

**Derenzo and Associates, Inc.**

*Environmental Consultants*

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April 22, 2011

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BUREAU OF  
AIR REGULATION

Ms. Trina Vielhauer, Bureau Chief  
Bureau of Air Regulation  
Department of Environmental Protection  
STATE OF FLORIDA  
2600 Blair Stone Road, MS 5505  
Tallahassee, FL 32399-2400

Subject: Seminole Energy, LLC  
DEP File No. 1170084-008-AC (PSD-FL-376A)  
LFG Monitoring Chlorine Contents

Dear Ms. Vielhauer:

Condition 3.C. of Section III – Emission Unit(s) Specific Conditions of Air Construction Permit 1170084-008-AC (PSD-FL-376A) issued Seminole Energy, LLC (Seminole Energy) specifies that *The permittee shall comply with the following requirements to monitor the sulfur and chlorine content of the landfill gas:*

*... the permittee shall sample and analyze the landfill gas for sulfur and chlorine content. The gas sample collected for the analyses shall be a composite sample and collected under normal operating conditions ... The gas sample collection and analyses for sulfur and chlorine content shall be done semi-annually ... Results shall be reported as SO<sub>2</sub> and HCl emission factors in terms of lb/MMscf of landfill gas.*

The initial gas sample collection and analyses were completed in February 2007. Therefore, Derenzo and Associates, Inc. (Derenzo and Associates), on behalf of Seminole Energy, is submitting to the Florida Department of Environmental Protection, Division of Air Resource Management (FDEP-DARM) results of the chlorine analysis that was performed on a sample of landfill gas (LFG) obtained from the Osceola Road Solid Waste Management Facility in March 2011 (semi-annual collection and analyses). The required HCl emission factors (in terms of lb/MMscf of landfill gas) and supporting analytical data are provided in the attached documents. The required SO<sub>2</sub> analysis and emission factors will be provided at a later date in a subsequent report.

The air permit application for Seminole Energy developed (based on USEPA AP-42 default LFG composition data) an HCl emission factor of 11.95 lb/MMscf of LFG.

The HCl emission factor developed from analyses of the March 10, 2011 sample of LFG obtained from the Osceola Road Solid Waste Management Facility is 0.47 lb/MMscf of LFG (<1.08 lb/MMscf of LFG with the incorporation of all non-measured chemicals at its reporting limit).

**Derenzo and Associates, Inc.**

Ms. Trina Vielhauer  
FDEP-DARM

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Please contact us if you have questions or require clarifications

Sincerely,

DERENZO AND ASSOCIATES, INC.

A handwritten signature in black ink, appearing to read "Charles Scamp". The signature is fluid and cursive, with a long horizontal stroke at the end.

Charles Scamp  
Environmental consultant

attachments

- c: Mike Laframboise, Landfill Energy Systems
- Garry Kuberski, FDEP Central District Office
- Kimberly Russell, Seminole County Solid Waste Management Division

Seminole Energy, LLC (March 10, 2011 Sample)

LFG Combustion Hydrogen Chloride Emission Factor

LFG Influent Chlorine Compounds	Analytical Report Concentration <sup>1</sup> (ppm)	Molecular Formula	No. Chlorine Atoms	HCl Emission Factor (lb./MMcf)
Freon 12 (Dichlorodifluoromethane)	0.467	CCl <sub>2</sub> F <sub>2</sub>	2	0.088 *
Freon 114 (Dichlorotetrafluoroethane)	<0.069	C <sub>2</sub> Cl <sub>2</sub> F <sub>4</sub>	2	<0.013
Chloromethane	<0.287	CH <sub>3</sub> Cl	1	<0.027
Vinyl Chloride	0.087	C <sub>2</sub> HCl	1	0.008
Chloroethane	<0.287	C <sub>2</sub> H <sub>5</sub> Cl	1	<0.027
Freon 11 (Fluorotrichloromethane)	<0.069	CFCl <sub>3</sub>	3	<0.020
Freon 113 (1,1,2-trichloro-1,2,2-trifluoroethane)	<0.069	C <sub>2</sub> Cl <sub>2</sub> F <sub>3</sub>	2	<0.013
3-Chloropropene	<0.287	C <sub>3</sub> H <sub>5</sub> Cl	1	<0.027
Methylene Chloride (Dichloromethane)	0.177	CH <sub>2</sub> Cl <sub>2</sub>	2	0.033
1,2-Dichloroethene (as cis-1,2-Dichloroethene)	0.263	C <sub>2</sub> H <sub>2</sub> Cl <sub>2</sub>	2	0.050
1,2-Dichloroethene (as trans-1,2-Dichloroethene)	<0.069	C <sub>2</sub> H <sub>2</sub> Cl <sub>2</sub>	2	<0.013
1,1-Dichloroethane	<0.069	C <sub>2</sub> H <sub>4</sub> Cl <sub>2</sub>	2	<0.013
1,1-Dichloroethene	<0.069	C <sub>2</sub> H <sub>2</sub> Cl <sub>2</sub>	2	<0.013
Chloroform	<0.069	CHCl <sub>3</sub>	3	<0.020
1,1,1-Trichloroethane	<0.069	C <sub>2</sub> H <sub>3</sub> Cl <sub>3</sub>	3	<0.020
Carbon Tetrachloride	<0.069	CCl <sub>4</sub>	4	<0.026
1,2-Dichloroethane	0.213	C <sub>2</sub> H <sub>4</sub> Cl <sub>2</sub>	2	0.040
Trichloroethene	0.140	C <sub>2</sub> HCl <sub>3</sub>	3	0.040
1,2-dichloropropane	<0.069	C <sub>3</sub> H <sub>6</sub> Cl <sub>2</sub>	2	<0.013
Bromodichloromethane	<0.069	CBrCl <sub>2</sub>	2	<0.013
1,3-Dichloropropene (as cis-1,3-Dichloropropene)	<0.069	C <sub>3</sub> H <sub>4</sub> Cl <sub>2</sub>	2	<0.013
1,3-Dichloropropene (as trans-1,3-Dichloropropene)	<0.069	C <sub>3</sub> H <sub>4</sub> Cl <sub>2</sub>	2	<0.013
1,1,2-Trichloroethane	<0.069	C <sub>2</sub> H <sub>3</sub> Cl <sub>3</sub>	3	<0.020
Tetrachloroethene (Perchloroethene)	0.310	C <sub>2</sub> Cl <sub>4</sub>	4	0.117
Dibromochloromethane	<0.069	CHBr <sub>2</sub> Cl	1	<0.007
Chlorobenzene	0.102	C <sub>6</sub> H <sub>5</sub> Cl	1	0.010
1,1,2,2-Tetrachloroethane	<0.069	C <sub>2</sub> H <sub>2</sub> Cl <sub>4</sub>	4	<0.026
1,3-Dichlorobenzene	<0.069	C <sub>6</sub> H <sub>4</sub> Cl <sub>2</sub>	2	<0.013
1,4-Dichlorobenzene	0.457	C <sub>6</sub> H <sub>4</sub> Cl <sub>2</sub>	2	0.086
alpha-Chlorotoluene	<0.069	C <sub>7</sub> H <sub>7</sub> Cl	1	<0.007
1,2-Dichlorobenzene	<0.069	C <sub>6</sub> H <sub>4</sub> Cl <sub>2</sub>	2	<0.013
1,2,4-Trichlorobenzene	<0.287	C <sub>6</sub> H <sub>3</sub> Cl <sub>3</sub>	3	<0.081
Hexachlorobutadiene	<0.287	C <sub>4</sub> Cl <sub>6</sub>	6	<0.162
<b>Total hydrogen chloride emission factor (lb./MMcf)</b>				<b>&lt;1.08</b>

Notes

1. March 31, 2011 LFG sample laboratory analytical results. Average of 3 samples (see Attachment).

\* Example calculation for Freon 12 that assumes complete conversion of chloride to HCl

$$(0.467 \text{ ft}^3 \text{ Freon 12/MMcf LFG}) (2 \text{ mol HCl/mol Freon 12}) (36.46 \text{ lb. HCl/mol}) / (387 \text{ ft}^3/\text{mol})$$

$$= 0.088 \text{ lb. HCl/MMcf LFG}$$

Seminole Energy, LLC (March 10, 2011 Sample)

**LFG Combustion Hydrogen Chloride Emission Factor**

LFG Influent Chlorine Compounds <sup>1</sup>	Measured Concentration (ppm)	Molecular Formula	No. Chlorine Atoms	HCl Emission Factor (lb./MMcf)
Freon 12 (Dichlorodifluoromethane)	0.467	CCl <sub>2</sub> F <sub>2</sub>	2	0.088 *
Vinyl Chloride	0.087	C <sub>2</sub> HCl	1	0.008
Methylene Chloride (Dichloromethane)	0.177	CH <sub>2</sub> Cl <sub>2</sub>	2	0.033
1,2-Dichloroethene (as cis-1,2-Dichloroethene)	0.263	C <sub>2</sub> H <sub>2</sub> Cl <sub>2</sub>	2	0.050
1,2-Dichloroethane	0.213	C <sub>2</sub> H <sub>4</sub> Cl <sub>2</sub>	2	0.040
Trichloroethene	0.140	C <sub>2</sub> HCl <sub>3</sub>	3	0.040
Tetrachloroethene (Perchloroethene)	0.310	C <sub>2</sub> Cl <sub>4</sub>	4	0.117
Chlorobenzene	0.102	C <sub>6</sub> H <sub>5</sub> Cl	1	0.010
1,4-Dichlorobenzene	0.457	C <sub>6</sub> H <sub>4</sub> Cl <sub>2</sub>	2	0.086
<b>Total hydrogen chloride emission factor (lb./MMcf)</b>				<b>0.47</b>

Notes

1. March 31, 2011 LFG sample laboratory analytical results. Average of 3 samples (see Attachment).

\* Example calculation for Freon 12 that assumes complete conversion of chloride to HCl

$$(0.467 \text{ ft}^3 \text{ Freon 12/MMcf LFG}) (2 \text{ mol HCl/mol Freon 12}) (36.46 \text{ lb. HCl/mol}) / (387 \text{ ft}^3/\text{mol}) = 0.088 \text{ lb. HCl/MMcf LFG}$$

**LABORATORY NARRATIVE  
EPA Method TO-15  
Derenzo & Associates  
Workorder# 1103542**

Three 6 Liter Summa Canister samples were received on March 24, 2011. The laboratory performed analysis via modified EPA Method TO-15 using GC/MS in the full scan mode.

This workorder was independently validated prior to submittal using 'USEPA National Functional Guidelines' as generally applied to the analysis of volatile organic compounds in air. A rules-based, logic driven, independent validation engine was employed to assess completeness, evaluate pass/fail of relevant project quality control requirements and verification of all quantified amounts.

**Receiving Notes**

There were no receiving discrepancies.

**Analytical Notes**

The canisters in this work order were pressurized with Helium prior to sampling, per client request. Dilution factors have been adjusted accordingly.

Dilution was performed on all of the samples due to the presence of high level target species.

All Quality Control Limit exceedences and affected sample results are noted by flags. Each flag is defined at the bottom of this Case Narrative and on each Sample Result Summary page. Target compound non-detects in the samples that are associated with high bias in QC analyses have not been flagged.

**Definition of Data Qualifying Flags**

Eight qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit.

UJ- Non-detected compound associated with low bias in the CCV and/or LCS.

N - The identification is based on presumptive evidence.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue



**Summary of Detected Compounds  
EPA METHOD TO-15 GC/MS FULL SCAN**

**Client Sample ID: SEG-1**

**Lab ID#: 1103542-01A**

<b>Compound</b>	<b>Rpt. Limit (ppbv)</b>	<b>Amount (ppbv)</b>	<b>Rpt. Limit (ug/m3)</b>	<b>Amount (ug/m3)</b>
Freon 12	130	480	660	2400
Ethanol	540	82000 E	1000	150000 E
Acetone	540	22000	1300	53000
2-Propanol	540	17000	1300	41000
Methylene Chloride	130	210	470	720
Hexane	130	450	470	1600
2-Butanone (Methyl Ethyl Ketone)	540	19000	1600	57000
cis-1,2-Dichloroethene	130	280	530	1100
Tetrahydrofuran	130	3600	400	10000
Cyclohexane	130	390	460	1300
2,2,4-Trimethylpentane	130	180	630	840
Benzene	130	2400	430	7600
1,2-Dichloroethane	130	200	540	800
Heptane	130	740	550	3000
Trichloroethene	130	160	720	870
4-Methyl-2-pentanone	130	1100	550	4500
Toluene	130	8400	510	32000
Tetrachloroethene	130	310	910	2100
Ethyl Benzene	130	4500	580	20000
m,p-Xylene	130	7000	580	31000
o-Xylene	130	2200	580	9400
Styrene	130	600	570	2600
Cumene	130	660	660	3200
Propylbenzene	130	370	660	1800
4-Ethyltoluene	130	1400	660	6800
1,3,5-Trimethylbenzene	130	530	660	2600
1,2,4-Trimethylbenzene	130	1200	660	5900
1,4-Dichlorobenzene	130	300	810	1800

**Client Sample ID: SEG-2**

**Lab ID#: 1103542-02A**



**Summary of Detected Compounds**  
**EPA METHOD TO-15 GC/MS FULL SCAN**

Client Sample ID: SEG-2

Lab ID#: 1103542-02A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	34	470	170	2300
Vinyl Chloride	34	65	87	170
Ethanol	140	79000 E	260	150000 E
Acetone	140	22000 E	320	53000 E
2-Propanol	140	16000 E	340	38000 E
Methylene Chloride	34	180	120	620
Hexane	34	430	120	1500
2-Butanone (Methyl Ethyl Ketone)	140	20000 E	400	59000 E
cis-1,2-Dichloroethene	34	260	140	1000
Tetrahydrofuran	34	3500	100	10000
Cyclohexane	34	410	120	1400
2,2,4-Trimethylpentane	34	180	160	850
Benzene	34	2400	110	7600
1,2-Dichloroethane	34	220	140	900
Heptane	34	660	140	2700
Trichloroethene	34	140	180	780
1,2-Dichloropropane	34	44	160	200
4-Methyl-2-pentanone	34	1200	140	4700
Toluene	34	8700	130	33000
Tetrachloroethene	34	310	230	2100
Chlorobenzene	34	85	160	390
Ethyl Benzene	34	4800	150	21000
m,p-Xylene	34	7500	150	33000
o-Xylene	34	2400	150	10000
Styrene	34	740	140	3100
Cumene	34	680	170	3400
Propylbenzene	34	420	170	2000
4-Ethyltoluene	34	1700	170	8200
1,3,5-Trimethylbenzene	34	630	170	3100
1,2,4-Trimethylbenzene	34	1500	170	7500
1,4-Dichlorobenzene	34	500	200	3000



**Summary of Detected Compounds**  
**EPA METHOD TO-15 GC/MS FULL SCAN**

Client Sample ID: SEG-3

Lab ID#: 1103542-03A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	44	450	220	2200
Vinyl Chloride	44	65	110	170
Ethanol	180	71000 E	330	130000 E
Acetone	180	22000 E	420	52000 E
2-Propanol	180	15000	430	36000
Methylene Chloride	44	140	150	500
Hexane	44	400	150	1400
2-Butanone (Methyl Ethyl Ketone)	180	20000 E	520	59000 E
cis-1,2-Dichloroethene	44	250	170	1000
Tetrahydrofuran	44	3400	130	10000
Cyclohexane	44	410	150	1400
2,2,4-Trimethylpentane	44	180	200	820
Benzene	44	2400	140	7500
1,2-Dichloroethane	44	220	180	900
Heptane	44	740	180	3000
Trichloroethene	44	150	240	820
4-Methyl-2-pentanone	44	1200	180	4800
Toluene	44	8700	160	33000
Tetrachloroethene	44	310	300	2100
Chlorobenzene	44	91	200	420
Ethyl Benzene	44	4900	190	21000
m,p-Xylene	44	7900	190	34000
o-Xylene	44	2500	190	11000
Styrene	44	780	190	3300
Cumene	44	710	220	3500
4-Ethyltoluene	44	1700	220	8600
1,3,5-Trimethylbenzene	44	680	220	3400
1,2,4-Trimethylbenzene	44	1600	220	8200
1,4-Dichlorobenzene	44	570	260	3400





Client Sample ID: SEG-1

Lab ID#: 1103542-01A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p033113	Date of Collection:	3/10/11 3:43:00 PM
Dil. Factor:	269	Date of Analysis:	3/31/11 03:31 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	130	480	660	2400
Freon 114	130	Not Detected	940	Not Detected
Chloromethane	540	Not Detected	1100	Not Detected
Vinyl Chloride	130	Not Detected	340	Not Detected
1,3-Butadiene	130	Not Detected	300	Not Detected
Bromomethane	130	Not Detected	520	Not Detected
Chloroethane	540	Not Detected	1400	Not Detected
Freon 11	130	Not Detected	760	Not Detected
Ethanol	540	82000 E	1000	150000 E
Freon 113	130	Not Detected	1000	Not Detected
1,1-Dichloroethene	130	Not Detected	530	Not Detected
Acetone	540	22000	1300	53000
2-Propanol	540	17000	1300	41000
Carbon Disulfide	540	Not Detected	1700	Not Detected
3-Chloropropene	540	Not Detected	1700	Not Detected
Methylene Chloride	130	210	470	720
Methyl tert-butyl ether	130	Not Detected	480	Not Detected
trans-1,2-Dichloroethene	130	Not Detected	530	Not Detected
Hexane	130	450	470	1600
1,1-Dichloroethane	130	Not Detected	540	Not Detected
2-Butanone (Methyl Ethyl Ketone)	540	19000	1600	57000
cis-1,2-Dichloroethene	130	280	530	1100
Tetrahydrofuran	130	3600	400	10000
Chloroform	130	Not Detected	660	Not Detected
1,1,1-Trichloroethane	130	Not Detected	730	Not Detected
Cyclohexane	130	390	460	1300
Carbon Tetrachloride	130	Not Detected	850	Not Detected
2,2,4-Trimethylpentane	130	180	630	840
Benzene	130	2400	430	7600
1,2-Dichloroethane	130	200	540	800
Heptane	130	740	550	3000
Trichloroethene	130	160	720	870
1,2-Dichloropropane	130	Not Detected	620	Not Detected
1,4-Dioxane	540	Not Detected	1900	Not Detected
Bromodichloromethane	130	Not Detected	900	Not Detected
cis-1,3-Dichloropropene	130	Not Detected	610	Not Detected
4-Methyl-2-pentanone	130	1100	550	4500
Toluene	130	8400	510	32000
trans-1,3-Dichloropropene	130	Not Detected	610	Not Detected
1,1,2-Trichloroethane	130	Not Detected	730	Not Detected
Tetrachloroethene	130	310	910	2100



Client Sample ID: SEG-1

Lab ID#: 1103542-01A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p033113	Date of Collection:	3/10/11 3:43:00 PM
Dil. Factor:	269	Date of Analysis:	3/31/11 03:31 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
2-Hexanone	540	Not Detected	2200	Not Detected
Dibromochloromethane	130	Not Detected	1100	Not Detected
1,2-Dibromoethane (EDB)	130	Not Detected	1000	Not Detected
Chlorobenzene	130	Not Detected	620	Not Detected
Ethyl Benzene	130	4500	580	20000
m,p-Xylene	130	7000	580	31000
o-Xylene	130	2200	580	9400
Styrene	130	600	570	2600
Bromoform	130	Not Detected	1400	Not Detected
Cumene	130	660	660	3200
1,1,2,2-Tetrachloroethane	130	Not Detected	920	Not Detected
Propylbenzene	130	370	660	1800
4-Ethyltoluene	130	1400	660	6800
1,3,5-Trimethylbenzene	130	530	660	2600
1,2,4-Trimethylbenzene	130	1200	660	5900
1,3-Dichlorobenzene	130	Not Detected	810	Not Detected
1,4-Dichlorobenzene	130	300	810	1800
alpha-Chlorotoluene	130	Not Detected	700	Not Detected
1,2-Dichlorobenzene	130	Not Detected	810	Not Detected
1,2,4-Trichlorobenzene	540	Not Detected	4000	Not Detected
Hexachlorobutadiene	540	Not Detected	5700	Not Detected

E = Exceeds instrument calibration range.

Container Type: 6 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	95	70-130
1,2-Dichloroethane-d4	98	70-130
4-Bromofluorobenzene	94	70-130

Client Sample ID: SEG-2

Lab ID#: 1103542-02A

**EPA METHOD TO-15 GC/MS FULL SCAN**

File Name:	p033029	Date of Collection:	3/10/11
Dil. Factor:	68.4	Date of Analysis:	3/30/11 11:42 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	34	470	170	2300
Freon 114	34	Not Detected	240	Not Detected
Chloromethane	140	Not Detected	280	Not Detected
Vinyl Chloride	34	65	87	170
1,3-Butadiene	34	Not Detected	76	Not Detected
Bromomethane	34	Not Detected	130	Not Detected
Chloroethane	140	Not Detected	360	Not Detected
Freon 11	34	Not Detected	190	Not Detected
Ethanol	140	79000 E	260	150000 E
Freon 113	34	Not Detected	260	Not Detected
1,1-Dichloroethene	34	Not Detected	140	Not Detected
Acetone	140	22000 E	320	53000 E
2-Propanol	140	16000 E	340	38000 E
Carbon Disulfide	140	Not Detected	430	Not Detected
3-Chloropropene	140	Not Detected	430	Not Detected
Methylene Chloride	34	180	120	620
Methyl tert-butyl ether	34	Not Detected	120	Not Detected
trans-1,2-Dichloroethene	34	Not Detected	140	Not Detected
Hexane	34	430	120	1500
1,1-Dichloroethane	34	Not Detected	140	Not Detected
2-Butanone (Methyl Ethyl Ketone)	140	20000 E	400	59000 E
cis-1,2-Dichloroethene	34	260	140	1000
Tetrahydrofuran	34	3500	100	10000
Chloroform	34	Not Detected	170	Not Detected
1,1,1-Trichloroethane	34	Not Detected	190	Not Detected
Cyclohexane	34	410	120	1400
Carbon Tetrachloride	34	Not Detected	220	Not Detected
2,2,4-Trimethylpentane	34	180	160	850
Benzene	34	2400	110	7600
1,2-Dichloroethane	34	220	140	900
Heptane	34	660	140	2700
Trichloroethene	34	140	180	780
1,2-Dichloropropane	34	44	160	200
1,4-Dioxane	140	Not Detected	490	Not Detected
Bromodichloromethane	34	Not Detected	230	Not Detected
cis-1,3-Dichloropropene	34	Not Detected	160	Not Detected
4-Methyl-2-pentanone	34	1200	140	4700
Toluene	34	8700	130	33000
trans-1,3-Dichloropropene	34	Not Detected	160	Not Detected
1,1,2-Trichloroethane	34	Not Detected	190	Not Detected
Tetrachloroethene	34	310	230	2100



Client Sample ID: SEG-2

Lab ID#: 1103542-02A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p033029	Date of Collection:	3/10/11
Dil. Factor:	68.4	Date of Analysis:	3/30/11 11:42 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
2-Hexanone	140	Not Detected	560	Not Detected
Dibromochloromethane	34	Not Detected	290	Not Detected
1,2-Dibromoethane (EDB)	34	Not Detected	260	Not Detected
Chlorobenzene	34	85	160	390
Ethyl Benzene	34	4800	150	21000
m,p-Xylene	34	7500	150	33000
o-Xylene	34	2400	150	10000
Styrene	34	740	140	3100
Bromoform	34	Not Detected	350	Not Detected
Cumene	34	680	170	3400
1,1,2,2-Tetrachloroethane	34	Not Detected	230	Not Detected
Propylbenzene	34	420	170	2000
4-Ethyltoluene	34	1700	170	8200
1,3,5-Trimethylbenzene	34	630	170	3100
1,2,4-Trimethylbenzene	34	1500	170	7500
1,3-Dichlorobenzene	34	Not Detected	200	Not Detected
1,4-Dichlorobenzene	34	500	200	3000
alpha-Chlorotoluene	34	Not Detected	180	Not Detected
1,2-Dichlorobenzene	34	Not Detected	200	Not Detected
1,2,4-Trichlorobenzene	140	Not Detected	1000	Not Detected
Hexachlorobutadiene	140	Not Detected	1400	Not Detected

E = Exceeds instrument calibration range.

Container Type: 6 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	95	70-130
1,2-Dichloroethane-d4	98	70-130
4-Bromofluorobenzene	96	70-130

Client Sample ID: SEG-3

Lab ID#: 1103542-03A

**EPA METHOD TO-15 GC/MS FULL SCAN**

File Name:	p033030	Date of Collection:	3/10/11
Dil. Factor:	87.5	Date of Analysis:	3/31/11 12:16 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	44	450	220	2200
Freon 114	44	Not Detected	300	Not Detected
Chloromethane	180	Not Detected	360	Not Detected
Vinyl Chloride	44	65	110	170
1,3-Butadiene	44	Not Detected	97	Not Detected
Bromomethane	44	Not Detected	170	Not Detected
Chloroethane	180	Not Detected	460	Not Detected
Freon 11	44	Not Detected	240	Not Detected
Ethanol	180	71000 E	330	130000 E
Freon 113	44	Not Detected	340	Not Detected
1,1-Dichloroethene	44	Not Detected	170	Not Detected
Acetone	180	22000 E	420	52000 E
2-Propanol	180	15000	430	36000
Carbon Disulfide	180	Not Detected	540	Not Detected
3-Chloropropene	180	Not Detected	550	Not Detected
Methylene Chloride	44	140	150	500
Methyl tert-butyl ether	44	Not Detected	160	Not Detected
trans-1,2-Dichloroethene	44	Not Detected	170	Not Detected
Hexane	44	400	150	1400
1,1-Dichloroethane	44	Not Detected	180	Not Detected
2-Butanone (Methyl Ethyl Ketone)	180	20000 E	520	59000 E
cis-1,2-Dichloroethene	44	250	170	1000
Tetrahydrofuran	44	3400	130	10000
Chloroform	44	Not Detected	210	Not Detected
1,1,1-Trichloroethane	44	Not Detected	240	Not Detected
Cyclohexane	44	410	150	1400
Carbon Tetrachloride	44	Not Detected	280	Not Detected
2,2,4-Trimethylpentane	44	180	200	820
Benzene	44	2400	140	7500
1,2-Dichloroethane	44	220	180	900
Heptane	44	740	180	3000
Trichloroethene	44	150	240	820
1,2-Dichloropropane	44	Not Detected	200	Not Detected
1,4-Dioxane	180	Not Detected	630	Not Detected
Bromodichloromethane	44	Not Detected	290	Not Detected
cis-1,3-Dichloropropene	44	Not Detected	200	Not Detected
4-Methyl-2-pentanone	44	1200	180	4800
Toluene	44	8700	160	33000
trans-1,3-Dichloropropene	44	Not Detected	200	Not Detected
1,1,2-Trichloroethane	44	Not Detected	240	Not Detected
Tetrachloroethene	44	310	300	2100



Client Sample ID: SEG-3

Lab ID#: 1103542-03A

**EPA METHOD TO-15 GC/MS FULL SCAN**

File Name:	p033030	Date of Collection:	3/10/11
Dil. Factor:	87.5	Date of Analysis:	3/31/11 12:16 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
2-Hexanone	180	Not Detected	720	Not Detected
Dibromochloromethane	44	Not Detected	370	Not Detected
1,2-Dibromoethane (EDB)	44	Not Detected	340	Not Detected
Chlorobenzene	44	91	200	420
Ethyl Benzene	44	4900	190	21000
m,p-Xylene	44	7900	190	34000
o-Xylene	44	2500	190	11000
Styrene	44	780	190	3300
Bromoform	44	Not Detected	450	Not Detected
Cumene	44	710	220	3500
1,1,2,2-Tetrachloroethane	44	Not Detected	300	Not Detected
Propylbenzene	44	Not Detected	220	Not Detected
4-Ethyltoluene	44	1700	220	8600
1,3,5-Trimethylbenzene	44	680	220	3400
1,2,4-Trimethylbenzene	44	1600	220	8200
1,3-Dichlorobenzene	44	Not Detected	260	Not Detected
1,4-Dichlorobenzene	44	570	260	3400
alpha-Chlorotoluene	44	Not Detected	230	Not Detected
1,2-Dichlorobenzene	44	Not Detected	260	Not Detected
1,2,4-Trichlorobenzene	180	Not Detected	1300	Not Detected
Hexachlorobutadiene	180	Not Detected	1900	Not Detected

E = Exceeds instrument calibration range.

Container Type: 6 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	96	70-130
1,2-Dichloroethane-d4	102	70-130
4-Bromofluorobenzene	97	70-130



Client Sample ID: Lab Blank

Lab ID#: 1103542-04A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p033006	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 3/30/11 10:21 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.50	Not Detected	2.5	Not Detected
Freon 114	0.50	Not Detected	3.5	Not Detected
Chloromethane	2.0	Not Detected	4.1	Not Detected
Vinyl Chloride	0.50	Not Detected	1.3	Not Detected
1,3-Butadiene	0.50	Not Detected	1.1	Not Detected
Bromomethane	0.50	Not Detected	1.9	Not Detected
Chloroethane	2.0	Not Detected	5.3	Not Detected
Freon 11	0.50	Not Detected	2.8	Not Detected
Ethanol	2.0	Not Detected	3.8	Not Detected
Freon 113	0.50	Not Detected	3.8	Not Detected
1,1-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Acetone	2.0	Not Detected	4.8	Not Detected
2-Propanol	2.0	Not Detected	4.9	Not Detected
Carbon Disulfide	2.0	Not Detected	6.2	Not Detected
3-Chloropropene	2.0	Not Detected	6.3	Not Detected
Methylene Chloride	0.50	Not Detected	1.7	Not Detected
Methyl tert-butyl ether	0.50	Not Detected	1.8	Not Detected
trans-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Hexane	0.50	Not Detected	1.8	Not Detected
1,1-Dichloroethane	0.50	Not Detected	2.0	Not Detected
2-Butanone (Methyl Ethyl Ketone)	2.0	Not Detected	5.9	Not Detected
cis-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Tetrahydrofuran	0.50	Not Detected	1.5	Not Detected
Chloroform	0.50	Not Detected	2.4	Not Detected
1,1,1-Trichloroethane	0.50	Not Detected	2.7	Not Detected
Cyclohexane	0.50	Not Detected	1.7	Not Detected
Carbon Tetrachloride	0.50	Not Detected	3.1	Not Detected
2,2,4-Trimethylpentane	0.50	Not Detected	2.3	Not Detected
Benzene	0.50	Not Detected	1.6	Not Detected
1,2-Dichloroethane	0.50	Not Detected	2.0	Not Detected
Heptane	0.50	Not Detected	2.0	Not Detected
Trichloroethene	0.50	Not Detected	2.7	Not Detected
1,2-Dichloropropane	0.50	Not Detected	2.3	Not Detected
1,4-Dioxane	2.0	Not Detected	7.2	Not Detected
Bromodichloromethane	0.50	Not Detected	3.4	Not Detected
cis-1,3-Dichloropropene	0.50	Not Detected	2.3	Not Detected
4-Methyl-2-pentanone	0.50	Not Detected	2.0	Not Detected
Toluene	0.50	Not Detected	1.9	Not Detected
trans-1,3-Dichloropropene	0.50	Not Detected	2.3	Not Detected
1,1,2-Trichloroethane	0.50	Not Detected	2.7	Not Detected
Tetrachloroethene	0.50	Not Detected	3.4	Not Detected



Client Sample ID: Lab Blank

Lab ID#: 1103542-04A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p033006	Date of Collection:	NA
Dil. Factor:	1.00	Date of Analysis:	3/30/11 10:21 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
2-Hexanone	2.0	Not Detected	8.2	Not Detected
Dibromochloromethane	0.50	Not Detected	4.2	Not Detected
1,2-Dibromoethane (EDB)	0.50	Not Detected	3.8	Not Detected
Chlorobenzene	0.50	Not Detected	2.3	Not Detected
Ethyl Benzene	0.50	Not Detected	2.2	Not Detected
m,p-Xylene	0.50	Not Detected	2.2	Not Detected
o-Xylene	0.50	Not Detected	2.2	Not Detected
Styrene	0.50	Not Detected	2.1	Not Detected
Bromoform	0.50	Not Detected	5.2	Not Detected
Cumene	0.50	Not Detected	2.4	Not Detected
1,1,2,2-Tetrachloroethane	0.50	Not Detected	3.4	Not Detected
Propylbenzene	0.50	Not Detected	2.4	Not Detected
4-Ethyltoluene	0.50	Not Detected	2.4	Not Detected
1,3,5-Trimethylbenzene	0.50	Not Detected	2.4	Not Detected
1,2,4-Trimethylbenzene	0.50	Not Detected	2.4	Not Detected
1,3-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,4-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
alpha-Chlorotoluene	0.50	Not Detected	2.6	Not Detected
1,2-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,2,4-Trichlorobenzene	2.0	Not Detected	15	Not Detected
Hexachlorobutadiene	2.0	Not Detected	21	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	92	70-130
1,2-Dichloroethane-d4	98	70-130
4-Bromofluorobenzene	91	70-130





Client Sample ID: Lab Blank

Lab ID#: 1103542-04B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p033109	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 3/31/11 01:08 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.50	Not Detected	2.5	Not Detected
Freon 114	0.50	Not Detected	3.5	Not Detected
Chloromethane	2.0	Not Detected	4.1	Not Detected
Vinyl Chloride	0.50	Not Detected	1.3	Not Detected
1,3-Butadiene	0.50	Not Detected	1.1	Not Detected
Bromomethane	0.50	Not Detected	1.9	Not Detected
Chloroethane	2.0	Not Detected	5.3	Not Detected
Freon 11	0.50	Not Detected	2.8	Not Detected
Ethanol	2.0	Not Detected	3.8	Not Detected
Freon 113	0.50	Not Detected	3.8	Not Detected
1,1-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Acetone	2.0	Not Detected	4.8	Not Detected
2-Propanol	2.0	Not Detected	4.9	Not Detected
Carbon Disulfide	2.0	Not Detected	6.2	Not Detected
3-Chloropropene	2.0	Not Detected	6.3	Not Detected
Methylene Chloride	0.50	Not Detected	1.7	Not Detected
Methyl tert-butyl ether	0.50	Not Detected	1.8	Not Detected
trans-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Hexane	0.50	Not Detected	1.8	Not Detected
1,1-Dichloroethane	0.50	Not Detected	2.0	Not Detected
2-Butanone (Methyl Ethyl Ketone)	2.0	Not Detected	5.9	Not Detected
cis-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Tetrahydrofuran	0.50	Not Detected	1.5	Not Detected
Chloroform	0.50	Not Detected	2.4	Not Detected
1,1,1-Trichloroethane	0.50	Not Detected	2.7	Not Detected
Cyclohexane	0.50	Not Detected	1.7	Not Detected
Carbon Tetrachloride	0.50	Not Detected	3.1	Not Detected
2,2,4-Trimethylpentane	0.50	Not Detected	2.3	Not Detected
Benzene	0.50	Not Detected	1.6	Not Detected
1,2-Dichloroethane	0.50	Not Detected	2.0	Not Detected
Heptane	0.50	Not Detected	2.0	Not Detected
Trichloroethene	0.50	Not Detected	2.7	Not Detected
1,2-Dichloropropane	0.50	Not Detected	2.3	Not Detected
1,4-Dioxane	2.0	Not Detected	7.2	Not Detected
Bromodichloromethane	0.50	Not Detected	3.4	Not Detected
cis-1,3-Dichloropropene	0.50	Not Detected	2.3	Not Detected
4-Methyl-2-pentanone	0.50	Not Detected	2.0	Not Detected
Toluene	0.50	Not Detected	1.9	Not Detected
trans-1,3-Dichloropropene	0.50	Not Detected	2.3	Not Detected
1,1,2-Trichloroethane	0.50	Not Detected	2.7	Not Detected
Tetrachloroethene	0.50	Not Detected	3.4	Not Detected



Client Sample ID: Lab Blank

Lab ID#: 1103542-04B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p033109	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 3/31/11 01:08 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
2-Hexanone	2.0	Not Detected	8.2	Not Detected
Dibromochloromethane	0.50	Not Detected	4.2	Not Detected
1,2-Dibromoethane (EDB)	0.50	Not Detected	3.8	Not Detected
Chlorobenzene	0.50	Not Detected	2.3	Not Detected
Ethyl Benzene	0.50	Not Detected	2.2	Not Detected
m,p-Xylene	0.50	Not Detected	2.2	Not Detected
o-Xylene	0.50	Not Detected	2.2	Not Detected
Styrene	0.50	Not Detected	2.1	Not Detected
Bromoform	0.50	Not Detected	5.2	Not Detected
Cumene	0.50	Not Detected	2.4	Not Detected
1,1,2,2-Tetrachloroethane	0.50	Not Detected	3.4	Not Detected
Propylbenzene	0.50	Not Detected	2.4	Not Detected
4-Ethyltoluene	0.50	Not Detected	2.4	Not Detected
1,3,5-Trimethylbenzene	0.50	Not Detected	2.4	Not Detected
1,2,4-Trimethylbenzene	0.50	Not Detected	2.4	Not Detected
1,3-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,4-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
alpha-Chlorotoluene	0.50	Not Detected	2.6	Not Detected
1,2-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,2,4-Trichlorobenzene	2.0	Not Detected	15	Not Detected
Hexachlorobutadiene	2.0	Not Detected	21	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	92	70-130
1,2-Dichloroethane-d4	102	70-130
4-Bromofluorobenzene	92	70-130



Client Sample ID: CCV

Lab ID#: 1103542-05A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p033002	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 3/30/11 08:28 AM

Compound	%Recovery
Freon 12	110
Freon 114	105
Chloromethane	131 Q
Vinyl Chloride	125
1,3-Butadiene	114
Bromomethane	112
Chloroethane	131 Q
Freon 11	102
Ethanol	103
Freon 113	100
1,1-Dichloroethene	109
Acetone	119
2-Propanol	128
Carbon Disulfide	122
3-Chloropropene	120
Methylene Chloride	128
Methyl tert-butyl ether	107
trans-1,2-Dichloroethene	106
Hexane	113
1,1-Dichloroethane	118
2-Butanone (Methyl Ethyl Ketone)	120
cis-1,2-Dichloroethene	104
Tetrahydrofuran	120
Chloroform	100
1,1,1-Trichloroethane	94
Cyclohexane	103
Carbon Tetrachloride	92
2,2,4-Trimethylpentane	108
Benzene	113
1,2-Dichloroethane	112
Heptane	111
Trichloroethene	101
1,2-Dichloropropane	110
1,4-Dioxane	102
Bromodichloromethane	100
cis-1,3-Dichloropropene	99
4-Methyl-2-pentanone	97
Toluene	95
trans-1,3-Dichloropropene	110
1,1,2-Trichloroethane	108
Tetrachloroethene	104



Client Sample ID: CCV

Lab ID#: 1103542-05A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p033002	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 3/30/11 08:28 AM

Compound	%Recovery
2-Hexanone	111
Dibromochloromethane	107
1,2-Dibromoethane (EDB)	106
Chlorobenzene	104
Ethyl Benzene	102
m,p-Xylene	101
o-Xylene	100
Styrene	98
Bromoform	101
Cumene	98
1,1,2,2-Tetrachloroethane	101
Propylbenzene	100
4-Ethyltoluene	99
1,3,5-Trimethylbenzene	95
1,2,4-Trimethylbenzene	96
1,3-Dichlorobenzene	97
1,4-Dichlorobenzene	96
alpha-Chlorotoluene	94
1,2-Dichlorobenzene	97
1,2,4-Trichlorobenzene	98
Hexachlorobutadiene	90

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	94	70-130
1,2-Dichloroethane-d4	100	70-130
4-Bromofluorobenzene	94	70-130



Client Sample ID: CCV

Lab ID#: 1103542-05B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p033102	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 3/31/11 09:12 AM

Compound	%Recovery
Freon 12	109
Freon 114	104
Chloromethane	133 Q
Vinyl Chloride	118
1,3-Butadiene	111
Bromomethane	104
Chloroethane	120
Freon 11	104
Ethanol	107
Freon 113	99
1,1-Dichloroethene	106
Acetone	114
2-Propanol	124
Carbon Disulfide	115
3-Chloropropene	115
Methylene Chloride	125
Methyl tert-butyl ether	106
trans-1,2-Dichloroethene	102
Hexane	110
1,1-Dichloroethane	115
2-Butanone (Methyl Ethyl Ketone)	114
cis-1,2-Dichloroethene	101
Tetrahydrofuran	119
Chloroform	102
1,1,1-Trichloroethane	98
Cyclohexane	103
Carbon Tetrachloride	98
2,2,4-Trimethylpentane	108
Benzene	111
1,2-Dichloroethane	116
Heptane	110
Trichloroethene	103
1,2-Dichloropropane	108
1,4-Dioxane	101
Bromodichloromethane	104
cis-1,3-Dichloropropene	100
4-Methyl-2-pentanone	100
Toluene	94
trans-1,3-Dichloropropene	118
1,1,2-Trichloroethane	109
Tetrachloroethene	102



Client Sample ID: CCV

Lab ID#: 1103542-05B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p033102	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 3/31/11 09:12 AM

Compound	%Recovery
2-Hexanone	115
Dibromochloromethane	110
1,2-Dibromoethane (EDB)	107
Chlorobenzene	104
Ethyl Benzene	101
m,p-Xylene	101
o-Xylene	100
Styrene	99
Bromoform	102
Cumene	100
1,1,2,2-Tetrachloroethane	102
Propylbenzene	102
4-Ethyltoluene	97
1,3,5-Trimethylbenzene	93
1,2,4-Trimethylbenzene	94
1,3-Dichlorobenzene	94
1,4-Dichlorobenzene	92
alpha-Chlorotoluene	93
1,2-Dichlorobenzene	93
1,2,4-Trichlorobenzene	93
Hexachlorobutadiene	90

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	95	70-130
1,2-Dichloroethane-d4	108	70-130
4-Bromofluorobenzene	93	70-130



Client Sample ID: LCS

Lab ID#: 1103542-06A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p033003	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 3/30/11 09:07 AM

Compound	%Recovery
Freon 12	114
Freon 114	110
Chloromethane	147 Q
Vinyl Chloride	128
1,3-Butadiene	115
Bromomethane	114
Chloroethane	130
Freon 11	105
Ethanol	112
Freon 113	103
1,1-Dichloroethene	118
Acetone	118
2-Propanol	131
Carbon Disulfide	151 Q
3-Chloropropene	141 Q
Methylene Chloride	126
Methyl tert-butyl ether	112
trans-1,2-Dichloroethene	123
Hexane	112
1,1-Dichloroethane	121
2-Butanone (Methyl Ethyl Ketone)	120
cis-1,2-Dichloroethene	107
Tetrahydrofuran	118
Chloroform	104
1,1,1-Trichloroethane	97
Cyclohexane	105
Carbon Tetrachloride	95
2,2,4-Trimethylpentane	108
Benzene	116
1,2-Dichloroethane	117
Heptane	116
Trichloroethene	104
1,2-Dichloropropane	112
1,4-Dioxane	101
Bromodichloromethane	102
cis-1,3-Dichloropropene	103
4-Methyl-2-pentanone	98
Toluene	96
trans-1,3-Dichloropropene	115
1,1,2-Trichloroethane	109
Tetrachloroethene	106



Client Sample ID: LCS

Lab ID#: 1103542-06A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p033003	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 3/30/11 09:07 AM

Compound	%Recovery
2-Hexanone	112
Dibromochloromethane	110
1,2-Dibromoethane (EDB)	109
Chlorobenzene	107
Ethyl Benzene	103
m,p-Xylene	105
o-Xylene	102
Styrene	100
Bromoform	103
Cumene	101
1,1,2,2-Tetrachloroethane	105
Propylbenzene	103
4-Ethyltoluene	96
1,3,5-Trimethylbenzene	96
1,2,4-Trimethylbenzene	96
1,3-Dichlorobenzene	98
1,4-Dichlorobenzene	95
alpha-Chlorotoluene	94
1,2-Dichlorobenzene	99
1,2,4-Trichlorobenzene	99
Hexachlorobutadiene	92

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	94	70-130
1,2-Dichloroethane-d4	102	70-130
4-Bromofluorobenzene	93	70-130





Client Sample ID: LCSD

Lab ID#: 1103542-06AA

**EPA METHOD TO-15 GC/MS FULL SCAN**

File Name:	p033004	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 3/30/11 09:24 AM

Compound	%Recovery
Freon 12	117
Freon 114	112
Chloromethane	147 Q
Vinyl Chloride	130
1,3-Butadiene	117
Bromomethane	118
Chloroethane	133 Q
Freon 11	107
Ethanol	104
Freon 113	106
1,1-Dichloroethene	122
Acetone	120
2-Propanol	133
Carbon Disulfide	155 Q
3-Chloropropene	142 Q
Methylene Chloride	130
Methyl tert-butyl ether	114
trans-1,2-Dichloroethene	126
Hexane	116
1,1-Dichloroethane	123
2-Butanone (Methyl Ethyl Ketone)	124
cis-1,2-Dichloroethene	110
Tetrahydrofuran	121
Chloroform	107
1,1,1-Trichloroethane	100
Cyclohexane	108
Carbon Tetrachloride	97
2,2,4-Trimethylpentane	114
Benzene	116
1,2-Dichloroethane	118
Heptane	115
Trichloroethene	105
1,2-Dichloropropane	112
1,4-Dioxane	102
Bromodichloromethane	103
cis-1,3-Dichloropropene	102
4-Methyl-2-pentanone	99
Toluene	97
trans-1,3-Dichloropropene	116
1,1,2-Trichloroethane	110
Tetrachloroethene	107



Client Sample ID: LCSD

Lab ID#: 1103542-06AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p033004	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 3/30/11 09:24 AM

Compound	%Recovery
2-Hexanone	114
Dibromochloromethane	109
1,2-Dibromoethane (EDB)	110
Chlorobenzene	108
Ethyl Benzene	104
m,p-Xylene	106
o-Xylene	105
Styrene	102
Bromoform	103
Cumene	104
1,1,2,2-Tetrachloroethane	106
Propylbenzene	106
4-Ethyltoluene	99
1,3,5-Trimethylbenzene	100
1,2,4-Trimethylbenzene	98
1,3-Dichlorobenzene	101
1,4-Dichlorobenzene	100
alpha-Chlorotoluene	95
1,2-Dichlorobenzene	101
1,2,4-Trichlorobenzene	107
Hexachlorobutadiene	96

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	94	70-130
1,2-Dichloroethane-d4	102	70-130
4-Bromofluorobenzene	95	70-130



Client Sample ID: LCS

Lab ID#: 1103542-06B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p033103	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 3/31/11 09:55 AM

Compound	%Recovery
Freon 12	115
Freon 114	108
Chloromethane	147 Q
Vinyl Chloride	125
1,3-Butadiene	115
Bromomethane	111
Chloroethane	125
Freon 11	109
Ethanol	127
Freon 113	103
1,1-Dichloroethene	119
Acetone	118
2-Propanol	130
Carbon Disulfide	148 Q
3-Chloropropene	138
Methylene Chloride	128
Methyl tert-butyl ether	112
trans-1,2-Dichloroethene	123
Hexane	112
1,1-Dichloroethane	120
2-Butanone (Methyl Ethyl Ketone)	121
cis-1,2-Dichloroethene	106
Tetrahydrofuran	120
Chloroform	109
1,1,1-Trichloroethane	103
Cyclohexane	107
Carbon Tetrachloride	102
2,2,4-Trimethylpentane	111
Benzene	116
1,2-Dichloroethane	121
Heptane	113
Trichloroethene	109
1,2-Dichloropropane	113
1,4-Dioxane	103
Bromodichloromethane	108
cis-1,3-Dichloropropene	104
4-Methyl-2-pentanone	100
Toluene	96
trans-1,3-Dichloropropene	125
1,1,2-Trichloroethane	114
Tetrachloroethene	105



Client Sample ID: LCS

Lab ID#: 1103542-06B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p033103	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 3/31/11 09:55 AM

Compound	%Recovery
2-Hexanone	120
Dibromochloromethane	115
1,2-Dibromoethane (EDB)	114
Chlorobenzene	109
Ethyl Benzene	104
m,p-Xylene	106
o-Xylene	104
Styrene	103
Bromoform	105
Cumene	104
1,1,2,2-Tetrachloroethane	108
Propylbenzene	107
4-Ethyltoluene	98
1,3,5-Trimethylbenzene	98
1,2,4-Trimethylbenzene	96
1,3-Dichlorobenzene	98
1,4-Dichlorobenzene	96
alpha-Chlorotoluene	97
1,2-Dichlorobenzene	98
1,2,4-Trichlorobenzene	100
Hexachlorobutadiene	94

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	95	70-130
1,2-Dichloroethane-d4	107	70-130
4-Bromofluorobenzene	94	70-130



Client Sample ID: LCSD

Lab ID#: 1103542-06BB

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p033104	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 3/31/11 10:12 AM

Compound	%Recovery
Freon 12	117
Freon 114	109
Chloromethane	148 Q
Vinyl Chloride	125
1,3-Butadiene	116
Bromomethane	113
Chloroethane	128
Freon 11	118
Ethanol	114
Freon 113	106
1,1-Dichloroethene	118
Acetone	120
2-Propanol	132
Carbon Disulfide	148 Q
3-Chloropropene	140
Methylene Chloride	130
Methyl tert-butyl ether	114
trans-1,2-Dichloroethene	122
Hexane	115
1,1-Dichloroethane	122
2-Butanone (Methyl Ethyl Ketone)	122
cis-1,2-Dichloroethene	109
Tetrahydrofuran	122
Chloroform	109
1,1,1-Trichloroethane	106
Cyclohexane	109
Carbon Tetrachloride	105
2,2,4-Trimethylpentane	116
Benzene	116
1,2-Dichloroethane	123
Heptane	118
Trichloroethene	110
1,2-Dichloropropane	116
1,4-Dioxane	104
Bromodichloromethane	108
cis-1,3-Dichloropropene	106
4-Methyl-2-pentanone	101
Toluene	99
trans-1,3-Dichloropropene	121
1,1,2-Trichloroethane	112
Tetrachloroethene	106



Client Sample ID: LCSD

Lab ID#: 1103542-06BB

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p033104	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 3/31/11 10:12 AM

Compound	%Recovery
2-Hexanone	118
Dibromochloromethane	114
1,2-Dibromoethane (EDB)	113
Chlorobenzene	109
Ethyl Benzene	104
m,p-Xylene	107
o-Xylene	105
Styrene	102
Bromoform	104
Cumene	106
1,1,2,2-Tetrachloroethane	108
Propylbenzene	108
4-Ethyltoluene	98
1,3,5-Trimethylbenzene	98
1,2,4-Trimethylbenzene	96
1,3-Dichlorobenzene	100
1,4-Dichlorobenzene	97
alpha-Chlorotoluene	97
1,2-Dichlorobenzene	100
1,2,4-Trichlorobenzene	104
Hexachlorobutadiene	98

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	94	70-130
1,2-Dichloroethane-d4	106	70-130
4-Bromofluorobenzene	93	70-130



**CHAIN-OF-CUSTODY RECORD**

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(916) 985-1000 FAX (916) 985-1020

Page 1 of 1

Project Manager M. Brack  
 Collected by: (Print and Sign) M. Brack  
 Company Derezo : Assoc Email mbrack@derezo.com  
 Address 39395 Schoolcraft City Livonia State MI Zip 48150  
 Phone 734-464-3880 Fax \_\_\_\_\_

Project Info:	P.O. # <u>1359</u>	Turn Around Time: <input checked="" type="checkbox"/> Normal <input type="checkbox"/> Rush <small>specify</small>	Lab Use Only
	Project # <u>1101030</u>		Pressurized by:
Project Name <u>Seminole Energy</u>			Date:
			Pressurization Gas: N <sub>2</sub> He

Lab I.D.	Field Sample I.D. (Location)	Can #	Date of Collection	Time of Collection	Analyses Requested	Canister Pressure/Vacuum			
						Initial	Final	Receipt	Final (psi)
01A	SEG-1	2567	3/10/11	1543	TO-15	25	2		
02A	SEG-2	2564	+		L	25	3		
03A	SEG-3		+			25	25		

Relinquished by: (signature) <u>M. Brack</u> Date/Time <u>3/21/11 1500</u>	Received by: (signature) <u>B. Whitaker</u> Date/Time <u>3/24/11 0900</u>	Notes:
Relinquished by: (signature) _____ Date/Time _____	Received by: (signature) _____ Date/Time _____	
Relinquished by: (signature) _____ Date/Time _____	Received by: (signature) _____ Date/Time _____	

Lab Use Only	Shipper Name <u>Frederix</u>	Air Bill # _____	Temp (°C) <u>as/A</u>	Condition <u>Good</u>	Custody <u>Yes</u>	Seals Intact? <u>No</u> <u>None</u>	Work Order # <u>1103542</u>
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