100.0 Gravel	
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Fravel/Sand Fraction semple fraction semple fraction inch .5 inch .25 inch .8 inch .76 inch .4 4 4 5	Sza (um) Pan 125000 63000 31500 16000 8000 4750 4000	0 0 0 0 0 0	89.8 9n+Sample S 0 0 0 0 0	0 g 0 g 0 g 0 g 0 g 0 g 0 g 0 g 0 g 0 g	% Finer Classification 100.0 Cobbles 100.0 Cobbles 100.0 Gravel 100.0 Gravel 100.0 Gravel 100.0 Gravel 100.0 Gravel	
Fassing #230 Fravel/Sand Fraction Fraction	Sza (um) Pan 125000 63000 31500 16000 8000 4750 4000 2000	0 0 0 0 0 0 0	89.8 ant Sample S 0 0 0 0 0 0 0 0 0 0 0 0 0 0	angle 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	76 Finer Classification 100.0 Cobbles 100.0 Cobbles 100.0 Gravel 100.0 Gravel 100.0 Gravel 100.0 Gravel 100.0 Gravel 100.0 Gravel 100.0 Gravel 100.0 Gravel 100.0 Gravel 100.0 Gravel 100.0 Gravel 100.0 Gravel 100.0 Gravel	
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6 Passing #230 Fravel/Sand Fraction sample Fraction inch .5 inch .25 inch .8 inch .16 inch .4 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5	\$22 (um) Pan 125000 63000 31500 16000 8000 4750 4000 2000 1000 500 250 125	0 0 0 0 0 0 0 0	89.8 ser-Sumplie S 0 0 0 0 0 0 0 0 0 0 0 0 0	onpo 0 g 0 g 0 g 0 g 0 g 0 g 0 g 0	100.0 Cobbles 100.0 Cobbles 100.0 Cobbles 100.0 Gravel 100.0 Gravel 100.0 Gravel 100.0 Gravel 100.0 Gravel 100.0 Gravel 100.0 Gravel 100.0 Gravel 100.0 Sand 98.8 Sand 98.8 Sand 93.0 Sand 99.9 Sand 89.9 Sand	Sus Cla Coarse Mediur Mediur Fine
Sample <#230 % Passing #230 Gravel/Sand Fraction Sample Fraction 5 inch 1.25 inch 5/6 inch 5/6 inch #4 #15 #10 #18 #18 #35 #60 #120 #230	\$22 (um) Pan 125000 63000 31500 16000 8000 4750 4000 2000 1000 500 250 125	0 0 0 0 0 0 0 0	89.8 ser-Sumplie S 0 0 0 0 0 0 0 0 0 0 0 0 0	0 g 0 g 0 g 0 g 0 g 0 g 0 g 0 g 0 g 0 g	100.0 Cobbles 100.0 Cobbles 100.0 Cobbles 100.0 Gravel 100.0 Gravel 100.0 Gravel 100.0 Gravel 100.0 Gravel 100.0 Gravel 100.0 Gravel 100.0 Gravel 100.0 Sand 98.8 Sand 96.2 Sand 93.0 Sand 89.9 Sand	Sub Cal Coarse Mediur Mediur Fine

Number of aliquots SHMP used

Silt/Clay Fraction (Pipette Test)

		Time -	Withdrawal			Residu	e weight -				
Pipette Size (Phi)	Size (um)	Temp C (hh:mm:ss)	Dapih	Tare Weight	Tin + residue	SHMP		Phi Interval	% Phi Interval:	% finer Classific	ation Sub Class
4	63	20 00:00:20	20	0 55.044	55.5522		0.50578	6.65	23.61061306	66,189387 Sand	Very Fine
5	31.42	20 00:01:54	10	54.9437	55.3189		0.37278	9.135	32,43352636	33.755861 Silt	Coarse
8	15.6	20 00:07:36	10	56.1907	56.3832		0.19008	2.495	8.858417982	24.897443 Silt	Medium
7	7.8	20 00:30:26	. 10	56.3158	56.4584	11.51	0.14018	1.6	5.680749007	19.216694 Silt	Fine
8	3.9	20 02:02:00	10	53.7534	53.864		0.10818	1.11	3.941019623	15.275674 Silt	Very Fine
9	1.95	20 08:06:00	10	53.6587	53.7471		0.08598	1.085	3.85225792	11.423416 Clay	Coarse
10	0.98	20 32:28:00	10	57,4267	57,4934		0.06428	3.214		0.0122115 Clay	Medium

Stifritog

SDG Labor	#:20577A6 #:580-13052-1 oratory: <u>Test America</u> *HOD: (Analyte) <u>Grain Size</u>	Date: 4 15 15 15 15 15 15 15						
							olids (forunt Mai	
	samples listed below were ation findings worksheets.		wed for each	h of the fol	llowir	ng va	lidation areas. Validation tu	indings are noted in attached
	Validation	Area					Comment	ts
I.	Technical holding times		A	Samp	oling da	ates: 3 13 - 3 10	L 109	
IIa.	. Initial calibration		A					
Ilb.	. Calibration verification		A					
III.	Blanks			A				
IV	Matrix Spike/Matrix Spike Du	es	A	1	45	MSD Dup		
V	Duplicates		al .	A		100		
VI.	Laboratory control samples			A	4	.5	, skm	
VII.				2	Net r	eviewe	ed for Level III validation.	
VIII				A				
IX.	Delegation (March 2007) (2017)			N				
x	Field blanks			7				
Valida	A = Acceptable N = Not provided/applicable SW = See worksheet ated Samples: ** Indicates samp	ple und	R = Rins FB = Fie	ield blank		ted	D = Duplicate TB = Trip blank EB = Equipment blank	
1_	PO-BA-24-SS-A-090313	11	B1-S37-SS-A	-090313		21	3	31
2	PO-BA-25-SS-A-090316	12	PO-BA-24-SS	S-A-090313MS	s	22	3	32
3	PO-BA-26-SS-A-090316	13	PO-BA-24-SS	S-A-090313MS	SD	23	3	33
4	PO-BA-27B-SS-A-090313	14	PO-BA-24-SS	S-A-090313DL	UP	24	3	34
5	PO-UP-20-SS-A-090313	15	PO-BA-25-SS	S-A-090316MS	is	25	3	35
6	PO-UP-21-SS-A-090313	16	PO-BA-25-S\$	S-A-090316MS	SD	26	3	36
7	PO-UP-22-SS-A-090313	17	PO-BA-25-S5	S-A-090316DL	UP	27	3	37
8	PO-UP-23B-SS-A-090313	18	B1-S37-SS-A	A-090313DUP	,	28	3	38
9	PO-AM-28-SS-A-090313	19	PB			29	3	39

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Notes:			

20

B1-C16-SS-A-090313

LDC #: 20577A6 SDG #: 5m Cr-

VALIDATION FINDINGS WORKSHEET Sample Specific Analysis Reference

Page: 1 of 1
Reviewer: 2nd reviewer:

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter C C C C	istur
1-11	5-2		nten-
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+	
12-18	Sed	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+	
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+	
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+	
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+	
	4 - 10 - 10 - 10 - 10 - 10 - 10 - 10 - 1	pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+	
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+	
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+	
		ph tds ci f no3 no2 so4 po4 alk cn. nh3 tkn toc cr6+	
		ph tds ci f no3 no2 so4 po4 alk cn. nh3 tkn toc cr6+	
		PH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+	
		ph tds ci f no ₃ no ₂ so ₄ po ₄ alk cn ⁵ nh ₃ tkn toc cr ⁶⁺	
		ph tds ci f no3 no2 so4 po4 alk cn. nh3 tkn toc cr6+	
		ph tds ci f no ₃ no ₂ so ₄ po ₄ alk cn ⁻ nh ₃ tkn toc cr ⁶⁺	
		pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN ⁻ NH ₃ TKN TOC CR ⁶⁺	
		pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN ⁻ NH ₃ TKN TOC CR ⁶⁺	
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+	
		ph TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+	
		ph TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN ⁻ NH ₃ TKN TOC CR ⁶⁺	
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+	
		pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN ⁻ NH ₃ TKN TOC CR ⁶⁺	
		PH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+	
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+	
		PH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+	
		ph TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+	
		ph TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺	
		pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN ⁻ NH ₃ TKN TOC CR ⁶⁺	
		pH TDS CLF NO, NO, SO, PO, ALK CN NH, TKN TOC CR6+	

Comments:	



LABORATORY DATA CONSULTANTS, INC.

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

Anchor QEA, LLC 1423 3rd Avenue, Suite 300 Seattle, WA 98101-2226 ATTN: Ms. Joy Dunay May 1, 2009

SUBJECT: Port of Olympia, Data Validation

Dear Ms. Dunay,

Enclosed is the final validation report for the fraction listed below. This SDG was received on April 9, 2009. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project # 20586:

SDG # Fraction
P1193 Dioxins/Dibenzofurans

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

 USEPA, Contract Laboratory Program National Functional Guidelines for Polychlorinated Dioxins/Diobenzofurans Data Review, September 2005

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

Sincerely,

Stella S. Cuenco

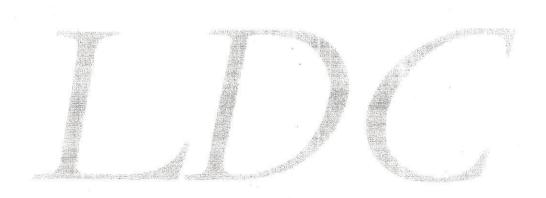
Data Validation Operations Manager/Senior Chemist

Attachment 1

3-41	EDD 474	Pages-EX	90/10		LE)C i	#20	586	6 (A	nc	hor	En	vir	onr	ner	ntal	-Se	att	le V	NA	/ P	ort	of (Oly	mp	ia)			37 3 3. O							
.DC	SDG#	DATE REC'D	(3) DATE DUE	Dio (16	xins 13B)																															
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Port of Olympia Data Validation Reports LDC# 20586

Dioxins/Dibenzofurans



Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

Port of Olympia

Collection Date:

March 13 through March 16, 2009

LDC Report Date:

April 28, 2009

Matrix:

Sediment

Parameters:

Dioxins/Dibenzofurans

Validation Level:

EPA Level III

Laboratory:

Analytical Perspectives

Sample Delivery Group (SDG): P1193

Sample Identification

PO-BA-24-SS-A-090313

PO-BA-25-SS-A-090316

PO-BA-26-SS-A-090316

PO-BA-27B-SS-A-090313

PO-UP-20-SS-A-090313

PO-UP-21-SS-A-090313

PO-UP-22-SS-A-090313

PO-UP-23B-SS-A-090313

PO-AM-28-SS-A-090313

B1-C16-SS-A-090313

B1-S37-SS-A-090313

Introduction

This data review covers 11 sediment samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 1613B for Polychlorinated Dioxins/Dibenzofurans.

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

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

Blank results are summarized in Section V.

Field duplicates are summarized in Section XIV.

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

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

EMPC Estimated Maximum Possible Concentration

- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

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

II. HRGC/LRMS Instrument Performance Check

Instrument performance was checked at the required daily frequency.

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

III. Initial Calibration

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

Percent relative standard deviations (%RSD) were less than or equal to 20.0% for unlabeled compounds and less than or equal to 35.0% for labeled compounds.

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

IV. Routine Calibration (Continuing)

Routine calibration was performed at the required frequencies.

All of the routine calibration percent differences (%D) between the initial calibration RRF and the routine calibration RRF were within the QC limits.

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

V. Blanks

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

VI. 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.

VII. Ongoing Precision Recovery (OPR)

Ongoing precision recovery samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

VIII. Regional Quality Assurance and Quality Control

Not applicable.

IX. Internal Standards

All internal standard recoveries were within QC limits.

X. Target Compound Identifications

Raw data were not reviewed for this SDG.

XI. Compound Quantitation and CRQLs

All compound quantitation and CRQLs were within validation criteria with the following exceptions:

Sample	Compound	Finding	Criteria	Flag	A or P
PO-UP-20-SS-A-090313 PO-UP-21-SS-A-090313	OCDD	Sample result exceeded calibration range.	Reported result should be within calibration range.	J (all detects)	Р
PO-UP-20-SS-A-090313 PO-UP-21-SS-A-090313 PO-UP-22-SS-A-090313 PO-UP-23B-SS-A-090313 PO-AM-28-SS-A-090313 B1-C16-SS-A-090313 B1-S37-SS-A-090313	2,3,7,8-TCDF	2nd column confirmation was not performed for this compound.	All compounds must be confirmed on the 2nd column per the QAPP.	None	Р

Raw data were not reviewed for this SDG.

XII. System Performance

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

The analysis was conducted within all specifications of the method with the exception noted in Section XI. No data were qualified due to this laboratory oversight.

No results were rejected in this SDG.

Due to compound quantitation problems, OCDD was qualified as estimated in two samples.

The quality control reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the Level III data validation all other results are considered valid and usable for all purposes.

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

XIV. Field Duplicates

No field duplicates were identified in this SDG.

XV. Field Blanks

No field blanks were identified in this SDG.

Port of Olympia Dioxins/Dibenzofurans - Data Qualification Summary - SDG P1193

SDG	Sample	Compound	Flag	A or P	Reason
P1193	PO-UP-20-SS-A-090313 PO-UP-21-SS-A-090313	OCDD	J (all detects)	Р	Compound quantitation and CRQLs
P1193	PO-UP-20-SS-A-090313 PO-UP-21-SS-A-090313 PO-UP-22-SS-A-090313 PO-UP-23B-SS-A-090313 PO-AM-28-SS-A-090313 B1-C16-SS-A-090313 B1-S37-SS-A-090313	2,3,7,8-TCDF	None	P	Compound quantitation and CRQLs

Port of Olympia Dioxins/Dibenzofurans - Laboratory Blank Data Qualification Summary - SDG P1193

No Sample Data Qualified in this SDG

): PO-BA-24-S	The state of the s				1110011	od 161
Client Data		Sample Data		Laboratory Da			
Name:	Anchor Environmental, LLC		Solids	Project No.:	P1193	Date Received:	17 Mar 09
Project ID:	이 얼마나 그 아이들이 아이들이 아이들이 아이들이 아이들이 아니는 아이들이 아니는 아이들이 아니는 아이들이 아이들이 아니는 아이들이 아니는 아니는 아니는 아니는 아니는 아니는 아니는 아니는 아니는 아니는	Weight/Volume:	10.26 g 🗸	Sample ID:	P1193_6679_001	Date Extracted:	19 Mar 09
Date Collected:	The Manager of the second of t	% Solids:	84.2 %	QC Batch No.:	6679	Date Analyzed:	25 Mar 09
		Split:	-	Dilution:	-	Time Analyzed:	17:40:33
Analyte	Conc. (pg/g)	DL (pg/g)	EMPC (pg/g)	Qualifiers	Standard	ES Recoveries	Qualifiers
2,3,7,8-TCDD	ND	0.0901			13C-2,3,7,8-TCDD	73.3	
1,2,3,7,8-PeCDD	ND	0.142			13C-1,2,3,7,8-PeCDD	69.1	
1,2,3,4,7,8-HxCDD	ND	0.22			13C-1,2,3,4,7,8-HxCDD	74.9	
1,2,3,6,7,8-HxCDD	ND	<0.244			13C-1,2,3,6,7,8-HxCDD	72.5	/
1,2,3,7,8,9-HxCDD	ND	0.259			13C-1,2,3,7,8,9-HxCDD	73.4	k
1,2,3,4,6,7,8-HpCDD	4.57				13C-1,2,3,4,6,7,8-HpCDD	72	01/1
OCDD	43.1	1			13C-OCDD	61.1	ok April
2,3,7,8-TCDF	DM	0.0577			13C-2,3,7,8-TCDF	85.5	4
1,2,3,7,8-PeCDF	ND	0.138			13C-1,2,3,7,8-PeCDF	78.2	
2,3,4,7,8-PeCDF	ND	0.124			13C-2,3,4,7,8-PeCDF -	78.2	
1,2,3,4,7,8-HxCDF	ND	0.0484			13C-1,2,3,4,7,8-HxCDF	73.5	
1,2,3,6,7,8-HxCDF	- ND	0.0449			13C-1,2,3,6,7,8-HxCDF	72.5	
2,3,4,6,7,8-HxCDF	ND	<0.244			13C-2,3,4,6,7,8-HxCDF	75.8	
1,2,3,7,8,9-HxCDF	ND	0.0658		•	13C-1,2,3,7,8,9-HxCDF	71.1	
1,2,3,4,6,7,8-HpCDF	0.973			J	13C-1,2,3,4,6,7,8-HpCDF	70.9	
1,2,3,4,7,8,9-HpCDF	ND	<0.244			13C-1,2,3,4,7,8,9-HpCDF	70.8	
DCDF	1.8	***************************************		J	13C-OCDF	63.3	
Totals			WAS IN A STATE OF THE STATE OF			CS Recoveries	
COD-	0.404				PRODUCTION OF WATER TO STATE OF THE STATE OF		
CODs	0.161		0.256		37CI-2,3,7,8-TCDD	77.9	
PeCDDs	ND .	0.142			13C-1,2,3,4,7-PeCDD	76.3	
HxCDDs	2.01				13C-1,2,3,4,6-PeCDF	85.9	
HpCDDs	16.9			"	13C-1,2,3,4,6,9-HxCDF	82.9	
rCDFs	ND	0.0577			13C-1,2,3,4,6,8,9-HpCDF	81	
PeCDFs	ND ND	0.0577					
4xCDFs	ND 0.643		0.119			AS Recoveries	
1pCDFs	0.613		1.05		13C-1,3,6,8-TCDD	74.5	
	2.79				13C-1,3,6,8-TCDF	95.1	
Total PCDD/Fs	67.4		68			2714	Exchange Driv
TEF TEQs	1	1	NGC 85	ANAL	YTICAL PERSPECT	IVES Wilmin	gton, NC 2840
FEQ: ND=0	0.1	i	0.1				US
FEQ: ND=DL/2	0.276	l	0.276		1613; Toll-Free 866 846-8	290 info@	Quitratrace.com
EQ: ND=DL heckcode: 1408	0.451		0.451	Fax: +1 910 794	-3919	www	ultratrace.co

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Reviewer Date 2008 Ray

Sample ID: PO-BA-25-SS-A-090316

Method 161

		O 7 0000	10			MCC	ou lot.
Client Data		Sample Data		Laboratory D	ata .		
Name:	Anchor Environmental, LLC	Matrix:	Solids	Project No.:	P1193 🗸	Date Received:	17 Mar 09
Project ID:	080166-01	Weight/Volume:	10.21 g	Sample ID:	P1193_6679_002	Date Extracted:	19 Mar 09
Date Collected:	16 Mar 09	% Solids:	86.6 %	QC Batch No.	: 6679	Date Analyzed:	25 Mar 09
		Split:	•8	Dilution:	•	Time Analyzed:	18:30:42
Analyte	Conc. (pg/g)	DL (pg/g)	EMPC (pg/g)	Qualifiers	Standard	ES Recoveries	Qualifiers
2,3,7,8-TCDD	ND	0.0343			13C-2,3,7,8-TCDD	78.4	
1,2,3,7,8-PeCDD	ND	0.168			13C-1,2,3,7,8-PeCDD	73.2	
1,2,3,4,7,8-HxCDD	ND	<0.245		1	13C-1,2,3,4,7,8-HxCDD	76.6	1
1,2,3,6,7,8-HxCDD	0.776			J	13C-1,2,3,6,7,8-HxCDD	76.2	<u> </u>
1,2,3,7,8,9-HxCDD	0.566			J	13C-1,2,3,7,8,9-HxCDD	80	of 3
1,2,3,4,6,7,8-HpCDD	26.1				13C-1,2,3,4,6,7,8-HpCDD	74.9	S .10
OCDD	209				13C-OCDD	66.2	of April 12
2,3,7,8-TCDF	ND	0.0377			13C-2,3,7,8-TCDF	89.3	,
1,2,3,7,8-PeCDF	ND	0.0607			13C-1,2,3,7,8-PeCDF	76.4	
2,3,4,7,8-PeCDF	ND	<0.245			13C-2,3,4,7,8-PeCDF	78.6	
1,2,3,4,7,8-HxCDF	ND	<0.245		ł	13C-1,2,3,4,7,8-HxCDF	75.2	
1,2,3,6,7,8-HxCDF	ND	<0.245			13C-1,2,3,6,7,8-HxCDF	69	
2,3,4,6,7,8-HxCDF	ND	< 0.245			13C-2,3,4,6,7,8-HxCDF	78.6	
1,2,3,7,8,9-HxCDF	ND	0.051			13C-1,2,3,7,8,9-HxCDF	74.4	
1,2,3,4,6,7,8-HpCDF	4.22				13C-1,2,3,4,6,7,8-HpCDF	71	
1,2,3,4,7,8,9-HpCDF	0.416			J	13C-1,2,3,4,7,8,9-HpCDF	72.4	
OCDF	16.6				13C-OCDF	68.1	
Totals						CS Recoveries	
CDDs	ND		0.228	22	37CI-2,3,7,8-TCDD	84	
PeCDDs	ND	0.168	0.220		13C-1,2,3,4,7-PeCDD	67.3	
HxCDDs	1.59		4.75		13C-1,2,3,4,6-PeCDF	83.1	
HpCDDs	55		1. 1.1.5	Ì	13C-1,2,3,4,6,9-HxCDF	88.1	
					13C-1,2,3,4,6,8,9-HpCDF	83.6	
CDFs	ND	0.0377				00.0	
PeCDFs	ND	MARKED AND TRATEON OF THE	0.366	5		AS Recoveries	
txCDFs	3.19	~	3.69		13C-1,3,6,8-TCDD	71.1	
HpCDFs	13.9		14.1		13C-1,3,6,8-TCDF	89	
Total PCDD/Fs	299		304			2714	Exchange Drive
TEF TEQs				ANA	LYTICAL PERSPECT		gton, NC 28405
ΓEQ: ND=0	0.667		0.667				USA
FEQ: ND=DL/2	0.842		0.842	Tel: +1 910 794	I-1613; Toll-Free 866 846-8	3290 info	@ultratrace.com
TEQ: ND=DL	1.02		1.02	Fax: +1 910 794			w.ultratrace com
Checkcode: 1692				***************************************			AP 2008 Fev

Sample II	D: PO-BA-26-S	S-A-0903	16			Meth	od 1613
Client Data		Sample Data		Laboratory D	ata	T T	A THE STATE OF THE
Name:	Anchor Environmental, LLC	Matrix:	Solids	Project No.:	 P1193 ✓	Date Received:	17 Mar 09
Project ID:	080166-01	Weight/Volume:	10.48 g	Sample ID:	P1193_6679_003	Date Extracted:	19 Mar 09
Date Collected:	16 Mar 09	% Solids:	84.5 %	QC Batch No.:		Date Analyzed:	25 Mar 09
		Split:	-	Dilution:		Time Analyzed:	19:20:51
Analyte	Conc. (pg/g)	DL (pg/g)	EMPC (pg/g)	Qualifiers	Standard	ES Recoveries	Qualifiers
2,3,7,8-TCDD	ND	0.102			13C-2,3,7,8-TCDD	75.1	
1,2,3,7,8-PeCDD	ND	0.1			13C-1,2,3,7,8-PeCDD	70.5	
1,2,3,4,7,8-HxCDD	ND	0.127			13C-1,2,3,4,7,8-HxCDD	71.6	1
1,2,3,6,7,8-HxCDD	ND	0.151			13C-1,2,3,6,7,8-HxCDD	69.9	,
1,2,3,7,8,9-HxCDD	ND	0.149		1	13C-1,2,3,7,8,9-HxCDD	72.9	de.
1,2,3,4,6,7,8-HpCDD	1.99	20.000		l	13C-1,2,3,4,6,7,8-HpCDD	69.4	of April
OCDD	19				13C-OCDD	56.2	2 Apr
2,3,7,8-TCDF	ND .	0.0323			13C-2,3,7,8-TCDF	85.9	
1,2,3,7,8-PeCDF	ND	0.0705			13C-1,2,3,7,8-PeCDF	79	
2,3,4,7,8-PeCDF	ND	0.0653			13C-2,3,4,7,8-PeCDF	77.4	
1,2,3,4,7,8-HxCDF	ND	0.122			13C-1,2,3,4,7,8-HxCDF	70.6	
1,2,3,6,7,8-HxCDF	ND	0.113			13C-1,2,3,6,7,8-HxCDF	69.9	
2,3,4,6,7,8-HxCDF	ND	0.12			13C-2,3,4,6,7,8-HxCDF	72.3	
1,2,3,7,8,9-HxCDF	ND	0.165			13C-1,2,3,7,8,9-HxCDF	68.8	
1,2,3,4,6,7,8-HpCDF	EMPC		0.325	J	13C-1,2,3,4,6,7,8-HpCDF	67.9	
1,2,3,4,7,8,9-HpCDF	ND	0.104	0.000	ľ	13C-1,2,3,4,7,8,9-HpCDF	67.4	
DCDF	EMPC		0.526	J	13C-OCDF	60.3	
Totals						CS Recoveries	
rcdds	0.104		0.26		2701007070700		
PeCDDs	ND ND	0.1	0.20		37CI-2,3,7,8-TCDD	76.8	
-txCDDs	ND	0.1	0.663		13C-1,2,3,4,7-PeCDD	74.6	
HpCDDs	7.18		0.003		13C-1.2,3,4,6-PeCDF	82.3	
±•1-5-0.1708	1				13C-1,2,3,4,6,9-HxCDF	76.6	
CDFs	0.0815	l	0.176		13C-1,2,3,4,6,8,9-HpCDF	75.8	
PeCDFs	ND ND		0.0367			AC Deserved	
AxCDFs	ND		0.311		13C-1,3,6,8-TCDD	AS Recoveries	
HpCDFs	0.598		0.924		AND THE PARTY OF T	69.1 87.5	85
otal PCDD/Fs	26.9	-	29		13C-1,3,6,8-TCDF		Turkers P.
TEF TEQs				ANAL	YTICAL PERSPECT		Exchange Drive
EQ: ND=0	0.0389		0.0427		Marin Marin	vviiming	gton, NC 28405
EQ: ND=DL/2	0.183		0.186	Tel: +1 910 704	1613; Toll-Free 866 846-8	200 :	USA
EQ: ND=DL	0.327		0.33	Fax: +1 910 794			Quitratrace.com
heckcode: 0702	1 0.027		0.33	rax. +1910/94	-0918	www	.ultratrace.com

Checkcode: 0702

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Sample ID: PO-BA-27B-SS-A-090313

Method 161

Campio in	····	00 11 000					Jul 101
Client Data		Sample Data		Laboratory Da	ata .		•
Name:	Anchor Environmental, LLC	Matrix:	Solids	Project No.:	P1193 /	Date Received:	17 Mar 09
Project ID:	080166-01	Weight/Volume:	10.37 g	Sample ID:	P1193_6679_004	Date Extracted:	19 Mar 09
Date Collected:	13 Mar 09	% Solids:	83.6 %	QC Batch No.:		Date Analyzed:	25 Mar 09
		Split:	-	Dilution:	*	Time Analyzed:	20:11:01
Analyte	Conc. (pg/g)	DL (pg/g)	EMPC (pg/g)	Qualifiers	Standard	ES Recoveries	Qualifiers
2,3,7,8-TCDD	ND	0.0939			13C-2,3,7,8-TCDD	79.3	
1,2,3,7,8-PeCDD	ND	0.0594		ĺ	13C-1,2,3,7,8-PeCDD	76.1	ł
1,2,3,4,7,8-HxCDD	ND	0.214			13C-1,2,3,4,7,8-HxCDD	78.1	
1,2,3,6,7,8-HxCDD	- ND	<0.241			13C-1,2,3,6,7,8-HxCDD	76.9	7. 1
1,2,3,7,8,9-HxCDD	ND	0.23		*	13C-1,2,3,7,8,9-HxCDD	80.2	01
1,2,3,4,6,7,8-HpCDD	2.77				13C-1,2,3,4,6,7,8-HpCDD	74.4	∠ .V
OCDD	26				13C-OCDD	58.7	ok This
2,3,7,8-TCDF	ND	0.0479	20		13C-2,3,7,8-TCDF	92.8	`
1,2,3,7,8-PeCDF	ND	0.09	7.0	1	13C-1,2,3,7,8-PeCDF	77.3	
2,3,4,7,8-PeCDF	ND	0.0808			13C-2,3,4,7,8-PeCDF	81	1
1,2,3,4,7,8-HxCDF	ND	<0.241		ł	13C-1,2,3,4,7,8-HxCDF	76.7	- 1
1,2,3,6,7,8-HxCDF	ND	0.0539			13C-1,2,3,6,7,8-HxCDF	66	
2,3,4,6,7,8-HxCDF	ND	0.05			13C-2,3,4,6,7,8-HxCDF	78.3	
1,2,3,7,8,9-HxCDF	ND	0.0694			13C-1,2,3,7,8,9-HxCDF	75	
1,2,3,4,6,7,8-HpCDF	0.651			J	13C-1,2,3,4,6,7,8-HpCDF	72.3	1
1,2,3,4,7,8,9-HpCDF	ND	0.104			13C-1,2,3,4,7,8,9-HpCDF	71.9	
OCDF	2.23			J	13C-OCDF	63.7	
Totals						CS Recoveries	
TCDDs	ND		0.11		37CI-2,3,7,8-TCDD	83.3	
PeCDDs	ND	0.0594			13C-1,2,3,4,7-PeCDD	62.5	
HxCDDs	0.324		0.802		13C-1,2,3,4,6-PeCDF	78	
HpCDDs	6.78				13C-1,2,3,4,6,9-HxCDF	85.2	
				ì	13C-1,2,3,4,6,8,9-HpCDF	80.5	n.
TCDFs	ND	0.0479		*			
PeCDFs	ND		0.0627			AS Recoveries	
HxCDFs	0.396		0.758		13C-1,3,6,8-TCDD	75.1	
HpCDFs	2				13C-1,3,6,8-TCDF	94.3	
Total PCDD/Fs	37.8		38.8				Exchange Drive
ITEF TEQs				ANAI	YTICAL PERSPECT	rives Wilmin	gton, NC 28405
TEQ: ND=0	0.0625		0.0625				USA
TEQ: ND=DL/2	0.205		0.205	Tel: +1 910 794	-1613; Toll-Free 866 846-	8290 info	@ultratrace.com
TEQ: ND=DL	0.347		0.347	Fax: +1 910 794			w.ultratracel.com
Checkcode: 2383		- THE MAN TO STATE OF					AP 2008 Rex. b

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Reviewer Date 2008 kg

Sample ID): PO-UP-20-S	S-A-0903	13			Meth	od 1613
Client Data		Sample Data		Laboratory Da	ata	T	
Name:	Anchor Environmental, LLC		Solids	Project No.:	P1193	Date Received:	17 Mar 09
Project ID:	080166-01	Weight/Volume:	10.07 g	Sample ID:	P1193_6679_005	Date Extracted:	19 Mar 09
Date Collected:	13 Mar 09	% Solids:	26.7 %	QC Batch No.:		Date Analyzed:	25 Mar 09
		Split:	-	Dilution:		Time Analyzed:	21:01:10
Analyte	Conc. (pg/g)	DL (pg/g)	EMPC (pg/g)	Qualifiers	Standard	ES Recoveries	Qualifiers
2,3,7,8-TCDD	0.803	[Ra=0.749]	0		13C-2,3,7,8-TCDD	75.6	
1,2,3,7,8-PeCDD	4.39	100		1	13C-1,2,3,7,8-PeCDD	74.6	,
1,2,3,4,7,8-HxCDD	9.63				13C-1,2,3,4,7,8-HxCDD	75.2	1
1,2,3,6,7,8-HxCDD	39.2				13C-1,2,3,6,7,8-HxCDD	75.6	ok
1,2,3,7,8,9-HxCDD	18.3				13C-1,2,3,7,8,9-HxCDD	79	1/10
1,2,3,4,6,7,8-HpCDD	1,440				13C-1,2,3,4,6,7,8-HpCDD	84.9	Dariel
OCDD	15,700	J20			13C-OCDD	93.1	April of
2,3,7,8-TCDF	2.67			20	13C-2,3,7,8-TCDF	93.6	Ne2
1,2,3,7,8-PeCDF	2.81				13C-1,2,3,7,8-PeCDF	89.3	
2,3,4,7,8-PeCDF	5.48			3	13C-2,3,4,7,8-PeCDF	85.2	
1,2,3,4,7,8-HxCDF	14.5				13C-1,2,3,4,7,8-HxCDF	77.7	
1,2,3,6,7,8-HxCDF	6.93				13C-1,2,3,6,7,8-HxCDF	73.8	8
2,3,4,6,7,8-HxCDF	10.1			Į.	13C-2,3,4,6,7,8-HxCDF	76.7	
1,2,3,7,8,9-HxCDF	2.71				13C-1,2,3,7,8,9-HxCDF	74.4	
1,2,3,4,6,7,8-HpCDF	257				13C-1,2,3,4,6,7,8-HpCDF	72.1	
1,2,3,4,7,8,9-HpCDF	12				13C-1,2,3,4,7,8,9-HpCDF	77.2	
OCDF	842				13C-OCDF	77.9	
Totals						CS Recoveries	
TCDDs	26.8		20.0		2701 2 2 7 2 7000	04.0	
PeCDDs	57.2		28.9 58.1		37CI-2,3,7,8-TCDD	81.8	
HxCDDs	564		56.1		13C-1,2,3,4,7-PeCDD	79.1	
HpCDDs	6,420				13C-1,2,3,4,6-PeCDF	96.4 85.7	
ripodds	0,420				13C-1,2,3,4,6,9-HxCDF	92.7	
TCDFs	36.2		38		13C-1,2,3,4,6,8,9-HpCDF	92.1	
PeCDFs	69.6		70.5			AS Bonovaries	
HxCDFs	289		290		13C-1,3,6,8-TCDD	AS Recoveries 65.9	340
HpCDFs	835		230		13C-1,3,6,8-TCDF	89	
Total PCDD/Fs	24,800		24,900		[[100-1,0,0,0-100F		Exchange Drive
ITEF TEQs	- 1,000		14,000	ANAL	YTICAL PERSPECT		gton, NC 28405
TEQ: ND=0	49.9		49.9			V VIII III	USA
TEQ: ND=DL/2	49.9		49.9	Tel: +1 910 794	-1613; Toll-Free 866 846-8	2290 info	@ultratrace.com
TEQ: ND=DL	49.9		49.9	Fax: +1 910 794			w.ultratrace.com
Checkcode: 2775	1	1	70.0	1. dx 1 0 10 134		WW	AP 2008 Poul D

Checkcode: 2775

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Sample ID: PO-UP-21-SS-A-090313

Method 161

Client Data		Sample Data		Laboratory Da	ata	1	
Name:	Anchor Environmental, LLC		Solids	Project No.:	P1193 🗸	Date Received:	17 Mar 09
Project ID:	080166-01	Weight/Volume:	10.16 g	Sample ID:	P1193_6679_006	Date Extracted:	19 Mar 09
Date Collected:	13 Mar 09	% Solids:	32.3 %	QC Batch No.:		Date Analyzed:	25 Mar 09
	TO Mar GO	Split:	-	Dilution:	-	Time Analyzed:	21:51:19
Analyte	Conc. (pg/g)	DL (pg/g)	EMPC (pg/g)	Qualifiers	Standard	ES Recoveries	Qualifiers
2,3,7,8-TCDD	0.712	[Ra=0.852]	Lim o (pg/g)	- Gasimoro	13C-2,3,7,8-TCDD	84.8	Qualificio
1,2,3,7,8-PeCDD	3.51	[114-0.002]			13C-1,2,3,7,8-PeCDD	81.6	
1,2,3,4,7,8-HxCDD	10.3				13C-1,2,3,4,7,8-HxCDD	73.7	
1,2,3,6,7,8-HxCDD	40.8				13C-1,2,3,6,7,8-HxCDD	76.2	1.
1,2,3,7,8,9-HxCDD	18				13C-1,2,3,7,8,9-HxCDD	77.5	- h
1,2,3,4,6,7,8-HpCDD	1,990				13C-1,2,3,4,6,7,8-HpCDD	86.1	1/ 11
OCDD	23,100	J20			13C-0CDD	93.2	4 7 3,1
CODE	25,100		1. A.		130-0000	93.2	Z April'
2,3,7,8-TCDF	2.39				13C-2,3,7,8-TCDF	96	٦
1,2,3,7,8-PeCDF	2.36			J	13C-1,2,3,7,8-PeCDF	91	
2,3,4,7,8-PeCDF	5.25				13C-2,3,4,7,8-PeCDF	89	
1,2,3,4,7,8-HxCDF	14.1				13C-1,2,3,4,7,8-HxCDF	74.8	
1,2,3,6,7,8-HxCDF	6.24				13C-1,2,3,6,7,8-HxCDF	71.3	
2,3,4,6,7,8-HxCDF	9.46				13C-2,3,4,6,7,8-HxCDF	75.1	
1,2,3,7,8,9-HxCDF	2.62		84	81	13C-1,2,3,7,8,9-HxCDF	73.1	
1,2,3,4,6,7,8-HpCDF	258			1	13C-1,2,3,4,6,7,8-HpCDF	70.2	
1,2,3,4,7,8,9-HpCDF	11.9				13C-1,2,3,4,7,8,9-HpCDF	76	
OCDF	869				13C-OCDF	81.7	
Totals						CS Recoveries	
TCDDs	18.7		20.8		37Cl-2,3,7,8-TCDD	86.3	
PeCDDs	52.5		20,0		13C-1,2,3,4,7-PeCDD	79	
HxCDDs	860	1			13C-1,2,3,4,6-PeCDF	93.8	
HpCDDs	11,200			1	13C-1,2,3,4,6,9-HxCDF	81.5	
	11,200					AVAILEM TO THE TAXABLE PROPERTY OF THE PARTY	
TCDFs	32.5		34.5	1	13C-1,2,3,4,6,8,9-HpCDF	87.7	
PeCDFs	63.9		U-1.0			AS Recoveries	
HxCDFs	287		288		13C-1,3,6,8-TCDD	74.4	
HpCDFs	879		200		13C-1,3,6,8-TCDF	95.4	
Total PCDD/Fs	37,400		37,400	<u> </u>	[[100-1,0,0,0-10DF		Exchange Drive
TEF TEQs				ANAL	YTICAL PERSPECT	****	gton, NC 28405
TEQ: ND=0	62.1		62.1			• • • • • • • • • • • • • • • • • • • •	USA
TEQ: ND=DL/2	62.1		62.1	Tel: +1 910 794	-1613; Toll-Free 866 846-8	290 info	@ultratrace.com
TEQ: ND=DL	62.1		62.1	Fax: +1 910 794	CONTRACTOR STATE S		v.ultratrace.com
Checkcode: 1387			V4.1	1. 44		ww	AP 2008 Rev.

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Reviewer Date P 2008 RIV.

Sample ID): PO-UP-22-S	S-A-0903	13			Meth	od 1613
Client Data		Sample Data		Laboratory Da	ta_		
Name:	Anchor Environmental, LLC	Matrix:	Solids	Project No.:	P1193 /	Date Received:	17 Mar 09
Project ID:	080166-01	Weight/Volume:	10.04 g	Sample ID:	P1193_6679_007	Date Extracted:	19 Mar 09
Date Collected:	13 Mar 09	% Solids:	26.3 %	QC Batch No.:	6679	Date Analyzed:	26 Mar 09
		Split:	-	Dilution:	-	Time Analyzed:	1:23:42 ~
Analyte	Conc. (pg/g)	DL (pg/g)	EMPC (pg/g)	Qualifiers	Standard	ES Recoveries	Qualifiers
2,3,7,8-TCDD	0.711	[Ra=0.814]			13C-2,3,7,8-TCDD	79.6	
1,2,3,7,8-PeCDD	4.44				13C-1,2,3,7,8-PeCDD	77.7	
1,2,3,4,7,8-HxCDD	9.18				13C-1,2,3,4,7,8-HxCDD	74.4	
1,2,3,6,7,8-HxCDD	37.8				13C-1,2,3,6,7,8-HxCDD	75.5	/ /
1,2,3,7,8,9-HxCDD	17.4				13C-1,2,3,7,8,9-HxCDD	78.6	0 . S
1,2,3,4,6,7,8-HpCDD	944				13C-1,2,3,4,6,7,8-HpCDD	79.4	1.1
OCDD	8,140				13C-OCDD	41.4	3 APA 1 5
2,3,7,8-TCDF	2.74				13C-2,3,7,8-TCDF	91.7	·
1,2,3,7,8-PeCDF	3.03			,	13C-1,2,3,7,8-PeCDF	87.3	
2,3,4,7,8-PeCDF	6.21	a °			13C-2,3,4,7,8-PeCDF	84.9	
1,2,3,4,7,8-HxCDF	16.6				13C-1,2,3,4,7,8-HxCDF	75.3	
1,2,3,6,7,8-HxCDF	7.26				13C-1,2,3,6,7,8-HxCDF	72.9	
2,3,4,6,7,8-HxCDF	10.4				13C-2,3,4,6,7,8-HxCDF	74.8	
1,2,3,7,8,9-HxCDF	EMPC		2.88	1	13C-1,2,3,7,8,9-HxCDF	73	
1,2,3,4,6,7,8-HpCDF	258		2.00		13C-1,2,3,4,6,7,8-HpCDF	67.4	
1,2,3,4,7,8,9-HpCDF	11.2		· ·	1	13C-1,2,3,4,7,8,9-HpCDF	73.1	
OCDF	669		Ø		13C-OCDF	46.2	-
Totals			*******		100-0001	CS Recoveries	
TCDDs	27.6		28.9		37CI-2,3,7,8-TCDD	79.6	
PeCDDs	57.1				13C-1,2,3,4,7-PeCDD	81	
HxCDDs	380				13C-1,2,3,4,6-PeCDF	90.3	
HpCDDs	2,710				13C-1,2,3,4,6,9-HxCDF	83	
					13C-1,2,3,4,6,8,9-HpCDF	81.9	
TCDFs	43.2		43.4				
PeCDFs	76.9		77.2			AS Recoveries	
HxCDFs	299		307		13C-1,3,6,8-TCDD	69.8	
HpCDFs	756				13C-1,3,6,8-TCDF	90.1	
Total PCDD/Fs	.13,200		13,200	1.			Exchange Drive
ITEF TEQs			*	ANAL	YTICAL PERSPECT	IVES Wilmin	gton, NC 28405
TEQ: ND=0	37.3		37.6				USA
TEQ: ND=DL/2	37.3		37.6	Tel: +1 910 794-	-1613; Toll-Free 866 846-8		@ultratrace.com
TEQ: ND=DL	37.3		37.6	Fax: +1 910 794	-3919	ww	w.ultratrace.com

Checkcode: 5119

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Reviewer

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Sample ID: PO-UP-23B-SS-A-090313

Method 161_

Campic ii	J. 1 0-01 -20D	-00-A-030	/U I C			Modif	ou ioi-
Client Data		Sample Data		Laboratory D	ata		
Name:	Anchor Environmental, LLC	Matrix:	Solids	Project No.:	P1193 ~	Date Received:	17 Mar 09
Project ID:	080166-01	Weight/Volume:	10.02 g	Sample ID:	P1193_6679_008	Date Extracted:	19 Mar 09
Date Collected:	13 Mar 09	% Solids:	25.8 %	QC Batch No.:		Date Analyzed:	26 Mar 09
		Split:	-	Dilution:	•	Time Analyzed:	2:13:51
Analyte	Conc. (pg/g)	DL (pg/g)	EMPC (pg/g)	Qualifiers	Standard	ES Recoveries	Qualifiers
2,3,7,8-TCDD	0.791	[Ra=0.81]			13C-2,3,7,8-TCDD	80	
1,2,3,7,8-PeCDD	4.91				13C-1,2,3,7,8-PeCDD	80.8	
1,2,3,4,7,8-HxCDD	10.3				13C-1,2,3,4,7,8-HxCDD	74.2	
1,2,3,6,7,8-HxCDD	44.1				13C-1,2,3,6,7,8-HxCDD	75.3	,
1,2,3,7,8,9-HxCDD	20.3				13C-1,2,3,7,8,9-HxCDD	78.5	1
1,2,3,4,6,7,8-HpCDD	1,110				13C-1,2,3,4,6,7,8-HpCDD	82.6	Ju
OCDD	9,630				13C-OCDD	82.9	de de la
2,3,7,8-TCDF	3.21				13C-2,3,7,8-TCDF	96.1	2H.
1,2,3,7,8-PeCDF	3.33				13C-1,2,3,7,8-PeCDF	93.1	
2,3,4,7,8-PeCDF	7.97				13C-2,3,4,7,8-PeCDF	90.1	
1,2,3,4,7,8-HxCDF	20.6				13C-1,2,3,4,7,8-HxCDF	74.7	
1,2,3,6,7,8-HxCDF	8.17				13C-1,2,3,6,7,8-HxCDF	70.9	
2,3,4,6,7,8-HxCDF	12.7				13C-2,3,4,6,7,8-HxCDF	75	
1,2,3,7,8,9-HxCDF	3.8				13C-1,2,3,7,8,9-HxCDF	74	
1,2,3,4,6,7,8-HpCDF	297			**	13C-1,2,3,4,6,7,8-HpCDF	72	
1,2,3,4,7,8,9-HpCDF	12.7				13C-1,2,3,4,7,8,9-HpCDF	75.2	
OCDF	787	*			13C-OCDF	73.3	
Totals						CS Recoveries	
TCDDs	27.2		28.2		3701 2 2 7 9 7000	79.6	W 100 Market
PeCDDs	52.2		57.7		37CI-2,3,7,8-TCDD 13C-1,2,3,4,7-PeCDD	80.3	
HxCDDs	428	1	57.7	T	13C-1,2,3,4,6-PeCDF	90.8	
HpCDDs	3,120				13C-1,2,3,4,6,9-HxCDF	79.1	
	0,120				13C-1,2,3,4,6,8,9-HpCDF	83.9	
TCDFs	46.3		46.4		130-1,2,3,4,0,0,3-1 (pCD)	03.9	
PeCDFs	90.1		90.3			AS Recoveries	
HxCDFs	373		374		13C-1,3,6,8-TCDD	68.2	
HpCDFs	904		V. ,		13C-1,3,6,8-TCDF	88.9	
Total PCDD/Fs	15,500		15,500		11		Exchange Drive
ITEF TEQs				ANA	YTICAL PERSPECT		gton, NC 28405
TEQ: ND=0	44.3		44.3			***************************************	USA
TEQ: ND=DL/2	44.3		44.3	Tel: +1 910 794	-1613; Toll-Free 866 846-8	3290 info	@ultratrace.com
TEQ: ND=DL	44.3		44.3	Fax: +1 910 794		10000000	v.uitratrace.com
Checkcode: 5423							AP 2008 Rev.

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Sample ID	D: PO-AM-28-S	SS-A-0903	313			Meth	od 1613
Client Data		Sample Data		Laboratory Da	ata	T	
Name:	Anchor Environmental, LLC	Matrix:	Solids	Project No.:	P1193 /	Date Received:	17 Mar 09
Project ID:	080166-01	Weight/Volume:	10.02 g	Sample ID:	P1193_6679_009	Date Extracted:	19 Mar 09
Date Collected:	13 Mar 09	% Solids:	25.9 %	QC Batch No.:		Date Analyzed:	26 Mar 09
		Split:	•	Dilution:	•	Time Analyzed:	3:03:54
Analyte	Conc. (pg/g)	DL (pg/g)	EMPC (pg/g)	Qualifiers	Standard	ES Recoveries	Qualifiers
2,3,7,8-TCDD	0.634	[Ra=0.711]			13C-2,3,7,8-TCDD	79.1	
1,2,3,7,8-PeCDD	3.28				13C-1,2,3,7,8-PeCDD	84.6	
1,2,3,4,7,8-HxCDD	6.3				13C-1,2,3,4,7,8-HxCDD	72.9	
1,2,3,6,7,8-HxCDD	28.7				13C-1,2,3,6,7,8-HxCDD	75.3	,
1,2,3,7,8,9-HxCDD	12.6	i i	•		13C-1,2,3,7,8,9-HxCDD	79	1.
1,2,3,4,6,7,8-HpCDD	635				13C-1,2,3,4,6,7,8-HpCDD	81.6	١
OCDD	5,080				13C-OCDD	82.3	200
							2 118"
2,3,7,8-TCDF	2.67				13C-2,3,7,8-TCDF	97	-4.
1,2,3,7,8-PeCDF	2.44			J	13C-1,2,3,7,8-PeCDF	94.3	
2,3,4,7,8-PeCDF	5.01				13C-2,3,4,7,8-PeCDF	92.9	81
1,2,3,4,7,8-HxCDF	.12.1				13C-1,2,3,4,7,8-HxCDF	75	
1,2,3,6,7,8-HxCDF	5.49				13C-1,2,3,6,7,8-HxCDF	71.5	
2,3,4,6,7,8-HxCDF	7.96				13C-2,3,4,6,7,8-HxCDF	76.1	
1,2,3,7,8,9-HxCDF	2.25			J	13C-1,2,3,7,8,9-HxCDF	74.2	
1,2,3,4,6,7,8-HpCDF	195				13C-1,2,3,4,6,7,8-HpCDF	73	
1,2,3,4,7,8,9-HpCDF	7.19				13C-1,2,3,4,7,8,9-HpCDF	77	
OCDF	410			i	13C-OCDF	71.2	
Totals					·	CS Recoveries	
TCDDs	20.5						
PeCDDs	26.5		28.8		37CI-2,3,7,8-TCDD	82.7	
	51.6				13C-1,2,3,4,7-PeCDD	83.9	
HxCDDs	282				13C-1,2,3,4,6-PeCDF	98.4	
HpCDDs	1,600			İ	13C-1,2,3,4,6,9-HxCDF	81.1	
TCDFs	25.7		20.0		13C-1,2,3,4,6,8,9-HpCDF	84.9	
PeCDFs	35.7 62.9		38.9				
HxCDFs	240		63.3		120 4 2 6 2 7255	AS Recoveries	
HpCDFs	535		242		13C-1,3,6,8-TCDD	70.3	
Total PCDD/Fs	8,330	, , , , , , , , , , , , , , , , , , , 	8,330		13C-1,3,6,8-TCDF	93.4	Euchance De
ITEF TEQs	0,000		0,330	ANAL	YTICAL PERSPECT	PER LA COLLEGE POLICE	Exchange Drive
TEQ: ND=0	26.6		20.0			Wilmin	gton, NC 28405
TEQ: ND=DU2	26.6 26.6		26.6	Tal- 14 040 704	4040, T-11 F 000 0 10 0		USA
TEQ: ND=DL2	26.6		26.6	Commence of the American Commence of the Comme	-1613; Toll-Free 866 846-8		@ultratrace.com
Checkcode: 5672	20.0		26.6	Fax: +1 910 794	1-3919	ww	w.ultratrade.dom

Checkcode: 5672

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Reviewer Date

Sample ID: B1-C16-SS-A-090313 Method 161 Client Data Sample Data **Laboratory Data** Name: Anchor Environmental, LLC Matrix: Solids Project No.: P1193 Date Received: 17 Mar 09 Project ID: 080166-01 Weight/Volume: 10.04 q ~ Sample ID: P1193 6679 010 Date Extracted: 19 Mar 09 Date Collected: 13 Mar 09 % Solids: QC Batch No .: 6679 26 Mar 09 28.6 % Date Analyzed: Split: 3:54:17 Dilution: Time Analyzed: **Analyte** EMPC (pg/g) Qualifiers Standard **ES Recoveries** Qualifiers Conc. (pg/g) DL (pg/g) 2,3,7,8-TCDD 0.575 [Ra=0.735] 91.8 13C-2,3,7,8-TCDD 1,2,3,7,8-PeCDD 3.18 87.4 13C-1,2,3,7,8-PeCDD 1,2,3,4,7,8-HxCDD 5.98 13C-1,2,3,4,7,8-HxCDD 84.3 1,2,3,6,7,8-HxCDD 30.6 84.1 13C-1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD 12.7 86.5 13C-1,2,3,7,8,9-HxCDD 1,2,3,4,6,7,8-HpCDD 721 13C-1,2,3,4,6,7,8-HpCDD 93.6 OCDD 6,590 13C-OCDD 94.1 2,3,7,8-TCDF 2.64 13C-2,3,7,8-TCDF 108 1,2,3,7,8-PeCDF 2.57 103 13C-1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF 5.05 13C-2,3,4,7,8-PeCDF 101 1,2,3,4,7,8-HxCDF 12 83.9 13C-1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 5.59 13C-1,2,3,6,7,8-HxCDF 79.9 2,3,4,6,7,8-HxCDF 8.06 13C-2,3,4,6,7,8-HxCDF 83.4 1,2,3,7,8,9-HxCDF 2.45 J 13C-1,2,3,7,8,9-HxCDF 81.6 1,2,3,4,6,7,8-HpCDF 196 13C-1,2,3,4,6,7,8-HpCDF 81.9 1,2,3,4,7,8,9-HpCDF 7.38 13C-1,2,3,4,7,8,9-HpCDF 85.3 OCDF 363 13C-OCDF 82.6 Totals **CS** Recoveries **TCDDs** 25.1 26 37CI-2.3.7.8-TCDD 95.3 **PeCDDs** 51.3 13C-1,2,3,4,7-PeCDD 89.3 HxCDDs 322 13C-1,2,3,4,6-PeCDF 108 **HpCDDs**

HxCDFs 249 250 13C-1,3,6,8-TCDD **HpCDFs** 547 13C-1.3.6.8-TCDF Total PCDD/Fs 10,600 10,600 ANALYTICAL PERSPECTIVES ITEF TEQs TEQ: ND=0 29 29 TEQ: ND=DL/2

63.2

29

29

2714 Exchange Drive Wilmington, NC 28405 USA

Tel: +1 910 794-1613; Toll-Free 866 846-8290 Fax: +1 910 794-3919

13C-1,2,3,4,6,9-HxCDF 13C-1,2,3,4,6,8,9-HpCDF

> info@ultratrace.com www.ultratrade.com

TEQ: ND=DL Checkcode: 5953

TCDFs

PeCDFs

2,350

37.7

63

29

29

90.7

94.4

AS Recoveries

84.4

106

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Sample II	D: B1-S37-SS-	A-090313				Meth	od 1613
Client Data		Sample Data		Laboratory Da	ata	1	
Name:	Anchor Environmental, LLC	Matrix:	Solids	Project No.:	P1193 /	Date Received:	17 Mar 09
Project ID:	080166-01	Weight/Volume:	10.15 g	Sample ID:	P1193_6679_011	Date Extracted:	19 Mar 09
Date Collected:	13 Mar 09	% Solids:	28.4 %	QC Batch No.:	(Table)	Date Analyzed:	26 Mar 09
		Split:	22	Dilution:	•	Time Analyzed:	4:44:41 /
Analyte	Conc. (pg/g)	DL (pg/g)	EMPC (pg/g)	Qualifiers	Standard	ES Recoveries	Qualifiers
2,3,7,8-TCDD	0.717	[Ra=0.837]		-	13C-2,3,7,8-TCDD	79.4	
1,2,3,7,8-PeCDD	3.28		Pi.		13C-1,2,3,7,8-PeCDD	81.2	
1,2,3,4,7,8-HxCDD	6.4				13C-1,2,3,4,7,8-HxCDD	80.1	,
1,2,3,6,7,8-HxCDD	29.7				13C-1,2,3,6,7,8-HxCDD	78.3	\mathcal{L}_{0}
1,2,3,7,8,9-HxCDD	12.7		W		13C-1,2,3,7,8,9-HxCDD	80.9	-10
1,2,3,4,6,7,8-HpCDD	603				13C-1,2,3,4,6,7,8-HpCDD	90.4	1.
OCDD	4,490				13C-OCDD	94.3	1 April
2,3,7,8-TCDF	3.05				13C-2,3,7,8-TCDF	99	*
1,2,3,7,8-PeCDF	2.61				13C-1,2,3,7,8-PeCDF	99.5	
2,3,4,7,8-PeCDF	5.15				13C-2,3,4,7,8-PeCDF	94.5	
1,2,3,4,7,8-HxCDF	11.9				13C-1,2,3,4,7,8-HxCDF	82.8	
1,2,3,6,7,8-HxCDF	5.77		54		13C-1,2,3,6,7,8-HxCDF	78.2	
2,3,4,6,7,8-HxCDF	8.6				13C-2,3,4,6,7,8-HxCDF	81.9	
1,2,3,7,8,9-HxCDF	2.46			J	13C-1,2,3,7,8,9-HxCDF	79.4	
1,2,3,4,6,7,8-HpCDF	206	!			13C-1,2,3,4,6,7,8-HpCDF	83.3	
1,2,3,4,7,8,9-HpCDF	6.86				13C-1,2,3,4,7,8,9-HpCDF	86.5	
OCDF	346				13C-OCDF	81.7	
Totals						CS Recoveries	
			(Leasening)				
TCDDs PeCDDs	29.2		30.2		37CI-2,3,7,8-TCDD	81.2	
-txCDDs	57.6		58.7		13C-1,2,3,4,7-PeCDD	84.4	
	284		288		13C-1,2,3,4,6-PeCDF	107	
dpCDDs	1,420				13C-1,2,3,4,6,9-HxCDF	87.2	
rcdfs	40.3	ē)	44.0		13C-1,2,3,4,6,8,9-HpCDF	95.3	
PeCDFs	64.2		41.8				
txCDFs	254		255			AS Recoveries	
dpCDFs	555		255		13C-1,3,6,8-TCDD	70	
Total PCDD/Fs	7,540		7.550		13C-1,3,6,8-TCDF	96.7	
TEF TEQs	7,040		7,550	ANAL	YTICAL PERSPECT		Exchange Drive
TEQ: ND=0	20.4		00.1	LL KINAL		Wilmin	gton, NC 28405
EQ: ND=U	26.1		26.1	**	1919 2 12 1 1000 5 10 10		USA
	26.1			26.1 Tel: +1 910 794-1613; Toll-Free 866 846-8290 info@ultratrace.com			
EQ: ND=DL	26.1		26.1	Fax: +1 910 794	-3919	ww	v.ultratrade.com

Checkcode: 0245

Rofryod

1.109 F

Reviewer Date

SDG # _abora	:20586A21 t:P1193 atory:Analytical Perspe	ctives	<u> </u>	L	_evel III		WORKSHEET		Date: 4/17/09/ Page: /_of_/ Reviewer: 2nd Reviewer:
The sa	OD: HRGC/HRMS Diox amples listed below were ion findings worksheets.	revie		•			on areas. Validati	on find	ings are noted in attached
	Validation	Area					Comn	nents	
1.	Technical holding times			٨	Sampling	dates:	3/13 - 3/	1600	1
II.	HRGC/HRMS Instrument pe	erforma	ance check	Ā					
111.	Initial calibration			A	20/	35°	lo		
IV.	Routine calibration/ICV			A	ac'	limi	+5		(4)
V.	Blanks			A					
VI.	Matrix spike/Matrix spike du	plicate	s	N	C	5			
VII.	Laboratory control samples			À	OPF	۷			
VIII.	Regional quality assurance	and qu	ality control	N					
IX.	Internal standards			4					
X.	Target compound identificat	ions		N					
XI.	Compound quantitation and	CRQL	.s	5W					
XII.	. System performance			N					
XIII.	Overall assessment of data			Δ					
V .	Field duplicates			N					
XV.	Field blanks			W		ACCUPATION OF THE PROPERTY OF			
Note:	A = Acceptable N = Not provided/applicable SW = See worksheet)	R = Rins	o compounds sate eld blank	s detected		D = Duplicate TB = Trip blank EB = Equipment bla	nk	
alidate	d Samples:	ment	:			_			
1	PO-BA-24-SS-A-090313	11	B1-S37-SS-A	-090313	21	66	79 - MB001	31	
2	PO-BA-25-SS-A-090316	12	н		22			32	
3	PO-BA-26-SS-A-090316	13			23			33	
4	PO-BA-27B-SS-A-090313	14			24			34	
5	PO-UP-20-SS-A-090313	15			25			35	
6	PO-UP-21-SS-A-090313	16			26			36	
7	PO-UP-22-SS-A-090313	17			27			37	
8	PO-UP-23B-SS-A-090313	18			28			38	
9	PO-AM-28-SS-A-090313	19			29			39	,
10	B1-C16-SS-A-090313	20			30			40	
Notes:									

LDC #:	20586 42/
SDG #:	see cone

VALIDATION FINDINGS WORKSHEET

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

METHOD: HRGC/HRMS Dioxins/Dibenzofurans (EPA SW 846 Method 1613B)

A. 2,3,7,8-TCDD	F. 1,2,3,4,6,7,8-HpCDD	K. 1,2,3,4,7,8-HxCDF	P. 1,2,3,4,7,8,9-HpCDF	U. Total HpCDD
B. 1,2,3,7,8-PeCDD	G. OCDD	L. 1,2,3,6,7,8-HxCDF	Q. OCDF	V. Total TCDF
C. 1,2,3,4,7,8-HxCDD	H. 2,3,7,8-TCDF	M. 2,3,4,6,7,8-HxCDF	R. Total TCDD	W. Total PeCDF
D. 1,2,3,6,7,8-HxCDD	I. 1,2,3,7,8-PeCDF	N. 1,2,3,7,8,9-HxCDF	S. Total PeCDD	X. Total HxCDF
E. 1,2,3,7,8,9-HxCDD	J. 2,3,4,7,8-PeCDF	O. 1,2,3,4,6,7,8-HpCDF	T. Total HxCDD	Y. Total HpCDF

Notes:			
NOIES.			
		The state of the s	

LDC #:	B6A21
SDG #:	e cons
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VALIDATION FIN

GS WORKSHEET and Reported CRQLs

Re	·:
2nd Review	ver:

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

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

Y N N/A Y N N/A Were the correct internal standard (IS), quantitation ions and relative response factors (RRF) used to quantitate the compound? Compound quantitation and CRQLs were adjusted to reflect all sample dilutions and dry weight factors (if necessary).

#	Date	compd S ample 18	Finding	Associated Samples	Qualifications
		G	x'del cal pange	5,6	S/Pout
			3	,	
	- LA COMMON DE LA COMMON DE LA COMMON DE LA COMMON DE LA COMMON DE LA COMMON DE LA COMMON DE LA COMMON DE LA C				
		Н	no second column confirmation was performal	5-711	non /P
			confirmation was		
			performed		
			1 /		
		- Company of the Comp			

Comments:	See sample calculation verification worksheet for recalculations	
		*



1423 Third Avenue, Suite 300 Seattle, Washington 98101 Phone 206.287.9130 Fax 206.287.9131

Data Validation Review Report - EPA Level 3

Project:

Port of Olympia- Terminal Berths 2 & 3

Project Number:

080166-02

Date:

April 1, 2009

Report #

JD040109

This report summarizes the review of analytical results for 4 sediment samples collected on February 26th, 2009. Samples were collected by Anchor QEA and submitted to TestAmerica Laboratories (TA), in Tacoma, WA. Samples were analyzed for the following:

- Total Organic Carbon (TOC) by Puget Sound Estuary Protocols (PSEP) method 9060
- Grainsize by PSEP/Plumb 1981
- Total Solids (TS) by United States Environmental Protection Agency (USEPA) method 160.3
- Moisture Content (MC) by ASTM method D2216-90

TA sample data group (SDG) number 12857-1 was reviewed in this report. The samples reviewed in this report are presented in Table 1.

Table 1 Samples Reviewed

Sample ID	Lab ID	Matrix	Analyses Requested
PO-BA-24-SS-A090226	580-12857-1	Sed	TOC, Grainsize, TS, MC (not required in SAP)
PO-BA-25-SS-A090226	580-12857-2	Sed	TOC, Grainsize, TS, MC (not required in SAP)
PO-BA-26-SS-A090226	580-12857-3	Sed	TOC, Grainsize, TS, MC (not required in SAP)
PO-BA-27B-SS-A090226	580-12857-4	Sed	TOC, Grainsize, TS, MC (not required in SAP)

Data Validation and Qualifications

The following comments refer to the laboratory's performance in meeting the quality assurance/quality control (QA/QC) guidelines outlined in the analytical procedures and data quality objective section of the Sampling and Analysis Plan (SAP). Laboratory results were

reviewed following USEPA guidelines using *USEPA Contract Laboratory Program National Functional Guidelines for Inorganics Data Review (USEPA, 2004),* and *USEPA Contract Laboratory National Functional Guidelines for Organics Data Review (USEPA, 1999)* as guidelines, and applying laboratory and method QC criteria as stated in SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998. Unless noted in this report, laboratory results for the samples listed above were within QC criteria.

Field Documentation

Field documentation was checked for completeness and accuracy. The chain-of-custodies were signed by TA at the time of sample receipt; the samples were received in good condition at 7.8°C. Because the samples were delivered to the laboratory so quickly after collection they were still in the cooling process; data were not impacted by this discrepancy.

Holding Times and Sample Preservation

Samples were appropriately preserved and analyzed within holding times.

Initial Calibration

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

Calibration Verification

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

Laboratory Method Blanks

Laboratory method blanks were analyzed at the required frequencies. All method blanks were free of target analytes.

Field Quality Control

Field Blanks and Field Duplicates

Field blanks were not collected in association with this data set.

Sample Replicates

Sample replicates were analyzed at the required frequencies and resulted in all relative percent difference (RPD) values within 20%.

Matrix Spike (MS) and Matrix Spike Duplicate (MSD)

MS and MSD samples were analyzed at the required frequency for TOC and resulted in recoveries within project control limits

Laboratory Control Sample (LCS) and Standard Reference Material (SRM)

An SRM was analyzed at the required frequency for TOC and resulted in a percent recovery within the SRM's published allowable range.

Method Reporting Limits

Reporting limits were deemed acceptable as reported. All values were reported using the laboratory's reporting limits.

Overall Assessment

As was determined by this evaluation, the laboratory followed the specified analytical methods and all requested sample analyses were completed. Accuracy was generally acceptable, as demonstrated by the SRM, CCV and MS/MSD %R values. Precision was also acceptable as demonstrated by the laboratory replicates and MS/MSD RPD values. All data were deemed acceptable as reported.

REFERENCES

- USEPA. 1983. Methods for Chemical Analysis of Water and Wastes. U.S. Environmental Protection Agency, Environmental Monitoring and Support Laboratory, Cincinnati, Ohio. EPA-600/4-79-020.
- USEPA. 1986. Test methods for Evaluating Solid Waste: Physical/Chemical Methods.

 U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response.

 EPA-530/SW-846.

- USEPA. 1999. USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review. U.S. Environmental Protection Agency, Office of Emergency Response. EPA 540/R-99/008. October.
- USEPA. 2004. USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review. U.S. Environmental Protection Agency, Office of Superfund Remediation and Technology Innovation (OSRTI). EPA 540-R-04-004. October 2004.