AM — Inc.

ORIGINAL Cover LTR & SUMMARY (COPY) GIVEN TO CF ALREADY 7/26/94

SOURCE

EMISSION

EVALUATION

APRIL 19, 1994

Prepared For:

KING COUNTY SOLID WASTE DIVISION
HOBART LANDFILL
CARBON CANISTER #2 & #3
HOBART, WASHINGTON
FEBRUARY 14, 1994

Submitted by:

Kris A. Hansen
Project Manager

K. Steven Mackey
Sr. Air Quality Specialist

Angela F. Blaisdell
Sr. Technical Writer

Am Test-Air Quality, Inc.
Preston, Washington

We certify that the information contained herein is accurate and complete to the best of our knowledge.

King County
Solid Waste Division
Department of Public Works
Yesler Building
400 Yesler Way, Room 600
Seattle, WA 98104-2637
(206) 296-6542

July 15, 1994

Claude Williams
Puget Sound Air Pollution Control Agency
110 Union Street, Suite 500
Seattle, WA 98101-2038

Dear Mr. Williams:

The purpose of this letter is to transmit a copy of AmTest's February 14, 1994 annual test report for the 300 cfm TIGG Nixtox N-500 DB carbon adsorber at the Hobart Landfill. Please note that Acetone and Dichloromethane (Methylene Chloride) are common laboratory solvents and that the reported emission values for these constituents may be suspect. In addition, due to design constraints, the AmTest technicians were required to use Kurz anemometers to estimate the inlet and outlet flows of the canisters. The low and sometimes negative removal efficiencies reported for VOC's are very likely to be due, in part, to the inaccurate inlet and outlet flow data.

The King County Solid Waste Division will be pursuing these issues with Amtest and our consultant. If you have any questions, please call Ed Henderson at 296-4437.

Sincerely,

Kevin E. Kiernan, P. E.
Engineering Services Manager

KEK:JB:er
JB1/psapcaHL.594

Enclosures

cc: Dic Gribbon, Inspector, Puget Sound Air Pollution Control Agency
Dennis Trammell, Operations Manager, Solid Waste Division
ATTN: Lew Nagy, Wastewater Supervisor
Monte Mendenhall, Landfill Gas Lead Operator
Shirley Jurgensen, Supervising Engineer
ATTN: Ed Henderson, Senior Engineer
Jamey Barker, Engineer

TABLE OF CONTENTS

TABLE OF CONTENTS (continued)

1.0
INTRODUCTION

The purpose of this source emission evaluation was to determine the volatile organic compound (VOC) removal efficiency of two (2) of the three (3) carbon canisters installed at the Hobart Landfill in Hobart, Washington to temporarily replace the flare system. Only 2 of the 3 canisters operate at a time, in parallel. The gases produced from the decomposition of buried organic wastes are extracted and piped to the carbon adsorption canisters prior to emitting the exhaust gases to the atmosphere. King County Solid Waste Division (KCSWD) contracted Am Test-Air Quality, Inc. of Preston, Washington to perform these tests to demonstrate compliance with Puget Sound Air Pollution Control Agency (PSAPCA) requirements regarding the interim use of carbon adsorption. Testing was performed at Canisters #2 and #3 on February 14, 1994 to determine the emission rate and removal efficiency of selected VOCs entering and exiting the canister. Secondarily, KCSWD wanted to determine whether organic breakthrough has occurred at the outlet of the canisters.

The gas at the inlet and outlet of each canister was measured to quantify the gas velocity, gas temperature, percent carbon dioxide (CO_2), percent oxygen (O_2), percent methane (CH_4), percent carbon monoxide (CO), percent moisture and volatile organic compounds (VOCs).

Sampling and analysis procedures used for this project are presented in the Environmental Protection Agency (EPA) document titled Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air, Method TO-14. Airflow was measured using a Kurz hot wire anemometer which was provided

by King County. Moisture content of the gas was determined using psychrometry. VOCs were collected at the inlet and outlet of each carbon canister using EPA Method TO-14. This technique allows an integrated sample of gas to be collected in an evacuated electropolished SUMMA^R stainless steel canister. The integrated samples were analyzed using a gas chromatograph equipped with a mass spectrophotometer detector (GC-MS). In addition to the volatile organic compounds identified by GC-MS procedures, the fixed gases (CO_2, O_2, CO, nitrogen (N_2) and methane (CH_4)) were analyzed using a GC equipped with a thermal conductivity detector (GC-TCD). Three (3) replicate samples of each type were collected on February 14, 1994 at each sample site.

Mr. K. Steven Mackey and Mr. E. Ray Lawrence of Am Test-Air Quality, Inc. conducted the field sampling. Analysis of the samples collected in SUMMA^R canisters was performed by Coast-to-Coast Analytical Services, Inc. (CCAS) of Camarillo, California. Mr. Kris A. Hansen, Ms. Angela F. Blaisdell, Ms. Jan W. Alden and Ms. Amy M. Brotherton performed data reduction, quality assurance review and report preparation. Mr. Ed Henderson and Mr. Jamie Barker of the King County Solid Waste Division and Mr. Sam Roudebush of CH2M Hill coordinated this project. Mr. Landon Collom of CH2M Hill provided on-site coordination on the test day.

2.0
SUMMARY OF RESULTS

The following subsections of this report present the results of this evaluation. The order of presentation is first by sample location (Canister #2 followed by Canister #3), and then chronologically by method number. The method order is as follows: Moisture and airflow, fixed gases (including methane) and VOCs by TO-14. Inlet data are presented before outlet data. Summary tables are included for each type of analysis which present the results from each test, and the average for each set of three (3) runs. Refer to the Table of Contents to locate specific information for each type of test. The summary tables in this section contain information obtained from computer printouts of results for each individual run which are included in Appendix A of this report. Appendix B of this report contains copies of the original laboratory data from Coast-to-Coast Analytical Services, Inc. Appendix C of this report contains example calculations of results. Appendix D of this report contains copies of the original field data sheets. Appendix E of this report contains miscellaneous supporting information.

Standard conditions are 68° F and 29.92 inches of mercury. It should also be noted that if a value is less than the detection limit (< DL) or is not detected (ND), it is counted as zero (0) in the average. When all individual test results are < DL or the average test results are < the average DL, the average is reported as < DL. If one (1) or two (2) values are < DL or ND and the average is a value larger than the average detection limit, then it is presented as an approximation (~) in the average column. In cases where a compound is found in levels above the detection limit for only 1 or 2 of 3 runs, the data should be considered to be less significant than cases where a compound was found for all 3 runs. The data becomes increasingly

significant as the concentration value increases in orders of magnitude above the blank value or detection limit. The converse of this would be true as the concentration value approaches the detection limit. Analytical laboratories typically use a multiplier of five (5) times the DL to determine significance.

2.1 CANISTER #2

2.1.1 Velocity, Temperature and Airflow

The results of the three (3) simultaneous moisture and airflow tests performed on February 14, 1994 at the Canister #2 inlet and outlet are summarized on the following computer printouts titled "Summary of Results - Moisture and Airflow".

The moisture of each gas stream was determined using psychrometry. King County provided a Kurz anemometer which was used to measure the gas velocity in feet per minute (ft/min). The velocity of the gas at the inlet to the canister averaged 766.0 feet per minute. The average airflow of landfill gas into the canister was 136.3 dry standard cubic feet per minute (dscf/min). The velocity of the gas at the canister outlet averaged 2103.5 feet per minute. The average outlet airflow was 103.3 dry standard cubic feet per minute (dscf/min).

AM TEST
AIR QUALITY, INC.

SUMMARY OF RESULTS - MOISTURE AND AIRFLOW
AM TEST - AIR QUALITY, INC.

FILE NAME: S705\HOBTIVSM
CLIENT: King County Solid Waste
@ Hobart Landfill
LOCATION: Hobart, Washington

CANISTER #2 INLET

	RUN #1	RUN #2	RUN #3	AVERAGE
AT LAB #:	5142	5143	5144	
CCAS LAB #:	CK-0721-1	CK-0721-2	CK-0721-3	
DATE:	2/14/94	2/14/94	2/14/94	
START TIME:	~11:15	~12:30	~13:45	
PSYCHROMETRIC MOISTURE (%):	1.03	1.08	0.94	1.02
BAROMETRIC PRESSURE (inches of Hg):	29.58	29.58	29.58	29.58
STATIC PRESSURE (inches of H2O):	2.8	2.7	3.0	2.8
DUCT PRESSURE (inches of Hg):	29.79	29.78	29.80	29.79
DUCT GAS TEMPERATURE (degrees F.):	67.0	68.0	67.0	67.3
DUCT GAS TEMPERATURE (degrees R.):	527.0	528.0	527.0	527.3
CARBON DIOXIDE (percent):	27.0	28.0	29.0	28.0
OXYGEN (percent):	2.8	2.6	2.4	2.6
CARBON MONOXIDE (percent):	< 0.1	< 0.1	< 0.1	< 0.1
METHANE (percent):	14	14	14	14
MOLECULAR WEIGHT (dry, g/g-mole):	30.75	30.90	31.06	30.90
MOLECULAR WEIGHT (wet, g/g-mole):	30.62	30.76	30.93	30.77
DUCT GAS VELOCITY (feet/minute):	531.5	954.0	812.5	766.0
DUCT DIAMETER (inches):	5.75	5.75	5.75	
DUCT AREA (square feet):	0.180	0.180	0.180	
DUCT GAS AIRFLOW (dry std. cubic feet per min.):	94.6	169.4	144.8	136.3
DUCT GAS AIRFLOW (actual cubic feet per min.):	95.8	172.0	146.5	138.1

AM TEST
AIR QUALITY, INC.

SUMMARY OF RESULTS - MOISTURE AND AIRFLOW
AM TEST - AIR QUALITY, INC.

FILE NAME: S705\HOB2OVSM
CLIENT: King County Solid Waste
@ Hobart Landfill
LOCATION: Hobart, Washington

	CANISTER #2 OUTLET			
	RUN #1	RUN #2	RUN #3	AVERAGE
AT LAB #:	5145	5146	5147	
CCAS LAB #:	CK-0721-4	CK-0721-5	CK-0721-6	
DATE:	2/14/94	2/14/94	2/14/94	
START TIME:	~11:15	~12:30	~13:45	
PSYCHROMETRIC MOISTURE (%):	1.07	1.06	1.07	1.07
BAROMETRIC PRESSURE (inches of Hg):	29.58	29.58	29.58	29.58
STATIC PRESSURE (inches of H2O):	0.15	0.10	0.10	0.12
STACK PRESSURE (inches of Hg):	29.59	29.59	29.59	29.59
STACK GAS TEMPERATURE (degrees F.):	52.0	57.0	59.0	56.0
STACK GAS TEMPERATURE (degrees R.):	512.0	517.0	519.0	516.0
CARBON DIOXIDE (percent):	29.0	27.0	28.0	28.0
OXYGEN (percent):	2.6	3.6	2.5	2.9
CARBON MONOXIDE (percent):	< 0.1	< 0.1	< 0.1	< 0.1
METHANE (percent):	14	13	14	14
MOLECULAR WEIGHT (dry, g/g-mole):	31.06	30.90	30.90	30.95
MOLECULAR WEIGHT (wet, g/g-mole):	30.92	30.77	30.76	30.82
STACK GAS VELOCITY (feet/minute):	1752.0	1898.5	2660.0	2103.5
STACK DIAMETER (inches):	3.0	3.0	3.0	
STACK AREA (square feet):	0.049	0.049	0.049	
STACK GAS AIRFLOW (dry std. cubic feet per min.):	86.8	93.1	130.0	103.3
STACK GAS AIRFLOW (actual cubic feet per min.):	86.0	93.2	130.6	103.3

2.1.2 Fixed Gases Analysis

Fixed gases at the inlet and outlet of Canister #2 were quantified by Coast-to-Coast Analytical Services (CCAS) using the gas collected in SUMMA^R canisters. Average combustion gas values obtained at the inlet and outlet of the carbon canister are presented in Table 2.1.2 below.

Table 2.1.2 Concentration of gaseous constituents quantified from samples collected on February 14, 1994 at the inlet and outlet of Canister #2 at the Hobart Landfill in Hobart, Washington.

Compound	Average Inlet Gas Concentrations	Average Outlet Gas Concentrations
Methane (%)	14	14
Carbon Dioxide (%)	28.0	28.0
Oxygen (%)	2.6	2.9
Carbon Monoxide (%)	< 0.1	< 0.1
Nitrogen (%)	55	55

2.1.3 EPA Method TO-14 - Volatile Organic Compounds (VOCs)

Three (3) EPA Method TO-14 samples were collected simultaneously at the inlet and outlet of Canister #2 on February 14, 1994 for quantifying volatile organic compound (VOC) emissions. VOC emission rates were calculated in units of milligrams per minute (mg/min). VOC emission rate calculations were performed using the laboratory analysis data provided by Coast-to-Coast Analytical Services, and from airflow data collected before or after each test. The inlet/outlet VOC results are summarized on the following computer printouts titled "Summary of Emission Rate Results - TO-14 Volatile Organic Compounds". The emission rate results compared to the detection limits and instrument blank for each individual run are presented on the computer printouts titled "TO-14 Emission Rate Results"

in Appendix A of this report. Copies of the VOC laboratory analysis results in emission concentration units of micrograms per cubic meter (ug/m^3) are included in Appendix B of this report.

AMTEST
AIR QUALITY, INC.

SUMMARY OF EMISSION RATE RESULTS
TO-14 VOLATILE ORGANIC COMPOUNDS
AM TEST - AIR QUALITY, INC.

FILE NAME: S302\HOB2IRSM
CLIENT: King County Solid Waste @ Hobart Landfill
LOCATION: Hobart, Washington

	CANISTER #2 INLET			
	RUN #1 (mg/min)	RUN #2 (mg/min)	RUN #3 (mg/min)	AVERAGE (mg/min)
LAB NUMBER:	CK-0721-1	CK-0721-2	CK-0721-3	
DATE:	2/14/94	2/14/94	2/14/94	
START TIME:	10:25	11:45	12:52	
STOP TIME:	10:55	12:15	13:22	
ANALYTE				
Acetone	4.29	9.12	6.56	6.65
Benzene	2.57	4.80	4.10	3.82
Bromodichloromethane	< DL	< DL	< DL	< DL
Bromomethane (Methyl Bromide)	< DL	< DL	< DL	< DL
Bromoform	< DL	< DL	< DL	< DL
1,3-Butadiene	< DL	< DL	< DL	< DL
2-Butanone (MEK)	< DL	< DL	< DL	< DL
Carbon Disulfide	0.029	0.058	0.041	0.043
Carbon Tetrachloride	< DL	< DL	< DL	< DL
Chlorobenzene	1.37	2.25	1.89	1.84
Chloroethane (Ethyl Chloride)	5.63	9.60	7.79	7.67
2-Chloroethyl Vinyl Ether	< DL	< DL	< DL	< DL
Chloroform	< DL	< DL	< DL	< DL
Chloromethane (Methyl Chloride)	0.670	1.20	1.03	0.965
Dibromochloromethane	< DL	< DL	< DL	< DL
1,2-Dibromoethane (EDB)	< DL	< DL	< DL	< DL
1,2-Dichlorobenzene	< DL	< DL	< DL	< DL
1,3-Dichlorobenzene	< DL	< DL	< DL	< DL
1,4-Dichlorobenzene	0.088	0.288	0.168	0.181
1,1-Dichloroethane	0.429	0.720	0.574	0.574
1,2-Dichloroethane (EDC)	< DL	< DL	< DL	< DL
1,1-Dichloroethene	< DL	< DL	< DL	< DL
cis-1,2-Dichloroethene	0.375	0.624	0.492	0.497
trans-1,2-Dichloroethene	< DL	< DL	< DL	< DL
Dichloromethane	0.348	0.576	0.410	0.445
1,2-Dichloropropane	< DL	< DL	< DL	< DL
cis-1,3-Dichloropropene	< DL	< DL	< DL	< DL
trans-1,3-Dichloropropene	< DL	< DL	< DL	< DL
Ethylbenzene	9.91	18.2	15.2	14.4
2-Hexanone	< DL	< DL	< DL	< DL
4-Methyl-2-Pentanone (MIBK)	< DL	< DL	< DL	< DL
Styrene	0.064	0.120	0.107	0.097
1,1,2,2-Tetrachloroethane	< DL	< DL	< DL	< DL
Tetrachloroethene (PCE)	0.429	0.528	0.451	0.469
Toluene	6.97	12.5	10.7	10.0
1,1,1-Trichloroethane (TCA)	0.482	0.816	0.697	0.665
1,1,2-Trichloroethane	< DL	< DL	< DL	< DL
Trichloroethene (TCE)	0.126	0.216	0.164	0.169
Trichlorofluoromethane (F-11)	1.02	1.68	1.39	1.36
Trichlorotrifluoroethane (F-113)	0.102	0.168	0.135	0.135
Vinyl Acetate	< DL	< DL	< DL	< DL
Vinyl Chloride	1.66	3.17	2.58	2.47
Xylenes, Total	18.2	33.1	27.5	26.3

< DL designates that the compound was not detected, or was found at levels below the practical quantitation limit.

mg/min = milligrams of analyte emitted per minute.

AMTEST
AIR QUALITY, INC.

SUMMARY OF EMISSION RATE RESULTS
TO-14 VOLATILE ORGANIC COMPOUNDS
AM TEST - AIR QUALITY, INC.

FILE NAME: S302\HOB2ORSM
CLIENT: King County Solid Waste @ Hobart Landfill
LOCATION: Hobart, Washington

	CANISTER #2 OUTLET			
	RUN #1 (mg/min)	RUN #2 (mg/min)	RUN #3 (mg/min)	AVERAGE (mg/min)
LAB NUMBER:	CK-0721-4	CK-0721-5	CK-0721-6	
DATE:	2/14/94	2/14/94	2/14/94	
START TIME:	10:25	11:45	12:52	
STOP TIME:	10:55	12:15	13:22	
ANALYTE				
Acetone	4.67	3.69	7.73	5.36
Benzene	0.009	0.069	0.096	0.058
Bromodichloromethane	< DL	< DL	< DL	< DL
Bromomethane (Methyl Bromide)	< DL	< DL	< DL	< DL
Bromoform	< DL	< DL	< DL	< DL
1,3-Butadiene	< DL	< DL	< DL	< DL
2-Butanone (MEK)	< DL	< DL	< DL	< DL
Carbon Disulfide	0.027	0.029	0.044	0.033
Carbon Tetrachloride	< DL	< DL	< DL	< DL
Chlorobenzene	0.014	< DL	< DL	~ 0.005
Chloroethane (Ethyl Chloride)	4.92	5.01	12.1	7.36
2-Chloroethyl Vinyl Ether	< DL	< DL	< DL	< DL
Chloroform	< DL	< DL	< DL	< DL
Chloromethane (Methyl Chloride)	0.418	0.606	1.14	0.722
Dibromochloromethane	< DL	< DL	< DL	< DL
1,2-Dibromoethane (EDB)	< DL	< DL	< DL	< DL
1,2-Dichlorobenzene	< DL	< DL	< DL	< DL
1,3-Dichlorobenzene	< DL	< DL	< DL	< DL
1,4-Dichlorobenzene	0.184	< DL	< DL	~ 0.061
1,1-Dichloroethane	0.467	0.659	0.773	0.633
1,2-Dichloroethane (EDC)	< DL	< DL	< DL	< DL
1,1-Dichloroethene	< DL	< DL	< DL	< DL
cis-1,2-Dichloroethene	0.229	0.177	0.479	0.295
trans-1,2-Dichloroethene	< DL	< DL	< DL	< DL
Dichloromethane	0.270	0.264	0.368	0.301
1,2-Dichloropropane	< DL	< DL	< DL	< DL
cis-1,3-Dichloropropene	< DL	< DL	< DL	< DL
trans-1,3-Dichloropropene	< DL	< DL	< DL	< DL
Ethylbenzene	1.13	0.063	0.125	0.440
2-Hexanone	< DL	< DL	< DL	< DL
4-Methyl-2-Pentanone (MIBK)	< DL	< DL	< DL	< DL
Styrene	0.270	< DL	< DL	~ 0.090
1,1,2,2-Tetrachloroethane	< DL	< DL	< DL	< DL
Tetrachloroethene (PCE)	0.170	< DL	< DL	~ 0.057
Toluene	0.885	0.100	0.162	0.382
1,1,1-Trichloroethane (TCA)	0.393	0.395	0.552	0.447
1,1,2-Trichloroethane	< DL	< DL	< DL	< DL
Trichloroethene (TCE)	< DL	< DL	< DL	< DL
Trichlorofluoromethane (F-11)	0.762	0.844	1.58	1.06
Trichlorotrifluoroethane (F-113)	0.155	0.245	0.291	0.230
Vinyl Acetate	< DL	< DL	< DL	< DL
Vinyl Chloride	1.20	1.66	4.05	2.31
Xylenes, Total	6.15	0.343	0.663	2.38

< DL designates that the compound was not detected, or was found at levels below the practical quantitation limit.

mg/min = milligrams of analyte emitted per minute.

2.1.4 Removal Efficiency of Volatile Organic Compounds

The removal efficiency is the amount of VOCs removed by passing the gas through activated carbon, expressed on a percentage basis. The percent removal efficiency for each volatile organic compound which was analyzed in the gas at the inlet and outlet of Canister #2 at the Hobart Landfill is presented on the following computer printout titled "Volatile Organic Compounds in Air - Percent Removal Evaluation". Removal efficiencies were calculated based on the average emission rate of each compound detected in milligrams per minute (mg/min).

AMTEST
AIR QUALITY, INC.

VOLATILE ORGANIC COMPOUNDS IN AIR
PERCENT REMOVAL EVALUATION
AM TEST-AIR QUALITY, INC.

FILE NAME: R302\HOBREFF
CLIENT: King County Solid Waste @ Hobart Landfill
LOCATION: Hobart, Washington
SAMPLE SITE: Canister #2
SAMPLE DATE: February 14, 1994

COMPOUNDS	Average Inlet Emission Rate mg/min		Average Outlet Emission Rate mg/min		Percent Removal
Acetone	6.65		5.36		19.40
Benzene	3.82		0.058		98.48
Bromodichloromethane	< DL		< DL		-----
Bromomethane (Methyl Bromide)	< DL		< DL		-----
Bromoform	< DL		< DL		-----
1,3-Butadiene	< DL		< DL		-----
2-Butanone (MEK)	< DL		< DL		-----
Carbon Disulfide	0.043		0.033		23.26
Carbon Tetrachloride	< DL		< DL		-----
Chlorobenzene	1.84	~	0.005		99.73
Chloroethane (Ethyl Chloride)	7.67		7.36		4.04
2-Chloroethyl Vinyl Ether	< DL		< DL		-----
Chloroform	< DL		< DL		-----
Chloromethane (Methyl Chloride)	0.965		0.722		25.18
Dibromochloromethane	< DL		< DL		-----
1,2-Dibromoethane (EDB)	< DL		< DL		-----
1,2-Dichlorobenzene	< DL		< DL		-----
1,3-Dichlorobenzene	< DL		< DL		-----
1,4-Dichlorobenzene	0.181	~	0.061	~	66.30
1,1-Dichloroethane	0.574		0.633		*-----
1,2-Dichloroethane (EDC)	< DL		< DL		-----
1,1-Dichloroethene	< DL		< DL		-----
cis-1,2-Dichloroethene	0.497		0.295		40.64
trans-1,2-Dichloroethene	< DL		< DL		-----
Dichloromethane	0.445		0.301		32.36
1,2-Dichloropropane	< DL		< DL		-----
cis-1,3-Dichloropropene	< DL		< DL		-----
trans-1,3-Dichloropropene	< DL		< DL		-----
Ethylbenzene	14.4		0.440		96.94
2-Hexanone	< DL		< DL		-----
4-Methyl-2-Pentanone (MIBK)	< DL		< DL		-----
Styrene	0.097	~	0.090	~	7.22
1,1,2,2-Tetrachloroethane	< DL		< DL		-----
Tetrachloroethene (PCE)	0.469	~	0.057	~	87.85
Toluene	10.0		0.382		96.18
1,1,1-Trichloroethane (TCA)	0.665		0.447		32.78
1,1,2-Trichloroethane	< DL		< DL		-----
Trichloroethene (TCE)	0.169		< DL	>	99.99
Trichlorofluoromethane (F-11)	1.36		1.06		22.06
Trichlorotrifluoroethane (F-113)	0.135		0.230		*-----
Vinyl Acetate	< DL		< DL		-----
Vinyl Chloride	2.47		2.31		6.48
Xylenes, Total	26.3		2.38		90.95

< DL designates that the compound was not detected, or was found at levels below the practical quantitation limit.

mg/min = milligrams of analyte emitted per minute.

* Not reported due to negative percent removal.

2.2 CANISTER #3

2.2.1 Velocity, Temperature and Airflow

The results of the three (3) simultaneous moisture and airflow tests performed on February 14, 1994 at the Canister #3 inlet and outlet are summarized on the following computer printouts titled "Summary of Results - Moisture and Airflow".

The moisture of each gas stream was determined using psychrometry. King County provided a Kurz anemometer which was used to measure the gas velocity in standard feet per minute (ft/min). The velocity of the gas at the inlet to the canister averaged 554.4 feet per minute. The average airflow of landfill gas into the canister was 99.9 dry standard cubic feet per minute (dscf/min). The velocity of the gas at the canister outlet averaged 1773.8 feet per minute. The average outlet airflow was 87.6 dry standard cubic feet per minute (dscf/min).

AM TEST
AIR QUALITY, INC.

SUMMARY OF RESULTS - MOISTURE AND AIRFLOW
AM TEST - AIR QUALITY, INC.

FILE NAME: S705\HOB3IVSM
CLIENT: King County Solid Waste
@ Hobart Landfill
LOCATION: Hobart, Washington

	CANISTER #3 INLET			
	RUN #1	RUN #2	RUN #3	AVERAGE
AT LAB #:	5148	5149	5150	
CCAS LAB #:	CK-0721-7	CK-0721-8	CK-0721-9	
DATE:	2/14/94	2/14/94	2/14/94	
START TIME:	~10:45	~11:55	~13:05	
PSYCHROMETRIC MOISTURE (%):	1.19	1.18	1.08	1.15
BAROMETRIC PRESSURE (inches of Hg):	29.58	29.58	29.58	29.58
STATIC PRESSURE (inches of H2O):	2.9	3.0	3.2	3.0
DUCT PRESSURE (inches of Hg):	29.79	29.80	29.82	29.80
DUCT GAS TEMPERATURE (degrees F.):	62.0	56.5	63.0	60.5
DUCT GAS TEMPERATURE (degrees R.):	522.0	516.5	523.0	520.5
CARBON DIOXIDE (percent):	28.0	29.0	28.0	28.3
OXYGEN (percent):	2.5	2.7	2.4	2.5
CARBON MONOXIDE (percent):	< 0.1	< 0.1	< 0.1	< 0.1
METHANE (percent):	14	13	14	14
MOLECULAR WEIGHT (dry, g/g-mole):	30.90	31.19	30.90	31.00
MOLECULAR WEIGHT (wet, g/g-mole):	30.75	31.03	30.76	30.85
DUCT GAS VELOCITY (feet/minute):	480.3	627.5	555.3	554.4
DUCT DIAMETER (inches):	5.75	5.75	5.75	
DUCT AREA (square feet):	0.180	0.180	0.180	
DUCT GAS AIRFLOW (dry std. cubic feet per min.):	86.2	113.9	99.6	99.9
DUCT GAS AIRFLOW (actual cubic feet per min.):	86.6	113.2	100.1	100.0

AM TEST
AIR QUALITY, INC.

SUMMARY OF RESULTS - MOISTURE AND AIRFLOW
AM TEST - AIR QUALITY, INC.

FILE NAME: S705\HOB3OVSM
CLIENT: King County Solid Waste
@ Hobart Landfill
LOCATION: Hobart, Washington

	CANISTER #3 OUTLET			
	RUN #1	RUN #2	RUN #3	AVERAGE
AT LAB #:	5151	5152	5153	
CCAS LAB #:	CK-0721-10	CK-0721-11	CK-0721-12	
DATE:	2/14/94	2/14/94	2/14/94	
START TIME:	~10:45	~11:55	~13:05	
PSYCHROMETRIC MOISTURE (%):	1.14	0.88	1.06	1.03
BAROMETRIC PRESSURE (inches of Hg):	29.58	29.58	29.58	29.58
STATIC PRESSURE (inches of H2O):	0.12	0.10	0.10	0.11
STACK PRESSURE (inches of Hg):	29.59	29.59	29.59	29.59
STACK DUCT GAS TEMPERATURE (degrees F.):	49.0	55.0	57.0	53.7
STACK GAS TEMPERATURE (degrees R.):	509.0	515.0	517.0	513.7
CARBON DIOXIDE (percent):	28.0	28.0	30.0	28.7
OXYGEN (percent):	3.4	2.4	2.4	2.7
CARBON MONOXIDE (percent):	< 0.1	< 0.1	< 0.1	< 0.1
METHANE (percent):	13	14	14	14
MOLECULAR WEIGHT (dry, g/g-mole):	31.06	30.90	31.22	31.06
MOLECULAR WEIGHT (wet, g/g-mole):	30.91	30.78	31.08	30.92
STACK GAS VELOCITY (feet/minute):	1643.0	1884.8	1793.5	1773.8
STACK DIAMETER (inches):	3.0	3.0	3.0	
STACK AREA (square feet):	0.049	0.049	0.049	
STACK GAS AIRFLOW (dry std. cubic feet per min.):	81.8	93.0	88.0	87.6
STACK GAS AIRFLOW (actual cubic feet per min.):	80.7	92.5	88.0	87.1

2.2.2 Fixed Gases Analysis

Fixed gases at the inlet and outlet of Canister #3 were quantified by Coast-to-Coast Analytical Services (CCAS) using the gas collected in SUMMA^R canisters. Average combustion gas values obtained at the inlet and outlet of the carbon canister are presented in Table 2.2.2 below.

Table 2.2.2 Concentration of gaseous constituents quantified from samples collected on February 14, 1994 at the inlet and outlet of Canister #3 at the Hobart Landfill in Hobart, Washington.

Compound	Average Inlet Gas Concentrations	Average Outlet Gas Concentrations
Methane (%)	14	14
Carbon Dioxide (%)	28.3	28.7
Oxygen (%)	2.5	2.7
Carbon Monoxide (%)	< 0.1	< 0.1
Nitrogen (%)	55	55

2.2.3 EPA Method TO-14 - Volatile Organic Compounds (VOCs)

Three (3) EPA Method TO-14 samples were collected simultaneously at the inlet and outlet of Canister #3 on February 14, 1994 for quantifying volatile organic compound (VOC) emissions. VOC emission rates were calculated in units of milligrams per minute (mg/min). VOC emission rate calculations were performed using the laboratory analysis data provided by Coast-to-Coast Analytical Services, and from airflow data collected before or after each test. The inlet/outlet VOC results are summarized on the following computer printouts titled "Summary of Emission Rate Results - TO-14 Volatile Organic Compounds". The emission rate results compared to the detection limits and instrument blank for each individual run are presented on the computer printouts titled "TO-14 Emission Rate Results"

in Appendix A of this report. Copies of the VOC laboratory analysis results in emission concentration units of micrograms per cubic meter (ug/m^3) are included in Appendix B of this report.

AMTEST
AIR QUALITY, INC.

SUMMARY OF EMISSION RATE RESULTS
TO-14 VOLATILE ORGANIC COMPOUNDS
AM TEST - AIR QUALITY, INC.

FILE NAME: S302\HOB3IRSM
CLIENT: King County Solid Waste
@ Hobart Landfill
LOCATION: Hobart, Washington

	CANISTER #3 INLET			
	RUN #1 (mg/min)	RUN #2 (mg/min)	RUN #3 (mg/min)	AVERAGE (mg/min)
LAB NUMBER:	CK-0721-7	CK-0721-8	CK-0721-9	
DATE:	2/14/94	2/14/94	2/14/94	
START TIME:	11:07	12:18	13:26	
STOP TIME:	11:37	12:48	13:56	
ANALYTE				
Acetone	7.81	5.48	6.21	6.50
Benzene	2.44	3.55	2.82	2.94
Bromodichloromethane	< DL	< DL	< DL	< DL
Bromomethane (Methyl Bromide)	< DL	< DL	< DL	< DL
Bromoform	< DL	< DL	< DL	< DL
1,3-Butadiene	< DL	< DL	< DL	< DL
2-Butanone (MEK)	< DL	< DL	< DL	< DL
Carbon Disulfide	0.027	0.035	0.031	0.031
Carbon Tetrachloride	< DL	< DL	< DL	< DL
Chlorobenzene	1.20	1.61	1.38	1.40
Chloroethane (Ethyl Chloride)	4.88	6.77	5.64	5.77
2-Chloroethyl Vinyl Ether	< DL	< DL	< DL	< DL
Chloroform	< DL	< DL	< DL	< DL
Chloromethane (Methyl Chloride)	0.635	0.871	0.621	0.709
Dibromochloromethane	< DL	< DL	< DL	< DL
1,2-Dibromoethane (EDB)	< DL	< DL	< DL	< DL
1,2-Dichlorobenzene	< DL	< DL	< DL	< DL
1,3-Dichlorobenzene	< DL	< DL	< DL	< DL
1,4-Dichlorobenzene	0.063	0.284	0.248	0.199
1,1-Dichloroethane	0.391	0.484	0.423	0.433
1,2-Dichloroethane (EDC)	< DL	< DL	< DL	< DL
1,1-Dichloroethene	< DL	< DL	< DL	< DL
cis-1,2-Dichloroethene	0.342	0.452	0.395	0.396
trans-1,2-Dichloroethene	< DL	< DL	< DL	< DL
Dichloromethane	0.244	0.323	0.282	0.283
1,2-Dichloropropane	< DL	< DL	< DL	< DL
cis-1,3-Dichloropropene	< DL	< DL	< DL	< DL
trans-1,3-Dichloropropene	< DL	< DL	< DL	< DL
Ethylbenzene	9.28	13.2	10.7	11.1
2-Hexanone	< DL	< DL	< DL	< DL
4-Methyl-2-Pentanone (MIBK)	< DL	< DL	< DL	< DL
Styrene	0.061	0.087	0.068	0.072
1,1,2,2-Tetrachloroethane	< DL	< DL	< DL	< DL
Tetrachloroethene (PCE)	0.293	0.387	0.310	0.330
Toluene	6.84	9.03	7.62	7.83
1,1,1-Trichloroethane (TCA)	0.439	0.581	0.508	0.509
1,1,2-Trichloroethane	< DL	< DL	< DL	< DL
Trichloroethene (TCE)	0.115	0.139	0.138	0.131
Trichlorofluoromethane (F-11)	0.879	1.19	1.02	1.03
Trichlorotrifluoroethane (F-113)	0.083	0.106	0.104	0.098
Vinyl Acetate	< DL	< DL	< DL	< DL
Vinyl Chloride	1.39	2.16	1.47	1.67
Xylenes, Total	17.1	23.5	19.7	20.1

< DL designates that the compound was not detected, or was found at levels below the practical quantitation limit.

mg/min = milligrams of analyte emitted per minute.

AM TEST
AIR QUALITY, INC.

SUMMARY OF EMISSION RATE RESULTS
TO-14 VOLATILE ORGANIC COMPOUNDS
AM TEST - AIR QUALITY, INC.

FILE NAME: S302\HOB3ORSM
CLIENT: King County Solid Waste
@ Hobart Landfill
LOCATION: Hobart, Washington

	CANISTER #3 OUTLET			
	RUN #1 (mg/min)	RUN #2 (mg/min)	RUN #3 (mg/min)	AVERAGE (mg/min)
LAB NUMBER:	CK-0721-4	CK-0721-5	CK-0721-6	
DATE:	2/14/94	2/14/94	2/14/94	
START TIME:	11:07	12:18	13:26	
STOP TIME:	11:37	12:48	13:56	
ANALYTE				
Acetone	3.94	5.27	4.49	4.56
Benzene	4.17	4.74	4.74	4.55
Bromodichloromethane	< DL	< DL	< DL	< DL
Bromomethane (Methyl Bromide)	< DL	< DL	< DL	< DL
Bromoform	< DL	< DL	< DL	< DL
1,3-Butadiene	< DL	< DL	< DL	< DL
2-Butanone (MEK)	< DL	< DL	< DL	< DL
Carbon Disulfide	0.025	0.034	0.037	0.032
Carbon Tetrachloride	< DL	< DL	< DL	< DL
Chlorobenzene	0.301	0.255	0.374	0.310
Chloroethane (Ethyl Chloride)	4.63	5.00	5.73	5.12
2-Chloroethyl Vinyl Ether	< DL	< DL	< DL	< DL
Chloroform	< DL	< DL	< DL	< DL
Chloromethane (Methyl Chloride)	0.579	0.290	0.698	0.522
Dibromochloromethane	< DL	< DL	< DL	< DL
1,2-Dibromoethane (EDB)	< DL	< DL	< DL	< DL
1,2-Dichlorobenzene	< DL	< DL	< DL	< DL
1,3-Dichlorobenzene	< DL	< DL	< DL	< DL
1,4-Dichlorobenzene	< DL	< DL	< DL	< DL
1,1-Dichloroethane	0.394	0.448	0.498	0.447
1,2-Dichloroethane (EDC)	< DL	< DL	< DL	< DL
1,1-Dichloroethene	< DL	< DL	< DL	< DL
cis-1,2-Dichloroethene	0.324	0.395	0.424	0.381
trans-1,2-Dichloroethene	< DL	< DL	< DL	< DL
Dichloromethane	0.232	0.263	0.498	0.331
1,2-Dichloropropane	< DL	< DL	< DL	< DL
cis-1,3-Dichloropropene	< DL	< DL	< DL	< DL
trans-1,3-Dichloropropene	< DL	< DL	< DL	< DL
Ethylbenzene	0.158	0.050	0.052	0.087
2-Hexanone	< DL	< DL	< DL	< DL
4-Methyl-2-Pentanone (MIBK)	< DL	< DL	< DL	< DL
Styrene	< DL	< DL	< DL	< DL
1,1,2,2-Tetrachloroethane	< DL	< DL	< DL	< DL
Tetrachloroethene (PCE)	0.016	< DL	< DL	~ 0.005
Toluene	0.155	0.066	0.122	0.114
1,1,1-Trichloroethane (TCA)	0.463	0.527	0.573	0.521
1,1,2-Trichloroethane	< DL	< DL	< DL	< DL
Trichloroethene (TCE)	0.255	0.290	0.424	0.323
Trichlorofluoromethane (F-11)	0.857	0.895	1.05	0.933
Trichlorotrifluoroethane (F-113)	0.097	0.105	0.107	0.103
Vinyl Acetate	< DL	< DL	< DL	< DL
Vinyl Chloride	1.55	1.05	1.69	1.43
Xylenes, Total	0.834	0.232	0.249	0.438

< DL designates that the compound was not detected, or was found at levels below the practical quantitation limit.

mg/min = milligrams of analyte emitted per minute.

2.2.4 Removal Efficiency of Volatile Organic Compounds

The removal efficiency is the amount of VOCs removed by passing the gas through activated carbon, expressed on a percentage basis. The percent removal efficiency for each volatile organic compound which was analyzed in the gas at the inlet and outlet of Canister #3 at the Hobart Landfill is presented on the following computer printout titled "Volatile Organic Compounds in Air - Percent Removal Evaluation". Removal efficiencies were calculated based on the average emission rate of each compound detected in milligrams per minute (mg/min).

AMTEST
AIR QUALITY, INC.

VOLATILE ORGANIC COMPOUNDS IN AIR
PERCENT REMOVAL EVALUATION
AM TEST-AIR QUALITY, INC.

FILE NAME: R302\HOB3REFF
CLIENT: King County Solid Waste @ Hobart Landfill
LOCATION: Hobart, Washington
SAMPLE SITE: Canister #3
SAMPLE DATE: February 14, 1994

COMPOUNDS	Average Inlet Emission Rate mg/min		Average Outlet Emission Rate mg/min		Percent Removal
Acetone	6.50		4.56		29.85
Benzene	2.94		4.55		*-----
Bromodichloromethane	< DL		< DL		-----
Bromomethane (Methyl Bromide)	< DL		< DL		-----
Bromoform	< DL		< DL		-----
1,3-Butadiene	< DL		< DL		-----
2-Butanone (MEK)	< DL		< DL		-----
Carbon Disulfide	0.031		0.032		*-----
Carbon Tetrachloride	< DL		< DL		-----
Chlorobenzene	1.40		0.310		77.86
Chloroethane (Ethyl Chloride)	5.77		5.12		11.27
2-Chloroethyl Vinyl Ether	< DL		< DL		-----
Chloroform	< DL		< DL		-----
Chloromethane (Methyl Chloride)	0.709		0.522		26.38
Dibromochloromethane	< DL		< DL		-----
1,2-Dibromoethane (EDB)	< DL		< DL		-----
1,2-Dichlorobenzene	< DL		< DL		-----
1,3-Dichlorobenzene	< DL		< DL		-----
1,4-Dichlorobenzene	0.199		< DL	>	99.99
1,1-Dichloroethane	0.433		0.447		*-----
1,2-Dichloroethane (EDC)	< DL		< DL		-----
1,1-Dichloroethene	< DL		< DL		-----
cis-1,2-Dichloroethene	0.396		0.381		3.79
trans-1,2-Dichloroethene	< DL		< DL		-----
Dichloromethane	0.283		0.331		*-----
1,2-Dichloropropane	< DL		< DL		-----
cis-1,3-Dichloropropene	< DL		< DL		-----
trans-1,3-Dichloropropene	< DL		< DL		-----
Ethylbenzene	11.1		0.087		99.22
2-Hexanone	< DL		< DL		-----
4-Methyl-2-Pentanone (MIBK)	< DL		< DL		-----
Styrene	0.072		< DL	>	99.99
1,1,2,2-Tetrachloroethane	< DL		< DL		-----
Tetrachloroethene (PCE)	0.330	~	0.005	~	98.48
Toluene	7.83		0.114		98.54
1,1,1-Trichloroethane (TCA)	0.509		0.521		*-----
1,1,2-Trichloroethane	< DL		< DL		-----
Trichloroethene (TCE)	0.131		0.323		*-----
Trichlorofluoromethane (F-11)	1.03		0.933		9.42
Trichlorotrifluoroethane (F-113)	0.098		0.103		*-----
Vinyl Acetate	< DL		< DL		-----
Vinyl Chloride	1.67		1.43		14.37
Xylenes, Total	20.1		0.438		97.82

< DL designates that the compound was not detected, or was found at levels below the practical quantitation limit.

mg/min = milligrams of analyte emitted per minute.

* Not reported due to negative percent removal.

3.0
PROJECT OVERVIEW/EXCEPTIONS

Flow rates were measured using a Kurz anemometer provided by King County Solid Waste Division rather than by EPA Method 1 and 2 procedures. This procedure was approved by Mr. Landon Collom of CH2M Hill. A pitot tube would not fit into the existing test ports. The specifications and calibration date were recorded on the Run 1-Outlet, Canister #3 field data sheet.

4.0
SOURCE OPERATION

Three (3) carbon adsorbers (Canister #1, #2 and #3) are temporarily installed at King County Solid Waste Division's Hobart Landfill in Hobart, Washington to replace the flare system. The gas is extracted from the landfill by extraction wells and a network of collection piping. The collected gas flows into the bottom of the carbon adsorbers. The gas flows up through the adsorber where the majority of the volatile organic compounds (VOCs) are removed. Only two canisters in parallel operate a time. Testing was conducted at Canister #2 and #3 during this evaluation.

5.0
SAMPLING AND ANALYSIS PROCEDURES

5.1 Velocity, Temperature, and Airflow

EPA Method 1 and 2 procedures could not be used during this project because a pitot tube would not fit into the existing test ports. Flow rates and temperatures were measured using a Kurz Instruments, Inc. Model 1440-5, (I.D.# PCE 6178-I) anemometer provided by King County Solid Waste Division. Flow rates were measured before or after each VOC test.

5.2 EPA Method 3A and Fixed Gas Analysis

The concentration of fixed gases (carbon dioxide (CO_2), carbon monoxide (CO), oxygen (O_2), nitrogen, and methane (CH_4)) at the inlet and outlet sample sites were quantified by Coast-to-Coast Analytical Services, Inc. using the gas collected in the SUMMA^R canisters. A gas chromatograph equipped with a thermal conductivity detector (GC-TCD) was used for this analysis, which detects percent levels of these compounds.

5.3 Moisture

The psychrometric moisture content of each gas stream was calculated using wet bulb and dry bulb temperatures recorded during each velocity test.

5.4 EPA Method TO-14 - Volatile Organic Compounds

Integrated samples of the gas at the inlet and outlet of each carbon canister were collected using Compendium Method TO-14 for volatile organic compound (VOC) analysis. The TO-14 sample train is illustrated in the figure titled "TO-14 Sample System Schematic" in the appendices of this report. This ambient air testing method

was used for this source testing project to collect integrated samples of gas in evacuated SUMMA^R electropolished stainless steel canisters. The integrated samples were analyzed using EPA Method TO-14, which utilizes a gas chromatograph equipped with a mass spectrophotometer (GC-MS) to quantify a standard list of volatile organic compounds.

The TO-14 sampling apparatus included a stainless steel probe, a mechanical critical orifice flow regulator or metering valve, and a 0-30 inch vacuum gauge to monitor canister vacuum. The system is specifically designed to collect uniformly integrated air samples over a predetermined time period. A stainless steel probe was inserted into the port to pull a gas sample through the flow controller and into the evacuated canister. The teflon sample line was attached to a stainless steel "T" connection, with the side branch connected to a vacuum gauge atop the SUMMA^R canister, the other end of the "T" was connected to a valve with a sample pump attached. The sample train was evacuated to approximately one inch above absolute pressure. A leak check was performed by observing the vacuum gauge for one (1) minute. The SUMMA^R canister valve was opened and the initial vacuum was recorded. The sample line valve was then opened until the canister vacuum was zero.

Coast-to-Coast Analytical Services, Inc., the outside contract laboratory used to analyze these samples, owns and maintains the integrity of the SUMMA^R passivated canisters and performs leak tests to assure that they can contain a gas sample over time. To prepare the canisters, the contract laboratory heated them in an isothermal oven to 100^o C. Once heated, the canisters were evacuated and maintained under vacuum for several hours. At the end of the heated/evacuation cycle, the canisters were pressurized with humid zero air and were quality assurance

checked with a gas chromatograph equipped with a flame ionization detector. Once certified clean, the canisters were reevacuated and remained in the evacuated state until they were used.

Each canister was labeled with an identification tag before it was returned to the contract laboratory for analysis. Upon return receipt of the canisters by the contract laboratory, the pressure of each canister was checked by attaching a pressure gauge to the canister inlet and opening the valve briefly to note the pressure. The sample canister was connected to the inlet of the GC-MS-SCAN analytical system. A mass flow controller was placed on the canister and the canister valve was opened. Following preliminary flushing, the canister flow was vented past a tee inlet to the analytical system. The sample was preconcentrated in a cryogenic trap, then the trapped analytes were thermally desorbed onto the head of the column to be separated and scanned. Primary identification is based on retention time and relative abundance of eluting ions as compared to the spectral library stored on the hard disk of the GC-MS data system. The concentration of each compound was calculated using the previously established response factors. Analysis of the gas contained in the canisters was accomplished using GC-MS as described in Method TO-14. This protocol is virtually identical to EPA Method 8240 procedures for quantifying volatile organic compounds. A copy of Coast-to-Coast's standard operating procedures (SOP) for TO-14 is included in the appendices of this report.

6.0
QUALITY ASSURANCE PLAN

The purpose of the quality assurance plan is to provide guidelines for achieving quality control in air pollution measurements. The detailed procedures which are utilized are included in the Environmental Protection Agency's (EPA's) reference manual titled Quality Assurance Handbook for Air Pollution Measurement Systems, Volume 3, EPA-600/4-77-027b. These procedures are followed throughout equipment preparation, field sampling, sample recovery, analysis and data reduction. Am Test-Air Quality, Inc.'s quality assurance procedures are discussed below.

6.1 Calibration Procedures and Frequency

Field equipment utilized for on-site measurements is calibrated at a frequency recommended by the equipment manufacturer or industry practice. Prior to field use, each instrument is calibrated and the calibration value is recorded. If any measuring or test device requiring calibration cannot immediately be removed from service, the Project Manager may extend the calibration cycle providing a review of the equipment's history warrants the issuance of an extension. No equipment will be extended more than twice a calibration cycle, nor will the extension exceed one-half the prescribed calibration cycle. Test equipment consistently found to be out of calibration will be repaired or replaced.

A barometer readable to 0.01 inches of mercury is used in the field to obtain barometric pressure readings. Support equipment is defined as all equipment, not previously discussed, that is required for completing an environmental monitoring or measurement task. This equipment may include storage and transportation

containers, sample recovery glassware, and communications gear. Support equipment is periodically inspected to maintain the performance standards necessary for proper and efficient execution of all tasks and responsibilities.

During a project, a systems audit is performed, consisting of an on-site qualitative inspection and review of the total measurement system. This inspection is conducted on a daily basis by the Project Leader. During the systems audit, the auditor observes the procedures and techniques of the field team in the following general areas:

- Setting up and leak testing the sample train
- Isokinetic sampling check (if applicable)
- Final leak check of the sample train
- Sample recovery

Visual inspections of pitot tubes, glassware, and other equipment are also made. The main purpose of a systems audit is to ensure that the measurement system will generate valid data, if operated properly.

6.2 Sample Recovery and Field Documentation

Data collected during each test, are immediately inspected for completeness and placed under the custody of the Project Leader until custody is transferred when the samples were returned to the Air Quality laboratory. Sample recovery is carried out in a suitable area free from particulate matter contamination. Each sample is assigned an identifying lab number to assist the chemists in tracking the sample.

6.3 Chain of Custody

The history of each sample was documented from collection through all transfers of custody until it was transferred to the analytical laboratory. Copies of the chain of

custody forms are included in the appendices of this report. Internal laboratory records document the custody of the samples through their final disposition. Care was taken to record precisely the sample type, sample time, and sample location and to help ensure that the sample number on the label exactly matches those numbers on the sample logsheet and the chain-of-custody record. The persons undertaking the actual sampling in the field were responsible for the care and custody of the samples collected until they were properly transferred or dispatched. Sample labels were completed for each sample bottle using water-proof ink.

6.4 Transfer of Custody and Shipment

All sample shipping containers were accompanied by an analysis request or chain-of-custody record form when they left the site. When transferring the possession of samples, the individuals relinquishing and receiving the samples signed, dated, and noted the time on the record. This record documents sample custody transfer from the sampler, often through another person, to the analyst in the laboratory.

The laboratory representative who accepted the incoming sample shipment signed and dated the chain-of-custody record, completing the sample transfer process. It is the laboratory's responsibility to maintain internal logbooks and custody records throughout sample preparation and analysis in accordance with the laboratory's written QA Plan.

It is important to maintain the integrity of the samples from the time of collection until the analyses are performed. The samples were preserved during transportation and storage to prevent or retard degradation or modification of chemicals in samples. Prior to shipping the TO-14 canisters, the samples were placed in boxes along with a chain-of-custody form. Empty space in the box was

filled with bubble pack and styrofoam to prevent damage during shipment. The samples were shipped to Coast-to-Coast Analytical via UPS red for next day delivery.

6.5 Data Reduction, Validation and Reporting

Raw data are handled according to strict guidelines when being transposed into computer files or to other logs. The guidelines include document receipt control procedures, file review, and sign-off by a project assistant. Raw data are entered into the appropriate computer spreadsheet by a "processor", then the entered figures are checked for accuracy by a "checker", different from the "processor". Any mistakes are corrected, and figures are rechecked and signed off by the "checker". In addition, a by-hand calculation check of each spreadsheet is made using a hand-held calculator to validate the computer output. All data generated by each phase of a laboratory or field sampling program are reviewed by the senior reviewer. The data package is signed off by the senior reviewer prior to releasing the data for report preparation.

7.0
METHODOLOGY REFERENCES

EPA. EPA Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air, Method TO-14.

EPA. EPA APTI Course, "Course 468 - Source Sampling For Gaseous Pollutants".

EPA. Quality Assurance Handbook for Air Pollution Measurement Systems, Volume 3, EPA-60/4-77-027b.

APPENDIX A

Computer Printouts of Results

MOISTURE AND AIRFLOW
AM TEST - AIR QUALITY, INC.

FILE NAME:	S705\HOBCA2I1	LAB #:	5142,CK-0721-1
CLIENT:	King County Solid Waste @ Hobart Landfill	START TIME:	~11:15 o'clock
LOCATION:	Hobart, Washington		
SAMPLE SITE:	Canister #2 - Inlet		
SAMPLE DATE:	February 14, 1994		
RUN #:	1 - Airflow		
OPERATORS:	Mackey/Lawrence		

WET BULB TEMPERATURE (Tw):	55	°F
DRY BULB TEMPERATURE (Td):	67	°F
SAT'd H2O VAPOR PRESSURE (SVP):	0.4359	inches of Hg (wet bulb °F - from chart)
VAPOR PRESSURE (VP):	0.3068	inches of Hg
Bws:	0.0103	
MOISTURE (%):	1.03	
DUCT DIAMETER:	5.75	inches
DUCT AREA:	0.180	sq. feet
BAROMETRIC PRES.:	29.58	inches Hg
STATIC PRESSURE:	2.8	inches H2O
DUCT PRESSURE:	29.79	inches Hg
AVERAGE CO2 CONC:	27.0	percent
AVERAGE O2 CONC:	2.8	percent
AVERAGE CO CONC:	< 0.1	percent
AVERAGE CH4 CONC:	14	percent
MOLECULAR WEIGHT:	30.75	g/g-mole-dry
MOLECULAR WEIGHT:	30.62	g/g-mole-wet

SAMPLE POINT	VELOCITY ft/min	TEMPERATURE °F	SAMPLE POINT	VELOCITY ft/min	TEMPERATURE °F
Top 1	345	67	Top 3	648	67
2	488	67	4	645	67

DUCT GAS TEMPERATURE:	67.0	degrees F
DUCT GAS TEMPERATURE:	527.0	degrees R
DUCT GAS VELOCITY:	531.5	ft/min
DUCT GAS AIR FLOW:	94.6	dscf/min
DUCT GAS AIR FLOW:	95.8	acf/min

MOISTURE AND AIRFLOW
AM TEST - AIR QUALITY, INC.

FILE NAME:	S705\HOBCA212	LAB #:	5143,CK-0721-2
CLIENT:	King County Solid Waste @ Hobart Landfill	START TIME:	~12:30 o'clock
LOCATION:	Hobart, Washington		
SAMPLE SITE:	Canister #2 - Inlet		
SAMPLE DATE:	February 14, 1994		
RUN #:	2 - Airflow		
OPERATORS:	Mackey/Lawrence		

WET BULB TEMPERATURE (Tw):	56	°F
DRY BULB TEMPERATURE (Td):	68	°F
SAT'd H2O VAPOR PRESSURE (SVP):	0.4520	inches of Hg (wet bulb °F - from chart)
VAPOR PRESSURE (VP):	0.3230	inches of Hg
Bws:	0.0108	
MOISTURE (%):	1.08	
DUCT DIAMETER:	5.75	inches
DUCT AREA:	0.180	sq. feet
BAROMETRIC PRES.:	29.58	inches Hg
STATIC PRESSURE:	2.7	inches H2O
DUCT PRESSURE:	29.78	inches Hg
AVERAGE CO2 CONC:	28.0	percent
AVERAGE O2 CONC:	2.6	percent
AVERAGE CO CONC:	< 0.1	percent
AVERAGE CH4 CONC:	14	percent
MOLECULAR WEIGHT:	30.90	g/g-mole-dry
MOLECULAR WEIGHT:	30.76	g/g-mole-wet

SAMPLE POINT	VELOCITY ft/min	TEMPERATURE °F	SAMPLE POINT	VELOCITY ft/min	TEMPERATURE °F
Top 1	960	68	Top 3	932	68
2	987	68	4	937	68

DUCT GAS TEMPERATURE:	68.0	degrees F
DUCT GAS TEMPERATURE:	528.0	degrees R
DUCT GAS VELOCITY:	954.0	ft/min
DUCT GAS AIR FLOW:	169.4	dscf/min
DUCT GAS AIR FLOW:	172.0	acf/min

MOISTURE AND AIRFLOW
AM TEST - AIR QUALITY, INC.

FILE NAME:	S705\HOBCA213	LAB #:	5144,CK-0721-3
CLIENT:	King County Solid Waste @ Hobart Landfill	START TIME:	~13:45 o'clock
LOCATION:	Hobart, Washington		
SAMPLE SITE:	Canister #2 - Inlet		
SAMPLE DATE:	February 14, 1994		
RUN #:	3 - Airflow		
OPERATORS:	Mackey/Lawrence		

WET BULB TEMPERATURE (Tw):	54	°F
DRY BULB TEMPERATURE (Td):	67	°F
SAT'd H2O VAPOR PRESSURE (SVP):	0.4203	inches of Hg (wet bulb °F - from chart)
VAPOR PRESSURE (VP):	0.2804	inches of Hg
Bws:	0.0094	
MOISTURE (%):	0.94	
DUCT DIAMETER:	5.75	inches
DUCT AREA:	0.180	sq. feet
BAROMETRIC PRES.:	29.58	inches Hg
STATIC PRESSURE:	3.0	inches H2O
DUCT PRESSURE:	29.80	inches Hg
AVERAGE CO2 CONC:	29.0	percent
AVERAGE O2 CONC:	2.4	percent
AVERAGE CO CONC:	< 0.1	percent
AVERAGE CH4 CONC:	14	percent
MOLECULAR WEIGHT:	31.06	g/g-mole-dry
MOLECULAR WEIGHT:	30.93	g/g-mole-wet

SAMPLE POINT	VELOCITY ft/min	TEMPERATURE °F	SAMPLE POINT	VELOCITY ft/min	TEMPERATURE °F
Top 1	749	67	Top 3	845	67
2	797	67	4	859	67

DUCT GAS TEMPERATURE:	67.0	degrees F
DUCT GAS TEMPERATURE:	527.0	degrees R
DUCT GAS VELOCITY:	812.5	ft/min
DUCT GAS AIR FLOW:	144.8	dscf/min
DUCT GAS AIR FLOW:	146.5	acf/min

MOISTURE AND AIRFLOW
AM TEST - AIR QUALITY, INC.

FILE NAME:	S705\HOBCA201	LAB #:	5145,CK-0721-4
CLIENT:	King County Solid Waste @ Hobart Landfill	START TIME:	~11:15 o'clock
LOCATION:	Hobart, Washington		
SAMPLE SITE:	Canister #2 - Outlet		
SAMPLE DATE:	February 14, 1994		
RUN #:	1 - Airflow		
OPERATORS:	Mackey/Lawrence		

WET BULB TEMPERATURE (Tw):	49	°F
DRY BULB TEMPERATURE (Td):	52	°F
SAT'd H2O VAPOR PRESSURE (SVP):	0.3493	inches of Hg (wet bulb °F - from chart)
VAPOR PRESSURE (VP):	0.3172	inches of Hg
Bws:	0.0107	
MOISTURE (%):	1.07	
STACK DIAMETER:	3.00	inches
STACK AREA:	0.049	sq. feet
BAROMETRIC PRES.:	29.58	inches Hg
STATIC PRESSURE:	0.15	inches H2O
DUCT PRESSURE:	29.59	inches Hg
AVERAGE CO2 CONC:	29.0	percent
AVERAGE O2 CONC:	2.6	percent
AVERAGE CO CONC:	< 0.1	percent
AVERAGE CH4 CONC:	14	percent
MOLECULAR WEIGHT:	31.06	g/g-mole-dry
MOLECULAR WEIGHT:	30.92	g/g-mole-wet

SAMPLE POINT	VELOCITY ft/min	TEMPERATURE °F	SAMPLE POINT	VELOCITY ft/min	TEMPERATURE °F
Center	1690	52	Center	1851	52
Point	1793	52	Point	1674	52

STACK GAS TEMPERATURE:	52.0	degrees F
STACK GAS TEMPERATURE:	512.0	degrees R
STACK GAS VELOCITY:	1752.0	ft/min
STACK GAS AIR FLOW:	86.8	dscf/min
STACK GAS AIR FLOW:	86.0	acf/min

MOISTURE AND AIRFLOW
AM TEST - AIR QUALITY, INC.

FILE NAME:	S705\HOBCA202	LAB #:	5146,CK-0721-5
CLIENT:	King County Solid Waste @ Hobart Landfill	START TIME:	~12:30 o'clock
LOCATION:	Hobart, Washington		
SAMPLE SITE:	Canister #2 - Outlet		
SAMPLE DATE:	February 14, 1994		
RUN #:	2 - Airflow		
OPERATORS:	Mackey/Lawrence		

WET BULB TEMPERATURE (Tw):	51	°F
DRY BULB TEMPERATURE (Td):	57	°F
SAT'd H2O VAPOR PRESSURE (SVP):	0.3764	inches of Hg (wet bulb °F - from chart)
VAPOR PRESSURE (VP):	0.3123	inches of Hg
Bws:	0.0106	
MOISTURE (%):	1.06	
STACK DIAMETER:	3.00	inches
STACK AREA:	0.049	sq. feet
BAROMETRIC PRES.:	29.58	inches Hg
STATIC PRESSURE:	0.10	inches H2O
DUCT PRESSURE:	29.59	inches Hg
AVERAGE CO2 CONC:	27.0	percent
AVERAGE O2 CONC:	3.6	percent
AVERAGE CO CONC:	< 0.1	percent
AVERAGE CH4 CONC:	13	percent
MOLECULAR WEIGHT:	30.90	g/g-mole-dry
MOLECULAR WEIGHT:	30.77	g/g-mole-wet

SAMPLE POINT	VELOCITY ft/min	TEMPERATURE °F	SAMPLE POINT	VELOCITY ft/min	TEMPERATURE °F
Center	1821	57	Center	1986	57
Point	1826	57	Point	1961	57

STACK GAS TEMPERATURE:	57.0	degrees F
STACK GAS TEMPERATURE:	517.0	degrees R
STACK GAS VELOCITY:	1898.5	ft/min
STACK GAS AIR FLOW:	93.1	dscf/min
STACK GAS AIR FLOW:	93.2	acf/min

MOISTURE AND AIRFLOW
AM TEST - AIR QUALITY, INC.

FILE NAME:	S705\HOBCA203	LAB #:	5147,CK-0721-6
CLIENT:	King County Solid Waste @ Hobart Landfill	START TIME:	~13:45 o'clock
LOCATION:	Hobart, Washington		
SAMPLE SITE:	Canister #2 - Outlet		
SAMPLE DATE:	February 14, 1994		
RUN #:	3 - Airflow		
OPERATORS:	Mackey/Lawrence		

WET BULB TEMPERATURE (Tw):	52	°F
DRY BULB TEMPERATURE (Td):	59	°F
SAT'd H2O VAPOR PRESSURE (SVP):	0.3906	inches of Hg (wet bulb °F - from chart)
VAPOR PRESSURE (VP):	0.3158	inches of Hg
Bws:	0.0107	
MOISTURE (%):	1.07	
STACK DIAMETER:	3.00	inches
STACK AREA:	0.049	sq. feet
BAROMETRIC PRES.:	29.58	inches Hg
STATIC PRESSURE:	0.10	inches H2O
DUCT PRESSURE:	29.59	inches Hg
AVERAGE CO2 CONC:	28.0	percent
AVERAGE O2 CONC:	2.5	percent
AVERAGE CO CONC:	< 0.1	percent
AVERAGE CH4 CONC:	14	percent
MOLECULAR WEIGHT:	30.90	g/g-mole-dry
MOLECULAR WEIGHT:	30.76	g/g-mole-wet

SAMPLE POINT	VELOCITY ft/min	TEMPERATURE °F	SAMPLE POINT	VELOCITY ft/min	TEMPERATURE °F
Center	2770	59	Center	2380	59
Point	2840	59	Point	2650	59

STACK GAS TEMPERATURE:	59.0	degrees F
STACK GAS TEMPERATURE:	519.0	degrees R
STACK GAS VELOCITY:	2660.0	ft/min
STACK GAS AIR FLOW:	130.0	dscf/min
STACK GAS AIR FLOW:	130.6	acf/min

EMISSION RATE RESULTS
TO-14 VOLATILE ORGANIC COMPOUNDS
AM TEST-AIR QUALITY, INC.

FILE NAME: R302\HOB2IN-1
CLIENT: King County Solid Waste @ Hobart Landfill
LOCATION: Hobart, Washington
SAMPLE LOCATION: Canister #2 - Inlet
SAMPLE DATE: February 14, 1994
SAMPLE TIME: 10:25-10:55
LAB NUMBER(S): CK-0721-1
CANISTER #: 455
AIRFLOW: 94.6 dscf/min

ANALYTE	Run 1 mg/min	Blank mg/min	DL Run 1 mg/min
Acetone	4.29	< DL	0.008
Benzene	2.57	< DL	0.001
Bromodichloromethane	< DL	< DL	0.003
Bromomethane (Methyl Bromide)	< DL	< DL	0.003
Bromoform	< DL	< DL	0.003
1,3-Butadiene	< DL	< DL	0.003
2-Butanone (MEK)	< DL	< DL	0.003
Carbon Disulfide	0.029	< DL	0.013
Carbon Tetrachloride	< DL	< DL	0.003
Chlorobenzene	1.37	< DL	0.001
Chloroethane (Ethyl Chloride)	5.63	< DL	0.001
2-Chloroethyl Vinyl Ether	< DL	< DL	0.013
Chloroform	< DL	< DL	0.008
Chloromethane (Methyl Chloride)	0.670	< DL	0.001
Dibromochloromethane	< DL	< DL	0.003
1,2-Dibromoethane (EDB)	< DL	< DL	0.005
1,2-Dichlorobenzene	< DL	< DL	0.003
1,3-Dichlorobenzene	< DL	< DL	0.003
1,4-Dichlorobenzene	0.088	< DL	0.003
1,1-Dichloroethane	0.429	< DL	0.001
1,2-Dichloroethane (EDC)	< DL	< DL	0.003
1,1-Dichloroethene	< DL	< DL	0.003
cis-1,2-Dichloroethene	0.375	< DL	0.003
trans-1,2-Dichloroethene	< DL	< DL	0.003
Dichloromethane	0.348	< DL	0.013
1,2-Dichloropropane	< DL	< DL	0.001
cis-1,3-Dichloropropene	< DL	< DL	0.001
trans-1,3-Dichloropropene	< DL	< DL	0.001
Ethylbenzene	9.91	< DL	0.003
2-Hexanone	< DL	< DL	0.001
4-Methyl-2-Pentanone (MIBK)	< DL	< DL	0.001
Styrene	0.064	< DL	0.003
1,1,2,2-Tetrachloroethane	< DL	< DL	0.003
Tetrachloroethene (PCE)	0.429	< DL	0.003
Toluene	6.97	< DL	0.003
1,1,1-Trichloroethane (TCA)	0.482	< DL	0.003
1,1,2-Trichloroethane	< DL	< DL	0.003
Trichloroethene (TCE)	0.126	< DL	0.001
Trichlorofluoromethane (F-11)	1.02	< DL	0.003
Trichlorotrifluoroethane (F-113)	0.102	< DL	0.005
Vinyl Acetate	< DL	< DL	0.005
Vinyl Chloride	1.66	< DL	0.001
Xylenes, Total	18.2	< DL	0.003

< DL designates that the compound was not detected, or was found at levels below the practical quantitation limit.

mg/min = milligrams of analyte emitted per minute

EMISSION RATE RESULTS
TO-14 VOLATILE ORGANIC COMPOUNDS
AM TEST-AIR QUALITY, INC.

FILE NAME: R302\HOB2IN-2
CLIENT: King County Solid Waste @ Hobart Landfill
LOCATION: Hobart, Washington
SAMPLE LOCATION: Canister #2 - Inlet
SAMPLE DATE: February 14, 1994
SAMPLE TIME: 11:45-12:15
LAB NUMBER(S): CK-0721-2
CANISTER #: 301
AIRFLOW: 169.4 dscf/min

ANALYTE	Run 2 mg/min	Blank mg/min	DL Run 2 mg/min
Acetone	9.12	< DL	0.014
Benzene	4.80	< DL	0.002
Bromodichloromethane	< DL	< DL	0.005
Bromomethane (Methyl Bromide)	< DL	< DL	0.005
Bromoform	< DL	< DL	0.005
1,3-Butadiene	< DL	< DL	0.005
2-Butanone (MEK)	< DL	< DL	0.005
Carbon Disulfide	0.058	< DL	0.024
Carbon Tetrachloride	< DL	< DL	0.005
Chlorobenzene	2.25	< DL	0.002
Chloroethane (Ethyl Chloride)	9.60	< DL	0.002
2-Chloroethyl Vinyl Ether	< DL	< DL	0.024
Chloroform	< DL	< DL	0.014
Chloromethane (Methyl Chloride)	1.20	< DL	0.002
Dibromochloromethane	< DL	< DL	0.005
1,2-Dibromoethane (EDB)	< DL	< DL	0.010
1,2-Dichlorobenzene	< DL	< DL	0.005
1,3-Dichlorobenzene	< DL	< DL	0.005
1,4-Dichlorobenzene	0.288	< DL	0.005
1,1-Dichloroethane	0.720	< DL	0.002
1,2-Dichloroethane (EDC)	< DL	< DL	0.005
1,1-Dichloroethene	< DL	< DL	0.005
cis-1,2-Dichloroethene	0.624	< DL	0.005
trans-1,2-Dichloroethene	< DL	< DL	0.005
Dichloromethane	0.576	< DL	0.024
1,2-Dichloropropane	< DL	< DL	0.002
cis-1,3-Dichloropropene	< DL	< DL	0.002
trans-1,3-Dichloropropene	< DL	< DL	0.002
Ethylbenzene	18.2	< DL	0.005
2-Hexanone	< DL	< DL	0.002
4-Methyl-2-Pentanone (MIBK)	< DL	< DL	0.002
Styrene	0.120	< DL	0.005
1,1,2,2-Tetrachloroethane	< DL	< DL	0.005
Tetrachloroethene (PCE)	0.528	< DL	0.005
Toluene	12.5	< DL	0.005
1,1,1-Trichloroethane (TCA)	0.816	< DL	0.005
1,1,2-Trichloroethane	< DL	< DL	0.005
Trichloroethene (TCE)	0.216	< DL	0.002
Trichlorofluoromethane (F-11)	1.68	< DL	0.005
Trichlorotrifluoroethane (F-113)	0.168	< DL	0.010
Vinyl Acetate	< DL	< DL	0.010
Vinyl Chloride	3.17	< DL	0.002
Xylenes, Total	33.1	< DL	0.005

< DL designates that the compound was not detected, or was found at levels below the practical quantitation limit.

mg/min = milligrams of analyte emitted per minute

EMISSION RATE RESULTS
TO-14 VOLATILE ORGANIC COMPOUNDS
AM TEST-AIR QUALITY, INC.

FILE NAME: R302\HOB2IN-3
CLIENT: King County Solid Waste @ Hobart Landfill
LOCATION: Hobart, Washington
SAMPLE LOCATION: Canister #2 - Inlet
SAMPLE DATE: February 14, 1994
SAMPLE TIME: 12:52-13:22
LAB NUMBER(S): CK-0721-3
CANISTER #: 653
AIRFLOW: 144.8 dscf/min

ANALYTE	Run 3 mg/min	Blank mg/min	DL Run 3 mg/min
Acetone	6.56	< DL	0.012
Benzene	4.10	< DL	0.002
Bromodichloromethane	< DL	< DL	0.004
Bromomethane (Methyl Bromide)	< DL	< DL	0.004
Bromoform	< DL	< DL	0.004
1,3-Butadiene	< DL	< DL	0.004
2-Butanone (MEK)	< DL	< DL	0.004
Carbon Disulfide	0.041	< DL	0.021
Carbon Tetrachloride	< DL	< DL	0.004
Chlorobenzene	1.89	< DL	0.002
Chloroethane (Ethyl Chloride)	7.79	< DL	0.002
2-Chloroethyl Vinyl Ether	< DL	< DL	0.021
Chloroform	< DL	< DL	0.012
Chloromethane (Methyl Chloride)	1.03	< DL	0.002
Dibromochloromethane	< DL	< DL	0.004
1,2-Dibromoethane (EDB)	< DL	< DL	0.008
1,2-Dichlorobenzene	< DL	< DL	0.004
1,3-Dichlorobenzene	< DL	< DL	0.004
1,4-Dichlorobenzene	0.168	< DL	0.004
1,1-Dichloroethane	0.574	< DL	0.002
1,2-Dichloroethane (EDC)	< DL	< DL	0.004
1,1-Dichloroethene	< DL	< DL	0.004
cis-1,2-Dichloroethene	0.492	< DL	0.004
trans-1,2-Dichloroethene	< DL	< DL	0.004
Dichloromethane	0.410	< DL	0.021
1,2-Dichloropropane	< DL	< DL	0.002
cis-1,3-Dichloropropene	< DL	< DL	0.002
trans-1,3-Dichloropropene	< DL	< DL	0.002
Ethylbenzene	15.2	< DL	0.004
2-Hexanone	< DL	< DL	0.002
4-Methyl-2-Pentanone (MIBK)	< DL	< DL	0.002
Styrene	0.107	< DL	0.004
1,1,2,2-Tetrachloroethane	< DL	< DL	0.004
Tetrachloroethene (PCE)	0.451	< DL	0.004
Toluene	10.7	< DL	0.004
1,1,1-Trichloroethane (TCA)	0.697	< DL	0.004
1,1,2-Trichloroethane	< DL	< DL	0.004
Trichloroethene (TCE)	0.164	< DL	0.002
Trichlorofluoromethane (F-11)	1.39	< DL	0.004
Trichlorotrifluoroethane (F-113)	0.135	< DL	0.008
Vinyl Acetate	< DL	< DL	0.008
Vinyl Chloride	2.58	< DL	0.002
Xylenes, Total	27.5	< DL	0.004

< DL designates that the compound was not detected, or was found at levels below the practical quantitation limit.

mg/min = milligrams of analyte emitted per minute

EMISSION RATE RESULTS
TO-14 VOLATILE ORGANIC COMPOUNDS
AM TEST-AIR QUALITY, INC.

FILE NAME: R302\HOB2OUT1
CLIENT: King County Solid Waste @ Hobart Landfill
LOCATION: Hobart, Washington
SAMPLE LOCATION: Canister #2 - Outlet
SAMPLE DATE: February 14, 1994
SAMPLE TIME: 10:25-10:55
LAB NUMBER(S): CK-0721-4
CANISTER #: 630
AIRFLOW: 86.8 dscf/min

ANALYTE	Run 1 mg/min	Blank mg/min	DL Run 1 mg/min
Acetone	4.67	< DL	0.007
Benzene	0.009	< DL	0.001
Bromodichloromethane	< DL	< DL	0.002
Bromomethane (Methyl Bromide)	< DL	< DL	0.002
Bromoform	< DL	< DL	0.002
1,3-Butadiene	< DL	< DL	0.002
2-Butanone (MEK)	< DL	< DL	0.002
Carbon Disulfide	0.027	< DL	0.012
Carbon Tetrachloride	< DL	< DL	0.002
Chlorobenzene	0.014	< DL	0.001
Chloroethane (Ethyl Chloride)	4.92	< DL	0.001
2-Chloroethyl Vinyl Ether	< DL	< DL	0.012
Chloroform	< DL	< DL	0.007
Chloromethane (Methyl Chloride)	0.418	< DL	0.001
Dibromochloromethane	< DL	< DL	0.002
1,2-Dibromoethane (EDB)	< DL	< DL	0.005
1,2-Dichlorobenzene	< DL	< DL	0.002
1,3-Dichlorobenzene	< DL	< DL	0.002
1,4-Dichlorobenzene	0.184	< DL	0.002
1,1-Dichloroethane	0.467	< DL	0.001
1,2-Dichloroethane (EDC)	< DL	< DL	0.002
1,1-Dichloroethene	< DL	< DL	0.002
cis-1,2-Dichloroethene	0.229	< DL	0.002
trans-1,2-Dichloroethene	< DL	< DL	0.002
Dichloromethane	0.270	< DL	0.012
1,2-Dichloropropane	< DL	< DL	0.001
cis-1,3-Dichloropropene	< DL	< DL	0.001
trans-1,3-Dichloropropene	< DL	< DL	0.001
Ethylbenzene	1.13	< DL	0.002
2-Hexanone	< DL	< DL	0.001
4-Methyl-2-Pentanone (MIBK)	< DL	< DL	0.001
Styrene	0.270	< DL	0.002
1,1,2,2-Tetrachloroethane	< DL	< DL	0.002
Tetrachloroethene (PCE)	0.170	< DL	0.002
Toluene	0.885	< DL	0.002
1,1,1-Trichloroethane (TCA)	0.393	< DL	0.002
1,1,2-Trichloroethane	< DL	< DL	0.002
Trichloroethene (TCE)	< DL	< DL	0.001
Trichlorofluoromethane (F-11)	0.762	< DL	0.002
Trichlorotrifluoroethane (F-113)	0.155	< DL	0.005
Vinyl Acetate	< DL	< DL	0.005
Vinyl Chloride	1.20	< DL	0.001
Xylenes, Total	6.15	< DL	0.002

< DL designates that the compound was not detected, or was found at levels below the practical quantitation limit.

mg/min = milligrams of analyte emitted per minute

EMISSION RATE RESULTS
TO-14 VOLATILE ORGANIC COMPOUNDS
AM TEST-AIR QUALITY, INC.

FILE NAME: R302\HOB2OUT2
CLIENT: King County Solid Waste @ Hobart Landfill
LOCATION: Hobart, Washington
SAMPLE LOCATION: Canister #2 - Outlet
SAMPLE DATE: February 14, 1994
SAMPLE TIME: 11:45-12:15
LAB NUMBER(S): CK-0721-5
CANISTER #: 126
AIRFLOW: 93.1 dscf/min

ANALYTE	Run 2 mg/min	Blank mg/min	DL Run 2 mg/min
Acetone	3.69	< DL	0.008
Benzene	0.069	< DL	0.001
Bromodichloromethane	< DL	< DL	0.003
Bromomethane (Methyl Bromide)	< DL	< DL	0.003
Bromoform	< DL	< DL	0.003
1,3-Butadiene	< DL	< DL	0.003
2-Butanone (MEK)	< DL	< DL	0.003
Carbon Disulfide	0.029	< DL	0.013
Carbon Tetrachloride	< DL	< DL	0.003
Chlorobenzene	< DL	< DL	0.001
Chloroethane (Ethyl Chloride)	5.01	< DL	0.001
2-Chloroethyl Vinyl Ether	< DL	< DL	0.013
Chloroform	< DL	< DL	0.008
Chloromethane (Methyl Chloride)	0.606	< DL	0.001
Dibromochloromethane	< DL	< DL	0.003
1,2-Dibromoethane (EDB)	< DL	< DL	0.005
1,2-Dichlorobenzene	< DL	< DL	0.003
1,3-Dichlorobenzene	< DL	< DL	0.003
1,4-Dichlorobenzene	< DL	< DL	0.003
1,1-Dichloroethane	0.659	< DL	0.001
1,2-Dichloroethane (EDC)	< DL	< DL	0.003
1,1-Dichloroethene	< DL	< DL	0.003
cis-1,2-Dichloroethene	0.177	< DL	0.003
trans-1,2-Dichloroethene	< DL	< DL	0.003
Dichloromethane	0.264	< DL	0.013
1,2-Dichloropropane	< DL	< DL	0.001
cis-1,3-Dichloropropene	< DL	< DL	0.001
trans-1,3-Dichloropropene	< DL	< DL	0.001
Ethylbenzene	0.063	< DL	0.003
2-Hexanone	< DL	< DL	0.001
4-Methyl-2-Pentanone (MIBK)	< DL	< DL	0.001
Styrene	< DL	< DL	0.003
1,1,2,2-Tetrachloroethane	< DL	< DL	0.003
Tetrachloroethene (PCE)	< DL	< DL	0.003
Toluene	0.100	< DL	0.003
1,1,1-Trichloroethane (TCA)	0.395	< DL	0.003
1,1,2-Trichloroethane	< DL	< DL	0.003
Trichloroethene (TCE)	< DL	< DL	0.001
Trichlorofluoromethane (F-11)	0.844	< DL	0.003
Trichlorotrifluoroethane (F-113)	0.245	< DL	0.005
Vinyl Acetate	< DL	< DL	0.005
Vinyl Chloride	1.66	< DL	0.001
Xylenes, Total	0.343	< DL	0.003

< DL designates that the compound was not detected, or was found at levels below the practical quantitation limit.

mg/min = milligrams of analyte emitted per minute

EMISSION RATE RESULTS
TO-14 VOLATILE ORGANIC COMPOUNDS
AM TEST-AIR QUALITY, INC.

FILE NAME: R302\HOB2OUT3
CLIENT: King County Solid Waste @ Hobart Landfill
LOCATION: Hobart, Washington
SAMPLE LOCATION: Canister #2 - Outlet
SAMPLE DATE: February 14, 1994
SAMPLE TIME: 12:52-13:22
LAB NUMBER(S): CK-0721-6
CANISTER #: 647
AIRFLOW: 130.0 dscf/min

ANALYTE	Run 3 mg/min	Blank mg/min	DL Run 3 mg/min
Acetone	7.73	< DL	0.011
Benzene	0.096	< DL	0.002
Bromodichloromethane	< DL	< DL	0.004
Bromomethane (Methyl Bromide)	< DL	< DL	0.004
Bromoform	< DL	< DL	0.004
1,3-Butadiene	< DL	< DL	0.004
2-Butanone (MEK)	< DL	< DL	0.004
Carbon Disulfide	0.044	< DL	0.018
Carbon Tetrachloride	< DL	< DL	0.004
Chlorobenzene	< DL	< DL	0.002
Chloroethane (Ethyl Chloride)	12.1	< DL	0.002
2-Chloroethyl Vinyl Ether	< DL	< DL	0.018
Chloroform	< DL	< DL	0.011
Chloromethane (Methyl Chloride)	1.14	< DL	0.002
Dibromochloromethane	< DL	< DL	0.004
1,2-Dibromoethane (EDB)	< DL	< DL	0.007
1,2-Dichlorobenzene	< DL	< DL	0.004
1,3-Dichlorobenzene	< DL	< DL	0.004
1,4-Dichlorobenzene	< DL	< DL	0.004
1,1-Dichloroethane	0.773	< DL	0.002
1,2-Dichloroethane (EDC)	< DL	< DL	0.004
1,1-Dichloroethene	< DL	< DL	0.004
cis-1,2-Dichloroethene	0.479	< DL	0.004
trans-1,2-Dichloroethene	< DL	< DL	0.004
Dichloromethane	0.368	< DL	0.018
1,2-Dichloropropane	< DL	< DL	0.002
cis-1,3-Dichloropropene	< DL	< DL	0.002
trans-1,3-Dichloropropene	< DL	< DL	0.002
Ethylbenzene	0.125	< DL	0.004
2-Hexanone	< DL	< DL	0.002
4-Methyl-2-Pentanone (MIBK)	< DL	< DL	0.002
Styrene	< DL	< DL	0.004
1,1,2,2-Tetrachloroethane	< DL	< DL	0.004
Tetrachloroethene (PCE)	< DL	< DL	0.004
Toluene	0.162	< DL	0.004
1,1,1-Trichloroethane (TCA)	0.552	< DL	0.004
1,1,2-Trichloroethane	< DL	< DL	0.004
Trichloroethene (TCE)	< DL	< DL	0.002
Trichlorofluoromethane (F-11)	1.58	< DL	0.004
Trichlorotrifluoroethane (F-113)	0.291	< DL	0.007
Vinyl Acetate	< DL	< DL	0.007
Vinyl Chloride	4.05	< DL	0.002
Xylenes, Total	0.663	< DL	0.004

< DL designates that the compound was not detected, or was found at levels below the practical quantitation limit.

mg/min = milligrams of analyte emitted per minute

MOISTURE AND AIRFLOW
AM TEST - AIR QUALITY, INC.

FILE NAME:	S705\HOBCA311	LAB #:	5148,CK-0721-7
CLIENT:	King County Solid Waste @ Hobart Landfill	START TIME:	~10:45 o'clock
LOCATION:	Hobart, Washington		
SAMPLE SITE:	Canister #3 - Inlet		
SAMPLE DATE:	February 14, 1994		
RUN #:	1 - Airflow		
OPERATORS:	Mackey/Lawrence		

WET BULB TEMPERATURE (Tw):	54	°F
DRY BULB TEMPERATURE (Td):	60	°F
SAT'd H2O VAPOR PRESSURE (SVP):	0.4203	inches of Hg (wet bulb °F - from chart)
VAPOR PRESSURE (VP):	0.3557	inches of Hg
Bws:	0.0119	
MOISTURE (%):	1.19	
DUCT DIAMETER:	5.75	inches
DUCT AREA:	0.180	sq. feet
BAROMETRIC PRES.:	29.58	inches Hg
STATIC PRESSURE:	2.9	inches H2O
DUCT PRESSURE:	29.79	inches Hg
AVERAGE CO2 CONC:	28.0	percent
AVERAGE O2 CONC:	2.5	percent
AVERAGE CO CONC:	< 0.1	percent
AVERAGE CH4 CONC:	14	percent
MOLECULAR WEIGHT:	30.90	g/g-mole-dry
MOLECULAR WEIGHT:	30.75	g/g-mole-wet

SAMPLE POINT	VELOCITY ft/min	TEMPERATURE °F	SAMPLE POINT	VELOCITY ft/min	TEMPERATURE °F
Top 1	576	62	Top 3	455	62
2	384	62	4	506	62

DUCT GAS TEMPERATURE:	62.0	degrees F
DUCT GAS TEMPERATURE:	522.0	degrees R
DUCT GAS VELOCITY:	480.3	ft/min
DUCT GAS AIR FLOW:	86.2	dscf/min
DUCT GAS AIR FLOW:	86.6	acf/min

MOISTURE AND AIRFLOW
AM TEST - AIR QUALITY, INC.

FILE NAME:	S705\HOBCA312	LAB #:	5149,CK-0721-8
CLIENT:	King County Solid Waste @ Hobart Landfill	START TIME:	~11:55 o'clock
LOCATION:	Hobart, Washington		
SAMPLE SITE:	Canister #3 - Inlet		
SAMPLE DATE:	February 14, 1994		
RUN #:	2 - Airflow		
OPERATORS:	Mackey/Lawrence		

WET BULB TEMPERATURE (Tw):	53	°F
DRY BULB TEMPERATURE (Td):	58	°F
SAT'd H2O VAPOR PRESSURE (SVP):	0.4052	inches of Hg (wet bulb °F - from chart)
VAPOR PRESSURE (VP):	0.3514	inches of Hg
Bws:	0.0118	
MOISTURE (%):	1.18	
DUCT DIAMETER:	5.75	inches
DUCT AREA:	0.180	sq. feet
BAROMETRIC PRES.:	29.58	inches Hg
STATIC PRESSURE:	3.0	inches H2O
DUCT PRESSURE:	29.80	inches Hg
AVERAGE CO2 CONC:	29.0	percent
AVERAGE O2 CONC:	2.7	percent
AVERAGE CO CONC:	< 0.1	percent
AVERAGE CH4 CONC:	13	percent
MOLECULAR WEIGHT:	31.19	g/g-mole-dry
MOLECULAR WEIGHT:	31.03	g/g-mole-wet

SAMPLE POINT	VELOCITY ft/min	TEMPERATURE °F	SAMPLE POINT	VELOCITY ft/min	TEMPERATURE °F
Top 1	521	58	Top 3	638	58
2	622	58	4	729	52

DUCT GAS TEMPERATURE:	56.5	degrees F
DUCT GAS TEMPERATURE:	516.5	degrees R
DUCT GAS VELOCITY:	627.5	ft/min
DUCT GAS AIR FLOW:	113.9	dscf/min
DUCT GAS AIR FLOW:	113.2	acf/min

MOISTURE AND AIRFLOW
AM TEST - AIR QUALITY, INC.

FILE NAME:	S705\HOBCA313	LAB #:	5150,CK-0721-9
CLIENT:	King County Solid Waste @ Hobart Landfill	START TIME:	~13:05 o'clock
LOCATION:	Hobart, Washington		
SAMPLE SITE:	Canister #3 - Inlet		
SAMPLE DATE:	February 14, 1994		
RUN #:	3 - Airflow		
OPERATORS:	Mackey/Lawrence		

WET BULB TEMPERATURE (Tw):	54	°F
DRY BULB TEMPERATURE (Td):	63	°F
SAT'd H2O VAPOR PRESSURE (SVP):	0.4203	inches of Hg (wet bulb °F - from chart)
VAPOR PRESSURE (VP):	0.3234	inches of Hg
Bws:	0.0108	
MOISTURE (%):	1.08	
DUCT DIAMETER:	5.75	inches
DUCT AREA:	0.180	sq. feet
BAROMETRIC PRES.:	29.58	inches Hg
STATIC PRESSURE:	3.2	inches H2O
DUCT PRESSURE:	29.82	inches Hg
AVERAGE CO2 CONC:	28.0	percent
AVERAGE O2 CONC:	2.4	percent
AVERAGE CO CONC:	< 0.1	percent
AVERAGE CH4 CONC:	14	percent
MOLECULAR WEIGHT:	30.90	g/g-mole-dry
MOLECULAR WEIGHT:	30.76	g/g-mole-wet

SAMPLE POINT	VELOCITY ft/min	TEMPERATURE °F	SAMPLE POINT	VELOCITY ft/min	TEMPERATURE °F
Top 1	485	63	Top 3	607	63
2	507	63	4	622	63

DUCT GAS TEMPERATURE:	63.0	degrees F
DUCT GAS TEMPERATURE:	523.0	degrees R
DUCT GAS VELOCITY:	555.3	ft/min
DUCT GAS AIR FLOW:	99.6	dscf/min
DUCT GAS AIR FLOW:	100.1	acf/min

MOISTURE AND AIRFLOW
AM TEST - AIR QUALITY, INC.

FILE NAME:	S705\HOBCA301	LAB #:	5151,CK-0721-10
CLIENT:	King County Solid Waste @ Hobart Landfill	START TIME:	~10:45 o'clock
LOCATION:	Hobart, Washington		
SAMPLE SITE:	Canister #3 - Outlet		
SAMPLE DATE:	February 14, 1994		
RUN #:	1 - Airflow		
OPERATORS:	S. Mackey		

WET BULB TEMPERATURE (Tw):	48	°F
DRY BULB TEMPERATURE (Td):	48	°F
SAT'd H2O VAPOR PRESSURE (SVP):	0.3364	inches of Hg (wet bulb °F - from chart)
VAPOR PRESSURE (VP):	0.3364	inches of Hg
Bws:	0.0114	
MOISTURE (%):	1.14	
STACK DIAMETER:	3.00	inches
STACK AREA:	0.049	sq. feet
BAROMETRIC PRES.:	29.58	inches Hg
STATIC PRESSURE:	0.12	inches H2O
DUCT PRESSURE:	29.59	inches Hg
AVERAGE CO2 CONC:	28.0	percent
AVERAGE O2 CONC:	3.4	percent
AVERAGE CO CONC:	< 0.1	percent
AVERAGE CH4 CONC:	13	percent
MOLECULAR WEIGHT:	31.06	g/g-mole-dry
MOLECULAR WEIGHT:	30.91	g/g-mole-wet

SAMPLE POINT	VELOCITY ft/min	TEMPERATURE °F	SAMPLE POINT	VELOCITY ft/min	TEMPERATURE °F
Center	1732	49	Center	1703	49
Point	1555	49	Point	1582	49

STACK GAS TEMPERATURE:	49.0	degrees F
STACK GAS TEMPERATURE:	509.0	degrees R
STACK GAS VELOCITY:	1643.0	ft/min
STACK GAS AIR FLOW:	81.8	dscf/min
STACK GAS AIR FLOW:	80.7	acf/min

MOISTURE AND AIRFLOW
AM TEST - AIR QUALITY, INC.

FILE NAME:	S705\HOBCA302	LAB #:	5152,CK-0721-11
CLIENT:	King County Solid Waste @ Hobart Landfill	START TIME:	~11:55 o'clock
LOCATION:	Hobart, Washington		
SAMPLE SITE:	Canister #3 - Outlet		
SAMPLE DATE:	February 14, 1994		
RUN #:	2 - Airflow		
OPERATORS:	S. Mackey		

WET BULB TEMPERATURE (Tw):	48	°F
DRY BULB TEMPERATURE (Td):	55	°F
SAT'd H2O VAPOR PRESSURE (SVP):	0.3364	inches of Hg (wet bulb °F - from chart)
VAPOR PRESSURE (VP):	0.2616	inches of Hg
Bws:	0.0088	
MOISTURE (%):	0.88	
STACK DIAMETER:	3.00	inches
STACK AREA:	0.049	sq. feet
BAROMETRIC PRES.:	29.58	inches Hg
STATIC PRESSURE:	0.10	inches H2O
DUCT PRESSURE:	29.59	inches Hg
AVERAGE CO2 CONC:	28.0	percent
AVERAGE O2 CONC:	2.4	percent
AVERAGE CO CONC:	< 0.1	percent
AVERAGE CH4 CONC:	14	percent
MOLECULAR WEIGHT:	30.90	g/g-mole-dry
MOLECULAR WEIGHT:	30.78	g/g-mole-wet

SAMPLE POINT	VELOCITY ft/min	TEMPERATURE °F	SAMPLE POINT	VELOCITY ft/min	TEMPERATURE °F
Center	1771	55	Center	1942	55
Point	1863	55	Point	1963	55

STACK GAS TEMPERATURE:	55.0	degrees F
STACK GAS TEMPERATURE:	515.0	degrees R
STACK GAS VELOCITY:	1884.8	ft/min
STACK GAS AIR FLOW:	93.0	dscf/min
STACK GAS AIR FLOW:	92.5	acf/min

MOISTURE AND AIRFLOW
AM TEST - AIR QUALITY, INC.

FILE NAME:	S705\HOBCA303	LAB #:	5153,CK-0721-12
CLIENT:	King County Solid Waste @ Hobart Landfill	START TIME:	~13:05 o'clock
LOCATION:	Hobart, Washington		
SAMPLE SITE:	Canister #3 - Outlet		
SAMPLE DATE:	February 14, 1994		
RUN #:	3 - Airflow		
OPERATORS:	S. Mackey		

WET BULB TEMPERATURE (Tw):	51	°F
DRY BULB TEMPERATURE (Td):	57	°F
SAT'd H2O VAPOR PRESSURE (SVP):	0.3764	inches of Hg (wet bulb °F - from chart)
VAPOR PRESSURE (VP):	0.3123	inches of Hg
Bws:	0.0106	
MOISTURE (%):	1.06	
STACK DIAMETER:	3.00	inches
STACK AREA:	0.049	sq. feet
BAROMETRIC PRES.:	29.58	inches Hg
STATIC PRESSURE:	0.10	inches H2O
DUCT PRESSURE:	29.59	inches Hg
AVERAGE CO2 CONC:	30.0	percent
AVERAGE O2 CONC:	2.4	percent
AVERAGE CO CONC:	< 0.1	percent
AVERAGE CH4 CONC:	14	percent
MOLECULAR WEIGHT:	31.22	g/g-mole-dry
MOLECULAR WEIGHT:	31.08	g/g-mole-wet

SAMPLE POINT	VELOCITY ft/min	TEMPERATURE °F	SAMPLE POINT	VELOCITY ft/min	TEMPERATURE °F
Center	1725	57	Center	1664	57
Point	1786	57	Point	1999	57

STACK GAS TEMPERATURE:	57.0	degrees F
STACK GAS TEMPERATURE:	517.0	degrees R
STACK GAS VELOCITY:	1793.5	ft/min
STACK GAS AIR FLOW:	88.0	dscf/min
STACK GAS AIR FLOW:	88.0	acf/min

EMISSION RATE RESULTS
TO-14 VOLATILE ORGANIC COMPOUNDS
AM TEST-AIR QUALITY, INC.

FILE NAME: R302\HOB3IN-1
CLIENT: King County Solid Waste @ Hobart Landfill
LOCATION: Hobart, Washington
SAMPLE LOCATION: Canister #3 - Inlet
SAMPLE DATE: February 14, 1994
SAMPLE TIME: 11:07-11:37
LAB NUMBER(S): CK-0721-7
CANISTER #: 638
AIRFLOW: 86.2 dscf/min

ANALYTE	Run 1 mg/min	Blank mg/min	DL Run 1 mg/min
Acetone	7.81	< DL	0.007
Benzene	2.44	< DL	0.001
Bromodichloromethane	< DL	< DL	0.002
Bromomethane (Methyl Bromide)	< DL	< DL	0.002
Bromoform	< DL	< DL	0.002
1,3-Butadiene	< DL	< DL	0.002
2-Butanone (MEK)	< DL	< DL	0.002
Carbon Disulfide	0.027	< DL	0.012
Carbon Tetrachloride	< DL	< DL	0.002
Chlorobenzene	1.20	< DL	0.001
Chloroethane (Ethyl Chloride)	4.88	< DL	0.001
2-Chloroethyl Vinyl Ether	< DL	< DL	0.012
Chloroform	< DL	< DL	0.007
Chloromethane (Methyl Chloride)	0.635	< DL	0.001
Dibromochloromethane	< DL	< DL	0.002
1,2-Dibromoethane (EDB)	< DL	< DL	0.005
1,2-Dichlorobenzene	< DL	< DL	0.002
1,3-Dichlorobenzene	< DL	< DL	0.002
1,4-Dichlorobenzene	0.063	< DL	0.002
1,1-Dichloroethane	0.391	< DL	0.001
1,2-Dichloroethane (EDC)	< DL	< DL	0.002
1,1-Dichloroethene	< DL	< DL	0.002
cis-1,2-Dichloroethene	0.342	< DL	0.002
trans-1,2-Dichloroethene	< DL	< DL	0.002
Dichloromethane	0.244	< DL	0.012
1,2-Dichloropropane	< DL	< DL	0.001
cis-1,3-Dichloropropene	< DL	< DL	0.001
trans-1,3-Dichloropropene	< DL	< DL	0.001
Ethylbenzene	9.28	< DL	0.002
2-Hexanone	< DL	< DL	0.001
4-Methyl-2-Pentanone (MIBK)	< DL	< DL	0.001
Styrene	0.061	< DL	0.002
1,1,2,2-Tetrachloroethane	< DL	< DL	0.002
Tetrachloroethene (PCE)	0.293	< DL	0.002
Toluene	6.84	< DL	0.002
1,1,1-Trichloroethane (TCA)	0.439	< DL	0.002
1,1,2-Trichloroethane	< DL	< DL	0.002
Trichloroethene (TCE)	0.115	< DL	0.001
Trichlorofluoromethane (F-11)	0.879	< DL	0.002
Trichlorotrifluoroethane (F-113)	0.083	< DL	0.005
Vinyl Acetate	< DL	< DL	0.005
Vinyl Chloride	1.39	< DL	0.001
Xylenes, Total	17.1	< DL	0.002

< DL designates that the compound was not detected, or was found at levels below the practical quantitation limit.

mg/min = milligrams of analyte emitted per minute

EMISSION RATE RESULTS
TO-14 VOLATILE ORGANIC COMPOUNDS
AM TEST-AIR QUALITY, INC.

FILE NAME: R302\HOB3IN-2
CLIENT: King County Solid Waste @ Hobart Landfill
LOCATION: Hobart, Washington
SAMPLE LOCATION: Canister #3 - Inlet
SAMPLE DATE: February 14, 1994
SAMPLE TIME: 12:18-12:48
LAB NUMBER(S): CK-0721-8
CANISTER #: 618
AIRFLOW: 113.9 dscf/min

ANALYTE	Run 2 mg/min	Blank mg/min	DL Run 2 mg/min
Acetone	5.48	< DL	0.010
Benzene	3.55	< DL	0.002
Bromodichloromethane	< DL	< DL	0.003
Bromomethane (Methyl Bromide)	< DL	< DL	0.003
Bromoform	< DL	< DL	0.003
1,3-Butadiene	< DL	< DL	0.003
2-Butanone (MEK)	< DL	< DL	0.003
Carbon Disulfide	0.035	< DL	0.016
Carbon Tetrachloride	< DL	< DL	0.003
Chlorobenzene	1.61	< DL	0.002
Chloroethane (Ethyl Chloride)	6.77	< DL	0.002
2-Chloroethyl Vinyl Ether	< DL	< DL	0.016
Chloroform	< DL	< DL	0.010
Chloromethane (Methyl Chloride)	0.871	< DL	0.002
Dibromochloromethane	< DL	< DL	0.003
1,2-Dibromoethane (EDB)	< DL	< DL	0.006
1,2-Dichlorobenzene	< DL	< DL	0.003
1,3-Dichlorobenzene	< DL	< DL	0.003
1,4-Dichlorobenzene	0.284	< DL	0.003
1,1-Dichloroethane	0.484	< DL	0.002
1,2-Dichloroethane (EDC)	< DL	< DL	0.003
1,1-Dichloroethene	< DL	< DL	0.003
cis-1,2-Dichloroethene	0.452	< DL	0.003
trans-1,2-Dichloroethene	< DL	< DL	0.003
Dichloromethane	0.323	< DL	0.016
1,2-Dichloropropane	< DL	< DL	0.002
cis-1,3-Dichloropropene	< DL	< DL	0.002
trans-1,3-Dichloropropene	< DL	< DL	0.002
Ethylbenzene	13.2	< DL	0.003
2-Hexanone	< DL	< DL	0.002
4-Methyl-2-Pentanone (MIBK)	< DL	< DL	0.002
Styrene	0.087	< DL	0.003
1,1,2,2-Tetrachloroethane	< DL	< DL	0.003
Tetrachloroethene (PCE)	0.387	< DL	0.003
Toluene	9.03	< DL	0.003
1,1,1-Trichloroethane (TCA)	0.581	< DL	0.003
1,1,2-Trichloroethane	< DL	< DL	0.003
Trichloroethene (TCE)	0.139	< DL	0.002
Trichlorofluoromethane (F-11)	1.19	< DL	0.003
Trichlorotrifluoroethane (F-113)	0.106	< DL	0.006
Vinyl Acetate	< DL	< DL	0.006
Vinyl Chloride	2.16	< DL	0.002
Xylenes, Total	23.5	< DL	0.003

< DL designates that the compound was not detected, or was found at levels below the practical quantitation limit.

mg/min = milligrams of analyte emitted per minute

EMISSION RATE RESULTS
TO-14 VOLATILE ORGANIC COMPOUNDS
AM TEST-AIR QUALITY, INC.

FILE NAME: R302\HOB3IN-3
CLIENT: King County Solid Waste @ Hobart Landfill
LOCATION: Hobart, Washington
SAMPLE LOCATION: Canister #3 - Inlet
SAMPLE DATE: February 14, 1994
SAMPLE TIME: 13:26-13:56
LAB NUMBER(S): CK-0721-9
CANISTER #: 608
AIRFLOW: 99.6 dscf/min

ANALYTE	Run 3 mg/min	Blank mg/min	DL Run 3 mg/min
Acetone	6.21	< DL	0.008
Benzene	2.82	< DL	0.001
Bromodichloromethane	< DL	< DL	0.003
Bromomethane (Methyl Bromide)	< DL	< DL	0.003
Bromoform	< DL	< DL	0.003
1,3-Butadiene	< DL	< DL	0.003
2-Butanone (MEK)	< DL	< DL	0.003
Carbon Disulfide	0.031	< DL	0.014
Carbon Tetrachloride	< DL	< DL	0.003
Chlorobenzene	1.38	< DL	0.001
Chloroethane (Ethyl Chloride)	5.64	< DL	0.001
2-Chloroethyl Vinyl Ether	< DL	< DL	0.014
Chloroform	< DL	< DL	0.008
Chloromethane (Methyl Chloride)	0.621	< DL	0.001
Dibromochloromethane	< DL	< DL	0.003
1,2-Dibromoethane (EDB)	< DL	< DL	0.006
1,2-Dichlorobenzene	< DL	< DL	0.003
1,3-Dichlorobenzene	< DL	< DL	0.003
1,4-Dichlorobenzene	0.248	< DL	0.003
1,1-Dichloroethane	0.423	< DL	0.001
1,2-Dichloroethane (EDC)	< DL	< DL	0.003
1,1-Dichloroethene	< DL	< DL	0.003
cis-1,2-Dichloroethene	0.395	< DL	0.003
trans-1,2-Dichloroethene	< DL	< DL	0.003
Dichloromethane	0.282	< DL	0.014
1,2-Dichloropropane	< DL	< DL	0.001
cis-1,3-Dichloropropene	< DL	< DL	0.001
trans-1,3-Dichloropropene	< DL	< DL	0.001
Ethylbenzene	10.7	< DL	0.003
2-Hexanone	< DL	< DL	0.001
4-Methyl-2-Pentanone (MIBK)	< DL	< DL	0.001
Styrene	0.068	< DL	0.003
1,1,2,2-Tetrachloroethane	< DL	< DL	0.003
Tetrachloroethene (PCE)	0.310	< DL	0.003
Toluene	7.62	< DL	0.003
1,1,1-Trichloroethane (TCA)	0.508	< DL	0.003
1,1,2-Trichloroethane	< DL	< DL	0.003
Trichloroethene (TCE)	0.138	< DL	0.001
Trichlorofluoromethane (F-11)	1.02	< DL	0.003
Trichlorotrifluoroethane (F-113)	0.104	< DL	0.006
Vinyl Acetate	< DL	< DL	0.006
Vinyl Chloride	1.47	< DL	0.001
Xylenes, Total	19.7	< DL	0.003

< DL designates that the compound was not detected, or was found at levels below the practical quantitation limit.

mg/min = milligrams of analyte emitted per minute

EMISSION RATE RESULTS
TO-14 VOLATILE ORGANIC COMPOUNDS
AM TEST-AIR QUALITY, INC.

FILE NAME: R302\HOB3OUT1
CLIENT: King County Solid Waste @ Hobart Landfill
LOCATION: Hobart, Washington
SAMPLE LOCATION: Canister #3 - Outlet
SAMPLE DATE: February 14, 1994
SAMPLE TIME: 11:07-11:37
LAB NUMBER(S): CK-0721-10
CANISTER #: 535
AIRFLOW: 81.8 dscf/min

ANALYTE	Run 1 mg/min	Blank mg/min	DL Run 1 mg/min
Acetone	3.94	< DL	0.007
Benzene	4.17	< DL	0.001
Bromodichloromethane	< DL	< DL	0.002
Bromomethane (Methyl Bromide)	< DL	< DL	0.002
Bromoform	< DL	< DL	0.002
1,3-Butadiene	< DL	< DL	0.002
2-Butanone (MEK)	< DL	< DL	0.002
Carbon Disulfide	0.025	< DL	0.012
Carbon Tetrachloride	< DL	< DL	0.002
Chlorobenzene	0.301	< DL	0.001
Chloroethane (Ethyl Chloride)	4.63	< DL	0.001
2-Chloroethyl Vinyl Ether	< DL	< DL	0.012
Chloroform	< DL	< DL	0.007
Chloromethane (Methyl Chloride)	0.579	< DL	0.001
Dibromochloromethane	< DL	< DL	0.002
1,2-Dibromoethane (EDB)	< DL	< DL	0.005
1,2-Dichlorobenzene	< DL	< DL	0.002
1,3-Dichlorobenzene	< DL	< DL	0.002
1,4-Dichlorobenzene	< DL	< DL	0.002
1,1-Dichloroethane	0.394	< DL	0.001
1,2-Dichloroethane (EDC)	< DL	< DL	0.002
1,1-Dichloroethene	< DL	< DL	0.002
cis-1,2-Dichloroethene	0.324	< DL	0.002
trans-1,2-Dichloroethene	< DL	< DL	0.002
Dichloromethane	0.232	< DL	0.012
1,2-Dichloropropane	< DL	< DL	0.001
cis-1,3-Dichloropropene	< DL	< DL	0.001
trans-1,3-Dichloropropene	< DL	< DL	0.001
Ethylbenzene	0.158	< DL	0.002
2-Hexanone	< DL	< DL	0.001
4-Methyl-2-Pentanone (MIBK)	< DL	< DL	0.001
Styrene	< DL	< DL	0.002
1,1,2,2-Tetrachloroethane	< DL	< DL	0.002
Tetrachloroethene (PCE)	0.016	< DL	0.002
Toluene	0.155	< DL	0.002
1,1,1-Trichloroethane (TCA)	0.463	< DL	0.002
1,1,2-Trichloroethane	< DL	< DL	0.002
Trichloroethene (TCE)	0.255	< DL	0.001
Trichlorofluoromethane (F-11)	0.857	< DL	0.002
Trichlorotrifluoroethane (F-113)	0.097	< DL	0.005
Vinyl Acetate	< DL	< DL	0.005
Vinyl Chloride	1.55	< DL	0.001
Xylenes, Total	0.834	< DL	0.002

< DL designates that the compound was not detected, or was found at levels below the practical quantitation limit.

mg/min = milligrams of analyte emitted per minute

EMISSION RATE RESULTS
TO-14 VOLATILE ORGANIC COMPOUNDS
AM TEST-AIR QUALITY, INC.

FILE NAME: R302\HOB3OUT2
CLIENT: King County Solid Waste @ Hobart Landfill
LOCATION: Hobart, Washington
SAMPLE LOCATION: Canister #3 - Outlet
SAMPLE DATE: February 14, 1994
SAMPLE TIME: 12:18-12:48
LAB NUMBER(S): CK-0721-11
CANISTER #: 602
AIRFLOW: 93.0 dscf/min

ANALYTE	Run 2 mg/min	Blank mg/min	DL Run 2 mg/min
Acetone	5.27	< DL	0.008
Benzene	4.74	< DL	0.001
Bromodichloromethane	< DL	< DL	0.003
Bromomethane (Methyl Bromide)	< DL	< DL	0.003
Bromoform	< DL	< DL	0.003
1,3-Butadiene	< DL	< DL	0.003
2-Butanone (MEK)	< DL	< DL	0.003
Carbon Disulfide	0.034	< DL	0.013
Carbon Tetrachloride	< DL	< DL	0.003
Chlorobenzene	0.255	< DL	0.001
Chloroethane (Ethyl Chloride)	5.00	< DL	0.001
2-Chloroethyl Vinyl Ether	< DL	< DL	0.013
Chloroform	< DL	< DL	0.008
Chloromethane (Methyl Chloride)	0.290	< DL	0.001
Dibromochloromethane	< DL	< DL	0.003
1,2-Dibromoethane (EDB)	< DL	< DL	0.005
1,2-Dichlorobenzene	< DL	< DL	0.003
1,3-Dichlorobenzene	< DL	< DL	0.003
1,4-Dichlorobenzene	< DL	< DL	0.003
1,1-Dichloroethane	0.448	< DL	0.001
1,2-Dichloroethane (EDC)	< DL	< DL	0.003
1,1-Dichloroethene	< DL	< DL	0.003
cis-1,2-Dichloroethene	0.395	< DL	0.003
trans-1,2-Dichloroethene	< DL	< DL	0.003
Dichloromethane	0.263	< DL	0.013
1,2-Dichloropropane	< DL	< DL	0.001
cis-1,3-Dichloropropene	< DL	< DL	0.001
trans-1,3-Dichloropropene	< DL	< DL	0.001
Ethylbenzene	0.050	< DL	0.003
2-Hexanone	< DL	< DL	0.001
4-Methyl-2-Pentanone (MIBK)	< DL	< DL	0.001
Styrene	< DL	< DL	0.003
1,1,2,2-Tetrachloroethane	< DL	< DL	0.003
Tetrachloroethene (PCE)	< DL	< DL	0.003
Toluene	0.066	< DL	0.003
1,1,1-Trichloroethane (TCA)	0.527	< DL	0.003
1,1,2-Trichloroethane	< DL	< DL	0.003
Trichloroethene (TCE)	0.290	< DL	0.001
Trichlorofluoromethane (F-11)	0.895	< DL	0.003
Trichlorotrifluoroethane (F-113)	0.105	< DL	0.005
Vinyl Acetate	< DL	< DL	0.005
Vinyl Chloride	1.05	< DL	0.001
Xylenes, Total	0.232	< DL	0.003

< DL designates that the compound was not detected, or was found at levels below the practical quantitation limit.

mg/min = milligrams of analyte emitted per minute

EMISSION RATE RESULTS
TO-14 VOLATILE ORGANIC COMPOUNDS
AM TEST-AIR QUALITY, INC.

FILE NAME: R302\HOB3OUT3
CLIENT: King County Solid Waste @ Hobart Landfill
LOCATION: Hobart, Washington
SAMPLE LOCATION: Canister #3 - Outlet
SAMPLE DATE: February 14, 1994
SAMPLE TIME: 13:26-13:56
LAB NUMBER(S): CK-0721-12
CANISTER #: 605
AIRFLOW: 88.0 dscf/min

ANALYTE	Run 3 mg/min	Blank mg/min	DL Run 3 mg/min
Acetone	4.49	< DL	0.007
Benzene	4.74	< DL	0.001
Bromodichloromethane	< DL	< DL	0.002
Bromomethane (Methyl Bromide)	< DL	< DL	0.002
Bromoform	< DL	< DL	0.002
1,3-Butadiene	< DL	< DL	0.002
2-Butanone (MEK)	< DL	< DL	0.002
Carbon Disulfide	0.037	< DL	0.012
Carbon Tetrachloride	< DL	< DL	0.002
Chlorobenzene	0.374	< DL	0.001
Chloroethane (Ethyl Chloride)	5.73	< DL	0.001
2-Chloroethyl Vinyl Ether	< DL	< DL	0.012
Chloroform	< DL	< DL	0.007
Chloromethane (Methyl Chloride)	0.698	< DL	0.001
Dibromochloromethane	< DL	< DL	0.002
1,2-Dibromoethane (EDB)	< DL	< DL	0.005
1,2-Dichlorobenzene	< DL	< DL	0.002
1,3-Dichlorobenzene	< DL	< DL	0.002
1,4-Dichlorobenzene	< DL	< DL	0.002
1,1-Dichloroethane	0.498	< DL	0.001
1,2-Dichloroethane (EDC)	< DL	< DL	0.002
1,1-Dichloroethene	< DL	< DL	0.002
cis-1,2-Dichloroethene	0.424	< DL	0.002
trans-1,2-Dichloroethene	< DL	< DL	0.002
Dichloromethane	0.498	< DL	0.012
1,2-Dichloropropane	< DL	< DL	0.001
cis-1,3-Dichloropropene	< DL	< DL	0.001
trans-1,3-Dichloropropene	< DL	< DL	0.001
Ethylbenzene	0.052	< DL	0.002
2-Hexanone	< DL	< DL	0.001
4-Methyl-2-Pentanone (MIBK)	< DL	< DL	0.001
Styrene	< DL	< DL	0.002
1,1,2,2-Tetrachloroethane	< DL	< DL	0.002
Tetrachloroethene (PCE)	< DL	< DL	0.002
Toluene	0.122	< DL	0.002
1,1,1-Trichloroethane (TCA)	0.573	< DL	0.002
1,1,2-Trichloroethane	< DL	< DL	0.002
Trichloroethene (TCE)	0.424	< DL	0.001
Trichlorofluoromethane (F-11)	1.05	< DL	0.002
Trichlorotrifluoroethane (F-113)	0.107	< DL	0.005
Vinyl Acetate	< DL	< DL	0.005
Vinyl Chloride	1.69	< DL	0.001
Xylenes, Total	0.249	< DL	0.002

< DL designates that the compound was not detected, or was found at levels below the practical quantitation limit.

mg/min = milligrams of analyte emitted per minute

APPENDIX B

Laboratory Analysis

EXCELLENCE IN ANALYSIS

COAST-TO-COAST ANALYTICAL SERVICES, INC.

58

SoCal Division (Camarillo Laboratory)
4765 Calle Quetzal, Camarillo, California 93012

(805) 389-1353
FAX (805)389-1438

CLIENT: Kris Hansen
AmTest - Air Quality Inc.
30545 S. E. 84th Street #5
Preston, WA 98050

Lab Number : CK-0721-1
Project : 94-016 Hobart Landfill

Analyzed : 02/16/94
Analyzed by: YL
Method : GC/TCD

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
R-1 IN #2 Carbon Bed Can #455	Air		02/14/94	02/17/94

CONSTITUENT	(CAS RN)	*PQL PERCENT	RESULT PERCENT	NOTE
FIXED GASES AND METHANE				
Carbon Dioxide	(124389)	0.1	27.	
Oxygen	(7782447)	0.01	2.8	
Nitrogen	(7727379)	0.02	56.	
Methane	(74828)	0.005	14.	
Carbon Monoxide	(630080)	0.1	ND	

Lab Certifications: CAELAP #1598 & #1783; UTELAP #E-142; AZELAP #AZ0162; A2LA #0136-01; L.A.Co.CSD #10187

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

02/18/94
TCD/02169410
GD/ge
KB16TA

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Gesheng Dai

Gesheng Dai, Ph.D.
Air Toxics Group Leader

EXCELLENCE IN ANALYSIS

COAST-TO-COAST ANALYTICAL SERVICES, INC.

59

SoCal Division (Camarillo Laboratory)
4765 Calle Quetzal, Camarillo, California 93012

(805) 389-1353
FAX (805)389-1438

CLIENT: Kris Hansen
AmTest - Air Quality Inc.
30545 S. E. 84th Street #5
Preston, WA 98050

Lab Number : CK-0721-2
Project : 94-016 Hobart Landfill

Analyzed : 02/16/94
Analyzed by: YL
Method : GC/TCD

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
R-2 IN #2 Carbon Bed Can #301	Air		02/14/94	02/17/94

CONSTITUENT	(CAS RN)	*PQL PERCENT	RESULT PERCENT	NOTE
FIXED GASES AND METHANE				
Carbon Dioxide	(124389)	0.1	28.	
Oxygen	(7782447)	0.01	2.6	
Nitrogen	(7727379)	0.02	55.	
Methane	(74828)	0.005	14.	
Carbon Monoxide	(630080)	0.1	ND	

Lab Certifications: CAELAP #1598 & #1783; UTELAP #E-142; AZELAP #AZ0162; A2LA #0136-01; L.A.Co.CSD #10187

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

02/18/94
TCD/02169411
GD/ge
KB16TA

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Gesheng Dai

Gesheng Dai, Ph.D.
Air Toxics Group Leader

EXCELLENCE IN ANALYSIS

COAST-TO-COAST ANALYTICAL SERVICES, INC.

SoCal Division (Camarillo Laboratory)
4765 Calle Quetzal, Camarillo, California 93012

(805) 389-1353
FAX (805)389-1438

60

CLIENT: Kris Hansen
AmTest - Air Quality Inc.
30545 S. E. 84th Street #5
Preston, WA 98050

Lab Number : CK-0721-3
Project : 94-016 Hobart Landfill

Analyzed : 02/16/94
Analyzed by: YL
Method : GC/TCD

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
R-3 IN #2 Carbon Bed Can #653	Air		02/14/94	02/17/94

CONSTITUENT	(CAS RN)	*PQL PERCENT	RESULT PERCENT	NOTE
FIXED GASES AND METHANE				
Carbon Dioxide	(124389)	0.1	29.	
Oxygen	(7782447)	0.01	2.4	
Nitrogen	(7727379)	0.02	55.	
Methane	(74828)	0.005	14.	
Carbon Monoxide	(630080)	0.1	ND	

Lab Certifications: CAELAP #1598 & #1783; UTELAP #E-142; AZELAP #AZ0162; A2LA #0136-01; L.A.Co.CSD #10187

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

02/18/94
TCD/02169412
GD/ge
KB16TA

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Gesheng Dai

Gesheng Dai, Ph.D.
Air Toxics Group Leader

EXCELLENCE IN ANALYSIS

COAST-TO-COAST ANALYTICAL SERVICES, INC.

SoCal Division (Camarillo Laboratory)
4765 Calle Quetzal, Camarillo, California 93012

(805) 389-1353
FAX (805)389-1438

61

CLIENT: Kris Hansen
AmTest - Air Quality Inc.
30545 S. E. 84th Street #5
Preston, WA 98050

Lab Number : CK-0721-4
Project : 94-016 Hobart Landfill

Analyzed : 02/16/94
Analyzed by: YL
Method : GC/TCD

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
R-1 Out #2 Carbon Bed Can #630	Air		02/14/94	02/17/94

CONSTITUENT	(CAS RN)	*PQL PERCENT	RESULT PERCENT	NOTE
FIXED GASES AND METHANE				
Carbon Dioxide	(124389)	0.1	29.	
Oxygen	(7782447)	0.01	2.6	
Nitrogen	(7727379)	0.02	54.	
Methane	(74828)	0.005	14.	
Carbon Monoxide	(630080)	0.1	ND	

Lab Certifications: CAELAP #1598 & #1783; UTELAP #E-142; AZELAP #AZ0162; A2LA #0136-01; L.A.Co.CSD #10187

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

02/18/94
TCD/02169403
GD/ge
KB16TA

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Gesheng Dai

Gesheng Dai, Ph.D.
Air Toxics Group Leader

EXCELLENCE IN ANALYSIS

COAST-TO-COAST ANALYTICAL SERVICES, INC.

SoCal Division (Camarillo Laboratory)
4765 Calle Quetzal, Camarillo, California 93012

(805) 389-1353
FAX (805) 389-1438

62

CLIENT: Kris Hansen
AmTest - Air Quality Inc.
30545 S. E. 84th Street #5
Preston, WA 98050

Lab Number : CK-0721-5
Project : 94-016 Hobart Landfill

Analyzed : 02/16/94
Analyzed by: YL
Method : GC/TCD

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
R-2 Out #2 Carbon Bed Can #126	Air		02/14/94	02/17/94

CONSTITUENT	(CAS RN)	*PQL PERCENT	RESULT PERCENT	NOTE
FIXED GASES AND METHANE				
Carbon Dioxide	(124389)	0.1	27.	
Oxygen	(7782447)	0.01	3.6	
Nitrogen	(7727379)	0.02	56.	
Methane	(74828)	0.005	13.	
Carbon Monoxide	(630080)	0.1	ND	

Lab Certifications: CAELAP #1598 & #1783; UTELAP #E-142; AZELAP #AZ0162; A2LA #0136-01; L.A.Co.CSD #10187

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

02/18/94
TCD/02169404
GD/ge
KB16TA

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Gesheng Dai

Gesheng Dai, Ph.D.
Air Toxics Group Leader

EXCELLENCE IN ANALYSIS

COAST-TO-COAST ANALYTICAL SERVICES, INC.

SoCal Division (Camarillo Laboratory)
4765 Calle Quetzal, Camarillo, California 93012

(805) 389-1353
FAX (805)389-1438

63

CLIENT: Kris Hansen
AmTest - Air Quality Inc.
30545 S. E. 84th Street #5
Preston, WA 98050

Lab Number : CK-0721-6
Project : 94-016 Hobart Landfill

Analyzed : 02/16/94
Analyzed by: YL
Method : GC/TCD

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
R-3 Out #2 Carbon Bed Can #647	Air		02/14/94	02/17/94

CONSTITUENT	(CAS RN)	*PQL PERCENT	RESULT PERCENT	NOTE
FIXED GASES AND METHANE				
Carbon Dioxide	(124389)	0.1	28.	
Oxygen	(7782447)	0.01	2.5	
Nitrogen	(7727379)	0.02	55.	
Methane	(74828)	0.005	14.	
Carbon Monoxide	(630080)	0.1	ND	

Lab Certifications: CAELAP #1598 & #1783; UTELAP #E-142; AZELAP #AZ0162; A2LA #0136-01; L.A.Co.CSD #10187

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

02/18/94
TCD/02169405
GD/ge
KB16TA

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Gesheng Dai

Gesheng Dai, Ph.D.
Air Toxics Group Leader

EXCELLENCE IN ANALYSIS

COAST-TO-COAST ANALYTICAL SERVICES, INC.

SoCal Division (Camarillo Laboratory)
4765 Calle Quetzal, Camarillo, California 93012

(805) 389-1353
FAX (805)389-1438

64

Lab Number : CK-0721-7
Project : 94-016 Hobart Landfill

CLIENT: Kris Hansen
AmTest - Air Quality Inc.
30545 S. E. 84th Street #5
Preston, WA 98050

Analyzed : 02/16/94
Analyzed by: YL
Method : GC/TCD

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
R-1 IN #3 Carbon Bed Can #638	Air		02/14/94	02/17/94

CONSTITUENT	(CAS RN)	*PQL PERCENT	RESULT PERCENT	NOTE
FIXED GASES AND METHANE				
Carbon Dioxide	(124389)	0.1	28.	
Oxygen	(7782447)	0.01	2.5	
Nitrogen	(7727379)	0.02	56.	
Methane	(74828)	0.005	14.	
Carbon Monoxide	(630080)	0.1	ND	

Lab Certifications: CAELAP #1598 & #1783; UTELAP #E-142; AZELAP #AZ0162; A2LA #0136-01; L.A.Co.CSD #10187

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

02/18/94
TCD/02169413
GD/ge
KB16TA

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Gesheng Dai

Gesheng Dai, Ph.D.
Air Toxics Group Leader

EXCELLENCE IN ANALYSIS

COAST-TO-COAST ANALYTICAL SERVICES, INC.

SoCal Division (Camarillo Laboratory)
4765 Calle Quetzal, Camarillo, California 93012

(805) 389-1353
FAX (805)389-1438

15

CLIENT: Kris Hansen
AmTest - Air Quality Inc.
30545 S. E. 84th Street #5
Preston, WA 98050

Lab Number : CK-0721-8
Project : 94-016 Hobart Landfill

Analyzed : 02/16/94
Analyzed by: YL
Method : GC/TCD

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
R-2 IN #3 Carbon Bed Can #618	Air		02/14/94	02/17/94

CONSTITUENT	(CAS RN)	*PQL PERCENT	RESULT PERCENT	NOTE
FIXED GASES AND METHANE				
Carbon Dioxide	(124389)	0.1	29.	
Oxygen	(7782447)	0.01	2.7	
Nitrogen	(7727379)	0.02	55.	
Methane	(74828)	0.005	13.	
Carbon Monoxide	(630080)	0.1	ND	

Lab Certifications: CAELAP #1598 & #1783; UTELAP #E-142; AZELAP #AZ0162; A2LA #0136-01; L.A.Co.CSD #10187

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

02/18/94
TCD/02169414
GD/ge
KB16TA

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Gesheng Dai

Gesheng Dai, Ph.D.
Air Toxics Group Leader

EXCELLENCE IN ANALYSIS

COAST-TO-COAST ANALYTICAL SERVICES, INC.

SoCal Division (Camarillo Laboratory)
4765 Calle Quetzal, Camarillo, California 93012

(805) 389-1353
FAX (805)389-1438

606

CLIENT: Kris Hansen
AmTest - Air Quality Inc.
30545 S. E. 84th Street #5
Preston, WA 98050

Lab Number : CK-0721-9
Project : 94-016 Hobart Landfill

Analyzed : 02/16/94
Analyzed by: YL
Method : GC/TCD

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
R-3 IN #3 Carbon Bed Can #608	Air		02/14/94	02/17/94

CONSTITUENT	(CAS RN)	*PQL PERCENT	RESULT PERCENT	NOTE
FIXED GASES AND METHANE				
Carbon Dioxide	(124389)	0.1	28.	
Oxygen	(7782447)	0.01	2.4	
Nitrogen	(7727379)	0.02	55.	
Methane	(74828)	0.005	14.	
Carbon Monoxide	(630080)	0.1	ND	

Lab Certifications: CAELAP #1598 & #1783; UTELAP #E-142; AZELAP #AZ0162; A2LA #0136-01; L.A.Co.CSD #10187

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

02/18/94
TCD/02169415
GD/ge
KB16TA

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Gesheng Dai

Gesheng Dai, Ph.D.
Air Toxics Group Leader

EXCELLENCE IN ANALYSIS

COAST-TO-COAST ANALYTICAL SERVICES, INC.

SoCal Division (Camarillo Laboratory)
4765 Calle Quetzal, Camarillo, California 93012

(805) 389-1353
FAX (805)389-1438

67

CLIENT: Kris Hansen
AmTest - Air Quality Inc.
30545 S. E. 84th Street #5
Preston, WA 98050

Lab Number : CK-0721-10
Project : 94-016 Hobart Landfill

Analyzed : 02/16/94
Analyzed by: YL
Method : GC/TCD

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
R-1 Out #3 Carbon Bed Can #535	Air		02/14/94	02/17/94

CONSTITUENT	(CAS RN)	*PQL PERCENT	RESULT PERCENT	NOTE
FIXED GASES AND METHANE				
Carbon Dioxide	(124389)	0.1	28.	
Oxygen	(7782447)	0.01	3.4	
Nitrogen	(7727379)	0.02	56.	
Methane	(74828)	0.005	13.	
Carbon Monoxide	(630080)	0.1	ND	

Lab Certifications: CAELAP #1598 & #1783; UTELAP #E-142; AZELAP #AZ0162; A2LA #0136-01; L.A.Co.CSD #10187

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

02/18/94
TCD/02169406
GD/ge
KB16TA

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Gesheng Dai

Gesheng Dai, Ph.D.
Air Toxics Group Leader

EXCELLENCE IN ANALYSIS

COAST-TO-COAST ANALYTICAL SERVICES, INC.

68

SoCal Division (Camarillo Laboratory)
4765 Calle Quetzal, Camarillo, California 93012

(805) 389-1353
FAX (805)389-1438

Lab Number : CK-0721-11
Project : 94-016 Hobart Landfill

CLIENT: Kris Hansen
AmTest - Air Quality Inc.
30545 S. E. 84th Street #5
Preston, WA 98050

Analyzed : 02/16/94
Analyzed by: YL
Method : GC/TCD

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
R-2 Out #3 Carbon Bed Can #602	Air		02/14/94	02/17/94

CONSTITUENT	(CAS RN)	*PQL PERCENT	RESULT PERCENT	NOTE
FIXED GASES AND METHANE				
Carbon Dioxide	(124389)	0.1	28.	
Oxygen	(7782447)	0.01	2.4	
Nitrogen	(7727379)	0.02	55.	
Methane	(74828)	0.005	14.	
Carbon Monoxide	(630080)	0.1	ND	

Lab Certifications: CAELAP #1598 & #1783; UTELAP #E-142; AZELAP #AZ0162; A2LA #0136-01; L.A.Co.CSD #10187

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

02/18/94
TCD/02169407
GD/ge
KB16TA

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Gesheng Dai

Gesheng Dai, Ph.D.
Air Toxics Group Leader

EXCELLENCE IN ANALYSIS

COAST-TO-COAST ANALYTICAL SERVICES, INC.

SoCal Division (Camarillo Laboratory)
4765 Calle Quetzal, Camarillo, California 93012

(805) 389-1353
FAX (805)389-1438

69

CLIENT: Kris Hansen
AmTest - Air Quality Inc.
30545 S. E. 84th Street #5
Preston, WA 98050

Lab Number : CK-0721-12
Project : 94-016 Hobart Landfill

Analyzed : 02/16/94
Analyzed by: YL
Method : GC/TCD

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
R-3 Out #3 Carbon Bed Can #605	Air		02/14/94	02/17/94

CONSTITUENT	(CAS RN)	*PQL PERCENT	RESULT PERCENT	NOTE
FIXED GASES AND METHANE				
Carbon Dioxide	(124389)	0.1	30.	
Oxygen	(7782447)	0.01	2.4	
Nitrogen	(7727379)	0.02	54.	
Methane	(74828)	0.005	14.	
Carbon Monoxide	(630080)	0.1	ND	

Lab Certifications: CAELAP #1598 & #1783; UTELAP #E-142; AZELAP #AZ0162; A2LA #0136-01; L.A.Co.CSD #10187

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

02/18/94
TCD/02169408
GD/ge
KB16TA

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Gesheng Dai

Gesheng Dai, Ph.D.
Air Toxics Group Leader

EXCELLENCE IN ANALYSIS

COAST-TO-COAST ANALYTICAL SERVICES, INC.

SoCal Division (Camarillo Laboratory)
4765 Calle Quetzal, Camarillo, California 93012

(805) 389-1353
FAX (805)389-1438

70

CLIENT: Kris Hansen
AmTest - Air Quality Inc.
30545 S. E. 84th Street #5
Preston, WA 98050

QC Batch ID: KB16TA CK-0721-12
Project : 94-016 Hobart Landfill

Analyzed : 02/16/94
Analyzed by: YL
Method : GC/TCD

QC DUPLICATE
REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
R-3 Out #3 Carbon Bed Can #605	Air		02/14/94	02/17/94

CONSTITUENT	(CAS RN)	*PQL PERCENT	RESULT PERCENT	%DIFF	NOTE
FIXED GASES AND METHANE					
Carbon Dioxide	(124389)	0.1	30.	0.	
Oxygen	(7782447)	0.01	2.4	0.	
Nitrogen	(7727379)	0.02	54.	0.	
Methane	(74828)	0.005	14.	0.	
Carbon Monoxide	(630080)	0.1	ND		

Lab Certifications: CAELAP #1598 & #1783; UTELAP #E-142; AZELAP #AZ0162; A2LA #0136-01; L.A.Co.CSD #10187
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

02/18/94
TCD/02169409
GD/ge
CK0721-12

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Gesheng Dai, Ph.D.
Air Toxics Group Leader

EXCELLENCE IN ANALYSIS

COAST-TO-COAST ANALYTICAL SERVICES, INC.

SoCal Division (Camarillo Laboratory)
4765 Calle Quetzal, Camarillo, California 93012

(805) 389-1353
FAX (805)389-1438

CLIENT: Kris Hansen
AmTest - Air Quality Inc.
30545 S. E. 84th Street #5
Preston, WA 98050

Lab Number : CK-0721-1
Project : 94-016 Hobart Landfill

Analyzed : 02/17/94
Analyzed by: YL
Method : EPA TO-14

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
R-1 IN #2 Carbon Bed Can #455	Air		02/14/94	02/17/94

CONSTITUENT	*PQL ppbv	RESULT ppbv	RESULT µg/cu M	NOTE
VOLATILE ORGANICS BY EPA TO-14				1,2
Acetone	2.	670.	1600	
Benzene	0.2	300.	960.	
Bromodichloromethane	0.2	ND	ND	
Bromomethane (Methyl Bromide)	0.5	ND	ND	
Bromoform	0.2	ND	ND	
1,3-Butadiene	1.	ND	ND	
2-Butanone (MEK)	0.5	ND	ND	
Carbon Disulfide	2.	4.	11.	
Carbon Tetrachloride	0.2	ND	ND	
Chlorobenzene	0.2	110.	510.	
Chloroethane (Ethyl Chloride)	0.5	800.	2100.	
2-Chloroethyl Vinyl Ether	2.	ND	ND	
Chloroform	1.	ND	ND	
Chloromethane (Methyl Chloride)	0.5	120.	250.	
Dibromochloromethane	0.2	ND	ND	
1,2-Dibromoethane (EDB)	0.5	ND	ND	
1,2-Dichlorobenzene	0.2	ND	ND	

Lab Certifications: CAELAP #1598 & #1783; UTELAP #E-142; AZELAP #AZ0162; A2LA #0136-01; L.A.Co.CSD #10187

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

(1) Concentrations in ug/cu M reported at 760 mm Hg pressure and 298 deg. K.

(2) Canister received at 0 psig and pressurized to 14.5 psig with He.

02/18/94
MS1/1S48K
GD/ge
MS1*A

EXCELLENCE IN ANALYSIS

COAST-TO-COAST ANALYTICAL SERVICES, INC.

SoCal Division (Camarillo Laboratory)
4765 Calle Quetzal, Camarillo, California 93012

(805) 389-1353
FAX (805)389-1438

CLIENT: Kris Hansen
AmTest - Air Quality Inc.
30545 S. E. 84th Street #5
Preston, WA 98050

Lab Number : CK-0721-1
Project : 94-016 Hobart Landfill

Analyzed : 02/17/94
Analyzed by: YL
Method : EPA TO-14

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
R-1 IN #2 Carbon Bed Can #455	Air		02/14/94	02/17/94

CONSTITUENT	*PQL ppbv	RESULT ppbv	RESULT µg/cu M	NOTE
1,3-Dichlorobenzene	0.2	ND	ND	
1,4-Dichlorobenzene	0.2	5.5	33.	
1,1-Dichloroethane	0.2	40.	160.	
1,2-Dichloroethane (EDC)	0.5	ND	ND	
1,1-Dichloroethene	0.5	ND	ND	
cis-1,2-Dichloroethene	0.5	35.	140.	
trans-1,2-Dichloroethene	0.5	ND	ND	
Dichloromethane	2.	37.	130.	
1,2-Dichloropropane	0.2	ND	ND	
cis-1,3-Dichloropropene	0.2	ND	ND	
trans-1,3-Dichloropropene	0.2	ND	ND	
Ethylbenzene	0.5	850.	3700.	
2-Hexanone	0.2	ND	ND	
4-Methyl-2-Pentanone (MIBK)	0.2	ND	ND	
Styrene	0.5	5.6	24.	
1,1,2,2-Tetrachloroethane	0.2	ND	ND	
Tetrachloroethene (PCE)	0.2	24.	160.	
Toluene	0.5	690.	2600.	
1,1,1-Trichloroethane (TCA)	0.5	33.	180.	
1,1,2-Trichloroethane	0.5	ND	ND	

Lab Certifications: CAELAP #1598 & #1783; UTELAP #E-142; AZELAP #AZ0162; A2LA #0136-01; L.A.Co.CSD #10187

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

02/18/94
MS1/1S48K
GD/ge
MS1*A

EXCELLENCE IN ANALYSIS

COAST-TO-COAST ANALYTICAL SERVICES, INC.

73

SoCal Division (Camarillo Laboratory)
4765 Calle Quetzal, Camarillo, California 93012

(805) 389-1353
FAX (805)389-1438

CLIENT: Kris Hansen
AmTest - Air Quality Inc.
30545 S. E. 84th Street #5
Preston, WA 98050

Lab Number : CK-0721-1
Project : 94-016 Hobart Landfill

Analyzed : 02/17/94
Analyzed by: YL
Method : EPA TO-14

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
R-1 IN #2 Carbon Bed Can #455	Air		02/14/94	02/17/94

CONSTITUENT	*PQL ppbv	RESULT ppbv	RESULT µg/cu M	NOTE
Trichloroethene (TCE)	0.2	8.7	47.	
Trichlorofluoromethane (F-11)	0.5	68.	380.	
Trichlorotrifluoroethane (F-113)	0.5	5.	38.	
Vinyl Acetate	1.	ND	ND	
Vinyl Chloride	0.5	290.	620.	
Xylenes	0.5	1600.	6800.	
Percent Surrogate Recovery			112.	

Lab Certifications: CAELAP #1598 & #1783; UTELAP #E-142; AZELAP #AZ0162; A2LA #0136-01; L.A.Co.CSD #10187
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

02/18/94
MS1/1S48K
GD/ge
MS1*A

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Gesheng Dai

Gesheng Dai, Ph.D.
Air Toxics Group Leader

EXCELLENCE IN ANALYSIS

COAST-TO-COAST ANALYTICAL SERVICES, INC.

SoCal Division (Camarillo Laboratory)
4765 Calle Quetzal, Camarillo, California 93012

(805) 389-1353
FAX (805)389-1438

74

CLIENT: Kris Hansen
AmTest - Air Quality Inc.
30545 S. E. 84th Street #5
Preston, WA 98050

Lab Number : CK-0721-2
Project : 94-016 Hobart Landfill

Analyzed : 02/17/94
Analyzed by: YL
Method : EPA TO-14

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
R-2 IN #2 Carbon Bed Can #301	Air		02/14/94	02/17/94

CONSTITUENT	*PQL ppbv	RESULT ppbv	RESULT µg/cu M	NOTE
VOLATILE ORGANICS BY EPA TO-14				1,2
Acetone	2.	800.	1900	
Benzene	0.2	310.	1000.	
Bromodichloromethane	0.2	ND	ND	
Bromomethane (Methyl Bromide)	0.5	ND	ND	
Bromoform	0.2	ND	ND	
1,3-Butadiene	1.	ND	ND	
2-Butanone (MEK)	0.5	ND	ND	
Carbon Disulfide	2.	4.	12.	
Carbon Tetrachloride	0.2	ND	ND	
Chlorobenzene	0.2	100.	470.	
Chloroethane (Ethyl Chloride)	0.5	760.	2000.	
2-Chloroethyl Vinyl Ether	2.	ND	ND	
Chloroform	1.	ND	ND	
Chloromethane (Methyl Chloride)	0.5	120.	250.	
Dibromochloromethane	0.2	ND	ND	
1,2-Dibromoethane (EDB)	0.5	ND	ND	
1,2-Dichlorobenzene	0.2	ND	ND	

Lab Certifications: CAELAP #1598 & #1783; UTELAP #E-142; AZELAP #AZ0162; A2LA #0136-01; L.A.Co.CSD #10187

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

(1) Concentrations in ug/cu M reported at 760 mm Hg pressure and 298 deg. K.

(2) Canister received at 0 psig and pressurized to 15.5 psig with He.

02/18/94
MS1/1S49K
GD/ge
MS1*A

EXCELLENCE IN ANALYSIS

COAST-TO-COAST ANALYTICAL SERVICES, INC.

SoCal Division (Camarillo Laboratory)
4765 Calle Quetzal, Camarillo, California 93012

(805) 389-1353
FAX (805)389-1438

75

CLIENT: Kris Hansen
AmTest - Air Quality Inc.
30545 S. E. 84th Street #5
Preston, WA 98050

Lab Number : CK-0721-2
Project : 94-016 Hobart Landfill

Analyzed : 02/17/94
Analyzed by: YL
Method : EPA TO-14

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
R-2 IN #2 Carbon Bed Can #301	Air		02/14/94	02/17/94

CONSTITUENT	*PQL ppbv	RESULT ppbv	RESULT µg/cu M	NOTE
1,3-Dichlorobenzene	0.2	ND	ND	
1,4-Dichlorobenzene	0.2	10.	60.	
1,1-Dichloroethane	0.2	37.	150.	
1,2-Dichloroethane (EDC)	0.5	ND	ND	
1,1-Dichloroethene	0.5	ND	ND	
cis-1,2-Dichloroethene	0.5	33.	130.	
trans-1,2-Dichloroethene	0.5	ND	ND	
Dichloromethane	2.	35.	120.	
1,2-Dichloropropane	0.2	ND	ND	
cis-1,3-Dichloropropene	0.2	ND	ND	
trans-1,3-Dichloropropene	0.2	ND	ND	
Ethylbenzene	0.5	880.	3800.	
2-Hexanone	0.2	ND	ND	
4-Methyl-2-Pentanone (MIBK)	0.2	ND	ND	
Styrene	0.5	5.9	25.	
1,1,2,2-Tetrachloroethane	0.2	ND	ND	
Tetrachloroethene (PCE)	0.2	16.	110.	
Toluene	0.5	690.	2600.	
1,1,1-Trichloroethane (TCA)	0.5	31.	170.	
1,1,2-Trichloroethane	0.5	ND	ND	

Lab Certifications: CAELAP #1598 & #1783; UTELAP #E-142; AZELAP #AZ0162; A2LA #0136-01; L.A.Co.CSD #10187

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

02/18/94
MS1/1S49K
GD/ge
MS1*A

EXCELLENCE IN ANALYSIS

COAST-TO-COAST ANALYTICAL SERVICES, INC.

SoCal Division (Camarillo Laboratory)
4765 Calle Quetzal, Camarillo, California 93012

(805) 389-1353
FAX (805)389-1438

76

CLIENT: Kris Hansen
AmTest - Air Quality Inc.
30545 S. E. 84th Street #5
Preston, WA 98050

Lab Number : CK-0721-2
Project : 94-016 Hobart Landfill

Analyzed : 02/17/94
Analyzed by: YL
Method : EPA TO-14

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
R-2 IN #2 Carbon Bed Can #301	Air		02/14/94	02/17/94

CONSTITUENT	*PQL ppbv	RESULT ppbv	RESULT µg/cu M	NOTE
Trichloroethene (TCE)	0.2	8.4	45.	
Trichlorofluoromethane (F-11)	0.5	62.	350.	
Trichlorotrifluoroethane (F-113)	0.5	4.6	35.	
Vinyl Acetate	1.	ND	ND	
Vinyl Chloride	0.5	310.	660.	
Xylenes	0.5	1600.	6900.	
Percent Surrogate Recovery			101.	

Lab Certifications: CAELAP #1598 & #1783; UTELAP #E-142; AZELAP #AZ0162; A2LA #0136-01; L.A.Co.CSD #10187
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

02/18/94
MS1/1S49K
GD/ge
MS1*A

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Gesheng Dai

Gesheng Dai, Ph.D.
Air Toxics Group Leader

EXCELLENCE IN ANALYSIS

COAST-TO-COAST ANALYTICAL SERVICES, INC.

77

SoCal Division (Camarillo Laboratory)
4765 Calle Quetzal, Camarillo, California 93012

(805) 389-1353
FAX (805)389-1438

CLIENT: Kris Hansen
AmTest - Air Quality Inc.
30545 S. E. 84th Street #5
Preston, WA 98050

Lab Number : CK-0721-3
Project : 94-016 Hobart Landfill

Analyzed : 02/17/94
Analyzed by: YL
Method : EPA TO-14

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
R-3 IN #2 Carbon Bed Can #653	Air		02/14/94	02/17/94

CONSTITUENT	*PQL ppbv	RESULT ppbv	RESULT µg/cu M	NOTE
VOLATILE ORGANICS BY EPA TO-14				1,2
Acetone	2.	670.	1600	
Benzene	0.2	310.	1000.	
Bromodichloromethane	0.2	ND	ND	
Bromomethane (Methyl Bromide)	0.5	ND	ND	
Bromoform	0.2	ND	ND	
1,3-Butadiene	1.	ND	ND	
2-Butanone (MEK)	0.5	ND	ND	
Carbon Disulfide	2.	3.	10.	
Carbon Tetrachloride	0.2	ND	ND	
Chlorobenzene	0.2	100.	460.	
Chloroethane (Ethyl Chloride)	0.5	720.	1900.	
2-Chloroethyl Vinyl Ether	2.	ND	ND	
Chloroform	1.	ND	ND	
Chloromethane (Methyl Chloride)	0.5	120.	250.	
Dibromochloromethane	0.2	ND	ND	
1,2-Dibromoethane (EDB)	0.5	ND	ND	
1,2-Dichlorobenzene	0.2	ND	ND	

Lab Certifications: CAELAP #1598 & #1783; UTELAP #E-142; AZELAP #AZ0162; A2LA #0136-01; L.A.Co.CSD #10187

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

(1) Concentrations in ug/cu M reported at 760 mm Hg pressure and 298 deg. K.

(2) Canister received at 0 psig and pressurized to 17.5 psig with He.

02/18/94
MS1/1S50K
GD/ge
MS1*A

EXCELLENCE IN ANALYSIS

COAST-TO-COAST ANALYTICAL SERVICES, INC.

SoCal Division (Camarillo Laboratory)
4765 Calle Quetzal, Camarillo, California 93012

(805) 389-1353
FAX (805)389-1438

78

CLIENT: Kris Hansen
AmTest - Air Quality Inc.
30545 S. E. 84th Street #5
Preston, WA 98050

Lab Number : CK-0721-3
Project : 94-016 Hobart Landfill

Analyzed : 02/17/94
Analyzed by: YL
Method : EPA TO-14

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
R-3 IN #2 Carbon Bed Can #653	Air		02/14/94	02/17/94

CONSTITUENT	*PQL ppbv	RESULT ppbv	RESULT µg/cu M	NOTE
1,3-Dichlorobenzene	0.2	ND	ND	
1,4-Dichlorobenzene	0.2	6.8	41.	
1,1-Dichloroethane	0.2	35.	140.	
1,2-Dichloroethane (EDC)	0.5	ND	ND	
1,1-Dichloroethene	0.5	ND	ND	
cis-1,2-Dichloroethene	0.5	30.	120.	
trans-1,2-Dichloroethene	0.5	ND	ND	
Dichloromethane	2.	29.	100.	
1,2-Dichloropropane	0.2	ND	ND	
cis-1,3-Dichloropropene	0.2	ND	ND	
trans-1,3-Dichloropropene	0.2	ND	ND	
Ethylbenzene	0.5	850.	3700.	
2-Hexanone	0.2	ND	ND	
4-Methyl-2-Pentanone (MIBK)	0.2	ND	ND	
Styrene	0.5	6.1	26.	
1,1,2,2-Tetrachloroethane	0.2	ND	ND	
Tetrachloroethene (PCE)	0.2	16.	110.	
Toluene	0.5	690.	2600.	
1,1,1-Trichloroethane (TCA)	0.5	31.	170.	
1,1,2-Trichloroethane	0.5	ND	ND	

Lab Certifications: CAELAP #1598 & #1783; UTELAP #E-142; AZELAP #AZ0162; A2LA #0136-01; L.A.Co.CSD #10187

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

02/18/94
MS1/1S50K
GD/ge
MS1*A

EXCELLENCE IN ANALYSIS

COAST-TO-COAST ANALYTICAL SERVICES, INC.

SoCal Division (Camarillo Laboratory)
4765 Calle Quetzal, Camarillo, California 93012

(805) 389-1353
FAX (805)389-1438

79

CLIENT: Kris Hansen
AmTest - Air Quality Inc.
30545 S. E. 84th Street #5
Preston, WA 98050

Lab Number : CK-0721-3
Project : 94-016 Hobart Landfill

Analyzed : 02/17/94
Analyzed by: YL
Method : EPA TO-14

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
R-3 IN #2 Carbon Bed Can #653	Air		02/14/94	02/17/94

CONSTITUENT	*PQL ppbv	RESULT ppbv	RESULT µg/cu M	NOTE
Trichloroethene (TCE)	0.2	7.4	40.	
Trichlorofluoromethane (F-11)	0.5	61.	340.	
Trichlorotrifluoroethane (F-113)	0.5	4.3	33.	
Vinyl Acetate	1.	ND	ND	
Vinyl Chloride	0.5	290.	630.	
Xylenes	0.5	1500.	6700.	
Percent Surrogate Recovery			99.	

Lab Certifications: CAELAP #1598 & #1783; UTELAP #E-142; AZELAP #AZ0162; A2LA #0136-01; L.A.Co.CSD #10187

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

02/18/94
MS1/1S50K
GD/ge
MS1*A

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Gesheng Dai

Gesheng Dai, Ph.D.
Air Toxics Group Leader

EXCELLENCE IN ANALYSIS

COAST-TO-COAST ANALYTICAL SERVICES, INC.

SoCal Division (Camarillo Laboratory)
4765 Calle Quetzal, Camarillo, California 93012

(805) 389-1353
FAX (805)389-1438

80

CLIENT: Kris Hansen
AmTest - Air Quality Inc.
30545 S. E. 84th Street #5
Preston, WA 98050

Lab Number : CK-0721-4
Project : 94-016 Hobart Landfill

Analyzed : 02/16/94
Analyzed by: YL
Method : EPA TO-14

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
R-1 Out #2 Carbon Bed Can #630	Air		02/14/94	02/17/94

CONSTITUENT	*PQL ppbv	RESULT ppbv	RESULT µg/cu M	NOTE
VOLATILE ORGANICS BY EPA TO-14				1,2
Acetone	2.	800.	1900	
Benzene	0.2	1.2	3.7	
Bromodichloromethane	0.2	ND	ND	
Bromomethane (Methyl Bromide)	0.5	ND	ND	
Bromoform	0.2	ND	ND	
1,3-Butadiene	1.	ND	ND	
2-Butanone (MEK)	0.5	ND	ND	
Carbon Disulfide	2.	4.	11.	
Carbon Tetrachloride	0.2	ND	ND	
Chlorobenzene	0.2	1.2	5.7	
Chloroethane (Ethyl Chloride)	0.5	760.	2000.	
2-Chloroethyl Vinyl Ether	2.	ND	ND	
Chloroform	1.	ND	ND	
Chloromethane (Methyl Chloride)	0.5	82.	170.	
Dibromochloromethane	0.2	ND	ND	
1,2-Dibromoethane (EDB)	0.5	ND	ND	
1,2-Dichlorobenzene	0.2	ND	ND	

Lab Certifications: CAELAP #1598 & #1783; UTELAP #E-142; AZELAP #AZ0162; A2LA #0136-01; L.A.Co.CSD #10187

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

(1) Concentrations in ug/cu M reported at 760 mm Hg pressure and 298 deg. K.

(2) Canister received at 0 psig and pressurized to 21.5 psig with He.

02/18/94
MS1/1S36K
GD/ge
MS1*A

EXCELLENCE IN ANALYSIS

COAST-TO-COAST ANALYTICAL SERVICES, INC.

SoCal Division (Camarillo Laboratory)
4765 Calle Quetzal, Camarillo, California 93012

(805) 389-1353
FAX (805)389-1438

81

CLIENT: Kris Hansen
AmTest - Air Quality Inc.
30545 S. E. 84th Street #5
Preston, WA 98050

Lab Number : CK-0721-4
Project : 94-016 Hobart Landfill

Analyzed : 02/16/94
Analyzed by: YL
Method : EPA TO-14

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
R-1 Out #2 Carbon Bed Can #630	Air		02/14/94	02/17/94

CONSTITUENT	*PQL ppbv	RESULT ppbv	RESULT µg/cu M	NOTE
1,3-Dichlorobenzene	0.2	ND	ND	
1,4-Dichlorobenzene	0.2	12.	75.	
1,1-Dichloroethane	0.2	47.	190.	
1,2-Dichloroethane (EDC)	0.5	ND	ND	
1,1-Dichloroethene	0.5	ND	ND	
cis-1,2-Dichloroethene	0.5	23.	93.	
trans-1,2-Dichloroethene	0.5	ND	ND	
Dichloromethane	2.	32.	110.	
1,2-Dichloropropane	0.2	ND	ND	
cis-1,3-Dichloropropene	0.2	ND	ND	
trans-1,3-Dichloropropene	0.2	ND	ND	
Ethylbenzene	0.5	110.	460.	
2-Hexanone	0.2	ND	ND	
4-Methyl-2-Pentanone (MIBK)	0.2	ND	ND	
Styrene	0.5	26.	110.	
1,1,2,2-Tetrachloroethane	0.2	ND	ND	
Tetrachloroethene (PCE)	0.2	10.	69.	
Toluene	0.5	96.	360.	
1,1,1-Trichloroethane (TCA)	0.5	29.	160.	
1,1,2-Trichloroethane	0.5	ND	ND	

Lab Certifications: CAELAP #1598 & #1783; UTELAP #E-142; AZELAP #AZ0162; A2LA #0136-01; L.A.Co.CSD #10187

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

02/18/94
MS1/1S36K
GD/ge
MS1*A

EXCELLENCE IN ANALYSIS

COAST-TO-COAST ANALYTICAL SERVICES, INC.

82

SoCal Division (Camarillo Laboratory)
4765 Calle Quetzal, Camarillo, California 93012

(805) 389-1353
FAX (805)389-1438

CLIENT: Kris Hansen
AmTest - Air Quality Inc.
30545 S. E. 84th Street #5
Preston, WA 98050

Lab Number : CK-0721-4
Project : 94-016 Hobart Landfill

Analyzed : 02/16/94
Analyzed by: YL
Method : EPA TO-14

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
R-1 Out #2 Carbon Bed Can #630	Air		02/14/94	02/17/94

CONSTITUENT	*PQL ppbv	RESULT ppbv	RESULT µg/cu M	NOTE
Trichloroethene (TCE)	0.2	ND	ND	
Trichlorofluoromethane (F-11)	0.5	55.	310.	
Trichlorotrifluoroethane (F-113)	0.5	8.2	63.	
Vinyl Acetate	1.	ND	ND	
Vinyl Chloride	0.5	230.	490.	
Xylenes	0.5	580.	2500.	
Percent Surrogate Recovery			91.	

Lab Certifications: CAELAP #1598 & #1783; UTELAP #E-142; AZELAP #AZ0162; A2LA #0136-01; L.A.Co.CSD #10187

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

02/18/94
MS1/1S36K
GD/ge
MS1*A

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Gesheng Dai

Gesheng Dai, Ph.D.
Air Toxics Group Leader

EXCELLENCE IN ANALYSIS

COAST-TO-COAST ANALYTICAL SERVICES, INC.

SoCal Division (Camarillo Laboratory)
4765 Calle Quetzal, Camarillo, California 93012

(805) 389-1353
FAX (805)389-1438

83

CLIENT: Kris Hansen
AmTest - Air Quality Inc.
30545 S. E. 84th Street #5
Preston, WA 98050

Lab Number : CK-0721-5
Project : 94-016 Hobart Landfill

Analyzed : 02/16/94
Analyzed by: YL
Method : EPA TO-14

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
R-2 Out #2 Carbon Bed Can #126	Air		02/14/94	02/17/94

CONSTITUENT	*PQL ppbv	RESULT ppbv	RESULT µg/cu M	NOTE
VOLATILE ORGANICS BY EPA TO-14				1,2
Acetone	2.	590.	1400.	
Benzene	0.2	8.1	26.	
Bromodichloromethane	0.2	ND	ND	
Bromomethane (Methyl Bromide)	0.5	ND	ND	
Bromoform	0.2	ND	ND	
1,3-Butadiene	1.	ND	ND	
2-Butanone (MEK)	0.5	ND	ND	
Carbon Disulfide	2.	4.	11.	
Carbon Tetrachloride	0.2	ND	ND	
Chlorobenzene	0.2	ND	ND	
Chloroethane (Ethyl Chloride)	0.5	720.	1900.	
2-Chloroethyl Vinyl Ether	2.	ND	ND	
Chloroform	1.	ND	ND	
Chloromethane (Methyl Chloride)	0.5	110.	230.	
Dibromochloromethane	0.2	ND	ND	
1,2-Dibromoethane (EDB)	0.5	ND	ND	
1,2-Dichlorobenzene	0.2	ND	ND	

Lab Certifications: CAELAP #1598 & #1783; UTELAP #E-142; AZELAP #AZ0162; A2LA #0136-01; L.A.Co.CSD #10187

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

(1) Concentrations in ug/cu M reported at 760 mm Hg pressure and 298 deg. K.

(2) Canister received at 0 psig and pressurized to 17.0 psig with He.

02/18/94
MS1/1S37K
GD/ge
MS1*A

EXCELLENCE IN ANALYSIS

COAST-TO-COAST ANALYTICAL SERVICES, INC.

SoCal Division (Camarillo Laboratory)
4765 Calle Quetzal, Camarillo, California 93012

(805) 389-1353
FAX (805)389-1438

84

CLIENT: Kris Hansen
AmTest - Air Quality Inc.
30545 S. E. 84th Street #5
Preston, WA 98050

Lab Number : CK-0721-5
Project : 94-016 Hobart Landfill

Analyzed : 02/16/94
Analyzed by: YL
Method : EPA TO-14

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
R-2 Out #2 Carbon Bed Can #126	Air		02/14/94	02/17/94

CONSTITUENT	*PQL ppbv	RESULT ppbv	RESULT µg/cu M	NOTE
1,3-Dichlorobenzene	0.2	ND	ND	
1,4-Dichlorobenzene	0.2	ND	ND	
1,1-Dichloroethane	0.2	62.	250.	
1,2-Dichloroethane (EDC)	0.5	ND	ND	
1,1-Dichloroethene	0.5	ND	ND	
cis-1,2-Dichloroethene	0.5	17.	67.	
trans-1,2-Dichloroethene	0.5	ND	ND	
Dichloromethane	2.	29.	100.	
1,2-Dichloropropane	0.2	ND	ND	
cis-1,3-Dichloropropene	0.2	ND	ND	
trans-1,3-Dichloropropene	0.2	ND	ND	
Ethylbenzene	0.5	5.5	24.	
2-Hexanone	0.2	ND	ND	
4-Methyl-2-Pentanone (MIBK)	0.2	ND	ND	
Styrene	0.5	ND	ND	
1,1,2,2-Tetrachloroethane	0.2	ND	ND	
Tetrachloroethene (PCE)	0.2	ND	ND	
Toluene	0.5	10.	38.	
1,1,1-Trichloroethane (TCA)	0.5	27.	150.	
1,1,2-Trichloroethane	0.5	ND	ND	

Lab Certifications: CAELAP #1598 & #1783; UTELAP #E-142; AZELAP #AZ0162; A2LA #0136-01; L.A.Co.CSD #10187

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

02/18/94
MS1/1S37K
GD/ge
MS1*A

EXCELLENCE IN ANALYSIS

COAST-TO-COAST ANALYTICAL SERVICES, INC.

SoCal Division (Camarillo Laboratory)
4765 Calle Quetzal, Camarillo, California 93012

(805) 389-1353
FAX (805)389-1438

85

CLIENT: Kris Hansen
AmTest - Air Quality Inc.
30545 S. E. 84th Street #5
Preston, WA 98050

Lab Number : CK-0721-5
Project : 94-016 Hobart Landfill

Analyzed : 02/16/94
Analyzed by: YL
Method : EPA TO-14

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
R-2 Out #2 Carbon Bed Can #126	Air		02/14/94	02/17/94

CONSTITUENT	*PQL ppbv	RESULT ppbv	RESULT µg/cu M	NOTE
Trichloroethene (TCE)	0.2	ND	ND	
Trichlorofluoromethane (F-11)	0.5	57.	320.	
Trichlorotrifluoroethane (F-113)	0.5	12.	93.	
Vinyl Acetate	1.	ND	ND	
Vinyl Chloride	0.5	290.	630.	
Xylenes	0.5	30.	130.	
Percent Surrogate Recovery			98.	

Lab Certifications: CAELAP #1598 & #1783; UTELAP #E-142; AZELAP #AZ0162; A2LA #0136-01; L.A.Co.CSD #10187

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

02/18/94
MS1/1S37K
GD/ge
MS1*A

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Gesheng Dai

Gesheng Dai, Ph.D.
Air Toxics Group Leader

EXCELLENCE IN ANALYSIS

COAST-TO-COAST ANALYTICAL SERVICES, INC.

SoCal Division (Camarillo Laboratory)
4765 Calle Quetzal, Camarillo, California 93012

(805) 389-1353
FAX (805) 389-1438

CLIENT: Kris Hansen
AmTest - Air Quality Inc.
30545 S. E. 84th Street #5
Preston, WA 98050

Lab Number : CK-0721-6
Project : 94-016 Hobart Landfill

Analyzed : 02/16/94
Analyzed by: YL
Method : EPA TO-14

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
R-3 Out #2 Carbon Bed Can #647	Air		02/14/94	02/17/94

CONSTITUENT	*PQL ppbv	RESULT ppbv	RESULT µg/cu M	NOTE
VOLATILE ORGANICS BY EPA TO-14				1,2
Acetone	2.	890.	2100	
Benzene	0.2	8.1	26.	
Bromodichloromethane	0.2	ND	ND	
Bromomethane (Methyl Bromide)	0.5	ND	ND	
Bromoform	0.2	ND	ND	
1,3-Butadiene	1.	ND	ND	
2-Butanone (MEK)	0.5	ND	ND	
Carbon Disulfide	2.	4.	12.	
Carbon Tetrachloride	0.2	ND	ND	
Chlorobenzene	0.2	ND	ND	
Chloroethane (Ethyl Chloride)	0.5	1300.	3300.	
2-Chloroethyl Vinyl Ether	2.	ND	ND	
Chloroform	1.	ND	ND	
Chloromethane (Methyl Chloride)	0.5	150.	310.	
Dibromochloromethane	0.2	ND	ND	
1,2-Dibromoethane (EDB)	0.5	ND	ND	
1,2-Dichlorobenzene	0.2	ND	ND	

Lab Certifications: CAELAP #1598 & #1783; UTELAP #E-142; AZELAP #AZ0162; A2LA #0136-01; L.A.Co.CSD #10187

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

(1) Concentrations in ug/cu M reported at 760 mm Hg pressure and 298 deg. K.

(2) Canister received at 0 psig and pressurized to 15.0 psig with He.

02/18/94
MS1/1S38K
GD/ge
MS1*A

EXCELLENCE IN ANALYSIS

COAST-TO-COAST ANALYTICAL SERVICES, INC.

SoCal Division (Camarillo Laboratory)
4765 Calle Quetzal, Camarillo, California 93012

(805) 389-1353
FAX (805)389-1438

87

CLIENT: Kris Hansen
AmTest - Air Quality Inc.
30545 S. E. 84th Street #5
Preston, WA 98050

Lab Number : CK-0721-6
Project : 94-016 Hobart Landfill

Analyzed : 02/16/94
Analyzed by: YL
Method : EPA TO-14

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
R-3 Out #2 Carbon Bed Can #647	Air		02/14/94	02/17/94

CONSTITUENT	*PQL ppbv	RESULT ppbv	RESULT µg/cu M	NOTE
1,3-Dichlorobenzene	0.2	ND	ND	
1,4-Dichlorobenzene	0.2	ND	ND	
1,1-Dichloroethane	0.2	52.	210.	
1,2-Dichloroethane (EDC)	0.5	ND	ND	
1,1-Dichloroethene	0.5	ND	ND	
cis-1,2-Dichloroethene	0.5	33.	130.	
trans-1,2-Dichloroethene	0.5	ND	ND	
Dichloromethane	2.	29.	100.	
1,2-Dichloropropane	0.2	ND	ND	
cis-1,3-Dichloropropene	0.2	ND	ND	
trans-1,3-Dichloropropene	0.2	ND	ND	
Ethylbenzene	0.5	7.8	34.	
2-Hexanone	0.2	ND	ND	
4-Methyl-2-Pentanone (MIBK)	0.2	ND	ND	
Styrene	0.5	ND	ND	
1,1,2,2-Tetrachloroethane	0.2	ND	ND	
Tetrachloroethene (PCE)	0.2	ND	ND	
Toluene	0.5	12.	44.	
1,1,1-Trichloroethane (TCA)	0.5	27.	150.	
1,1,2-Trichloroethane	0.5	ND	ND	

Lab Certifications: CAELAP #1598 & #1783; UTELAP #E-142; AZELAP #AZ0162; A2LA #0136-01; L.A.Co.CSD #10187

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

02/18/94
MS1/1S38K
GD/ge
MS1*A

EXCELLENCE IN ANALYSIS

COAST-TO-COAST ANALYTICAL SERVICES, INC.

SoCal Division (Camarillo Laboratory)
4765 Calle Quetzal, Camarillo, California 93012

(805) 389-1353
FAX (805)389-1438

88

CLIENT: Kris Hansen
AmTest - Air Quality Inc.
30545 S. E. 84th Street #5
Preston, WA 98050

Lab Number : CK-0721-6
Project : 94-016 Hobart Landfill

Analyzed : 02/16/94
Analyzed by: YL
Method : EPA TO-14

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
R-3 Out #2 Carbon Bed Can #647	Air		02/14/94	02/17/94

CONSTITUENT	*PQL ppbv	RESULT ppbv	RESULT µg/cu M	NOTE
Trichloroethene (TCE)	0.2	ND	ND	
Trichlorofluoromethane (F-11)	0.5	77.	430.	
Trichlorotrifluoroethane (F-113)	0.5	10.	79.	
Vinyl Acetate	1.	ND	ND	
Vinyl Chloride	0.5	510.	1100.	
Xylenes	0.5	42.	180.	
Percent Surrogate Recovery			99.	

Lab Certifications: CAELAP #1598 & #1783; UTELAP #E-142; AZELAP #AZ0162; A2LA #0136-01; L.A.Co.CSD #10187

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

02/18/94
MS1/1S38K
GD/ge
MS1*A

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Gesheng Dai, Ph.D.
Air Toxics Group Leader

EXCELLENCE IN ANALYSIS

COAST-TO-COAST ANALYTICAL SERVICES, INC.

SoCal Division (Camarillo Laboratory)
4765 Calle Quetzal, Camarillo, California 93012

(805) 389-1353
FAX (805)389-1438

89

CLIENT: Kris Hansen
AmTest - Air Quality Inc.
30545 S. E. 84th Street #5
Preston, WA 98050

Lab Number : CK-0721-7
Project : 94-016 Hobart Landfill

Analyzed : 02/17/94
Analyzed by: YL
Method : EPA TO-14

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
R-1 IN #3 Carbon Bed Can #638	Air		02/14/94	02/17/94

CONSTITUENT	*PQL ppbv	RESULT ppbv	RESULT µg/cu M	NOTE
VOLATILE ORGANICS BY EPA TO-14				1,2
Acetone	2.	1300.	3200	
Benzene	0.2	310.	1000.	
Bromodichloromethane	0.2	ND	ND	
Bromomethane (Methyl Bromide)	0.5	ND	ND	
Bromoform	0.2	ND	ND	
1,3-Butadiene	1.	ND	ND	
2-Butanone (MEK)	0.5	ND	ND	
Carbon Disulfide	2.	4.	11.	
Carbon Tetrachloride	0.2	ND	ND	
Chlorobenzene	0.2	110.	490.	
Chloroethane (Ethyl Chloride)	0.5	760.	2000.	
2-Chloroethyl Vinyl Ether	2.	ND	ND	
Chloroform	1.	ND	ND	
Chloromethane (Methyl Chloride)	0.5	130.	260.	
Dibromochloromethane	0.2	ND	ND	
1,2-Dibromoethane (EDB)	0.5	ND	ND	
1,2-Dichlorobenzene	0.2	ND	ND	

Lab Certifications: CAELAP #1598 & #1783; UTELAP #E-142; AZELAP #AZ0162; A2LA #0136-01; L.A.Co.CSD #10187

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

(1) Concentrations in ug/cu M reported at 760 mm Hg pressure and 298 deg. K.

(2) Canister received at 0 psig and pressurized to 16.5 psig with He.

02/18/94
MS1/1S51K
GD/ge
MS1*A

EXCELLENCE IN ANALYSIS

COAST-TO-COAST ANALYTICAL SERVICES, INC.

SoCal Division (Camarillo Laboratory)
4765 Calle Quetzal, Camarillo, California 93012

(805) 389-1353
FAX (805)389-1438

90

CLIENT: Kris Hansen
AmTest - Air Quality Inc.
30545 S. E. 84th Street #5
Preston, WA 98050

Lab Number : CK-0721-7
Project : 94-016 Hobart Landfill

Analyzed : 02/17/94
Analyzed by: YL
Method : EPA TO-14

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
R-1 IN #3 Carbon Bed Can #638	Air		02/14/94	02/17/94

CONSTITUENT	*PQL ppbv	RESULT ppbv	RESULT µg/cu M	NOTE
1,3-Dichlorobenzene	0.2	ND	ND	
1,4-Dichlorobenzene	0.2	4.3	26.	
1,1-Dichloroethane	0.2	40.	160.	
1,2-Dichloroethane (EDC)	0.5	ND	ND	
1,1-Dichloroethene	0.5	ND	ND	
cis-1,2-Dichloroethene	0.5	35.	140.	
trans-1,2-Dichloroethene	0.5	ND	ND	
Dichloromethane	2.	29.	100.	
1,2-Dichloropropane	0.2	ND	ND	
cis-1,3-Dichloropropene	0.2	ND	ND	
trans-1,3-Dichloropropene	0.2	ND	ND	
Ethylbenzene	0.5	880.	3800.	
2-Hexanone	0.2	ND	ND	
4-Methyl-2-Pentanone (MIBK)	0.2	ND	ND	
Styrene	0.5	5.9	25.	
1,1,2,2-Tetrachloroethane	0.2	ND	ND	
Tetrachloroethene (PCE)	0.2	18.	120.	
Toluene	0.5	740.	2800.	
1,1,1-Trichloroethane (TCA)	0.5	33.	180.	
1,1,2-Trichloroethane	0.5	ND	ND	

Lab Certifications: CAELAP #1598 & #1783; UTELAP #E-142; AZELAP #AZ0162; A2LA #0136-01; L.A.Co.CSD #10187

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

02/18/94
MS1/1S51K
GD/ge
MS1*A

EXCELLENCE IN ANALYSIS

COAST-TO-COAST ANALYTICAL SERVICES, INC.

SoCal Division (Camarillo Laboratory)
4765 Calle Quetzal, Camarillo, California 93012

(805) 389-1353
FAX (805) 389-1438

91

CLIENT: Kris Hansen
AmTest - Air Quality Inc.
30545 S. E. 84th Street #5
Preston, WA 98050

Lab Number : CK-0721-7
Project : 94-016 Hobart Landfill

Analyzed : 02/17/94
Analyzed by: YL
Method : EPA TO-14

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
R-1 IN #3 Carbon Bed Can #638	Air		02/14/94	02/17/94

CONSTITUENT	*PQL ppbv	RESULT ppbv	RESULT µg/cu M	NOTE
Trichloroethene (TCE)	0.2	8.7	47.	
Trichlorofluoromethane (F-11)	0.5	64.	360.	
Trichlorotrifluoroethane (F-113)	0.5	4.4	34.	
Vinyl Acetate	1.	ND	ND	
Vinyl Chloride	0.5	270.	570.	
Xylenes	0.5	1600.	7000.	
Percent Surrogate Recovery			97.	

Lab Certifications: CAELAP #1598 & #1783; UTELAP #E-142; AZELAP #AZ0162; A2LA #0136-01; L.A.Co.CSD #10187
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

02/18/94
MS1/1S51K
GD/ge
MS1*A

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Gesheng Dai

Gesheng Dai, Ph.D.
Air Toxics Group Leader

EXCELLENCE IN ANALYSIS

COAST-TO-COAST ANALYTICAL SERVICES, INC.

SoCal Division (Camarillo Laboratory)
4765 Calle Quetzal, Camarillo, California 93012

(805) 389-1353
FAX (805)389-1438

92

CLIENT: Kris Hansen
AmTest - Air Quality Inc.
30545 S. E. 84th Street #5
Preston, WA 98050

Lab Number : CK-0721-8
Project : 94-016 Hobart Landfill

Analyzed : 02/17/94
Analyzed by: YL
Method : EPA TO-14

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
R-2 IN #3 Carbon Bed Can #618	Air		02/14/94	02/17/94

CONSTITUENT	*PQL ppbv	RESULT ppbv	RESULT µg/cu M	NOTE
VOLATILE ORGANICS BY EPA TO-14				1,2
Acetone	2.	720.	1700	
Benzene	0.2	340.	1100.	
Bromodichloromethane	0.2	ND	ND	
Bromomethane (Methyl Bromide)	0.5	ND	ND	
Bromoform	0.2	ND	ND	
1,3-Butadiene	1.	ND	ND	
2-Butanone (MEK)	0.5	ND	ND	
Carbon Disulfide	2.	4.	11.	
Carbon Tetrachloride	0.2	ND	ND	
Chlorobenzene	0.2	110.	500.	
Chloroethane (Ethyl Chloride)	0.5	800.	2100.	
2-Chloroethyl Vinyl Ether	2.	ND	ND	
Chloroform	1.	ND	ND	
Chloromethane (Methyl Chloride)	0.5	130.	270.	
Dibromochloromethane	0.2	ND	ND	
1,2-Dibromoethane (EDB)	0.5	ND	ND	
1,2-Dichlorobenzene	0.2	ND	ND	

Lab Certifications: CAELAP #1598 & #1783; UTELAP #E-142; AZELAP #AZ0162; A2LA #0136-01; L.A.Co.CSD #10187

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

(1) Concentrations in ug/cu M reported at 760 mm Hg pressure and 298 deg. K.

(2) Canister received at 0 psig and pressurized to 21.0 psig with He.

02/18/94
MS1/1S52K
GD/ge
MS1*A

EXCELLENCE IN ANALYSIS

COAST-TO-COAST ANALYTICAL SERVICES, INC.

SoCal Division (Camarillo Laboratory)
4765 Calle Quetzal, Camarillo, California 93012

(805) 389-1353
FAX (805)389-1438

93

CLIENT: Kris Hansen
AmTest - Air Quality Inc.
30545 S. E. 84th Street #5
Preston, WA 98050

Lab Number : CK-0721-8
Project : 94-016 Hobart Landfill

Analyzed : 02/17/94
Analyzed by: YL
Method : EPA TO-14

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
R-2 IN #3 Carbon Bed Can #618	Air		02/14/94	02/17/94

CONSTITUENT	*PQL ppbv	RESULT ppbv	RESULT µg/cu M	NOTE
1,3-Dichlorobenzene	0.2	ND	ND	
1,4-Dichlorobenzene	0.2	15.	88.	
1,1-Dichloroethane	0.2	37.	150.	
1,2-Dichloroethane (EDC)	0.5	ND	ND	
1,1-Dichloroethene	0.5	ND	ND	
cis-1,2-Dichloroethene	0.5	35.	140.	
trans-1,2-Dichloroethene	0.5	ND	ND	
Dichloromethane	2.	29.	100.	
1,2-Dichloropropane	0.2	ND	ND	
cis-1,3-Dichloropropene	0.2	ND	ND	
trans-1,3-Dichloropropene	0.2	ND	ND	
Ethylbenzene	0.5	940.	4100.	
2-Hexanone	0.2	ND	ND	
4-Methyl-2-Pentanone (MIBK)	0.2	ND	ND	
Styrene	0.5	6.3	27.	
1,1,2,2-Tetrachloroethane	0.2	ND	ND	
Tetrachloroethene (PCE)	0.2	18.	120.	
Toluene	0.5	740.	2800.	
1,1,1-Trichloroethane (TCA)	0.5	33.	180.	
1,1,2-Trichloroethane	0.5	ND	ND	

Lab Certifications: CAELAP #1598 & #1783; UTELAP #E-142; AZELAP #AZ0162; A2LA #0136-01; L.A.Co.CSD #10187

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

02/18/94
MS1/1S52K
GD/ge
MS1*A

EXCELLENCE IN ANALYSIS

COAST-TO-COAST ANALYTICAL SERVICES, INC.

94

SoCal Division (Camarillo Laboratory)
4765 Calle Quetzal, Camarillo, California 93012

(805) 389-1353
FAX (805)389-1438

CLIENT: Kris Hansen
AmTest - Air Quality Inc.
30545 S. E. 84th Street #5
Preston, WA 98050

Lab Number : CK-0721-8
Project : 94-016 Hobart Landfill

Analyzed : 02/17/94
Analyzed by: YL
Method : EPA TO-14

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
R-2 IN #3 Carbon Bed Can #618	Air		02/14/94	02/17/94

CONSTITUENT	*PQL ppbv	RESULT ppbv	RESULT µg/cu M	NOTE
Trichloroethene (TCE)	0.2	8.	43.	
Trichlorofluoromethane (F-11)	0.5	66.	370.	
Trichlorotrifluoroethane (F-113)	0.5	4.3	33.	
Vinyl Acetate	1.	ND	ND	
Vinyl Chloride	0.5	310.	670.	
Xylenes	0.5	1700.	7300.	
Percent Surrogate Recovery			105.	

Lab Certifications: CAELAP #1598 & #1783; UTELAP #E-142; AZELAP #AZ0162; A2LA #0136-01; L.A.Co.CSD #10187

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

02/18/94
MS1/1S52K
GD/ge
MS1*A

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Gesheng Dai

Gesheng Dai, Ph.D.
Air Toxics Group Leader

EXCELLENCE IN ANALYSIS

COAST-TO-COAST ANALYTICAL SERVICES, INC.

SoCal Division (Camarillo Laboratory)
4765 Calle Quetzal, Camarillo, California 93012

(805) 389-1353
FAX (805)389-1438

95

CLIENT: Kris Hansen
AmTest - Air Quality Inc.
30545 S. E. 84th Street #5
Preston, WA 98050

Lab Number : CK-0721-9
Project : 94-016 Hobart Landfill

Analyzed : 02/17/94
Analyzed by: YL
Method : EPA TO-14

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
R-3 IN #3 Carbon Bed Can #608	Air		02/14/94	02/17/94

CONSTITUENT	*PQL ppbv	RESULT ppbv	RESULT µg/cu M	NOTE
VOLATILE ORGANICS BY EPA TO-14				1,2
Acetone	2.	930.	2200.	
Benzene	0.2	310.	1000.	
Bromodichloromethane	0.2	ND	ND	
Bromomethane (Methyl Bromide)	0.5	ND	ND	
Bromoform	0.2	ND	ND	
1,3-Butadiene	1.	ND	ND	
2-Butanone (MEK)	0.5	ND	ND	
Carbon Disulfide	2.	4.	11.	
Carbon Tetrachloride	0.2	ND	ND	
Chlorobenzene	0.2	110.	490.	
Chloroethane (Ethyl Chloride)	0.5	760.	2000.	
2-Chloroethyl Vinyl Ether	2.	ND	ND	
Chloroform	1.	ND	ND	
Chloromethane (Methyl Chloride)	0.5	110.	220.	
Dibromochloromethane	0.2	ND	ND	
1,2-Dibromoethane (EDB)	0.5	ND	ND	
1,2-Dichlorobenzene	0.2	ND	ND	

Lab Certifications: CAELAP #1598 & #1783; UTELAP #E-142; AZELAP #AZ0162; A2LA #0136-01; L.A.Co.CSD #10187

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

(1) Concentrations in ug/cu M reported at 760 mm Hg pressure and 298 deg. K.

(2) Canister received at 0 psig and pressurized to 15.5 psig with He.

02/18/94
MS1/1S53K
GD/ge
MS1*A

EXCELLENCE IN ANALYSIS

COAST-TO-COAST ANALYTICAL SERVICES, INC.

SoCal Division (Camarillo Laboratory)
4765 Calle Quetzal, Camarillo, California 93012

(805) 389-1353
FAX (805)389-1438

96

CLIENT: Kris Hansen
AmTest - Air Quality Inc.
30545 S. E. 84th Street #5
Preston, WA 98050

Lab Number : CK-0721-9
Project : 94-016 Hobart Landfill

Analyzed : 02/17/94
Analyzed by: YL
Method : EPA TO-14

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
R-3 IN #3 Carbon Bed Can #608	Air		02/14/94	02/17/94

CONSTITUENT	*PQL ppbv	RESULT ppbv	RESULT µg/cu M	NOTE
1,3-Dichlorobenzene	0.2	ND	ND	
1,4-Dichlorobenzene	0.2	15.	88.	
1,1-Dichloroethane	0.2	37.	150.	
1,2-Dichloroethane (EDC)	0.5	ND	ND	
1,1-Dichloroethene	0.5	ND	ND	
cis-1,2-Dichloroethene	0.5	35.	140.	
trans-1,2-Dichloroethene	0.5	ND	ND	
Dichloromethane	2.	29.	100.	
1,2-Dichloropropane	0.2	ND	ND	
cis-1,3-Dichloropropene	0.2	ND	ND	
trans-1,3-Dichloropropene	0.2	ND	ND	
Ethylbenzene	0.5	880.	3800.	
2-Hexanone	0.2	ND	ND	
4-Methyl-2-Pentanone (MIBK)	0.2	ND	ND	
Styrene	0.5	5.6	24.	
1,1,2,2-Tetrachloroethane	0.2	ND	ND	
Tetrachloroethene (PCE)	0.2	16.	110.	
Toluene	0.5	720.	2700.	
1,1,1-Trichloroethane (TCA)	0.5	33.	180.	
1,1,2-Trichloroethane	0.5	ND	ND	

Lab Certifications: CAELAP #1598 & #1783; UTELAP #E-142; AZELAP #AZ0162; A2LA #0136-01; L.A.Co.CSD #10187

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

02/18/94
MS1/1S53K
GD/ge
MS1*A

EXCELLENCE IN ANALYSIS

COAST-TO-COAST ANALYTICAL SERVICES, INC.

SoCal Division (Camarillo Laboratory)
4765 Calle Quetzal, Camarillo, California 93012

(805) 389-1353
FAX (805)389-1438

97

CLIENT: Kris Hansen
AmTest - Air Quality Inc.
30545 S. E. 84th Street #5
Preston, WA 98050

Lab Number : CK-0721-9
Project : 94-016 Hobart Landfill

Analyzed : 02/17/94
Analyzed by: YL
Method : EPA TO-14

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
R-3 IN #3 Carbon Bed Can #608	Air		02/14/94	02/17/94

CONSTITUENT	*PQL ppbv	RESULT ppbv	RESULT µg/cu M	NOTE
Trichloroethene (TCE)	0.2	9.1	49.	
Trichlorofluoromethane (F-11)	0.5	64.	360.	
Trichlorotrifluoroethane (F-113)	0.5	4.8	37.	
Vinyl Acetate	1.	ND	ND	
Vinyl Chloride	0.5	240.	520.	
Xylenes	0.5	1600.	7000.	
Percent Surrogate Recovery			105.	

Lab Certifications: CAELAP #1598 & #1783; UTELAP #E-142; AZELAP #AZ0162; A2LA #0136-01; L.A.Co.CSD #10187

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

02/18/94
MS1/1S53K
GD/ge
MS1*A

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Gesheng Dai

Gesheng Dai, Ph.D.
Air Toxics Group Leader

EXCELLENCE IN ANALYSIS

COAST-TO-COAST ANALYTICAL SERVICES, INC.

SoCal Division (Camarillo Laboratory)
4765 Calle Quetzal, Camarillo, California 93012

(805) 389-1353
FAX (805)389-1438

98

CLIENT: Kris Hansen
AmTest - Air Quality Inc.
30545 S. E. 84th Street #5
Preston, WA 98050

QC Batch ID: MS1*A CK-0721-9
Project : 94-016 Hobart Landfill

Analyzed : 02/17/94
Analyzed by: YL
Method : EPA TO-14

QC DUPLICATE
REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
R-3 IN #3 Carbon Bed Can #608	Air		02/14/94	02/17/94

CONSTITUENT	*PQL ppbv	RESULT ppbv	RESULT µg/cu M	%DIFF	NOTE
VOLATILE ORGANICS BY EPA TO-14					1,2
Acetone	2.	670.	1600.	32.	
Benzene	0.2	340.	1100.	9.5	
Bromodichloromethane	0.2	ND	ND		
Bromomethane (Methyl Bromide)	0.5	ND	ND		
Bromoform	0.2	ND	ND		
1,3-Butadiene	1.	ND	ND		
2-Butanone (MEK)	0.5	ND	ND		
Carbon Disulfide	2.	3.5	11.	0.	
Carbon Tetrachloride	0.2	ND	ND		
Chlorobenzene	0.2	110.	490.	0.	
Chloroethane (Ethyl Chloride)	0.5	830.	2200.	9.5	
2-Chloroethyl Vinyl Ether	2.	ND	ND		
Chloroform	1.	ND	ND		
Chloromethane (Methyl Chloride)	0.5	120.	250.	13.	
Dibromochloromethane	0.2	ND	ND		
1,2-Dibromoethane (EDB)	0.5	ND	ND		
1,2-Dichlorobenzene	0.2	ND	ND		
1,3-Dichlorobenzene	0.2	ND	ND		
1,4-Dichlorobenzene	0.2	11.	64.	32.	
1,1-Dichloroethane	0.2	37.	150.	0.	

Lab Certifications: CAELAP #1598 & #1783; UTELAP #E-142; AZELAP #AZ0162; A2LA #0136-01; L.A.Co.CSD #10187
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) Concentrations in ug/cu M reported at 760 mm Hg pressure and 298 deg. K.
(2) Canister received at 0 psig and pressurized to 15.5 psig with He.

02/18/94
MS1/1S54K
GD/ge
CK0721-9

EXCELLENCE IN ANALYSIS

COAST-TO-COAST ANALYTICAL SERVICES, INC.

SoCal Division (Camarillo Laboratory)
4765 Calle Quetzal, Camarillo, California 93012

(805) 389-1353
FAX (805)389-1438

99

CLIENT: Kris Hansen
AmTest - Air Quality Inc.
30545 S. E. 84th Street #5
Preston, WA 98050

QC Batch ID: MS1*A CK-0721-9
Project : 94-016 Hobart Landfill

Analyzed : 02/17/94
Analyzed by: YL
Method : EPA TO-14

QC DUPLICATE
REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
R-3 IN #3 Carbon Bed Can #608	Air		02/14/94	02/17/94

CONSTITUENT	*PQL ppbv	RESULT ppbv	RESULT µg/cu M	%DIFF	NOTE
1,2-Dichloroethane (EDC)	0.5	ND	ND		
1,1-Dichloroethene	0.5	ND	ND		
cis-1,2-Dichloroethene	0.5	35.	140.	0.	
trans-1,2-Dichloroethene	0.5	ND	ND		
Dichloromethane	2.	35.	120.	18.	
1,2-Dichloropropane	0.2	ND	ND		
cis-1,3-Dichloropropene	0.2	ND	ND		
trans-1,3-Dichloropropene	0.2	ND	ND		
Ethylbenzene	0.5	880.	3800.	0.	
2-Hexanone	0.2	ND	ND		
4-Methyl-2-Pentanone (MIBK)	0.2	ND	ND		
Styrene	0.5	5.6	24.	0.	
1,1,2,2-Tetrachloroethane	0.2	ND	ND		
Tetrachloroethene (PCE)	0.2	18.	120.	8.7	
Toluene	0.5	740.	2800.	3.6	
1,1,1-Trichloroethane (TCA)	0.5	33.	180.	0.	
1,1,2-Trichloroethane	0.5	ND	ND		
Trichloroethene (TCE)	0.2	8.9	48.	2.1	
Trichlorofluoromethane (F-11)	0.5	66.	370.	2.7	
Trichlorotrifluoroethane (F-113)	0.5	4.6	35.	5.6	
Vinyl Acetate	1.	ND	ND		
Vinyl Chloride	0.5	320.	690.	28.	
Xylenes	0.5	1600.	7000.	0.	
Percent Surrogate Recovery			108.		

Lab Certifications: CAELAP #1598 & #1783; UTELAP #E-142; AZELAP #AZ0162; A2LA #0136-01; L.A.Co.CSD #10187
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

02/18/94
MS1/1S54K
GD/ge
CK0721-9

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Gesheng Dai, Ph.D.
Air Toxics Group Leader

EXCELLENCE IN ANALYSIS

COAST-TO-COAST ANALYTICAL SERVICES, INC.

SoCal Division (Camarillo Laboratory)
4765 Calle Quetzal, Camarillo, California 93012

(805) 389-1353
FAX (805)389-1438

100

CLIENT: Kris Hansen
AmTest - Air Quality Inc.
30545 S. E. 84th Street #5
Preston, WA 98050

Lab Number : CK-0721-10
Project : 94-016 Hobart Landfill

Analyzed : 02/16/94
Analyzed by: YL
Method : EPA TO-14

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
R-1 Out #3 Carbon Bed Can #535	Air		02/14/94	02/17/94

CONSTITUENT	*PQL ppbv	RESULT ppbv	RESULT µg/cu M	NOTE
VOLATILE ORGANICS BY EPA TO-14				1,2
Acetone	2.	720.	1700	
Benzene	0.2	560.	1800.	
Bromodichloromethane	0.2	ND	ND	
Bromomethane (Methyl Bromide)	0.5	ND	ND	
Bromoform	0.2	ND	ND	
1,3-Butadiene	1.	ND	ND	
2-Butanone (MEK)	0.5	ND	ND	
Carbon Disulfide	2.	4.	11.	
Carbon Tetrachloride	0.2	ND	ND	
Chlorobenzene	0.2	28.	130.	
Chloroethane (Ethyl Chloride)	0.5	760.	2000.	
2-Chloroethyl Vinyl Ether	2.	ND	ND	
Chloroform	1.	ND	ND	
Chloromethane (Methyl Chloride)	0.5	120.	250.	
Dibromochloromethane	0.2	ND	ND	
1,2-Dibromoethane (EDB)	0.5	ND	ND	
1,2-Dichlorobenzene	0.2	ND	ND	

Lab Certifications: CAELAP #1598 & #1783; UTELAP #E-142; AZELAP #AZ0162; A2LA #0136-01; L.A.Co.CSD #10187

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

(1) Concentrations in ug/cu M reported at 760 mm Hg pressure and 298 deg. K.

(2) Canister received at 0 psig and pressurized to 21.5 psig with He.

02/18/94
MS1/1S39K
GD/ge
MS1*A

EXCELLENCE IN ANALYSIS

COAST-TO-COAST ANALYTICAL SERVICES, INC.

SoCal Division (Camarillo Laboratory)
4765 Calle Quetzal, Camarillo, California 93012

(805) 389-1353
FAX (805)389-1438

101

CLIENT: Kris Hansen
AmTest - Air Quality Inc.
30545 S. E. 84th Street #5
Preston, WA 98050

Lab Number : CK-0721-10
Project : 94-016 Hobart Landfill

Analyzed : 02/16/94
Analyzed by: YL
Method : EPA TO-14

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
R-1 Out #3 Carbon Bed Can #535	Air		02/14/94	02/17/94

CONSTITUENT	*PQL ppbv	RESULT ppbv	RESULT µg/cu M	NOTE
1,3-Dichlorobenzene	0.2	ND	ND	
1,4-Dichlorobenzene	0.2	ND	ND	
1,1-Dichloroethane	0.2	42.	170.	
1,2-Dichloroethane (EDC)	0.5	ND	ND	
1,1-Dichloroethene	0.5	ND	ND	
cis-1,2-Dichloroethene	0.5	35.	140.	
trans-1,2-Dichloroethene	0.5	ND	ND	
Dichloromethane	2.	29.	100.	
1,2-Dichloropropane	0.2	ND	ND	
cis-1,3-Dichloropropene	0.2	ND	ND	
trans-1,3-Dichloropropene	0.2	ND	ND	
Ethylbenzene	0.5	16.	68.	
2-Hexanone	0.2	ND	ND	
4-Methyl-2-Pentanone (MIBK)	0.2	ND	ND	
Styrene	0.5	ND	ND	
1,1,2,2-Tetrachloroethane	0.2	ND	ND	
Tetrachloroethene (PCE)	0.2	1.	6.7	
Toluene	0.5	18.	67.	
1,1,1-Trichloroethane (TCA)	0.5	37.	200.	
1,1,2-Trichloroethane	0.5	ND	ND	

Lab Certifications: CAELAP #1598 & #1783; UTELAP #E-142; AZELAP #AZ0162; A2LA #0136-01; L.A.Co.CSD #10187

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

02/18/94
MS1/1S39K
GD/ge
MS1*A

EXCELLENCE IN ANALYSIS

COAST-TO-COAST ANALYTICAL SERVICES, INC.

102

SoCal Division (Camarillo Laboratory)
4765 Calle Quetzal, Camarillo, California 93012

(805) 389-1353
FAX (805)389-1438

CLIENT: Kris Hansen
AmTest - Air Quality Inc.
30545 S. E. 84th Street #5
Preston, WA 98050

Lab Number : CK-0721-10
Project : 94-016 Hobart Landfill

Analyzed : 02/16/94
Analyzed by: YL
Method : EPA TO-14

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
R-1 Out #3 Carbon Bed Can #535	Air		02/14/94	02/17/94

CONSTITUENT	*PQL ppbv	RESULT ppbv	RESULT µg/cu M	NOTE
Trichloroethene (TCE)	0.2	20.	110.	
Trichlorofluoromethane (F-11)	0.5	66.	370.	
Trichlorotrifluoroethane (F-113)	0.5	5.5	42.	
Vinyl Acetate	1.	ND	ND	
Vinyl Chloride	0.5	310.	670.	
Xylenes	0.5	83.	360.	
Percent Surrogate Recovery			108.	

Lab Certifications: CAELAP #1598 & #1783; UTELAP #E-142; AZELAP #AZ0162; A2LA #0136-01; L.A.Co.CSD #10187

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

02/18/94
MS1/1S39K
GD/ge
MS1*A

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Gesheng Dai

Gesheng Dai, Ph.D.
Air Toxics Group Leader

EXCELLENCE IN ANALYSIS

COAST-TO-COAST ANALYTICAL SERVICES, INC.

103

SoCal Division (Camarillo Laboratory)
4765 Calle Quetzal, Camarillo, California 93012

(805) 389-1353
FAX (805)389-1438

CLIENT: Kris Hansen
AmTest - Air Quality Inc.
30545 S. E. 84th Street #5
Preston, WA 98050

QC Batch ID: MS1*A CK-0721-10
Project : 94-016 Hobart Landfill

Analyzed : 02/16/94
Analyzed by: YL
Method : EPA TO-14

QC DUPLICATE
REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
R-1 Out #3 Carbon Bed Can #535	Air		02/14/94	02/17/94

CONSTITUENT	*PQL ppbv	RESULT ppbv	RESULT µg/cu M	%DIFF	NOTE
VOLATILE ORGANICS BY EPA TO-14					1,2
Acetone	2.	670.	1600.	6.1	
Benzene	0.2	560.	1800.	0.	
Bromodichloromethane	0.2	ND	ND		
Bromomethane (Methyl Bromide)	0.5	ND	ND		
Bromoform	0.2	ND	ND		
1,3-Butadiene	1.	ND	ND		
2-Butanone (MEK)	0.5	ND	ND		
Carbon Disulfide	2.	3.9	12.	8.7	
Carbon Tetrachloride	0.2	ND	ND		
Chlorobenzene	0.2	26.	120.	8.	
Chloroethane (Ethyl Chloride)	0.5	720.	1900.	5.1	
2-Chloroethyl Vinyl Ether	2.	ND	ND		
Chloroform	1.	ND	ND		
Chloromethane (Methyl Chloride)	0.5	120.	240.	4.1	
Dibromochloromethane	0.2	ND	ND		
1,2-Dibromoethane (EDB)	0.5	ND	ND		
1,2-Dichlorobenzene	0.2	ND	ND		
1,3-Dichlorobenzene	0.2	ND	ND		
1,4-Dichlorobenzene	0.2	ND	ND		
1,1-Dichloroethane	0.2	40.	160.	6.1	

Lab Certifications: CAELAP #1598 & #1783; UTELAP #E-142; AZELAP #AZ0162; A2LA #0136-01; L.A.Co.CSD #10187
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) Concentrations in ug/cu M reported at 760 mm Hg pressure and 298 deg. K.
(2) Canister received at 0 psig and pressurized to 21.5 psig with He.

02/18/94
MS1/1S40K
GD/ge
CK0721-10

EXCELLENCE IN ANALYSIS

COAST-TO-COAST ANALYTICAL SERVICES, INC.

104

SoCal Division (Camarillo Laboratory)
4765 Calle Quetzal, Camarillo, California 93012

(805) 389-1353
FAX (805)389-1438

CLIENT: Kris Hansen
AmTest - Air Quality Inc.
30545 S. E. 84th Street #5
Preston, WA 98050

QC Batch ID: MS1*A CK-0721-10
Project : 94-016 Hobart Landfill

Analyzed : 02/16/94
Analyzed by: YL
Method : EPA TO-14

QC DUPLICATE
REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
R-1 Out #3 Carbon Bed Can #535	Air		02/14/94	02/17/94

CONSTITUENT	*PQL ppbv	RESULT ppbv	RESULT µg/cu M	%DIFF	NOTE
1,2-Dichloroethane (EDC)	0.5	ND	ND		
1,1-Dichloroethene	0.5	ND	ND		
cis-1,2-Dichloroethene	0.5	35.	140.	0.	
trans-1,2-Dichloroethene	0.5	ND	ND		
Dichloromethane	2.	37.	130.	26.	
1,2-Dichloropropane	0.2	ND	ND		
cis-1,3-Dichloropropene	0.2	ND	ND		
trans-1,3-Dichloropropene	0.2	ND	ND		
Ethylbenzene	0.5	14.	61.	11.	
2-Hexanone	0.2	ND	ND		
4-Methyl-2-Pentanone (MIBK)	0.2	ND	ND		
Styrene	0.5	ND	ND		
1,1,2,2-Tetrachloroethane	0.2	ND	ND		
Tetrachloroethene (PCE)	0.2	0.94	6.4	4.6	
Toluene	0.5	17.	63.	6.2	
1,1,1-Trichloroethane (TCA)	0.5	33.	180.	11.	
1,1,2-Trichloroethane	0.5	ND	ND		
Trichloroethene (TCE)	0.2	19.	100.	9.5	
Trichlorofluoromethane (F-11)	0.5	61.	340.	8.5	
Trichlorotrifluoroethane (F-113)	0.5	5.6	43.	2.4	
Vinyl Acetate	1.	ND	ND		
Vinyl Chloride	0.5	270.	590.	13.	
Xylenes	0.5	78.	340.	5.7	
Percent Surrogate Recovery			97.		

Lab Certifications: CAELAP #1598 & #1783; UTELAP #E-142; AZELAP #AZ0162; A2LA #0136-01; L.A.Co.CSD #10187
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

02/18/94
MS1/1S40K
GD/ge
CK0721-10

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Gesheng Dai

Gesheng Dai, Ph.D.
Air Toxics Group Leader

EXCELLENCE IN ANALYSIS

COAST-TO-COAST ANALYTICAL SERVICES, INC.

105

SoCal Division (Camarillo Laboratory)
4765 Calle Quetzal, Camarillo, California 93012

(805) 389-1353
FAX (805)389-1438

CLIENT: Kris Hansen
AmTest - Air Quality Inc.
30545 S. E. 84th Street #5
Preston, WA 98050

Lab Number : CK-0721-11
Project : 94-016 Hobart Landfill

Analyzed : 02/16/94
Analyzed by: YL
Method : EPA TO-14

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
R-2 Out #3 Carbon Bed Can #602	Air		02/14/94	02/17/94

CONSTITUENT	*PQL ppbv	RESULT ppbv	RESULT µg/cu M	NOTE
VOLATILE ORGANICS BY EPA TO-14				1,2
Acetone	2.	840.	2000	
Benzene	0.2	560.	1800.	
Bromodichloromethane	0.2	ND	ND	
Bromomethane (Methyl Bromide)	0.5	ND	ND	
Bromoform	0.2	ND	ND	
1,3-Butadiene	1.	ND	ND	
2-Butanone (MEK)	0.5	ND	ND	
Carbon Disulfide	2.	4.	13.	
Carbon Tetrachloride	0.2	ND	ND	
Chlorobenzene	0.2	21.	97.	
Chloroethane (Ethyl Chloride)	0.5	720.	1900.	
2-Chloroethyl Vinyl Ether	2.	ND	ND	
Chloroform	1.	ND	ND	
Chloromethane (Methyl Chloride)	0.5	53.	110.	
Dibromochloromethane	0.2	ND	ND	
1,2-Dibromoethane (EDB)	0.5	ND	ND	
1,2-Dichlorobenzene	0.2	ND	ND	

Lab Certifications: CAELAP #1598 & #1783; UTELAP #E-142; AZELAP #AZ0162; A2LA #0136-01; L.A.Co.CSD #10187

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

(1) Concentrations in ug/cu M reported at 760 mm Hg pressure and 298 deg. K.

(2) Canister received at 0 psig and pressurized to 17.0 psig with He.

02/18/94
MS1/1S41K
GD/ge
MS1*A

EXCELLENCE IN ANALYSIS

COAST-TO-COAST ANALYTICAL SERVICES, INC.

106

SoCal Division (Camarillo Laboratory)
4765 Calle Quetzal, Camarillo, California 93012

(805) 389-1353
FAX (805)389-1438

CLIENT: Kris Hansen
AmTest - Air Quality Inc.
30545 S. E. 84th Street #5
Preston, WA 98050

Lab Number : CK-0721-11
Project : 94-016 Hobart Landfill

Analyzed : 02/16/94
Analyzed by: YL
Method : EPA TO-14

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
R-2 Out #3 Carbon Bed Can #602	Air		02/14/94	02/17/94

CONSTITUENT	*PQL ppbv	RESULT ppbv	RESULT µg/cu M	NOTE
1,3-Dichlorobenzene	0.2	ND	ND	
1,4-Dichlorobenzene	0.2	ND	ND	
1,1-Dichloroethane	0.2	42.	170.	
1,2-Dichloroethane (EDC)	0.5	ND	ND	
1,1-Dichloroethene	0.5	ND	ND	
cis-1,2-Dichloroethene	0.5	38.	150.	
trans-1,2-Dichloroethene	0.5	ND	ND	
Dichloromethane	2.	29.	100.	
1,2-Dichloropropane	0.2	ND	ND	
cis-1,3-Dichloropropene	0.2	ND	ND	
trans-1,3-Dichloropropene	0.2	ND	ND	
Ethylbenzene	0.5	4.4	19.	
2-Hexanone	0.2	ND	ND	
4-Methyl-2-Pentanone (MIBK)	0.2	ND	ND	
Styrene	0.5	ND	ND	
1,1,2,2-Tetrachloroethane	0.2	ND	ND	
Tetrachloroethene (PCE)	0.2	ND	ND	
Toluene	0.5	6.6	25.	
1,1,1-Trichloroethane (TCA)	0.5	37.	200.	
1,1,2-Trichloroethane	0.5	ND	ND	

Lab Certifications: CAELAP #1598 & #1783; UTELAP #E-142; AZELAP #AZ0162; A2LA #0136-01; L.A.Co.CSD #10187

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

02/18/94
MS1/1S41K
GD/ge
MS1*A

EXCELLENCE IN ANALYSIS

COAST-TO-COAST ANALYTICAL SERVICES, INC.

107

SoCal Division (Camarillo Laboratory)
4765 Calle Quetzal, Camarillo, California 93012

(805) 389-1353
FAX (805)389-1438

CLIENT: Kris Hansen
AmTest - Air Quality Inc.
30545 S. E. 84th Street #5
Preston, WA 98050

Lab Number : CK-0721-11
Project : 94-016 Hobart Landfill

Analyzed : 02/16/94
Analyzed by: YL
Method : EPA TO-14

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
R-2 Out #3 Carbon Bed Can #602	Air		02/14/94	02/17/94

CONSTITUENT	*PQL ppbv	RESULT ppbv	RESULT µg/cu M	NOTE
Trichloroethene (TCE)	0.2	20.	110.	
Trichlorofluoromethane (F-11)	0.5	61.	340.	
Trichlorotrifluoroethane (F-113)	0.5	5.2	40.	
Vinyl Acetate	1.	ND	ND	
Vinyl Chloride	0.5	190.	400.	
Xylenes	0.5	20.	88.	
Percent Surrogate Recovery			92.	

Lab Certifications: CAELAP #1598 & #1783; UTELAP #E-142; AZELAP #AZ0162; A2LA #0136-01; L.A.Co.CSD #10187

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

02/18/94
MS1/1S41K
GD/ge
MS1*A

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Gesheng Dai

Gesheng Dai, Ph.D.
Air Toxics Group Leader

EXCELLENCE IN ANALYSIS

COAST-TO-COAST ANALYTICAL SERVICES, INC.

108

SoCal Division (Camarillo Laboratory)
4765 Calle Quetzal, Camarillo, California 93012

(805) 389-1353
FAX (805)389-1438

CLIENT: Kris Hansen
AmTest - Air Quality Inc.
30545 S. E. 84th Street #5
Preston, WA 98050

Lab Number : CK-0721-12
Project : 94-016 Hobart Landfill

Analyzed : 02/17/94
Analyzed by: YL
Method : EPA TO-14

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
R-3 Out #3 Carbon Bed Can #605	Air		02/14/94	02/17/94

CONSTITUENT	*PQL ppbv	RESULT ppbv	RESULT µg/cu M	NOTE
VOLATILE ORGANICS BY EPA TO-14				1,2
Acetone	2.	760.	1800	
Benzene	0.2	590.	1900.	
Bromodichloromethane	0.2	ND	ND	
Bromomethane (Methyl Bromide)	0.5	ND	ND	
Bromoform	0.2	ND	ND	
1,3-Butadiene	1.	ND	ND	
2-Butanone (MEK)	0.5	ND	ND	
Carbon Disulfide	2.	5.	15.	
Carbon Tetrachloride	0.2	ND	ND	
Chlorobenzene	0.2	33.	150.	
Chloroethane (Ethyl Chloride)	0.5	870.	2300.	
2-Chloroethyl Vinyl Ether	2.	ND	ND	
Chloroform	1.	ND	ND	
Chloromethane (Methyl Chloride)	0.5	140.	280.	
Dibromochloromethane	0.2	ND	ND	
1,2-Dibromoethane (EDB)	0.5	ND	ND	
1,2-Dichlorobenzene	0.2	ND	ND	

Lab Certifications: CAELAP #1598 & #1783; UTELAP #E-142; AZELAP #AZ0162; A2LA #0136-01; L.A.Co.CSD #10187

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

(1) Concentrations in ug/cu M reported at 760 mm Hg pressure and 298 deg. K.

(2) Canister received at 0 psig and pressurized to 21.5 psig with He.

02/18/94
MS1/1S46K
GD/ge
MS1*A

EXCELLENCE IN ANALYSIS

COAST-TO-COAST ANALYTICAL SERVICES, INC.

SoCal Division (Camarillo Laboratory)
4765 Calle Quetzal, Camarillo, California 93012

(805) 389-1353
FAX (805)389-1438

109

CLIENT: Kris Hansen
AmTest - Air Quality Inc.
30545 S. E. 84th Street #5
Preston, WA 98050

Lab Number : CK-0721-12
Project : 94-016 Hobart Landfill

Analyzed : 02/17/94
Analyzed by: YL
Method : EPA TO-14

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
R-3 Out #3 Carbon Bed Can #605	Air		02/14/94	02/17/94

CONSTITUENT	*PQL ppbv	RESULT ppbv	RESULT µg/cu M	NOTE
1,3-Dichlorobenzene	0.2	ND	ND	
1,4-Dichlorobenzene	0.2	ND	ND	
1,1-Dichloroethane	0.2	49.	200.	
1,2-Dichloroethane (EDC)	0.5	ND	ND	
1,1-Dichloroethene	0.5	ND	ND	
cis-1,2-Dichloroethene	0.5	43.	170.	
trans-1,2-Dichloroethene	0.5	ND	ND	
Dichloromethane	2.	58.	200.	
1,2-Dichloropropane	0.2	ND	ND	
cis-1,3-Dichloropropene	0.2	ND	ND	
trans-1,3-Dichloropropene	0.2	ND	ND	
Ethylbenzene	0.5	4.8	21.	
2-Hexanone	0.2	ND	ND	
4-Methyl-2-Pentanone (MIBK)	0.2	ND	ND	
Styrene	0.5	ND	ND	
1,1,2,2-Tetrachloroethane	0.2	ND	ND	
Tetrachloroethene (PCE)	0.2	ND	ND	
Toluene	0.5	13.	49.	
1,1,1-Trichloroethane (TCA)	0.5	42.	230.	
1,1,2-Trichloroethane	0.5	ND	ND	

Lab Certifications: CAELAP #1598 & #1783; UTELAP #E-142; AZELAP #AZ0162; A2LA #0136-01; L.A.Co.CSD #10187

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

02/18/94
MS1/1S46K
GD/ge
MS1*A

EXCELLENCE IN ANALYSIS

COAST-TO-COAST ANALYTICAL SERVICES, INC.

110

SoCal Division (Camarillo Laboratory)
4765 Calle Quetzal, Camarillo, California 93012

(805) 389-1353
FAX (805)389-1438

CLIENT: Kris Hansen
AmTest - Air Quality Inc.
30545 S. E. 84th Street #5
Preston, WA 98050

Lab Number : CK-0721-12
Project : 94-016 Hobart Landfill

Analyzed : 02/17/94
Analyzed by: YL
Method : EPA TO-14

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
R-3 Out #3 Carbon Bed Can #605	Air		02/14/94	02/17/94

CONSTITUENT	*PQL ppbv	RESULT ppbv	RESULT µg/cu M	NOTE
Trichloroethene (TCE)	0.2	32.	170.	
Trichlorofluoromethane (F-11)	0.5	75.	420.	
Trichlorotrifluoroethane (F-113)	0.5	5.6	43.	
Vinyl Acetate	1.	ND	ND	
Vinyl Chloride	0.5	320.	680.	
Xylenes	0.5	23.	100.	
Percent Surrogate Recovery			120.	

Lab Certifications: CAELAP #1598 & #1783; UTELAP #E-142; AZELAP #AZ0162; A2LA #0136-01; L.A.Co.CSD #10187
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

02/18/94
MS1/1S46K
GD/ge
MS1*A

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Gesheng Dai

Gesheng Dai, Ph.D.
Air Toxics Group Leader

EXCELLENCE IN ANALYSIS

COAST-TO-COAST ANALYTICAL SERVICES, INC.

SoCal Division (Camarillo Laboratory)
4765 Calle Quetzal, Camarillo, California 93012

(805) 389-1353
FAX (805)389-1438

CLIENT: Coast-to-Coast Analytical Services, Inc.

QC Batch ID: KB16TA

Analyzed : 02/16/94
Analyzed by: YL
Method : GC/TCD

QC SPIKE
REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
QC SPIKE	Air			

CONSTITUENT	*PQL PERCENT	SPIKE AMOUNT	RESULT PERCENT	%REC	NOTE
FIXED GASES AND METHANE					
Carbon Dioxide	0.1	15.	15.	100.	
Oxygen	0.01	7.1	7.1	100.	
Nitrogen	0.02	66.	66.	100.	
Methane	0.005	4.6	4.6	100.	
Carbon Monoxide	0.1	7.1	7.1	100.	

Lab Certifications: CAELAP #1598 & #1783; UTELAP #E-142; AZELAP #AZ0162; A2LA #0136-01; L.A.Co.CSD #10187
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

02/18/94
TCD/02169420
GD/ge
CK0721-1

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Gesheng Dai, Ph.D.
Air Toxics Group Leader

EXCELLENCE IN ANALYSIS

COAST-TO-COAST ANALYTICAL SERVICES, INC.

SoCal Division (Camarillo Laboratory)
4765 Calle Quetzal, Camarillo, California 93012

(805) 389-1353
FAX (805)389-1438

112

CLIENT: Coast-to-Coast Analytical Services, Inc.

Analyzed : 02/16/94
Analyzed by: YL
Method : EPA TO-14

QC SPIKE
REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
QC SPIKE	Air			

CONSTITUENT	*PQL µg/cu M	SPIKE AMOUNT	RESULT µg/cu M	%REC	NOTE
VOLATILE ORGANICS BY EPA TO-14					1,2
Acetone	3.		NS		
Benzene	0.5	16.	20.	125.	
Bromodichloromethane	1.		NS		
Bromomethane (Methyl Bromide)	1.	21.	15.	71.	
Bromoform	1.		NS		
1,3-Butadiene	1.	10.	9.0	90.	
2-Butanone (MEK)	1.		NS		
Carbon Disulfide	5.		NS		
Carbon Tetrachloride	1.	31.	34.	110.	
Chlorobenzene	0.5	23.	27.	117.	
Chloroethane (Ethyl Chloride)	0.5		NS		
2-Chloroethyl Vinyl Ether	5.		NS		
Chloroform	3.	25.	28.	112.	
Chloromethane (Methyl Chloride)	0.5		NS		
Dibromochloromethane	1.		NS		
1,2-Dibromoethane (EDB)	2.	10.	9.4	94.	
1,2-Dichlorobenzene	1.		NS		
1,3-Dichlorobenzene	1.		NS		
1,4-Dichlorobenzene	1.		NS		
1,1-Dichloroethane	0.5		NS		

Lab Certifications: CAELAP #1598 & #1783; UTELAP #E-142; AZELAP #AZ0162; A2LA #0136-01; L.A.Co.CSD #10187

* RESULTS listed as 'NS' were not spiked. PQL = Practical Quantitation Limit

(1) Concentrations in ug/cu M reported at 760 mm Hg pressure and 298 deg. K.

(2) Zero Air spiked with NIST SRM 1804, Cylinder # ALM-000881.

02/18/94
MS1/1S34K
GD/ge
CK9402-16

EXCELLENCE IN ANALYSIS

COAST-TO-COAST ANALYTICAL SERVICES, INC.

SoCal Division (Camarillo Laboratory)
4765 Calle Quetzal, Camarillo, California 93012

(805) 389-1353
FAX (805)389-1438

CLIENT: Coast-to-Coast Analytical Services, Inc.

Analyzed : 02/16/94
Analyzed by: YL
Method : EPA TO-14

QC SPIKE
REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
QC SPIKE	Air			

CONSTITUENT	*PQL µg/cu M	SPIKE AMOUNT	RESULT µg/cu M	%REC	NOTE
1,2-Dichloroethane (EDC)	1.	20.	22.	110.	
1,1-Dichloroethene	1.		NS		
cis-1,2-Dichloroethene	1.0		NS		
trans-1,2-Dichloroethene	1.		NS		
Dichloromethane	5.	17.	19.	112.	
1,2-Dichloropropane	0.5	23.	27.	117.	
cis-1,3-Dichloropropene	0.5		NS		
trans-1,3-Dichloropropene	0.5		NS		
Ethylbenzene	1.	15.	19.	127.	
2-Hexanone	0.5		NS		
4-Methyl-2-Pentanone (MIBK)	0.5		NS		
Styrene	1.		NS		
1,1,2,2-Tetrachloroethane	1.		NS		
Tetrachloroethene (PCE)	1.	34.	36.	106.	
Toluene	1	18.	23.	128.	
1,1,1-Trichloroethane (TCA)	1.	28.	30.	107.	
1,1,2-Trichloroethane	1.		NS		
Trichloroethene (TCE)	0.5	27.	32.	119.	
Trichlorofluoromethane (F-11)	1.	29.	29.	100.	
Trichlorotrifluoroethane (F-113)	2.		NS		
Vinyl Acetate	2.		NS		
Vinyl Chloride	0.5	14.	14.	100.	
Xylenes	1.	15.	19.	127.	

Lab Certifications: CAELAP #1598 & #1783; UTELAP #E-142; AZELAP #AZ0162; A2LA #0136-01; L.A.Co.CSD #10187
* RESULTS listed as 'NS' were not spiked. PQL = Practical Quantitation Limit

02/18/94
MS1/1S34K
GD/ge
CK9402-16

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Gesheng Dai

Gesheng Dai, Ph.D.
Air Toxics Group Leader

EXCELLENCE IN ANALYSIS

COAST-TO-COAST ANALYTICAL SERVICES, INC.

SoCal Division (Camarillo Laboratory)
4765 Calle Quetzal, Camarillo, California 93012

(805) 389-1353
FAX (805)389-1438

CLIENT: Coast-to-Coast Analytical Services, Inc.

Analyzed : 02/16/94
Analyzed by: YL
Method : EPA TO-14

INSTRUMENT BLANK
REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
INSTRUMENT BLANK	Air			

CONSTITUENT	(CAS RN)	*PQL µg/cu M	RESULT µg/cu M	NOTE
VOLATILE ORGANICS BY EPA TO-14				1
Acetone	(67641)	3.	ND	
Benzene	(71432)	0.5	ND	
Bromodichloromethane	(75274)	1.	ND	
Bromomethane (Methyl Bromide)	(74839)	1.	ND	
Bromoform	(75252)	1.	ND	
1,3-Butadiene	(106990)	1.	ND	
2-Butanone (MEK)	(78933)	1.	ND	
Carbon Disulfide	(75150)	5.	ND	
Carbon Tetrachloride	(56235)	1.	ND	
Chlorobenzene	(108907)	0.5	ND	
Chloroethane (Ethyl Chloride)	(75003)	0.5	ND	
2-Chloroethyl Vinyl Ether	(110758)	5.	ND	
Chloroform	(67663)	3.	ND	
Chloromethane (Methyl Chloride)	(74873)	0.5	ND	
Dibromochloromethane	(124381)	1.	ND	
1,2-Dibromoethane (EDB)	(106934)	2.	ND	
1,2-Dichlorobenzene	(95501)	1.	ND	
1,3-Dichlorobenzene	(541731)	1.	ND	
1,4-Dichlorobenzene	(106467)	1.	ND	
1,1-Dichloroethane	(75343)	0.5	ND	
1,2-Dichloroethane (EDC)	(107062)	1.	ND	

Lab Certifications: CAELAP #1598 & #1783; UTELAP #E-142; AZELAP #AZ0162; A2LA #0136-01; L.A.Co.CSD #10187
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) Concentrations in ug/cu M reported at 760 mm Hg pressure and 298 deg. K.

02/18/94
MS1/1S33K
GD/ge
CK9402-16

EXCELLENCE IN ANALYSIS

COAST-TO-COAST ANALYTICAL SERVICES, INC.

SoCal Division (Camarillo Laboratory)
4765 Calle Quetzal, Camarillo, California 93012

(805) 389-1353
FAX (805)389-1438

115

CLIENT: Coast-to-Coast Analytical Services, Inc.

Analyzed : 02/16/94
Analyzed by: YL
Method : EPA TO-14

INSTRUMENT BLANK
REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE RECEIVED
INSTRUMENT BLANK	Air		

CONSTITUENT	(CAS RN)	*PQL µg/cu M	RESULT µg/cu M	NOTE
1,1-Dichloroethene	(75354)	1.	ND	
cis-1,2-Dichloroethene	(156694)	1.0	ND	
trans-1,2-Dichloroethene	(156605)	1.	ND	
Dichloromethane	(75092)	5.	ND	
1,2-Dichloropropane	(78875)	0.5	ND	
cis-1,3-Dichloropropene	(10061015)	0.5	ND	
trans-1,3-Dichloropropene	(10061026)	0.5	ND	
Ethylbenzene	(100411)	1.	ND	
2-Hexanone	(591786)	0.5	ND	
4-Methyl-2-Pentanone (MIBK)	(108101)	0.5	ND	
Styrene	(100425)	1.	ND	
1,1,2,2-Tetrachloroethane	(79345)	1.	ND	
Tetrachloroethene (PCE)	(127184)	1.	ND	
Toluene	(108883)	1	ND	
1,1,1-Trichloroethane (TCA)	(71556)	1.	ND	
1,1,2-Trichloroethane	(79005)	1.	ND	
Trichloroethene (TCE)	(79016)	0.5	ND	
Trichlorofluoromethane (F-11)	(75694)	1.	ND	
Trichlorotrifluoroethane (F-113)	(76131)	2.	ND	
Vinyl Acetate	(108054)	2.	ND	
Vinyl Chloride	(75104)	0.5	ND	
Xylenes	(1330207)	1.	ND	

Lab Certifications: CAELAP #1598 & #1783; UTELAP #E-142; AZELAP #AZ0162; A2LA #0136-01; L.A.Co.CSD #10187
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

02/18/94
MS1/1S33K
GD/ge
CK9402-16

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Gesheng Dai

Gesheng Dai, Ph.D.
Air Toxics Group Leader

AMTEST

AMTest Inc
Professional Analytical Services
14603 7th St ... 206 ... 95
Redmond, WA 98052
Tel: 206 885 1664

CHAIN OF CUSTODY RECORD

PROJ. NO.: 94-016

PROJECT NAME: CH2MHill - Hobart Landfill

SAMPLERS: (Signature)

Client Name: Amtest - Air Quality
Client Address: 30545 S.E. 84th #5
Client Phone: Preston, WA 98050
Contact Person: Angela 206-222-7746
P.O. No.: 94-016

STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	JOB#	NO. OF CONTAINERS (CAN #)	SUMMA CANS
	2/14	1025-1055			R-1 IN: #2 CARBON Bed	5142	455	1
		1145-1215			R-2 IN: #2 CARBON Bed	5143	301	1
		1252-1322			R-3 IN: #2 CARBON Bed	5144	653	1
		1025-1055			R-1 OUT: #2 CARBON Bed	5145	630	1
		1145-1215			R-2 OUT: #2 CARBON Bed	5146	126	1
		1252-1322			R-3 OUT: #2 CARBON Bed	5147	647	1
		1107-1137			R-1 IN: #3 CARBON Bed	5148	638	1
		1218-1248			R-2 IN: #3 CARBON Bed	5149	618	1
		1326-1356			R-3 IN: #3 CARBON Bed	5150	608	1
		1107-1137			R1 OUT: #3 CARBON Bed	5151	535	1
		1218-1248			R2 OUT: #3 CARBON Bed	5152	602	1
		1326-1356			R-3 OUT: #3 CARBON Bed	5153	605	1

TO-14: Speciated VOC's By GC/MS

Fixed GAS Analysis (CH4, CO2, O2, CO) By GC/MS

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
[signature]	2/14/94 PM				
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)

Relinquished by: (Signature)	Date/Time	Received for Laboratory by: (Signature)	Date/Time	Remarks
				116

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

APPENDIX C

Example Calculations

AMTEST
AIR QUALITY, INC

EXAMPLE CALCULATION OF PSYCHROMETRIC MOISTURE (WET BULB/DRY BULB)

Client: King Co. Solid Waste Division

Location: Hobart Landfill - Hobart, WA

Site: Canister #2 - Inlet

Date: 2-14-94

Run: 2 - 5143

Vapor Pressure (VP) = Sat'd Vapor Pressure (SVP) - $\frac{((P_A - SVP)(td - tw))}{(2800 - 1.3tw)}$

P_A = Absolute pressure in "Hg

= $P_{barometric}$ + (P_{static} / 13.6 "H_2O/"Hg)

= 29.58 "Hg + (2.7 "H_2O / 13.6 "H_2O/"Hg)

P_A = 29.78 "Hg

tw = Wet bulb temperature °F = 56

td = Dry bulb temperature °F = 68

SVP = Saturated Vapor Pressure = 0.4520

$$VP = 0.4520 \text{ SVP} - \frac{((29.78 \text{ "Hg} - 0.4520 \text{ SVP}) * (68 \text{ °F} - 56 \text{ °F}))}{(2800 - (1.3 * 56 \text{ °F}))}$$

VP = 0.3230 "Hg

$$Bws = \frac{VP}{P_A} = \frac{0.3230 \text{ "Hg}}{29.78 \text{ "Hg}} = 0.0108$$

Percent Moisture (%) = Bws * 100 = 0.0108 * 100

= 1.08

* Oregon DEQ Source Sampling Manual, October 15, 1991

Wet Bulb Temp. Deg. F.	0	1	2	3	4	5	6	7	8	9
– – –20	0126	0119	0112	.0106	0100	.0095	0089	0084	0080	0075
– – –10	0222	0209	0199	0187	0176	0168	0158	.0150	0142	0134
– – –	0376	0359	0339	.0324	0306	0289	0275	.0250	0247	0233
0	0376	0398	0417	.0463	0441	.0489	0517	0541	0571	0598
10	0631	0660	0696	0728	0768	0810	0846	0892	0932	0982
20	1025	.1080	1127	1186	1248	1302	1370	1429	1502	1567
30	.1647	.1716	1803	.1878	.1955	.2035	2118	.2203	.2292	2382
40	.2478	.2576	.2677	.2782	2891	3004	.3120	.3240	.3364	3493
50	.3626	.3764	.3906	.4052	.4203	.4359	.4520	.4586	4858	5035
60	.5218	.5407	.5601	.5802	.6009	.6222	.6442	.6669	.6903	7144
70	.7392	.7648	.7912	.8183	.8462	.8750	.9046	.9352	.9666	.9989
80	1.032	1.066	1.102	1.138	1.175	1.213	1.253	1.293	1.335	1.378
90	1.422	1.467	1.513	1.561	1.610	1.660	1.712	1.765	1.819	1.875
100	1.932	1.991	2.052	2.114	2.178	2.243	2.310	2.379	2.449	2.521
110	2.596	2.672	2.749	2.829	2.911	2.995	3.081	3.169	3.259	3.351
120	3.446	3.543	3.642	3.744	3.848	3.954	4.063	4.174	4.289	4.406
130	4.525	4.647	4.772	4.900	5.031	5.165	5.302	5.442	5.585	5.732
140	5.881	6.034	6.190	6.350	6.513	6.680	6.850	7.024	7.202	7.384
150	7.569	7.759	7.952	8.150	8.351	8.557	8.767	8.981	9.200	9.424
160	9.652	9.885	10.12	10.36	10.61	10.86	11.12	11.38	11.65	11.92
170	12.20	12.48	12.77	13.07	13.37	13.67	13.98	14.30	14.62	14.96
180	15.29	15.63	15.98	16.34	16.70	17.07	17.44	17.82	18.21	18.61
190	10.01	19.42	19.84	20.27	20.70	21.14	21.50	22.05	22.52	22.99
200	23.47	23.96	24.46	24.97	25.48	26.00	26.53	27.07	27.62	28.18
210	28.75	29.33	29.92	30.52	31.13	31.75	32.38	33.02	33.67	34.33
220	35.00	35.68	36.37	37.07	37.78	38.50	39.24	39.99	40.75	41.52
230	42.31	43.11	43.92	44.74	45.57	46.41	47.37	48.14	49.03	49.93
240	50.84	51.76	52.70	53.65	54.62	55.60	56.60	57.61	58.63	59.67
250	60.72	61.79	62.88	63.98	65.10	66.23	67.38	68.54	69.72	70.92
260	72.13	74.36	74.61	75.88	77.17	78.46	79.78	81.11	82.46	83.83
270	85.22	86.63	88.06	89.51	90.97	92.45	93.96	95.49	97.03	98.61
280	100.2	101.8	103.4	105.0	106.7	108.4	110.1	111.8	113.6	115.4
290	117.2	119.0	120.8	122.7	124.6	126.5	128.4	130.4	132.4	134.4
300	136.4	138.5	140.6	142.7	144.8	147.0	149.2	151.4	153.6	155.9
310	158.2	160.5	162.8	165.2	167.6	170.0	172.5	175.0	177.5	180.0
320	182.6	185.2	187.8	190.4	193.1	195.8	198.5	201.3	204.1	206.9
330	209.8	212.7	215.6	218.6	221.6	224.6	227.7	230.8	233.9	237.1
340	240.3	243.5	246.8	250.1	253.4	256.7	260.1	263.6	267.1	270.6
350	274.1	277.7	281.3	284.9	288.6	292.3	296.1	299.9	303.8	307.7
360	311.6	315.5	319.5	323.5	327.6	331.7	335.9	340.1	344.4	348.7
370	353.0	357.4	361.8	366.2	370.7	375.2	379.8	384.4	389.1	393.8
380	398.6	403.4	408.2	413.1	418.1	423.1	428.1	433.1	438.2	443.4
390	448.6	453.9	459.2	464.6	470.0	475.5	481.0	486.2	492.2	497.9
400	503.6	509.3	515.1	521.0	526.9	532.9	538.9	545.0	551.1	557.3

S.V.P. (Saturated H_2O vapor pressure wet bulb temperature—inches of mercury)

EXAMPLE CALCULATION SHEET
EPA METHODS 1, 2, 3A AND 4

FOR METHOD ______

CLIENT: King Co. Solid Waste Division LOCATION: Hobart, WA DATE: 2-14-94

RUN #: 2 LAB #: 5143 SITE LOCATION: Hobart Landfill - Inlet

Dry Gas Volume - Equation 5-1

Vm_{std} = 17.647°R/"Hg(constant)*volume sampled*Y_{factor}*(P_B + ΔH/13.6)/(460 + T_m)

= 17.647°R/"Hg* ______ ft^3* ______ *(______ "Hg + (______ "H_2O/13.6))/(460 + ___ °F)

= NA dscf

dscm = ______ dscf/35.31 ft^3/m^3 = NA dscm

Moisture - Equation 5-2 and 5-3

Vw_{std} = 0.04715 ft^3/g * ______ grams of H_2O collected in impingers = ______ scf

B_{ws} = (______ scf)/(______ scf + ______ dscf) = ______

% Moisture = 1.08 % = B_{ws} * 100 See Psychrometric Moisture Ex. Calc.

Molecular weight - Equation 3-2

+.16 * 14% CH_4 −14% CH_4

M_d = 0.440*(28.0 %CO_2) + 0.320*(2.6 %O_2) + 0.280*(100%- 28 %CO_2- 2.6 %O_2 (%CO + %N_2))

= 30.90 g/g-mole (dry)

M_s = M_d * (1-B_{ws}) + 18.0 * B_{ws} = 30.90 g/g-mole * (1 - 0.0108) + 18.0 g/g-mole * 0.0108

= 30.76 g/g-mole (wet) **F_o = (20.9- ______)%O_2/ ______ %CO_2 = NA**

Stack gas velocity and volumetric flow rate - Equation 2-9 and 2-10

V_s = 85.49 * Cp* $\sqrt{\Delta P * T_s / (M_s * P_s)}$

V_s = 85.49 * ______ *√(______ * ______ °R /(______ g/g-mole * ______ "Hg)
(____ °F + 460)°R (____ PB+ ____ Ps/13.6)

V_s = ______ ft/sec (std) Vs = 954.0 ft/min measured by a Kurz anemometer

Q_{sd} = 3600 sec/hr * (1 - B_{ws}) * V_s * A_s * (T_{std}/T_s) * (P_s / P_{std}) / 60 min/hr

Q_{sd} = ~~3600~~ * (1 - .0108) * 954.0 ft/~~sec~~ min * 0.180 ft^2 * (528° R/ 528 ° R) * (29.78"Hg / 29.92"Hg) / ~~60~~

= 169.4 dscf/min (dry standard cubic feet per minute)

acfm = 954.0 ft/~~sec~~ min * .180 ft^2* ~~60 sec~~/min

= 172.0 acfm (actual cubic feet per minute)

Isokinetic variation - Equation 5-8

I = 0.09450 * Vm_{std} * T_s ÷ [P_s * V_s * sample time * A_n *(1 -B_{ws})]

I = 0.09450 * ______ dscf * ______ °R/[______ "Hg * ______ ft/sec * ______ min * ______ ft^2 *(1 - ______)]
(____ Ndia/12/2)^2*Pi

I = ______ %

All of the above numbered equations are from the 40 CFR 60 and assume English units.

[cbh\c:\word\b-plate\M4.doc]

EXAMPLE CALCULATION OF TO-14 RESULTS

Client: King County Solid Waste
Location: Hobart Land fill - Hobart
Site Location: Canister #2

Date: 2-14-94
Lab #: CK-0721-2
Run #: 2

EXAMPLE COMPOUND: Benzene

EMISSION RATE (mg/min)

$$\frac{mg}{min} = \frac{ug}{m3} \times \frac{m3}{35.31\ ft3} \times \frac{dscf}{min} \times \frac{1\ mg}{1000\ ug}$$

Inlet $= \frac{1000\ ug}{m3} \times \frac{m3}{35.31\ ft3} \times \frac{169.4\ dscf}{min} \times \frac{1\ mg}{1000\ ug}$

$= 4.80\ \frac{mg}{min}$

REMOVAL ~~DESTRUCTION~~ EFFICIENCY

$$DE = \frac{\text{Average Inlet Rate - Average Outlet Rate}}{\text{Average Inlet Rate}} \times 100\%$$

$$= \frac{3.82\ \frac{mg}{min} - 0.058\ \frac{mg}{min}}{3.82\ \frac{mg}{min}} \times 100\%$$

$= 98.48\ \%$

RETENTION TIME (seconds)

Length of Combustion Zone = _____ feet to test port
Area of Combustion Zone = _____ ft2
Average Airflow at Test Port = _____ acfm

$$\text{Seconds of Retention} = \frac{\text{Area X Length X 60 s/min}}{\text{Airflow}}$$

$$= \frac{\text{ft2 X ft X 60 s/min}}{\text{acfm}}$$

$= NA$ seconds @ _____ degrees F

[cbh:c:\excel\to14bh.xls]

APPENDIX D
Field Data Sheets

5142

METHOD 4 AND AIRFLOW SAMPLING DATA SHEET

Page ___ of ___
Flows 123

Client King County
Location Hobart Landfill
Sample Site Carbon Ban #2 inlet
Stack Diameter 5.75
Date 2/14/94
Operators Eric KSM
Run I.D R-1 iNleT

EQUIPMENT CHECKS

Initial/Final

Leak Rate cfm ___/___
Leak Test Vacuum ___/___
___ Pitots, Pre Leak Ck
___ Pitots, Post Leak Ck
___ Gas Sampling System
___ Integrated Bag
___ Thermocouples @ ___ °F

QA FORMS COMPLETED

Stack Schematic ___
Sample Train ___
Pitot Tube Insp. ___
Magnehelic Cal. ___
Temp. Probe Cal. ___
Gas Meter Calib. ___

Filter # ___ Box # ___

	Final Wt. gram		Initial Wt. gram		Net Wt. gram
#1 Imp.		-		=	
#2 Imp.		-		=	
#3 Imp.		-		=	
#4 Imp.		-		=	
#5 Imp.		-		=	
#6 S.G.		-		=	

Total H_2O Volume ___ g

Start Time ~11:15
Stop Time Inlet Flows Runs 1 & 2
Barometric Pressure "Hg 29.58
Static Pres "H_2O +.280 +.280
Production Rate ___

SAMPLING PARAMETERS

% Moisture Dry 67 Wet 55
Meter Temp. ___
Stack Temp. 67
Δ H@ ___ Y ___
Meter Box ID ___
Pitot # ___ Side # ___
Thermocouple ID ___
Flow Meas. Device ___
Cp ___
K Factor ___

Sample Point	Elap Time Min.	Dry Gas Meter Reading Cu.Ft.	Orifice Setting (^H) "H_2O Actual	Gas Meter Temp °F In	Gas Meter Temp °F Out	Pump. Vac. Gauge " Hg	Imp. Exit Temp °F	Sample Point	Pitot Reading ^ P " H_2O (Apparent Fpm)	Stack Temp °F	
									345	67	
									488	67	
									648	67	
									645	67	

531.5

5143

METHOD 4 AND AIRFLOW SAMPLING DATA SHEET

Client KingCo
Location Hobart Landfill
Sample Site Carbon Bed #2 Inlet

Stack Diameter 5.75" d
Date 2/14/94
Operators KSM/ERL
Run I.D. 2 - Inlet 2

QA FORMS COMPLETED
Stack Schematic ___
Sample Train ___
Pitot Tube Insp. ___
Magnehelic Cal. ___
Temp. Probe Cal. ___
Gas Meter Calib. ___

Start Time Flows @ ~1230
Stop Time After Run 2 TO-14
Barometric Pressure "Hg 29.58
Static Pres $"H_2O$ +2.7
Production Rate ___

Filter # ___ Box # ___

EQUIPMENT CHECKS

Initial/Final
Leak Rate cfm ___/___
Leak Test Vacuum ___/___
___ Pitots, Pre Leak Ck
___ Pitots, Post Leak Ck
___ Gas Sampling System
___ Integrated Bag
___ Thermocouples @ ___ °F

	Final Wt. gram	Initial Wt. gram		Net Wt. gram
#1 Imp.	Dry Bulb	= 68	=	
#2 Imp.	Wet Bulb	= 56	=	
#3 Imp.		-	=	
#4 Imp.		-	=	
#5 Imp.		-	=	
#6 S.G.		-	=	

Total H_2O Volume ___ g

SAMPLING PARAMETERS

% Moisture ___
Meter Temp. ___
Stack Temp. ___
Δ H@ ___ Y ___
Meter Box ID ___
Pitot # ___ Side # ___
Thermocouple ID ___
Flow Meas. Device ___
Cp ___
K Factor ___ Anemometer

Sample Point	Elap Time Min.	Dry Gas Meter Reading Cu.Ft.	Orifice Setting (^H) $"H_2O$ Actual	Gas Meter Temp °F In	Gas Meter Temp °F Out	Pump. Vac. Gauge " Hg	Imp. Exit Temp °F	Sample Point	FPM ~~Pitot Reading ^P " H_2O~~	Stack Temp °F	
								Tip 1	960	68	
								2	987	68	
								3	932	68	
								4	937	68	
									954.0		

8144

125

METHOD 4 AND AIRFLOW SAMPLING DATA SHEET

Client King Co.
Location Hobbs Landfill
Sample Site Carbon Bed #2 Inlet

Stack Diameter 5.75" Ø
Date 2/14/94
Operators KSH/ERC
Run I.D. 3 Bed 2 Inlet

EQUIPMENT CHECKS

Initial/Final
Leak Rate cfm ____/____
Leak Test Vacuum ____/____
____ Pitots, Pre Leak Ck
____ Pitots, Post Leak Ck
____ Gas Sampling System
____ Integrated Bag
____ Thermocouples @ ____ °F

QA FORMS COMPLETED
Stack Schematic ___
Sample Train ___
Pitot Tube Insp. ___
Magnehelic Cal. ___
Temp. Probe Cal. ___
Gas Meter Calib. ___

Filter # ____ Box # ____

	Final Wt. gram	Initial Wt. gram	Net Wt. gram
#1 Imp.	Dry Bulb = 67°F		
#2 Imp.	Wet Bulb = 54°F		
#3 Imp.	-	=	
#4 Imp.	-	=	
#5 Imp.	-	=	
#6 S.G.	-	=	

Total H_2O Volume ____ g

Start Time ~13:45
Stop Time After Run 3 TO-14
Barometric Pressure "Hg 29.58
Static Pres "H_2O +3.0
Production Rate ____

SAMPLING PARAMETERS

% Moisture ____
Meter Temp. ____
Stack Temp. ____
Δ H@ ____ Y ____
Meter Box ID ____
Pitot # ____ Side # ____
Thermocouple ID ____
Flow Meas. Device ____
Cp ____
K Factor ____

Sample Point	Elap Time Min.	Dry Gas Meter Reading Cu.Ft.	Orifice Setting (^H) "H_2O Actual	Gas Meter Temp °F In	Gas Meter Temp °F Out	Pump. Vac. Gauge " Hg	Imp. Exit Temp °F	Sample Point	~~Pitot Reading ^P " H_2O~~ Anemometer FPM	Stack Temp °F
								~~Top 1~~	~~[illegible]~~	~~67~~
								~~2~~	~~[illegible]~~	~~67~~
								~~3~~	~~465~~	~~67~~
								~~4~~	~~469~~	~~67~~
								Top 1	749	67
								2	797	67
								3	845	67
								4	859	67
									812.5	

5145

METHOD 4 AND AIRFLOW SAMPLING DATA SHEET

Client King County
Location Hobart Landfill
Sample Site Carbon Bed #2 Outlet
Stack Diameter 30"
Date 2/14/94
Operators USNERL
Run ID R-1 Outlet

QA FORMS COMPLETED
Stack Schematic ___
Sample Train ___
Pitot Tube Insp. ___
Magnehelic Cal. ___
Temp. Probe Cal. ___
Gas Meter Calib. ___

Start Time Flows @ 11:15 / 1126
Stop Time In Between Runs 1 & 2
Barometric Pressure "Hg 29.58
Static Pres "H_2O +.150
Production Rate ___

Filter # ___ Box # ___

EQUIPMENT CHECKS

	Initial/Final
Leak Rate cfm	___ / ___
Leak Test Vacuum	___ / ___
___ Pitots, Pre Leak Ck	
___ Pitots, Post Leak Ck	
___ Gas Sampling System	
___ Integrated Bag	
___ Thermocouples @ ___ °F	

	Final Wt. gram	Initial Wt. gram	Net Wt. gram
#1 Imp.			
#2 Imp.			
#3 Imp.			
#4 Imp.			
#5 Imp.			
#6 S.G.			

Total H_2O Volume ___ g

SAMPLING PARAMETERS

% Moisture D52-W49
Meter Temp ___
Stack Temp. 52
△ H@ ___ Y ___
Meter Box ID ___
Pitot # ___ Side # ___
Thermocouple ID ___
Flow Meas. Device ___
Cp ___
K Factor ___

Sample Point	Elap Time Min.	Dry Gas Meter Reading Cu.Ft.	Orifice Setting (^H) "H_2O Actual	Gas Meter Temp °F In	Gas Meter Temp °F Out	Pump. Vac. Gauge " Hg	Imp. Exit Temp °F	Sample Point	Anemometer FPM Reading ^ P " H_2O	Stack Temp °F	
									1690	52	
									1793	52	
									1851	52	
									1674	52	
									1752.0		

METHOD 4 AND AIRFLOW SAMPLING DATA SHEET

5144 Flows @ 127

Client King Co.
Location Hobart Landfill
Sample Site Carbon Bed #2 Outlet

Stack Diameter 3" ϕ
Date 2/14/94
Operators KSH/ERL
Run I.D. 2 – Outlet 2

QA FORMS COMPLETED
Stack Schematic ___
Sample Train ___
Pitot Tube Insp. ___
Magnehelic Cal. ___
Temp. Probe Cal. ___
Gas Meter Calib. ___

Start Time ~12:30 After Run 2
Stop Time ______ TV-14
Barometric Pressure "Hg 29.58
Static Pres "H_2O +.10
Production Rate ______

Filter # ______ Box # ______

EQUIPMENT CHECKS

	Initial/Final
Leak Rate cfm	___/___
Leak Test Vacuum	___/___
___ Pitots, Pre Leak Ck	
___ Pitots, Post Leak Ck	
___ Gas Sampling System	
___ Integrated Bag	
___ Thermocouples @ ___ °F	

	Final Wt. gram	Initial Wt. gram	Net Wt. gram
#1 Imp.	Dry Bulb = 57°F		
#2 Imp.	Wet Bulb = 51°F		
#3 Imp.	___ -	___ =	___
#4 Imp.	___ -	___ =	___
#5 Imp.	___ -	___ =	___
#6 S.G.	___ -	___ =	___

Total H_2O Volume ______ g

SAMPLING PARAMETERS

% Moisture ______
Meter Temp. ______
Stack Temp. ______
△ H@ ______ Y ______
Meter Box ID ______
Pitot # ______ Side # ______
Thermocouple ID ______
Flow Meas. Device ______
Cp ______
K Factor ______

Sample Point	Elap Time Min.	Dry Gas Meter Reading Cu.Ft.	Orifice Setting (^H) "H_2O Actual	Gas Meter Temp °F In	Gas Meter Temp °F Out	Pump. Vac. Gauge " Hg	Imp. Exit Temp °F	Sample Point	Aenomometer FPM ~~Pitot Reading ^P " H_2O~~	Stack Temp °F	
								Center	1821	57°F	
								Center	1826	57°F	
								Center	1986	57°F	
								Center	1961	57°F	
									1898.5		

METHOD 4 AND AIRFLOW SAMPLING DATA SHEET

5147

128

Client King Co. Hobart Landfill
Location
Sample Site Carbon Bed #2 Outlet

Stack Diameter 3" Φ
Date 2/14/94
Operators KSM
Run I.D. 3 — Bed 2 Only

EQUIPMENT CHECKS

	Initial/Final
Leak Rate cfm	/
Leak Test Vacuum	/
____ Pitots, Pre Leak Ck	
____ Pitots, Post Leak Ck	
____ Gas Sampling System	
____ Integrated Bag	
____ Thermocouples @ ____ °F	

QA FORMS COMPLETED
Stack Schematic ____
Sample Train ____
Pitot Tube Insp. ____
Magnehelic Cal. ____
Temp. Probe Cal. ____
Gas Meter Calib. ____

Filter # ____ Box # ____

	Final Wt. gram	Initial Wt. gram	Net Wt. gram
#1 Imp.	Dry Bulb = 54°F		
#2 Imp.	Wet Bulb = 52°F		
#3 Imp.	-		=
#4 Imp.	-		=
#5 Imp.	-		=
#6 S.G.	-		=

Total H_2O Volume ____ g

Start Time ~1345
Stop Time After Run 3 - Bed 2 only
Barometric Pressure "Hg 29.58
Static Pres "H_2O +0.10
Production Rate

SAMPLING PARAMETERS

% Moisture
Meter Temp.
Stack Temp.
Δ H@ ____ Y ____
Meter Box ID
Pitot # ____ Side # ____
Thermocouple ID
Flow Meas. Device
Cp
K Factor

Sample Point	Elap Time Min.	Dry Gas Meter Reading Cu.Ft.	Orifice Setting (^H) "H_2O Actual	Gas Meter Temp °F In	Gas Meter Temp °F Out	Pump. Vac. Gauge " Hg	Imp. Exit Temp °F	Sample Point	~~Pitot Reading ^P " H_2O~~ Anemometer FPM	Stack Temp °F
								~~Center~~	~~[illegible]~~	
								~~[illegible]~~	~~2800~~	
								~~[illegible]~~		
								~~[illegible]~~		
								Center	2770	59
								Center	2840	59
								Center	2380	59
								Center	2650	59

2660

CANISTER SAMPLING FIELD DATA SHEET

#2 R-1 Inlet

A. GENERAL INFORMATION

SITE LOCATION: CARBON BED INlet #2
SITE ADDRESS: HOBART CAMPUS
SAMPLING DATE: 2-14-94

SHIPPING DATE:
CANISTER SERIAL NO. [redacted]455 / 5142
SAMPLER ID:
OPERATOR: KSM/ERL
CANISTER LEAK CHECK DATE:

B. SAMPLING INFORMATION

TEMPERATURE

	INTERIOR	AMBIENT	MAXIMUM	MINIMUM
START	62	47	X	X
STOP	62	47		

PRESSURE

CANISTER PRESSURE	
	-30.0
X	0

SAMPLING TIMES

	LOCAL TIME	ELAPSED TIME METER READING
START	1025	
STOP	10:55	

FLOW RATES

MANIFOLD FLOW RATE	CANISTER FLOW RATE	FLOW CONTROLLER READOUT

SAMPLING SYSTEM CERTIFICATION DATE:
QUARTERLY RECERTIFICATION DATE:

C. LABORATORY INFORMATION

DATE RECEIVED:
RECEIVED BY:
INITIAL PRESSURE:
FINAL PRESSURE:
DILUTION FACTOR:
ANALYSIS
GC-FID-ECD DATE:
GC-MSD-SCAN DATE:
GC-MSD-SIM DATE:
RESULTS :

GC-FID-ECD:
GC-MSD-SCAN:
GC-MSD-SIM:

SIGNATURE/TITLE

CANISTER SAMPLING FIELD DATA SHEET

Bed # 2 Run 2 Inlet

A. GENERAL INFORMATION

SITE LOCATION: #2 CARBON BED INlet
SITE ADDRESS: HoBART (King County)
SAMPLING DATE: 2-14-94
SHIPPING DATE:
CANISTER SERIAL NO. 301 /5143
SAMPLER ID:
OPERATOR: Ecc KSM
CANISTER LEAK CHECK DATE:

B. SAMPLING INFORMATION

TEMPERATURE

	INTERIOR	AMBIENT	MAXIMUM	MINIMUM
START	58	44	X	X
STOP	58	46		

PRESSURE

CANISTER PRESSURE	
	30
X	0

SAMPLING TIMES

	LOCAL TIME	ELAPSED TIME METER READING
START	1145	
STOP	1215	

FLOW RATES

MANIFOLD FLOW RATE	CANISTER FLOW RATE	FLOW CONTROLLER READOUT

SAMPLING SYSTEM CERTIFICATION DATE:
QUARTERLY RECERTIFICATION DATE:

C. LABORATORY INFORMATION

DATE RECEIVED:
RECEIVED BY:
INITIAL PRESSURE:
FINAL PRESSURE:
DILUTION FACTOR:
ANALYSIS
GC-FID-ECD DATE:
GC-MSD-SCAN DATE:
GC-MSD-SIM DATE:
RESULTS:
GC-FID-ECD:
GC-MSD-SCAN:
GC-MSD-SIM:

SIGNATURE/TITLE

131
Run 3 Inlet

CANISTER SAMPLING FIELD DATA SHEET

Bed #2 Run 3 Inlet
(Bed #2 Run 3 Inlet)

A. GENERAL INFORMATION

SITE LOCATION: Hobart Landfill
SITE ADDRESS: Carbon Bed 2 Inlet
SAMPLING DATE: 2/14/94

SHIPPING DATE:
CANISTER SERIAL NO. #653 / 5144
SAMPLER ID:
OPERATOR: Kemler
CANISTER LEAK CHECK DATE:

B. SAMPLING INFORMATION

TEMPERATURE

	INTERIOR	AMBIENT	MAXIMUM	MINIMUM
START	63	47	X	X
STOP	63	47		

PRESSURE

CANISTER PRESSURE	
	30.0"
X	Ø

SAMPLING TIMES

	LOCAL TIME	ELAPSED TIME METER READING
START	12:32	
STOP	13:32	

FLOW RATES

MANIFOLD FLOW RATE	CANISTER FLOW RATE	FLOW CONTROLLER READOUT

SAMPLING SYSTEM CERTIFICATION DATE:
QUARTERLY RECERTIFICATION DATE:

C. LABORATORY INFORMATION

DATE RECEIVED:
RECEIVED BY:
INITIAL PRESSURE:
FINAL PRESSURE:
DILUTION FACTOR:
ANALYSIS
GC-FID-ECD DATE:
GC-MSD-SCAN DATE:
GC-MSD-SIM DATE:
RESULTS :

GC-FID-ECD:
GC-MSD-SCAN:
GC-MSD-SIM:

SIGNATURE/TITLE

CANISTER SAMPLING FIELD DATA SHEET

#2 R-1 Outlet

A. GENERAL INFORMATION

SITE LOCATION: CARBON Bed outlet #2
SITE ADDRESS: Hobart Laundromat
SAMPLING DATE: 2-14-94

SHIPPING DATE:
CANISTER SERIAL NO. A 630 / 5145
SAMPLER ID:
OPERATOR: KSM/ERL
CANISTER LEAK CHECK DATE:

B. SAMPLING INFORMATION

TEMPERATURE

	INTERIOR	AMBIENT	MAXIMUM	MINIMUM
START	49	47	X	X
STOP	46	47		

PRESSURE

CANISTER PRESSURE	
	-30.0 "Hg
X	0

SAMPLING TIMES

	LOCAL TIME	ELAPSED TIME METER READING
START	1025	
STOP	1055	

FLOW RATES

MANIFOLD FLOW RATE	CANISTER FLOW RATE	FLOW CONTROLLER READOUT

SAMPLING SYSTEM CERTIFICATION DATE:
QUARTERLY RECERTIFICATION DATE:

C. LABORATORY INFORMATION

DATE RECEIVED:
RECEIVED BY:
INITIAL PRESSURE:
FINAL PRESSURE:
DILUTION FACTOR:
ANALYSIS
- GC-FID-ECD DATE:
- GC-MSD-SCAN DATE:
- GC-MSD-SIM DATE:

RESULTS:
- GC-FID-ECD:
- GC-MSD-SCAN:
- GC-MSD-SIM:

SIGNATURE/TITLE

CANISTER SAMPLING FIELD DATA SHEET

Bed #2 Run 2 Outlet

A. GENERAL INFORMATION

SITE LOCATION: #2 CARBON BED outlet
SITE ADDRESS: HOBART King County
SAMPLING DATE: 2-14-97
SHIPPING DATE:
CANISTER SERIAL NO. 126 / 5746
SAMPLER ID:
OPERATOR: BAL ICSM
CANISTER LEAK CHECK DATE:

B. SAMPLING INFORMATION

TEMPERATURE

	INTERIOR	AMBIENT	MAXIMUM	MINIMUM
START	55	46		
STOP	55	46		

PRESSURE

CANISTER PRESSURE	
30	30
	0

SAMPLING TIMES

	LOCAL TIME	ELAPSED TIME METER READING
START	1145	
STOP	1215	

FLOW RATES

MANIFOLD FLOW RATE	CANISTER FLOW RATE	FLOW CONTROLLER READOUT

SAMPLING SYSTEM CERTIFICATION DATE:
QUARTERLY RECERTIFICATION DATE:

C. LABORATORY INFORMATION

DATE RECEIVED:
RECEIVED BY:
INITIAL PRESSURE:
FINAL PRESSURE:
DILUTION FACTOR:
ANALYSIS
GC-FID-ECD DATE:
GC-MSD-SCAN DATE:
GC-MSD-SIM DATE:
'RESULTS':
GC-FID-ECD:
GC-MSD-SCAN:
GC-MSD-SIM:

SIGNATURE/TITLE

(Bed 2 Run 3 Inlet)
Bed #2 Run 3 Outlet

CANISTER SAMPLING FIELD DATA SHEET

A. GENERAL INFORMATION

SITE LOCATION: Hilbert Landfill
SITE ADDRESS: Carbon Bed 2 Outlet

SAMPLING DATE: 2/4/04

SHIPPING DATE:
CANISTER SERIAL NO. #647 / 5147
SAMPLER ID:
OPERATOR: USM/ERG
CANISTER LEAK CHECK DATE:

B. SAMPLING INFORMATION

TEMPERATURE

	INTERIOR	AMBIENT	MAXIMUM	MINIMUM
START	57	47		
STOP	57	47		

PRESSURE

CANISTER PRESSURE	
	30.04
	0

SAMPLING TIMES

	LOCAL TIME	ELAPSED TIME METER READING
START	12:52	
STOP	13:22	

FLOW RATES

MANIFOLD FLOW RATE	CANISTER FLOW RATE	FLOW CONTROLLER READOUT

SAMPLING SYSTEM CERTIFICATION DATE:
QUARTERLY RECERTIFICATION DATE:

C. LABORATORY INFORMATION

DATE RECEIVED:
RECEIVED BY:
INITIAL PRESSURE:
FINAL PRESSURE:
DILUTION FACTOR:
ANALYSIS
GC-FID-ECD DATE:
GC-MSD-SCAN DATE:
GC-MSD-SIM DATE:
RESULTS:

GC-FID-ECD:
GC-MSD-SCAN:
GC-MSD-SIM:

SIGNATURE/TITLE

#3 R-1

METHOD 4 AND AIRFLOW SAMPLING DATA SHEET

5148

Flow 135

Client King County Landfill
Location Hobart
Sample Site INlet #3 (Carbon Absorber #3)
Stack Diameter 5.75" ⌀
Date 2/14/93
Operators HSW/ERL
Run I.D. Run 1 – Inlet 3

EQUIPMENT CHECKS

Initial/Final
Leak Rate cfm ____/____
Leak Test Vacuum ____/____
____ Pitots, Pre Leak Ck
____ Pitots, Post Leak Ck
____ Gas Sampling System
____ Integrated Bag
____ Thermocouples @ ____ °F

QA FORMS COMPLETED
Stack Schematic ___
Sample Train ___
Pitot Tube Insp. ___
Magnehelic Cal. ___
Temp. Probe Cal. ___
Gas Meter Calib. ___

Filter # ______ Box # ______

moisture →

	Final Wt. gram	Initial Wt. gram	Net Wt. gram
#1 Imp.	Dry Bulb = 60		=
#2 Imp.	Wet Bulb = 54		=
#3 Imp.			=
#4 Imp.			=
#5 Imp.			=
#6 S.G.			=

Total H_2O Volume ______ g

Start Time ~10:45 Just Before
Stop Time TO-14 Run
Barometric Pressure "Hg 29.58
Static Pres "H_2O +2.9
Production Rate
~~[illegible]~~

SAMPLING PARAMETERS

% Moisture N/A
Meter Temp. N/A
Stack Temp. N/A
Δ H@ N/A Y N/A
Meter Box ID N/A
Pitot # N/A Side # N/A
Thermocouple ID Anen.
Flow Meas. Device Anenometer
Cp N/A
K Factor ______

Sample Point	Elap Time Min.	Dry Gas Meter Reading Cu.Ft.	Orifice Setting (^H) "H_2O Actual	Gas Meter Temp °F In	Gas Meter Temp °F Out	Pump. Vac. Gauge " Hg	Imp. Exit Temp °F	Sample Point	~~Pitot~~ Anemometer Reading ^ P " H_2O ft/min	Stack Temp °F	
					Used Hot Wire Anenometer				~~1735 fpm~~	~~62°F~~	
									~~555~~		
									~~1765 fpm~~		
							~~Single Pt~~				
							~~Avg vel.~~				
								Vert 1	576	62°F	
								2	384	62	
								3	455	62	
								4	506	62	
									480.3		

UMB

METHOD 4 AND AIRFLOW SAMPLING DATA SHEET

5149 136

Client King County
Location Hobart Landfill
Sample Site Carbon Bed #3 Inlet

Stack Diameter 5.75" Ø
Date 2/14/94
Operators RSM
Run I.D. Run 2 - Inlet 3

EQUIPMENT CHECKS

Initial/Final
Leak Rate cfm ____/____
Leak Test Vacuum ____/____
____ Pitots, Pre Leak Ck
____ Pitots, Post Leak Ck
____ Gas Sampling System
____ Integrated Bag
____ Thermocouples @ ____ °F

QA FORMS COMPLETED
Stack Schematic ___
Sample Train ___
Pitot Tube Insp. ___
Magnehelic Cal. ___
Temp. Probe Cal. ___
Gas Meter Calib. ___

Filter # ______ Box # ______

	Final Wt. gram	Initial Wt. gram		Net Wt. gram
#1 Imp.	Dry Bulb = 58°F			
#2 Imp.	Wet Bulb = 53°F			
#3 Imp.		-	=	
#4 Imp.		-	=	
#5 Imp.		-	=	
#6 S.G.		-	=	

Total H_2O Volume ______ g

Start Time ~11:55
Stop Time Between Runs 1 & 2
Barometric Pressure "Hg 29.58
Static Pres "H_2O +3.0
Production Rate ______

SAMPLING PARAMETERS

% Moisture ______
Meter Temp. ______
Stack Temp. ______
△ H@ ______ Y ______
Meter Box ID ______
Pitot # ______ Side # ______
Thermocouple ID ______
Flow Meas. Device ______
Cp ______
K Factor ______

Sample Point	Elap Time Min.	Dry Gas Meter Reading Cu.Ft.	Orifice Setting (^H) "H_2O Actual	Gas Meter Temp °F In	Gas Meter Temp °F Out	Pump. Vac. Gauge " Hg	Imp. Exit Temp °F	Sample Point	~~Pitot Reading ^P "H_2O~~ Anemometer Reading (fpm)	Stack Temp °F	
								Top 1	521	58 °F	
								2	622	58	
								3	638	58	
								4	729	52	
									627.5	56.5	

METHOD 4 AND AIRFLOW SAMPLING DATA SHEET

5150

137

Client King Co.
Location Hobart Landfill
Sample Site Carbon Bed 3 Inlet

Stack Diameter 5.75" Ø
Date 2/14/94
Operators KSM
Run I.D. Run 3 Bed 3 Inlet

EQUIPMENT CHECKS

	Initial/Final
Leak Rate cfm	____/____
Leak Test Vacuum	____/____

____ Pitots, Pre Leak Ck
____ Pitots, Post Leak Ck
____ Gas Sampling System
____ Integrated Bag
____ Thermocouples @ ____ °F

QA FORMS COMPLETED
Stack Schematic ___
Sample Train ___
Pitot Tube Insp. ___
Magnehelic Cal. ___
Temp. Probe Cal. ___
Gas Meter Calib. ___

Filter # ______ Box # ______

	Final Wt. gram	Initial Wt. gram	Net Wt. gram
#1 Imp.	Dry Bulb = 63		=
#2 Imp.	Wet Bulb = 54		=
#3 Imp.	-		=
#4 Imp.	-		=
#5 Imp.	-		=
#6 S.G.	-		=

Total H_2O Volume ______ g

Start Time ~13:05
Stop Time Between Runs 2 & 3 TW14
Barometric Pressure "Hg 29.58
Static Pres "H_2O +3.2
Production Rate ______

SAMPLING PARAMETERS

% Moisture ______
Meter Temp. ______
Stack Temp. ______
△ H@ ______ Y ______
Meter Box ID ______
Pitot # ______ Side # ______
Thermocouple ID ______
Flow Meas. Device ______
Cp ______
K Factor ______

Sample Point	Elap Time Min.	Dry Gas Meter Reading Cu.Ft.	Orifice Setting (^H) "H_2O Actual	Gas Meter Temp °F In	Gas Meter Temp °F Out	Pump. Vac. Gauge " Hg	Imp. Exit Temp °F	Sample Point	~~Pitot Reading ^P " H_2O~~ Anemometer FPM	Stack Temp °F	
								Top 1	485	63	
								2	507	63	
								3	607	63	
								4	622	63	
			____ △H	____ T					555.3 $(\Delta P)^{1/2}$	____ T	

#3 R-1

5151

METHOD 4 AND AIRFLOW SAMPLING DATA SHEET

138

Client King County Landfill
Location Hidden Landfill
Sample Site Outlet #3 (Carbon Absorber #3)
Stack Diameter 3.0" I.D.
Date 2/14/03
Operators
Run I.D. Run 1 - Outlet 3

EQUIPMENT CHECKS

Initial/Final
Leak Rate cfm ____/____
Leak Test Vacuum ____/____
____ Pitots, Pre Leak Ck
____ Pitots, Post Leak Ck
____ Gas Sampling System
____ Integrated Bag
____ Thermocouples @ ____ °F

QA FORMS COMPLETED

Stack Schematic ___
Sample Train ___
Pitot Tube Insp. ___
Magnehelic Cal. ___
Temp. Probe Cal. ___
Gas Meter Calib. ___

Filter # ______ Box # ______

	Final Wt. gram	Initial Wt. gram	Net Wt. gram
#1 Imp.	Dry Bulb	48°F	
#2 Imp.	Wet Bulb	48°F	
#3 Imp.	-	=	
#4 Imp.	-	=	
#5 Imp.	-	=	
#6 S.G.	-	=	

Total H_2O Volume ______ g

Start Time Flows
Stop Time ~10:45 Just Before TO-14 Run
Barometric Pressure "Hg 29.58
Static Pres "H_2O +.12
Production Rate

SAMPLING PARAMETERS

% Moisture
Meter Temp.
Stack Temp.
△ H@ Y
Meter Box ID
Pitot # Side #
Thermocouple ID
Flow Meas. Device
Cp
K Factor

Sample Point	Elap Time Min.	Dry Gas Meter Reading Cu.Ft.	Orifice Setting (^H) "H_2O Actual	Gas Meter Temp °F In	Gas Meter Temp °F Out	Pump. Vac. Gauge " Hg	Imp. Exit Temp °F	Sample Point	SFPM (~~Pitot Reading ^P "H_2O~~)	Stack Temp °F
				Used Hot Wire Manometer				Center	1732	49°F
									1555	
									1703	
									1582	

King Co Kurz Model 1440-5
(Dual Range 0-12K/0-2000) S/N PCE 6178-I
0-2000 SFPM range Calibrated 6/23/93 by Kurz Instruments, Inc

1643.0

METHOD 4 AND AIRFLOW SAMPLING DATA SHEET

5152

139

Client King County
Location Hobart Landfill
Sample Site Carbon Bed #3 Outlet

Stack Diameter 3" Φ
Date 2/14/94
Operators HSM
Run I.D. Run 2 Outlet 3

EQUIPMENT CHECKS

Initial/Final
Leak Rate cfm ____/____
Leak Test Vacuum ____/____
____ Pitots, Pre Leak Ck
____ Pitots, Post Leak Ck
____ Gas Sampling System
____ Integrated Bag
____ Thermocouples @ ____ °F

QA FORMS COMPLETED
Stack Schematic ___
Sample Train ___
Pitot Tube Insp. ___
Magnehelic Cal. ___
Temp. Probe Cal. ___
Gas Meter Calib. ___

Filter # ____ Box # ____

	Final Wt. gram	Initial Wt. gram	Net Wt. gram
#1 Imp.	Dry Bulb = 55 °F		
#2 Imp.	Wet Bulb = 48 °F		
#3 Imp.	-		=
#4 Imp.	-		=
#5 Imp.	-		=
#6 S.G.	-		=

Total H_2O Volume ____ g

Start Time ~11:55
Stop Time In Between Run 1 & 2
Barometric Pressure "Hg 29.58
Static Pres "H_2O +0.10
Production Rate ____

SAMPLING PARAMETERS

% Moisture ____
Meter Temp. ____
Stack Temp. ____
Δ H@ ____ Y ____
Meter Box ID ____
Pitot # ____ Side # ____
Thermocouple ID ____
Flow Meas. Device ____
Cp ____
K Factor ____

Sample Point	Elap Time Min.	Dry Gas Meter Reading Cu.Ft.	Orifice Setting (ΔH) "H_2O Actual	Gas Meter Temp °F In	Gas Meter Temp °F Out	Pump. Vac. Gauge " Hg	Imp. Exit Temp °F	Sample Point	~~Pitot~~ Anemometer Reading ~~ΔP " H_2O~~	Stack Temp °F
								Center	1777	55
								Center	1863	55
								Center	1942	55
								Center	1963	55
									1884.8	

METHOD 4 AND AIRFLOW SAMPLING DATA SHEET Page ___ of 140

5153

Client King Co
Location Hobart Landfill
Sample Site Carbon Bed 3 Outlet
Stack Diameter 3"ϕ
Date 2/14/04
Operators KSA
Run I.D. Run 3 Bed 3 Outlet

EQUIPMENT CHECKS

	Initial/Final
Leak Rate cfm	___/___
Leak Test Vacuum	___/___
___ Pitots, Pre Leak Ck	
___ Pitots, Post Leak Ck	
___ Gas Sampling System	
___ Integrated Bag	
___ Thermocouples @ ___ °F	

QA FORMS COMPLETED

Stack Schematic ___
Sample Train ___
Pitot Tube Insp. ___
Magnehelic Cal. ___
Temp. Probe Cal. ___
Gas Meter Calib. ___

Filter # _____ Box # _____

	Final Wt. gram	Initial Wt. gram	Net Wt. gram
#1 Imp.	Dry Bulb = 57°F		
#2 Imp.	Wet Bulb = 51°F		
#3 Imp.			
#4 Imp.			
#5 Imp.			
#6 S.G.			
Total H_2O Volume			g

Start Time 2:13:05
Stop Time Between Runs 2 & 3 To 4
Barometric Pressure "Hg 29.58
Static Pres "H_2O +.10
Production Rate _____

SAMPLING PARAMETERS

% Moisture _____
Meter Temp. _____
Stack Temp. _____
△ H@ _____ Y _____
Meter Box ID _____
Pitot # _____ Side # _____
Thermocouple ID _____
Flow Meas. Device _____
Cp _____
K Factor _____

Anemometer FPM

Sample Point	Elap Time Min.	Dry Gas Meter Reading Cu.Ft.	Orifice Setting (^H) "H_2O Actual	Gas Meter Temp °F In	Gas Meter Temp °F Out	Pump. Vac. Gauge " Hg	Imp. Exit Temp °F	Sample Point	Pitot Reading ^P " H_2O	Stack Temp °F	
								Center	1775	57	
								Center	1786	57	
								Center	1664	57	
								Center	1999	57	
									1793.5		

___ △ H ___ T

CANISTER SAMPLING FIELD DATA SHEET

Bed #3 R-1 INLET

A. GENERAL INFORMATION

SITE LOCATION: CARBON BED INLET #3
SITE ADDRESS: HOBART WA
KING Co.
SAMPLING DATE: 2-14-97

SHIPPING DATE:
CANISTER SERIAL NO. 638 / 5148
SAMPLER ID:
OPERATOR: PAL KSM
CANISTER LEAK CHECK DATE:

B. SAMPLING INFORMATION

TEMPERATURE

	INTERIOR	AMBIENT	MAXIMUM	MINIMUM
START	67	46		
STOP	67	46		

PRESSURE

CANISTER PRESSURE	
	30"
	0

SAMPLING TIMES

	LOCAL TIME	ELAPSED TIME METER READING
START	1107	
STOP	1137	

FLOW RATES

MANIFOLD FLOW RATE	CANISTER FLOW RATE	FLOW CONTROLLER READOUT

SAMPLING SYSTEM CERTIFICATION DATE:
QUARTERLY RECERTIFICATION DATE:

C. LABORATORY INFORMATION

DATE RECEIVED:
RECEIVED BY:
INITIAL PRESSURE:
FINAL PRESSURE:
DILUTION FACTOR:
ANALYSIS
GC-FID-ECD DATE:
GC-MSD-SCAN DATE:
GC-MSD-SIM DATE:
RESULTS:

GC-FID-ECD:
GC-MSD-SCAN:
GC-MSD-SIM:

SIGNATURE/TITLE

CANISTER SAMPLING FIELD DATA SHEET R-2

A. GENERAL INFORMATION

SITE LOCATION: CARBON BED #3 INLET
SITE ADDRESS: HOBART King County
SAMPLING DATE: 2-14-94

SHIPPING DATE:
CANISTER SERIAL NO. 618 / 5149
SAMPLER ID:
OPERATOR: FJL / KSM
CANISTER LEAK CHECK DATE:

B. SAMPLING INFORMATION

TEMPERATURE

	INTERIOR	AMBIENT	MAXIMUM	MINIMUM
START	68	47	X	X
STOP	68	47		

PRESSURE

CANISTER PRESSURE	
	30
X	0

SAMPLING TIMES

	LOCAL TIME	ELAPSED TIME METER READING
START	1218	
STOP	1248	

FLOW RATES

MANIFOLD FLOW RATE	CANISTER FLOW RATE	FLOW CONTROLLER READOUT

SAMPLING SYSTEM CERTIFICATION DATE:
QUARTERLY RECERTIFICATION DATE:

C. LABORATORY INFORMATION

DATE RECEIVED:
RECEIVED BY:
INITIAL PRESSURE:
FINAL PRESSURE:
DILUTION FACTOR:
ANALYSIS
GC-FID-ECD DATE:
GC-MSD-SCAN DATE:
GC-MSD-SIM DATE:
RESULTS :

GC-FID-ECD:
GC-MSD-SCAN:
GC-MSD-SIM:

SIGNATURE/TITLE

R-3 143

CANISTER SAMPLING FIELD DATA SHEET

A. GENERAL INFORMATION

SITE LOCATION: Hiford Landfill
SITE ADDRESS: Carbon Bed #3 Inlet

SAMPLING DATE: 2/14/13

SHIPPING DATE: /
CANISTER SERIAL NO.
SAMPLER ID: #608 / 5150
OPERATOR:
CANISTER LEAK CHECK DATE:

B. SAMPLING INFORMATION

TEMPERATURE

	INTERIOR	AMBIENT	MAXIMUM	MINIMUM
START	67	47	X	X
STOP	67	47		

PRESSURE

CANISTER PRESSURE	
	30.0
X	0

SAMPLING TIMES

	LOCAL TIME	ELAPSED TIME METER READING
START	13:36	
STOP	13:56	

FLOW RATES

MANIFOLD FLOW RATE	CANISTER FLOW RATE	FLOW CONTROLLER READOUT

SAMPLING SYSTEM CERTIFICATION DATE:
QUARTERLY RECERTIFICATION DATE:

C. LABORATORY INFORMATION

DATE RECEIVED:
RECEIVED BY:
INITIAL PRESSURE:
FINAL PRESSURE:
DILUTION FACTOR:
ANALYSIS
GC-FID-ECD DATE:
GC-MSD-SCAN DATE:
GC-MSD-SIM DATE:
RESULTS :

GC-FID-ECD:
GC-MSD-SCAN:
GC-MSD-SIM:

SIGNATURE/TITLE

CANISTER SAMPLING FIELD DATA SHEET

Bed #3 R-1 outlet

A. GENERAL INFORMATION

SITE LOCATION: CARBON BED #3 outlet
SITE ADDRESS: HOBART WA (King Co)

SAMPLING DATE: 2-14-94

SHIPPING DATE: _____
CANISTER SERIAL NO. 535 / 575
SAMPLER ID: _____
OPERATOR: ERL ICSM
CANISTER LEAK CHECK DATE: _____

B. SAMPLING INFORMATION

TEMPERATURE

	INTERIOR	AMBIENT	MAXIMUM	MINIMUM
START	52	46	X	X
STOP	57	46		

PRESSURE

CANISTER PRESSURE	
	30" Hg
X	0

SAMPLING TIMES

	LOCAL TIME	ELAPSED TIME METER READING
START	1107	
STOP	1137	

FLOW RATES

MANIFOLD FLOW RATE	CANISTER FLOW RATE	FLOW CONTROLLER READOUT

SAMPLING SYSTEM CERTIFICATION DATE: _____
QUARTERLY RECERTIFICATION DATE: _____

C. LABORATORY INFORMATION

DATE RECEIVED: _____
RECEIVED BY: _____
INITIAL PRESSURE: _____
FINAL PRESSURE: _____
DILUTION FACTOR: _____
ANALYSIS
GC-FID-ECD DATE: _____
GC-MSD-SCAN DATE: _____
GC-MSD-SIM DATE: _____
RESULTS: _____

GC-FID-ECD: _____
GC-MSD-SCAN: _____
GC-MSD-SIM: _____

_____
SIGNATURE/TITLE

CANISTER SAMPLING FIELD DATA SHEET

R-2

A. GENERAL INFORMATION

SITE LOCATION: CARBON BED #3 OUTLET
SITE ADDRESS: Hobart King County
SAMPLING DATE: 2-14-94

SHIPPING DATE:
CANISTER SERIAL NO. 602 / 5752
SAMPLER ID:
OPERATOR: ERL KSM
CANISTER LEAK CHECK DATE:

B. SAMPLING INFORMATION

TEMPERATURE

	INTERIOR	AMBIENT	MAXIMUM	MINIMUM
START	57	47	X	X
STOP	54	47		

PRESSURE

CANISTER PRESSURE	
	30
X	0

SAMPLING TIMES

	LOCAL TIME	ELAPSED TIME METER READING
START	1218	
STOP	1248	

FLOW RATES

MANIFOLD FLOW RATE	CANISTER FLOW RATE	FLOW CONTROLLER READOUT

SAMPLING SYSTEM CERTIFICATION DATE:
QUARTERLY RECERTIFICATION DATE:

C. LABORATORY INFORMATION

DATE RECEIVED:
RECEIVED BY:
INITIAL PRESSURE:
FINAL PRESSURE:
DILUTION FACTOR:
ANALYSIS
GC-FID-ECD DATE:
GC-MSD-SCAN DATE:
GC-MSD-SIM DATE:
RESULTS:

GC-FID-ECD:
GC-MSD-SCAN:
GC-MSD-SIM:

SIGNATURE/TITLE

146

R-3

CANISTER SAMPLING FIELD DATA SHEET

A. GENERAL INFORMATION

SITE LOCATION: Habart Landfill
SITE ADDRESS: Carbon Bed #3 Outlet

SAMPLING DATE: 2/14/04

SHIPPING DATE:
CANISTER SERIAL NO.
SAMPLER ID: #605 / 5153
OPERATOR:
CANISTER LEAK CHECK DATE:

B. SAMPLING INFORMATION

TEMPERATURE

	INTERIOR	AMBIENT	MAXIMUM	MINIMUM
START	56	47		
STOP	57	47		

PRESSURE

CANISTER PRESSURE	
	30.0 "Hg
	0

SAMPLING TIMES

	LOCAL TIME	ELAPSED TIME METER READING
START	13:26	
STOP	13:50	

FLOW RATES

MANIFOLD FLOW RATE	CANISTER FLOW RATE	FLOW CONTROLLER READOUT

SAMPLING SYSTEM CERTIFICATION DATE:
QUARTERLY RECERTIFICATION DATE:

C. LABORATORY INFORMATION

DATE RECEIVED:
RECEIVED BY:
INITIAL PRESSURE:
FINAL PRESSURE:
DILUTION FACTOR:
ANALYSIS
GC-FID-ECD DATE:
GC-MSD-SCAN DATE:
GC-MSD-SIM DATE:
'RESULTS':

GC-FID-ECD:
GC-MSD-SCAN:
GC-MSD-SIM:

SIGNATURE/TITLE

APPENDIX E

Supporting Information

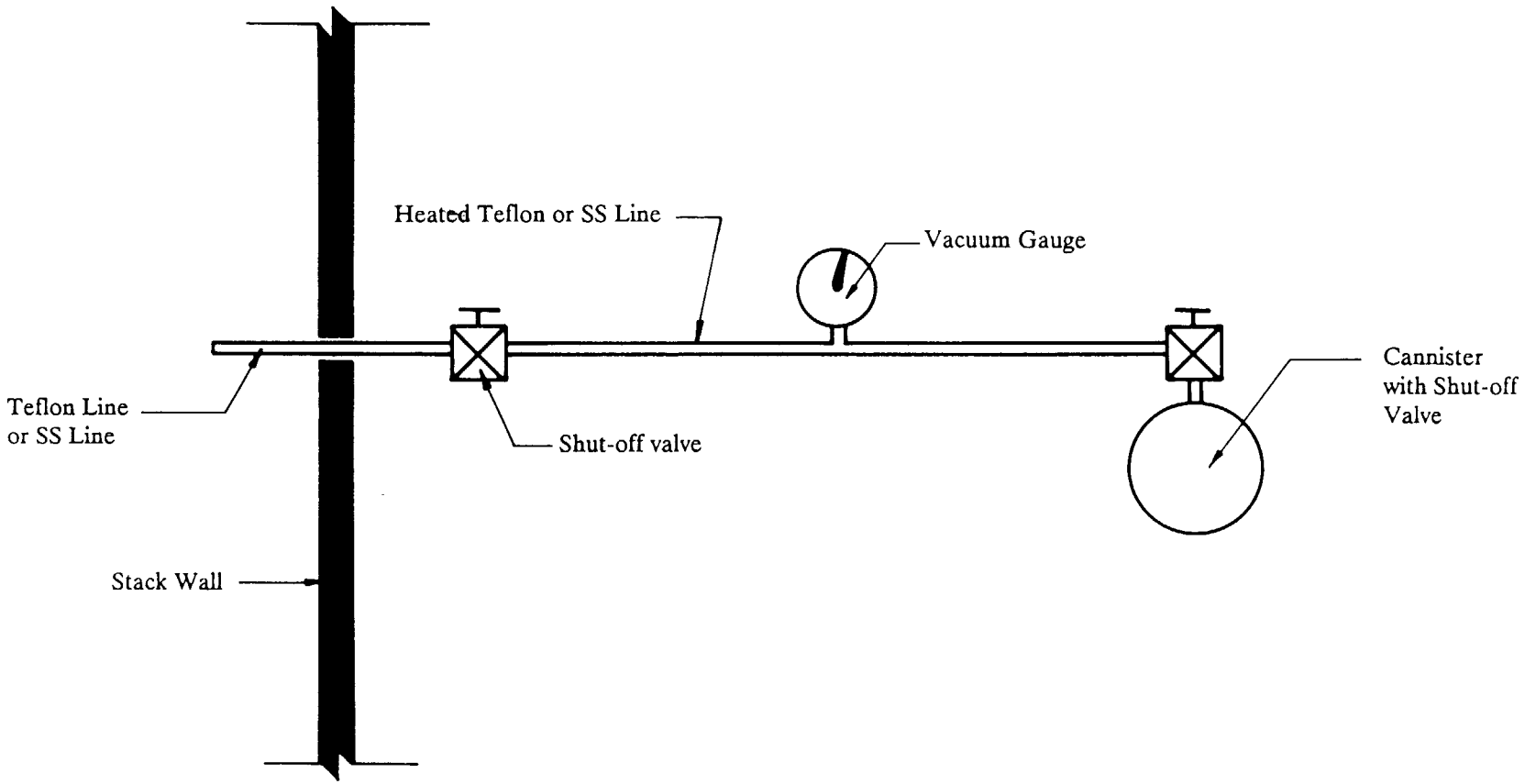


Figure 7. TO-14 Sample System Schematic

Exhibit 1

COAST · TO · COAST ANALYTICAL SERVICES

Air, Water & Hazardous Waste Sampling, Analysis & Consultation
Certified Hazardous Waste, Chemistry, Bacteriology & Bioassay Laboratories

141 Suburban Road	San Luis Obispo, CA 93401	(805) 543-2553	Fax (805) 543-2685
751 S. Kellogg, Suite A	Goleta, CA 93117	(805) 964-7838	Fax (805) 967-4386
1885 North Kelly Road	Napa, CA 94558	(707) 257-7211	Fax (707) 226-1001
9333 Tech Center Dr., Ste. 800	Sacramento, CA 95826	(916) 368-1333	Fax (916) 362-2484
2400 Cumberland Dr.	Valparaiso, Indiana 46383	(219) 464-2389	Fax (219) 462-2953

162

CLIENT: ATTN:
Coast-to-Coast Analytical Services
141 Suburban Rd. Ste. C-4
San Luis Obispo, CA 93401

Lab Number : G-4000-4
Project : TEST PROJECT

Analyzed : 11/05/90
Analyzed by: PI
Method : EPA TO-14

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
Zero Air Blank	Air	A. Sampler	11/03/90	11/03/90

CONSTITUENT	(CAS RN)	*PQL µg/cu M	RESULT µg/cu M	NOTE
1,1-Dichloroethene	(75354)	0.5	Not Found	
cis-1,2-Dichloroethene	(156694)	0.5	Not Found	
trans-1,2-Dichloroethene	(156605)	0.5	Not Found	
Dichloromethane	(75092)	5.	Not Found	
1,2-Dichloropropane	(78875)	0.5	Not Found	
cis-1,3-Dichloropropene	(10061015)	0.5	Not Found	
trans-1,3-Dichloropropene	(10061026)	0.5	Not Found	
Ethylbenzene	(100411)	1.	Not Found	
2-Hexanone	(591786)	0.5	Not Found	
4-Methyl-2-Pentanone (MIBK)	(108101)	0.5	Not Found	
Styrene	(100425)	1.	Not Found	
1,1,2,2-Tetrachloroethane	(79345)	1.	Not Found	
Tetrachloroethene (PCE)	(127184)	1.	Not Found	
Toluene	(108883)	1.	Not Found	
1,1,1-Trichloroethane (TCA)	(71556)	1.	Not Found	
1,1,2-Trichloroethane	(79005)	1.	Not Found	
Trichloroethene (TCE)	(79016)	0.5	Not Found	
Trichlorofluoromethane (F-11)	(75694)	1.	Not Found	
Trichlorotrifluoroethane (F-113)	(76131)	2.	Not Found	
Vinyl Acetate	(108054)	5.	Not Found	
Vinyl Chloride	(75014)	0.5	Not Found	
Xylenes, Total		1.	Not Found	
Percent Surrogate Recovery			100.	

RESULTS listed as 'Not Found' would have been reported if present at or above the listed PQL
* Practical Quantitation Limit

11/28/90

LRH/lrh/pi

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Gesheng Dai, Ph.D., Group Leader

Laurence R. Hilpert, Ph.D.
Vice President

Exhibit 1

COAST · TO · COAST ANALYTICAL SERVICES

Air, Water & Hazardous Waste Sampling, Analysis & Consultation
Certified Hazardous Waste, Chemistry, Bacteriology & Bioassay Laboratories

163

141 Suburban Road	San Luis Obispo, CA 93401	(805) 543-2553	Fax (805) 543-2685
751 S. Kellogg, Suite A	Goleta, CA 93117	(305) 964-7838	Fax (805) 967-4386
1885 North Kelly Road	Napa, CA 94558	(707) 257-7211	Fax (707) 226-1001
9333 Tech Center Dr., Ste. 800	Sacramento, CA 95826	(916) 368-1333	Fax (916) 362-2484
2400 Cumberland Dr.	Valparaiso, Indiana 46383	(219) 464-2389	Fax (219) 462-2953

CLIENT: ATTN:
Coast-to-Coast Analytical Services
141 Suburban Rd. Ste. C-4
San Luis Obispo, CA 93401

Lab Number : G-4000-4
Project : TEST PROJECT

Analyzed : 11/05/90
Analyzed by: PI
Method : EPA TO-14

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
Zero Air Blank	Air	A. Sampler	11/03/90	11/03/90

CONSTITUENT	(CAS RN)	*PQL µg/cu M	RESULT µg/cu M	NOTE
VOLATILE ORGANICS BY EPA TO-14				1
Acetone	(67641)	2.	Not Found	
Benzene	(71432)	0.5	Not Found	
Bromodichloromethane	(75274)	1.	Not Found	
Bromomethane (Methyl Bromide)	(74839)	1.	Not Found	
Bromoform	(75252)	1.	Not Found	
1,3-Butadiene	(106990)	0.2	Not Found	
2-Butanone (MEK)	(78933)	0.5	Not Found	
Carbon Disulfide	(75150)	1.	Not Found	
Carbon Tetrachloride	(56235)	1.	Not Found	
Chlorobenzene	(108907)	0.5	Not Found	
Chloroethane (Ethyl Chloride)	(75003)	0.5	Not Found	
2-Chloroethyl Vinyl Ether	(110758)	5.	Not Found	
Chloroform	(67663)	0.5	Not Found	
Chloromethane (Methyl Chloride)	(74873)	0.2	Not Found	
Dibromochloromethane	(124381)	1.	Not Found	
1,2-Dibromoethane (EDB)	(106934)	1.	Not Found	
1,2-Dichlorobenzene	(95501)	1.	Not Found	
1,3-Dichlorobenzene	(541731)	1.	Not Found	
1,4-Dichlorobenzene	(106467)	1.	Not Found	
1,1-Dichloroethane	(75343)	0.5	Not Found	
1,2-Dichloroethane (EDC)	(107062)	0.5	Not Found	

RESULTS listed as 'Not Found' would have been reported if present at or above the listed PQL
* Practical Quantitation Limit
(1) Canister was received under vacuum at -X in. Hg and pressurized to Y psig with He.

11/28/90

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

LRH/lrh/pi

Gesheng Dai, Ph.D., Group Leader

Laurence R. Hilpert, Ph.D.
Vice President

Exhibit 2

164

GC/MS PERFORMANCE STANDARD

Bromofluorobenzene (BFB)

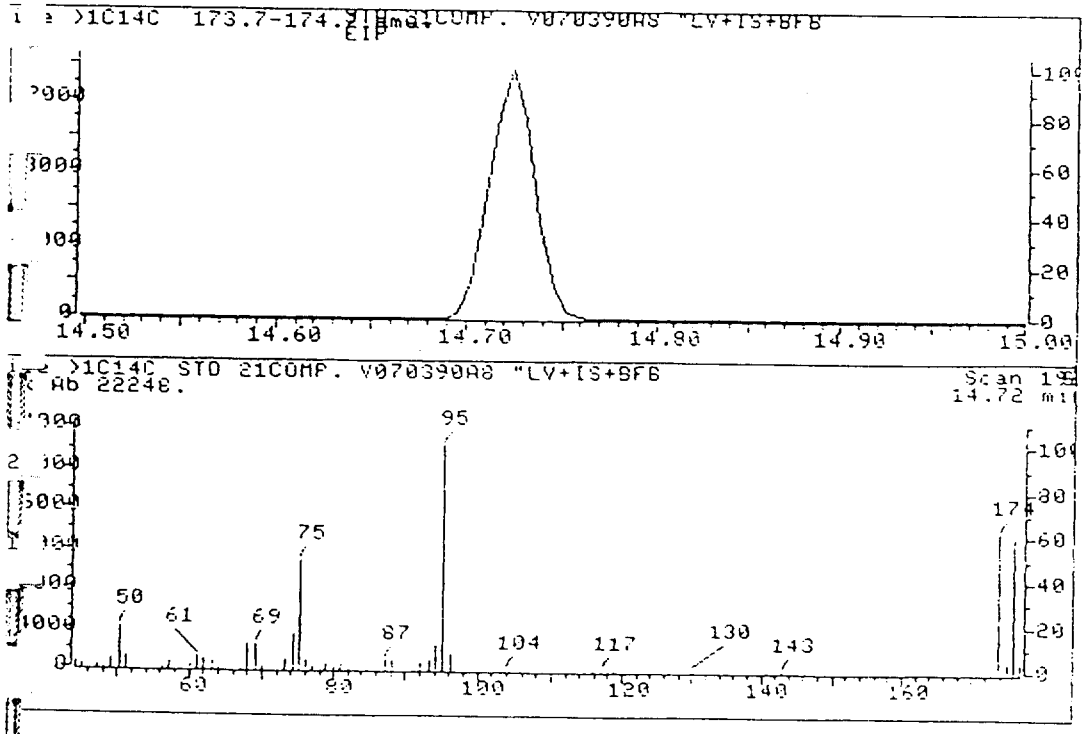
m/z	Ion Abundance Criteria	% Relative Abundance Base Peak	% Relative Abundance Appropriate Peak	Status
50	15-40% of mass 95	18.88	18.88	Ok
75	30-60% of mass 95	48.95	48.95	Ok
95	Base peak, 100% relative abundance	100.00	100.00	Ok
96	5-9% of mass 95	6.84	6.84	Ok
173	Less than 2% of mass 174	0.00	0.00	Ok
174	Greater than 50% of mass 95	62.16	62.16	Ok
175	5-9% of mass 174	4.32	6.96	Ok
176	95-101% of mass 174	59.99	96.51	Ok
177	5-9% of mass 176	3.97	6.62	Ok

Injection Date: 03/28/91
Injection Time: 20:12
Data File: >1C14C
Scan: 1923

orc

GD

3/29/91



COAST-TO-COAST ANALYTICAL SERVICES

Air, Water & Hazardous Waste Sampling, Analysis & Consultation
Certified Hazardous Waste, Chemistry, Bacteriology & Bioassay Laboratories

141 Suburban Road	San Luis Obispo, CA 93401	(805) 543-2553	Fax (805) 543-2685
751 S. Kellogg, Suite A	Goleta, CA 93117	(805) 964-7838	Fax (805) 967-4386
1885 North Kelly Road	Napa, CA 94558	(707) 257-7211	Fax (707) 226-1001
9333 Tech Center Dr., Ste. 800	Sacramento, CA 95826	(916) 368-1333	Fax (916) 362-2484
2400 Cumberland Dr	Valparaiso, Indiana 46383	(219) 464-2389	Fax (219) 462-2953

QC Batch ID: HC20M1

CLIENT: Coast-to-Coast Analytical Services
141 Suburban Rd. Ste. C-4
San Luis Obispo, CA 93401

Analyzed : 03/20/91
Analyzed by: EA
Method : EPA TO-14

QC SPIKE
REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
QC SPIKE	Air			

CONSTITUENT	*PQL µg/cu M	SPIKE AMOUNT	RESULT µg/cu M	%REC	NOTE
VOLATILE ORGANICS PLUS ALL IDENTIFIABLE PEAKS					1
Acetone	2.		NS		
Benzene	0.5	17.	16.	94.	
Bromodichloromethane	1.		NS		
Bromomethane (Methyl Bromide)	1.		NS		
Bromoform	1.		NS		
1,3-Butadiene	0.2		NS		
2-Butanone (MEK)	0.5		NS		
Carbon Disulfide	1.		NS		
Carbon Tetrachloride	1.	34.	32.	94.	
Chlorobenzene	0.5	25.	25.	100.	
Chloroethane (Ethyl Chloride)	0.5		NS		
2-Chloroethyl Vinyl Ether	5.		NS		
Chloroform	0.5		NS		
Chloromethane (Methyl Chloride)	0.2		NS		
Dibromochloromethane	1.		NS		
1,2-Dibromoethane (EDB)	1.	40.	46.	115.	
1,2-Dichlorobenzene	1.		NS		
1,3-Dichlorobenzene	1.		NS		
1,4-Dichlorobenzene	1.		NS		
1,1-Dichloroethane	0.5		NS		
1,2-Dichloroethane (EDC)	0.5	22.	22.	100.	

CCAS is Certified by CA Department of Health Services: Laboratory #131
* RESULTS listed as 'NS' were not spiked. PQL = Practical Quantitation Limit
(1) Zero Air spiked with NIST SRM 1804.

03/22/91
MSD1/1B47C
LRH/ge
H1102-1

Exhibit 3

COAST-TO-COAST ANALYTICAL SERVICES

Air, Water & Hazardous Waste Sampling, Analysis & Consultation
Certified Hazardous Waste, Chemistry, Bacteriology & Bioassay Laboratories

141 Suburban Road	San Luis Obispo, CA 93401	(805) 543-2553	Fax (805) 543-2685
751 S. Kellogg, Suite A	Goleta, CA 93117	(805) 964-7838	Fax (805) 967-4386
1885 North Kelly Road	Napa, CA 94558	(707) 257-7211	Fax (707) 226-1001
9333 Tech Center Dr., Ste. 800	Sacramento, CA 95826	(916) 368-1333	Fax (916) 362-2484
2400 Cumberland Dr	Valparaiso, Indiana 46383	(219) 464-2389	Fax (219) 462-2953

1666

QC Batch ID: HC20M1

CLIENT: Coast-to-Coast Analytical Services
141 Suburban Rd. Ste. C-4
San Luis Obispo, CA 93401

Analyzed : 03/20/91
Analyzed by: EA
Method : EPA TO-14

QC SPIKE
REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE RECEIVED
QC SPIKE	Air		

CONSTITUENT	*PQL µg/cu M	SPIKE AMOUNT	RESULT µg/cu M	%REC	NOTE
1,1-Dichloroethene	0.5		NS		
cis-1,2-Dichloroethene	0.5		NS		
trans-1,2-Dichloroethene	0.5		NS		
Dichloromethane	5.	19.	19.	100.	
1,2-Dichloropropane	0.5	25.	23.	92.	
cis-1,3-Dichloropropene	0.5		NS		
trans-1,3-Dichloropropene	0.5		NS		
Ethylbenzene	1.	22.	21.	95.	
2-Hexanone	0.5		NS		
4-Methyl-2-Pentanone (MIBK)	0.5		NS		
Styrene	1.		NS		
1,1,2,2-Tetrachloroethane	1.		NS		
Tetrachloroethene (PCE)	1.	37.	39.	105.	
Toluene	1.	20.	18.	90.	
1,1,1-Trichloroethane (TCA)	1.	30.	30.	100.	
1,1,2-Trichloroethane	1.		NS		
Trichloroethene (TCE)	0.5		NS		
Trichlorofluoromethane (F-11)	1.		NS		
Trichlorotrifluoroethane (F-113)	2.		NS		
Vinyl Acetate	5.		NS		
Vinyl Chloride	0.5	15.	17.	113.	
Xylenes, Total	1.	24.	22.	92.	
Percent Surrogate Recovery		114.	117.		

CCAS is Certified by CA Department of Health Services: Laboratory #131
* RESULTS listed as 'NS' were not spiked. PQL = Practical Quantitation Limit

03/22/91
MSD1/1B47C
LRH/ge
H1102-1

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Gesheng Dai

Gesheng Dai, Ph.D., Group Leader

Laurence R. Hilpert, Ph.D.
Vice President

COAST - TO - COAST ANALYTICAL SERVICES

Air, Water & Hazardous Waste Sampling, Analysis & Consultation
Certified Hazardous Waste, Chemistry, Bacteriology & Bioassay Laboratories

167

141 Suburban Road	San Luis Obispo, CA 93401	(805) 543-2553	Fax (805) 543-2685
751 S. Kellogg, Suite A	Goleta, CA 93117	(805) 964-7838	Fax (805) 967-4386
1885 North Kelly Road	Napa, CA 94558	(707) 257-7211	Fax (707) 226-1001
9333 Tech Center Dr., Ste. 800	Sacramento, CA 95826	(916) 368-1333	Fax (916) 362-2484
2400 Cumberland Dr.	Valparaiso, Indiana 46383	(219) 464-2389	Fax (219) 462-2953

CANISTER SAMPLING FIELD DATA SHEET

A. GENERAL INFORMATION

SITE LOCATION: _____
SITE ADDRESS: _____
_____
_____
SAMPLING DATE: _____

SHIPPING DATE: _____
CANISTER SERIAL NO.: _____
SAMPLER ID: _____
OPERATOR: _____
CANISTER LEAK CHECK DATE: _____

B. SAMPLING INFORMATION

TEMPERATURE

	INTERIOR	AMBIENT	MAXIMUM	MINIMUM
START				
STOP				

PRESSURE

	CANISTER PRESSURE	
START		
STOP		

SAMPLING TIMES

	LOCAL TIME	ELAPSED TIME METER READING
START		
STOP		

FLOW RATES

MANIFOLD FLOW RATE	CANISTER FLOW RATE	FLOW CONTROLLER READOUT

SAMPLING SYSTEM CERTIFICATION DATE: _____
QUARTERLY RECERTIFICATION DATE: _____

C. LABORATORY INFORMATION

DATE RECEIVED: _____
RECEIVED BY: _____
INITIAL PRESSURE: _____
FINAL PRESSURE: _____
DILUTION FACTOR: _____
ANALYSIS
GC-FID-ECD DATE: _____
GC-MSD-SCAN DATE: _____
GC-MSD-SIM DATE: _____
RESULTS*: _____
_____
GC-FID-ECD: _____
GC-MSD-SCAN: _____
GC-MSD-SIM: _____

_____
SIGNATURE/TITLE

* ATTACH DATA SHEETS