SGS

Laboratory Results

Mr. Michael Legg
Severn Trent
2417 Bond Street
University Park IL 60466

Phone: 708-534-5200
Fax: 708-534-5211

Dear Mr. Lang:

Enclosed is a full data package containing the final results for samples received by SGS Environmental Services, Inc. on June 20, 2007 under your project name "State of DE/Hercules". The samples were analyzed by Method 1613 following SGS's Standard Operating Procedures and are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards.

Number of Samples Received:	4
Your Project Reference:	State of DE/Hercules
PAL Project Number:	G348-157

We appreciate your business and look forward to working with you again. Please contact me at 910-350-1903 if you have questions or need additional technical support.

Sincerely,

for CKC

Christopher K. Cornwell
Assistant Director

07/06/2007
Date

DC138.033007.7

Quanterra Analytical Laboratories, Inc. | 5500 Business Dr., Wilmington, NC 28405 t (910) 350-1903 f (910) 350-1557 www.sgs.com

Member of the SGS Group

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Case Narrative
SGS Project: G348-157
Project Name: **State of Delaware/Hercules**

For Method: 1613 for 2,3,7,8-TCDD only

- The submitted samples were accepted into the lab on June 20th, 2007 and extracted on June 28th, 2007 by method 3520C. The sample extracst and associated QC extracts were then processed through clean-up by method 3630/3620 and analyzed by HRGC/HRMS for methods 1613.

Craig R. Tronzo Date
Data Validation/QA Officer

Secondary Review

W. Mike Larkins Date
Technical Director

Or

Heather Patterson 06Jul07
Heather Patterson Date
Director

SGS

List of Qualifiers: Dioxin's

B Analyte was detected in the Lab Method Blank at a level above the Reporting Limit.

EDL "Estimated Detection Limit"

EMPC "Estimated Maximum Possible Concentration"

ppt Parts-per-trillion (pg/g; ng/L)

V Recovery is below quality control limit. The data has been validated based on a favorable signal-to-noise and detection limit.

Outside quality control limits

* Indicates that the ion-ratio fails high or low; analyte reported as an EMPC

An average uncertainty of 30% can be routinely achieved as concluded from the evaluation of HRGC-HRMS standard operating procedures. The following flags warn the data user of situations where the uncertainty may be greater than stated.

A Amount detected is less than the Lower Method Calibration Limit.

J Amount detected is between the Method Detection Limit and the Lower Calibration Limit.

E Amount detected is greater than the Upper Calibration Limit.

S The amount of analyte present has saturated the detector. This situation results in an underestimation of the affected analyte(s).

Q Indicates the presence of a quantitative interference. This situation may result in an underestimation of the affected analyte(s).

I Indicates the presence of a qualitative interference that could cause a false positive or an overestimation of the affected analyte(s).

DPE Indicates the presence of a peak in the polychlorinated diphenylether channel that could cause a false positive or an overestimation of the affected analyte(s).

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Toxic Equivalency Factors

Analyte	WHO* 1998	WHO* 2005	International-89	MADEP+
2,3,7,8-TCDD	1	1	1	1
1,2,3,7,8-PeCDD	1	1	0.5	0.5
1,2,3,4,7,8-HxCDD	0.1	0.1	0.1	0.1
1,2,3,6,7,8-HxCDD	0.1	0.1	0.1	0.1
1,2,3,7,8,9-HxCDD	0.1	0.1	0.1	0.1
1,2,3,4,6,7,8-HpCDD	0.01	0.01	0.01	0.1
OCDD	0.0001	0.0003	0.001	0.001
2,3,7,8-TCDF	0.1	0.1	0.1	0.1
1,2,3,7,8-PeCDF	0.05	0.03	0.05	0.5
2,3,4,7,8-PeCDF	0.5	0.3	0.5	0.5
1,2,3,4,7,8-HxCDF	0.1	0.1	0.1	0.1
1,2,3,6,7,8-HxCDF	0.1	0.1	0.1	0.1
2,3,4,6,7,8-HxCDF	0.1	0.1	0.1	0.1
1,2,3,7,8,9-HxCDF	0.1	0.1	0.1	0.1
1,2,3,4,6,7,8-HpCDF	0.01	0.01	0.01	0.1
1,2,3,4,7,8,9-HpCDF	0.01	0.01	0.01	0.1
OCDF	0.0001	0.0003	0.001	0.001

* World Health Organization
+ Massachusetts Department of Environmental Protection

Method 1613

HERSOGRN91

Severn Trent

Analytical Data Summary Sheet

Analyte	Amount (pg/g)	RL (pg/g)	RT (min.)	Ratio	Qualifier
2,3,7,8-TCDD	ND	1.00			

Analytical Data Summary Sheet

Labeled Standard	Expected Amount (ng)	Measured Amount (ng)	Percent Recovery (%)	RT (min.)	Ratio	Qualifier
Extraction Standards						
$^{13}C_{12}$-2,3,7,8-TCDD	2.0	1.77	88.7	31:34	0.78	
Cleanup Standards						
$^{37}Cl_4$-2,3,7,8-TCDD	0.4	0.387	96.7	31:35		
Injection Standards						
$^{13}C_{12}$-1,2,3,4-TCDD	2.0			31:09	0.79	

Client Information

Project Name:	State of DE/Hercules
Sample ID:	HERSOGRN91

Laboratory Information

Project ID:	G348-157	
Sample ID:	G348-157-1B	
Collection Date/Time:	19-Jun-07	10:20
Receipt Date:	20-Jun-07	10:10
Extraction Date:	28-Jun-07	
Analysis Date:	05-Jul-07	20:06

Sample Information

Report Basis:	Dry Weight	
Matrix:	Soil	
Weight / Volume:	12.47	Grams
Solids / Lipids:	81.85	%
Original pH :	NA	
Batch ID:	WG14336	
Filename:	a05jul07b-11	
Retchk:	a05jul07b-1	
Begin ConCal:	a05jul07b-1	
Initial Cal:	m1613-071006e	

Analyzed by: JWS
Date: 07-06-07

Reviewed by: [illegible]
Date: 7/6/07

Form Version:[1613_HRMS12_v5.05]1613tcdd

Method 1613

HERSOGRN92

Severn Trent

Analytical Data Summary Sheet

Analyte	Amount (pg/g)	RL (pg/g)	RT (min.)	Ratio	Qualifier
2,3,7,8-TCDD	ND	1.00			

Analytical Data Summary Sheet

Labeled Standard	Expected Amount (ng)	Measured Amount (ng)	Percent Recovery (%)	RT (min.)	Ratio	Qualifier
Extraction Standards						
$^{13}C_{12}$-2,3,7,8-TCDD	2.0	1.63	81.5	31:34	0.79	
Cleanup Standards						
$^{37}Cl_4$-2,3,7,8-TCDD	0.4	0.379	94.7	31:35		
Injection Standards						
$^{13}C_{12}$-1,2,3,4-TCDD	2.0			31:08	0.78	

Client Information

Project Name: State of DE/Hercules

Sample ID: HERSOGRN92

Sample Information

Report Basis: Dry Weight

Matrix: Soil

Weight / Volume: 12.78 Grams

Solids / Lipids: 85.77 %

Original pH : NA

Batch ID: WG14336

Laboratory Information

Project ID: G348-157

Sample ID: G348-157-2B

Collection Date/Time: 19-Jun-07 10:20

Receipt Date: 20-Jun-07 10:10

Extraction Date: 28-Jun-07

Analysis Date: 05-Jul-07 20:55

Filename: a05jul07b-12

Retchk: a05jul07b-1

Begin ConCal: a05jul07b-1

Initial Cal: m1613-071006e

Analyzed by: JW

Date: 07-06-07

Reviewed by: [illegible]

Date: 7/4/07

Form Version:[1613_HRMS12_v5.05]1613tcdd

Method 1613

HERSOFAR1

Severn Trent

Analytical Data Summary Sheet

Analyte	Amount (pg/g)	RL (pg/g)	RT (min.)	Ratio	Qualifier
2,3,7,8-TCDD	1.15	1.00	31:35	0.78	

Analytical Data Summary Sheet

Labeled Standard	Expected Amount (ng)	Measured Amount (ng)	Percent Recovery (%)	RT (min.)	Ratio	Qualifier
Extraction Standards						
$^{13}C_{12}$-2,3,7,8-TCDD	2.0	1.80	90.0	31:34	0.78	
Cleanup Standards						
$^{37}Cl_4$-2,3,7,8-TCDD	0.4	0.391	97.7	31:35		
Injection Standards						
$^{13}C_{12}$-1,2,3,4-TCDD	2.0			31:09	0.78	

Client Information

Project Name:	State of DE/Hercules
Sample ID:	HERSOFAR1

Laboratory Information

Project ID:	G348-157	
Sample ID:	G348-157-3B	
Collection Date/Time:	19-Jun-07	10:40
Receipt Date:	20-Jun-07	10:10
Extraction Date:	28-Jun-07	
Analysis Date:	05-Jul-07	21:43

Sample Information

Report Basis:	Dry Weight	
Matrix:	Soil	
Weight / Volume:	13.92	Grams
Solids / Lipids:	84.11	%
Original pH :	NA	
Batch ID:	WG14336	
Filename:	a05jul07b-13	
Retchk:	a05jul07b-1	
Begin ConCal:	a05jul07b-1	
Initial Cal:	m1613-071006e	

Analyzed by: JWP
Date: 07.06.07

Reviewed by: [illegible]
Date: 7/12/07

Form Version:[1613_HRMS12_v5.05]1613tcdd

Method 1613

HERSOFAR4

Severn Trent

Analytical Data Summary Sheet

Analyte	Amount (pg/g)	RL (pg/g)	RT (min.)	Ratio	Qualifier
2,3,7,8-TCDD	ND	1.00			

Analytical Data Summary Sheet

Labeled Standard	Expected Amount (ng)	Measured Amount (ng)	Percent Recovery (%)	RT (min.)	Ratio	Qualifier
Extraction Standards						
$^{13}C_{12}$-2,3,7,8-TCDD	2.0	1.72	86.0	31:34	0.78	
Cleanup Standards						
$^{37}Cl_4$-2,3,7,8-TCDD	0.4	0.381	95.2	31:34		
Injection Standards						
$^{13}C_{12}$-1,2,3,4-TCDD	2.0			31:09	0.79	

Client Information

Project Name:	State of DE/Hercules
Sample ID:	HERSOFAR4

Sample Information

Report Basis:	Dry Weight	
Matrix:	Soil	
Weight / Volume:	14.58	Grams
Solids / Lipids:	70.73	%
Original pH :	NA	
Batch ID:	WG14336	

Laboratory Information

Project ID:	G348-157			
Sample ID:	G348-157-4B		Filename:	a05jul07b-14
Collection Date/Time:	19-Jun-07	10:55	Retchk:	a05jul07b-1
Receipt Date:	20-Jun-07	10:10	Begin ConCal:	a05jul07b-1
Extraction Date:	28-Jun-07			
Analysis Date:	05-Jul-07	22:31	Initial Cal:	m1613-071006e

Analyzed by: JWS

Date: 07-06-07

Reviewed by: [illegible]

Date: 7/6/07

Form Version:[1613_HRMS12_v5.05]1613tcdd

Method 1613 - Blank Results

LMB

Analytical Data Summary Sheet

Analyte	Amount (pg/g)	RL (pg/g)	RT (min.)	Ratio	Qualifier
2,3,7,8-TCDD	ND	1.00			

Analytical Data Summary Sheet

Labeled Standard	Expected Amount (ng)	Measured Amount (ng)	Percent Recovery (%)	RT (min.)	Ratio	Qualifier
Extraction Standards						
$^{13}C_{12}$-2,3,7,8-TCDD	2.0	1.78	89.1	31:34	0.78	
Cleanup Standards						
$^{37}Cl_4$-2,3,7,8-TCDD	0.4	0.395	98.7	31:35		
Injection Standards						
$^{13}C_{12}$-1,2,3,4-TCDD	2.0			31:09	0.78	

Sample Information

Report Basis:	Dry Weight	
Matrix:	Soil	
Weight / Volume:	10.00	Grams
Solids / Lipids:	100	%
Original pH :	NA	
Batch ID:	WG14336	

Laboratory Information

Sample ID:	LMB14336		Filename:	a05jul07b-10
			Retchk:	a05jul07b-1
			Begin ConCal:	a05jul07b-1
Extraction Date:	28-Jun-07			
Analysis Date:	05-Jul-07	19:18	Initial Cal:	m1613-071006e

Analyzed by: JW
Date: 07-[illegible]-07

Reviewed by: [illegible]
Date: 7/6/07

Form Version:[1613_HRMS12_v5.05]1613tcdd

Analytical Results
for
Ongoing Precision Result (OPR)

Analyte	Spiked pg/ul	AMT pg/ul	REC %	Range pg/ul Lower	Range pg/ul Upper	Flag
2,3,7,8-TCDD	10.0	9.52	95.2	6.70	15.8	

= Outside range limits
* = Ion Ratio Out

QC Information

OPR Lab ID:	OPR14336
Extraction Date:	28-Jun-07
Analysis Date:	05-Jul-07
Method:	1613

Sample Information

Matrix:	Soil

File Information

OPR Filename :	a05jul07b-8
Retchk:	a05jul07b-1
Begin ConCal:	a05jul07b-1
Initial Cal:	m1613-071006e

Analytical Results
for
Ongoing Precision Result (OPR)

Labeled Standard	Spiked pg/ul	AMT pg/ul	REC %	Range pg/ul Lower	Range pg/ul Upper	Flag
Extraction Standards						
$^{13}C_{12}$-2,3,7,8-TCDD	100	88.1	88.1	20.0	175	
Cleanup Standards						
$^{37}C_{14}$-2,3,7,8-TCDD	20.0	18.3	91.7	6.20	38.2	

Form Version:[OPRv3.474]1613

QC Information

OPR Lab ID: OPR14336
Extraction Date: 28-Jun-07
Analysis Date: 05-Jul-07
Method: 1613

File Information

OPR Filename : a05jul07b-8
Retchk: a05jul07b-1
Begin ConCal: a05jul07b-1

Initial Cal: m1613-071006e

Sample Information

Matrix: Soil

Reviewed by: [illegible]

Date Reviewed: 7/11/07

Analytical Results
for
Ongoing Precision Result (OPRD)

Analyte	Spiked pg/ul	AMT pg/ul	Recovery %	#	Range pg/ul Lower	Range pg/ul Upper	OPR Rec(%)	#	RPD	#
2,3,7,8-TCDD	10.0	9.63	96.3		6.70	15.8	95.2		1.14	

= Outside range limits
* = Ion Ratio Out

QC Information

OPRD Lab ID: OPRD14336
Extraction Date: 28-Jun-07
Analysis Date: 5-JUL-07 18:30:17
Method: 1613

File Information

OPRD Filename: a05jul07b-9
Retchk: a05jul07b-1
Begin ConCal: a05jul07b-1
Initial Cal: m1613-071006e

Sample Information

Matrix: Soil

Analytical Results
for
Ongoing Precision Result (OPRD)

Labeled Standard	Spiked pg/ul	AMT pg/ul	REC %	Range pg/ul Lower	Range pg/ul Upper	Flag
Extraction Standards						
$^{13}C_{12}$-2,3,7,8-TCDD	100	87.6	87.6	20.0	175	
Cleanup Standards						
$^{37}C_{14}$-2,3,7,8-TCDD	20.0	18.8	93.9	6.20	38.2	

Form Version:[OPRDv4.128]1613

QC Information

OPRD Lab ID: OPRD14336
Extraction Date: 28-Jun-07
Analysis Date: 5-JUL-07 18:30:17
Method: 1613

File Information

OPRD Filename : a05jul07b-9
Retchk: a05jul07b-1
Begin ConCal: a05jul07b-1
Initial Cal: m1613-071006e

Sample Information

Matrix: Soil

Reviewed by: [illegible]

Date Reviewed: 7/6/07

Environmental Laboratory Section - Division of Water Resources
Department of Natural Resources and Environmental Control
89 Kings Highway, Dover, DE 19901 (302) 739-4771

FIELD CHAIN OF CUSTODY

(Complete in BLUE ink)

Client : Robert M. Schulte
Address : DNREC - Division of Air & Waste Management
391 Lukens Drive, New Castle, DE 19720
Phone No.: (302) 395-2600

Report To : Robert M. Schulte
Invoice To : Robert M. Schulte
Account :
ELS Order ID :

PROJECT NAME
Hercules / Delaware National /

SAMPLERS (Please Print)
T. Ratsep, R. Asreen, C. Hall

(ELS Use Only) Lab Log No.	Client Sample Description	Sample Date	Sample Time	Matrix*	Comp	Grab	No. Of Containers	ANALYSES: 163								REMARKS
	HERSOGRN91 /	6/19/07	1020	SO		x	1	x								2,3,7,8-TCDD only
	HERSOGRN92 /	6/19/07		SO		x	1	x								2,3,7,8-TCDD only
	HERSOFAR 1 /	6/19/07	1040	SO		x	1	x								2,3,7,8-TCDD only
	HERSOFAR4 /	6/19/07	1055	SO		x	1	x								2,3,7,8-TCDD only

RELINQUISHED BY: (signature)	DATE	TIME	RECEIVED BY: (signature)
[signature]	6/14/07	1231	[signature] SZL
[signature] SZL	6/19/07	1400	[signature] 6/20/07 1010 5.2

DW - drinking water
ER - equip. rinseate
GW - ground water
Lab - lab water
LW - liquid waste
SE - sediment
SL - sludge
SO - soil
SW - surface water
TI - tissue
WS - solid waste
WW - waste water

COMMENTS:

Is laboratory chain-of-custody required?
Yes / No

ELS USE ONLY
Sample Conditions (circle response):
1. Samples match COC? Yes/No 2. Bottles supplied by ELS? Yes/No 3. Samples received broken/leaking? Yes/No 4. Cooler temp bottle 2-6 degrees? Yes/No/NA
5. Properly preserved? Yes/No 6. VOA/DO containers free of headspace? Yes/No/NA 7. Holding times expired? Yes/No 8. Volume sufficient for analysis? Yes/No