Superfund Records Center
SITE: Centredale
BREAK: 2.3
OTHER: 35796

DIOXIN DATA VALIDATION REPORT
USEPA REGION I - TIER III

SDG No.: G2D130156
Laboratory: Severn Trent Laboratories, Inc., West Sacramento, CA
Site: Centredale Manor
Date: May 22, 2002
Samples:
Dioxin: 23/Soil/2102205, 2102206, 2102207, 2102208, 2102209, 2102210, 2102211, 2102212, 2102213, 2102214, 2102215, 2102216, 2102217, 2102218, 2102219, 2102220, 2102221, 2102222, 2102223, 2102224, 2102225, 2102226, 2102227
1/Aqueous/2102251

A Tier III validation was performed on the dioxin/furan analytical data for twenty-three soil samples and one aqueous blank sample collected by Loureiro Engineering Associates at the Centredale Manor Site in North Providence, Rhode Island. The samples were analyzed under EPA Method 8290 for high resolution dioxin/furans. The data were evaluated as a Tier III level in accordance with the "Region I EPA-NE Data Validation Functional Guidelines for Evaluating Dioxin/Furan Analyses", dated November 1998 and the "Region I EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses" dated December 1996 and were based on the following parameters:

- Overall Evaluation of Data and Potential Usability Issues.
- * Data Completeness.
- * Preservation and Technical Holding Times.
- * PE Samples/Accuracy Check.
- * Window Defining Solution.
- * Initial & Continuing Calibrations.
- * Chromatographic Resolution.
- * Instrument Sensitivity Check.
- Blanks.
- * Matrix Spike Analysis.
- * Laboratory & Field Duplicate Analysis.
- Internal/Clean-up/Recovery Standards.
- * Sample Analysis & Identification.
- Sample Quantitation & Total Homologues.
- * Estimated Detection Limits (EDL) & Estimated Maximum Possible Concentration (EMPC).
- * Toxicity Equivalency (TEF) and Isomer Specificity.
- * Required Sample Reruns & Second Column Confirmation.
- * Dilutions.

* = All criteria were met for this parameter.
NA = Not Applicable.

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Overall Evaluation of Data and Potential Usability Issues

Dioxin/Furans:

Dioxin/furan sample results were qualified as follows:

- Total TCDF has been qualified as undetected (UJ) in samples 2102205, 2102206, 2102207, 2102208, 2102212, 2102220, 2102221, 2102222, 2102223 and 2102224 due to method blank contamination.
- 2378-TCDD, 2378-TCDF, 12378-PeCDD and 123678-HxCDD have been qualified as estimated (J/UJ) in sample 2102206 due to low internal standard recoveries.
- 2378-TCDF has been qualified as estimated (J) in sample 2102210 due to a low internal standard recovery.
- OCDD has been qualified as estimated (J) in sample 2102212 due to a low internal standard recovery.
- 2378-TCDF, 12378-PeCDD and OCDD have been qualified as estimated (J/UJ) in sample 2102215 due to low internal standard recoveries.
- 2378-TCDF has been qualified as estimated (UJ) in sample 2102219 due to a low internal standard recovery.
- The concentration of several analytes in several samples exceeded the linear range of the initial calibration curve but according to the case narrative, did not saturate the instrument detector. The laboratory flagged these results with an (E) and the reviewer further qualified as estimated (J).

Blanks

The contamination detected in the blanks which resulted in qualification are summarized in the following section:

Blank	Date Extracted	Compound	Conc. pg/g	Action Level pg/g
E0A6A1AA	04/23/02	Total TCDF	11	55

- Total TCDF has been qualified as undetected (UJ) in samples 2102205, 2102206, 2102207, 2102208, 2102212, 2102220, 2102221, 2102222, 2102223 and 2102224.

Internal/Clean-up/Recovery Standards

Sample	Internal Standard	%R	Action
2102206	$^{13}C_{12}$-2378-TCDD $^{13}C_{12}$-2378-TCDF $^{13}C_{12}$-12378-PeCDD $^{13}C_{12}$-123678-HxCDD	35% 19% 32% 36%	J/UJ
2102210	$^{13}C_{12}$-2378-TCDF	31%	J/UJ
2102212	$^{13}C_{12}$-OCDD	31%	J/UJ

Sample	Internal Standard	%R	Action
2102215	$^{13}C_{12}$-2378-TCDF $^{13}C_{12}$-12378-PeCDD $^{13}C_{12}$-OCDD	23% 36% 39%	J/UJ
2102219	$^{13}C_{12}$-2378-TCDF	38%	J/UJ

- 2378-TCDD, 2378-TCDF, 12378-PeCDD and 123678-HxCDD have been qualified as estimated (J/UJ) in sample 2102206.
- 2378-TCDF has been qualified as estimated (J) in sample 2102210.
- OCDD has been qualified as estimated (J) in sample 2102212.
- 2378-TCDF, 12378-PeCDD and OCDD have been qualified as estimated (J/UJ) in sample 2102215.
- 2378-TCDF has been qualified as estimated (UJ) in sample 2102219.

Additional Comments

- The concentration of several analytes in several samples exceeded the linear range of the initial calibration curve but according to the case narrative, did not saturate the instrument detector. The laboratory flagged these results with an (E) and the reviewer further qualified as estimated (J).
- An aqueous PE sample (2102253) and a soil PE sample (2102252) (SDG G2D130158) were analyzed with this project. According to the client, Cambridge Analytical Isotopes did not provide a range of values for the aqueous PE sample. A range of expected values was provided for the soil PE sample and all results were acceptable and within the range. No action was taken by the reviewer on the basis of the PE samples. A copy of the Form Is for both PE samples, as well as Table 1 - Summary of Quality Assurance/Quality Control Sample Results is attached to this report.

Please contact the undersigned at (603) 226-0118 if you have any questions or need further information.

Very truly yours,
Environmental Data Services, Inc.

Nancy Weaver
Senior Chemist

Attachments: Data Validation Worksheets
Annotated Form Is

DATA SUMMARY KEY
ORGANIC DATA VALIDATION

J = The associated numerical value is an estimated quantity.

R = The data are unusable (compound may or may not be present). Resampling and reanalysis are necessary for verification. The R replaces the numerical value or sample quantitation limit.

U = The compound was analyzed for, but not detected. The associated numerical value is the sample quantitation limit or the adjusted sample quantitation limit.

UJ = The compound was analyzed for, but not detected. The associated numerical value is the estimated sample quantitation limit.

EB = The compound was detected in aqueous equipment blank associated soil/sediment samples.

Region I
Data Review Worksheets

Site Name: Centredale Mano
Reference Number: —

DIOXIN DATA REVIEW WORKSHEET
(LOW or HIGH RESOLUTION)

The following data package has been validated:

Lab Name: Severn Trent West Sacramento, CA
DAS/Project No: Centredale Manor
SDG No. GZD130156
No. of Samples/Matrix 23 Soil / Aqueous

Tech. Spec./Method No. 8290 High Res. Dioxin/Fu
Sampling Date(s) 4/10/02
Shipping Date(s) 4/10/02
Date(s) Rec'd by Lab 4/13/02

Traffic Report Sample Nos. 2102205, 2102206, 2102207, 2102208, 2102209, 2102210, 2102211, 2102212, 2102213, 2102214, 2102215, 2102216, 2102217, 2102218, 2102219, 2102220 2102221, 2102222, 2102223, 2102224, 2102225, 2102226, 2102227, 2102251
Equipment Blank Nos. 2102251
Field Duplicate Nos. —
PES Nos. —

The Region I, EPA-NE Data Validation Functional Guidelines for Evaluating Dioxin/Furan Analyses, November 1998 and Region I, EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses, December 1996 were used to evaluate the data and/or approved modifications to the Functional Guidelines were used to evaluate the data. (Attach modified criteria from EPA approved QAPjP or amendment to QAPjP).

The general criteria used to determine the performance were based on an examination of:

- Overall Evaluation of Data
- Data Completeness
- Preservation/Technical Holding Times
- PE Samples/Accuracy Check
- Window Defining Mix
- Initial & Continuing Calibrations
- Chromatographic Resolution
- Instrument Sensitivity Check
- Blanks
- Matrix Spike Analysis
- Laboratory & Field Duplicate Analysis
- Internal/Clean-up/Recovery Standards
- Sample Analysis & Identification
- Sample Quantitation & Total Homologues
- Estimated Detection Limit (EDL) & Estimated Maximum Possible Concentration (EMPC)
- Toxicity Equivalency Factor (TEF) & Isomer Specificity
- Required Sample Reruns & Second Column Confirmation
- Dilutions

Definition of Qualifiers:

A - Acceptable data
J - Approximate data due to quality control criteria
R - Reject data due to quality control criteria
U - Result not detected
EB - Compound detected in aqueous equipment blank associated with soil/sediment samples

Validator: Nancy Weaver

Date: May 22, 2002

Region I
Data Review Worksheet - (Low and High Resolution)

I. DATA COMPLETENESS

MISSING INFORMATION	DATE LAB CONTACTED	DATE RECEIVED
all criteria were met.		

Add'l. comments: The concentration of some analytes in the samples exceeded the linear range of the initial calibration curve, but according to the case narrative did not saturate the instrument detector. The laboratory flagged these results (E) and the reviewer further qualified (J).

Reviewer: Nancy Weaver

Date: 5/22/02

11/98

Region I
Data Review Worksheet - (Low and High Resolution)

II. PRESERVATION AND HOLDING TIMES

Sampler: JC Company: Loureiro Eng. Contacted Yes No Date: _____

1. Circle sample numbers with exceeded contract holding times or omitted preservation.

Sample Number	Matrix	Preserved Y/N	Date Sampled	Date Extracted	Date Analyzed	Action
2102205	Soil	N	4/10/02	4/23/02	4/26/02	None
2102206				"	"	
2102207				"	"	
2102208				"	"	
2102209				"	"	
2102210				"	"	
2102211				"	"	
2102212				"	"	
2102213				4/27/02	4/29/02	
2102214				4/25/02	4/28/02	
2102215				4/23/02	4/27/02	
2102216				"	"	
2102217				"	"	
2102218				"	"	
2102219				"	"	
2102220				"	"	
2102221				"	"	
2102222				"	"	

Validator: Nancy Weaver

Date: 5/22/02

Region I
Data Review Worksheet - (Low and High Resolution)

II. PRESERVATION AND HOLDING TIMES

Sampler: JC Company Loureiro ENG Contacted Yes (No) Date: _____

1. Circle sample numbers with exceeded contract holding times or omitted preservation.

Sample Number	Matrix	Preserved Y/N	Date Sampled	Date Extracted	Date Analyzed	Action
2102223	Soil	N	4/10/02	4/23/02	4/27/02	None
2102224				"	"	
2102225				"	"	
2102226				"	"	
2102227				4/27/02	4/29/02	
2102251	Aqueous			4/16/02	4/18/02	

Validator: Nancy Weaver

Date: 5/22/02

11/98

Region I
Data Review Worksheet - (Low and High Resolution)

III. ACCURACY CHECK (Performance Evaluation Results) - List all analytes that are outside criteria.

SDG No: G2D130156 CASE/PROJECT No: Centredale Manor

Are more than one-half of the PES analytes within criteria for each parameter. (Y) N

PE Sample Number	Ampule Number	Type of PES	Matrix	Analyte	Conc	Region I EPA PES Scores*	Non-EPA PES Scores**	Samples Affected	Action
E0A6A1AC	—	LCS	Soil	all ok	ok	(60-140)	—	all soil	None
E0D611AC	—	"	"	"	ok "	"	—	" "	None
E0A6D1AC	—	"	"	"	"	(60-140)	—	all soil	None
E0KL31AC	—	"	"	"	"	"	—	"	None
EX1CP1AC	—	"	Aqueous	"	"	"	—	all water	None

* For Region I PESs indicate the Region I PES Score Report Results: Action Low; Action High; TCL MISS; TCL CONTAMINANT

** For Non-EPA PESs indicate the Non-EPA PES Score: PES COMPOUND MISS; PES COMPOUND CONTAMINANT; PES COMPOUND HIT (% Recovery Limits)

Validator: LWeaver

Date: 5/22/02

Region I
Data Review Worksheets - (Low or High Resolution)

V. INITIAL AND CONTINUING CALIBRATIONS

Va. INITIAL CALIBRATION

Date of ICAL	Instrument File Name	Compound	%RSD	Ion Ratio	S/N	RT	Resolution	Samples Affected	Action
4/29/02	26AP021D2	all	all	all	all	all	all ok	all Samples	None
4/26/02	05MR021D2	cmpds	ok	ok	ok	ok			
4/27/02	26AP021D2								
4/28/02	26AP021D2								
4/26/02	26AP025D5								
4/28/02	28AP027D5								
4/26/02	07MR029D5								
4/27/02	07MR029D5								
4/27/02	23AP029D5								
3/6/02	05MR021D2								

Comments:
4/24/02 23AP 025D5
4/20/02 19AP027D5
4/23/02 23AP 029D5
4/17/02 17AP028SD5
4/21/02 21MR025D5

Validator: Nancy Weaver

Date: 5/22/02

Region I
Data Review Worksheets - (Low or High Resolution)

V. INITIAL AND CONTINUING CALIBRATIONS Continued

Vb. CONTINUING CALIBRATION

Date of CCAL	Instrument File Name	Compound	%D	Ion Ratio	S/N	RT	Resolution	Samples Affected	Action
4/29/02	29AP021D2	all	all	all	all	all	all	all samples	None
4/26/02	26AP021D2	cmpds	ok	ok	ok	ok	ok		
4/27/02	26AP021D2								
4/28/02	26AP021D2								
4/28/02	28AP027D5								
4/26/02	26AP029D5								
4/27/02	26AP029D5								
4/27/02	27AP029D5								
4/17/02	17AP02B5D5								
4/18/02	17AP02C5D5								

Comments: all pass

Validator: Nancy Weaver

Date: 5/22/02

VI. COLUMN PERFORMANCE RESOLUTION CHECK

Date:_____ ID:_____

Was the chromatographic resolution of the TCDD/TCDF isomers and the in the CC3 solution for DB-5 columns calculated for each 12 hour period?

% Valley _____-TCDD/_____-TCDD_____ (QC Limit ≤ 25%)

% Valley _____-TCDF/_____-TCDF_____ (QC Limit ≤ 50%)

All Pass

For DB-225 columns:

% Valley _____-TCDD/_____-TCDD_____ (QC Limit ≤ 25%)

% Valley _____-TCDF/_____-TCDF_____ (QC Limit ≤ 50%)

ACTIONS:

A. If the GC resolution criteria do not meet specifications, the positive hits will be qualified as "J". All tetras and hexas (for both di and furans) will be qualified. The heptas are not believed to be affected. OCDD and OCDF are not affected as there is only one isomer in each group. No action is taken for non-detects.

B. The criteria for chromatographic resolution must be met for all standards and the reviewer must use professional judgement on the severity of the problem and its effect on the final results.

Validator: M Weaver

Date: 5/22/02

Region I
Data Review Worksheets - (Low and High Resolution)

VIIa. BLANKS ANALYSIS

Was a method blank prepared and analyzed for each matrix prior to analysis of sample? Yes [X] No [ ]

List the blank contamination below.

Sampler: JC Company: Loureiro Eng. Contacted: Yes (No) Date:

1. Laboratory: Method and Instrument Blanks

Date Extracted	Date Analyzed	Matrix	Sample No. (Blank Type)	Instrument	Compound	Conc. (units)
4/23/02	4/26/02	Soil	E0A6A1AA	HRGC/HRMS	Total TCDF	11 pg/g
"	"	"	E0A6D1AA	"	all ND	—
4/25/02	4/27/02	"	E0D61AA	"	all ND	—
4/27/02	4/28/02	"	E0KL31AA	"	all ND	—
4/16/02	4/18/02	Water	EXICP1AA	"	all ND	—

* see Next page.

2. Field: Equipment (Rinsate) Blanks

Date Extracted	Date Analyzed	Matrix	Sample No. (Blank Type)	Instrument	Compound	Conc. (units)
4/16/02	4/18/02	aq	2102251 (ER)	HRGC/HRMS	all ND	—

Validator: Nancy Weaver Date: 5/22/02

Data Review Worksheets - (Low and High Resolution) Continued

VIIb. BLANKS ANALYSIS

Compound	Type of Blank	Date Blank Sample/Originated	Max Conc. (units)	Action Level (units)	Samples Affected	Action
*Total	EQA6A1AA	4/23/02 ext	11 pg/g	55 pg/g	2102205	UJ
TCDF					2102206	UJ
(prep Batch 2113441)					2102207	UJ
					2102208	UJ
					2102212	UJ
					2102220	UJ
					2102221	UJ
					2102222	UJ
					2102223	UJ
					2102224	UJ

ACTIONS:

A. If no blank is run with a particular matrix, the non-detected results should be accepted without qualifying the data and the positive hits should be flagged "J". If all samples have the same hits with similar concentrati and no blank is run, professional judgment should be used to determine if all results should be rejected "R".

B. If a blank is contaminated above the specified limits, any sample hits reported as below the action level are to be reported as non-detected, and not included in the TEF calculations. All data that are not greater tha times the blank action level are to be reported as non-detected. If the detected analyte is OCDD/OCDF or a Total Homologue all data that are not greater than 10 times the blank are to be reported as non-detects.

C. If positive results are detected in aqueous equipment (rinsate) blanks and the associated non-aqueous samples, then the validator should flag (ED) those detected compounds in the associated non-aqueous sample: indicate an indeterminate amount of sampling error has potentially affected the sample results.

Validator: Nancy Weaver

Date 5/22/02

Region I
Data Review Worksheet - (Low and High Resolution)

VIII. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

List all MS/MSD analytes that are outside method QC acceptance criteria. 2102222

Compound	MS % Rec	MSD % Rec	RPD	Method QC Limits		Concentration			%RSD	Action
				% Rec	RPD	Unspiked Sample	MS	MSD		
2378-TCDD										
2378-TCDF										
12378-PeCDF										
12378-PeCDD										
23478-PeCDF										
123478-HxCDF										
123678-HxCDF										
123478-HxCDD										
123678-HxCDD										
123789-HxCDD										
234678-HxCDF										
123789-HxCDF										
1234678-HpCDF										
1234678-HpCDD										
1234789-HpCDF										
OCDD										
OCDF										

All Pass

Default Limits: % Recovery (50-150%), RPD (50%)

ACTIONS:

If recoveries are beyond 50-150%, recheck all calculations. Professional judgment should be used to flag sample data.

Validator: Nancy Weaver

Date: 5/22/02

Region I
Data Review Worksheets - (High Resolution)

Xb. INTERNAL STANDARD RECOVERY

Recovery Acceptance Criteria per Table 10 in Dioxin Validation SOP:

Sample Nos.	2102206				2102210				2102212			
Internal Standard	% Rec.	S/N	QC Range (%)	Action	% Rec.	S/N	QC Range (%)	Action	% Rec.	S/N	QC Range (%)	Action
$^{13}C_{12}$-2378-TCDD	35%	ok	40-135	(J/UJ)								
$^{13}C_{12}$-2378-TCDF	19%	ok	"	(J/UJ)	31%	ok	40-135	(J/UJ)				
$^{13}C_{12}$-12378-PeCDD	32%	ok	40-135	(J/UJ)								
$^{13}C_{12}$-12378-PeCDF												
$^{13}C_{12}$-23478-PeCDF												
$^{13}C_{12}$-123478-HxCDD												
$^{13}C_{12}$-123678-HxCDD	36%	ok	40-135	(J/UJ)								
$^{13}C_{12}$-123789-HxCDD												
$^{13}C_{12}$-123478-HxCDF												
$^{13}C_{12}$-123678-HxCDF												
$^{13}C_{12}$-123789-HxCDF												
$^{13}C_{12}$-234678-HxCDF												
$^{13}C_{12}$-1234678-HpCDD												
$^{13}C_{12}$-1234678-HpCDF												
$^{13}C_{12}$-1234789-HpCDF												
$^{13}C_{12}$-OCDD									31%	ok	40-135	(J/UJ)
$^{37}Cl_4$-2378-TCDD												

Validator: Nancy Weaver

Date: 5/22/02

Region I
Data Review Worksheets - (High Resolution)

Xb. INTERNAL STANDARD RECOVERY

Recovery Acceptance Criteria per Table 10 in Dioxin Validation SOP:

Sample Nos.	2102215				2102219							
Internal Standard	% Rec.	S/N	QC Range (%)	Action	% Rec.	S/N	QC Range (%)	Action	% Rec.	S/N	QC Range (%)	Action
$^{13}C_{12}$-2378-TCDD												
$^{13}C_{12}$-2378-TCDF	23%	ok	40-135	(J/UJ)	38%	ok	40-135	(J/UJ)				
$^{13}C_{12}$-12378-PeCDD	36%	ok	40-135	(J/UJ)								
$^{13}C_{12}$-12378-PeCDF												
$^{13}C_{12}$-23478-PeCDF												
$^{13}C_{12}$-123478-HxCDD												
$^{13}C_{12}$-123678-HxCDD												
$^{13}C_{12}$-123789-HxCDD												
$^{13}C_{12}$-123478-HxCDF												
$^{13}C_{12}$-123678-HxCDF												
$^{13}C_{12}$-123789-HxCDF												
$^{13}C_{12}$-234678-HxCDF												
$^{13}C_{12}$-1234678-HpCDD												
$^{13}C_{12}$-1234678-HpCDF												
$^{13}C_{12}$-1234789-HpCDF												
$^{13}C_{12}$-OCDD	39%	ok	40-135	(J/UJ)								
$^{37}Cl_4$-2378-TCDD												

Validator: Nancy Weaver

Date: 5/22/02

Region I
Data Review Worksheet - (High Resolution)

XI. Sample Analysis and Identification

List any sample and analytes which did not meet identification criteria:

SAMPLE Nos						
NATIVE ANALYTES	RT	S/N	Ion Ratio	RT	S/N	Ion Ratio
2378-TCDD						
2378-TCDF						
12378-PeCDF						
12378-PeCDD						
23478-PeCDF						
123478-HxCDF						
123678-HxCDF						
123478-HxCDD						
123678-HxCDD						
123789-HxCDD						
234678-HxCDF						
123789-HxCDF						
1234678-HpCDF						
1234678-HpCDD						
1234789-HpCDF						
OCDD						
OCDF						
INTERNAL STANDARDS VS RECOVERY STANDARDS						
^{13}C-2378-TCDD						
^{13}C-2378-TCDF						
^{13}C-12378-PeCDD						
^{13}C-12378-PeCDF						
^{13}C-123478-HxCDD						
^{13}C-123678-HxCDD						
^{13}C-123478-HxCDF						
^{13}C-123678-HxCDF						
^{13}C-123789-HxCDF						
^{13}C-234678-HxCDF						
^{13}C-1234678-HpCDD						
^{13}C-1234678-HpCDF						
^{13}C-1234789-HpCDF						
^{13}C-OCDD						
^{37}Cl-2378-TCDD						
RECOVERY STANDARDS						
^{13}C-1234-TCDD						
^{13}C-123789-HxCDD						

All Pass

Validator: Nancy Weaver

Date: 5/22/02

11/98

XII. SAMPLE CALCULATION 2102206

$$2378\text{-TCDD} = \frac{130655 \times 2000}{17929810 \times 10 \times 1.01 \times 0.80}$$

$$= 1.80 \approx 1.8 \text{ pg/g}$$

$$\text{Concentration (ng/g)} = \frac{Q_{is} \times (A_{x1} + A_{x2}) \times D}{(W \text{ or } V) \times (A_{is1} + A_{is2}) \times RRF_x}$$

$$EDL = \frac{2.5 \times Q_{is} \times (H_{x1} + H_{x2}) \times D}{(W \text{ or } V) \times (H_{is1} + H_{is2}) \times RRF_x}$$

$$EMPC = \frac{Q_{is} \times (A_{x1} + A_{x2}) \times D}{(W \text{ or } V) \times (A_{is1} + A_{is2}) \times RRF_x}$$

where:

Q_{is}	=	Quantity (ng) of appropriate internal standard added to sample before extraction.
A_x^1/A_x^2	=	Integrated areas of the two quantitation ions.
A_{is}^1/A_{is}^2	=	Integrated areas of the internal standard quantitation ions
W	=	Weight (g) of sample extracted.
V	=	Volume (L) of sample extracted.
RRF_x	=	Calculated relative response factor from the continuing calibration.
$H_x^1 + H_x^2$	=	Peak heights of the noise for the quantitation ions.
$H_{is}^1 + H_{is}^2$	=	Peak heights of the internal standard quantitation ions.
D	=	Dilution.

Validator: Nancy Weaver

Date: 5/22/02

LOUREIRO ENGINEERING ASSOCIATES, P.C.

Dioxins/Furans, HRGC/HRMS (8290)

Client Sample ID: 2102205

Lot-Sample #...:	G2D130156 - 001	Work Order #...:	EXWD71AC	Matrix.....:	SOLID
Date Sampled...:	04/10/02	Date Received..:	04/13/02	Instrument:	9D5
Prep Date.....:	04/23/02	Analysis Date..:	04/26/02	Units.....:	pg/g
Prep Batch #...:	2113441	Dilution Factor:	1	% Moisture:	16

PARAMETER	RESULT		DETECTION LIMIT	TEF FACTOR	TEQ CONCENTRATION
2,3,7,8-TCDD	**1.2**	**J**	**1.2**	**1.000**	**1.200000**
Total TCDD	**1.2**		**1.2**		
1,2,3,7,8-PeCDD	ND		0.24	0.500	0
Total PeCDD	ND		2.2		0
1,2,3,4,7,8-HxCDD	ND		0.32	0.100	0
1,2,3,6,7,8-HxCDD	ND		0.79	0.100	0
1,2,3,7,8,9-HxCDD	ND		0.64	0.100	0
Total HxCDD	ND		2.1		0
1,2,3,4,6,7,8-HpCDD	**22**		**6.0**	**0.010**	**0.220000**
Total HpCDD	**47**		**6.0**		
OCDD	**2400**		**12**	**0.001**	**2.400000**
2,3,7,8-TCDF	ND	CON	0.57	0.100	0
Total TCDF	**9.1** UJ		**6.0**		
1,2,3,7,8-PeCDF	ND		0.43	0.050	0
2,3,4,7,8-PeCDF	ND		0.49	0.500	0
Total PeCDF	**9.0**		**6.0**		
1,2,3,4,7,8-HxCDF	ND		1.0	0.100	0
1,2,3,6,7,8-HxCDF	ND		0.62	0.100	0
2,3,4,6,7,8-HxCDF	ND		0.74	0.100	0
1,2,3,7,8,9-HxCDF	ND		0.098	0.100	0
Total HxCDF	**3.8**		**6.0**		
1,2,3,4,6,7,8-HpCDF	**4.7**	**J**	**6.0**	**0.010**	**0.047000**
1,2,3,4,7,8,9-HpCDF	ND		0.32	0.010	0
Total HpCDF	**10**		**6.0**		
OCDF	**9.8**	**J**	**12**	**0.001**	**0.009800**
Total TEQ Concentration					**3.876800**

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	72	40 - 135
13C-1,2,3,7,8-PeCDD	75	40 - 135
13C-1,2,3,6,7,8-HxCDD	76	40 - 135
13C-1,2,3,4,6,7,8-HpCDD	81	40 - 135
13C-OCDD	85	40 - 135
13C-2,3,7,8-TCDF	68	40 - 135
13C-1,2,3,7,8-PeCDF	76	40 - 135
13C-1,2,3,4,7,8-HxCDF	80	40 - 135
13C-1,2,3,4,6,7,8-HpCDF	84	40 - 135

MW 5/22/02

LOUREIRO ENGINEERING ASSOCIATES, P.C.

Dioxins/Furans, HRGC/HRMS (8290)

Client Sample ID: 2102205

Notes:

TEF values are cited in U.S. Environmental Protection Agency, (1989) Interim procedures for estimating risks associated with exposures to mixtures of chlorinated dibenzo-p-dioxins and -dibenzofurans (CDDs and CDFs) and 1989 update. U.S. Environmental Protection Agency, Risk Assessment forum, Washington, DC; EPA/625/3-89/016.

CON	Confirmation analysis.
J	Estimated result. Result is less than the reporting limit.

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5/22/02

LOUREIRO ENGINEERING ASSOCIATES, P.C.

Dioxins/Furans, HRGC/HRMS (8290)

Client Sample ID: 2102206

Lot-Sample #...:	G2D130156 - 002	Work Order #...:	EXWD81AC	Matrix....:	SOLID
Date Sampled...:	04/10/02	Date Received..:	04/13/02	Instrument:	9D5
Prep Date.....:	04/23/02	Analysis Date..:	04/26/02	Units.....:	pg/g
Prep Batch #...:	2113441	Dilution Factor:	1	% Moisture:	20

PARAMETER	RESULT	DETECTION LIMIT	TEF FACTOR	TEQ CONCENTRATION
2,3,7,8-TCDD	**1.8 J**	**1.2**	**1.000**	**1.800000**
Total TCDD	**2.7**	**1.2**		
1,2,3,7,8-PeCDD	~~ND~~ UJ	0.47	0.500	0
Total PeCDD	ND	1.6		0
1,2,3,4,7,8-HxCDD	ND	0.21	0.100	0
1,2,3,6,7,8-HxCDD	~~ND~~ UJ	0.42	0.100	0
1,2,3,7,8,9-HxCDD	ND	0.42	0.100	0
Total HxCDD	ND	2.1		0
1,2,3,4,6,7,8-HpCDD	**28**	**6.2**	**0.010**	**0.280000**
Total HpCDD	**63**	**6.2**		
OCDD	**5100 J** ~~E~~	**12**	**0.001**	**5.100000**
2,3,7,8-TCDF	**0.80 J** ~~J~~ CON	**1.2**	**0.100**	**0.080000**
Total TCDF	**13** UJ	**1.2**		
1,2,3,7,8-PeCDF	ND	0.26	0.050	0
2,3,4,7,8-PeCDF	ND	0.34	0.500	0
Total PeCDF	**13**	**6.2**		
1,2,3,4,7,8-HxCDF	ND	0.39	0.100	0
1,2,3,6,7,8-HxCDF	ND	0.55	0.100	0
2,3,4,6,7,8-HxCDF	ND	0.16	0.100	0
1,2,3,7,8,9-HxCDF	ND	0.12	0.100	0
Total HxCDF	ND	3.0		0
1,2,3,4,6,7,8-HpCDF	ND	2.5	0.010	0
1,2,3,4,7,8,9-HpCDF	ND	0.20	0.010	0
Total HpCDF	ND	2.5		0
OCDF	ND	3.8	0.001	0
Total TEQ Concentration				**7.260000**

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	35 *	40 - 135
13C-1,2,3,7,8-PeCDD	32 *	40 - 135
13C-1,2,3,6,7,8-HxCDD	36 *	40 - 135
13C-1,2,3,4,6,7,8-HpCDD	44	40 - 135
13C-OCDD	52	40 - 135
13C-2,3,7,8-TCDF	19 *	40 - 135
13C-1,2,3,7,8-PeCDF	48	40 - 135
13C-1,2,3,4,7,8-HxCDF	52	40 - 135
13C-1,2,3,4,6,7,8-HpCDF	62	40 - 135

DEW 5/22/02

LOUREIRO ENGINEERING ASSOCIATES, P.C.

Dioxins/Furans, HRGC/HRMS (8290)

Client Sample ID: 2102206

Notes:

TEF values are cited in U.S. Environmental Protection Agency, (1989) Interim procedures for estimating risks associated with exposures to mixtures of chlorinated dibenzo-p-dioxins and -dibenzofurans (CDDs and CDFs) and 1989 update. U.S. Environmental Protection Agency, Risk Assessment forum, Washington, DC; EPA/625/3-89/016.

*	Surrogate recovery is outside stated control limits.
CON	Confirmation analysis.
E	Estimated result. Result concentration exceeds the calibration range.
J	Estimated result. Result is less than the reporting limit.

MW 5/22/02

LOUREIRO ENGINEERING ASSOCIATES, P.C.

Dioxins/Furans, HRGC/HRMS (8290)

Client Sample ID: 2102207

Lot-Sample #...:	G2D130156 - 003	Work Order #...:	EXWD91AC	Matrix....:	SOLID
Date Sampled...:	04/10/02	Date Received..:	04/13/02	Instrument:	9D5
Prep Date.....:	04/23/02	Analysis Date..:	04/26/02	Units.....:	pg/g
Prep Batch #...:	2113441	Dilution Factor:	1	% Moisture:	22

PARAMETER	RESULT		DETECTION LIMIT	TEF FACTOR	TEQ CONCENTRATION
2,3,7,8-TCDD	**1.2**	**J**	**1.3**	**1.000**	**1.200000**
Total TCDD	**2.9**		**1.3**		
1,2,3,7,8-PeCDD	ND		0.37	0.500	0
Total PeCDD	ND		3.2		0
1,2,3,4,7,8-HxCDD	ND		0.41	0.100	0
1,2,3,6,7,8-HxCDD	ND		2.4	0.100	0
1,2,3,7,8,9-HxCDD	ND		1.1	0.100	0
Total HxCDD	**11**		**6.4**		
1,2,3,4,6,7,8-HpCDD	**25**		**6.4**	**0.010**	**0.250000**
Total HpCDD	**56**		**6.4**		
OCDD	**240**		**13**	**0.001**	**0.240000**
2,3,7,8-TCDF	**1.4**	**CON**	**1.3**	**0.100**	**0.140000**
Total TCDF	**15** UJ		**1.3**		
1,2,3,7,8-PeCDF	ND		0.64	0.050	0
2,3,4,7,8-PeCDF	ND		0.92	0.500	0
Total PeCDF	**17**		**6.4**		
1,2,3,4,7,8-HxCDF	ND		2.4	0.100	0
1,2,3,6,7,8-HxCDF	ND		1.2	0.100	0
2,3,4,6,7,8-HxCDF	ND		1.3	0.100	0
1,2,3,7,8,9-HxCDF	ND		0.45	0.100	0
Total HxCDF	**16**		**6.4**		
1,2,3,4,6,7,8-HpCDF	**8.0**		**6.4**	**0.010**	**0.080000**
1,2,3,4,7,8,9-HpCDF	ND		0.63	0.010	0
Total HpCDF	**18**		**6.4**		
OCDF	**18**		**13**	**0.001**	**0.018000**
Total TEQ Concentration					**1.928000**

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	81	40 - 135
13C-1,2,3,7,8-PeCDD	83	40 - 135
13C-1,2,3,6,7,8-HxCDD	84	40 - 135
13C-1,2,3,4,6,7,8-HpCDD	89	40 - 135
13C-OCDD	85	40 - 135
13C-2,3,7,8-TCDF	74	40 - 135
13C-1,2,3,7,8-PeCDF	84	40 - 135
13C-1,2,3,4,7,8-HxCDF	82	40 - 135
13C-1,2,3,4,6,7,8-HpCDF	88	40 - 135

5/22/02

LOUREIRO ENGINEERING ASSOCIATES, P.C.

Dioxins/Furans, HRGC/HRMS (8290)

Client Sample ID: 2102207

Notes:

TEF values are cited in U.S. Environmental Protection Agency, (1989) Interim procedures for estimating risks associated with exposures to mixtures of chlorinated dibenzo-p-dioxins and -dibenzofurans (CDDs and CDFs) and 1989 update. U.S. Environmental Protection Agency, Risk Assessment forum, Washington, DC; EPA/625/3-89/016.

CON	Confirmation analysis.
J	Estimated result. Result is less than the reporting limit.

JW
5/22/02

LOUREIRO ENGINEERING ASSOCIATES, P.C.

Dioxins/Furans, HRGC/HRMS (8290)

Client Sample ID: 2102208

Lot-Sample #...:	G2D130156 - 004	Work Order #...:	EXWEA1AC	Matrix....:	SOLID
Date Sampled...:	04/10/02	Date Received..:	04/13/02	Instrument:	9D5
Prep Date.....:	04/23/02	Analysis Date..:	04/26/02	Units.....:	pg/g
Prep Batch #...:	2113441	Dilution Factor:	1	% Moisture:	18

PARAMETER	RESULT		DETECTION LIMIT	TEF FACTOR	TEQ CONCENTRATION
2,3,7,8-TCDD	**1.1**	**J**	**1.2**	**1.000**	**1.100000**
Total TCDD	**4.4**		**1.2**		
1,2,3,7,8-PeCDD	ND		0.23	0.500	0
Total PeCDD	ND		3.2		0
1,2,3,4,7,8-HxCDD	ND		0.83	0.100	0
1,2,3,6,7,8-HxCDD	**3.6**	**J**	**6.1**	**0.100**	**0.360000**
1,2,3,7,8,9-HxCDD	ND		2.0	0.100	0
Total HxCDD	**25**		**6.1**		
1,2,3,4,6,7,8-HpCDD	**71**		**6.1**	**0.010**	**0.710000**
Total HpCDD	**240**		**6.1**		
OCDD	**700**		**12**	**0.001**	**0.700000**
2,3,7,8-TCDF	**1.0**	**J CON**	**1.2**	**0.100**	**0.100000**
Total TCDF	**23** UJ		**1.2**		
1,2,3,7,8-PeCDF	ND		0.75	0.050	0
2,3,4,7,8-PeCDF	ND		1.3	0.500	0
Total PeCDF	**24**		**6.1**		
1,2,3,4,7,8-HxCDF	ND		2.5	0.100	0
1,2,3,6,7,8-HxCDF	ND		1.6	0.100	0
2,3,4,6,7,8-HxCDF	ND		1.3	0.100	0
1,2,3,7,8,9-HxCDF	ND		0.17	0.100	0
Total HxCDF	**18**		**6.1**		
1,2,3,4,6,7,8-HpCDF	**11**		**6.1**	**0.010**	**0.110000**
1,2,3,4,7,8,9-HpCDF	ND		1.1	0.010	0
Total HpCDF	**29**		**6.1**		
OCDF	**32**		**12**	**0.001**	**0.032000**
Total TEQ Concentration					**3.112000**

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	70	40 - 135
13C-1,2,3,7,8-PeCDD	71	40 - 135
13C-1,2,3,6,7,8-HxCDD	75	40 - 135
13C-1,2,3,4,6,7,8-HpCDD	75	40 - 135
13C-OCDD	73	40 - 135
13C-2,3,7,8-TCDF	62	40 - 135
13C-1,2,3,7,8-PeCDF	72	40 - 135
13C-1,2,3,4,7,8-HxCDF	76	40 - 135
13C-1,2,3,4,6,7,8-HpCDF	80	40 - 135

JLW 5/22/02

LOUREIRO ENGINEERING ASSOCIATES, P.C.

Dioxins/Furans, HRGC/HRMS (8290)

Client Sample ID: 2102208

Notes:

TEF values are cited in U.S. Environmental Protection Agency, (1989) Interim procedures for estimating risks associated with exposures to mixtures of chlorinated dibenzo-p-dioxins and -dibenzofurans (CDDs and CDFs) and 1989 update. U.S. Environmental Protection Agency, Risk Assessment forum, Washington, DC; EPA/625/3-89/016.

CON	Confirmation analysis.
J	Estimated result. Result is less than the reporting limit.

JW 5/22/02

LOUREIRO ENGINEERING ASSOCIATES, P.C.

Dioxins/Furans, HRGC/HRMS (8290)

Client Sample ID: 2102209

Lot-Sample #...:	G2D130156 - 005	Work Order #...:	EXWEC1AC	Matrix....:	SOLID
Date Sampled...:	04/10/02	Date Received..:	04/13/02	Instrument:	9D5
Prep Date.....:	04/23/02	Analysis Date..:	04/26/02	Units.....:	pg/g
Prep Batch #...:	2113441	Dilution Factor:	1	% Moisture:	30

PARAMETER	RESULT	DETECTION LIMIT	TEF FACTOR	TEQ CONCENTRATION
2,3,7,8-TCDD	230	1.4	1.000	230.000000
Total TCDD	240	1.4		
1,2,3,7,8-PeCDD	9.7	7.1	0.500	4.800000
Total PeCDD	20	7.1		
1,2,3,4,7,8-HxCDD	20	7.1	0.100	2.000000
1,2,3,6,7,8-HxCDD	54	7.1	0.100	5.400000
1,2,3,7,8,9-HxCDD	49	7.1	0.100	4.900000
Total HxCDD	360	7.1		
1,2,3,4,6,7,8-HpCDD	1600	7.1	0.010	16.000000
Total HpCDD	2700	7.1		
OCDD	9600 J ~~E~~	14	0.001	9.600000
2,3,7,8-TCDF	6.0 CON	1.4	0.100	0.600000
Total TCDF	79	1.4		
1,2,3,7,8-PeCDF	ND	2.9	0.050	0
2,3,4,7,8-PeCDF	7.4	7.1	0.500	3.700000
Total PeCDF	100	7.1		
1,2,3,4,7,8-HxCDF	16	7.1	0.100	1.600000
1,2,3,6,7,8-HxCDF	12	7.1	0.100	1.200000
2,3,4,6,7,8-HxCDF	8.1	7.1	0.100	0.810000
1,2,3,7,8,9-HxCDF	ND	0.19	0.100	0
Total HxCDF	230	7.1		
1,2,3,4,6,7,8-HpCDF	180	7.1	0.010	1.800000
1,2,3,4,7,8,9-HpCDF	12	7.1	0.010	0.120000
Total HpCDF	420	7.1		
OCDF	340	14	0.001	0.340000
Total TEQ Concentration				282.870000

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	80	40 - 135
13C-1,2,3,7,8-PeCDD	73	40 - 135
13C-1,2,3,6,7,8-HxCDD	82	40 - 135
13C-1,2,3,4,6,7,8-HpCDD	80	40 - 135
13C-OCDD	88	40 - 135
13C-2,3,7,8-TCDF	77	40 - 135
13C-1,2,3,7,8-PeCDF	75	40 - 135
13C-1,2,3,4,7,8-HxCDF	76	40 - 135
13C-1,2,3,4,6,7,8-HpCDF	82	40 - 135

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LOUREIRO ENGINEERING ASSOCIATES, P.C.

Dioxins/Furans, HRGC/HRMS (8290)

Client Sample ID: 2102209

Notes:

TEF values are cited in U.S. Environmental Protection Agency, (1989) Interim procedures for estimating risks associated with exposures to mixtures of chlorinated dibenzo-p-dioxins and -dibenzofurans (CDDs and CDFs) and 1989 update. U.S. Environmental Protection Agency, Risk Assessment forum, Washington, DC; EPA/625/3-89/016.

CON	Confirmation analysis.
E	Estimated result. Result concentration exceeds the calibration range.

MW 5/22/02

LOUREIRO ENGINEERING ASSOCIATES, P.C.

Dioxins/Furans, HRGC/HRMS (8290)

Client Sample ID: 2102210

Lot-Sample #...:	G2D130156 - 006	Work Order #...:	EXWED1AC	Matrix.....:	SOLID
Date Sampled...:	04/10/02	Date Received..:	04/13/02	Instrument:	9D5
Prep Date.....:	04/23/02	Analysis Date..:	04/26/02	Units.....:	pg/g
Prep Batch #...:	2113441	Dilution Factor:	1	% Moisture:	42

PARAMETER	RESULT		DETECTION LIMIT	TEF FACTOR	TEQ CONCENTRATION
2,3,7,8-TCDD	730 J	E	1.7	1.000	730.000000
Total TCDD	770		1.7		
1,2,3,7,8-PeCDD	ND		1.2	0.500	0
Total PeCDD	18		8.6		
1,2,3,4,7,8-HxCDD	30		8.6	0.100	3.000000
1,2,3,6,7,8-HxCDD	77		8.6	0.100	7.700000
1,2,3,7,8,9-HxCDD	68		8.6	0.100	6.800000
Total HxCDD	510		8.6		
1,2,3,4,6,7,8-HpCDD	1900		8.6	0.010	19.000000
Total HpCDD	3400		8.6		
OCDD	12000 J	E	17	0.001	12.000000
2,3,7,8-TCDF	17 J	CON	1.7	0.100	1.700000
Total TCDF	380		1.7		
1,2,3,7,8-PeCDF	4.9	J	8.6	0.050	0.240000
2,3,4,7,8-PeCDF	7.9	J	8.6	0.500	3.900000
Total PeCDF	260		8.6		
1,2,3,4,7,8-HxCDF	16		8.6	0.100	1.600000
1,2,3,6,7,8-HxCDF	13		8.6	0.100	1.300000
2,3,4,6,7,8-HxCDF	4.9	J	8.6	0.100	0.490000
1,2,3,7,8,9-HxCDF	ND		0.17	0.100	0
Total HxCDF	320		8.6		
1,2,3,4,6,7,8-HpCDF	130		8.6	0.010	1.300000
1,2,3,4,7,8,9-HpCDF	7.5	J	8.6	0.010	0.075000
Total HpCDF	290		8.6		
OCDF	230		17	0.001	0.230000
Total TEQ Concentration					789.335000

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	54	40 - 135
13C-1,2,3,7,8-PeCDD	49	40 - 135
13C-1,2,3,6,7,8-HxCDD	54	40 - 135
13C-1,2,3,4,6,7,8-HpCDD	62	40 - 135
13C-OCDD	74	40 - 135
13C-2,3,7,8-TCDF	31 *	40 - 135
13C-1,2,3,7,8-PeCDF	64	40 - 135
13C-1,2,3,4,7,8-HxCDF	66	40 - 135
13C-1,2,3,4,6,7,8-HpCDF	73	40 - 135

5/22/02

LOUREIRO ENGINEERING ASSOCIATES, P.C.

Dioxins/Furans, HRGC/HRMS (8290)

Client Sample ID: 2102210

Notes:

TEF values are cited in U.S. Environmental Protection Agency, (1989) Interim procedures for estimating risks associated with exposures to mixtures of chlorinated dibenzo-p-dioxins and -dibenzofurans (CDDs and CDFs) and 1989 update. U.S. Environmental Protection Agency, Risk Assessment forum, Washington, DC; EPA/625/3-89/016.

*	Surrogate recovery is outside stated control limits.
CON	Confirmation analysis.
E	Estimated result. Result concentration exceeds the calibration range.
J	Estimated result. Result is less than the reporting limit.

5/22/02

LOUREIRO ENGINEERING ASSOCIATES, P.C.

Dioxins/Furans, HRGC/HRMS (8290)

Client Sample ID: 2102211

Lot-Sample #...:	G2D130156 - 007	Work Order #...:	EXWEE1AC	Matrix....:	SOLID
Date Sampled...:	04/10/02	Date Received..:	04/13/02	Instrument:	9D5
Prep Date.....:	04/23/02	Analysis Date..:	04/26/02	Units.....:	pg/g
Prep Batch #...:	2113441	Dilution Factor:	1	% Moisture:	52

PARAMETER	RESULT		DETECTION LIMIT	TEF FACTOR	TEQ CONCENTRATION
2,3,7,8-TCDD	840 J	~~J~~	2.1	1.000	840.000000
Total TCDD	920		2.1		
1,2,3,7,8-PeCDD	7.2	J	10	0.500	3.600000
Total PeCDD	44		10		
1,2,3,4,7,8-HxCDD	7.9	J	10	0.100	0.790000
1,2,3,6,7,8-HxCDD	21		10	0.100	2.100000
1,2,3,7,8,9-HxCDD	16		10	0.100	1.600000
Total HxCDD	180		10		
1,2,3,4,6,7,8-HpCDD	330		10	0.010	3.300000
Total HpCDD	610		10		
OCDD	1600		21	0.001	1.600000
2,3,7,8-TCDF	29	CON	2.1	0.100	2.900000
Total TCDF	400		2.1		
1,2,3,7,8-PeCDF	13		10	0.050	0.650000
2,3,4,7,8-PeCDF	19		10	0.500	9.500000
Total PeCDF	370		10		
1,2,3,4,7,8-HxCDF	18		10	0.100	1.800000
1,2,3,6,7,8-HxCDF	15		10	0.100	1.500000
2,3,4,6,7,8-HxCDF	12		10	0.100	1.200000
1,2,3,7,8,9-HxCDF	ND		0.64	0.100	0
Total HxCDF	260		10		
1,2,3,4,6,7,8-HpCDF	85		10	0.010	0.850000
1,2,3,4,7,8,9-HpCDF	5.5	J	10	0.010	0.055000
Total HpCDF	150		10		
OCDF	91		21	0.001	0.091000
Total TEQ Concentration					871.536000

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	78	40 - 135
13C-1,2,3,7,8-PeCDD	75	40 - 135
13C-1,2,3,6,7,8-HxCDD	76	40 - 135
13C-1,2,3,4,6,7,8-HpCDD	80	40 - 135
13C-OCDD	77	40 - 135
13C-2,3,7,8-TCDF	71	40 - 135
13C-1,2,3,7,8-PeCDF	76	40 - 135
13C-1,2,3,4,7,8-HxCDF	74	40 - 135
13C-1,2,3,4,6,7,8-HpCDF	81	40 - 135

JW
5/22/02

LOUREIRO ENGINEERING ASSOCIATES, P.C.

Dioxins/Furans, HRGC/HRMS (8290)

Client Sample ID: 2102211

Notes:

TEF values are cited in U.S. Environmental Protection Agency, (1989) Interim procedures for estimating risks associated with exposures to mixtures of chlorinated dibenzo-p-dioxins and -dibenzofurans (CDDs and CDFs) and 1989 update. U.S. Environmental Protection Agency, Risk Assessment forum, Washington, DC; EPA/625/3-89/016.

CON	Confirmation analysis.
E	Estimated result. Result concentration exceeds the calibration range.
J	Estimated result. Result is less than the reporting limit.

gw
5/22/02

LOUREIRO ENGINEERING ASSOCIATES, P.C.

Dioxins/Furans, HRGC/HRMS (8290)

Client Sample ID: 2102212

Lot-Sample #...:	G2D130156 - 008	Work Order #...:	EXWEF1AC	Matrix....:	SOLID
Date Sampled...:	04/10/02	Date Received..:	04/13/02	Instrument:	9D5
Prep Date.....:	04/23/02	Analysis Date..:	04/26/02	Units.....:	pg/g
Prep Batch #...:	2113441	Dilution Factor:	1	% Moisture:	28

PARAMETER	RESULT		DETECTION LIMIT	TEF FACTOR	TEQ CONCENTRATION
2,3,7,8-TCDD	**2.4**		**1.4**	**1.000**	**2.400000**
Total TCDD	**5.1**		**1.4**		
1,2,3,7,8-PeCDD	ND		0.24	0.500	0
Total PeCDD	ND		1.9		0
1,2,3,4,7,8-HxCDD	ND		0.28	0.100	0
1,2,3,6,7,8-HxCDD	ND		0.39	0.100	0
1,2,3,7,8,9-HxCDD	ND		0.51	0.100	0
Total HxCDD	ND		1.9		0
1,2,3,4,6,7,8-HpCDD	**5.2**	**J**	**6.9**	**0.010**	**0.052000**
Total HpCDD	**10**		**6.9**		
OCDD	**35 J**		**14**	**0.001**	**0.035000**
2,3,7,8-TCDF	**2.1**	**CON**	**1.4**	**0.100**	**0.210000**
Total TCDF	**31 UJ**		**1.4**		
1,2,3,7,8-PeCDF	ND		0.95	0.050	0
2,3,4,7,8-PeCDF	ND		0.94	0.500	0
Total PeCDF	**9.7**		**6.9**		
1,2,3,4,7,8-HxCDF	ND		1.8	0.100	0
1,2,3,6,7,8-HxCDF	ND		0.93	0.100	0
2,3,4,6,7,8-HxCDF	ND		0.48	0.100	0
1,2,3,7,8,9-HxCDF	ND		0.12	0.100	0
Total HxCDF	ND		3.0		0
1,2,3,4,6,7,8-HpCDF	**4.0**	**J**	**6.9**	**0.010**	**0.040000**
1,2,3,4,7,8,9-HpCDF	ND		0.33	0.010	0
Total HpCDF	**4.0**		**6.9**		
OCDF	ND		6.6	0.001	0
Total TEQ Concentration					**2.737000**

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	64	40 - 135
13C-1,2,3,7,8-PeCDD	55	40 - 135
13C-1,2,3,6,7,8-HxCDD	50	40 - 135
13C-1,2,3,4,6,7,8-HpCDD	46	40 - 135
13C-OCDD	31 *	40 - 135
13C-2,3,7,8-TCDF	51	40 - 135
13C-1,2,3,7,8-PeCDF	63	40 - 135
13C-1,2,3,4,7,8-HxCDF	56	40 - 135
13C-1,2,3,4,6,7,8-HpCDF	56	40 - 135

QW
5/22/02

LOUREIRO ENGINEERING ASSOCIATES, P.C.

Dioxins/Furans, HRGC/HRMS (8290)

Client Sample ID: 2102212

Notes:

TEF values are cited in U.S. Environmental Protection Agency, (1989) Interim procedures for estimating risks associated with exposures to mixtures of chlorinated dibenzo-p-dioxins and -dibenzofurans (CDDs and CDFs) and 1989 update. U.S. Environmental Protection Agency, Risk Assessment forum, Washington, DC; EPA/625/3-89/016.

*	Surrogate recovery is outside stated control limits.
CON	Confirmation analysis.
J	Estimated result. Result is less than the reporting limit.

RW
5/22/02

LOUREIRO ENGINEERING ASSOCIATES, P.C.

Dioxins/Furans, HRGC/HRMS (8290)

Client Sample ID: 2102213

Lot-Sample #...:	G2D130156 - 009	Work Order #...:	EXWEG2AC	Matrix....:	SOLID
Date Sampled...:	04/10/02	Date Received..:	04/13/02	Instrument:	7D5
Prep Date.....:	04/27/02	Analysis Date..:	04/29/02	Units.....:	pg/g
Prep Batch #...:	2117124	Dilution Factor:	1	% Moisture:	21

PARAMETER	RESULT		DETECTION LIMIT	TEF FACTOR	TEQ CONCENTRATION
2,3,7,8-TCDD	ND		0.39	1.000	0
Total TCDD	ND		0.44		0
1,2,3,7,8-PeCDD	ND		0.83	0.500	0
Total PeCDD	ND		0.83		0
1,2,3,4,7,8-HxCDD	ND		0.36	0.100	0
1,2,3,6,7,8-HxCDD	ND		0.39	0.100	0
1,2,3,7,8,9-HxCDD	ND		0.34	0.100	0
Total HxCDD	ND		0.82		0
1,2,3,4,6,7,8-HpCDD	ND		1.0	0.010	0
Total HpCDD	ND		1.2		0
OCDD	**14**		**13**	**0.001**	**0.014000**
2,3,7,8-TCDF	ND	CON	0.44	0.100	0
Total TCDF	**4.4**		**1.3**		
1,2,3,7,8-PeCDF	ND		0.42	0.050	0
2,3,4,7,8-PeCDF	ND		0.42	0.500	0
Total PeCDF	ND		1.2		0
1,2,3,4,7,8-HxCDF	ND		0.73	0.100	0
1,2,3,6,7,8-HxCDF	ND		0.34	0.100	0
2,3,4,6,7,8-HxCDF	ND		0.43	0.100	0
1,2,3,7,8,9-HxCDF	ND		0.39	0.100	0
Total HxCDF	ND		0.73		0
1,2,3,4,6,7,8-HpCDF	ND		1.4	0.010	0
1,2,3,4,7,8,9-HpCDF	ND		0.28	0.010	0
Total HpCDF	ND		1.4		0
OCDF	ND		1.2	0.001	0
Total TEQ Concentration					**0.014000**

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	78	40 - 135
13C-1,2,3,7,8-PeCDD	73	40 - 135
13C-1,2,3,6,7,8-HxCDD	82	40 - 135
13C-1,2,3,4,6,7,8-HpCDD	71	40 - 135
13C-OCDD	70	40 - 135
13C-2,3,7,8-TCDF	70	40 - 135
13C-1,2,3,7,8-PeCDF	71	40 - 135
13C-1,2,3,4,7,8-HxCDF	74	40 - 135
13C-1,2,3,4,6,7,8-HpCDF	66	40 - 135

MW 5/22/02

LOUREIRO ENGINEERING ASSOCIATES, P.C.

Dioxins/Furans, HRGC/HRMS (8290)

Client Sample ID: 2102213

Notes:

TEF values are cited in U.S. Environmental Protection Agency. (1989) Interim procedures for estimating risks associated with exposures to mixtures of chlorinated dibenzo-p-dioxins and -dibenzofurans (CDDs and CDFs) and 1989 update. U.S. Environmental Protection Agency, Risk Assessment forum, Washington, DC; EPA/625/3-89/016.

CON Confirmation analysis.

lw 5/22/02

LOUREIRO ENGINEERING ASSOCIATES, P.C.

Dioxins/Furans, HRGC/HRMS (8290)

Client Sample ID: 2102214

Lot-Sample #...:	G2D130156 - 010	Work Order #...:	EXWEH1AC	Matrix....:	SOLID
Date Sampled...:	04/10/02	Date Received..:	04/13/02	Instrument:	9D5
Prep Date.....:	04/25/02	Analysis Date..:	04/28/02	Units.....:	pg/g
Prep Batch #...:	2115093	Dilution Factor:	1	% Moisture:	26

PARAMETER	RESULT		DETECTION LIMIT	TEF FACTOR	TEQ CONCENTRATION
2,3,7,8-TCDD	**110**		**1.4**	**1.000**	**110.000000**
Total TCDD	**120**		**1.4**		
1,2,3,7,8-PeCDD	ND		1.6	0.500	0
Total PeCDD	ND		3.1		0
1,2,3,4,7,8-HxCDD	ND		2.0	0.100	0
1,2,3,6,7,8-HxCDD	**4.2**	**J**	**6.8**	**0.100**	**0.420000**
1,2,3,7,8,9-HxCDD	**5.8**	**J**	**6.8**	**0.100**	**0.580000**
Total HxCDD	**32**		**6.8**		
1,2,3,4,6,7,8-HpCDD	**90**		**6.8**	**0.010**	**0.900000**
Total HpCDD	**210**		**6.8**		
OCDD	**1100**		**2.8**	**0.001**	**1.100000**
2,3,7,8-TCDF	**2.0**	**CON**	**1.4**	**0.100**	**0.200000**
Total TCDF	**23**		**1.4**		
1,2,3,7,8-PeCDF	ND		0.90	0.050	0
2,3,4,7,8-PeCDF	ND		1.4	0.500	0
Total PeCDF	**22**		**6.8**		
1,2,3,4,7,8-HxCDF	ND		2.8	0.100	0
1,2,3,6,7,8-HxCDF	ND		1.4	0.100	0
2,3,4,6,7,8-HxCDF	ND		1.2	0.100	0
1,2,3,7,8,9-HxCDF	ND		0.37	0.100	0
Total HxCDF	**27**		**6.8**		
1,2,3,4,6,7,8-HpCDF	**11**		**6.8**	**0.010**	**0.110000**
1,2,3,4,7,8,9-HpCDF	ND		0.61	0.010	0
Total HpCDF	**20**		**6.8**		
OCDF	**18**		**0.95**	**0.001**	**0.018000**
Total TEQ Concentration					**113.328000**

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	71	40 - 135
13C-1,2,3,7,8-PeCDD	72	40 - 135
13C-1,2,3,6,7,8-HxCDD	74	40 - 135
13C-1,2,3,4,6,7,8-HpCDD	78	40 - 135
13C-OCDD	71	40 - 135
13C-2,3,7,8-TCDF	60	40 - 135
13C-1,2,3,7,8-PeCDF	75	40 - 135
13C-1,2,3,4,7,8-HxCDF	70	40 - 135
13C-1,2,3,4,6,7,8-HpCDF	74	40 - 135

lw 5/22/02

LOUREIRO ENGINEERING ASSOCIATES, P.C.

Dioxins/Furans, HRGC/HRMS (8290)

Client Sample ID: 2102214

Notes:

TEF values are cited in U.S. Environmental Protection Agency, (1989) Interim procedures for estimating risks associated with exposures to mixtures of chlorinated dibenzo-p-dioxins and -dibenzofurans (CDDs and CDFs) and 1989 update. U.S. Environmental Protection Agency, Risk Assessment forum, Washington, DC; EPA/625/3-89/016.

CON	Confirmation analysis.
J	Estimated result. Result is less than the reporting limit.

MW
5/22/02

LOUREIRO ENGINEERING ASSOCIATES, P.C.

Dioxins/Furans, HRGC/HRMS (8290)

Client Sample ID: 2102215

Lot-Sample #...:	G2D130156 - 011	Work Order #...:	EXWEJ1AC	Matrix....:	SOLID
Date Sampled...:	04/10/02	Date Received..:	04/13/02	Instrument:	9D5
Prep Date.....:	04/23/02	Analysis Date..:	04/27/02	Units.....:	pg/g
Prep Batch #...:	2113441	Dilution Factor:	1	% Moisture:	16

PARAMETER	RESULT	DETECTION LIMIT	TEF FACTOR	TEQ CONCENTRATION
2,3,7,8-TCDD	**3.0**	**1.2**	**1.000**	**3.000000**
Total TCDD	**3.0**	**1.2**		
1,2,3,7,8-PeCDD	~~ND~~ UJ	0.33	0.500	0
Total PeCDD	ND	0.49		0
1,2,3,4,7,8-HxCDD	ND	0.14	0.100	0
1,2,3,6,7,8-HxCDD	ND	0.14	0.100	0
1,2,3,7,8,9-HxCDD	ND	0.13	0.100	0
Total HxCDD	ND	0.46		0
1,2,3,4,6,7,8-HpCDD	ND	2.3	0.010	0
Total HpCDD	ND	2.3		0
OCDD	**14** J	**12**	**0.001**	**0.014000**
2,3,7,8-TCDF	ND UJ	0.38	0.100	0
Total TCDF	ND	0.51		0
1,2,3,7,8-PeCDF	ND	0.13	0.050	0
2,3,4,7,8-PeCDF	ND	0.12	0.500	0
Total PeCDF	ND	2.3		0
1,2,3,4,7,8-HxCDF	ND	0.19	0.100	0
1,2,3,6,7,8-HxCDF	ND	0.12	0.100	0
2,3,4,6,7,8-HxCDF	ND	0.053	0.100	0
1,2,3,7,8,9-HxCDF	ND	0.065	0.100	0
Total HxCDF	ND	0.98		0
1,2,3,4,6,7,8-HpCDF	ND	0.89	0.010	0
1,2,3,4,7,8,9-HpCDF	ND	0.17	0.010	0
Total HpCDF	ND	0.89		0
OCDF	ND	0.50	0.001	0
Total TEQ Concentration				**3.014000**

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	41	40 - 135
13C-1,2,3,7,8-PeCDD	36*	40 - 135
13C-1,2,3,6,7,8-HxCDD	41	40 - 135
13C-1,2,3,4,6,7,8-HpCDD	43	40 - 135
13C-OCDD	39*	40 - 135
13C-2,3,7,8-TCDF	23*	40 - 135
13C-1,2,3,7,8-PeCDF	52	40 - 135
13C-1,2,3,4,7,8-HxCDF	55	40 - 135
13C-1,2,3,4,6,7,8-HpCDF	59	40 - 135

JLW
5/22/02

LOUREIRO ENGINEERING ASSOCIATES, P.C.

Dioxins/Furans, HRGC/HRMS (8290)

Client Sample ID: 2102215

Notes:

TEF values are cited in U.S. Environmental Protection Agency, (1989) Interim procedures for estimating risks associated with exposures to mixtures of chlorinated dibenzo-p-dioxins and -dibenzofurans (CDDs and CDFs) and 1989 update. U.S. Environmental Protection Agency, Risk Assessment forum, Washington, DC; EPA/625/3-89/016.

* Surrogate recovery is outside stated control limits.

MW 5/22/02

LOUREIRO ENGINEERING ASSOCIATES, P.C.

Dioxins/Furans, HRGC/HRMS (8290)

Client Sample ID: 2102216

Lot-Sample #...:	G2D130156 - 012	Work Order #...:	EXWEK1AC	Matrix....:	SOLID
Date Sampled...:	04/10/02	Date Received..:	04/13/02	Instrument:	9D5
Prep Date.....:	04/23/02	Analysis Date..:	04/27/02	Units.....:	pg/g
Prep Batch #...:	2113441	Dilution Factor:	1	% Moisture:	46

PARAMETER	RESULT		DETECTION LIMIT	TEF FACTOR	TEQ CONCENTRATION
2,3,7,8-TCDD	42		1.8	1.000	42.000000
Total TCDD	650		1.8		
1,2,3,7,8-PeCDD	41		9.2	0.500	20.000000
Total PeCDD	490		9.2		
1,2,3,4,7,8-HxCDD	29		9.2	0.100	2.900000
1,2,3,6,7,8-HxCDD	81		9.2	0.100	8.100000
1,2,3,7,8,9-HxCDD	53		9.2	0.100	5.300000
Total HxCDD	840		9.2		
1,2,3,4,6,7,8-HpCDD	1200		9.2	0.010	12.000000
Total HpCDD	2300		9.2		
OCDD	6100		18	0.001	6.100000
2,3,7,8-TCDF	310	CON	1.8	0.100	31.000000
Total TCDF	4800		1.8		
1,2,3,7,8-PeCDF	150		9.2	0.050	7.500000
2,3,4,7,8-PeCDF	190		9.2	0.500	95.000000
Total PeCDF	2200		9.2		
1,2,3,4,7,8-HxCDF	150		9.2	0.100	15.000000
1,2,3,6,7,8-HxCDF	140		9.2	0.100	14.000000
2,3,4,6,7,8-HxCDF	160		9.2	0.100	16.000000
1,2,3,7,8,9-HxCDF	8.6	J	9.2	0.100	0.860000
Total HxCDF	1400		9.2		
1,2,3,4,6,7,8-HpCDF	650		9.2	0.010	6.500000
1,2,3,4,7,8,9-HpCDF	52		9.2	0.010	0.520000
Total HpCDF	1100		9.2		
OCDF	340		18	0.001	0.340000
Total TEQ Concentration					283.120000

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	81	40 - 135
13C-1,2,3,7,8-PeCDD	79	40 - 135
13C-1,2,3,6,7,8-HxCDD	85	40 - 135
13C-1,2,3,4,6,7,8-HpCDD	87	40 - 135
13C-OCDD	88	40 - 135
13C-2,3,7,8-TCDF	79	40 - 135
13C-1,2,3,7,8-PeCDF	81	40 - 135
13C-1,2,3,4,7,8-HxCDF	77	40 - 135
13C-1,2,3,4,6,7,8-HpCDF	88	40 - 135

dlw 5/22/02

LOUREIRO ENGINEERING ASSOCIATES, P.C.

Dioxins/Furans, HRGC/HRMS (8290)

Client Sample ID: 2102216

Notes:

TEF values are cited in U.S. Environmental Protection Agency, (1989) Interim procedures for estimating risks associated with exposures to mixtures of chlorinated dibenzo-p-dioxins and -dibenzofurans (CDDs and CDFs) and 1989 update. U.S. Environmental Protection Agency, Risk Assessment forum, Washington, DC; EPA/625/3-89/016.

CON	Confirmation analysis.
J	Estimated result. Result is less than the reporting limit.

JW 5/22/02

LOUREIRO ENGINEERING ASSOCIATES, P.C.

Dioxins/Furans, HRGC/HRMS (8290)

Client Sample ID: 2102217

Lot-Sample #...:	G2D130156 - 013	Work Order #...:	EXWEL1AC	Matrix....:	SOLID
Date Sampled...:	04/10/02	Date Received..:	04/13/02	Instrument:	9D5
Prep Date.....:	04/23/02	Analysis Date..:	04/27/02	Units.....:	pg/g
Prep Batch #...:	2113441	Dilution Factor:	1	% Moisture:	51

PARAMETER	RESULT		DETECTION LIMIT	TEF FACTOR	TEQ CONCENTRATION
2,3,7,8-TCDD	52		2.0	1.000	52.000000
Total TCDD	1800		2.0		
1,2,3,7,8-PeCDD	73		10	0.500	36.000000
Total PeCDD	1200		10		
1,2,3,4,7,8-HxCDD	50		10	0.100	5.000000
1,2,3,6,7,8-HxCDD	130		10	0.100	13.000000
1,2,3,7,8,9-HxCDD	86		10	0.100	8.600000
Total HxCDD	1800		10		
1,2,3,4,6,7,8-HpCDD	1500		10	0.010	15.000000
Total HpCDD	2700		10		
OCDD	5900		20	0.001	5.900000
2,3,7,8-TCDF	400	CON	2.0	0.100	40.000000
Total TCDF	8200		2.0		
1,2,3,7,8-PeCDF	260		10	0.050	13.000000
2,3,4,7,8-PeCDF	370		10	0.500	180.000000
Total PeCDF	4300		10		
1,2,3,4,7,8-HxCDF	290		10	0.100	29.000000
1,2,3,6,7,8-HxCDF	270		10	0.100	27.000000
2,3,4,6,7,8-HxCDF	300		10	0.100	30.000000
1,2,3,7,8,9-HxCDF	15		10	0.100	1.500000
Total HxCDF	2600		10		
1,2,3,4,6,7,8-HpCDF	950		10	0.010	9.500000
1,2,3,4,7,8,9-HpCDF	90		10	0.010	0.900000
Total HpCDF	1600		10		
OCDF	400		20	0.001	0.400000
Total TEQ Concentration					466.800000

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	68	40 - 135
13C-1,2,3,7,8-PeCDD	69	40 - 135
13C-1,2,3,6,7,8-HxCDD	75	40 - 135
13C-1,2,3,4,6,7,8-HpCDD	73	40 - 135
13C-OCDD	72	40 - 135
13C-2,3,7,8-TCDF	64	40 - 135
13C-1,2,3,7,8-PeCDF	71	40 - 135
13C-1,2,3,4,7,8-HxCDF	71	40 - 135
13C-1,2,3,4,6,7,8-HpCDF	76	40 - 135

5/22/02

LOUREIRO ENGINEERING ASSOCIATES, P.C.

Dioxins/Furans, HRGC/HRMS (8290)

Client Sample ID: 2102217

Notes:

TEF values are cited in U.S. Environmental Protection Agency. (1989) Interim procedures for estimating risks associated with exposures to mixtures of chlorinated dibenzo-p-dioxins and -dibenzofurans (CDDs and CDFs) and 1989 update. U.S. Environmental Protection Agency. Risk Assessment forum, Washington, DC; EPA/625/3-89/016.

CON Confirmation analysis.

flw 5/22/02

LOUREIRO ENGINEERING ASSOCIATES, P.C.

Dioxins/Furans, HRGC/HRMS (8290)

Client Sample ID: 2102218

Lot-Sample #...:	G2D130156 - 014	Work Order #...:	EXWEM1AC	Matrix....:	SOLID
Date Sampled...:	04/10/02	Date Received..:	04/13/02	Instrument:	9D5
Prep Date.....:	04/23/02	Analysis Date..:	04/27/02	Units.....:	pg/g
Prep Batch #...:	2113441	Dilution Factor:	1	% Moisture:	21

PARAMETER	RESULT		DETECTION LIMIT	TEF FACTOR	TEQ CONCENTRATION
2,3,7,8-TCDD	130		1.3	1.000	130.000000
Total TCDD	140		1.3		
1,2,3,7,8-PeCDD	3.7	J	6.4	0.500	1.800000
Total PeCDD	19		6.4		
1,2,3,4,7,8-HxCDD	3.8	J	6.4	0.100	0.380000
1,2,3,6,7,8-HxCDD	14		6.4	0.100	1.400000
1,2,3,7,8,9-HxCDD	13		6.4	0.100	1.300000
Total HxCDD	110		6.4		
1,2,3,4,6,7,8-HpCDD	230		6.4	0.010	2.300000
Total HpCDD	410		6.4		
OCDD	1800		13	0.001	1.800000
2,3,7,8-TCDF	5.9	CON	1.3	0.100	0.590000
Total TCDF	110		1.3		
1,2,3,7,8-PeCDF	3.2	J	6.4	0.050	0.160000
2,3,4,7,8-PeCDF	5.0	J	6.4	0.500	2.500000
Total PeCDF	140		6.4		
1,2,3,4,7,8-HxCDF	7.1		6.4	0.100	0.710000
1,2,3,6,7,8-HxCDF	6.9		6.4	0.100	0.690000
2,3,4,6,7,8-HxCDF	5.8	J	6.4	0.100	0.580000
1,2,3,7,8,9-HxCDF	ND		0.22	0.100	0
Total HxCDF	140		6.4		
1,2,3,4,6,7,8-HpCDF	97		6.4	0.010	0.970000
1,2,3,4,7,8,9-HpCDF	3.5	J	6.4	0.010	0.035000
Total HpCDF	180		6.4		
OCDF	72		13	0.001	0.072000
Total TEQ Concentration					145.287000

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	78	40 - 135
13C-1,2,3,7,8-PeCDD	76	40 - 135
13C-1,2,3,6,7,8-HxCDD	81	40 - 135
13C-1,2,3,4,6,7,8-HpCDD	81	40 - 135
13C-OCDD	78	40 - 135
13C-2,3,7,8-TCDF	70	40 - 135
13C-1,2,3,7,8-PeCDF	75	40 - 135
13C-1,2,3,4,7,8-HxCDF	77	40 - 135
13C-1,2,3,4,6,7,8-HpCDF	82	40 - 135

MW 5/22/02

LOUREIRO ENGINEERING ASSOCIATES, P.C.

Dioxins/Furans, HRGC/HRMS (8290)

Client Sample ID: 2102218

Notes:

TEF values are cited in U.S. Environmental Protection Agency, (1989) Interim procedures for estimating risks associated with exposures to mixtures of chlorinated dibenzo-p-dioxins and -dibenzofurans (CDDs and CDFs) and 1989 update. U.S. Environmental Protection Agency, Risk Assessment forum, Washington, DC; EPA/625/3-89/016.

CON	Confirmation analysis.
J	Estimated result. Result is less than the reporting limit.

lew
5/22/02

LOUREIRO ENGINEERING ASSOCIATES, P.C.

Dioxins/Furans, HRGC/HRMS (8290)

Client Sample ID: 2102219

Lot-Sample #...:	G2D130156 - 015	Work Order #...:	EXWEN1AC	Matrix....:	SOLID
Date Sampled...:	04/10/02	Date Received..:	04/13/02	Instrument:	9D5
Prep Date.....:	04/23/02	Analysis Date..:	04/27/02	Units.....:	pg/g
Prep Batch #...:	2113441	Dilution Factor:	1	% Moisture:	15

PARAMETER	RESULT		DETECTION LIMIT	TEF FACTOR	TEQ CONCENTRATION
2,3,7,8-TCDD	**2.4**		**1.2**	**1.000**	**2.400000**
Total TCDD	**2.4**		**1.2**		
1,2,3,7,8-PeCDD	ND		0.24	0.500	0
Total PeCDD	ND		0.32		0
1,2,3,4,7,8-HxCDD	ND		0.11	0.100	0
1,2,3,6,7,8-HxCDD	ND		0.44	0.100	0
1,2,3,7,8,9-HxCDD	ND		0.54	0.100	0
Total HxCDD	ND		1.7		0
1,2,3,4,6,7,8-HpCDD	**16**		**5.9**	**0.010**	**0.160000**
Total HpCDD	**29**		**5.9**		
OCDD	**1500**		**12**	**0.001**	**1.500000**
2,3,7,8-TCDF	ND UJ		0.44	0.100	0
Total TCDF	ND		1.9		0
1,2,3,7,8-PeCDF	ND		0.10	0.050	0
2,3,4,7,8-PeCDF	ND		0.10	0.500	0
Total PeCDF	ND		2.8		0
1,2,3,4,7,8-HxCDF	ND		0.46	0.100	0
1,2,3,6,7,8-HxCDF	ND		0.28	0.100	0
2,3,4,6,7,8-HxCDF	ND		0.20	0.100	0
1,2,3,7,8,9-HxCDF	ND		0.13	0.100	0
Total HxCDF	ND		1.9		0
1,2,3,4,6,7,8-HpCDF	**3.4**	**J**	**5.9**	**0.010**	**0.034000**
1,2,3,4,7,8,9-HpCDF	ND		0.34	0.010	0
Total HpCDF	**3.4**		**5.9**		
OCDF	ND		4.6	0.001	0
Total TEQ Concentration					**4.094000**

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	48	40 - 135
13C-1,2,3,7,8-PeCDD	47	40 - 135
13C-1,2,3,6,7,8-HxCDD	50	40 - 135
13C-1,2,3,4,6,7,8-HpCDD	53	40 - 135
13C-OCDD	54	40 - 135
13C-2,3,7,8-TCDF	38 *	40 - 135
13C-1,2,3,7,8-PeCDF	54	40 - 135
13C-1,2,3,4,7,8-HxCDF	58	40 - 135
13C-1,2,3,4,6,7,8-HpCDF	53	40 - 135

MW
5/22/02

LOUREIRO ENGINEERING ASSOCIATES, P.C.

Dioxins/Furans, HRGC/HRMS (8290)

Client Sample ID: 2102219

Notes:

TEF values are cited in U.S. Environmental Protection Agency, (1989) Interim procedures for estimating risks associated with exposures to mixtures of chlorinated dibenzo-p-dioxins and -dibenzofurans (CDDs and CDFs) and 1989 update. U.S. Environmental Protection Agency, Risk Assessment forum, Washington, DC; EPA/625/3-89/016.

*	Surrogate recovery is outside stated control limits.
J	Estimated result. Result is less than the reporting limit.

JW
5/22/02

LOUREIRO ENGINEERING ASSOCIATES, P.C.

Dioxins/Furans, HRGC/HRMS (8290)

Client Sample ID: 2102220

Lot-Sample #...:	G2D130156 - 016	Work Order #...:	EXWEP1AC	Matrix....:	SOLID
Date Sampled...:	04/10/02	Date Received..:	04/13/02	Instrument:	9D5
Prep Date.....:	04/23/02	Analysis Date..:	04/27/02	Units.....:	pg/g
Prep Batch #...:	2113441	Dilution Factor:	1	% Moisture:	12

PARAMETER	RESULT		DETECTION LIMIT	TEF FACTOR	TEQ CONCENTRATION
2,3,7,8-TCDD	**49**		**1.1**	**1.000**	**49.000000**
Total TCDD	**57**		**1.1**		
1,2,3,7,8-PeCDD	ND		1.3	0.500	0
Total PeCDD	**6.1**		**5.7**		
1,2,3,4,7,8-HxCDD	ND		0.94	0.100	0
1,2,3,6,7,8-HxCDD	ND		2.1	0.100	0
1,2,3,7,8,9-HxCDD	ND		2.3	0.100	0
Total HxCDD	**15**		**5.7**		
1,2,3,4,6,7,8-HpCDD	**24**		**5.7**	**0.010**	**0.240000**
Total HpCDD	**45**		**5.7**		
OCDD	**99**		**11**	**0.001**	**0.099000**
2,3,7,8-TCDF	**1.2**	**CON**	**1.1**	**0.100**	**0.120000**
Total TCDF	**33** UJ		**1.1**		
1,2,3,7,8-PeCDF	ND		0.66	0.050	0
2,3,4,7,8-PeCDF	ND		0.91	0.500	0
Total PeCDF	**11**		**5.7**		
1,2,3,4,7,8-HxCDF	ND		1.8	0.100	0
1,2,3,6,7,8-HxCDF	ND		0.85	0.100	0
2,3,4,6,7,8-HxCDF	ND		1.1	0.100	0
1,2,3,7,8,9-HxCDF	ND		0.080	0.100	0
Total HxCDF	ND		2.7		0
1,2,3,4,6,7,8-HpCDF	**3.4**	**J**	**5.7**	**0.010**	**0.034000**
1,2,3,4,7,8,9-HpCDF	ND		0.32	0.010	0
Total HpCDF	**3.4**		**5.7**		
OCDF	ND		2.8	0.001	0
Total TEQ Concentration					**49.493000**

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	71	40 - 135
13C-1,2,3,7,8-PeCDD	75	40 - 135
13C-1,2,3,6,7,8-HxCDD	82	40 - 135
13C-1,2,3,4,6,7,8-HpCDD	73	40 - 135
13C-OCDD	66	40 - 135
13C-2,3,7,8-TCDF	71	40 - 135
13C-1,2,3,7,8-PeCDF	73	40 - 135
13C-1,2,3,4,7,8-HxCDF	76	40 - 135
13C-1,2,3,4,6,7,8-HpCDF	79	40 - 135

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5/22/02

LOUREIRO ENGINEERING ASSOCIATES, P.C.

Dioxins/Furans, HRGC/HRMS (8290)

Client Sample ID: 2102220

Notes:

TEF values are cited in U.S. Environmental Protection Agency, (1989) Interim procedures for estimating risks associated with exposures to mixtures of chlorinated dibenzo-p-dioxins and -dibenzofurans (CDDs and CDFs) and 1989 update. U.S. Environmental Protection Agency, Risk Assessment forum, Washington, DC; EPA/625/3-89/016.

CON	Confirmation analysis.
J	Estimated result. Result is less than the reporting limit.

MW
5/22/02

LOUREIRO ENGINEERING ASSOCIATES, P.C.

Dioxins/Furans, HRGC/HRMS (8290)

Client Sample ID: 2102221

Lot-Sample #...:	G2D130156 - 017	Work Order #...:	EXWEQ1AC	Matrix....:	SOLID
Date Sampled...:	04/10/02	Date Received..:	04/13/02	Instrument:	9D5
Prep Date.....:	04/23/02	Analysis Date..:	04/27/02	Units.....:	pg/g
Prep Batch #...:	2113441	Dilution Factor:	1	% Moisture:	17

PARAMETER	RESULT		DETECTION LIMIT	TEF FACTOR	TEQ CONCENTRATION
2,3,7,8-TCDD	**47**		**1.2**	**1.000**	**47.000000**
Total TCDD	**50**		**1.2**		
1,2,3,7,8-PeCDD	ND		0.60	0.500	0
Total PeCDD	ND		1.7		0
1,2,3,4,7,8-HxCDD	ND		0.58	0.100	0
1,2,3,6,7,8-HxCDD	ND		1.8	0.100	0
1,2,3,7,8,9-HxCDD	ND		1.6	0.100	0
Total HxCDD	**9.4**		**6.0**		
1,2,3,4,6,7,8-HpCDD	**25**		**6.0**	**0.010**	**0.250000**
Total HpCDD	**51**		**6.0**		
OCDD	**160**		**12**	**0.001**	**0.160000**
2,3,7,8-TCDF	**1.2**	**J CON**	**1.2**	**0.100**	**0.120000**
Total TCDF	**15** UJ		**1.2**		
1,2,3,7,8-PeCDF	ND		0.49	0.050	0
2,3,4,7,8-PeCDF	ND		1.0	0.500	0
Total PeCDF	**13**		**6.0**		
1,2,3,4,7,8-HxCDF	ND		1.7	0.100	0
1,2,3,6,7,8-HxCDF	ND		0.76	0.100	0
2,3,4,6,7,8-HxCDF	ND		1.0	0.100	0
1,2,3,7,8,9-HxCDF	ND		0.090	0.100	0
Total HxCDF	**16**		**6.0**		
1,2,3,4,6,7,8-HpCDF	**6.9**		**6.0**	**0.010**	**0.069000**
1,2,3,4,7,8,9-HpCDF	ND		0.41	0.010	0
Total HpCDF	**14**		**6.0**		
OCDF	**11**	**J**	**12**	**0.001**	**0.011000**
Total TEQ Concentration					**47.610000**

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	70	40 - 135
13C-1,2,3,7,8-PeCDD	72	40 - 135
13C-1,2,3,6,7,8-HxCDD	77	40 - 135
13C-1,2,3,4,6,7,8-HpCDD	69	40 - 135
13C-OCDD	66	40 - 135
13C-2,3,7,8-TCDF	66	40 - 135
13C-1,2,3,7,8-PeCDF	72	40 - 135
13C-1,2,3,4,7,8-HxCDF	77	40 - 135
13C-1,2,3,4,6,7,8-HpCDF	73	40 - 135

MW 5/22/02

LOUREIRO ENGINEERING ASSOCIATES, P.C.

Dioxins/Furans, HRGC/HRMS (8290)

Client Sample ID: 2102221

Notes:

TEF values are cited in U.S. Environmental Protection Agency, (1989) Interim procedures for estimating risks associated with exposures to mixtures of chlorinated dibenzo-p-dioxins and -dibenzofurans (CDDs and CDFs) and 1989 update. U.S. Environmental Protection Agency, Risk Assessment forum, Washington, DC; EPA/625/3-89/016.

CON	Confirmation analysis.
J	Estimated result. Result is less than the reporting limit.

JW
5/22/02

LOUREIRO ENGINEERING ASSOCIATES, P.C.

Dioxins/Furans, HRGC/HRMS (8290)

Client Sample ID: 2102222

Lot-Sample #...:	G2D130156 - 018	Work Order #...:	EXWER1AC	Matrix....:	SOLID
Date Sampled...:	04/10/02	Date Received..:	04/13/02	Instrument:	9D5
Prep Date.....:	04/23/02	Analysis Date..:	04/27/02	Units.....:	pg/g
Prep Batch #...:	2113441	Dilution Factor:	1	% Moisture:	36

PARAMETER	RESULT		DETECTION LIMIT	TEF FACTOR	TEQ CONCENTRATION
2,3,7,8-TCDD	**18**		**1.6**	**1.000**	**18.000000**
Total TCDD	**19**		**1.6**		
1,2,3,7,8-PeCDD	ND		1.3	0.500	0
Total PeCDD	ND		3.7		0
1,2,3,4,7,8-HxCDD	ND		2.0	0.100	0
1,2,3,6,7,8-HxCDD	**11**		**7.8**	**0.100**	**1.100000**
1,2,3,7,8,9-HxCDD	**6.2**	J	**7.8**	**0.100**	**0.620000**
Total HxCDD	**83**		**7.8**		
1,2,3,4,6,7,8-HpCDD	**170**		**7.8**	**0.010**	**1.700000**
Total HpCDD	**570**		**7.8**		
OCDD	**1600**		**16**	**0.001**	**1.600000**
2,3,7,8-TCDF	**2.6**	CON	**1.6**	**0.100**	**0.260000**
Total TCDF	**29** UJ		**1.6**		
1,2,3,7,8-PeCDF	ND		1.4	0.050	0
2,3,4,7,8-PeCDF	ND		2.1	0.500	0
Total PeCDF	**46**		**7.8**		
1,2,3,4,7,8-HxCDF	**6.0**	J	**7.8**	**0.100**	**0.600000**
1,2,3,6,7,8-HxCDF	ND		3.1	0.100	0
2,3,4,6,7,8-HxCDF	ND		2.0	0.100	0
1,2,3,7,8,9-HxCDF	ND		1.2	0.100	0
Total HxCDF	**110**		**7.8**		
1,2,3,4,6,7,8-HpCDF	**100**		**7.8**	**0.010**	**1.000000**
1,2,3,4,7,8,9-HpCDF	ND		2.7	0.010	0
Total HpCDF	**240**		**7.8**		
OCDF	**120**		**16**	**0.001**	**0.120000**
Total TEQ Concentration					**25.000000**

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	68	40 - 135
13C-1,2,3,7,8-PeCDD	65	40 - 135
13C-1,2,3,6,7,8-HxCDD	62	40 - 135
13C-1,2,3,4,6,7,8-HpCDD	54	40 - 135
13C-OCDD	42	40 - 135
13C-2,3,7,8-TCDF	58	40 - 135
13C-1,2,3,7,8-PeCDF	69	40 - 135
13C-1,2,3,4,7,8-HxCDF	70	40 - 135
13C-1,2,3,4,6,7,8-HpCDF	61	40 - 135

QW
5/22/02

LOUREIRO ENGINEERING ASSOCIATES, P.C.

Dioxins/Furans, HRGC/HRMS (8290)

Client Sample ID: 2102222

Notes:

TEF values are cited in U.S. Environmental Protection Agency, (1989) Interim procedures for estimating risks associated with exposures to mixtures of chlorinated dibenzo-p-dioxins and -dibenzofurans (CDDs and CDFs) and 1989 update. U.S. Environmental Protection Agency, Risk Assessment forum, Washington, DC; EPA/625/3-89/016.

CON	Confirmation analysis.
J	Estimated result. Result is less than the reporting limit.

MW
5/22/02

LOUREIRO ENGINEERING ASSOCIATES, P.C.

Dioxins/Furans, HRGC/HRMS (8290)

Client Sample ID: 2102223

Lot-Sample #...:	G2D130156 - 019	Work Order #...:	EXWET1AC	Matrix....:	SOLID
Date Sampled...:	04/10/02	Date Received..:	04/13/02	Instrument:	9D5
Prep Date.....:	04/23/02	Analysis Date..:	04/27/02	Units.....:	pg/g
Prep Batch #...:	2113441	Dilution Factor:	1	% Moisture:	19

PARAMETER	RESULT		DETECTION LIMIT	TEF FACTOR	TEQ CONCENTRATION
2,3,7,8-TCDD	**4.4**		**1.2**	**1.000**	**4.400000**
Total TCDD	**4.4**		**1.2**		
1,2,3,7,8-PeCDD	ND		0.67	0.500	0
Total PeCDD	ND		2.6		0
1,2,3,4,7,8-HxCDD	ND		0.49	0.100	0
1,2,3,6,7,8-HxCDD	ND		2.2	0.100	0
1,2,3,7,8,9-HxCDD	ND		1.4	0.100	0
Total HxCDD	**14**		**6.2**		
1,2,3,4,6,7,8-HpCDD	**11**		**6.2**	**0.010**	**0.110000**
Total HpCDD	**27**		**6.2**		
OCDD	**53**		**12**	**0.001**	**0.053000**
2,3,7,8-TCDF	**1.0**	**J CON**	**1.2**	**0.100**	**0.100000**
Total TCDF	**11** UJ		**1.2**		
1,2,3,7,8-PeCDF	ND		0.55	0.050	0
2,3,4,7,8-PeCDF	ND		0.74	0.500	0
Total PeCDF	**13**		**6.2**		
1,2,3,4,7,8-HxCDF	ND		1.8	0.100	0
1,2,3,6,7,8-HxCDF	ND		0.90	0.100	0
2,3,4,6,7,8-HxCDF	ND		0.73	0.100	0
1,2,3,7,8,9-HxCDF	ND		0.55	0.100	0
Total HxCDF	**10**		**6.2**		
1,2,3,4,6,7,8-HpCDF	**4.5**	**J**	**6.2**	**0.010**	**0.045000**
1,2,3,4,7,8,9-HpCDF	ND		0.53	0.010	0
Total HpCDF	**9.3**		**6.2**		
OCDF	ND		4.5	0.001	0
Total TEQ Concentration					**4.708000**

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	69	40 - 135
13C-1,2,3,7,8-PeCDD	67	40 - 135
13C-1,2,3,6,7,8-HxCDD	70	40 - 135
13C-1,2,3,4,6,7,8-HpCDD	61	40 - 135
13C-OCDD	56	40 - 135
13C-2,3,7,8-TCDF	61	40 - 135
13C-1,2,3,7,8-PeCDF	72	40 - 135
13C-1,2,3,4,7,8-HxCDF	73	40 - 135
13C-1,2,3,4,6,7,8-HpCDF	70	40 - 135

JW 5/22/02

LOUREIRO ENGINEERING ASSOCIATES, P.C.

Dioxins/Furans, HRGC/HRMS (8290)

Client Sample ID: 2102223

Notes:

TEF values are cited in U.S. Environmental Protection Agency, (1989) Interim procedures for estimating risks associated with exposures to mixtures of chlorinated dibenzo-p-dioxins and -dibenzofurans (CDDs and CDFs) and 1989 update. U.S. Environmental Protection Agency, Risk Assessment forum, Washington, DC; EPA/625/3-89/016.

CON	Confirmation analysis.
J	Estimated result. Result is less than the reporting limit.

QW
5/22/02

LOUREIRO ENGINEERING ASSOCIATES, P.C.

Dioxins/Furans, HRGC/HRMS (8290)

Client Sample ID: 2102224

Lot-Sample #...:	G2D130156 - 020	Work Order #...:	EXWEW1AC	Matrix....:	SOLID
Date Sampled...:	04/10/02	Date Received..:	04/13/02	Instrument:	9D5
Prep Date.....:	04/23/02	Analysis Date..:	04/27/02	Units.....:	pg/g
Prep Batch #...:	2113441	Dilution Factor:	1	% Moisture:	39

PARAMETER	RESULT		DETECTION LIMIT	TEF FACTOR	TEQ CONCENTRATION
2,3,7,8-TCDD	**1.4**	**J**	**1.6**	**1.000**	**1.400000**
Total TCDD	**1.4**		**1.6**		
1,2,3,7,8-PeCDD	ND		0.49	0.500	0
Total PeCDD	ND		1.1		0
1,2,3,4,7,8-HxCDD	ND		0.65	0.100	0
1,2,3,6,7,8-HxCDD	ND		1.8	0.100	0
1,2,3,7,8,9-HxCDD	ND		1.6	0.100	0
Total HxCDD	**11**		**8.2**		
1,2,3,4,6,7,8-HpCDD	**53**		**8.2**	**0.010**	**0.530000**
Total HpCDD	**140**		**8.2**		
OCDD	**520**		**16**	**0.001**	**0.520000**
2,3,7,8-TCDF	ND	CON	0.46	0.100	0
Total TCDF	**6.6** UJ		**1.6**		
1,2,3,7,8-PeCDF	ND		0.38	0.050	0
2,3,4,7,8-PeCDF	ND		0.41	0.500	0
Total PeCDF	**5.6**		**8.2**		
1,2,3,4,7,8-HxCDF	ND		1.7	0.100	0
1,2,3,6,7,8-HxCDF	ND		1.1	0.100	0
2,3,4,6,7,8-HxCDF	ND		0.88	0.100	0
1,2,3,7,8,9-HxCDF	ND		0.24	0.100	0
Total HxCDF	**12**		**8.2**		
1,2,3,4,6,7,8-HpCDF	**11**		**8.2**	**0.010**	**0.110000**
1,2,3,4,7,8,9-HpCDF	ND		0.90	0.010	0
Total HpCDF	**32**		**8.2**		
OCDF	**33**		**16**	**0.001**	**0.033000**
Total TEQ Concentration					**2.593000**

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	72	40 - 135
13C-1,2,3,7,8-PeCDD	74	40 - 135
13C-1,2,3,6,7,8-HxCDD	79	40 - 135
13C-1,2,3,4,6,7,8-HpCDD	78	40 - 135
13C-OCDD	73	40 - 135
13C-2,3,7,8-TCDF	67	40 - 135
13C-1,2,3,7,8-PeCDF	74	40 - 135
13C-1,2,3,4,7,8-HxCDF	81	40 - 135
13C-1,2,3,4,6,7,8-HpCDF	83	40 - 135

fw
5/22/02

LOUREIRO ENGINEERING ASSOCIATES, P.C.

Dioxins/Furans, HRGC/HRMS (8290)

Client Sample ID: 2102224

Notes:

TEF values are cited in U.S. Environmental Protection Agency, (1989) Interim procedures for estimating risks associated with exposures to mixtures of chlorinated dibenzo-p-dioxins and -dibenzofurans (CDDs and CDFs) and 1989 update. U.S. Environmental Protection Agency, Risk Assessment forum, Washington, DC; EPA/625/3-89/016.

CON	Confirmation analysis.
J	Estimated result. Result is less than the reporting limit.

JW
5/22/02

LOUREIRO ENGINEERING ASSOCIATES, P.C.

Dioxins/Furans, HRGC/HRMS (8290)

Client Sample ID: 2102225

Lot-Sample #...:	G2D130156 - 021	Work Order #...:	EXWEX1AC	Matrix....:	SOLID
Date Sampled...:	04/10/02	Date Received..:	04/13/02	Instrument:	5D5
Prep Date.....:	04/23/02	Analysis Date..:	04/27/02	Units.....:	pg/g
Prep Batch #...:	2113442	Dilution Factor:	1	% Moisture:	14

PARAMETER	RESULT		DETECTION LIMIT	TEF FACTOR	TEQ CONCENTRATION
2,3,7,8-TCDD	**0.92**	**J**	**1.2**	**1.000**	**0.920000**
Total TCDD	**0.92**		**1.2**		
1,2,3,7,8-PeCDD	ND		0.86	0.500	0
Total PeCDD	ND		0.86		0
1,2,3,4,7,8-HxCDD	ND		0.62	0.100	0
1,2,3,6,7,8-HxCDD	ND		1.1	0.100	0
1,2,3,7,8,9-HxCDD	ND		0.59	0.100	0
Total HxCDD	**3.9**		**5.8**		
1,2,3,4,6,7,8-HpCDD	**32**		**5.8**	**0.010**	**0.320000**
Total HpCDD	**56**		**5.8**		
OCDD	**270**		**12**	**0.001**	**0.270000**
2,3,7,8-TCDF	ND	CON	0.41	0.100	0
Total TCDF	ND		0.41		0
1,2,3,7,8-PeCDF	ND		0.58	0.050	0
2,3,4,7,8-PeCDF	ND		0.57	0.500	0
Total PeCDF	ND		2.2		0
1,2,3,4,7,8-HxCDF	ND		0.57	0.100	0
1,2,3,6,7,8-HxCDF	ND		0.52	0.100	0
2,3,4,6,7,8-HxCDF	ND		0.58	0.100	0
1,2,3,7,8,9-HxCDF	ND		0.63	0.100	0
Total HxCDF	ND		2.3		0
1,2,3,4,6,7,8-HpCDF	**5.2**	**J**	**5.8**	**0.010**	**0.052000**
1,2,3,4,7,8,9-HpCDF	ND		0.49	0.010	0
Total HpCDF	**12**		**5.8**		
OCDF	**9.3**	**J**	**12**	**0.001**	**0.009300**
Total TEQ Concentration					**1.571300**

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	69	40 - 135
13C-1,2,3,7,8-PeCDD	73	40 - 135
13C-1,2,3,6,7,8-HxCDD	77	40 - 135
13C-1,2,3,4,6,7,8-HpCDD	72	40 - 135
13C-OCDD	72	40 - 135
13C-2,3,7,8-TCDF	49	40 - 135
13C-1,2,3,7,8-PeCDF	62	40 - 135
13C-1,2,3,4,7,8-HxCDF	62	40 - 135
13C-1,2,3,4,6,7,8-HpCDF	70	40 - 135

5/22/02

LOUREIRO ENGINEERING ASSOCIATES, P.C.

Dioxins/Furans, HRGC/HRMS (8290)

Client Sample ID: 2102225

Notes:

TEF values are cited in U.S. Environmental Protection Agency. (1989) Interim procedures for estimating risks associated with exposures to mixtures of chlorinated dibenzo-p-dioxins and -dibenzofurans (CDDs and CDFs) and 1989 update. U.S. Environmental Protection Agency, Risk Assessment forum, Washington, DC; EPA/625/3-89/016.

CON	Confirmation analysis.
J	Estimated result. Result is less than the reporting limit.

5/22/02

LOUREIRO ENGINEERING ASSOCIATES, P.C.

Dioxins/Furans, HRGC/HRMS (8290)

Client Sample ID: 2102226

Lot-Sample #...:	G2D130156 - 022	Work Order #...:	EXWE01AC	Matrix....:	SOLID
Date Sampled...:	04/10/02	Date Received..:	04/13/02	Instrument:	5D5
Prep Date.....:	04/23/02	Analysis Date..:	04/27/02	Units.....:	pg/g
Prep Batch #...:	2113442	Dilution Factor:	1	% Moisture:	9.3

PARAMETER	RESULT	DETECTION LIMIT	TEF FACTOR	TEQ CONCENTRATION
2,3,7,8-TCDD	ND	0.40	1.000	0
Total TCDD	ND	0.40		0
1,2,3,7,8-PeCDD	ND	0.62	0.500	0
Total PeCDD	ND	0.62		0
1,2,3,4,7,8-HxCDD	ND	0.44	0.100	0
1,2,3,6,7,8-HxCDD	ND	0.47	0.100	0
1,2,3,7,8,9-HxCDD	ND	0.41	0.100	0
Total HxCDD	ND	0.47		0
1,2,3,4,6,7,8-HpCDD	ND	1.9	0.010	0
Total HpCDD	ND	1.9		0
OCDD	**11**	**11**	**0.001**	**0.011000**
2,3,7,8-TCDF	ND	0.31	0.100	0
Total TCDF	ND	0.33		0
1,2,3,7,8-PeCDF	ND	0.44	0.050	0
2,3,4,7,8-PeCDF	ND	0.44	0.500	0
Total PeCDF	ND	0.61		0
1,2,3,4,7,8-HxCDF	ND	0.42	0.100	0
1,2,3,6,7,8-HxCDF	ND	0.39	0.100	0
2,3,4,6,7,8-HxCDF	ND	0.43	0.100	0
1,2,3,7,8,9-HxCDF	ND	0.45	0.100	0
Total HxCDF	ND	0.45		0
1,2,3,4,6,7,8-HpCDF	ND	0.53	0.010	0
1,2,3,4,7,8,9-HpCDF	ND	0.40	0.010	0
Total HpCDF	ND	0.53		0
OCDF	ND	0.67	0.001	0
Total TEQ Concentration				**0.011000**

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	75	40 - 135
13C-1,2,3,7,8-PeCDD	80	40 - 135
13C-1,2,3,6,7,8-HxCDD	83	40 - 135
13C-1,2,3,4,6,7,8-HpCDD	76	40 - 135
13C-OCDD	74	40 - 135
13C-2,3,7,8-TCDF	57	40 - 135
13C-1,2,3,7,8-PeCDF	68	40 - 135
13C-1,2,3,4,7,8-HxCDF	64	40 - 135
13C-1,2,3,4,6,7,8-HpCDF	67	40 - 135

JW 5/22/02

LOUREIRO ENGINEERING ASSOCIATES, P.C.

Dioxins/Furans, HRGC/HRMS (8290)

Client Sample ID: 2102226

Notes:

TEF values are cited in U.S. Environmental Protection Agency. (1989) Interim procedures for estimating risks associated with exposures to mixtures of chlorinated dibenzo-p-dioxins and -dibenzofurans (CDDs and CDFs) and 1989 update. U.S. Environmental Protection Agency, Risk Assessment forum, Washington, DC; EPA/625/3-89/016.

JW
5/22/02

LOUREIRO ENGINEERING ASSOCIATES, P.C.

Dioxins/Furans, HRGC/HRMS (8290)

Client Sample ID: 2102227

Lot-Sample #...:	G2D130156 - 023	Work Order #...:	EXWE12AC	Matrix....:	SOLID
Date Sampled...:	04/10/02	Date Received..:	04/13/02	Instrument:	7D5
Prep Date.....:	04/27/02	Analysis Date..:	04/29/02	Units.....:	pg/g
Prep Batch #...:	2117124	Dilution Factor:	1	% Moisture:	35

PARAMETER	RESULT		DETECTION LIMIT	TEF FACTOR	TEQ CONCENTRATION
2,3,7,8-TCDD	**8.2**		**1.5**	**1.000**	**8.200000**
Total TCDD	**18**		**1.5**		
1,2,3,7,8-PeCDD	ND		1.4	0.500	0
Total PeCDD	**5.0**		**7.7**		
1,2,3,4,7,8-HxCDD	ND		0.93	0.100	0
1,2,3,6,7,8-HxCDD	**10**		**7.7**	**0.100**	**1.000000**
1,2,3,7,8,9-HxCDD	**6.1**	**J**	**7.7**	**0.100**	**0.610000**
Total HxCDD	**70**		**7.7**		
1,2,3,4,6,7,8-HpCDD	**86**		**7.7**	**0.010**	**0.860000**
Total HpCDD	**150**		**7.7**		
OCDD	**520**		**15**	**0.001**	**0.520000**
2,3,7,8-TCDF	**5.4**	**CON**	**1.5**	**0.100**	**0.540000**
Total TCDF	**130**		**1.5**		
1,2,3,7,8-PeCDF	ND		2.8	0.050	0
2,3,4,7,8-PeCDF	**7.5**	**J**	**7.7**	**0.500**	**3.700000**
Total PeCDF	**230**		**7.7**		
1,2,3,4,7,8-HxCDF	**9.3**		**7.7**	**0.100**	**0.930000**
1,2,3,6,7,8-HxCDF	**7.8**		**7.7**	**0.100**	**0.780000**
2,3,4,6,7,8-HxCDF	**7.2**	**J**	**7.7**	**0.100**	**0.720000**
1,2,3,7,8,9-HxCDF	ND		0.57	0.100	0
Total HxCDF	**140**		**7.7**		
1,2,3,4,6,7,8-HpCDF	**62**		**7.7**	**0.010**	**0.620000**
1,2,3,4,7,8,9-HpCDF	ND		2.8	0.010	0
Total HpCDF	**110**		**7.7**		
OCDF	**33**		**15**	**0.001**	**0.033000**
Total TEQ Concentration					**18.513000**

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	77	40 - 135
13C-1,2,3,7,8-PeCDD	68	40 - 135
13C-1,2,3,6,7,8-HxCDD	82	40 - 135
13C-1,2,3,4,6,7,8-HpCDD	72	40 - 135
13C-OCDD	65	40 - 135
13C-2,3,7,8-TCDF	70	40 - 135
13C-1,2,3,7,8-PeCDF	68	40 - 135
13C-1,2,3,4,7,8-HxCDF	82	40 - 135
13C-1,2,3,4,6,7,8-HpCDF	70	40 - 135

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5/22/02

LOUREIRO ENGINEERING ASSOCIATES, P.C.

Dioxins/Furans, HRGC/HRMS (8290)

Client Sample ID: 2102227

Notes:

TEF values are cited in U.S. Environmental Protection Agency, (1989) Interim procedures for estimating risks associated with exposures to mixtures of chlorinated dibenzo-p-dioxins and -dibenzofurans (CDDs and CDFs) and 1989 update. U.S. Environmental Protection Agency, Risk Assessment forum, Washington, DC; EPA/625/3-89/016.

CON	Confirmation analysis.
J	Estimated result. Result is less than the reporting limit.

Qew
5/22/02

LOUREIRO ENGINEERING ASSOCIATES, P.C.

Dioxins/Furans, HRGC/HRMS (8290)

Client Sample ID: 2102251

Lot-Sample #...:	G2D130156 - 024	**Work Order #...:**	EXWE21AA	**Matrix....:**	WATER
Date Sampled...:	04/10/02	**Date Received..:**	04/13/02	**Instrument:**	5D5
Prep Date.....:	04/16/02	**Analysis Date..:**	04/18/02	**Units.....:**	pg/L
Prep Batch #...:	2106506	**Dilution Factor:**	1	**% Moisture:**	

PARAMETER	RESULT	DETECTION LIMIT	TEF FACTOR	TEQ CONCENTRATION
2,3,7,8-TCDD	ND	2.1	1.000	0
Total TCDD	ND	2.1		0
1,2,3,7,8-PeCDD	ND	3.0	0.500	0
Total PeCDD	ND	7.9		0
1,2,3,4,7,8-HxCDD	ND	1.9	0.100	0
1,2,3,6,7,8-HxCDD	ND	2.2	0.100	0
1,2,3,7,8,9-HxCDD	ND	1.7	0.100	0
Total HxCDD	ND	2.2		0
1,2,3,4,6,7,8-HpCDD	ND	4.9	0.010	0
Total HpCDD	ND	4.9		0
OCDD	ND	18	0.001	0
2,3,7,8-TCDF	ND	1.4	0.100	0
Total TCDF	ND	1.4		0
1,2,3,7,8-PeCDF	ND	2.0	0.050	0
2,3,4,7,8-PeCDF	ND	1.9	0.500	0
Total PeCDF	ND	2.6		0
1,2,3,4,7,8-HxCDF	ND	1.6	0.100	0
1,2,3,6,7,8-HxCDF	ND	1.6	0.100	0
2,3,4,6,7,8-HxCDF	ND	1.7	0.100	0
1,2,3,7,8,9-HxCDF	ND	1.6	0.100	0
Total HxCDF	ND	1.7		0
1,2,3,4,6,7,8-HpCDF	ND	2.2	0.010	0
1,2,3,4,7,8,9-HpCDF	ND	2.8	0.010	0
Total HpCDF	ND	2.8		0
OCDF	ND	5.7	0.001	0
Total TEQ Concentration				**0**

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	70	40 - 135
13C-1,2,3,7,8-PeCDD	61	40 - 135
13C-1,2,3,6,7,8-HxCDD	85	40 - 135
13C-1,2,3,4,6,7,8-HpCDD	63	40 - 135
13C-OCDD	58	40 - 135
13C-2,3,7,8-TCDF	74	40 - 135
13C-1,2,3,7,8-PeCDF	61	40 - 135
13C-1,2,3,4,7,8-HxCDF	82	40 - 135
13C-1,2,3,4,6,7,8-HpCDF	68	40 - 135

LW 5/22/02

LOUREIRO ENGINEERING ASSOCIATES, P.C.

Dioxins/Furans, HRGC/HRMS (8290)

Client Sample ID: 2102251

Notes:

TEF values are cited in U.S. Environmental Protection Agency, (1989) Interim procedures for estimating risks associated with exposures to mixtures of chlorinated dibenzo-p-dioxins and -dibenzofurans (CDDs and CDFs) and 1989 update. U.S. Environmental Protection Agency, Risk Assessment forum, Washington, DC; EPA/625/3-89/016.

lew
5/22/02

TABLE 1
SUMMARY OF QUALITY ASSURANCE / QUALITY CONTROL SAMPLE RESULTS
DIOXIN DELINEATION SAMPLING - FIRST COMPONENT OF ALLENDALE POND INVESTIGATION
CENTREDALE MANOR RESTORATION PROJECT SUPERFUND SITE
NORTH PROVIDENCE, RHODE ISLAND

		AQUEOUS			SOLID	
	Equipment Rinsate Blank	PE Standard	PE Sample Result	PE Standard	PE Sample Result	Range of Expected Values[1]
Location ID	AP-DEL-BKE	AP-DEL-PEAQ	AP-DEL-PEAQ	AP-DEL-PES	AP-DEL-PES	AP-DEL-PES
Sample ID	2102251	2102253	2102253	2102252	2102252	2102252
Sample Date	4/10/02	NA	NA	NA	4/11/02	NA
Sample Time	1600	NA	NA	NA	1730	NA
Sample Depth	NA	NA	N/A	N/A	NA	N/A
Laboratory	STL	CIL	STL	CIL	STL	CIL
Lot Number	G2D130156	34761-82	G2D130158	MAR-21985-85-A	G2D130158	MAR-21985-85-A
Lab. Number	#024	NA	#020	EDF-2513	#019	EDF-2513
Date Analyzed	4/18/02	NA	4/18/02	NA	4/28/02	NA
Constituent	pg/L	pg/L	pg/L	pg/g	pg/g	pg/g
2,3,7,8-TCDD	<2.1	ND	<1.3	500	380	260 - 670
Total TCDD	<2.1	ND	<1.3	ND	380	-
1,2,3,7,8-PeCDD	<3.0	ND	<12	1000	820	560 - 1370
Total PeCDD	<7.9	ND	<12	ND	820	-
1,2,3,4,7,8-HxCDD	<1.9	6000	3100	1000	780	500 - 1290
1,2,3,6,7,8-HxCDD	<2.2	15000	9800	1000	900	520 - 1210
1,2,3,7,8,9-HxCDD	<1.7	ND	36 J	1000	860	460 - 1330
Total HxCDD	<2.2	ND	13000	ND	2600	-
1,2,3,4,6,7,8-HpCDD	<4.9	20000	11000	1500	1500	710 - 2070
Total HpCDD	<4.9	ND	11000	ND	1600	-
OCDD	<18	30000	16000	2500	3500	1980 - 5030
2,3,7,8-TCDF	<1.4	7000	4300 E, CON	500	430 E, CON	260 - 640
Total TCDF	<1.4	ND	4400	ND	480	-
1,2,3,7,8-PeCDF	<2.0	5000	2900	1000	880	590 - 1150
2,3,4,7,8-PeCDF	<1.9	ND	<1.4	1000	900	410 - 1310
Total PeCDF	<2.6	ND	2900	ND	1800	-
1,2,3,4,7,8-HxCDF	<1.6	ND	<5.0	1000	870	530 - 1230
1,2,3,6,7,8-HxCDF	<1.6	ND	<11	1000	900	340 - 1560
2,3,4,6,7,8-HxCDF	<1.7	ND	<16	1000	1000	480 - 1350
1,2,3,7,8,9-HxCDF	<1.6	ND	<1.2	1000	900	390 - 1260
Total HxCDF	<1.7	ND	<16	ND	3700	-
1,2,3,4,6,7,8-HpCDF	<2.2	10000	6200	1500	1400	520 - 2010
1,2,3,4,7,8,9-HpCDF	<2.8	ND	<2.3	1500	1500	250 - 1980
Total HpCDF	<2.8	ND	6200	ND	2900	-
OCDF	<5.7	ND	<6.5	2500	2300	1170 - 3330
Total TEQ Concentration		ND		ND		-

Notes:
pg/g = picograms per gram = parts per trillion (ppt)
pg/L = picograms per liter = parts per trillion (ppt)
CON = Confirmation analysis
J = Estimated result; result is less than the reporting limit
NA = Not applicable
ND = Not determined
STL = Severn Trent Laboratories, Inc. - Sacramento
CIL = Cambridge Isotope Laboratories
PE = Performance Evaluation
Results have been adjusted for dry weight; the solid performance evaluation sample, as prepared, is dry
E = Estimated result; result concentration exceeds the calibration range
[1] These values represent the upper and lower 95% tolerance limits which indicate the range of results that 95% of the laboratories should obtain 95^% of the time for a single sample analysis.

LOUREIRO ENGINEERING ASSOCIATES, P.C.

Dioxins/Furans, HRGC/HRMS (8290)

Client Sample ID: 2102252 PE

Lot-Sample #...:	G2D130158 - 019	Work Order #...:	EXWFP1AC	Matrix....:	SOLID
Date Sampled...:	04/11/02	Date Received..:	04/13/02	Instrument:	5D5
Prep Date.....:	04/25/02	Analysis Date..:	04/28/02	Units.....:	pg/g
Prep Batch #...:	2115445	Dilution Factor:	1	% Moisture:	

PARAMETER	RESULT		DETECTION LIMIT	TEF FACTOR	TEQ CONCENTRATION
2,3,7,8-TCDD	380		1.0	1.000	380.000000
Total TCDD	380		1.0		
1,2,3,7,8-PeCDD	820		5.0	0.500	410.000000
Total PeCDD	820		5.0		
1,2,3,4,7,8-HxCDD	780		5.0	0.100	78.000000
1,2,3,6,7,8-HxCDD	900		5.0	0.100	90.000000
1,2,3,7,8,9-HxCDD	860		5.0	0.100	86.000000
Total HxCDD	2600		5.0		
1,2,3,4,6,7,8-HpCDD	1500		5.0	0.010	15.000000
Total HpCDD	1600		5.0		
OCDD	3500		10	0.001	3.500000
2,3,7,8-TCDF	430	E CON	1.0	0.100	43.000000
Total TCDF	480		1.0		
1,2,3,7,8-PeCDF	880		5.0	0.050	44.000000
2,3,4,7,8-PeCDF	900		5.0	0.500	450.000000
Total PeCDF	1800		5.0		
1,2,3,4,7,8-HxCDF	870		5.0	0.100	87.000000
1,2,3,6,7,8-HxCDF	900		5.0	0.100	90.000000
2,3,4,6,7,8-HxCDF	1000		5.0	0.100	100.000000
1,2,3,7,8,9-HxCDF	900		5.0	0.100	90.000000
Total HxCDF	3700		5.0		
1,2,3,4,6,7,8-HpCDF	1400		5.0	0.010	14.000000
1,2,3,4,7,8,9-HpCDF	1500		5.0	0.010	15.000000
Total HpCDF	2900		5.0		
OCDF	2300		10	0.001	2.300000
Total TEQ Concentration					1,997.800000

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	28	40 - 135
13C-1,2,3,7,8-PeCDD	45	40 - 135
13C-1,2,3,6,7,8-HxCDD	37	40 - 135
13C-1,2,3,4,6,7,8-HpCDD	35	40 - 135
13C-OCDD	36	40 - 135
13C-2,3,7,8-TCDF	29	40 - 135
13C-1,2,3,7,8-PeCDF	36	40 - 135
13C-1,2,3,4,7,8-HxCDF	32	40 - 135
13C-1,2,3,4,6,7,8-HpCDF	33	40 - 135

LOUREIRO ENGINEERING ASSOCIATES, P.C.

Dioxins/Furans, HRGC/HRMS (8290)

Client Sample ID: 2102252 PE

Notes:

TEF values are cited in U.S. Environmental Protection Agency, (1989) Interim procedures for estimating risks associated with exposures to mixtures of chlorinated dibenzo-p-dioxins and -dibenzofurans (CDDs and CDFs) and 1989 update. U.S. Environmental Protection Agency, Risk Assessment forum, Washington, DC; EPA/625/3-89/016.

*	Surrogate recovery is outside stated control limits.
CON	Confirmation analysis.
E	Estimated result. Result concentration exceeds the calibration range.

LOUREIRO ENGINEERING ASSOCIATES, P.C.

Dioxins/Furans, HRGC/HRMS (8290)

Client Sample ID: 2102253 PE

Lot-Sample #...:	G2D130158 - 020	Work Order #...:	EXWFQ1AA	Matrix....:	WATER
Date Sampled...:	04/11/02	Date Received..:	04/13/02	Instrument:	5D5
Prep Date.....:	04/16/02	Analysis Date..:	04/18/02	Units.....:	pg/L
Prep Batch #...:	2106506	Dilution Factor:	1	% Moisture:	

PARAMETER	RESULT		DETECTION LIMIT	TEF FACTOR	TEQ CONCENTRATION
2,3,7,8-TCDD	ND		1.3	1.000	0
Total TCDD	ND		1.3		0
1,2,3,7,8-PeCDD	ND		12	0.500	0
Total PeCDD	ND		12		0
1,2,3,4,7,8-HxCDD	**3100**		**50**	**0.100**	**310.000000**
1,2,3,6,7,8-HxCDD	**9800**		**50**	**0.100**	**980.000000**
1,2,3,7,8,9-HxCDD	**36**	**J**	**50**	**0.100**	**3.600000**
Total HxCDD	**13000**		**50**		
1,2,3,4,6,7,8-HpCDD	**11000**		**50**	**0.010**	**110.000000**
Total HpCDD	**11000**		**50**		
OCDD	**16000**		**100**	**0.001**	**16.000000**
2,3,7,8-TCDF	**4300**	**CON E**	**10**	**0.100**	**430.000000**
Total TCDF	**4400**		**10**		
1,2,3,7,8-PeCDF	**2900**		**50**	**0.050**	**140.000000**
2,3,4,7,8-PeCDF	ND		1.4	0.500	0
Total PeCDF	**2900**		**50**		
1,2,3,4,7,8-HxCDF	ND		5.0	0.100	0
1,2,3,6,7,8-HxCDF	ND		11	0.100	0
2,3,4,6,7,8-HxCDF	ND		16	0.100	0
1,2,3,7,8,9-HxCDF	ND		1.2	0.100	0
Total HxCDF	ND		16		0
1,2,3,4,6,7,8-HpCDF	**6200**		**50**	**0.010**	**62.000000**
1,2,3,4,7,8,9-HpCDF	ND		2.3	0.010	0
Total HpCDF	**6200**		**50**		
OCDF	ND		6.5	0.001	0
Total TEQ Concentration					**2,051.600000**

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	81	40 - 135
13C-1,2,3,7,8-PeCDD	69	40 - 135
13C-1,2,3,6,7,8-HxCDD	95	40 - 135
13C-1,2,3,4,6,7,8-HpCDD	70	40 - 135
13C-OCDD	67	40 - 135
13C-2,3,7,8-TCDF	80	40 - 135
13C-1,2,3,7,8-PeCDF	67	40 - 135
13C-1,2,3,4,7,8-HxCDF	87	40 - 135
13C-1,2,3,4,6,7,8-HpCDF	76	40 - 135

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Dioxins/Furans, HRGC/HRMS (8290)

Client Sample ID: 2102253 PE

Notes:

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CON	Confirmation analysis.
E	Estimated result. Result concentration exceeds the calibration range.
J	Estimated result. Result is less than the reporting limit.