Analytical Resources, Incorporated
Analytical Chemists and Consultants

22 February 2006

Stacy Pischer
Landau Associates, Inc.
130 Second Avenue South
Edmonds, WA 98020-9129

RE: Project: Port of Anacortes / 529009
ARI Job No: IZ17 and IZ30 (Dioxins/Furans)

Dear Stacy:

Please find enclosed a copy of chain of custody (COC) record and the analytical results for the samples from the project referenced above. Analytical Resources, Inc. (ARI) accepted six water samples on January 24, 2006 and thirteen water samples and a trip blank on January 25, 2006 in good condition. There were no discrepancies between the COC's and the sample containers' labels.

The samples were analyzed for SVOAs, LVI SIM-cPAHs, Resin Acids, PCBs, Pests, NWTPH-Dx with acid/silica gel cleanups, total and dissolved metals, conventional parameters, tannins/lignins, and dioxin/furans. The dioxin/furans analyses were subcontracted to Pace Analytical Services, Inc. Data for all analyses except the dioxin/furans was sent previously under separate cover letters (IZ17 and IZ30). This package contains the results for the dioxin/furans analyses.

The original packages from Pace in their entirety are submitted here including the case narratives.

A copy of this report will remain on file with ARI. If you have any questions or require additional information, please feel free to contact me at your convenience.

Sincerely,

ANALYTICAL RESOURCES, INC.

Mary Lou Fox

Mary Lou Fox
Project Manager
206/695-6211
marylou@arilabs.com

Enclosures
cc: IZ17 and IZ30 (Dioxins/Furans)
MLF/mlf

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www.pacelabs.com

Pace Analytical Services, Inc.
1700 Elm Street
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

DETERMINATION OF PCDD/PCDF LEVELS

Prepared for:
Analytical Resources, Inc.
Attn: Mary Lou Fox
4611 South 134th Place, Suite 100
Tukwila, WA 98168

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This report contains 14 pages.

The results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

Client Project Number: IZ17

Client Purchase Order Number: NA

REPORT OF LABORATORY ANALYSIS

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REPORT OF: CHEMICAL ANALYSES

Pace Analytical Services, Inc.
1700 Elm Street
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

PROJECT: **PCDD/PCDF ANALYSES**

DATE: February 15, 2006

ISSUED TO: Analytical Resources, Inc.
Attn: Mary Lou Fox
4611 South 134th Place
Tukwila, WA 98168

REPORT NO: 06-1027119

INTRODUCTION

This report presents the results from the analyses performed on three samples submitted by a representative of Analytical Resources, Inc. The samples were analyzed for the presence or absence of polychlorodibenzo-p-dioxins (PCDDs) and polychlorodibenzofurans (PCDFs) using a modified version of USEPA Method 8290.

SAMPLE IDENTIFICATION

Client ID	Sample Type	Date Received	Pace ID
06-1030-IZ17I MW-109	Water	01/27/06	1027119001
06-1031-IZ17J MW-101	Water	01/27/06	1027119002
06-1033-IZ17L MW-106	Water	01/27/06	1027119003

RESULTS

The results are included in the following:

Appendix A – Chain of Custody Documentation
Appendix B – PCDD/PCDF Results

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REPORT OF: CHEMICAL ANALYSES

PROJECT: PCDD/PCDF ANALYSES **DATE:** February 15, 2006

 REPORT NO: 06-1027119

DISCUSSION

The recoveries of the isotopically-labeled PCDD/PCDF internal standards in the sample extracts ranged from 56-109%. All of the labeled standard recoveries obtained for this project were within the 40-135% target range for this method. Also, since the quantification of the native 2,3,7,8-substituted congeners was based on isotope dilution, the data were automatically corrected for variation in recovery and accurate values were obtained.

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results, found at the beginning of Appendix B, show the blank to be free of PCDDs and PCDFs at the reporting limits. These results indicate that the sample processing procedures did not significantly impact the results of the field sample analyses.

Laboratory spike samples were also prepared with the sample batch using clean water that had been fortified with native standard materials. The results show that the spiked native compounds were recovered at 88-116%, with relative percent differences of 0.0-8.2%. These results indicate high degrees of accuracy and precision for these determinations.

REMARKS

The sample extracts will be retained for a period of 15 days from the date of this report and then discarded unless other arrangements are made. The raw mass spectral data will be archived for a period of not less than one year. Questions regarding the data contained in this report may be directed to the author at the number provided below.

Pace Analytical Services, Inc.

Michelle Krueger for Scott Unze 2/16/06

Scott C. Unze
Project Manager, HRMS
(612) 607-6383

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TABLE 1. 2,3,7,8-TCDD Equivalency Factors (TEFs) for the Polychlorinated Dibenzo-p-dioxins and Dibenzofurans

Number	Compound(s)	TEF
1	2,3,7,8-TCDD	1.00
2	1,2,3,7,8-PeCDD	0.50
3	1,2,3,6,7,8-HxCDD	0.1
4	1,2,3,7,8,9-HxCDD	0.1
5	1,2,3,4,7,8-HxCDD	0.1
6	1,2,3,4,6,7,8-HpCDD	0.01
7	OCDD	0.001
8	* Total - TCDD	0.0
9	* Total - PeCDD	0.0
10	* Total - HxCDD	0.0
11	* Total - HpCDD	0.0
12	2,3,7,8-TCDF	0.10
13	1,2,3,7,8-PeCDF	0.05
14	2,3,4,7,8-PeCDF	0.5
15	1,2,3,6,7,8-HxCDF	0.1
16	1,2,3,7,8,9-HxCDF	0.1
17	1,2,3,4,7,8-HxCDF	0.1
18	2,3,4,6,7,8-HxCDF	0.1
19	1,2,3,4,6,7,8-HpCDF	0.01
20	1,2,3,4,7,8,9-HpCDF	0.01
21	OCDF	0.001
22	* Total - TCDF	0.0
23	* Total - PeCDF	0.0
24	* Total - HxCDF	0.0
25	* Total - HpCDF	0.0

*Excluding the 2,3,7,8-substituted congeners.

Reference: 1989 ITEFs

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Appendix A

REPORT OF LABORATORY ANALYSIS

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1027119

SUBCONTRACTOR ANALYSIS REQUEST
CUSTODY TRANSFER 01\24\06

ANALYTICAL RESOURCES INCORPORATED

ARI Project: IZ17

Laboratory: Pace Analytical, Inc.
Lab Contact: Scott Unze
Lab Address: 1700 Elm St.
Minneapolis, MN 55414
Phone: 612-607-1700
Fax:

ARI Client: Landau Associates
Project ID: 529009
ARI PMgr: Mary Lou Fox
Phone: (206) 340-2866 Ext
Fax: (206) 695-6201

Analytical Protocol: In-house
Special Instructions:

Requested Turn Around: std
Fax Results (Y/N): **YES**

Limits of Liability. *Subcontractor is expected to perform all requested services in accordance with appropriate methodology following Standard Operating Procedures that meet standards for the industry. The total liability of ARI, its officers, agents, employees, or sucessors, arising out of or in connection with the requested services, shall not exceed the negotiated amount for said services. The agreement by the Subcontractor to perform services requested by ARI releases ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Subcontractor.*

ARI Sample ID	Client Sample ID/ Add'l Sample ID	Sampled	Matrix	Bottles	Analyses
06-1030-IZ17I	MW-109	1/23/06	Water	2	Dioxins/Furans tetra-octa isomers
Special Instructions: NONE					8290 001
06-1031-IZ17J	MW-101	1/23/06	Water	2	Dioxins/Furans
Special Instructions: NONE					8290 002
06-1033-IZ17L	MW-106	1/23/06	Water	2	Dioxins/Furans
Special Instructions: NONE					8290 003

Please let samples settle prior to extraction/analysis. Client requests this to avoid particulates in samples.

Please provide standard EXCEL EDD in addition to hard copy.

Carrier UPS	Airbill 1Z832 695 13 4227 6462	Date 1/26/06
Relinquished by IR	Company ARI	Date 1/26/06	Time 1530
Received by	Company Pace	Date 1/27/06	Time 09:30

T = 2.0°C

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Minneapolis, MN 55414
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Fax: 612.607.6444

Appendix B

REPORT OF LABORATORY ANALYSIS

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1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

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Method 8290 Blank Analysis Results

Client - Analytical Resources Inc.

Lab Sample ID	BLANK-8890	Matrix	Water
Filename	F60214A_16	Dilution	NA
Total Amount Extracted	965 mL	Extracted	02/13/2006
ICAL Date	02/14/2006	Analyzed	02/14/2006 22:39
CCal Filename(s)	F60214A_11 & F60214A_25	Injected By	MRO

Native Isomers	Conc ng/L	EMPC ng/L	LRL ng/L	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	0.0021	2,3,7,8-TCDF-13C	2.00	73
Total TCDF	ND	-----	0.0021	2,3,7,8-TCDD-13C	2.00	81
				1,2,3,7,8-PeCDF-13C	2.00	77
2,3,7,8-TCDD	ND	-----	0.0021	2,3,4,7,8-PeCDF-13C	2.00	84
Total TCDD	ND	-----	0.0021	1,2,3,7,8-PeCDD-13C	2.00	98
				1,2,3,4,7,8-HxCDF-13C	2.00	72
1,2,3,7,8-PeCDF	ND	-----	0.0100	1,2,3,6,7,8-HxCDF-13C	2.00	76
2,3,4,7,8-PeCDF	ND	-----	0.0100	2,3,4,6,7,8-HxCDF-13C	2.00	89
Total PeCDF	ND	-----	0.0100	1,2,3,7,8,9-HxCDF-13C	2.00	82
				1,2,3,4,7,8-HxCDD-13C	2.00	74
1,2,3,7,8-PeCDD	ND	-----	0.0100	1,2,3,6,7,8-HxCDD-13C	2.00	91
Total PeCDD	ND	-----	0.0100	1,2,3,4,6,7,8-HpCDF-13C	2.00	85
				1,2,3,4,7,8,9-HpCDF-13C	2.00	76
1,2,3,4,7,8-HxCDF	ND	-----	0.0100	1,2,3,4,6,7,8-HpCDD-13C	2.00	94
1,2,3,6,7,8-HxCDF	ND	-----	0.0100	OCDD-13C	4.00	86
2,3,4,6,7,8-HxCDF	ND	-----	0.0100			
1,2,3,7,8,9-HxCDF	ND	-----	0.0100	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	-----	0.0100	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	0.0100	2,3,7,8-TCDD-37Cl4	0.20	67
1,2,3,6,7,8-HxCDD	ND	-----	0.0100			
1,2,3,7,8,9-HxCDD	ND	-----	0.0100			
Total HxCDD	ND	-----	0.0100			
1,2,3,4,6,7,8-HpCDF	ND	-----	0.0100	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.0100	Equivalence: 0.00 ng/L		
Total HpCDF	ND	-----	0.0100	(Using ITE Factors)		
1,2,3,4,6,7,8-HpCDD	ND	-----	0.0100			
Total HpCDD	ND	-----	0.0100			
OCDF	ND	-----	0.0210			
OCDD	ND	-----	0.0210			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
LRL = Lower Reporting Limit
J = Concentration detected is below the calibration range
P = Recovery outside of target range
A = Detection Limit based on signal-to-noise measurement

I = Interference
E = PCDE Interference
ND = Not Detected
NA = Not Applicable
NC = Not Calculated
* = See Discussion

Report No.....1027119

REPORT OF LABORATORY ANALYSIS

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Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

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Method 8290 Analysis Results

Client - Analytical Resources Inc.

Client's Sample ID	06-1030-IZ17I MW-109		
Lab Sample ID	1027119001		
Filename	F60214A_22		
Injected By	MRO		
Total Amount Extracted	975 mL	Matrix	Water
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	01/23/2006
ICAL Date	02/14/2006	Received	01/27/2006
CCal Filename(s)	F60214A_11 & F60214A_25	Extracted	02/13/2006
Method Blank ID	BLANK-8890	Analyzed	02/15/2006 03:32

Native Isomers	Conc ng/L	EMPC ng/L	LRL ng/L		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	0.00210		2,3,7,8-TCDF-13C	2.00	80
Total TCDF	ND	-----	0.00210		2,3,7,8-TCDD-13C	2.00	87
					1,2,3,7,8-PeCDF-13C	2.00	83
2,3,7,8-TCDD	ND	-----	0.00210	A	2,3,4,7,8-PeCDF-13C	2.00	88
Total TCDD	ND	-----	0.00210		1,2,3,7,8-PeCDD-13C	2.00	107
					1,2,3,4,7,8-HxCDF-13C	2.00	69
1,2,3,7,8-PeCDF	ND	-----	0.01000		1,2,3,6,7,8-HxCDF-13C	2.00	71
2,3,4,7,8-PeCDF	ND	-----	0.01000		2,3,4,6,7,8-HxCDF-13C	2.00	56
Total PeCDF	ND	-----	0.01000		1,2,3,7,8,9-HxCDF-13C	2.00	81
					1,2,3,4,7,8-HxCDD-13C	2.00	60
1,2,3,7,8-PeCDD	ND	-----	0.01000		1,2,3,6,7,8-HxCDD-13C	2.00	84
Total PeCDD	ND	-----	0.01000		1,2,3,4,6,7,8-HpCDF-13C	2.00	82
					1,2,3,4,7,8,9-HpCDF-13C	2.00	76
1,2,3,4,7,8-HxCDF	ND	-----	0.01000		1,2,3,4,6,7,8-HpCDD-13C	2.00	93
1,2,3,6,7,8-HxCDF	ND	-----	0.01000		OCDD-13C	4.00	87
2,3,4,6,7,8-HxCDF	ND	-----	0.01000				
1,2,3,7,8,9-HxCDF	ND	-----	0.01000		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	-----	0.01000		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	0.01000		2,3,7,8-TCDD-37Cl4	0.20	77
1,2,3,6,7,8-HxCDD	ND	-----	0.01000				
1,2,3,7,8,9-HxCDD	ND	-----	0.01000				
Total HxCDD	ND	-----	0.01000				
1,2,3,4,6,7,8-HpCDF	ND	-----	0.01000		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.01000		Equivalence: 0.00 ng/L		
Total HpCDF	ND	-----	0.01000		(Using ITE Factors)		
1,2,3,4,6,7,8-HpCDD	ND	-----	0.01000				
Total HpCDD	ND	-----	0.01000				
OCDF	ND	-----	0.02100				
OCDD	ND	-----	0.02100				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers)
EMPC = Estimated Maximum Possible Concentration
A = Detection Limit based on signal-to-noise measurement
J = Concentration detected is below the calibration range
B = Less than 10 times higher than method blank level
P = Recovery outside of target range
Nn = Value obtained from additional analysis

LRL = Lower Reporting Limit
I = Interference
E = PCDE Interference
S = Saturated signal
ND = Not Detected
NA = Not Applicable
NC = Not Calculated
* = See Discussion

Report No.....1027119

REPORT OF LABORATORY ANALYSIS

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1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

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Method 8290 Analysis Results

Client - Analytical Resources Inc.

Client's Sample ID	06-1031-IZ17J MW-101		
Lab Sample ID	1027119002		
Filename	F60214A_23		
Injected By	MRO		
Total Amount Extracted	978 mL	Matrix	Water
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	01/23/2006
ICAL Date	02/14/2006	Received	01/27/2006
CCal Filename(s)	F60214A_11 & F60214A_25	Extracted	02/13/2006
Method Blank ID	BLANK-8890	Analyzed	02/15/2006 04:21

Native Isomers	Conc ng/L	EMPC ng/L	LRL ng/L		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	0.00200		2,3,7,8-TCDF-13C	2.00	79
Total TCDF	ND	-----	0.00200		2,3,7,8-TCDD-13C	2.00	84
					1,2,3,7,8-PeCDF-13C	2.00	79
2,3,7,8-TCDD	ND	-----	0.00200		2,3,4,7,8-PeCDF-13C	2.00	82
Total TCDD	ND	-----	0.00200		1,2,3,7,8-PeCDD-13C	2.00	94
					1,2,3,4,7,8-HxCDF-13C	2.00	68
1,2,3,7,8-PeCDF	ND	-----	0.01000		1,2,3,6,7,8-HxCDF-13C	2.00	72
2,3,4,7,8-PeCDF	ND	-----	0.01000		2,3,4,6,7,8-HxCDF-13C	2.00	63
Total PeCDF	ND	-----	0.01000		1,2,3,7,8,9-HxCDF-13C	2.00	82
					1,2,3,4,7,8-HxCDD-13C	2.00	77
1,2,3,7,8-PeCDD	ND	-----	0.01000		1,2,3,6,7,8-HxCDD-13C	2.00	82
Total PeCDD	ND	-----	0.01000		1,2,3,4,6,7,8-HpCDF-13C	2.00	76
					1,2,3,4,7,8,9-HpCDF-13C	2.00	66
1,2,3,4,7,8-HxCDF	ND	-----	0.01000		1,2,3,4,6,7,8-HpCDD-13C	2.00	82
1,2,3,6,7,8-HxCDF	ND	-----	0.01000		OCDD-13C	4.00	72
2,3,4,6,7,8-HxCDF	ND	-----	0.01000				
1,2,3,7,8,9-HxCDF	ND	-----	0.01000		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	-----	0.01000		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	0.01000		2,3,7,8-TCDD-37Cl4	0.20	75
1,2,3,6,7,8-HxCDD	ND	-----	0.01000				
1,2,3,7,8,9-HxCDD	ND	-----	0.01000				
Total HxCDD	ND	-----	0.01000				
1,2,3,4,6,7,8-HpCDF	ND	-----	0.01000		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.01000		Equivalence: 0.00038 ng/L		
Total HpCDF	ND	-----	0.01000		(Using ITE Factors)		
1,2,3,4,6,7,8-HpCDD	0.022	-----	0.01000	J			
Total HpCDD	0.037	-----	0.01000	J			
OCDF	ND	-----	0.02000				
OCDD	0.160	-----	0.02000				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers)
EMPC = Estimated Maximum Possible Concentration
A = Detection Limit based on signal-to-noise measurement
J = Concentration detected is below the calibration range
B = Less than 10 times higher than method blank level
P = Recovery outside of target range
Nn = Value obtained from additional analysis

LRL = Lower Reporting Limit
I = Interference
E = PCDE Interference
S = Saturated signal
ND = Not Detected
NA = Not Applicable
NC = Not Calculated
* = See Discussion

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Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612-607-6444

Method 8290 Analysis Results

Client - Analytical Resources Inc.

Client's Sample ID	06-1033-IZ17L MW-106		
Lab Sample ID	1027119003		
Filename	F60214A_24		
Injected By	MRO		
Total Amount Extracted	964 mL	Matrix	Water
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	01/23/2006
ICAL Date	02/14/2006	Received	01/27/2006
CCal Filename(s)	F60214A_11 & F60214A_25	Extracted	02/13/2006
Method Blank ID	BLANK-8890	Analyzed	02/15/2006 05:10

Native Isomers	Conc ng/L	EMPC ng/L	LRL ng/L	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	0.00210	2,3,7,8-TCDF-13C	2.00	89
Total TCDF	ND	-----	0.00210	2,3,7,8-TCDD-13C	2.00	98
				1,2,3,7,8-PeCDF-13C	2.00	91
2,3,7,8-TCDD	ND	-----	0.00210	2,3,4,7,8-PeCDF-13C	2.00	98
Total TCDD	ND	-----	0.00210	1,2,3,7,8-PeCDD-13C	2.00	109
				1,2,3,4,7,8-HxCDF-13C	2.00	72
1,2,3,7,8-PeCDF	ND	-----	0.01000	1,2,3,6,7,8-HxCDF-13C	2.00	80
2,3,4,7,8-PeCDF	ND	-----	0.01000	2,3,4,6,7,8-HxCDF-13C	2.00	70
Total PeCDF	ND	-----	0.01000	1,2,3,7,8,9-HxCDF-13C	2.00	91
				1,2,3,4,7,8-HxCDD-13C	2.00	84
1,2,3,7,8-PeCDD	ND	-----	0.01000	1,2,3,6,7,8-HxCDD-13C	2.00	98
Total PeCDD	ND	-----	0.01000	1,2,3,4,6,7,8-HpCDF-13C	2.00	84
				1,2,3,4,7,8,9-HpCDF-13C	2.00	73
1,2,3,4,7,8-HxCDF	ND	-----	0.01000	1,2,3,4,6,7,8-HpCDD-13C	2.00	89
1,2,3,6,7,8-HxCDF	ND	-----	0.01000	OCDD-13C	4.00	75
2,3,4,6,7,8-HxCDF	ND	-----	0.01000			
1,2,3,7,8,9-HxCDF	ND	-----	0.01000	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	-----	0.01000	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	0.01000	2,3,7,8-TCDD-37Cl4	0.20	90
1,2,3,6,7,8-HxCDD	ND	-----	0.01000			
1,2,3,7,8,9-HxCDD	ND	-----	0.01000			
Total HxCDD	ND	-----	0.01000			
1,2,3,4,6,7,8-HpCDF	ND	-----	0.01000	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.01000	Equivalence: 0.00 ng/L		
Total HpCDF	ND	-----	0.01000	(Using ITE Factors)		
1,2,3,4,6,7,8-HpCDD	ND	-----	0.01000			
Total HpCDD	ND	-----	0.01000			
OCDF	ND	-----	0.02100			
OCDD	ND	-----	0.02100			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers)
EMPC = Estimated Maximum Possible Concentration
A = Detection Limit based on signal-to-noise measurement
J = Concentration detected is below the calibration range
B = Less than 10 times higher than method blank level
P = Recovery outside of target range
Nn = Value obtained from additional analysis

LRL = Lower Reporting Limit
I = Interference
E = PCDE Interference
S = Saturated signal
ND = Not Detected
NA = Not Applicable
NC = Not Calculated
* = See Discussion

Report No.....1027119

REPORT OF LABORATORY ANALYSIS

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1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Pace Analytical™

Method 8290 Laboratory Control Spike Results

Client - Analytical Resources Inc.

Lab Sample ID	LCS-8891		
Filename	F60214A_13	Matrix	Water
Total Amount Extracted	983 mL	Dilution	NA
ICAL Date	02/14/2006	Extracted	02/13/2006
CCal Filename(s)	F60214A_11 & F60214A_25	Analyzed	02/14/2006 20:12
Method Blank ID	BLANK-8890	Injected By	MRO

Native Isomers	Qs (ng)	Qm (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.20	0.21	103	2,3,7,8-TCDF-13C	2.00	66
				2,3,7,8-TCDD-13C	2.00	70
				1,2,3,7,8-PeCDF-13C	2.00	65
2,3,7,8-TCDD	0.20	0.19	94	2,3,4,7,8-PeCDF-13C	2.00	67
				1,2,3,7,8-PeCDD-13C	2.00	76
				1,2,3,4,7,8-HxCDF-13C	2.00	57
1,2,3,7,8-PeCDF	1.00	1.07	107	1,2,3,6,7,8-HxCDF-13C	2.00	63
2,3,4,7,8-PeCDF	1.00	0.99	99	2,3,4,6,7,8-HxCDF-13C	2.00	55
				1,2,3,7,8,9-HxCDF-13C	2.00	76
				1,2,3,4,7,8-HxCDD-13C	2.00	64
1,2,3,7,8-PeCDD	1.00	0.88	88	1,2,3,6,7,8-HxCDD-13C	2.00	68
				1,2,3,4,6,7,8-HpCDF-13C	2.00	73
				1,2,3,4,7,8,9-HpCDF-13C	2.00	65
1,2,3,4,7,8-HxCDF	1.00	0.97	97	1,2,3,4,6,7,8-HpCDD-13C	2.00	80
1,2,3,6,7,8-HxCDF	1.00	1.01	101	OCDD-13C	4.00	73
2,3,4,6,7,8-HxCDF	1.00	0.96	96			
1,2,3,7,8,9-HxCDF	1.00	1.00	100	1,2,3,4-TCDD-13C	2.00	NA
				1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	1.00	1.02	102	2,3,7,8-TCDD-37Cl4	0.20	82
1,2,3,6,7,8-HxCDD	1.00	1.13	113			
1,2,3,7,8,9-HxCDD	1.00	1.16	116			
1,2,3,4,6,7,8-HpCDF	1.00	1.02	102			
1,2,3,4,7,8,9-HpCDF	1.00	1.01	101			
1,2,3,4,6,7,8-HpCDD	1.00	0.88	88			
OCDF	2.00	1.77	88			
OCDD	2.00	1.97	99			

Qs = Quantity Spiked
Qm = Quantity Measured
Rec. = Recovery (Expressed as Percent)
P = Recovery outside of target range
X = Background subtracted value
Nn = Value obtained from additional analysis
NA = Not Applicable
* = See Discussion

Report No.....1027119

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Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Pace Analytical™

Method 8290 Laboratory Control Spike Results

Client - Analytical Resources Inc.

Lab Sample ID	LCSD-8893		
Filename	F60214A_30	Matrix	Water
Total Amount Extracted	902 mL	Dilution	2
ICAL Date	02/14/2006	Extracted	02/13/2006
CCal Filename(s)	F60214A_25 & F60214A_34	Analyzed	02/15/2006 10:09
Method Blank ID	BLANK-8890	Injected By	MRO

Native Isomers	Qs (ng)	Qm (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.20	0.21	106	2,3,7,8-TCDF-13C	2.00	80
				2,3,7,8-TCDD-13C	2.00	85
				1,2,3,7,8-PeCDF-13C	2.00	78
2,3,7,8-TCDD	0.20	0.18	91	2,3,4,7,8-PeCDF-13C	2.00	82
				1,2,3,7,8-PeCDD-13C	2.00	95
				1,2,3,4,7,8-HxCDF-13C	2.00	65
1,2,3,7,8-PeCDF	1.00	1.05	105	1,2,3,6,7,8-HxCDF-13C	2.00	72
2,3,4,7,8-PeCDF	1.00	1.00	100	2,3,4,6,7,8-HxCDF-13C	2.00	58
				1,2,3,7,8,9-HxCDF-13C	2.00	83
				1,2,3,4,7,8-HxCDD-13C	2.00	73
1,2,3,7,8-PeCDD	1.00	0.88	88	1,2,3,6,7,8-HxCDD-13C	2.00	85
				1,2,3,4,6,7,8-HpCDF-13C	2.00	80
				1,2,3,4,7,8,9-HpCDF-13C	2.00	77
1,2,3,4,7,8-HxCDF	1.00	0.98	98	1,2,3,4,6,7,8-HpCDD-13C	2.00	87
1,2,3,6,7,8-HxCDF	1.00	1.00	100	OCDD-13C	4.00	74
2,3,4,6,7,8-HxCDF	1.00	1.04	104			
1,2,3,7,8,9-HxCDF	1.00	0.98	98	1,2,3,4-TCDD-13C	2.00	NA
				1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	1.00	1.00	100	2,3,7,8-TCDD-37Cl4	0.20	87
1,2,3,6,7,8-HxCDD	1.00	1.06	106			
1,2,3,7,8,9-HxCDD	1.00	1.10	110			
1,2,3,4,6,7,8-HpCDF	1.00	1.03	103			
1,2,3,4,7,8,9-HpCDF	1.00	0.93	93			
1,2,3,4,6,7,8-HpCDD	1.00	0.93	93			
OCDF	2.00	1.84	92			
OCDD	2.00	1.90	95			

Qs = Quantity Spiked
Qm = Quantity Measured
Rec. = Recovery (Expressed as Percent)
P = Recovery outside of target range
X = Background subtracted value
Nn = Value obtained from additional analysis
NA = Not Applicable
* = See Discussion

Report No.....1027119

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Fax: 612.607.6444

SPIKE RECOVERY RELATIVE PERCENT DIFFERENCE (RPD) RESULTS

Client..... Analytical Resources Inc.

SPIKE 1 ID..... LCS-8891
SPIKE 1 Filename..... F60214A_13
SPIKE 2 ID..... LCSD-8893
SPIKE 2 Filename..... F60214A_30

COMPOUND	SPIKE 1 REC,%	SPIKE 2 REC,%	RPD,%
2378-TCDF	103	106	2.9
2378-TCDD	94	91	3.2
12378-PeCDF	107	105	1.9
23478-PeCDF	99	100	1.0
12378-PeCDD	88	88	0.0
123478-HxCDF	97	98	1.0
123678-HxCDF	101	100	1.0
234678-HxCDF	96	104	8.0
123789-HxCDF	100	98	2.0
123478-HxCDD	102	100	2.0
123678-HxCDD	113	106	6.4
123789-HxCDD	116	110	5.3
1234678-HpCDF	102	103	1.0
1234789-HpCDF	101	93	8.2
1234678-HpCDD	88	93	5.5
OCDF	88	92	4.4
OCDD	99	95	4.1

REC = Percent Recovered
RPD = The difference between the two values divided by the average.
NA = Not Applicable

Report No..... 1027119

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Phone: 612.607.1700
Fax: 612.607.6444

DETERMINATION OF PCDD/PCDF LEVELS

Prepared for:
Analytical Resources, Inc.
Attn: Mary Lou Fox
4611 South 134th Place, Suite 100
Tukwila, WA 98168

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This report contains 16 pages.

The results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

Client Project Number: IZ30

Client Purchase Order Number: NA

REPORT OF LABORATORY ANALYSIS

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www.pacelabs.com REPORT OF: CHEMICAL ANALYSES

Pace Analytical Services, Inc.
1700 Elm Street
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

PROJECT: **PCDD/PCDF ANALYSES**

DATE: February 15, 2006

ISSUED TO: Analytical Resources, Inc.
Attn: Mary Lou Fox
4611 South 134th Place
Tukwila, WA 98168

REPORT NO: 06-1027103

INTRODUCTION

This report presents the results from the analyses performed on five samples submitted by a representative of Analytical Resources, Inc. The samples were analyzed for the presence or absence of polychlorodibenzo-p-dioxins (PCDDs) and polychlorodibenzofurans (PCDFs) using a modified version of USEPA Method 8290.

SAMPLE IDENTIFICATION

Client ID	Sample Type	Date Received	Pace ID
06-1157-IZ30P MW-104	Water	01/27/06	1027103001
06-1159-IZ30R MW-108	Water	01/27/06	1027103002
06-1160-IZ30S MW-112	Water	01/27/06	1027103003
06-1161-IZ30T MW-107	Water	01/27/06	1027103004
06-1162-IZ30U MW-110	Water	01/27/06	1027103005

RESULTS

The results are included in the following:

Appendix A – Chain of Custody Documentation
Appendix B – PCDD/PCDF Results

REPORT OF LABORATORY ANALYSIS

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Phone: 612.607.1700
Fax: 612.607.6444

REPORT OF: CHEMICAL ANALYSES

PROJECT: **PCDD/PCDF ANALYSES** **DATE:** February 15, 2006

 REPORT NO: 06-1027103

DISCUSSION

The recoveries of the isotopically-labeled PCDD/PCDF internal standards in the sample extracts ranged from 69-113%. All of the labeled standard recoveries obtained for this project were within the 40-135% target range for this method. Also, since the quantification of the native 2,3,7,8-substituted congeners was based on isotope dilution, the data were automatically corrected for variation in recovery and accurate values were obtained.

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results, found at the beginning of Appendix B, show the blank to be free of PCDDs and PCDFs at the reporting limits. These results indicate that the sample processing procedures did not significantly impact the results of the field sample analyses.

Laboratory spike samples were also prepared with the sample batch using clean water that had been fortified with native standard materials. The results show that the spiked native compounds were recovered at 88-116%, with relative percent differences of 0.0-8.2%. These results indicate high degrees of accuracy and precision for these determinations.

REMARKS

The sample extracts will be retained for a period of 15 days from the date of this report and then discarded unless other arrangements are made. The raw mass spectral data will be archived for a period of not less than one year. Questions regarding the data contained in this report may be directed to the author at the number provided below.

Pace Analytical Services, Inc.

Michelle Krueger for Scott Unze

Scott C. Unze
Project Manager, HRMS
(612) 607-6383

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TABLE 1. 2,3,7,8-TCDD Equivalency Factors (TEFs) for the Polychlorinated Dibenzo-p-dioxins and Dibenzofurans

Number	Compound(s)	TEF
1	2,3,7,8-TCDD	1.00
2	1,2,3,7,8-PeCDD	0.50
3	1,2,3,6,7,8-HxCDD	0.1
4	1,2,3,7,8,9-HxCDD	0.1
5	1,2,3,4,7,8-HxCDD	0.1
6	1,2,3,4,6,7,8-HpCDD	0.01
7	OCDD	0.001
8	* Total - TCDD	0.0
9	* Total - PeCDD	0.0
10	* Total - HxCDD	0.0
11	* Total - HpCDD	0.0
12	2,3,7,8-TCDF	0.10
13	1,2,3,7,8-PeCDF	0.05
14	2,3,4,7,8-PeCDF	0.5
15	1,2,3,6,7,8-HxCDF	0.1
16	1,2,3,7,8,9-HxCDF	0.1
17	1,2,3,4,7,8-HxCDF	0.1
18	2,3,4,6,7,8-HxCDF	0.1
19	1,2,3,4,6,7,8-HpCDF	0.01
20	1,2,3,4,7,8,9-HpCDF	0.01
21	OCDF	0.001
22	* Total - TCDF	0.0
23	* Total - PeCDF	0.0
24	* Total - HxCDF	0.0
25	* Total - HpCDF	0.0

*Excluding the 2,3,7,8-substituted congeners.

Reference: 1989 ITEFs

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Appendix A

REPORT OF LABORATORY ANALYSIS
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1027103

SUBCONTRACTOR ANALYSIS REQUEST
CUSTODY TRANSFER 01\25\06

ANALYTICAL RESOURCES INCORPORATED

ARI Project: IZ30

Laboratory: Pace Analytical, Inc.
Lab Contact: Scott Unze
Lab Address: 1700 Elm St.
Minneapolis, MN 55414
Phone: 612-607-1700
Fax:

ARI Client: Landau Associates
Project ID: 529009
ARI PMgr: Mary Lou Fox
Phone: (206) 340-2866 Ext
Fax: (206) 695-6201

Analytical Protocol: In-house
Special Instructions:

Requested Turn Around: std
Fax Results (Y/N): **YES**

Limits of Liability. *Subcontractor is expected to perform all requested services in accordance with appropriate methodology following Standard Operating Procedures that meet standards for the industry. The total liability of ARI, its officers, agents, employees, or sucessors, arising out of or in connection with the requested services, shall not exceed the negotiated amount for said services. The agreement by the Subcontractor to perform services requested by ARI releases ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Subcontractor.*

ARI Sample ID	Client Sample ID/ Add'l Sample ID	Sampled	Matrix	Bottles	Analyses	
06-1157-IZ30P	MW-104	1/24/06	Water	2	Dioxins/Furans 8290	tetra-octa isomers 001
Special Instructions: NONE						
06-1159-IZ30R	MW-108	1/24/06	Water	2	Dioxins/Furans 8290	002
Special Instructions: NONE						
06-1160-IZ30S	MW-112	1/24/06	Water	2	Dioxins/Furans 8290	003
Special Instructions: NONE						
06-1161-IZ30T	MW-107	1/24/06	Water	2	Dioxins/Furans 8290	004
Special Instructions: NONE						
06-1162-IZ30U	MW-110	1/24/06	Water	2	Dioxins/Furans 8290	005
Special Instructions: NONE						

Please let samples settle prior to extraction/analysis. Client requests this to avoid particulates in samples.

Please provide a standard EXCEL EDD in addition to hard copy.

Carrier		Airbill		Date
UPS		1Z 832 695 13 4227 6462		1/26/06
Relinquished by	Company	Date		Time
[illegible]	ARI	1/26/06		1530
Received by	Company	Date		Time
Courier	PACE	1/27/06		9:30

2.5

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Appendix B

REPORT OF LABORATORY ANALYSIS
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Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Pace Analytical™

Method 8290 Blank Analysis Results

Client - Analytical Resources Inc.

Lab Sample ID	BLANK-8890	Matrix	Water
Filename	F60214A_16	Dilution	NA
Total Amount Extracted	965 mL	Extracted	02/13/2006
ICAL Date	02/14/2006	Analyzed	02/14/2006 22:39
CCal Filename(s)	F60214A_11 & F60214A_25	Injected By	MRO

Native Isomers	Conc ng/L	EMPC ng/L	LRL ng/L	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	0.0021	2,3,7,8-TCDF-13C	2.00	73
Total TCDF	ND	-----	0.0021	2,3,7,8-TCDD-13C	2.00	81
				1,2,3,7,8-PeCDF-13C	2.00	77
2,3,7,8-TCDD	ND	-----	0.0021	2,3,4,7,8-PeCDF-13C	2.00	84
Total TCDD	ND	-----	0.0021	1,2,3,7,8-PeCDD-13C	2.00	98
				1,2,3,4,7,8-HxCDF-13C	2.00	72
1,2,3,7,8-PeCDF	ND	-----	0.0100	1,2,3,6,7,8-HxCDF-13C	2.00	76
2,3,4,7,8-PeCDF	ND	-----	0.0100	2,3,4,6,7,8-HxCDF-13C	2.00	89
Total PeCDF	ND	-----	0.0100	1,2,3,7,8,9-HxCDF-13C	2.00	82
				1,2,3,4,7,8-HxCDD-13C	2.00	74
1,2,3,7,8-PeCDD	ND	-----	0.0100	1,2,3,6,7,8-HxCDD-13C	2.00	91
Total PeCDD	ND	-----	0.0100	1,2,3,4,6,7,8-HpCDF-13C	2.00	85
				1,2,3,4,7,8,9-HpCDF-13C	2.00	76
1,2,3,4,7,8-HxCDF	ND	-----	0.0100	1,2,3,4,6,7,8-HpCDD-13C	2.00	94
1,2,3,6,7,8-HxCDF	ND	-----	0.0100	OCDD-13C	4.00	86
2,3,4,6,7,8-HxCDF	ND	-----	0.0100			
1,2,3,7,8,9-HxCDF	ND	-----	0.0100	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	-----	0.0100	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	0.0100	2,3,7,8-TCDD-37Cl4	0.20	67
1,2,3,6,7,8-HxCDD	ND	-----	0.0100			
1,2,3,7,8,9-HxCDD	ND	-----	0.0100			
Total HxCDD	ND	-----	0.0100			
1,2,3,4,6,7,8-HpCDF	ND	-----	0.0100	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.0100	Equivalence: 0.00 ng/L		
Total HpCDF	ND	-----	0.0100	(Using ITE Factors)		
1,2,3,4,6,7,8-HpCDD	ND	-----	0.0100			
Total HpCDD	ND	-----	0.0100			
OCDF	ND	-----	0.0210			
OCDD	ND	-----	0.0210			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
LRL = Lower Reporting Limit
J = Concentration detected is below the calibration range
P = Recovery outside of target range
A = Detection Limit based on signal-to-noise measurement

I = Interference
E = PCDE Interference
ND = Not Detected
NA = Not Applicable
NC = Not Calculated
* = See Discussion

Report No.....1027103

REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Analysis Results

Client - Analytical Resources Inc.

Client's Sample ID	06-1157-IZ30P MW-104		
Lab Sample ID	1027103001		
Filename	F60214A_17		
Injected By	MRO		
Total Amount Extracted	954 mL	Matrix	Water
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	01/24/2006
ICAL Date	02/14/2006	Received	01/27/2006
CCal Filename(s)	F60214A_11 & F60214A_25	Extracted	02/13/2006
Method Blank ID	BLANK-8890	Analyzed	02/14/2006 23:28

Native Isomers	Conc ng/L	EMPC ng/L	LRL ng/L	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	0.0021	2,3,7,8-TCDF-13C	2.00	82
Total TCDF	ND	-----	0.0021	2,3,7,8-TCDD-13C	2.00	88
				1,2,3,7,8-PeCDF-13C	2.00	84
2,3,7,8-TCDD	ND	-----	0.0021	2,3,4,7,8-PeCDF-13C	2.00	88
Total TCDD	ND	-----	0.0021	1,2,3,7,8-PeCDD-13C	2.00	99
				1,2,3,4,7,8-HxCDF-13C	2.00	79
1,2,3,7,8-PeCDF	ND	-----	0.0100	1,2,3,6,7,8-HxCDF-13C	2.00	82
2,3,4,7,8-PeCDF	ND	-----	0.0100	2,3,4,6,7,8-HxCDF-13C	2.00	97
Total PeCDF	ND	-----	0.0100	1,2,3,7,8,9-HxCDF-13C	2.00	88
				1,2,3,4,7,8-HxCDD-13C	2.00	81
1,2,3,7,8-PeCDD	ND	-----	0.0100	1,2,3,6,7,8-HxCDD-13C	2.00	93
Total PeCDD	ND	-----	0.0100	1,2,3,4,6,7,8-HpCDF-13C	2.00	88
				1,2,3,4,7,8,9-HpCDF-13C	2.00	78
1,2,3,4,7,8-HxCDF	ND	-----	0.0100	1,2,3,4,6,7,8-HpCDD-13C	2.00	96
1,2,3,6,7,8-HxCDF	ND	-----	0.0100	OCDD-13C	4.00	89
2,3,4,6,7,8-HxCDF	ND	-----	0.0100			
1,2,3,7,8,9-HxCDF	ND	-----	0.0100	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	-----	0.0100	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	0.0100	2,3,7,8-TCDD-37Cl4	0.20	82
1,2,3,6,7,8-HxCDD	ND	-----	0.0100			
1,2,3,7,8,9-HxCDD	ND	-----	0.0100			
Total HxCDD	ND	-----	0.0100			
1,2,3,4,6,7,8-HpCDF	ND	-----	0.0100	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.0100	Equivalence: 0.00 ng/L		
Total HpCDF	ND	-----	0.0100	(Using ITE Factors)		
1,2,3,4,6,7,8-HpCDD	ND	-----	0.0100			
Total HpCDD	ND	-----	0.0100			
OCDF	ND	-----	0.0210			
OCDD	ND	-----	0.0210			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers)
EMPC = Estimated Maximum Possible Concentration
A = Detection Limit based on signal-to-noise measurement
J = Concentration detected is below the calibration range
B = Less than 10 times higher than method blank level
P = Recovery outside of target range
Nn = Value obtained from additional analysis

LRL = Lower Reporting Limit
I = Interference
E = PCDE Interference
S = Saturated signal
ND = Not Detected
NA = Not Applicable
NC = Not Calculated
* = See Discussion

Report No.....1027103

REPORT OF LABORATORY ANALYSIS

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Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

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Method 8290 Analysis Results

Client - Analytical Resources Inc.

Client's Sample ID	06-1159-IZ30R MW-108		
Lab Sample ID	1027103002		
Filename	F60214A_18		
Injected By	MRO		
Total Amount Extracted	965 mL	Matrix	Water
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	01/24/2006
ICAL Date	02/14/2006	Received	01/27/2006
CCal Filename(s)	F60214A_11 & F60214A_25	Extracted	02/13/2006
Method Blank ID	BLANK-8890	Analyzed	02/15/2006 00:17

Native Isomers	Conc ng/L	EMPC ng/L	LRL ng/L		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	0.00210		2,3,7,8-TCDF-13C	2.00	83
Total TCDF	ND	-----	0.00210		2,3,7,8-TCDD-13C	2.00	90
					1,2,3,7,8-PeCDF-13C	2.00	89
2,3,7,8-TCDD	ND	-----	0.00210		2,3,4,7,8-PeCDF-13C	2.00	96
Total TCDD	ND	-----	0.00210		1,2,3,7,8-PeCDD-13C	2.00	113
					1,2,3,4,7,8-HxCDF-13C	2.00	85
1,2,3,7,8-PeCDF	ND	-----	0.01000		1,2,3,6,7,8-HxCDF-13C	2.00	88
2,3,4,7,8-PeCDF	ND	-----	0.01000		2,3,4,6,7,8-HxCDF-13C	2.00	100
Total PeCDF	ND	-----	0.01000		1,2,3,7,8,9-HxCDF-13C	2.00	92
					1,2,3,4,7,8-HxCDD-13C	2.00	87
1,2,3,7,8-PeCDD	ND	-----	0.01000		1,2,3,6,7,8-HxCDD-13C	2.00	100
Total PeCDD	ND	-----	0.01000		1,2,3,4,6,7,8-HpCDF-13C	2.00	94
					1,2,3,4,7,8,9-HpCDF-13C	2.00	88
1,2,3,4,7,8-HxCDF	ND	-----	0.01000		1,2,3,4,6,7,8-HpCDD-13C	2.00	106
1,2,3,6,7,8-HxCDF	ND	-----	0.01000		OCDD-13C	4.00	97
2,3,4,6,7,8-HxCDF	ND	-----	0.01000				
1,2,3,7,8,9-HxCDF	ND	-----	0.01000		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	-----	0.01000		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	0.01000		2,3,7,8-TCDD-37Cl4	0.20	86
1,2,3,6,7,8-HxCDD	ND	-----	0.01000				
1,2,3,7,8,9-HxCDD	ND	-----	0.01000				
Total HxCDD	ND	-----	0.01000				
1,2,3,4,6,7,8-HpCDF	ND	-----	0.01000		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.01000		Equivalence: 0.00041 ng/L		
Total HpCDF	ND	-----	0.01000		(Using ITE Factors)		
1,2,3,4,6,7,8-HpCDD	0.012	-----	0.01000	J			
Total HpCDD	0.024	-----	0.01000	J			
OCDF	ND	-----	0.02100				
OCDD	0.280	-----	0.02100				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers)
EMPC = Estimated Maximum Possible Concentration
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B = Less than 10 times higher than method blank level
P = Recovery outside of target range
Nn = Value obtained from additional analysis

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Report No.....1027103

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Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

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Method 8290 Analysis Results

Client - Analytical Resources Inc.

Client's Sample ID	06-1160-IZ30S MW-112		
Lab Sample ID	1027103003		
Filename	F60214A_19		
Injected By	MRO		
Total Amount Extracted	994 mL	Matrix	Water
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	01/24/2006
ICAL Date	02/14/2006	Received	01/27/2006
CCal Filename(s)	F60214A_11 & F60214A_25	Extracted	02/13/2006
Method Blank ID	BLANK-8890	Analyzed	02/15/2006 01:06

Native Isomers	Conc ng/L	EMPC ng/L	LRL ng/L	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	0.00200	2,3,7,8-TCDF-13C	2.00	87
Total TCDF	ND	-----	0.00200	2,3,7,8-TCDD-13C	2.00	94
				1,2,3,7,8-PeCDF-13C	2.00	87
2,3,7,8-TCDD	ND	-----	0.00200	2,3,4,7,8-PeCDF-13C	2.00	91
Total TCDD	ND	-----	0.00200	1,2,3,7,8-PeCDD-13C	2.00	106
				1,2,3,4,7,8-HxCDF-13C	2.00	70
1,2,3,7,8-PeCDF	ND	-----	0.01000	1,2,3,6,7,8-HxCDF-13C	2.00	75
2,3,4,7,8-PeCDF	ND	-----	0.01000	2,3,4,6,7,8-HxCDF-13C	2.00	79
Total PeCDF	ND	-----	0.01000	1,2,3,7,8,9-HxCDF-13C	2.00	91
				1,2,3,4,7,8-HxCDD-13C	2.00	84
1,2,3,7,8-PeCDD	ND	-----	0.01000	1,2,3,6,7,8-HxCDD-13C	2.00	94
Total PeCDD	ND	-----	0.01000	1,2,3,4,6,7,8-HpCDF-13C	2.00	81
				1,2,3,4,7,8,9-HpCDF-13C	2.00	70
1,2,3,4,7,8-HxCDF	ND	-----	0.01000	1,2,3,4,6,7,8-HpCDD-13C	2.00	88
1,2,3,6,7,8-HxCDF	ND	-----	0.01000	OCDD-13C	4.00	75
2,3,4,6,7,8-HxCDF	ND	-----	0.01000			
1,2,3,7,8,9-HxCDF	ND	-----	0.01000	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	-----	0.01000	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	0.01000	2,3,7,8-TCDD-37Cl4	0.20	89
1,2,3,6,7,8-HxCDD	ND	-----	0.01000			
1,2,3,7,8,9-HxCDD	ND	-----	0.01000			
Total HxCDD	ND	-----	0.01000			
1,2,3,4,6,7,8-HpCDF	ND	-----	0.01000	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.01000	Equivalence: 0.00 ng/L		
Total HpCDF	ND	-----	0.01000	(Using ITE Factors)		
1,2,3,4,6,7,8-HpCDD	ND	-----	0.01000			
Total HpCDD	ND	-----	0.01000			
OCDF	ND	-----	0.02000			
OCDD	ND	-----	0.02000			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers)
EMPC = Estimated Maximum Possible Concentration
A = Detection Limit based on signal-to-noise measurement
J = Concentration detected is below the calibration range
B = Less than 10 times higher than method blank level
P = Recovery outside of target range
Nn = Value obtained from additional analysis

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E = PCDE Interference
S = Saturated signal
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Report No.....1027103

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Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

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Method 8290 Analysis Results

Client - Analytical Resources Inc.

Client's Sample ID	06-1161-IZ30T MW-107		
Lab Sample ID	1027103004		
Filename	F60214A_20		
Injected By	MRO		
Total Amount Extracted	874 mL	Matrix	Water
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	01/24/2006
ICAL Date	02/14/2006	Received	01/27/2006
CCal Filename(s)	F60214A_11 & F60214A_25	Extracted	02/13/2006
Method Blank ID	BLANK-8890	Analyzed	02/15/2006 01:54

Native Isomers	Conc ng/L	EMPC ng/L	LRL ng/L		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	0.0023		2,3,7,8-TCDF-13C	2.00	86
Total TCDF	ND	-----	0.0023		2,3,7,8-TCDD-13C	2.00	93
					1,2,3,7,8-PeCDF-13C	2.00	88
2,3,7,8-TCDD	ND	-----	0.0023		2,3,4,7,8-PeCDF-13C	2.00	94
Total TCDD	ND	-----	0.0023		1,2,3,7,8-PeCDD-13C	2.00	109
					1,2,3,4,7,8-HxCDF-13C	2.00	83
1,2,3,7,8-PeCDF	ND	-----	0.0110		1,2,3,6,7,8-HxCDF-13C	2.00	90
2,3,4,7,8-PeCDF	ND	-----	0.0110		2,3,4,6,7,8-HxCDF-13C	2.00	108
Total PeCDF	ND	-----	0.0110		1,2,3,7,8,9-HxCDF-13C	2.00	100
					1,2,3,4,7,8-HxCDD-13C	2.00	91
1,2,3,7,8-PeCDD	ND	-----	0.0110		1,2,3,6,7,8-HxCDD-13C	2.00	106
Total PeCDD	ND	-----	0.0110		1,2,3,4,6,7,8-HpCDF-13C	2.00	95
					1,2,3,4,7,8,9-HpCDF-13C	2.00	86
1,2,3,4,7,8-HxCDF	ND	-----	0.0110		1,2,3,4,6,7,8-HpCDD-13C	2.00	103
1,2,3,6,7,8-HxCDF	ND	-----	0.0110		OCDD-13C	4.00	94
2,3,4,6,7,8-HxCDF	ND	-----	0.0110				
1,2,3,7,8,9-HxCDF	ND	-----	0.0110		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	-----	0.0110		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	0.0110		2,3,7,8-TCDD-37Cl4	0.20	89
1,2,3,6,7,8-HxCDD	ND	-----	0.0110				
1,2,3,7,8,9-HxCDD	ND	-----	0.0110				
Total HxCDD	ND	-----	0.0110				
1,2,3,4,6,7,8-HpCDF	ND	-----	0.0110		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.0110		Equivalence: 0.00081 ng/L		
Total HpCDF	0.012	-----	0.0110	J	(Using ITE Factors)		
1,2,3,4,6,7,8-HpCDD	0.050	-----	0.0110	J			
Total HpCDD	0.081	-----	0.0110				
OCDF	ND	-----	0.0230				
OCDD	0.310	-----	0.0230				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers)
EMPC = Estimated Maximum Possible Concentration
A = Detection Limit based on signal-to-noise measurement
J = Concentration detected is below the calibration range
B = Less than 10 times higher than method blank level
P = Recovery outside of target range
Nn = Value obtained from additional analysis

LRL = Lower Reporting Limit
I = Interference
E = PCDE Interference
S = Saturated signal
ND = Not Detected
NA = Not Applicable
NC = Not Calculated
* = See Discussion

Report No.....1027103

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Tel: 612-607-1700
Fax: 612-607-6444

Method 8290 Analysis Results

Client - Analytical Resources Inc.

Client's Sample ID	06-1162-IZ30U MW-110		
Lab Sample ID	1027103005		
Filename	F60214A_21		
Injected By	MRO		
Total Amount Extracted	968 mL	Matrix	Water
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	01/24/2006
ICAL Date	02/14/2006	Received	01/27/2006
CCal Filename(s)	F60214A_11 & F60214A_25	Extracted	02/13/2006
Method Blank ID	BLANK-8890	Analyzed	02/15/2006 02:43

Native Isomers	Conc ng/L	EMPC ng/L	LRL ng/L		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	0.00210		2,3,7,8-TCDF-13C	2.00	78
Total TCDF	ND	-----	0.00210		2,3,7,8-TCDD-13C	2.00	85
					1,2,3,7,8-PeCDF-13C	2.00	86
2,3,7,8-TCDD	ND	-----	0.00210		2,3,4,7,8-PeCDF-13C	2.00	94
Total TCDD	ND	-----	0.00210		1,2,3,7,8-PeCDD-13C	2.00	111
					1,2,3,4,7,8-HxCDF-13C	2.00	83
1,2,3,7,8-PeCDF	ND	-----	0.01000		1,2,3,6,7,8-HxCDF-13C	2.00	74
2,3,4,7,8-PeCDF	ND	-----	0.01000		2,3,4,6,7,8-HxCDF-13C	2.00	74
Total PeCDF	ND	-----	0.01000		1,2,3,7,8,9-HxCDF-13C	2.00	81
					1,2,3,4,7,8-HxCDD-13C	2.00	91
1,2,3,7,8-PeCDD	ND	-----	0.01000		1,2,3,6,7,8-HxCDD-13C	2.00	69
Total PeCDD	ND	-----	0.01000		1,2,3,4,6,7,8-HpCDF-13C	2.00	77
					1,2,3,4,7,8,9-HpCDF-13C	2.00	72
1,2,3,4,7,8-HxCDF	ND	-----	0.01000		1,2,3,4,6,7,8-HpCDD-13C	2.00	94
1,2,3,6,7,8-HxCDF	ND	-----	0.01000		OCDD-13C	4.00	81
2,3,4,6,7,8-HxCDF	ND	-----	0.01000				
1,2,3,7,8,9-HxCDF	ND	-----	0.01000		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	-----	0.01000		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	0.01000		2,3,7,8-TCDD-37Cl4	0.20	81
1,2,3,6,7,8-HxCDD	ND	-----	0.01000				
1,2,3,7,8,9-HxCDD	ND	-----	0.01000				
Total HxCDD	ND	-----	0.01000				
1,2,3,4,6,7,8-HpCDF	ND	-----	0.01000		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.01000		Equivalence: 0.000023 ng/L		
Total HpCDF	ND	-----	0.01000		(Using ITE Factors)		
1,2,3,4,6,7,8-HpCDD	ND	-----	0.01000				
Total HpCDD	ND	-----	0.01000				
OCDF	ND	-----	0.02100				
OCDD	0.023	-----	0.02100	J			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers)
EMPC = Estimated Maximum Possible Concentration
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1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

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Method 8290 Laboratory Control Spike Results

Client - Analytical Resources Inc.

Lab Sample ID	LCS-8891		
Filename	F60214A_13	Matrix	Water
Total Amount Extracted	983 mL	Dilution	NA
ICAL Date	02/14/2006	Extracted	02/13/2006
CCal Filename(s)	F60214A_11 & F60214A_25	Analyzed	02/14/2006 20:12
Method Blank ID	BLANK-8890	Injected By	MRO

Native Isomers	Qs (ng)	Qm (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.20	0.21	103	2,3,7,8-TCDF-13C	2.00	66
				2,3,7,8-TCDD-13C	2.00	70
				1,2,3,7,8-PeCDF-13C	2.00	65
2,3,7,8-TCDD	0.20	0.19	94	2,3,4,7,8-PeCDF-13C	2.00	67
				1,2,3,7,8-PeCDD-13C	2.00	76
				1,2,3,4,7,8-HxCDF-13C	2.00	57
1,2,3,7,8-PeCDF	1.00	1.07	107	1,2,3,6,7,8-HxCDF-13C	2.00	63
2,3,4,7,8-PeCDF	1.00	0.99	99	2,3,4,6,7,8-HxCDF-13C	2.00	55
				1,2,3,7,8,9-HxCDF-13C	2.00	76
				1,2,3,4,7,8-HxCDD-13C	2.00	64
1,2,3,7,8-PeCDD	1.00	0.88	88	1,2,3,6,7,8-HxCDD-13C	2.00	68
				1,2,3,4,6,7,8-HpCDF-13C	2.00	73
				1,2,3,4,7,8,9-HpCDF-13C	2.00	65
1,2,3,4,7,8-HxCDF	1.00	0.97	97	1,2,3,4,6,7,8-HpCDD-13C	2.00	80
1,2,3,6,7,8-HxCDF	1.00	1.01	101	OCDD-13C	4.00	73
2,3,4,6,7,8-HxCDF	1.00	0.96	96			
1,2,3,7,8,9-HxCDF	1.00	1.00	100	1,2,3,4-TCDD-13C	2.00	NA
				1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	1.00	1.02	102	2,3,7,8-TCDD-37Cl4	0.20	82
1,2,3,6,7,8-HxCDD	1.00	1.13	113			
1,2,3,7,8,9-HxCDD	1.00	1.16	116			
1,2,3,4,6,7,8-HpCDF	1.00	1.02	102			
1,2,3,4,7,8,9-HpCDF	1.00	1.01	101			
1,2,3,4,6,7,8-HpCDD	1.00	0.88	88			
OCDF	2.00	1.77	88			
OCDD	2.00	1.97	99			

Qs = Quantity Spiked
Qm = Quantity Measured
Rec. = Recovery (Expressed as Percent)
P = Recovery outside of target range
X = Background subtracted value
Nn = Value obtained from additional analysis
NA = Not Applicable
* = See Discussion

Report No.....1027103

REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Pace Analytical™

Method 8290 Laboratory Control Spike Results

Client - Analytical Resources Inc.

Lab Sample ID	LCSD-8893		
Filename	F60214A_30	Matrix	Water
Total Amount Extracted	902 mL	Dilution	2
ICAL Date	02/14/2006	Extracted	02/13/2006
CCal Filename(s)	F60214A_25 & F60214A_34	Analyzed	02/15/2006 10:09
Method Blank ID	BLANK-8890	Injected By	MRO

Native Isomers	Qs (ng)	Qm (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.20	0.21	106	2,3,7,8-TCDF-13C	2.00	80
				2,3,7,8-TCDD-13C	2.00	85
				1,2,3,7,8-PeCDF-13C	2.00	78
2,3,7,8-TCDD	0.20	0.18	91	2,3,4,7,8-PeCDF-13C	2.00	82
				1,2,3,7,8-PeCDD-13C	2.00	95
				1,2,3,4,7,8-HxCDF-13C	2.00	65
1,2,3,7,8-PeCDF	1.00	1.05	105	1,2,3,6,7,8-HxCDF-13C	2.00	72
2,3,4,7,8-PeCDF	1.00	1.00	100	2,3,4,6,7,8-HxCDF-13C	2.00	58
				1,2,3,7,8,9-HxCDF-13C	2.00	83
				1,2,3,4,7,8-HxCDD-13C	2.00	73
1,2,3,7,8-PeCDD	1.00	0.88	88	1,2,3,6,7,8-HxCDD-13C	2.00	85
				1,2,3,4,6,7,8-HpCDF-13C	2.00	80
				1,2,3,4,7,8,9-HpCDF-13C	2.00	77
1,2,3,4,7,8-HxCDF	1.00	0.98	98	1,2,3,4,6,7,8-HpCDD-13C	2.00	87
1,2,3,6,7,8-HxCDF	1.00	1.00	100	OCDD-13C	4.00	74
2,3,4,6,7,8-HxCDF	1.00	1.04	104			
1,2,3,7,8,9-HxCDF	1.00	0.98	98	1,2,3,4-TCDD-13C	2.00	NA
				1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	1.00	1.00	100	2,3,7,8-TCDD-37Cl4	0.20	87
1,2,3,6,7,8-HxCDD	1.00	1.06	106			
1,2,3,7,8,9-HxCDD	1.00	1.10	110			
1,2,3,4,6,7,8-HpCDF	1.00	1.03	103			
1,2,3,4,7,8,9-HpCDF	1.00	0.93	93			
1,2,3,4,6,7,8-HpCDD	1.00	0.93	93			
OCDF	2.00	1.84	92			
OCDD	2.00	1.90	95			

Qs = Quantity Spiked
Qm = Quantity Measured
Rec. = Recovery (Expressed as Percent)
P = Recovery outside of target range
X = Background subtracted value
Nn = Value obtained from additional analysis
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* = See Discussion

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www.pacelabs.com

Pace Analytical Services, Inc.
1700 Elm Street
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

SPIKE RECOVERY RELATIVE PERCENT DIFFERENCE (RPD) RESULTS

Client..... Analytical Resources Inc.

SPIKE 1 ID..... LCS-8891
SPIKE 1 Filename..... F60214A_13
SPIKE 2 ID..... LCSD-8893
SPIKE 2 Filename..... F60214A_30

COMPOUND	SPIKE 1 REC,%	SPIKE 2 REC,%	RPD,%
2378-TCDF	103	106	2.9
2378-TCDD	94	91	3.2
12378-PeCDF	107	105	1.9
23478-PeCDF	99	100	1.0
12378-PeCDD	88	88	0.0
123478-HxCDF	97	98	1.0
123678-HxCDF	101	100	1.0
234678-HxCDF	96	104	8.0
123789-HxCDF	100	98	2.0
123478-HxCDD	102	100	2.0
123678-HxCDD	113	106	6.4
123789-HxCDD	116	110	5.3
1234678-HpCDF	102	103	1.0
1234789-HpCDF	101	93	8.2
1234678-HpCDD	88	93	5.5
OCDF	88	92	4.4
OCDD	99	95	4.1

REC = Percent Recovered
RPD = The difference between the two values divided by the average.
NA = Not Applicable

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