US EPA RECORDS CENTER REGION 5
513880

ANNUAL PERFORMANCE REPORT
GRANULAR ACTIVATED CARBON TREATMENT SYSTEM
FOR 1999

REILLY TAR & CHEMICAL CORP.
N.P.L. SITE
ST. LOUIS PARK, MINNESOTA

SUBMITTED MARCH 15, 2000

CITY

ENSR QUANTERRA

CITY OF ST. LOUIS PARK

UTILITY OPERATIONS

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

March 15, 2000

Regional Administrator
United States Environmental
Protection Agency, Region 5
ATTN: Darryl Owens
Mail Code HSR-6J
77 West Jackson Boulevard
Chicago, Illinois 60604

Director, Groundwater and Solid
Waste Division
Minnesota Pollution Control Agency
ATTN: Site Response Section
520 Lafayette Road North
St. Paul, MN 55155

President
Reilly Industries, Inc.
300 N. Meridian #1500
Indianapolis, Indiana 46204

Commissioner
Minnesota Department of Health
121 E. Seventh Place
P. O. Box 64975
St. Paul, MN 55164-0975

RE: United States of America, et al. vs. Reilly Tar & Chemical Corporation, et al.
File No. Civ. 4-80-469
CD-RAP 4.3.5

Gentlemen:

Enclosed is the 1999 annual performance report of the Granular Activated Carbon treatment system submitted pursuant to Section 4.3.5. of the Consent Decree Remedial Action Plan in the above captioned matter. This report is issued by the City in accordance with Section 2(a) of the Reilly/St. Louis Park Agreement (Exhibit B to the Consent Decree).

Sincerely,

Scott E. Anderson
Superintendent of Utilities

SEA/bah
Enclosure

cc: William Gregg (w/enclosures)
Tom Scott (w/o enclosures)
Reilly File

N:\ScottA\REILLY\AnnualRpt. coverltr..doc

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ANNUAL PERFORMANCE REPORT
FOR
GRANULAR ACTIVATED CARBON
TREATMENT SYSTEM 1999

Operation:

The City operated the Granular Activated Carbon (GAC) treatment system in substantial compliance with Section 4.2 of the Remedial Action Plan (RAP) during 1999, treating 369.083 million gallons of water pumped from SLP 10.

The results of the 1st Quarter sample indicated the treated water at GAC-SLP10 and GAC-SLP4 exceeded the Drinking Water Criteria and the Drinking Water Advisory Level respectively. The City notified the Agencies of the exceedance and immediately initiated the process of GAC replacement at both facilities. The City collected a sample to verify the results as required in Section 12.1.2 of the RAP. The sample was analyzed within the 21-day turnaround required by Section 12.1.3. The verification sample was received on May 12, 1999 and confirmed the levels of PAH's (Table 3, page 2). The GAC was replaced on May 17, 1999 and regular quarterly sampling resumed.

Monitoring:

The 1999 monitoring was jointly conducted by the City and Quanterra Environmental Services (Quanterra). The City collected all samples and Quanterra was responsible for the analytical services. Laboratory analyses were conducted at the Quanterra laboratory in Arvada, Colorado.

The 1999 monitoring schedule (Table 2), as established in the 1999 Sampling Plan developed in accordance with the requirements of Section 3.3 of the RAP, provided for quarterly monitoring of the treatment system effluent (Table 3, page 1), and annual monitoring of the treatment system feed water(Table 3, page 2), acid fraction analysis(Section 4.3.4) and extended PAH compounds. The extended compound list is used for all PAH analysis, therefore no designated sample for extended compounds was taken. All samples were collected an analyzed in compliance with the CD-RAP.

Additional Information:

The CD-RAP provides the operational criteria for the GAC facility located adjacent to Water Treatment Plant No. 1, located at 2936 Idaho Avenue that treats water produced by SLP 10 or 15. The City constructed an additional GAC facility in 1994 located at 4701 West 41st Street (GAC-4) which treats water produced by SLP4. This GAC facility is not reference in the RAP. The City operates the GAC-4 facility within the Drinking Water Criteria established in Section 2.2. The facility is operated on a continuous pumping schedule as directed by the Unites States Environmental Protection Agency and the

Minnesota Pollution Control Agency. The system is operated in a series of GAC vessels. A sample in taken at the effluent of the lead vessel (SLP4TLE), this is an operation sample. The PAH analysis may reflect a level of total other PAH that may exceed the Drinking Water Advisory or Drinking Water Criteria which indicate the first GAC in the lead vessels is spent, at which time the GAC is be scheduled for replacement.

The GAC4 facility treated 529.465 million gallons produced by SLP4. The monthly production is recorded in Table 4 of this report. The results of the facility effluent (GAC-SLP4T) are recorded in Table 3 of this report.

CITY ST. LOUIS PARK
GRANULAR ACTIVATED CARBON
TREATMENT PLANT GAC 1

1999 PRODUCTION

	MILLION GALLONS
January	37.782
February	33.513
March	32.456
April	30.487
May	34.823
June	33.677
July	39.999
August	35.599
September	28.959
October	30.433
November	20.455
December	10.900
TOTAL	369.083 MG

TABLE 1

1999 SAMPLING PLAN
GAC TREATMENT SYSTEM MONITORING SCHEDULE

RAP Section	Sampling Point	Start of Monitoring	Sample Frequency	Analysis
4.3.1(C)	Treated Water (TRTD	Date of plan approval	Quarterly	PAH (ppt)
4.3.3(D)	Feed Water (FEED)	Date of plan approval	Annually	PAH (ppt)
4.3.4	*Treated Water*	*Date of plan approval*	*Annually*	*PAH (ppt) Extended List*
4.3.4	Treated or Feed Water	Date of plan approval	Annually	Acid Fraction EPA Method 625

All PAH sample analysis includes the extended list. No seperate extended sample is taken.

TABLE 2

GAC Treatment System
Analytical Results 1999

		1ST QUARTER		2ND QUARTER		3RD QUARTER		4TH QUARTER	
		SLP4TD	SLP10T	SLP4T	SLP10T	SLP4T	SLP10T	SLP4TD	SLP10T
		3/15/99	3/15/99	5/25/99	5/25/99	9/13/99	9/13/99	11/15/99	11/15/99
2,3-Benzofuran		0	1.8	0	0	0	0	0	0
2,3-Dihydroindene		75	74	0	0	0	7.9	0	23
1H-Indene		11	10	0	0	0	0	0	1.8
Naphthalene		14	8.1	3.5	0	0	0	5.8	4.3
Benzo (b) Thiophene		7.1	6.8	0	0	0	0	0	0
Quinoline*	C	**0**	**0**	0	0	0	0	0	0
1H-Indole		0.48	1.1	0	0	0	0	0	0
2-Methylnaphthalene		1.5	1.3	0	0	0	0	4.3	0
1-Methylnaphthalene		1.8	6.6	0	0	0	0	2.2	0
Biphenyl		0.41	2.2	0	0	0	0	0	0
Acenaphthylene		0	34	0	0	0	0	0	4.9
Acenaphthene		76	140	0	0	0	7.9	0	28
Dibenzofuran		0	3.7	0	0	0	0	0	0
Fluorene		0	40	0	0	0	1.8	2	7.5
Dibenzothiophene		0.5	5.3	0	0	0	0	0	0
Phenanthrene		2.2	3.3	0	0	0	0	6.2	4.8
Anthracene		0.63	1.2	0	0	0	0	0	0
Acridine		0	0.94	0	0	0	0	0	0
Carbazole		10	1.7	0	0	0	0	0	0
Fluoranthene		4.6	9.4	0	0	0	0	2.4	2
Pyrene		4.2	17	0	0	0	0	0	0
Benzo (a) Anthracene	C	**0**	**0.33**	0	0	0	0	0	0
Chrysene	C	**0**	**0.39**	0	0	0	0	0	0
Benzo (b) Fluoranthene	C	**0**	**0**	0	0	0	0	0	0
Benzo (k) Fluoranthene	C	**0**	**0**	0	0	0	0	0	0
Benzo (e) Pyrene		0	0	0	0	0	0	0	0
Benzo (a) Pyrene	C	**0**	**0**	0	0	0	0	0	0
Perylene		0	0	0	0	0	0	0	0
Indino (1,2,3-cd) Pyrene	C	**0**	**0**	0	0	0	0	0	0
Dibenz (a,h) Anthracene	C	**0**	**0**	0	0	0	0	0	0
Benzo (g,h,i) Perylene	C	**0**	**0**	0	0	0	0	0	0
TOTAL OTHER PAH		**209.42**	**368.44**	**3.5**	**0**	**0**	**17.6**	**22.9**	**76.3**
BENZO(a)PYRENE + DIBENZO(A,H)		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
TOTAL CARCINOGEN		**0**	**0.72**	**0**	**0**	**0**	**0**	**0**	**0**

If quinoline is the only carcinogenic PAH detected, then its value is included with Total

GAC Treatment System
Analytical Results 1999

		SPECIAL SAMPLE VERIFY 1ST QTR				GAC FEED	
		SLP4T	SLP10T			SLP4F	SLP10F
		4/27/99	4/27/99			5/11/99	5/17/99
2,3-Benzofuran		1.8	1.2	2,3-Benzofuran		0	2.7
2,3-Dihydroindene		98	72	2,3-Dihydroindene		170	260
1H-Indene		12	9.5	1H-Indene		0	22
Naphthalene	C	3.3	1.8	Naphthalene	C	0	3.4
Benzo (b) Thiophene		13	5.8	Benzo (b) Thiophene		23	29
Quinoline*		0	0	**Quinoline***		0	16
1H-Indole		0	0.89	1H-Indole		11	0
2-Methylnaphthalene		2.4	0.93	2-Methylnaphthalene		0	0
1-Methylnaphthalene		0	7.4	1-Methylnaphthalene		0	41
Biphenyl		0	2	Biphenyl		0	11
Acenaphthylene		0	28	Acenaphthylene		0	120
Acenaphthene		110	150	Acenaphthene		190	550
Dibenzofuran		0	4.2	Dibenzofuran		0	25
Fluorene		0.45	42	Fluorene		0	150
Dibenzothiophene		0.56	4.9	Dibenzothiophene		0	23
Phenanthrene		1.3	2.5	Phenanthrene		4	12
Anthracene		0.99	1	Anthracene		0	6.5
Acridine		1.1	0.8	Acridine		0	5.1
Carbazole		14	1.3	Carbazole		29	10
Fluoranthene	C	6	5.7	Fluoranthene	C	13	41
Pyrene	C	5.6	11	Pyrene	C	12	81
Benzo (a) Anthracene	C	0	0.3	**Benzo (a) Anthracene**	C	0	0
Chrysene	C	0	0	**Chrysene**	C	0	0
Benzo (b) Fluoranthene		0	0	**Benzo (b) Fluoranthene**		0	0
Benzo (k) Fluoranthene		0	0	**Benzo (k) Fluoranthene**		0	0
Benzo (e) Pyrene	C	0	0	Benzo (e) Pyrene	C	0	0
Benzo (a) Pyrene		0	0	**Benzo (a) Pyrene**		0	0
Perylene		0	0	Perylene		0	0
Indino (1,2,3-cd) Pyrene	C	0	0	**Indino (1,2,3-cd) Pyrene**	C	0	0
Dibenz (a,h) Anthracene	C	0	0.16	**Dibenz (a,h) Anthracene**	C	0	0
Benzo (g,h,i) Perylene	C	0.39	0.19	**Benzo (g,h,i) Perylene**	C	0	0
TOTAL OTHER PAH		**270.5**	**352.92**	**TOTAL OTHER PAH**		**452**	**1392.7**
BENZO(a)PYRENE + DIBENZO(A,H)		**0**	**0.16**	BENZO(a)PYRENE + DIBENZO(A,H)		**0**	**0**
TOTAL CARCINOGEN		**0.39**	**0.65**	**TOTAL CARCINOGEN**		**0**	**16**

CITY ST. LOUIS PARK
GRANULAR ACTIVATED CARBON
TREATMENT PLANT GAC 4

1999 PRODUCTION

	MILLION GALLONS
January	44.176
February	39.539
March	41.856
April	43.641
May	46.665
June	47.107
July	46.442
August	47.341
September	43.584
October	44.411
November	40.442
December	44.261
TOTAL	529.465 MG

TABLE 4

SECTION 4.3.1 (C)

FIRST QUARTER

PAH ANALYSIS

GAC

Quanterra

Advanced Analytical Services

Quanterra Incorporated
4955 Yarrow Street
Arvada, Colorado 80002

303 421-6611 Telephone
303 467-9136 Fax

CASE NARRATIVE

FOR

City of St. Louis Park

April 16, 1999

Quanterra Environmental Services

Project Lot Number D9C160123

Introduction

Eight aqueous samples (including matrix QC) were received at Quanterra Environmental Services, Denver Laboratory on March 16, 1999. The samples were logged in under Quanterra Denver's project lot number D9C160123 A cross reference associating Quanterra Denver's laboratory sample numbers to the actual field sample number is included The samples were analyzed for part per trillion (ppt) PAHs

Data Quality Assessment

The results contained in this report were reviewed relative to data acceptance criteria as specified in the October 1998 QAPP for completeness, precision, accuracy, representativeness and defensibility of the data. Unless otherwise stated below, no quality control problems or technical difficulties were encountered which would impact the interpretation or use of data in this report

The spike compound indene in the Duplicate Control Samples (DCSs) are reported at 169% and 164% respectively. These are outside the 20% to 150% acceptance limits. Indene was present in the method blank at 1 9 ng/L . Indene was recovered in the matrix spike and matrix spike duplicate samples within acceptance limits No corrective action is required

Except for the above, this data package is in compliance with the terms and conditions of the October 1998 QAPP, both technically and for completeness

Reported By: _____ **Date:** April 16, 1999

Kurt C. Ill
Program Manger

ANALYTICAL METHODS SUMMARY

D9C160123

PARAMETER	ANALYTICAL METHOD
Base/Neutrals and Acids	SW846 8270A SIM

References:

SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 and its updates.

SAMPLE SUMMARY

D9C160123

WO #	SAMPLE#	CLIENT SAMPLE ID	DATE	TIME
CRM9H	001	GAC-SLP4T-031599	03/15/99	
CRM9J	002	GAC-SLP4TD-031599	03/15/99	
CRM9M	003	GAC-SLP4TFB-031599	03/15/99	
CRM9R	004	GAC-SLP4TFBD-031599	03/15/99	
CRM9V	005	GAC-SLP4TLE-031599	03/15/99	
CRM9W	006	GAC-SLP10T-031599	03/15/99	

NOTE(S):

- The analytical results of the samples listed above are presented on the following pages
- All calculations are performed before rounding to avoid round-off errors in calculated results
- Results noted as "ND" were not detected at or above the stated limit
- This report must not be reproduced, except in full, without the written approval of the laboratory
- Results for the following parameters are never reported on a dry weight basis color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight

EXECUTIVE SUMMARY - Detection Highlights

D9C160123

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
GAC-SLP4TFB-031599 03/15/99 003				
Indene	1.9	0.90	ng/L	SW846 8270A SIM
1-Methylnaphthalene	0.81 J	2.8	ng/L	SW846 8270A SIM
Biphenyl	0.20 J	4.3	ng/L	SW846 8270A SIM
2,3-Dihydroindene	2.1 J	5.0	ng/L	SW846 8270A SIM
GAC-SLP4TFBD-031599 03/15/99 004				
Naphthalene	5.3 J	6.5	ng/L	SW846 8270A SIM
2-Methylnaphthalene	1.4 J	3.9	ng/L	SW846 8270A SIM
Acenaphthene	0.25 J	1.3	ng/L	SW846 8270A SIM
Fluorene	0.35 J	1.0	ng/L	SW846 8270A SIM
Phenanthrene	1.3	1.3	ng/L	SW846 8270A SIM
Fluoranthene	0.71 J	3.1	ng/L	SW846 8270A SIM
Pyrene	0.41 J	1.4	ng/L	SW846 8270A SIM
Indene	1.5	0.90	ng/L	SW846 8270A SIM
1-Methylnaphthalene	0 64 J	2.8	ng/L	SW846 8270A SIM
Biphenyl	0.24 J	4.3	ng/L	SW846 8270A SIM
2,3-Benzofuran	0.71 J	5.1	ng/L	SW846 8270A SIM
2,3-Dihydroindene	1.9 J	5.0	ng/L	SW846 8270A SIM
GAC-SLP4TLE-031599 03/15/99 005				
Naphthalene	5.6 J	6.5	ng/L	SW846 8270A SIM
2-Methylnaphthalene	1.6 J	3.9	ng/L	SW846 8270A SIM
Acenaphthene	200	1.3	ng/L	SW846 8270A SIM
Phenanthrene	3.3	1.3	ng/L	SW846 8270A SIM
Anthracene	1.9 J	2.7	ng/L	SW846 8270A SIM
Carbazole	33	1.9	ng/L	SW846 8270A SIM
Fluoranthene	17	3.1	ng/L	SW846 8270A SIM
Pyrene	17	1.4	ng/L	SW846 8270A SIM
Indene	19	0.90	ng/L	SW846 8270A SIM
Biphenyl	0.62 J	4.3	ng/L	SW846 8270A SIM
2,3-Benzofuran	4.0 J	5.1	ng/L	SW846 8270A SIM
2,3-Dihydroindene	170	5.0	ng/L	SW846 8270A SIM
Benzo(b)thiophene	17	0.90	ng/L	SW846 8270A SIM
Dibenzothiophene	1.3	1.1	ng/L	SW846 8270A SIM
GAC-SLP10T-031599 03/15/99 006				
Acenaphthylene	34	1.4	ng/L	SW846 8270A SIM
Naphthalene	8.1	6.5	ng/L	SW846 8270A SIM
2-Methylnaphthalene	1.3 J	3.9	ng/L	SW846 8270A SIM
Acenaphthene	140	1.3	ng/L	SW846 8270A SIM

(Continued on next page)

EXECUTIVE SUMMARY - Detection Highlights

D9C160123

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
GAC-SLP10T-031599 03/15/99 006				
Dibenzofuran	3.7	1.0	ng/L	SW846 8270A SIM
Fluorene	40	1.0	ng/L	SW846 8270A SIM
Phenanthrene	3.3	1.3	ng/L	SW846 8270A SIM
Anthracene	1.2 J	2.7	ng/L	SW846 8270A SIM
Carbazole	1.7 J	1.9	ng/L	SW846 8270A SIM
Fluoranthene	9.4	3 1	ng/L	SW846 8270A SIM
Pyrene	17	1.4	ng/L	SW846 8270A SIM
Benzo(a)anthracene	0.33 J	2.5	ng/L	SW846 8270A SIM
Chrysene	0.39 J	2.8	ng/L	SW846 8270A SIM
Indene	10	0.90	ng/L	SW846 8270A SIM
1-Methylnaphthalene	6.6	2.8	ng/L	SW846 8270A SIM
Biphenyl	2.2 J	4.3	ng/L	SW846 8270A SIM
2,3-Benzofuran	1.8 J	5 1	ng/L	SW846 8270A SIM
2,3-Dihydroindene	74	5.0	ng/L	SW846 8270A SIM
Benzo(b)thiophene	6.8	0.90	ng/L	SW846 8270A SIM
Indole	1.1 J	2 5	ng/L	SW846 8270A SIM
Acridine	0.94 J	6.1	ng/L	SW846 8270A SIM
Dibenzothiophene	5.3	1.1	ng/L	SW846 8270A SIM

CITY OF ST. LOUIS PARK

Client Sample ID: GAC-SLP4T-031599

GC/MS Semivolatiles

Lot-Sample #...: D9C160123-001 Work Order #...: CRM9H101 Matrix.....: WATER
Date Sampled...: 03/15/99 Date Received..: 03/16/99
Prep Date.....: 03/16/99 Analysis Date..: 04/02/99
Prep Batch #...: 9075345 Analysis Time..: 13:25
Dilution Factor: 1

Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	ND	1.4	ng/L
Naphthalene	**3.5 J**	**6.5**	**ng/L**
2-Methylnaphthalene	**1.6 J**	**3.9**	**ng/L**
Acenaphthene	**72**	**1.3**	**ng/L**
Dibenzofuran	ND	1.0	ng/L
Fluorene	**0.35 J**	**1.0**	**ng/L**
Phenanthrene	**1.9**	**1.3**	**ng/L**
Anthracene	**0.57 J**	**2.7**	**ng/L**
Carbazole	**9.5**	**1.9**	**ng/L**
Fluoranthene	**4.3**	**3.1**	**ng/L**
Pyrene	**4.4**	**1.4**	**ng/L**
Benzo(a)anthracene	ND	2.5	ng/L
Chrysene	ND	2.8	ng/L
Benzo(b)fluoranthene	ND	2.5	ng/L
Benzo(k)fluoranthene	ND	2.3	ng/L
Benzo(a)pyrene	ND	2.3	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Benzo(ghi)perylene	ND	2.8	ng/L
Indene	**8.2**	**0.90**	**ng/L**
1-Methylnaphthalene	**0.90 J**	**2.8**	**ng/L**
Benzo(e)pyrene	ND	1.9	ng/L
Biphenyl	**0.34 J**	**4.3**	**ng/L**
Dibenz(a,h)anthracene	ND	1.6	ng/L
Quinoline	ND	6.9	ng/L
2,3-Benzofuran	ND	5.1	ng/L
2,3-Dihydroindene	**68**	**5.0**	**ng/L**
Benzo(b)thiophene	**5.9**	**0.90**	**ng/L**
Indole	**0.41 J**	**2.5**	**ng/L**
Acridine	ND	6.1	ng/L
Perylene	ND	2.5	ng/L
Dibenzothiophene	**0.44 J**	**1.1**	**ng/L**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	56	(10 - 118)
Fluorene d-10	86	(41 - 162)
Naphthalene-d8	72	(21 - 108)

NOTE(S):

J Estimated result Result is less than RL

CITY OF ST. LOUIS PARK

Client Sample ID: GAC-SLP4TD-031599

GC/MS Semivolatiles

Lot-Sample #...: D9C160123-002 Work Order #...: CRM9J101 Matrix.....: WATER
Date Sampled...: 03/15/99 Date Received..: 03/16/99
Prep Date.....: 03/16/99 Analysis Date..: 04/02/99
Prep Batch #...: 9075345 Analysis Time..: 16:25
Dilution Factor: 1

Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	ND	1.4	ng/L
Naphthalene	**14**	**6.5**	**ng/L**
2-Methylnaphthalene	**1.5 J**	**3.9**	**ng/L**
Acenaphthene	**76**	**1.3**	**ng/L**
Dibenzofuran	ND	1.0	ng/L
Fluorene	ND	1.0	ng/L
Phenanthrene	**2.2**	**1.3**	**ng/L**
Anthracene	**0.63 J**	**2.7**	**ng/L**
Carbazole	**10**	**1.9**	**ng/L**
Fluoranthene	**4.6**	**3.1**	**ng/L**
Pyrene	**4.2**	**1.4**	**ng/L**
Benzo(a)anthracene	ND	2.5	ng/L
Chrysene	ND	2.8	ng/L
Benzo(b)fluoranthene	ND	2.5	ng/L
Benzo(k)fluoranthene	ND	2.3	ng/L
Benzo(a)pyrene	ND	2.3	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Benzo(ghi)perylene	ND	2.8	ng/L
Indene	**11**	**0.90**	**ng/L**
1-Methylnaphthalene	**1.8 J**	**2.8**	**ng/L**
Benzo(e)pyrene	ND	1.9	ng/L
Biphenyl	**0.41 J**	**4.3**	**ng/L**
Dibenz(a,h)anthracene	ND	1.6	ng/L
Quinoline	ND	6.9	ng/L
2,3-Benzofuran	ND	5.1	ng/L
2,3-Dihydroindene	**75**	**5.0**	**ng/L**
Benzo(b)thiophene	**7.1**	**0.90**	**ng/L**
Indole	**0.48 J**	**2.5**	**ng/L**
Acridine	ND	6.1	ng/L
Perylene	ND	2.5	ng/L
Dibenzothiophene	**0.50 J**	**1.1**	**ng/L**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	64	(10 - 118)
Fluorene d-10	91	(41 - 162)
Naphthalene-d8	80	(21 - 108)

NOTE(S):

J Estimated result Result is less than RL

CITY OF ST. LOUIS PARK

Client Sample ID: GAC-SLP4TFB-031599

GC/MS Semivolatiles

Lot-Sample #...: D9C160123-003 Work Order #...: CRM9M101 Matrix.....: WATER
Date Sampled...: 03/15/99 Date Received..: 03/16/99
Prep Date.....: 03/16/99 Analysis Date..: 04/02/99
Prep Batch #...: 9075345 Analysis Time..: 17:03
Dilution Factor: 1

Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	ND	1.4	ng/L
Naphthalene	**3.8 J**	**6.5**	**ng/L**
2-Methylnaphthalene	**1.6 J**	**3.9**	**ng/L**
Acenaphthene	ND	1.3	ng/L
Dibenzofuran	ND	1.0	ng/L
Fluorene	**0.19 J**	**1.0**	**ng/L**
Phenanthrene	**1.2 J**	**1.3**	**ng/L**
Anthracene	ND	2.7	ng/L
Carbazole	ND	1.9	ng/L
Fluoranthene	**0.73 J**	**3.1**	**ng/L**
Pyrene	**0.46 J**	**1.4**	**ng/L**
Benzo(a)anthracene	ND	2.5	ng/L
Chrysene	ND	2.8	ng/L
Benzo(b)fluoranthene	ND	2.5	ng/L
Benzo(k)fluoranthene	ND	2.3	ng/L
Benzo(a)pyrene	ND	2.3	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Benzo(ghi)perylene	ND	2.8	ng/L
Indene	**1.9**	**0.90**	**ng/L**
1-Methylnaphthalene	**0.81 J**	**2.8**	**ng/L**
Benzo(e)pyrene	ND	1.9	ng/L
Biphenyl	**0.20 J**	**4.3**	**ng/L**
Dibenz(a,h)anthracene	ND	1.6	ng/L
Quinoline	ND	6.9	ng/L
2,3-Benzofuran	ND	5.1	ng/L
2,3-Dihydroindene	**2.1 J**	**5.0**	**ng/L**
Benzo(b)thiophene	ND	0.90	ng/L
Indole	ND	2.5	ng/L
Acridine	ND	6.1	ng/L
Perylene	ND	2.5	ng/L
Dibenzothiophene	ND	1.1	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	95	(10 - 118)
Fluorene d-10	101	(41 - 162)
Naphthalene-d8	83	(21 - 108)

NOTE(S):

J Estimated result Result is less than RL

CITY OF ST. LOUIS PARK

Client Sample ID: GAC-SLP4TFBD-031599

GC/MS Semivolatiles

Lot-Sample #...: D9C160123-004 Work Order #...: CRM9R101 Matrix.....: WATER
Date Sampled...: 03/15/99 Date Received..: 03/16/99
Prep Date.....: 03/16/99 Analysis Date..: 04/02/99
Prep Batch #...: 9075345 Analysis Time..: 17:40
Dilution Factor: 1

Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	ND	1.4	ng/L
Naphthalene	**5.3 J**	**6.5**	**ng/L**
2-Methylnaphthalene	**1.4 J**	**3.9**	**ng/L**
Acenaphthene	**0.25 J**	**1.3**	**ng/L**
Dibenzofuran	ND	1.0	ng/L
Fluorene	**0.35 J**	**1.0**	**ng/L**
Phenanthrene	**1.3**	**1.3**	**ng/L**
Anthracene	ND	2.7	ng/L
Carbazole	ND	1.9	ng/L
Fluoranthene	**0.71 J**	**3.1**	**ng/L**
Pyrene	**0.41 J**	**1.4**	**ng/L**
Benzo(a)anthracene	ND	2.5	ng/L
Chrysene	ND	2.8	ng/L
Benzo(b)fluoranthene	ND	2.5	ng/L
Benzo(k)fluoranthene	ND	2.3	ng/L
Benzo(a)pyrene	ND	2.3	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Benzo(ghi)perylene	ND	2.8	ng/L
Indene	**1.5**	**0.90**	**ng/L**
1-Methylnaphthalene	**0.64 J**	**2.8**	**ng/L**
Benzo(e)pyrene	ND	1.9	ng/L
Biphenyl	**0.24 J**	**4.3**	**ng/L**
Quinoline	ND	6.9	ng/L
2,3-Benzofuran	**0.71 J**	**5.1**	**ng/L**
2,3-Dihydroindene	**1.9 J**	**5.0**	**ng/L**
Benzo(b)thiophene	ND	0.90	ng/L
Indole	ND	2.5	ng/L
Acridine	ND	6.1	ng/L
Perylene	ND	2.5	ng/L
Dibenzothiophene	ND	1.1	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	92	(10 - 118)
Fluorene d-10	90	(41 - 162)
Naphthalene-d8	75	(21 - 108)

NOTE(S):

J Estimated result Result is less than RL

CITY OF ST. LOUIS PARK

Client Sample ID: GAC-SLP4TLE-031599

GC/MS Semivolatiles

Lot-Sample #...: D9C160123-005 Work Order #...: CRM9V101 Matrix.....: WATER
Date Sampled...: 03/15/99 Date Received..: 03/16/99
Prep Date.....: 03/16/99 Analysis Date..: 04/02/99
Prep Batch #...: 9075345 Analysis Time..: 18:18
Dilution Factor: 1

Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	ND	1.4	ng/L
Naphthalene	**5.6 J**	**6.5**	**ng/L**
2-Methylnaphthalene	**1.6 J**	**3.9**	**ng/L**
Acenaphthene	**200**	**1.3**	**ng/L**
Dibenzofuran	ND	1.0	ng/L
Fluorene	ND	1.0	ng/L
Phenanthrene	**3.3**	**1.3**	**ng/L**
Anthracene	**1.9 J**	**2.7**	**ng/L**
Carbazole	**33**	**1.9**	**ng/L**
Fluoranthene	**17**	**3.1**	**ng/L**
Pyrene	**17**	**1.4**	**ng/L**
Benzo(a)anthracene	ND	2 5	ng/L
Chrysene	ND	2.8	ng/L
Benzo(b)fluoranthene	ND	2.5	ng/L
Benzo(k)fluoranthene	ND	2.3	ng/L
Benzo(a)pyrene	ND	2.3	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Benzo(ghi)perylene	ND	2.8	ng/L
Indene	**19**	**0.90**	**ng/L**
1-Methylnaphthalene	ND	2.8	ng/L
Benzo(e)pyrene	ND	1.9	ng/L
Biphenyl	**0.62 J**	**4.3**	**ng/L**
Dibenz(a,h)anthracene	ND	1.6	ng/L
Quinoline	ND	6.9	ng/L
2,3-Benzofuran	**4.0 J**	**5.1**	**ng/L**
2,3-Dihydroindene	**170**	**5.0**	**ng/L**
Benzo(b)thiophene	**17**	**0.90**	**ng/L**
Indole	ND	2.5	ng/L
Acridine	ND	6.1	ng/L
Perylene	ND	2.5	ng/L
Dibenzothiophene	**1.3**	**1.1**	**ng/L**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	63	(10 - 118)
Fluorene d-10	95	(41 - 162)
Naphthalene-d8	73	(21 - 108)

NOTE(S):

J Estimated result Result is less than RL

CITY OF ST. LOUIS PARK

Client Sample ID: GAC-SLP10T-031599

GC/MS Semivolatiles

Lot-Sample #...: D9C160123-006 Work Order #...: CRM9W101 Matrix.....: WATER
Date Sampled...: 03/15/99 Date Received..: 03/16/99
Prep Date.....: 03/16/99 Analysis Date..: 04/02/99
Prep Batch #...: 9075345 Analysis Time..: 18:56
Dilution Factor: 1

Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	34	1.4	ng/L
Naphthalene	8.1	6.5	ng/L
2-Methylnaphthalene	1.3 J	3.9	ng/L
Acenaphthene	140	1.3	ng/L
Dibenzofuran	3.7	1.0	ng/L
Fluorene	40	1.0	ng/L
Phenanthrene	3.3	1.3	ng/L
Anthracene	1.2 J	2.7	ng/L
Carbazole	1.7 J	1.9	ng/L
Fluoranthene	9.4	3.1	ng/L
Pyrene	17	1.4	ng/L
Benzo(a)anthracene	0.33 J	2.5	ng/L
Chrysene	0.39 J	2.8	ng/L
Benzo(b)fluoranthene	ND	2.5	ng/L
Benzo(k)fluoranthene	ND	2.3	ng/L
Benzo(a)pyrene	ND	2.3	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Benzo(ghi)perylene	ND	2.8	ng/L
Indene	10	0.90	ng/L
1-Methylnaphthalene	6.6	2.8	ng/L
Benzo(e)pyrene	ND	1.9	ng/L
Biphenyl	2.2 J	4.3	ng/L
Dibenz(a,h)anthracene	ND	1.6	ng/L
Quinoline	ND	6.9	ng/L
2,3-Benzofuran	1.8 J	5.1	ng/L
2,3-Dihydroindene	74	5.0	ng/L
Benzo(b)thiophene	6.8	0.90	ng/L
Indole	1.1 J	2.5	ng/L
Acridine	0.94 J	6.1	ng/L
Perylene	ND	2.5	ng/L
Dibenzothiophene	5.3	1.1	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	56	(10 - 118)
Fluorene d-10	89	(41 - 162)
Naphthalene-d8	74	(21 - 108)

NOTE(S):

J Estimated result Result is less than RL

METHOD BLANK REPORT

GC/MS Semivolatiles

Client Lot #...: D9C160123 **Work Order #...:** CRMWL101 **Matrix.....:** WATER
MB Lot-Sample #: D9C160000-345

Prep Date.....: 03/16/99 **Analysis Time..:** 11:31
Analysis Date..: 04/02/99 **Prep Batch #...:** 9075345
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Acenaphthylene	ND	1.4	ng/L	SW846 8270A SIM
Naphthalene	**3.2 J**	**6.5**	**ng/L**	**SW846 8270A SIM**
2-Methylnaphthalene	**1.0 J**	**3.9**	**ng/L**	**SW846 8270A SIM**
Acenaphthene	ND	1.3	ng/L	SW846 8270A SIM
Dibenzofuran	ND	1.0	ng/L	SW846 8270A SIM
Fluorene	ND	1.0	ng/L	SW846 8270A SIM
Phenanthrene	**0.87 J**	**1.3**	**ng/L**	**SW846 8270A SIM**
Anthracene	ND	2.7	ng/L	SW846 8270A SIM
Carbazole	ND	1.9	ng/L	SW846 8270A SIM
Fluoranthene	**0.71 J**	**3.1**	**ng/L**	**SW846 8270A SIM**
Pyrene	**0.43 J**	**1.4**	**ng/L**	**SW846 8270A SIM**
Benzo(a)anthracene	ND	2.5	ng/L	SW846 8270A SIM
Chrysene	**0.23 J**	**2.8**	**ng/L**	**SW846 8270A SIM**
Benzo(b)fluoranthene	ND	2.5	ng/L	SW846 8270A SIM
Benzo(k)fluoranthene	ND	2.3	ng/L	SW846 8270A SIM
Benzo(a)pyrene	ND	2.3	ng/L	SW846 8270A SIM
Indeno(1,2,3-cd)pyrene	**0.19 J**	**2.1**	**ng/L**	**SW846 8270A SIM**
Benzo(ghi)perylene	**0.46 J**	**2.8**	**ng/L**	**SW846 8270A SIM**
Indene	**1.9**	**0.90**	**ng/L**	**SW846 8270A SIM**
1-Methylnaphthalene	ND	2.8	ng/L	SW846 8270A SIM
Benzo(e)pyrene	ND	1.9	ng/L	SW846 8270A SIM
Biphenyl	**0.18 J**	**4.3**	**ng/L**	**SW846 8270A SIM**
Dibenz(a,h)anthracene	ND	1.6	ng/L	SW846 8270A SIM
Quinoline	ND	6.9	ng/L	SW846 8270A SIM
2,3-Benzofuran	ND	5.1	ng/L	SW846 8270A SIM
2,3-Dihydroindene	**0.95 J**	**5.0**	**ng/L**	**SW846 8270A SIM**
Benzo(b)thiophene	ND	0.90	ng/L	SW846 8270A SIM
Indole	ND	2.5	ng/L	SW846 8270A SIM
Acridine	ND	6.1	ng/L	SW846 8270A SIM
Perylene	ND	2.5	ng/L	SW846 8270A SIM
Dibenzothiophene	ND	1.1	ng/L	SW846 8270A SIM

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	100	(10 - 118)
Fluorene d-10	87	(41 - 162)
Naphthalene-d8	78	(21 - 108)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results

J Estimated result Result is less than RL

LABORATORY CONTROL SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #...: D9C160123 **Work Order #...:** CRMWL102-LCS **Matrix.....:** WATER
LCS Lot-Sample#: D9C160000-345 CRMWL103-LCSD
Prep Date.....: 03/16/99 **Analysis Date..:** 04/02/99
Prep Batch #...: 9075345 **Analysis Time..:** 12:09
Dilution Factor: 1

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	RPD	METHOD
Naphthalene	**10.0**	**9.62**	**ng/L**	**96**		**SW846 8270A SIM**
	10.0	**10.4**	**ng/L**	**104**	**7.9**	**SW846 8270A SIM**
2-Methylnaphthalene	**10.0**	**9.33**	**ng/L**	**93**		**SW846 8270A SIM**
	10.0	**10.1**	**ng/L**	**101**	**8.4**	**SW846 8270A SIM**
Fluorene	**10.0**	**9.57**	**ng/L**	**96**		**SW846 8270A SIM**
	10.0	**9.74**	**ng/L**	**97**	**1.8**	**SW846 8270A SIM**
Chrysene	**10.0**	**9.92**	**ng/L**	**99**		**SW846 8270A SIM**
	10.0	**10.7**	**ng/L**	**107**	**7.7**	**SW846 8270A SIM**
Indene	**10.0**	**16.9 a**	**ng/L**	**169**		**SW846 8270A SIM**
	10.0	**16.4 a**	**ng/L**	**164**	**3.0**	**SW846 8270A SIM**
Benzo(e)pyrene	**10.0**	**7.66**	**ng/L**	**77**		**SW846 8270A SIM**
	10.0	**7.78**	**ng/L**	**78**	**1.6**	**SW846 8270A SIM**
Quinoline	**10.0**	**8.05**	**ng/L**	**81**		**SW846 8270A SIM**
	10.0	**2.24 p**	**ng/L**	**22**	**113**	**SW846 8270A SIM**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	108	(10 - 118)
	109	(10 - 118)
Fluorene d-10	96	(41 - 162)
	96	(41 - 162)
Naphthalene-d8	78	(21 - 108)
	82	(21 - 108)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results

Bold print denotes control parameters

a Spiked analyte recovery is outside stated control limits

p Relative percent difference (RPD) is outside stated control limits

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: D9C160123 Work Order #...: CRMWL102-LCS Matrix.....: WATER
LCS Lot-Sample#: D9C160000-345 CRMWL103-LCSD
Prep Date.....: 03/16/99 Analysis Date..: 04/02/99
Prep Batch #...: 9075345 Analysis Time..: 12:09
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Naphthalene	**96**	**(20 - 150)**			**SW846 8270A SIM**
	104	**(20 - 150)**	**7.9**	**(0-20)**	**SW846 8270A SIM**
2-Methylnaphthalene	**93**	**(20 - 150)**			**SW846 8270A SIM**
	101	**(20 - 150)**	**8.4**	**(0-20)**	**SW846 8270A SIM**
Fluorene	**96**	**(69 - 118)**			**SW846 8270A SIM**
	97	**(69 - 118)**	**1.8**	**(0-20)**	**SW846 8270A SIM**
Chrysene	**99**	**(20 - 132)**			**SW846 8270A SIM**
	107	**(20 - 132)**	**7.7**	**(0-20)**	**SW846 8270A SIM**
Indene	**169 a**	**(20 - 150)**			**SW846 8270A SIM**
	164 a	**(20 - 150)**	**3.0**	**(0-20)**	**SW846 8270A SIM**
Benzo(e)pyrene	**77**	**(20 - 150)**			**SW846 8270A SIM**
	78	**(20 - 150)**	**1.6**	**(0-20)**	**SW846 8270A SIM**
Quinoline	**81**	**(20 - 150)**			**SW846 8270A SIM**
	22 p	**(20 - 150)**	**113**	**(0-20)**	**SW846 8270A SIM**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	108	(10 - 118)
	109	(10 - 118)
Fluorene d-10	96	(41 - 162)
	96	(41 - 162)
Naphthalene-d8	78	(21 - 108)
	82	(21 - 108)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results

Bold print denotes control parameters

a Spiked analyte recovery is outside stated control limits

p Relative percent difference (RPD) is outside stated control limits

MATRIX SPIKE SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #...: D9C160123 **Work Order #...:** CRM9H102-MS **Matrix.....:** WATER
MS Lot-Sample #: D9C160123-001 CRM9H103-MSD
Date Sampled...: 03/15/99 **Date Received..:** 03/16/99
Prep Date.....: 03/16/99 **Analysis Date..:** 04/02/99
Prep Batch #...: 9075345 **Analysis Time..:** 14:02
Dilution Factor: 1

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCENT RECOVERY	RPD	METHOD
Naphthalene	**3.5**	**11.3**	**11.7**	**ng/L**	**73**		**SW846 8270A SIM**
	3.5	**10.9**	**12.5**	**ng/L**	**83**	**9.9**	**SW846 8270A SIM**
2-Methylnaphthalene	**1.6**	**11.3**	**11.0**	**ng/L**	**84**		**SW846 8270A SIM**
	1.6	**10.9**	**10.7**	**ng/L**	**84**	**0.28**	**SW846 8270A SIM**
Fluorene	**0.35**	**11.3**	**10.3**	**ng/L**	**88**		**SW846 8270A SIM**
	0.35	**10.9**	**9.69**	**ng/L**	**86**	**2.6**	**SW846 8270A SIM**
Chrysene	**ND**	**11.3**	**6.78**	**ng/L**	**60**		**SW846 8270A SIM**
	ND	**10.9**	**6.83**	**ng/L**	**63**	**4.0**	**SW846 8270A SIM**
Indene	**8.2**	**11.3**	**23.5**	**ng/L**	**136**		**SW846 8270A SIM**
	8.2	**10.9**	**23.9**	**ng/L**	**144**	**5.0**	**SW846 8270A SIM**
Benzo(e)pyrene	**ND**	**11.3**	**3.57**	**ng/L**	**32**		**SW846 8270A SIM**
	ND	**10.9**	**3.52**	**ng/L**	**32**	**1.9**	**SW846 8270A SIM**
Quinoline	**ND**	**11.3**	**11.7**	**ng/L**	**104**		**SW846 8270A SIM**
	ND	**10.9**	**13.8**	**ng/L**	**127**	**20**	**SW846 8270A SIM**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	66	(10 - 118)
	68	(10 - 118)
Fluorene d-10	95	(41 - 162)
	95	(41 - 162)
Naphthalene-d8	73	(21 - 108)
	73	(21 - 108)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results

Bold print denotes control parameters

MATRIX SPIKE SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: D9C160123 Work Order #...: CRM9H102-MS Matrix.....: WATER
MS Lot-Sample #: D9C160123-001 CRM9H103-MSD
Date Sampled...: 03/15/99 Date Received..: 03/16/99
Prep Date.....: 03/16/99 Analysis Date..: 04/02/99
Prep Batch #...: 9075345 Analysis Time..: 14:02
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Naphthalene	**73**	**(20 - 150)**			**SW846 8270A SIM**
	83	**(20 - 150)**	**9.9**	**(0-20)**	**SW846 8270A SIM**
2-Methylnaphthalene	**84**	**(20 - 150)**			**SW846 8270A SIM**
	84	**(20 - 150)**	**0.28**	**(0-20)**	**SW846 8270A SIM**
Fluorene	**88**	**(69 - 118)**			**SW846 8270A SIM**
	86	**(69 - 118)**	**2.6**	**(0-20)**	**SW846 8270A SIM**
Chrysene	**60**	**(20 - 132)**			**SW846 8270A SIM**
	63	**(20 - 132)**	**4.0**	**(0-20)**	**SW846 8270A SIM**
Indene	**136**	**(20 - 150)**			**SW846 8270A SIM**
	144	**(20 - 150)**	**5.0**	**(0-20)**	**SW846 8270A SIM**
Benzo(e)pyrene	**32**	**(20 - 150)**			**SW846 8270A SIM**
	32	**(20 - 150)**	**1.9**	**(0-20)**	**SW846 8270A SIM**
Quinoline	**104**	**(20 - 150)**			**SW846 8270A SIM**
	127	**(20 - 150)**	**20**	**(0-20)**	**SW846 8270A SIM**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	66	(10 - 118)
	68	(10 - 118)
Fluorene d-10	95	(41 - 162)
	95	(41 - 162)
Naphthalene-d8	73	(21 - 108)
	73	(21 - 108)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results

Bold print denotes control parameters

QC DATA ASSOCIATION SUMMARY

D9C160123

Sample Preparation and Analysis Control Numbers

SAMPLE#	MATRIX	ANALYTICAL METHOD	LEACH BATCH #	PREP BATCH #	MS RUN#
001	WATER	SW846 8270A SIM		9075345	9075150
002	WATER	SW846 8270A SIM		9075345	9075150
003	WATER	SW846 8270A SIM		9075345	9075150
004	WATER	SW846 8270A SIM		9075345	9075150
005	WATER	SW846 8270A SIM		9075345	9075150
006	WATER	SW846 8270A SIM		9075345	9075150

SECOND QUARTER

PAH ANALYSIS

GAC

Quanterra

Advanced Analytical Services

Quanterra Incorporated
4955 Yarrow Street
Arvada, Colorado 80002

303 421-6611 Telephone
303 467-9136 Fax

CASE NARRATIVE

FOR

City of St. Louis Park

June 22, 1999

Quanterra , Inc.

Project Lot Number D9E260108

Introduction

Seven aqueous samples (including matrix QC) were received at Quanterra Environmental Services, Denver Laboratory on May 26, 1999. The samples were logged in under Quanterra Denver's project lot number D9E260108. A cross reference associating Quanterra Denver's laboratory sample numbers to the actual field sample number is included. The samples were analyzed for part per tillion (ppt) PAHs.

Data Quality Assessment

The results contained in this report were reviewed relative to data acceptance criteria as specified in the October 1998 QAPP for completeness, precision, accuracy, representativeness and defensibility of the data. Unless otherwise stated below, no quality control problems or technical difficulties were encountered which would impact the interpretation or use of data in this report.

This data package is in compliance with the terms and conditions of the October 1998 QAPP, both technically and for completeness

Reported By: Kurt C Ill **Date:** June 22, 1999

Kurt C. Ill
Program Manager

ANALYTICAL REPORT

PROJECT NO. GAC

Reilly Tar & Chemical NPL Site

Lot #: D9E260108

Scott Anderson

City of St. Louis Park

QUANTERRA INCORPORATED

Kurt C. Ill
Project Manager

June 22, 1999

EXECUTIVE SUMMARY - Detection Highlights

D9E260108

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
GAC-SLP10FB-052599 05/25/99 003				
Naphthalene	3.5 J	6.5	ng/L	SW846 8270A SIM
GAC-SLP10FBD-052599 05/25/99 004				
Naphthalene	3.1 J	6.5	ng/L	SW846 8270A SIM
GAC-SLP4T-052599 05/25/99 005				
Anthracene	2.3 J	2.7	ng/L	SW846 8270A SIM

ANALYTICAL METHODS SUMMARY

D9E260108

PARAMETER	ANALYTICAL METHOD
Base/Neutrals and Acids	SW846 8270A SIM

References:

SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 and its updates.

METHOD / ANALYST SUMMARY

D9E260108

ANALYTICAL METHOD	ANALYST	ANALYST ID
SW846 8270A SIM	Monica R. Edwards	001685

References:

SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 and its updates.

SAMPLE SUMMARY

D9E260108

WO #	SAMPLE#	CLIENT SAMPLE ID	DATE	TIME
CW850	001	GAC-SLP10T-052599	05/25/99	
CW856	002	GAC-SLP10TD-052599	05/25/99	
CW85A	003	GAC-SLP10FB-052599	05/25/99	
CW85H	004	GAC-SLP10FBD-052599	05/25/99	
CW85M	005	GAC-SLP4T-052599	05/25/99	

NOTE(S):

- The analytical results of the samples listed above are presented on the following pages
- All calculations are performed before rounding to avoid round-off errors in calculated results
- Results noted as "ND" were not detected at or above the stated limit
- This report must not be reproduced, except in full, without the written approval of the laboratory
- Results for the following parameters are never reported on a dry weight basis color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight

CITY OF ST. LOUIS PARK

Client Sample ID: GAC-SLP10T-052599

GC/MS Semivolatiles

Lot-Sample #...: D9E260108-001 **Work Order #...:** CW850101 **Matrix.....:** WATER
Date Sampled...: 05/25/99 **Date Received..:** 05/26/99
Prep Date.....: 05/26/99 **Analysis Date..:** 06/12/99
Prep Batch #...: 9146327 **Analysis Time..:** 17:24
Dilution Factor: 1

Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	ND	1.4	ng/L
Naphthalene	ND	6.5	ng/L
2-Methylnaphthalene	ND	3.9	ng/L
Acenaphthene	ND	1.3	ng/L
Dibenzofuran	ND	1.0	ng/L
Fluorene	ND	1.0	ng/L
Phenanthrene	ND	1.3	ng/L
Anthracene	ND	2.7	ng/L
Carbazole	ND	1.9	ng/L
Fluoranthene	ND	3.1	ng/L
Pyrene	ND	1.4	ng/L
Benzo(a)anthracene	ND	2.5	ng/L
Chrysene	ND	2.8	ng/L
Benzo(b)fluoranthene	ND	2.5	ng/L
Benzo(k)fluoranthene	ND	2.3	ng/L
Benzo(a)pyrene	ND	2.3	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Benzo(ghi)perylene	ND	2.8	ng/L
Indene	ND	0.90	ng/L
1-Methylnaphthalene	ND	2.8	ng/L
Benzo(e)pyrene	ND	1.9	ng/L
Biphenyl	ND	4.3	ng/L
Dibenz(a,h)anthracene	ND	1.6	ng/L
Quinoline	ND	6.9	ng/L
2,3-Benzofuran	ND	5.1	ng/L
2,3-Dihydroindene	ND	5.0	ng/L
Benzo(b)thiophene	ND	0.90	ng/L
Indole	ND	2.5	ng/L
Acridine	ND	6.1	ng/L
Perylene	ND	2.5	ng/L
Dibenzothiophene	ND	1.1	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	38	(10 - 118)
Fluorene d-10	72	(41 - 162)
Naphthalene-d8	62	(21 - 108)

CITY OF ST. LOUIS PARK

Client Sample ID: GAC-SLP10TD-052599

GC/MS Semivolatiles

Lot-Sample #...: D9E260108-002 Work Order #...: CW856101 Matrix.....: WATER
Date Sampled...: 05/25/99 Date Received..: 05/26/99
Prep Date.....: 05/26/99 Analysis Date..: 06/12/99
Prep Batch #...: 9146327 Analysis Time..: 19:13
Dilution Factor: 1

Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	ND	1.4	ng/L
Naphthalene	ND	6.5	ng/L
2-Methylnaphthalene	ND	3.9	ng/L
Acenaphthene	ND	1.3	ng/L
Dibenzofuran	ND	1.0	ng/L
Fluorene	ND	1.0	ng/L
Phenanthrene	ND	1.3	ng/L
Anthracene	ND	2.7	ng/L
Carbazole	ND	1.9	ng/L
Fluoranthene	ND	3.1	ng/L
Pyrene	ND	1.4	ng/L
Benzo(a)anthracene	ND	2.5	ng/L
Chrysene	ND	2.8	ng/L
Benzo(b)fluoranthene	ND	2.5	ng/L
Benzo(k)fluoranthene	ND	2.3	ng/L
Benzo(a)pyrene	ND	2.3	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Benzo(ghi)perylene	ND	2.8	ng/L
Indene	ND	0.90	ng/L
1-Methylnaphthalene	ND	2.8	ng/L
Benzo(e)pyrene	ND	1.9	ng/L
Biphenyl	ND	4.3	ng/L
Dibenz(a,h)anthracene	ND	1.6	ng/L
Quinoline	ND	6.9	ng/L
2,3-Benzofuran	ND	5.1	ng/L
2,3-Dihydroindene	ND	5.0	ng/L
Benzo(b)thiophene	ND	0.90	ng/L
Indole	ND	2.5	ng/L
Acridine	ND	6.1	ng/L
Perylene	ND	2.5	ng/L
Dibenzothiophene	ND	1.1	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	45	(10 - 118)
Fluorene d-10	71	(41 - 162)
Naphthalene-d8	63	(21 - 108)

CITY OF ST. LOUIS PARK

Client Sample ID: GAC-SLP10FB-052599

GC/MS Semivolatiles

Lot-Sample #...: D9E260108-003 Work Order #...: CW85A101 Matrix.....: WATER
Date Sampled...: 05/25/99 Date Received..: 05/26/99
Prep Date.....: 05/26/99 Analysis Date..: 06/12/99
Prep Batch #...: 9146327 Analysis Time..: 19:49
Dilution Factor: 1

Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	ND	1.4	ng/L
Naphthalene	**3.5 J**	**6.5**	**ng/L**
2-Methylnaphthalene	ND	3.9	ng/L
Acenaphthene	ND	1.3	ng/L
Dibenzofuran	ND	1.0	ng/L
Fluorene	ND	1.0	ng/L
Phenanthrene	ND	1.3	ng/L
Anthracene	ND	2.7	ng/L
Carbazole	ND	1.9	ng/L
Fluoranthene	ND	3.1	ng/L
Pyrene	ND	1.4	ng/L
Benzo(a)anthracene	ND	2.5	ng/L
Chrysene	ND	2.8	ng/L
Benzo(b)fluoranthene	ND	2.5	ng/L
Benzo(k)fluoranthene	ND	2.3	ng/L
Benzo(a)pyrene	ND	2.3	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Benzo(ghi)perylene	ND	2.8	ng/L
Indene	ND	0.90	ng/L
1-Methylnaphthalene	ND	2.8	ng/L
Benzo(e)pyrene	ND	1.9	ng/L
Biphenyl	ND	4.3	ng/L
Dibenz(a,h)anthracene	ND	1.6	ng/L
Quinoline	ND	6.9	ng/L
2,3-Benzofuran	ND	5.1	ng/L
2,3-Dihydroindene	ND	5.0	ng/L
Benzo(b)thiophene	ND	0.90	ng/L
Indole	ND	2.5	ng/L
Acridine	ND	6.1	ng/L
Perylene	ND	2.5	ng/L
Dibenzothiophene	ND	1.1	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	69	(10 - 118)
Fluorene d-10	75	(41 - 162)
Naphthalene-d8	65	(21 - 108)

NOTE(S):

J Estimated result Result is less than RL

CITY OF ST. LOUIS PARK

Client Sample ID: GAC-SLP10FBD-052599

GC/MS Semivolatiles

Lot-Sample #...:	D9E260108-004	**Work Order #...:**	CW85H101	**Matrix.....:**	WATER
Date Sampled...:	05/25/99	**Date Received..:**	05/26/99		
Prep Date.....:	05/26/99	**Analysis Date..:**	06/12/99		
Prep Batch #...:	9146327	**Analysis Time..:**	20:26		
Dilution Factor:	1				
		Method.....:	SW846 8270A SIM		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	ND	1.4	ng/L
Naphthalene	**3.1 J**	**6.5**	**ng/L**
2-Methylnaphthalene	ND	3.9	ng/L
Acenaphthene	ND	1.3	ng/L
Dibenzofuran	ND	1.0	ng/L
Fluorene	ND	1.0	ng/L
Phenanthrene	ND	1.3	ng/L
Anthracene	ND	2.7	ng/L
Carbazole	ND	1.9	ng/L
Fluoranthene	ND	3.1	ng/L
Pyrene	ND	1.4	ng/L
Benzo(a)anthracene	ND	2.5	ng/L
Chrysene	ND	2.8	ng/L
Benzo(b)fluoranthene	ND	2.5	ng/L
Benzo(k)fluoranthene	ND	2.3	ng/L
Benzo(a)pyrene	ND	2.3	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Benzo(ghi)perylene	ND	2.8	ng/L
Indene	ND	0.90	ng/L
1-Methylnaphthalene	ND	2.8	ng/L
Benzo(e)pyrene	ND	1.9	ng/L
Biphenyl	ND	4.3	ng/L
Quinoline	ND	6.9	ng/L
2,3-Benzofuran	ND	5.1	ng/L
2,3-Dihydroindene	ND	5.0	ng/L
Benzo(b)thiophene	ND	0.90	ng/L
Indole	ND	2.5	ng/L
Acridine	ND	6.1	ng/L
Perylene	ND	2.5	ng/L
Dibenzothiophene	ND	1.1	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	66	(10 - 118)
Fluorene d-10	69	(41 - 162)
Naphthalene-d8	60	(21 - 108)

NOTE(S):

J Estimated result Result is less than RL

CITY OF ST. LOUIS PARK

Client Sample ID: GAC-SLP4T-052599

GC/MS Semivolatiles

Lot-Sample #...: D9E260108-005 Work Order #...: CW85M101 Matrix.....: WATER
Date Sampled...: 05/25/99 Date Received..: 05/26/99
Prep Date.....: 05/26/99 Analysis Date..: 06/12/99
Prep Batch #...: 9146327 Analysis Time..: 21:02
Dilution Factor: 1

Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	ND	1.4	ng/L
Naphthalene	ND	6.5	ng/L
2-Methylnaphthalene	ND	3.9	ng/L
Acenaphthene	ND	1.3	ng/L
Dibenzofuran	ND	1.0	ng/L
Fluorene	ND	1.0	ng/L
Phenanthrene	ND	1.3	ng/L
Anthracene	**2.3 J**	**2.7**	**ng/L**
Carbazole	ND	1.9	ng/L
Fluoranthene	ND	3.1	ng/L
Pyrene	ND	1.4	ng/L
Benzo(a)anthracene	ND	2.5	ng/L
Chrysene	ND	2.8	ng/L
Benzo(b)fluoranthene	ND	2.5	ng/L
Benzo(k)fluoranthene	ND	2.3	ng/L
Benzo(a)pyrene	ND	2.3	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Benzo(ghi)perylene	ND	2.8	ng/L
Indene	ND	0.90	ng/L
1-Methylnaphthalene	ND	2.8	ng/L
Benzo(e)pyrene	ND	1.9	ng/L
Biphenyl	ND	4.3	ng/L
Dibenz(a,h)anthracene	ND	1.6	ng/L
Quinoline	ND	6.9	ng/L
2,3-Benzofuran	ND	5.1	ng/L
2,3-Dihydroindene	ND	5.0	ng/L
Benzo(b)thiophene	ND	0.90	ng/L
Indole	ND	2.5	ng/L
Acridine	ND	6.1	ng/L
Perylene	ND	2.5	ng/L
Dibenzothiophene	ND	1.1	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	34	(10 - 118)
Fluorene d-10	70	(41 - 162)
Naphthalene-d8	58	(21 - 108)

NOTE(S):

J Estimated result Result is less than RL

QC DATA ASSOCIATION SUMMARY

D9E260108

Sample Preparation and Analysis Control Numbers

SAMPLE#	MATRIX	ANALYTICAL METHOD	LEACH BATCH #	PREP BATCH #	MS RUN#
001	WATER	SW846 8270A SIM		9146327	9146136
002	WATER	SW846 8270A SIM		9146327	9146136
003	WATER	SW846 8270A SIM		9146327	9146136
004	WATER	SW846 8270A SIM		9146327	9146136
005	WATER	SW846 8270A SIM		9146327	9146136

METHOD BLANK REPORT

GC/MS Semivolatiles

Client Lot #...: D9E260108 **Work Order #...:** CW907101 **Matrix.....:** WATER
MB Lot-Sample #: D9E260000-327

Prep Date.....: 05/26/99 **Analysis Time..:** 13:44
Analysis Date..: 06/12/99 **Prep Batch #...:** 9146327
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Acenaphthylene	ND	1.4	ng/L	SW846 8270A SIM
Naphthalene	ND	6.5	ng/L	SW846 8270A SIM
2-Methylnaphthalene	ND	3.9	ng/L	SW846 8270A SIM
Acenaphthene	ND	1.3	ng/L	SW846 8270A SIM
Dibenzofuran	ND	1.0	ng/L	SW846 8270A SIM
Fluorene	ND	1.0	ng/L	SW846 8270A SIM
Phenanthrene	ND	1.3	ng/L	SW846 8270A SIM
Anthracene	ND	2.7	ng/L	SW846 8270A SIM
Carbazole	ND	1.9	ng/L	SW846 8270A SIM
Fluoranthene	ND	3.1	ng/L	SW846 8270A SIM
Pyrene	ND	1.4	ng/L	SW846 8270A SIM
Benzo(a)anthracene	ND	2.5	ng/L	SW846 8270A SIM
Chrysene	ND	2.8	ng/L	SW846 8270A SIM
Benzo(b)fluoranthene	ND	2.5	ng/L	SW846 8270A SIM
Benzo(k)fluoranthene	ND	2.3	ng/L	SW846 8270A SIM
Benzo(a)pyrene	ND	2.3	ng/L	SW846 8270A SIM
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L	SW846 8270A SIM
Benzo(ghi)perylene	ND	2.8	ng/L	SW846 8270A SIM
Indene	ND	0.90	ng/L	SW846 8270A SIM
1-Methylnaphthalene	ND	2.8	ng/L	SW846 8270A SIM
Benzo(e)pyrene	ND	1.9	ng/L	SW846 8270A SIM
Biphenyl	ND	4.3	ng/L	SW846 8270A SIM
Dibenz(a,h)anthracene	ND	1.6	ng/L	SW846 8270A SIM
Quinoline	ND	6.9	ng/L	SW846 8270A SIM
2,3-Benzofuran	ND	5.1	ng/L	SW846 8270A SIM
2,3-Dihydroindene	ND	5.0	ng/L	SW846 8270A SIM
Benzo(b)thiophene	ND	0.90	ng/L	SW846 8270A SIM
Indole	ND	2.5	ng/L	SW846 8270A SIM
Acridine	ND	6.1	ng/L	SW846 8270A SIM
Perylene	ND	2.5	ng/L	SW846 8270A SIM
Dibenzothiophene	ND	1.1	ng/L	SW846 8270A SIM

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	63	(10 - 118)
Fluorene d-10	72	(41 - 162)
Naphthalene-d8	65	(21 - 108)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results

LABORATORY CONTROL SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #...: D9E260108 **Work Order #...:** CW907102-LCS **Matrix.....:** WATER
LCS Lot-Sample#: D9E260000-327 CW907103-LCSD
Prep Date.....: 05/26/99 **Analysis Date..:** 06/12/99
Prep Batch #...: 9146327 **Analysis Time..:** 14:21
Dilution Factor: 1

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	RPD	METHOD
Naphthalene	**10.0**	**8.92**	**ng/L**	**89**		**SW846 8270A SIM**
	10.0	**8.59**	**ng/L**	**86**	**3.7**	**SW846 8270A SIM**
2-Methylnaphthalene	**10.0**	**7.83**	**ng/L**	**78**		**SW846 8270A SIM**
	10.0	**7.48**	**ng/L**	**75**	**4.5**	**SW846 8270A SIM**
Fluorene	**10.0**	**7.64**	**ng/L**	**76**		**SW846 8270A SIM**
	10.0	**7.30**	**ng/L**	**73**	**4.4**	**SW846 8270A SIM**
Chrysene	**10.0**	**5.97**	**ng/L**	**60**		**SW846 8270A SIM**
	10.0	**6.07**	**ng/L**	**61**	**1.6**	**SW846 8270A SIM**
Indene	**10.0**	**8.13**	**ng/L**	**81**		**SW846 8270A SIM**
	10.0	**7.32**	**ng/L**	**73**	**10**	**SW846 8270A SIM**
Benzo(e)pyrene	**10.0**	**7.12**	**ng/L**	**71**		**SW846 8270A SIM**
	10.0	**6.37**	**ng/L**	**64**	**11**	**SW846 8270A SIM**
Quinoline	**10.0**	**7.80**	**ng/L**	**78**		**SW846 8270A SIM**
	10.0	**6.75**	**ng/L**	**68**	**14**	**SW846 8270A SIM**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	73	(10 - 118)
	72	(10 - 118)
Fluorene d-10	77	(41 - 162)
	74	(41 - 162)
Naphthalene-d8	70	(21 - 108)
	66	(21 - 108)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results

Bold print denotes control parameters

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: D9E260108 **Work Order #...:** CW907102-LCS **Matrix.....:** WATER
LCS Lot-Sample#: D9E260000-327 CW907103-LCSD
Prep Date.....: 05/26/99 **Analysis Date..:** 06/12/99
Prep Batch #...: 9146327 **Analysis Time..:** 14:21
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Naphthalene	**89**	**(20 - 150)**			**SW846 8270A SIM**
	86	**(20 - 150)**	**3.7**	**(0-20)**	**SW846 8270A SIM**
2-Methylnaphthalene	**78**	**(20 - 150)**			**SW846 8270A SIM**
	75	**(20 - 150)**	**4.5**	**(0-20)**	**SW846 8270A SIM**
Fluorene	**76**	**(69 - 118)**			**SW846 8270A SIM**
	73	**(69 - 118)**	**4.4**	**(0-20)**	**SW846 8270A SIM**
Chrysene	**60**	**(20 - 132)**			**SW846 8270A SIM**
	61	**(20 - 132)**	**1.6**	**(0-20)**	**SW846 8270A SIM**
Indene	**81**	**(20 - 150)**			**SW846 8270A SIM**
	73	**(20 - 150)**	**10**	**(0-20)**	**SW846 8270A SIM**
Benzo(e)pyrene	**71**	**(20 - 150)**			**SW846 8270A SIM**
	64	**(20 - 150)**	**11**	**(0-20)**	**SW846 8270A SIM**
Quinoline	**78**	**(20 - 150)**			**SW846 8270A SIM**
	68	**(20 - 150)**	**14**	**(0-20)**	**SW846 8270A SIM**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	73	(10 - 118)
	72	(10 - 118)
Fluorene d-10	77	(41 - 162)
	74	(41 - 162)
Naphthalene-d8	70	(21 - 108)
	66	(21 - 108)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results

Bold print denotes control parameters

MATRIX SPIKE SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #...: D9E260108 **Work Order #...:** CW850102-MS **Matrix.....:** WATER
MS Lot-Sample #: D9E260108-001 CW850103-MSD
Date Sampled...: 05/25/99 **Date Received..:** 05/26/99
Prep Date.....: 05/26/99 **Analysis Date..:** 06/12/99
Prep Batch #...: 9146327 **Analysis Time..:** 18:00
Dilution Factor: 1

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCENT RECOVERY	RPD	METHOD
Naphthalene	**ND**	**10.3**	**10.5**	**ng/L**	**102**		**SW846 8270A SIM**
	ND	**10.3**	**10.5**	**ng/L**	**103**	**0.49**	**SW846 8270A SIM**
2-Methylnaphthalene	**ND**	**10.3**	**8.28**	**ng/L**	**80**		**SW846 8270A SIM**
	ND	**10.3**	**8.17**	**ng/L**	**80**	**1.1**	**SW846 8270A SIM**
Fluorene	**ND**	**10.3**	**7.90**	**ng/L**	**77**		**SW846 8270A SIM**
	ND	**10.3**	**8.04**	**ng/L**	**78**	**2.2**	**SW846 8270A SIM**
Chrysene	**ND**	**10.3**	**4.02**	**ng/L**	**39**		**SW846 8270A SIM**
	ND	**10.3**	**4.87**	**ng/L**	**47**	**19**	**SW846 8270A SIM**
Indene	**ND**	**10.3**	**8.19**	**ng/L**	**80**		**SW846 8270A SIM**
	ND	**10.3**	**7.70**	**ng/L**	**75**	**5.9**	**SW846 8270A SIM**
Benzo(e)pyrene	**ND**	**10.3**	**2.81**	**ng/L**	**27**		**SW846 8270A SIM**
	ND	**10.3**	**3.10**	**ng/L**	**30**	**10**	**SW846 8270A SIM**
Quinoline	**ND**	**10.3**	**9.12**	**ng/L**	**89**		**SW846 8270A SIM**
	ND	**10.3**	**8.86**	**ng/L**	**86**	**2.6**	**SW846 8270A SIM**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	39	(10 - 118)
	55	(10 - 118)
Fluorene d-10	72	(41 - 162)
	77	(41 - 162)
Naphthalene-d8	64	(21 - 108)
	70	(21 - 108)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results

Bold print denotes control parameters

MATRIX SPIKE SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: D9E260108 Work Order #...: CW850102-MS Matrix.....: WATER
MS Lot-Sample #: D9E260108-001 CW850103-MSD
Date Sampled...: 05/25/99 Date Received..: 05/26/99
Prep Date.....: 05/26/99 Analysis Date..: 06/12/99
Prep Batch #...: 9146327 Analysis Time..: 18:00
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Naphthalene	102	(20 - 150)			SW846 8270A SIM
	103	(20 - 150)	0.49	(0-20)	SW846 8270A SIM
2-Methylnaphthalene	80	(20 - 150)			SW846 8270A SIM
	80	(20 - 150)	1.1	(0-20)	SW846 8270A SIM
Fluorene	77	(69 - 118)			SW846 8270A SIM
	78	(69 - 118)	2.2	(0-20)	SW846 8270A SIM
Chrysene	39	(20 - 132)			SW846 8270A SIM
	47	(20 - 132)	19	(0-20)	SW846 8270A SIM
Indene	80	(20 - 150)			SW846 8270A SIM
	75	(20 - 150)	5.9	(0-20)	SW846 8270A SIM
Benzo(e)pyrene	27	(20 - 150)			SW846 8270A SIM
	30	(20 - 150)	10	(0-20)	SW846 8270A SIM
Quinoline	89	(20 - 150)			SW846 8270A SIM
	86	(20 - 150)	2.6	(0-20)	SW846 8270A SIM

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	39	(10 - 118)
	55	(10 - 118)
Fluorene d-10	72	(41 - 162)
	77	(41 - 162)
Naphthalene-d8	64	(21 - 108)
	70	(21 - 108)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results

Bold print denotes control parameters

THIRD QUARTER

PAH ANALYSIS

Quanterra

Advanced Analytical Services

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CASE NARRATIVE

FOR

City of St Louis Park

October 20, 1999

Quanterra Environmental Services

Project Lot Number D9I140125

Introduction

Thirteen aqueous samples (including matrix QC) were received at Quanterra Environmental Services, Denver Laboratory on September 14, 1999. The samples were logged in under Quanterra Denver's project lot number D9I140125 A cross reference associating Quanterra Denver's laboratory sample numbers to the actual field sample number is included. The samples were analyzed for part per trillion (ppt) PAHs

Data Quality Assessment

The results contained in this report were reviewed relative to data acceptance criteria as specified in the October 1998 QAPP for completeness, precision, accuracy, representativeness and defensibility of the data. Unless otherwise stated below, no quality control problems or technical difficulties were encountered which would impact the interpretation or use of data in this report

Client samples with laboratory Id's D9I140125-006 and -009 were analyzed at a dilution due to target analytes exceeding the linear range of the instrument The reporting limits were raised accordingly As a result of the dilution, the surrogate compounds were not detected and are reported as "NC".

The surrogate compound naphthalene-d8 in sample D9I140125-008 was recovered at 309% which is ablve the 21%-108% recovery limits. Naphthalene-d8 was recovered within recovery limits in the method blank and duplicate control samples A matrix effect is indicated

The spike compound fluorene in the duplicate control samples was recovered at 62% and 65% respectively which is below the 69% to118% recovery limits but within the 53% to 105% historical limits

The relative percent difference (RPD) for the spike compounds chrysene and quinoline in the laboratory control samples are reported at 24% and 32% which is outside the 20% limit The RPDs for chrysene and quinoline were within limits in the matrix spike and matrix spike duplicate samples

Fluorene was recovered at 53% and 56% in the matrix spike and matrix spike duplicate samples which is below the 69% to 118% recovery limits but within the 53% to 105% historical limits

Except for the above, this data package is in compliance with the terms and conditions of the October 1998 QPP both technically and for completeness

Reported By: Kurt C. Ill **Date:** October 20, 1999

Kurt C. Ill
Program Manager, AASG

EXECUTIVE SUMMARY - Detection Highlights

D9I140125

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
DPV-W1-091399 09/13/99 07:50 008				
Indeno(1,2,3-cd)pyrene	8.2	2 1	ng/L	SW846 8270A SIM
Benzo(ghi)perylene	8.2	2.8	ng/L	SW846 8270A SIM
Indene	13	0.90	ng/L	SW846 8270A SIM
Benzo(e)pyrene	12	1.9	ng/L	SW846 8270A SIM
Dibenz(a,h)anthracene	2.6	1.6	ng/L	SW846 8270A SIM
2,3-Dihydroindene	16	5.0	ng/L	SW846 8270A SIM
Benzo(b)thiophene	19	0.90	ng/L	SW846 8270A SIM
Perylene	3.4	2.5	ng/L	SW846 8270A SIM
DPV-W18-091399 09/13/99 08:30 009				
Acenaphthylene	15	7.0	ng/L	SW846 8270A SIM
Naphthalene	33	32	ng/L	SW846 8270A SIM
Acenaphthene	300	6.5	ng/L	SW846 8270A SIM
Fluorene	7.6	5.0	ng/L	SW846 8270A SIM
Phenanthrene	13	6.5	ng/L	SW846 8270A SIM
Carbazole	16	9.5	ng/L	SW846 8270A SIM
Indene	130	4.5	ng/L	SW846 8270A SIM
2,3-Benzofuran	12 J	26	ng/L	SW846 8270A SIM
2,3-Dihydroindene	360	25	ng/L	SW846 8270A SIM
Benzo(b)thiophene	420	4.5	ng/L	SW846 8270A SIM
Dibenzothiophene	16	5.5	ng/L	SW846 8270A SIM
GAC-SLP10T-091399 09/13/99 011				
Acenaphthene	7.9	1.3	ng/L	SW846 8270A SIM
Fluorene	1.8	1.0	ng/L	SW846 8270A SIM
2,3-Dihydroindene	7.9	5.0	ng/L	SW846 8270A SIM

ANALYTICAL METHODS SUMMARY

D9I140125

PARAMETER	ANALYTICAL METHOD
Base/Neutrals and Acids	SW846 8270A SIM

References:

SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 and its updates.

METHOD / ANALYST SUMMARY

D9I140125

ANALYTICAL METHOD	ANALYST	ANALYST ID
SW846 8270A SIM	Monica R. Edwards	001685

References:

SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 and its updates.

SAMPLE SUMMARY

D9I140125

WO #	SAMPLE#	CLIENT SAMPLE ID	DATE	TIME
D2E9E	001	PCJ-SLP4-091399	09/13/99	
D2E9F	002	PCJ-SLP4D-091399	09/13/99	
D2E9G	003	PCJ-SLP4FB-091399	09/13/99	
D2E9H	004	PCJ-SLP4FBD-091399	09/13/99	
D2E9J	005	DPV-W19-091399	09/13/99	14:00
D2E9L	006	DPV-W20-091399	09/13/99	11:10
D2E9R	007	DPV-W121-091399	09/13/99	12.10
D2E9T	008	DPV-W1-091399	09/13/99	07:50
D2E9W	009	DPV-W18-091399	09/13/99	08:30
D2E9X	010	GAC-SLP4T-091399	09/13/99	
D2EA2	011	GAC-SLP10T-091399	09/13/99	

NOTE(S):

- The analytical results of the samples listed above are presented on the following pages
- All calculations are performed before rounding to avoid round-off errors in calculated results
- Results noted as "ND" were not detected at or above the stated limit
- This report must not be reproduced, except in full without the written approval of the laboratory
- Results for the following parameters are never reported on a dry weight basis color corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight

CITY OF ST. LOUIS PARK

Client Sample ID: GAC-SLP4T-091399

GC/MS Semivolatiles

Lot-Sample #...: D9I140125-010 Work Order #...: D2E9X101 Matrix.....: WATER
Date Sampled...: 09/13/99 Date Received..: 09/14/99
Prep Date.....: 09/14/99 Analysis Date..: 09/18/99
Prep Batch #...: 9258415 Analysis Time..: 20:18
Dilution Factor: 1

Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	ND	1.4	ng/L
Naphthalene	ND	6.5	ng/L
2-Methylnaphthalene	ND	3.9	ng/L
Acenaphthene	ND	1.3	ng/L
Dibenzofuran	ND	1.0	ng/L
Fluorene	ND	1.0	ng/L
Phenanthrene	ND	1.3	ng/L
Anthracene	ND	2.7	ng/L
Carbazole	ND	1.9	ng/L
Fluoranthene	ND	3.1	ng/L
Pyrene	ND	1.4	ng/L
Benzo(a)anthracene	ND	2.5	ng/L
Chrysene	ND	2.8	ng/L
Benzo(b)fluoranthene	ND	2.5	ng/L
Benzo(k)fluoranthene	ND	2.3	ng/L
Benzo(a)pyrene	ND	2.3	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Benzo(ghi)perylene	ND	2.8	ng/L
Indene	ND	0.90	ng/L
1-Methylnaphthalene	ND	2.8	ng/L
Benzo(e)pyrene	ND	1.9	ng/L
Biphenyl	ND	4.3	ng/L
Dibenz(a,h)anthracene	ND	1.6	ng/L
Quinoline	ND	6.9	ng/L
2,3-Benzofuran	ND	5.1	ng/L
2,3-Dihydroindene	ND	5.0	ng/L
Benzo(b)thiophene	ND	0.90	ng/L
Indole	ND	2.5	ng/L
Acridine	ND	6.1	ng/L
Perylene	ND	2.5	ng/L
Dibenzothiophene	ND	1.1	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	55	(10 - 118)
Fluorene d-10	78	(41 - 162)
Naphthalene-d8	67	(21 - 108)

CITY OF ST. LOUIS PARK

Client Sample ID: GAC-SLP10T-091399

GC/MS Semivolatiles

Lot-Sample #...: D9I140125-011 Work Order #...: D2EA2101 Matrix.....: WATER
Date Sampled...: 09/13/99 Date Received..: 09/14/99
Prep Date.....: 09/14/99 Analysis Date..: 09/18/99
Prep Batch #...: 9258415 Analysis Time..: 20:54
Dilution Factor: 1

Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	ND	1.4	ng/L
Naphthalene	ND	6.5	ng/L
2-Methylnaphthalene	ND	3 9	ng/L
Acenaphthene	**7.9**	**1.3**	**ng/L**
Dibenzofuran	ND	1.0	ng/L
Fluorene	**1.8**	**1.0**	**ng/L**
Phenanthrene	ND	1.3	ng/L
Anthracene	ND	2.7	ng/L
Carbazole	ND	1.9	ng/L
Fluoranthene	ND	3.1	ng/L
Pyrene	ND	1.4	ng/L
Benzo(a)anthracene	ND	2.5	ng/L
Chrysene	ND	2.8	ng/L
Benzo(b)fluoranthene	ND	2.5	ng/L
Benzo(k)fluoranthene	ND	2.3	ng/L
Benzo(a)pyrene	ND	2.3	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Benzo(ghi)perylene	ND	2.8	ng/L
Indene	ND	0.90	ng/L
1-Methylnaphthalene	ND	2.8	ng/L
Benzo(e)pyrene	ND	1.9	ng/L
Biphenyl	ND	4.3	ng/L
Dibenz(a,h)anthracene	ND	1.6	ng/L
Quinoline	ND	6.9	ng/L
2,3-Benzofuran	ND	5.1	ng/L
2,3-Dihydroindene	**7.9**	**5.0**	**ng/L**
Benzo(b)thiophene	ND	0.90	ng/L
Indole	ND	2.5	ng/L
Acridine	ND	6.1	ng/L
Perylene	ND	2.5	ng/L
Dibenzothiophene	ND	1.1	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	58	(10 - 118)
Fluorene d-10	61	(41 - 162)
Naphthalene-d8	54	(21 - 108)

METHOD BLANK REPORT

GC/MS Semivolatiles

Client Lot #...: D9I140125 Work Order #...: D2H08101 Matrix.....: WATER
MB Lot-Sample #: D9I150000-415

Prep Date.....: 09/14/99 Analysis Time..: 11:46
Analysis Date..: 09/18/99 Prep Batch #...: 9258415
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Acenaphthylene	ND	1.4	ng/L	SW846 8270A SIM
Naphthalene	ND	6.5	ng/L	SW846 8270A SIM
2-Methylnaphthalene	ND	3 9	ng/L	SW846 8270A SIM
Acenaphthene	ND	1.3	ng/L	SW846 8270A SIM
Dibenzofuran	ND	1.0	ng/L	SW846 8270A SIM
Fluorene	ND	1.0	ng/L	SW846 8270A SIM
Phenanthrene	ND	1.3	ng/L	SW846 8270A SIM
Anthracene	ND	2.7	ng/L	SW846 8270A SIM
Carbazole	ND	1.9	ng/L	SW846 8270A SIM
Fluoranthene	ND	3.1	ng/L	SW846 8270A SIM
Pyrene	ND	1.4	ng/L	SW846 8270A SIM
Benzo(a)anthracene	ND	2.5	ng/L	SW846 8270A SIM
Chrysene	ND	2.8	ng/L	SW846 8270A SIM
Benzo(b)fluoranthene	ND	2.5	ng/L	SW846 8270A SIM
Benzo(k)fluoranthene	ND	2.3	ng/L	SW846 8270A SIM
Benzo(a)pyrene	ND	2.3	ng/L	SW846 8270A SIM
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L	SW846 8270A SIM
Benzo(ghi)perylene	ND	2.8	ng/L	SW846 8270A SIM
Indene	ND	0.90	ng/L	SW846 8270A SIM
1-Methylnaphthalene	ND	2.8	ng/L	SW846 8270A SIM
Benzo(e)pyrene	ND	1.9	ng/L	SW846 8270A SIM
Biphenyl	ND	4.3	ng/L	SW846 8270A SIM
Dibenz(a,h)anthracene	ND	1.6	ng/L	SW846 8270A SIM
Quinoline	ND	6.9	ng/L	SW846 8270A SIM
2,3-Benzofuran	ND	5.1	ng/L	SW846 8270A SIM
2,3-Dihydroindene	ND	5.0	ng/L	SW846 8270A SIM
Benzo(b)thiophene	ND	0.90	ng/L	SW846 8270A SIM
Indole	ND	2.5	ng/L	SW846 8270A SIM
Acridine	ND	6.1	ng/L	SW846 8270A SIM
Perylene	ND	2.5	ng/L	SW846 8270A SIM
Dibenzothiophene	ND	1.1	ng/L	SW846 8270A SIM

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	102	(10 - 118)
Fluorene d-10	62	(41 - 162)
Naphthalene-d8	51	(21 - 108)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results

LABORATORY CONTROL SAMPLE DATA REPORT

GC/MS Semivolatiles

ient Lot #...: D9I140125 Work Order #...: D2H08102-LCS Matrix.....: WATER
S Lot-Sample#: D9I150000-415 D2H08103-LCSD
ep Date.....: 09/14/99 Analysis Date..: 09/18/99
ep Batch #...: 9258415 Analysis Time..: 12:23
lution Factor: 1

ıRAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	RPD	METHOD
ıphthalene	10.0	7.57	ng/L	76		SW846 8270A SIM
	10.0	7.44	ng/L	74	1.7	SW846 8270A SIM
Methylnaphthalene	10.0	7.09	ng/L	71		SW846 8270A SIM
	10.0	6.92	ng/L	69	2.4	SW846 8270A SIM
luorene	10.0	6.18 a	ng/L	62		SW846 8270A SIM
	10.0	6.53 a	ng/L	65	5.4	SW846 8270A SIM
ırysene	10.0	8.38	ng/L	84		SW846 8270A SIM
	10.0	6.61 p	ng/L	66	24	SW846 8270A SIM
ndene	10.0	6.34	ng/L	63		SW846 8270A SIM
	10.0	6.79	ng/L	68	6.8	SW846 8270A SIM
enzo(e)pyrene	10.0	8.71	ng/L	87		SW846 8270A SIM
	10.0	7.20	ng/L	72	19	SW846 8270A SIM
uinoline	10.0	6.16	ng/L	62		SW846 8270A SIM
	10.0	4.47 p	ng/L	45	32	SW846 8270A SIM

URROGATE	PERCENT RECOVERY	RECOVERY LIMITS
hrysene-d12	118	(10 - 118)
	90	(10 - 118)
luorene d-10	75	(41 - 162)
	80	(41 - 162)
aphthalene-d8	66	(21 - 108)
	69	(21 - 108)

OTE(S):

alculations are performed before rounding to avoid round-off errors in calculated results

old print denotes control parameters

Spiked analyte recovery is outside stated control limits

Relative percent difference (RPD) is outside stated control limits

MATRIX SPIKE SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: D9I140125 Work Order #...: D2E9E102-MS Matrix.....: WATER
MS Lot-Sample #: D9I140125-001 D2E9E103-MSD
Date Sampled...: 09/13/99 Date Received..: 09/14/99
Prep Date.....: 09/14/99 Analysis Date..: 09/18/99
Prep Batch #...: 9258415 Analysis Time..: 14:13
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Naphthalene	71	(20 - 150)			SW846 8270A SIM
	71	(20 - 150)	1.2	(0-20)	SW846 8270A SIM
2-Methylnaphthalene	60	(20 - 150)			SW846 8270A SIM
	60	(20 - 150)	0.98	(0-20)	SW846 8270A SIM
Fluorene	53 a	(69 - 118)			SW846 8270A SIM
	56 a	(69 - 118)	4.3	(0-20)	SW846 8270A SIM
Chrysene	43	(20 - 132)			SW846 8270A SIM
	40	(20 - 132)	7.2	(0-20)	SW846 8270A SIM
Indene	51	(20 - 150)			SW846 8270A SIM
	56	(20 - 150)	2.7	(0-20)	SW846 8270A SIM
Benzo(e)pyrene	27	(20 - 150)			SW846 8270A SIM
	23	(20 - 150)	15	(0-20)	SW846 8270A SIM
Quinoline	87	(20 - 150)			SW846 8270A SIM
	95	(20 - 150)	8.9	(0-20)	SW846 8270A SIM

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	53	(10 - 118)
	53	(10 - 118)
Fluorene d-10	62	(41 - 162)
	66	(41 - 162)
Naphthalene-d8	51	(21 - 108)
	52	(21 - 108)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results

Bold print denotes control parameters

a Spiked analyte recovery is outside stated control limits

FOURTH QUARTER

PAH ANALYSIS

Advanced Analytical Services

Quanterra Incorporated
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Arvada, Colorado 80002

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303 467-9136 Fax

CASE NARRATIVE

FOR

City of St. Louis Park

December 20, 1999

Quanterra Environmental Services

Project Lot Number D9K160118

Introduction

Eight aqueous samples (including matrix QC) were received at Quanterra Environmental Services, Denver Laboratory on November 16, 1999. The samples were logged in under Quanterra Denver's project lot number D9K160118. A cross reference associating Quanterra Denver's laboratory sample numbers to the actual field sample number is included. The samples were analyzed for part per trillion (ppt) PAHs.

Data Quality Assessment

The results contained in this report were reviewed relative to data acceptance criteria as specified in the October 1999 QAPP for completeness, precision, accuracy, representativeness and defensibility of the data. Unless otherwise stated below, no quality control problems or technical difficulties were encountered which would impact the interpretation or use of data in this report

The spike compound phenanthrene was reported in the method blank at a concentration of 3.3 ng/L which is above the 1.3ng/L reporting limit but below the 5 times allowable in the QAPP

The spike compound quinoline was not recovered in the laboratory control sample and recovered at 139% in the duplicate laboratory control sample. Quinoline was recovered within acceptance limits in the matrix spike and matrix spike duplicate samples. All surrogates were recovered within acceptance limits for all client and QC samples.

Except for the above, this data package is in compliance with the terms and conditions of the October 1998 QPP both technically and for completeness

Reported By: _____ **Date:** December 20, 1999

Kurt C. Ill
Program Manager, AASG

EXECUTIVE SUMMARY - Detection Highlights

D9K160118

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
GAC-SLP4T-111599 11/15/99 12:00 001				
2-Methylnaphthalene	2 6 J	3.9	ng/L	SW846 8270A SIM
Naphthalene	4 7 J	6.5	ng/L	SW846 8270A SIM
Phenanthrene	4.4	1.3	ng/L	SW846 8270A SIM
GAC-SLP4TD-111599 11/15/99 12:00 002				
Fluoranthene	2.4 J	3.1	ng/L	SW846 8270A SIM
Fluorene	2.0	1 0	ng/L	SW846 8270A SIM
2-Methylnaphthalene	4.3	3.9	ng/L	SW846 8270A SIM
Naphthalene	5.8 J	6.5	ng/L	SW846 8270A SIM
Phenanthrene	6.2	1.3	ng/L	SW846 8270A SIM
1-Methylnaphthalene	2.2 J	2.8	ng/L	SW846 8270A SIM
GAC-SLP4TFB-111599 11/15/99 12:00 003				
Fluoranthene	1.6 J	3.1	ng/L	SW846 8270A SIM
2-Methylnaphthalene	2.9 J	3.9	ng/L	SW846 8270A SIM
Naphthalene	5.0 J	6.5	ng/L	SW846 8270A SIM
Phenanthrene	3.7	1.3	ng/L	SW846 8270A SIM
GAC-SLP4TFBD-111599 11/15/99 12:00 004				
Naphthalene	4 4 J	6.5	ng/L	SW846 8270A SIM
2-Methylnaphthalene	2.2 J	3.9	ng/L	SW846 8270A SIM
Phenanthrene	3.6	1.3	ng/L	SW846 8270A SIM
GAC-SLP4TLE-111599 11/15/99 12:00 005				
Acenaphthene	88	1.3	ng/L	SW846 8270A SIM
Fluoranthene	6.5	3.1	ng/L	SW846 8270A SIM
Fluorene	1.6	1.0	ng/L	SW846 8270A SIM
2-Methylnaphthalene	2.8 J	3.9	ng/L	SW846 8270A SIM
Naphthalene	5.7 J	6.5	ng/L	SW846 8270A SIM
Phenanthrene	5.6	1.3	ng/L	SW846 8270A SIM
Pyrene	6.5	1.4	ng/L	SW846 8270A SIM
Carbazole	12	1.9	ng/L	SW846 8270A SIM
Indene	13	0.90	ng/L	SW846 8270A SIM
2,3-Dihydroindene	100	5.0	ng/L	SW846 8270A SIM
Benzo(b)thiophene	9.8	0.90	ng/L	SW846 8270A SIM

(Continued on next page)

EXECUTIVE SUMMARY - Detection Highlights

D9K160118

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
GAC-SLP10T-111599 11/15/99 12:00 006				
Acenaphthene	28	1.3	ng/L	SW846 8270A SIM
Acenaphthylene	4.9	1.4	ng/L	SW846 8270A SIM
Fluoranthene	2.0 J	3.1	ng/L	SW846 8270A SIM
Fluorene	7.5	1.0	ng/L	SW846 8270A SIM
Naphthalene	4.3 J	6.5	ng/L	SW846 8270A SIM
Phenanthrene	4.8	1.3	ng/L	SW846 8270A SIM
Indene	1.8	0.90	ng/L	SW846 8270A SIM
2,3-Dihydroindene	23	5.0	ng/L	SW846 8270A SIM

ANALYTICAL METHODS SUMMARY

D9K160118

PARAMETER	ANALYTICAL METHOD
Base/Neutrals and Acids	SW846 8270A SIM

References:

SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 and its updates.

METHOD / ANALYST SUMMARY

D9K160118

ANALYTICAL METHOD	ANALYST	ANALYST ID
SW846 8270A SIM	Monica R. Edwards	001685

References:

SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 and its updates.

SAMPLE SUMMARY

D9K160118

WO #	SAMPLE#	CLIENT SAMPLE ID	DATE	TIME
D53AM	001	GAC-SLP4T-111599	11/15/99	12:00
D53C3	002	GAC-SLP4TD-111599	11/15/99	12.00
D53C5	003	GAC-SLP4TFB-111599	11/15/99	12:00
D53DC	004	GAC-SLP4TFBD-111599	11/15/99	12:00
D53DL	005	GAC-SLP4TLE-111599	11/15/99	12:00
D53DT	006	GAC-SLP10T-111599	11/15/99	12:00

NOTE(S):

- The analytical results of the samples listed above are presented on the following pages
- All calculations are performed before rounding to avoid round-off errors in calculated results
- Results noted as "ND" were not detected at or above the stated limit
- This report must not be reproduced, except in full, without the written approval of the laboratory
- Results for the following parameters are never reported on a dry weight basis color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility temperature, viscosity, and weight

CITY OF ST. LOUIS PARK

Client Sample ID: GAC-SLP4T-111599

GC/MS Semivolatiles

Lot-Sample #...: D9K160118-001 Work Order #...: D53AM101 Matrix.....: WATER
Date Sampled...: 11/15/99 12:00 Date Received..: 11/16/99
Prep Date.....: 11/20/99 Analysis Date..: 11/30/99
Prep Batch #...: 9324209 Analysis Time..: 17:21
Dilution Factor: 1

Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	1.3	ng/L
Acenaphthylene	ND	1.4	ng/L
Anthracene	ND	2.7	ng/L
Benzo(a)anthracene	ND	2.5	ng/L
Benzo(b)fluoranthene	ND	2.5	ng/L
Benzo(k)fluoranthene	ND	2.3	ng/L
Benzo(ghi)perylene	ND	2.8	ng/L
Benzo(a)pyrene	ND	2.3	ng/L
Benzo(e)pyrene	ND	1.9	ng/L
Biphenyl	ND	4.3	ng/L
Chrysene	ND	2.8	ng/L
Dibenz(a,h)anthracene	ND	1.6	ng/L
Dibenzofuran	ND	1.0	ng/L
Fluoranthene	ND	3.1	ng/L
Fluorene	ND	1.0	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
2-Methylnaphthalene	**2.6 J**	**3.9**	**ng/L**
Naphthalene	**4.7 J**	**6.5**	**ng/L**
Phenanthrene	**4.4**	**1.3**	**ng/L**
Pyrene	ND	1.4	ng/L
Carbazole	ND	1.9	ng/L
1-Methylnaphthalene	ND	2.8	ng/L
Indene	ND	0.90	ng/L
Quinoline	ND	6.9	ng/L
2,3-Benzofuran	ND	5.1	ng/L
2,3-Dihydroindene	ND	5.0	ng/L
Benzo(b)thiophene	ND	0.90	ng/L
Indole	ND	2.5	ng/L
Acridine	ND	6.1	ng/L
Perylene	ND	2.5	ng/L
Dibenzothiophene	ND	1.1	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	69	(10 - 118)
Fluorene d-10	74	(41 - 162)
Naphthalene-d8	84	(21 - 108)

NOTE(S):

J Estimated result Result is less than RL

CITY OF ST. LOUIS PARK

Client Sample ID: GAC-SLP4TD-111599

GC/MS Semivolatiles

Lot-Sample #...: D9K160118-002 Work Order #...: D53C3101 Matrix.....: WATER
Date Sampled...: 11/15/99 12:00 Date Received..: 11/16/99
Prep Date.....: 11/20/99 Analysis Date..: 11/30/99
Prep Batch #...: 9324209 Analysis Time..: 19:17
Dilution Factor: 1
Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	1.3	ng/L
Acenaphthylene	ND	1.4	ng/L
Anthracene	ND	2.7	ng/L
Benzo(a)anthracene	ND	2.5	ng/L
Benzo(b)fluoranthene	ND	2.5	ng/L
Benzo(k)fluoranthene	ND	2.3	ng/L
Benzo(ghi)perylene	ND	2.8	ng/L
Benzo(a)pyrene	ND	2.3	ng/L
Benzo(e)pyrene	ND	1.9	ng/L
Biphenyl	ND	4.3	ng/L
Chrysene	ND	2.8	ng/L
Dibenz(a,h)anthracene	ND	1.6	ng/L
Dibenzofuran	ND	1.0	ng/L
Fluoranthene	**2.4 J**	**3.1**	**ng/L**
Fluorene	**2.0**	**1.0**	**ng/L**
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
2-Methylnaphthalene	**4.3**	**3.9**	**ng/L**
Naphthalene	**5.8 J**	**6.5**	**ng/L**
Phenanthrene	**6.2**	**1.3**	**ng/L**
Pyrene	ND	1.4	ng/L
Carbazole	ND	1.9	ng/L
1-Methylnaphthalene	**2.2 J**	**2.8**	**ng/L**
Indene	ND	0.90	ng/L
Quinoline	ND	6.9	ng/L
2,3-Benzofuran	ND	5.1	ng/L
2,3-Dihydroindene	ND	5.0	ng/L
Benzo(b)thiophene	ND	0.90	ng/L
Indole	ND	2.5	ng/L
Acridine	ND	6.1	ng/L
Perylene	ND	2.5	ng/L
Dibenzothiophene	ND	1.1	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	67	(10 - 118)
Fluorene d-10	81	(41 - 162)
Naphthalene-d8	90	(21 - 108)

NOTE(S):

J Estimated result Result is less than RL

CITY OF ST. LOUIS PARK

Client Sample ID: GAC-SLP4TFB-111599

GC/MS Semivolatiles

Lot-Sample #...: D9K160118-003 Work Order #...: D53C5101 Matrix.....: WATER
Date Sampled...: 11/15/99 12:00 Date Received..: 11/16/99
Prep Date.....: 11/20/99 Analysis Date..: 11/30/99
Prep Batch #...: 9324209 Analysis Time..: 19:56
Dilution Factor: 1

Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	1.3	ng/L
Acenaphthylene	ND	1.4	ng/L
Anthracene	ND	2.7	ng/L
Benzo(a)anthracene	ND	2.5	ng/L
Benzo(b)fluoranthene	ND	2.5	ng/L
Benzo(k)fluoranthene	ND	2.3	ng/L
Benzo(ghi)perylene	ND	2.8	ng/L
Benzo(a)pyrene	ND	2.3	ng/L
Benzo(e)pyrene	ND	1.9	ng/L
Biphenyl	ND	4.3	ng/L
Chrysene	ND	2.8	ng/L
Dibenz(a,h)anthracene	ND	1.6	ng/L
Dibenzofuran	ND	1.0	ng/L
Fluoranthene	**1.6 J**	**3.1**	**ng/L**
Fluorene	ND	1.0	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
2-Methylnaphthalene	**2.9 J**	**3.9**	**ng/L**
Naphthalene	**5.0 J**	**6.5**	**ng/L**
Phenanthrene	**3.7**	**1.3**	**ng/L**
Pyrene	ND	1.4	ng/L
Carbazole	ND	1.9	ng/L
1-Methylnaphthalene	ND	2.8	ng/L
Indene	ND	0.90	ng/L
Quinoline	ND	6.9	ng/L
2,3-Benzofuran	ND	5.1	ng/L
2,3-Dihydroindene	ND	5.0	ng/L
Benzo(b)thiophene	ND	0.90	ng/L
Indole	ND	2.5	ng/L
Acridine	ND	6.1	ng/L
Perylene	ND	2.5	ng/L
Dibenzothiophene	ND	1.1	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	104	(10 - 118)
Fluorene d-10	83	(41 - 162)
Naphthalene-d8	93	(21 - 108)

NOTE(S):

J Estimated result Result is less than RL

CITY OF ST. LOUIS PARK

Client Sample ID: GAC-SLP4TFBD-111599

GC/MS Semivolatiles

Lot-Sample #...: D9K160118-004 **Work Order #...:** D53DC102 **Matrix.....:** WATER
Date Sampled...: 11/15/99 12:00 **Date Received..:** 11/16/99
Prep Date.....: 11/20/99 **Analysis Date..:** 11/30/99
Prep Batch #...: 9324209 **Analysis Time..:** 20:34
Dilution Factor: 1

Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
2,3-Benzofuran	ND	5.1	ng/L
2,3-Dihydroindene	ND	5.0	ng/L
Indene	ND	0.90	ng/L
Naphthalene	**4.4 J**	**6.5**	**ng/L**
Benzo(b)thiophene	ND	0.90	ng/L
Quinoline	ND	6.9	ng/L
Indole	ND	2.5	ng/L
2-Methylnaphthalene	**2.2 J**	**3.9**	**ng/L**
1-Methylnaphthalene	ND	2.8	ng/L
Biphenyl	ND	4.3	ng/L
Acenaphthylene	ND	1.4	ng/L
Acenaphthene	ND	1.3	ng/L
Dibenzofuran	ND	1.0	ng/L
Fluorene	ND	1.0	ng/L
Dibenzothiophene	ND	1.1	ng/L
Phenanthrene	**3.6**	**1.3**	**ng/L**
Anthracene	ND	2.7	ng/L
Acridine	ND	6.1	ng/L
Carbazole	ND	1.9	ng/L
Fluoranthene	ND	3.1	ng/L
Pyrene	ND	1.4	ng/L
Benzo(a)anthracene	ND	2.5	ng/L
Chrysene	ND	2.8	ng/L
Benzo(b)fluoranthene	ND	2.5	ng/L
Benzo(k)fluoranthene	ND	2.3	ng/L
Benzo(e)pyrene	ND	1.9	ng/L
Benzo(a)pyrene	ND	2.3	ng/L
Perylene	ND	2.5	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Benzo(ghi)perylene	ND	2.8	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	83	(10 - 118)
Fluorene d-10	70	(41 - 162)
Naphthalene-d8	80	(21 - 108)

NOTE(S):

J Estimated result Result is less than RL

CITY OF ST. LOUIS PARK

Client Sample ID: GAC-SLP4TLE-111599

GC/MS Semivolatiles

Lot-Sample #...: D9K160118-005 Work Order #...: D53DL101 Matrix.....: WATER
Date Sampled...: 11/15/99 12.00 Date Received..: 11/16/99
Prep Date.....: 11/20/99 Analysis Date..: 11/30/99
Prep Batch #...: 9324209 Analysis Time..: 21:13
Dilution Factor: 1

Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	**88**	**1.3**	**ng/L**
Acenaphthylene	ND	1.4	ng/L
Anthracene	ND	2.7	ng/L
Benzo(a)anthracene	ND	2.5	ng/L
Benzo(b)fluoranthene	ND	2.5	ng/L
Benzo(k)fluoranthene	ND	2.3	ng/L
Benzo(ghi)perylene	ND	2.8	ng/L
Benzo(a)pyrene	ND	2.3	ng/L
Benzo(e)pyrene	ND	1.9	ng/L
Biphenyl	ND	4.3	ng/L
Chrysene	ND	2.8	ng/L
Dibenz(a,h)anthracene	ND	1.6	ng/L
Dibenzofuran	ND	1.0	ng/L
Fluoranthene	**6.5**	**3.1**	**ng/L**
Fluorene	**1.6**	**1.0**	**ng/L**
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
2-Methylnaphthalene	**2.8 J**	**3.9**	**ng/L**
Naphthalene	**5.7 J**	**6.5**	**ng/L**
Phenanthrene	**5.6**	**1.3**	**ng/L**
Pyrene	**6.5**	**1.4**	**ng/L**
Carbazole	**12**	**1.9**	**ng/L**
1-Methylnaphthalene	ND	2.8	ng/L
Indene	**13**	**0.90**	**ng/L**
Quinoline	ND	6.9	ng/L
2,3-Benzofuran	ND	5.1	ng/L
2,3-Dihydroindene	**100**	**5.0**	**ng/L**
Benzo(b)thiophene	**9.8**	**0.90**	**ng/L**
Indole	ND	2.5	ng/L
Acridine	ND	6.1	ng/L
Perylene	ND	2.5	ng/L
Dibenzothiophene	ND	1.1	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	59	(10 - 118)
Fluorene d-10	75	(41 - 162)
Naphthalene-d8	80	(21 - 108)

NOTE(S):

J Estimated result Result is less than RL

CITY OF ST. LOUIS PARK

Client Sample ID: GAC-SLP10T-111599

GC/MS Semivolatiles

Lot-Sample #...: D9K160118-006 **Work Order #...:** D53DT101 **Matrix.....:** WATER
Date Sampled...: 11/15/99 12:00 **Date Received..:** 11/16/99
Prep Date.....: 11/20/99 **Analysis Date..:** 11/30/99
Prep Batch #...: 9324209 **Analysis Time..:** 21.51
Dilution Factor: 1

Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	**28**	**1.3**	**ng/L**
Acenaphthylene	**4.9**	**1.4**	**ng/L**
Anthracene	ND	2.7	ng/L
Benzo(a)anthracene	ND	2.5	ng/L
Benzo(b)fluoranthene	ND	2.5	ng/L
Benzo(k)fluoranthene	ND	2.3	ng/L
Benzo(ghi)perylene	ND	2.8	ng/L
Benzo(a)pyrene	ND	2.3	ng/L
Benzo(e)pyrene	ND	1.9	ng/L
Biphenyl	ND	4.3	ng/L
Chrysene	ND	2.8	ng/L
Dibenz(a,h)anthracene	ND	1.6	ng/L
Dibenzofuran	ND	1.0	ng/L
Fluoranthene	**2.0 J**	**3.1**	**ng/L**
Fluorene	**7.5**	**1.0**	**ng/L**
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
2-Methylnaphthalene	ND	3.9	ng/L
Naphthalene	**4.3 J**	**6.5**	**ng/L**
Phenanthrene	**4.8**	**1.3**	**ng/L**
Pyrene	ND	1.4	ng/L
Carbazole	ND	1.9	ng/L
1-Methylnaphthalene	ND	2.8	ng/L
Indene	**1.8**	**0.90**	**ng/L**
Quinoline	ND	6.9	ng/L
2,3-Benzofuran	ND	5.1	ng/L
2,3-Dihydroindene	**23**	**5.0**	**ng/L**
Benzo(b)thiophene	ND	0.90	ng/L
Indole	ND	2.5	ng/L
Acridine	ND	6.1	ng/L
Perylene	ND	2.5	ng/L
Dibenzothiophene	ND	1 1	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	70	(10 - 118)
Fluorene d-10	75	(41 - 162)
Naphthalene-d8	79	(21 - 108)

NOTE(S):

J Estimated result Result is less than RL

QC DATA ASSOCIATION SUMMARY

D9K160118

Sample Preparation and Analysis Control Numbers

SAMPLE#	MATRIX	ANALYTICAL METHOD	LEACH BATCH #	PREP BATCH #	MS RUN#
001	WATER	SW846 8270A SIM		9324209	9324078
002	WATER	SW846 8270A SIM		9324209	9324078
003	WATER	SW846 8270A SIM		9324209	9324078
004	WATER	SW846 8270A SIM		9324209	9324078
005	WATER	SW846 8270A SIM		9324209	9324078
006	WATER	SW846 8270A SIM		9324209	9324078

METHOD BLANK REPORT

GC/MS Semivolatiles

Client Lot #...: D9K160118 **Work Order #...:** D5D2T101 **Matrix.....:** WATER
MB Lot-Sample #: D9K200000-209

Prep Date.....: 11/20/99 **Analysis Time..:** 15:26
Analysis Date..: 11/30/99 **Prep Batch #...:** 9324209
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Acenaphthene	ND	1.3	ng/L	SW846 8270A SIM
Acenaphthylene	ND	1.4	ng/L	SW846 8270A SIM
Anthracene	ND	2 7	ng/L	SW846 8270A SIM
Benzo(a)anthracene	ND	2.5	ng/L	SW846 8270A SIM
Benzo(b)fluoranthene	ND	2 5	ng/L	SW846 8270A SIM
Benzo(k)fluoranthene	ND	2.3	ng/L	SW846 8270A SIM
Benzo(ghi)perylene	ND	2.8	ng/L	SW846 8270A SIM
Benzo(a)pyrene	ND	2.3	ng/L	SW846 8270A SIM
Benzo(e)pyrene	ND	1.9	ng/L	SW846 8270A SIM
Biphenyl	ND	4.3	ng/L	SW846 8270A SIM
Chrysene	ND	2 8	ng/L	SW846 8270A SIM
Dibenz(a,h)anthracene	ND	1.6	ng/L	SW846 8270A SIM
Dibenzofuran	ND	1.0	ng/L	SW846 8270A SIM
Fluoranthene	ND	3 1	ng/L	SW846 8270A SIM
Fluorene	ND	1.0	ng/L	SW846 8270A SIM
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L	SW846 8270A SIM
2-Methylnaphthalene	ND	3.9	ng/L	SW846 8270A SIM
Naphthalene	ND	6.5	ng/L	SW846 8270A SIM
Phenanthrene	**3.3**	**1.3**	**ng/L**	**SW846 8270A SIM**
Pyrene	ND	1.4	ng/L	SW846 8270A SIM
Carbazole	ND	1.9	ng/L	SW846 8270A SIM
1-Methylnaphthalene	ND	2.8	ng/L	SW846 8270A SIM
Indene	ND	0.90	ng/L	SW846 8270A SIM
Quinoline	ND	6.9	ng/L	SW846 8270A SIM
2,3-Benzofuran	ND	5.1	ng/L	SW846 8270A SIM
2,3-Dihydroindene	ND	5.0	ng/L	SW846 8270A SIM
Benzo(b)thiophene	ND	0.90	ng/L	SW846 8270A SIM
Indole	ND	2.5	ng/L	SW846 8270A SIM
Acridine	ND	6.1	ng/L	SW846 8270A SIM
Perylene	ND	2.5	ng/L	SW846 8270A SIM
Dibenzothiophene	ND	1.1	ng/L	SW846 8270A SIM

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	85	(10 - 118)
Fluorene d-10	76	(41 - 162)
Naphthalene-d8	80	(21 - 108)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results

LABORATORY CONTROL SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #...: D9K160118 **Work Order #...:** D5D2T102-LCS **Matrix.....:** WATER
LCS Lot-Sample#: D9K200000-209 D5D2T103-LCSD
Prep Date.....: 11/20/99 **Analysis Date..:** 11/30/99
Prep Batch #...: 9324209 **Analysis Time..:** 16:04
Dilution Factor: 1

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	RPD	METHOD
2-Methylnaphthalene	**10.0**	**9.94**	**ng/L**	**99**		**SW846 8270A SIM**
	10.0	**9.49**	**ng/L**	**95**	**4.6**	**SW846 8270A SIM**
Benzo(e)pyrene	**10.0**	**8.73**	**ng/L**	**87**		**SW846 8270A SIM**
	10.0	**8.80**	**ng/L**	**88**	**0.77**	**SW846 8270A SIM**
Chrysene	**10.0**	**8.34**	**ng/L**	**83**		**SW846 8270A SIM**
	10.0	**8.18**	**ng/L**	**82**	**1.9**	**SW846 8270A SIM**
Fluorene	**10.0**	**9.49**	**ng/L**	**95**		**SW846 8270A SIM**
	10.0	**9.45**	**ng/L**	**94**	**0.44**	**SW846 8270A SIM**
Indene	**10.0**	**8.02**	**ng/L**	**80**		**SW846 8270A SIM**
	10.0	**7.91**	**ng/L**	**79**	**1.3**	**SW846 8270A SIM**
Naphthalene	**10.0**	**10.7**	**ng/L**	**107**		**SW846 8270A SIM**
	10.0	**10.5**	**ng/L**	**105**	**1.4**	**SW846 8270A SIM**
Quinoline	**10.0**		**ng/L**	**0.0**		**SW846 8270A SIM**
	10.0	**13.9 p**	**ng/L**	**139**	**200**	**SW846 8270A SIM**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	87	(10 - 118)
	86	(10 - 118)
Fluorene d-10	74	(41 - 162)
	76	(41 - 162)
Naphthalene-d8	82	(21 - 108)
	82	(21 - 108)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results

Bold print denotes control parameters

p Relative percent difference (RPD) is outside stated control limits

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: D9K160118 **Work Order #...:** D5D2T102-LCS **Matrix.....:** WATER
LCS Lot-Sample#: D9K200000-209 D5D2T103-LCSD
Prep Date.....: 11/20/99 **Analysis Date..:** 11/30/99
Prep Batch #...: 9324209 **Analysis Time..:** 16:04
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
2-Methylnaphthalene	**99**	**(20 - 150)**			**SW846 8270A SIM**
	95	**(20 - 150)**	**4.6**	**(0-20)**	**SW846 8270A SIM**
Benzo(e)pyrene	**87**	**(20 - 150)**			**SW846 8270A SIM**
	88	**(20 - 150)**	**0.77**	**(0-20)**	**SW846 8270A SIM**
Chrysene	**83**	**(20 - 132)**			**SW846 8270A SIM**
	82	**(20 - 132)**	**1.9**	**(0-20)**	**SW846 8270A SIM**
Fluorene	**95**	**(69 - 118)**			**SW846 8270A SIM**
	94	**(69 - 118)**	**0.44**	**(0-20)**	**SW846 8270A SIM**
Indene	**80**	**(20 - 150)**			**SW846 8270A SIM**
	79	**(20 - 150)**	**1.3**	**(0-20)**	**SW846 8270A SIM**
Naphthalene	**107**	**(20 - 150)**			**SW846 8270A SIM**
	105	**(20 - 150)**	**1.4**	**(0-20)**	**SW846 8270A SIM**
Quinoline	**0.0**	**(20 - 150)**			**SW846 8270A SIM**
	139 p	**(20 - 150)**	**200**	**(0-20)**	**SW846 8270A SIM**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	87	(10 - 118)
	86	(10 - 118)
Fluorene d-10	74	(41 - 162)
	76	(41 - 162)
Naphthalene-d8	82	(21 - 108)
	82	(21 - 108)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results

Bold print denotes control parameters

p Relative percent difference (RPD) is outside stated control limits

MATRIX SPIKE SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #...: D9K160118 **Work Order #...:** D53AM102-MS **Matrix.....:** WATER
MS Lot-Sample #: D9K160118-001 D53AM103-MSD
Date Sampled...: 11/15/99 12:00 **Date Received..:** 11/16/99
Prep Date.....: 11/20/99 **Analysis Date..:** 11/30/99
Prep Batch #...: 9324209 **Analysis Time..:** 18:00
Dilution Factor: 1

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCENT RECOVERY	RPD	METHOD
2-Methylnaphthalene	**2.6**	**10.1**	**10.2**	**ng/L**	**74**		**SW846 8270A SIM**
	2.6	**10.2**	**11.3**	**ng/L**	**86**	**10**	**SW846 8270A SIM**
Benzo(e)pyrene	**ND**	**10.1**	**4.14**	**ng/L**	**41**		**SW846 8270A SIM**
	ND	**10.2**	**4.16**	**ng/L**	**41**	**0.47**	**SW846 8270A SIM**
Chrysene	**ND**	**10.1**	**6.53**	**ng/L**	**64**		**SW846 8270A SIM**
	ND	**10.2**	**6.73**	**ng/L**	**66**	**2.8**	**SW846 8270A SIM**
Fluorene	**ND**	**10.1**	**9.04**	**ng/L**	**89**		**SW846 8270A SIM**
	ND	**10.2**	**9.69**	**ng/L**	**95**	**6.9**	**SW846 8270A SIM**
Indene	**ND**	**10.1**	**7.46**	**ng/L**	**74**		**SW846 8270A SIM**
	ND	**10.2**	**8.54**	**ng/L**	**84**	**13**	**SW846 8270A SIM**
Naphthalene	**4.7**	**10.1**	**11.8**	**ng/L**	**71**		**SW846 8270A SIM**
	4.7	**10.2**	**13.0**	**ng/L**	**82**	**9.2**	**SW846 8270A SIM**
Quinoline	**ND**	**10.1**	**8.26**	**ng/L**	**81**		**SW846 8270A SIM**
	ND	**10.2**	**9.96**	**ng/L**	**98**	**19**	**SW846 8270A SIM**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	65	(10 - 118)
	70	(10 - 118)
Fluorene d-10	72	(41 - 162)
	78	(41 - 162)
Naphthalene-d8	81	(21 - 108)
	89	(21 - 108)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results

Bold print denotes control parameters

MATRIX SPIKE SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: D9K160118 **Work Order #...:** D53AM102-MS **Matrix.....:** WATER
MS Lot-Sample #: D9K160118-001 D53AM103-MSD
Date Sampled...: 11/15/99 12:00 **Date Received..:** 11/16/99
Prep Date.....: 11/20/99 **Analysis Date..:** 11/30/99
Prep Batch #...: 9324209 **Analysis Time..:** 18:00
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
2-Methylnaphthalene	**74**	**(20 - 150)**			**SW846 8270A SIM**
	86	**(20 - 150)**	**10**	**(0-20)**	**SW846 8270A SIM**
Benzo(e)pyrene	**41**	**(20 - 150)**			**SW846 8270A SIM**
	41	**(20 - 150)**	**0.47**	**(0-20)**	**SW846 8270A SIM**
Chrysene	**64**	**(20 - 132)**			**SW846 8270A SIM**
	66	**(20 - 132)**	**2.8**	**(0-20)**	**SW846 8270A SIM**
Fluorene	**89**	**(69 - 118)**			**SW846 8270A SIM**
	95	**(69 - 118)**	**6.9**	**(0-20)**	**SW846 8270A SIM**
Indene	**74**	**(20 - 150)**			**SW846 8270A SIM**
	84	**(20 - 150)**	**13**	**(0-20)**	**SW846 8270A SIM**
Naphthalene	**71**	**(20 - 150)**			**SW846 8270A SIM**
	82	**(20 - 150)**	**9.2**	**(0-20)**	**SW846 8270A SIM**
Quinoline	**81**	**(20 - 150)**			**SW846 8270A SIM**
	98	**(20 - 150)**	**19**	**(0-20)**	**SW846 8270A SIM**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	65	(10 - 118)
	70	(10 - 118)
Fluorene d-10	72	(41 - 162)
	78	(41 - 162)
Naphthalene-d8	81	(21 - 108)
	89	(21 - 108)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results

Bold print denotes control parameters

SPECIAL VERIFICATION ANALYSIS

GK

Quanterra

Advanced Analytical Services

Quanterra Incorporated
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CASE NARRATIVE

FOR

City of St Louis Park

May 10, 1999

Quanterra , Inc.

Project Lot Number D9D280131

Introduction

Seven aqueous samples (including matrix QC) were received at Quanterra Environmental Services, Denver Laboratory on April 28, 1999 The samples were logged in under Quanterra Denver's project lot number D9D280131 A cross reference associating Quanterra Denver's laboratory sample numbers to the actual field sample number is included. The samples were analyzed for part per trillion (ppt) PAHs.

Data Quality Assessment

The results contained in this report were reviewed relative to data acceptance criteria as specified in the October 1998 QAPP for completeness, precision, accuracy, representativeness and defensibility of the data. Unless otherwise stated below, no quality control problems or technical difficulties were encountered which would impact the interpretation or use of data in this report.

The Relative Percent Difference (RPD) for the spike compound quinoline in the Duplicate Control Samples is reported at 63% which is outside the 20% acceptance criteria. Quinoline was not recovered in any of the samples above the reporting limit associated with these DCSs. The RPD for quinoline in the matrix spike and matrix spike duplicate samples was within the 20% acceptance limit.

Except for the above, this data package is in compliance with the terms and conditions of the October 1998 QAPP, both technically and for completeness

Reported By: Kurt C Ill **Date:** May 10, 1999

Kurt C Ill
Customer Service Manger

EXECUTIVE SUMMARY - Detection Highlights

D9D280131

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
GAC-SLP4T-042799 04/27/99 005				
Naphthalene	3.3 J	6.5	ng/L	SW846 8270A SIM
2-Methylnaphthalene	2.4 J	3 9	ng/L	SW846 8270A SIM
Acenaphthene	110	1 3	ng/L	SW846 8270A SIM
Fluorene	0.45 J	1.0	ng/L	SW846 8270A SIM
Phenanthrene	1.3	1.3	ng/L	SW846 8270A SIM
Anthracene	0.99 J	2.7	ng/L	SW846 8270A SIM
Carbazole	14	1.9	ng/L	SW846 8270A SIM
Fluoranthene	6.0	3.1	ng/L	SW846 8270A SIM
Pyrene	5.6	1.4	ng/L	SW846 8270A SIM
Benzo(ghi)perylene	0.39 J	2.8	ng/L	SW846 8270A SIM
Indene	12	0.90	ng/L	SW846 8270A SIM
2,3-Benzofuran	1.8 J	5.1	ng/L	SW846 8270A SIM
2,3-Dihydroindene	98	5.0	ng/L	SW846 8270A SIM
Benzo(b)thiophene	13	0.90	ng/L	SW846 8270A SIM
Acridine	1.1 J	6.1	ng/L	SW846 8270A SIM
Dibenzothiophene	0.56 J	1.1	ng/L	SW846 8270A SIM

EXECUTIVE SUMMARY - Detection Highlights

D9D280131

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
GAC-SLP10T-042799 04/27/99 001				
Acenaphthylene	28	1.4	ng/L	SW846 8270A SIM
Naphthalene	1.8 J	6.5	ng/L	SW846 8270A SIM
2-Methylnaphthalene	0.93 J	3.9	ng/L	SW846 8270A SIM
Acenaphthene	150	1.3	ng/L	SW846 8270A SIM
Dibenzofuran	4.2	1.0	ng/L	SW846 8270A SIM
Fluorene	42	1.0	ng/L	SW846 8270A SIM
Phenanthrene	2.5	1.3	ng/L	SW846 8270A SIM
Anthracene	1.0 J	2.7	ng/L	SW846 8270A SIM
Carbazole	1.3 J	1.9	ng/L	SW846 8270A SIM
Fluoranthene	5.7	3.1	ng/L	SW846 8270A SIM
Pyrene	11	1.4	ng/L	SW846 8270A SIM
Benzo(a)anthracene	0.30 J	2.5	ng/L	SW846 8270A SIM
Benzo(ghi)perylene	0.19 J	2.8	ng/L	SW846 8270A SIM
Indene	9.5	0.90	ng/L	SW846 8270A SIM
1-Methylnaphthalene	7.4	2.8	ng/L	SW846 8270A SIM
Biphenyl	2.0 J	4.3	ng/L	SW846 8270A SIM
Dibenz(a,h)anthracene	0.16 J	1.6	ng/L	SW846 8270A SIM
2,3-Benzofuran	1.2 J	5.1	ng/L	SW846 8270A SIM
2,3-Dihydroindene	72	5.0	ng/L	SW846 8270A SIM
Benzo(b)thiophene	5.8	0.90	ng/L	SW846 8270A SIM
Indole	0.89 J	2.5	ng/L	SW846 8270A SIM
Acridine	0.80 J	6.1	ng/L	SW846 8270A SIM
Dibenzothiophene	4.9	1.1	ng/L	SW846 8270A SIM
GAC-SLP10TD-042799 04/27/99 002				
Acenaphthylene	25	1.4	ng/L	SW846 8270A SIM
Naphthalene	1.8 J	6.5	ng/L	SW846 8270A SIM
2-Methylnaphthalene	0.88 J	3.9	ng/L	SW846 8270A SIM
Acenaphthene	130	1.3	ng/L	SW846 8270A SIM
Dibenzofuran	3.8	1.0	ng/L	SW846 8270A SIM
Fluorene	38	1.0	ng/L	SW846 8270A SIM
Phenanthrene	2.1	1.3	ng/L	SW846 8270A SIM
Anthracene	1.0 J	2.7	ng/L	SW846 8270A SIM
Carbazole	1.2 J	1.9	ng/L	SW846 8270A SIM
Fluoranthene	5.3	3.1	ng/L	SW846 8270A SIM
Pyrene	9.6	1.4	ng/L	SW846 8270A SIM
Benzo(ghi)perylene	0.36 J	2.8	ng/L	SW846 8270A SIM
Indene	8.6	0.90	ng/L	SW846 8270A SIM
1-Methylnaphthalene	6.4	2.8	ng/L	SW846 8270A SIM
Biphenyl	1.7 J	4.3	ng/L	SW846 8270A SIM
2,3-Benzofuran	1.3 J	5.1	ng/L	SW846 8270A SIM
2,3-Dihydroindene	66	5.0	ng/L	SW846 8270A SIM

(Continued on next page)

EXECUTIVE SUMMARY - Detection Highlights

D9D280131

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
GAC-SLP10TD-042799 04/27/99 002				
Benzo(b)thiophene	5.2	0.90	ng/L	SW846 8270A SIM
Indole	0.92 J	2.5	ng/L	SW846 8270A SIM
Dibenzothiophene	4.4	1.1	ng/L	SW846 8270A SIM
GAC-SLP10TFB-042799 04/27/99 003				
Naphthalene	9.8	6.5	ng/L	SW846 8270A SIM
2-Methylnaphthalene	4.8	3.9	ng/L	SW846 8270A SIM
Acenaphthene	1.0 J	1.3	ng/L	SW846 8270A SIM
Fluorene	0.68 J	1.0	ng/L	SW846 8270A SIM
Phenanthrene	1.3	1.3	ng/L	SW846 8270A SIM
Fluoranthene	0.47 J	3.1	ng/L	SW846 8270A SIM
Pyrene	0.39 J	1.4	ng/L	SW846 8270A SIM
Benzo(k)fluoranthene	0.18 J	2.3	ng/L	SW846 8270A SIM
Indeno(1,2,3-cd)pyrene	0.17 J	2.1	ng/L	SW846 8270A SIM
Benzo(ghi)perylene	0.23 J	2.8	ng/L	SW846 8270A SIM
Indene	1.5	0.90	ng/L	SW846 8270A SIM
1-Methylnaphthalene	3.2	2.8	ng/L	SW846 8270A SIM
Biphenyl	0.47 J	4.3	ng/L	SW846 8270A SIM
Quinoline	0.18 J	6.9	ng/L	SW846 8270A SIM
2,3-Dihydroindene	3.0 J	5.0	ng/L	SW846 8270A SIM
Dibenzothiophene	2.0	1.1	ng/L	SW846 8270A SIM
GAC-SLP10TFBD-042799 04/27/99 004				
Naphthalene	1.6 J	6.5	ng/L	SW846 8270A SIM
2-Methylnaphthalene	1.1 J	3.9	ng/L	SW846 8270A SIM
Acenaphthene	0.14 J	1.3	ng/L	SW846 8270A SIM
Fluorene	0.16 J	1.0	ng/L	SW846 8270A SIM
Phenanthrene	0.71 J	1.3	ng/L	SW846 8270A SIM
Anthracene	0.98 J	2.7	ng/L	SW846 8270A SIM
Carbazole	0.14 J	1.9	ng/L	SW846 8270A SIM
Fluoranthene	0.41 J	3.1	ng/L	SW846 8270A SIM
Pyrene	0.63 J	1.4	ng/L	SW846 8270A SIM
Benzo(k)fluoranthene	0.17 J	2.3	ng/L	SW846 8270A SIM
Benzo(a)pyrene	0.14 J	2.3	ng/L	SW846 8270A SIM
Indeno(1,2,3-cd)pyrene	0.25 J	2.1	ng/L	SW846 8270A SIM
Benzo(ghi)perylene	0.36 J	2.8	ng/L	SW846 8270A SIM
1-Methylnaphthalene	0.54 J	2.8	ng/L	SW846 8270A SIM
2,3-Dihydroindene	0.54 J	5.0	ng/L	SW846 8270A SIM
Perylene	0.15 J	2.5	ng/L	SW846 8270A SIM

(Continued on next page)

ANALYTICAL METHODS SUMMARY

D9D280131

PARAMETER	ANALYTICAL METHOD
Base/Neutrals and Acids	SW846 8270A SIM

References:

SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 and its updates.

METHOD / ANALYST SUMMARY

D9D280131

ANALYTICAL METHOD	ANALYST	ANALYST ID
SW846 8270A SIM	Monica R. Edwards	001685

References:

SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 and its updates.

SAMPLE SUMMARY

D9D280131

WO #	SAMPLE#	CLIENT SAMPLE ID	DATE	TIME
CV5T5	001	GAC-SLP10T-042799	04/27/99	
CV5T7	002	GAC-SLP10TD-042799	04/27/99	
CV5T8	003	GAC-SLP10TFB-042799	04/27/99	
CV5T9	004	GAC-SLP10TFBD-042799	04/27/99	
CV5TA	005	GAC-SLP4T-042799	04/27/99	

NOTE(S):

- The analytical results of the samples listed above are presented on the following pages
- All calculations are performed before rounding to avoid round-off errors in calculated results
- Results noted as "ND" were not detected at or above the stated limit
- This report must not be reproduced, except in full, without the written approval of the laboratory
- Results for the following parameters are never reported on a dry weight basis color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight

CITY OF ST. LOUIS PARK

Client Sample ID: GAC-SLP10T-042799

GC/MS Semivolatiles

Lot-Sample #...: D9D280131-001 Work Order #...: CV5T5101 Matrix.....: WATER
Date Sampled...: 04/27/99 Date Received..: 04/28/99
Prep Date.....: 04/28/99 Analysis Date..: 04/30/99
Prep Batch #...: 9118245 Analysis Time..: 20:21
Dilution Factor: 1

Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	28	1.4	ng/L
Naphthalene	1.8 J	6.5	ng/L
2-Methylnaphthalene	0.93 J	3.9	ng/L
Acenaphthene	150	1.3	ng/L
Dibenzofuran	4.2	1.0	ng/L
Fluorene	42	1.0	ng/L
Phenanthrene	2.5	1.3	ng/L
Anthracene	1.0 J	2.7	ng/L
Carbazole	1.3 J	1.9	ng/L
Fluoranthene	5.7	3.1	ng/L
Pyrene	11	1.4	ng/L
Benzo(a)anthracene	0.30 J	2.5	ng/L
Chrysene	ND	2.8	ng/L
Benzo(b)fluoranthene	ND	2.5	ng/L
Benzo(k)fluoranthene	ND	2.3	ng/L
Benzo(a)pyrene	ND	2.3	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Benzo(ghi)perylene	0.19 J	2.8	ng/L
Indene	9.5	0.90	ng/L
1-Methylnaphthalene	7.4	2.8	ng/L
Benzo(e)pyrene	ND	1.9	ng/L
Biphenyl	2.0 J	4.3	ng/L
Dibenz(a,h)anthracene	0.16 J	1.6	ng/L
Quinoline	ND	6.9	ng/L
2,3-Benzofuran	1.2 J	5.1	ng/L
2,3-Dihydroindene	72	5.0	ng/L
Benzo(b)thiophene	5.8	0.90	ng/L
Indole	0.89 J	2.5	ng/L
Acridine	0.80 J	6.1	ng/L
Perylene	ND	2.5	ng/L
Dibenzothiophene	4.9	1.1	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	59	(10 - 118)
Fluorene d-10	93	(41 - 162)
Naphthalene-d8	86	(21 - 108)

NOTE(S):

J Estimated result Result is less than RL

CITY OF ST. LOUIS PARK

Client Sample ID: GAC-SLP10TD-042799

GC/MS Semivolatiles

Lot-Sample #...: D9D280131-002 Work Order #...: CV5T7101 Matrix.....: WATER
Date Sampled...: 04/27/99 Date Received..: 04/28/99
Prep Date.....: 04/28/99 Analysis Date..: 04/30/99
Prep Batch #...: 9118245 Analysis Time..: 22:21
Dilution Factor: 1

Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	25	1.4	ng/L
Naphthalene	1.8 J	6.5	ng/L
2-Methylnaphthalene	0.88 J	3.9	ng/L
Acenaphthene	130	1.3	ng/L
Dibenzofuran	3.8	1.0	ng/L
Fluorene	38	1.0	ng/L
Phenanthrene	2.1	1.3	ng/L
Anthracene	1.0 J	2.7	ng/L
Carbazole	1.2 J	1.9	ng/L
Fluoranthene	5.3	3.1	ng/L
Pyrene	9.6	1.4	ng/L
Benzo(a)anthracene	ND	2.5	ng/L
Chrysene	ND	2.8	ng/L
Benzo(b)fluoranthene	ND	2.5	ng/L
Benzo(k)fluoranthene	ND	2.3	ng/L
Benzo(a)pyrene	ND	2.3	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Benzo(ghi)perylene	0.36 J	2.8	ng/L
Indene	8.6	0.90	ng/L
1-Methylnaphthalene	6.4	2.8	ng/L
Benzo(e)pyrene	ND	1.9	ng/L
Biphenyl	1.7 J	4.3	ng/L
Dibenz(a,h)anthracene	ND	1.6	ng/L
Quinoline	ND	6.9	ng/L
2,3-Benzofuran	1.3 J	5.1	ng/L
2,3-Dihydroindene	66	5.0	ng/L
Benzo(b)thiophene	5.2	0.90	ng/L
Indole	0.92 J	2.5	ng/L
Acridine	ND	6.1	ng/L
Perylene	ND	2.5	ng/L
Dibenzothiophene	4.4	1.1	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	51	(10 - 118)
Fluorene d-10	93	(41 - 162)
Naphthalene-d8	85	(21 - 108)

NOTE(S):

J Estimated result Result is less than RL

CITY OF ST. LOUIS PARK

Client Sample ID: GAC-SLP10TFB-042799

GC/MS Semivolatiles

Lot-Sample #...: D9D280131-003 Work Order #...: CV5T8101 Matrix.....: WATER
Date Sampled...: 04/27/99 Date Received..: 04/28/99
Prep Date.....: 04/28/99 Analysis Date..: 04/30/99
Prep Batch #...: 9118245 Analysis Time..: 23:02
Dilution Factor: 1

Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	ND	1.4	ng/L
Naphthalene	**9.8**	**6.5**	**ng/L**
2-Methylnaphthalene	**4.8**	**3.9**	**ng/L**
Acenaphthene	**1.0 J**	**1.3**	**ng/L**
Dibenzofuran	ND	1.0	ng/L
Fluorene	**0.68 J**	**1.0**	**ng/L**
Phenanthrene	**1.3**	**1.3**	**ng/L**
Anthracene	ND	2.7	ng/L
Carbazole	ND	1.9	ng/L
Fluoranthene	**0.47 J**	**3.1**	**ng/L**
Pyrene	**0.39 J**	**1.4**	**ng/L**
Benzo(a)anthracene	ND	2.5	ng/L
Chrysene	ND	2.8	ng/L
Benzo(b)fluoranthene	ND	2.5	ng/L
Benzo(k)fluoranthene	**0.18 J**	**2.3**	**ng/L**
Benzo(a)pyrene	ND	2.3	ng/L
Indeno(1,2,3-cd)pyrene	**0.17 J**	**2.1**	**ng/L**
Benzo(ghi)perylene	**0.23 J**	**2.8**	**ng/L**
Indene	**1.5**	**0.90**	**ng/L**
1-Methylnaphthalene	**3.2**	**2.8**	**ng/L**
Benzo(e)pyrene	ND	1.9	ng/L
Biphenyl	**0.47 J**	**4.3**	**ng/L**
Dibenz(a,h)anthracene	ND	1.6	ng/L
Quinoline	**0.18 J**	**6.9**	**ng/L**
2,3-Benzofuran	ND	5.1	ng/L
2,3-Dihydroindene	**3.0 J**	**5.0**	**ng/L**
Benzo(b)thiophene	ND	0.90	ng/L
Indole	ND	2.5	ng/L
Acridine	ND	6.1	ng/L
Perylene	ND	2.5	ng/L
Dibenzothiophene	**2.0**	**1.1**	**ng/L**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	96	(10 - 118)
Fluorene d-10	94	(41 - 162)
Naphthalene-d8	93	(21 - 108)

NOTE(S):

J Estimated result Result is less than RL

CITY OF ST. LOUIS PARK

Client Sample ID: GAC-SLP10TFBD-042799

GC/MS Semivolatiles

Lot-Sample #...: D9D280131-004 Work Order #...: CV5T9101 Matrix.....: WATER
Date Sampled...: 04/27/99 Date Received..: 04/28/99
Prep Date.....: 04/28/99 Analysis Date..: 04/30/99
Prep Batch #...: 9118245 Analysis Time..: 23:42
Dilution Factor: 1

Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	ND	1.4	ng/L
Naphthalene	**1.6 J**	**6.5**	**ng/L**
2-Methylnaphthalene	**1.1 J**	**3.9**	**ng/L**
Acenaphthene	**0.14 J**	**1.3**	**ng/L**
Dibenzofuran	ND	1.0	ng/L
Fluorene	**0.16 J**	**1.0**	**ng/L**
Phenanthrene	**0.71 J**	**1.3**	**ng/L**
Anthracene	**0.98 J**	**2.7**	**ng/L**
Carbazole	**0.14 J**	**1.9**	**ng/L**
Fluoranthene	**0.41 J**	**3.1**	**ng/L**
Pyrene	**0.63 J**	**1.4**	**ng/L**
Benzo(a)anthracene	ND	2.5	ng/L
Chrysene	ND	2.8	ng/L
Benzo(b)fluoranthene	ND	2.5	ng/L
Benzo(k)fluoranthene	**0.17 J**	**2.3**	**ng/L**
Benzo(a)pyrene	**0.14 J**	**2.3**	**ng/L**
Indeno(1,2,3-cd)pyrene	**0.25 J**	**2.1**	**ng/L**
Benzo(ghi)perylene	**0.36 J**	**2.8**	**ng/L**
Indene	ND	0.90	ng/L
1-Methylnaphthalene	**0.54 J**	**2.8**	**ng/L**
Benzo(e)pyrene	ND	1.9	ng/L
Biphenyl	ND	4.3	ng/L
Quinoline	ND	6.9	ng/L
2,3-Benzofuran	ND	5.1	ng/L
2,3-Dihydroindene	**0.54 J**	**5.0**	**ng/L**
Benzo(b)thiophene	ND	0.90	ng/L
Indole	ND	2.5	ng/L
Acridine	ND	6.1	ng/L
Perylene	**0.15 J**	**2.5**	**ng/L**
Dibenzothiophene	ND	1.1	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	93	(10 - 118)
Fluorene d-10	97	(41 - 162)
Naphthalene-d8	94	(21 - 108)

NOTE(S):

J Estimated result Result is less than RL

CITY OF ST. LOUIS PARK

Client Sample ID: GAC-SLP4T-042799

GC/MS Semivolatiles

Lot-Sample #...: D9D280131-005 Work Order #...: CV5TA101 Matrix.....: WATER
Date Sampled...: 04/27/99 Date Received..: 04/28/99
Prep Date.....: 04/28/99 Analysis Date..: 05/01/99
Prep Batch #...: 9118245 Analysis Time..: 00:22
Dilution Factor: 1

Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	ND	1.4	ng/L
Naphthalene	**3.3 J**	**6.5**	**ng/L**
2-Methylnaphthalene	**2.4 J**	**3.9**	**ng/L**
Acenaphthene	**110**	**1.3**	**ng/L**
Dibenzofuran	ND	1.0	ng/L
Fluorene	**0.45 J**	**1.0**	**ng/L**
Phenanthrene	**1.3**	**1.3**	**ng/L**
Anthracene	**0.99 J**	**2.7**	**ng/L**
Carbazole	**14**	**1.9**	**ng/L**
Fluoranthene	**6.0**	**3.1**	**ng/L**
Pyrene	**5.6**	**1.4**	**ng/L**
Benzo(a)anthracene	ND	2.5	ng/L
Chrysene	ND	2.8	ng/L
Benzo(b)fluoranthene	ND	2.5	ng/L
Benzo(k)fluoranthene	ND	2.3	ng/L
Benzo(a)pyrene	ND	2.3	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Benzo(ghi)perylene	**0.39 J**	**2.8**	**ng/L**
Indene	**12**	**0.90**	**ng/L**
1-Methylnaphthalene	ND	2.8	ng/L
Benzo(e)pyrene	ND	1.9	ng/L
Biphenyl	ND	4.3	ng/L
Dibenz(a,h)anthracene	ND	1.6	ng/L
Quinoline	ND	6.9	ng/L
2,3-Benzofuran	**1.8 J**	**5.1**	**ng/L**
2,3-Dihydroindene	**98**	**5.0**	**ng/L**
Benzo(b)thiophene	**13**	**0.90**	**ng/L**
Indole	ND	2.5	ng/L
Acridine	**1.1 J**	**6.1**	**ng/L**
Perylene	ND	2.5	ng/L
Dibenzothiophene	**0.56 J**	**1.1**	**ng/L**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	55	(10 - 118)
Fluorene d-10	97	(41 - 162)
Naphthalene-d8	87	(21 - 108)

NOTE(S):

J Estimated result Result is less than RL

QC DATA ASSOCIATION SUMMARY

D9D280131

Sample Preparation and Analysis Control Numbers

SAMPLE#	MATRIX	ANALYTICAL METHOD	LEACH BATCH #	PREP BATCH #	MS RUN#
001	WATER	SW846 8270A SIM		9118245	9118087
002	WATER	SW846 8270A SIM		9118245	9118087
003	WATER	SW846 8270A SIM		9118245	9118087
004	WATER	SW846 8270A SIM		9118245	9118087
005	WATER	SW846 8270A SIM		9118245	9118087

METHOD BLANK REPORT

GC/MS Semivolatiles

Client Lot #...: D9D280131 Work Order #...: CV642101 Matrix.....: WATER
MB Lot-Sample #: D9D280000-245

Prep Date.....: 04/28/99 Analysis Time..: 18:20
Analysis Date..: 04/30/99 Prep Batch #...: 9118245
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Acenaphthylene	ND	1.4	ng/L	SW846 8270A SIM
Naphthalene	**1.7 J**	**6.5**	**ng/L**	**SW846 8270A SIM**
2-Methylnaphthalene	**1.2 J**	**3.9**	**ng/L**	**SW846 8270A SIM**
Acenaphthene	ND	1.3	ng/L	SW846 8270A SIM
Dibenzofuran	ND	1.0	ng/L	SW846 8270A SIM
Fluorene	**0.23 J**	**1.0**	**ng/L**	**SW846 8270A SIM**
Phenanthrene	**0.53 J**	**1.3**	**ng/L**	**SW846 8270A SIM**
Anthracene	ND	2.7	ng/L	SW846 8270A SIM
Carbazole	ND	1.9	ng/L	SW846 8270A SIM
Fluoranthene	**0.28 J**	**3.1**	**ng/L**	**SW846 8270A SIM**
Pyrene	**0.33 J**	**1.4**	**ng/L**	**SW846 8270A SIM**
Benzo(a)anthracene	ND	2.5	ng/L	SW846 8270A SIM
Chrysene	ND	2.8	ng/L	SW846 8270A SIM
Benzo(b)fluoranthene	ND	2.5	ng/L	SW846 8270A SIM
Benzo(k)fluoranthene	**0.30 J**	**2.3**	**ng/L**	**SW846 8270A SIM**
Benzo(a)pyrene	ND	2.3	ng/L	SW846 8270A SIM
Indeno(1,2,3-cd)pyrene	**0.35 J**	**2.1**	**ng/L**	**SW846 8270A SIM**
Benzo(ghi)perylene	**0.80 J**	**2.8**	**ng/L**	**SW846 8270A SIM**
Indene	ND	0.90	ng/L	SW846 8270A SIM
1-Methylnaphthalene	**0.57 J**	**2.8**	**ng/L**	**SW846 8270A SIM**
Benzo(e)pyrene	ND	1.9	ng/L	SW846 8270A SIM
Biphenyl	**0.18 J**	**4.3**	**ng/L**	**SW846 8270A SIM**
Dibenz(a,h)anthracene	**0.20 J**	**1.6**	**ng/L**	**SW846 8270A SIM**
Quinoline	ND	6.9	ng/L	SW846 8270A SIM
2,3-Benzofuran	ND	5.1	ng/L	SW846 8270A SIM
2,3-Dihydroindene	**0.35 J**	**5.0**	**ng/L**	**SW846 8270A SIM**
Benzo(b)thiophene	ND	0.90	ng/L	SW846 8270A SIM
Indole	ND	2.5	ng/L	SW846 8270A SIM
Acridine	ND	6.1	ng/L	SW846 8270A SIM
Perylene	ND	2.5	ng/L	SW846 8270A SIM
Dibenzothiophene	ND	1.1	ng/L	SW846 8270A SIM

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	93	(10 - 118)
Fluorene d-10	97	(41 - 162)
Naphthalene-d8	89	(21 - 108)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results

J Estimated result Result is less than RL

LABORATORY CONTROL SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #...: D9D280131 Work Order #...: CV642102-LCS Matrix.....: WATER
LCS Lot-Sample#: D9D280000-245 CV642103-LCSD
Prep Date.....: 04/28/99 Analysis Date..: 04/30/99
Prep Batch #...: 9118245 Analysis Time..: 19:00
Dilution Factor: 1

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	RPD	METHOD
Naphthalene	**10.0**	**11.2**	**ng/L**	**112**		**SW846 8270A SIM**
	10.0	**11.2**	**ng/L**	**112**	**0.0**	**SW846 8270A SIM**
2-Methylnaphthalene	**10.0**	**10.9**	**ng/L**	**109**		**SW846 8270A SIM**
	10.0	**10.8**	**ng/L**	**108**	**0.55**	**SW846 8270A SIM**
Fluorene	**10.0**	**10.5**	**ng/L**	**105**		**SW846 8270A SIM**
	10.0	**10.4**	**ng/L**	**104**	**0.95**	**SW846 8270A SIM**
Chrysene	**10.0**	**10.3**	**ng/L**	**103**		**SW846 8270A SIM**
	10.0	**10.1**	**ng/L**	**101**	**1.8**	**SW846 8270A SIM**
Indene	**16.5**	**19.6**	**ng/L**	**119**		**SW846 8270A SIM**
	16.5	**19.5**	**ng/L**	**118**	**0.66**	**SW846 8270A SIM**
Benzo(e)pyrene	**10.0**	**8.98**	**ng/L**	**90**		**SW846 8270A SIM**
	10.0	**8.96**	**ng/L**	**90**	**0.20**	**SW846 8270A SIM**
Quinoline	**10.0**	**10.7**	**ng/L**	**107**		**SW846 8270A SIM**
	10.0	**5.58 p**	**ng/L**	**56**	**63**	**SW846 8270A SIM**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	99	(10 - 118)
	101	(10 - 118)
Fluorene d-10	98	(41 - 162)
	98	(41 - 162)
Naphthalene-d8	91	(21 - 108)
	91	(21 - 108)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results

Bold print denotes control parameters

p Relative percent difference (RPD) is outside stated control limits

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: D9D280131 Work Order #...: CV642102-LCS Matrix.....: WATER
LCS Lot-Sample#: D9D280000-245 CV642103-LCSD
Prep Date.....: 04/28/99 Analysis Date..: 04/30/99
Prep Batch #...: 9118245 Analysis Time..: 19:00
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Naphthalene	**112**	**(20 - 150)**			**SW846 8270A SIM**
	112	**(20 - 150)**	**0.0**	**(0-20)**	**SW846 8270A SIM**
2-Methylnaphthalene	**109**	**(20 - 150)**			**SW846 8270A SIM**
	108	**(20 - 150)**	**0.55**	**(0-20)**	**SW846 8270A SIM**
Fluorene	**105**	**(69 - 118)**			**SW846 8270A SIM**
	104	**(69 - 118)**	**0.95**	**(0-20)**	**SW846 8270A SIM**
Chrysene	**103**	**(20 - 132)**			**SW846 8270A SIM**
	101	**(20 - 132)**	**1.8**	**(0-20)**	**SW846 8270A SIM**
Indene	**119**	**(20 - 150)**			**SW846 8270A SIM**
	118	**(20 - 150)**	**0.66**	**(0-20)**	**SW846 8270A SIM**
Benzo(e)pyrene	**90**	**(20 - 150)**			**SW846 8270A SIM**
	90	**(20 - 150)**	**0.20**	**(0-20)**	**SW846 8270A SIM**
Quinoline	**107**	**(20 - 150)**			**SW846 8270A SIM**
	56 p	**(20 - 150)**	**63**	**(0-20)**	**SW846 8270A SIM**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	99	(10 - 118)
	101	(10 - 118)
Fluorene d-10	98	(41 - 162)
	98	(41 - 162)
Naphthalene-d8	91	(21 - 108)
	91	(21 - 108)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results

Bold print denotes control parameters

p Relative percent difference (RPD) is outside stated control limits

MATRIX SPIKE SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #...: D9D280131 Work Order #...: CV5T5102-MS Matrix.....: WATER
MS Lot-Sample #: D9D280131-001 CV5T5103-MSD
Date Sampled...: 04/27/99 Date Received..: 04/28/99
Prep Date.....: 04/28/99 Analysis Date..: 04/30/99
Prep Batch #...: 9118245 Analysis Time..: 21:01
Dilution Factor: 1

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCENT RECOVERY	RPD	METHOD
Naphthalene	1.8	10.2	11.3	ng/L	94		SW846 8270A SIM
	1.8	10.2	11.6	ng/L	97	2.5	SW846 8270A SIM
2-Methylnaphthalene	0.93	10.2	10.3	ng/L	92		SW846 8270A SIM
	0.93	10.2	10.9	ng/L	98	5.3	SW846 8270A SIM
Fluorene	42	10.2	49.4	ng/L	77		SW846 8270A SIM
	42	10.2	50.0	ng/L	83	0.83	SW846 8270A SIM
Chrysene	ND	10.2	6.37	ng/L	63		SW846 8270A SIM
	ND	10.2	7.82	ng/L	77	20	SW846 8270A SIM
Indene	9.5	16.8	26.1	ng/L	99		SW846 8270A SIM
	9.5	16.8	26.7	ng/L	102	2.0	SW846 8270A SIM
Benzo(e)pyrene	ND	10.2	3.06	ng/L	30		SW846 8270A SIM
	ND	10.2	3.74	ng/L	37	19	SW846 8270A SIM
Quinoline	ND	10.2	10.4	ng/L	102		SW846 8270A SIM
	ND	10.2	11.0	ng/L	108	5.3	SW846 8270A SIM

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	60	(10 - 118)
	73	(10 - 118)
Fluorene d-10	92	(41 - 162)
	98	(41 - 162)
Naphthalene-d8	85	(21 - 108)
	90	(21 - 108)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results

Bold print denotes control parameters

MATRIX SPIKE SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: D9D280131 Work Order #...: CV5T5102-MS Matrix.....: WATER
MS Lot-Sample #: D9D280131-001 CV5T5103-MSD
Date Sampled...: 04/27/99 Date Received..: 04/28/99
Prep Date.....: 04/28/99 Analysis Date..: 04/30/99
Prep Batch #...: 9118245 Analysis Time..: 21:01
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Naphthalene	**94**	**(20 - 150)**			**SW846 8270A SIM**
	97	**(20 - 150)**	**2.5**	**(0-20)**	**SW846 8270A SIM**
2-Methylnaphthalene	**92**	**(20 - 150)**			**SW846 8270A SIM**
	98	**(20 - 150)**	**5.3**	**(0-20)**	**SW846 8270A SIM**
Fluorene	**77**	**(69 - 118)**			**SW846 8270A SIM**
	83	**(69 - 118)**	**0.83**	**(0-20)**	**SW846 8270A SIM**
Chrysene	**63**	**(20 - 132)**			**SW846 8270A SIM**
	77	**(20 - 132)**	**20**	**(0-20)**	**SW846 8270A SIM**
Indene	**99**	**(20 - 150)**			**SW846 8270A SIM**
	102	**(20 - 150)**	**2.0**	**(0-20)**	**SW846 8270A SIM**
Benzo(e)pyrene	**30**	**(20 - 150)**			**SW846 8270A SIM**
	37	**(20 - 150)**	**19**	**(0-20)**	**SW846 8270A SIM**
Quinoline	**102**	**(20 - 150)**			**SW846 8270A SIM**
	108	**(20 - 150)**	**5.3**	**(0-20)**	**SW846 8270A SIM**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	60	(10 - 118)
	73	(10 - 118)
Fluorene d-10	92	(41 - 162)
	98	(41 - 162)
Naphthalene-d8	85	(21 - 108)
	90	(21 - 108)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results

Bold print denotes control parameters

SECTION 4.3.3 (D)

EXECUTIVE SUMMARY - Detection Highlights

D9E120122

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
PCJ-SLP4-051199 05/11/99 001				
Acenaphthene	190	2.6	ng/L	SW846 8270A SIM
Phenanthrene	4.0	2.6	ng/L	SW846 8270A SIM
Carbazole	29	3.8	ng/L	SW846 8270A SIM
Fluoranthene	13	6.2	ng/L	SW846 8270A SIM
Pyrene	12	2.8	ng/L	SW846 8270A SIM
Indene	11	1.8	ng/L	SW846 8270A SIM
2,3-Dihydroindene	170	10	ng/L	SW846 8270A SIM
Benzo(b)thiophene	23	1.8	ng/L	SW846 8270A SIM
PCJ-SLP4D-051199 05/11/99 002				
Acenaphthene	200	2.6	ng/L	SW846 8270A SIM
Phenanthrene	7.4	2.6	ng/L	SW846 8270A SIM
Carbazole	33	3.8	ng/L	SW846 8270A SIM
Fluoranthene	16	6.2	ng/L	SW846 8270A SIM
Pyrene	15	2.8	ng/L	SW846 8270A SIM
Indene	11	1.8	ng/L	SW846 8270A SIM
Quinoline	9.2 J	14	ng/L	SW846 8270A SIM
2,3-Dihydroindene	170	10	ng/L	SW846 8270A SIM
Benzo(b)thiophene	23	1.8	ng/L	SW846 8270A SIM
PCJ-SLP4FB-051199 05/11/99 003				
Phenanthrene	1.7	1.3	ng/L	SW846 8270A SIM
PCJ-SLP4FBD-051199 05/11/99 004				
Phenanthrene	1.9	1.3	ng/L	SW846 8270A SIM
DPV-W130-051199 05/11/99 10:00 005				
Naphthalene	15	6.5	ng/L	SW846 8270A SIM
Acenaphthene	4.9	1.3	ng/L	SW846 8270A SIM
Phenanthrene	10	1.3	ng/L	SW846 8270A SIM
Anthracene	6.8	2.7	ng/L	SW846 8270A SIM
Carbazole	4.8	1.9	ng/L	SW846 8270A SIM
Fluoranthene	8.4	3.1	ng/L	SW846 8270A SIM
Pyrene	41	1.4	ng/L	SW846 8270A SIM
Benzo(ghi)perylene	3.1	2.8	ng/L	SW846 8270A SIM
Indene	27	0.90	ng/L	SW846 8270A SIM
1-Methylnaphthalene	7.5	2.8	ng/L	SW846 8270A SIM
2,3-Benzofuran	3.6 J	5.1	ng/L	SW846 8270A SIM
2,3-Dihydroindene	8.9	5.0	ng/L	SW846 8270A SIM

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EXECUTIVE SUMMARY - Detection Highlights

D9E180128

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
PCJ-SLP10-051799 05/17/99 12:00 001				
Acenaphthylene	120	1.4	ng/L	SW846 8270A SIM
Acenaphthylene	94	7.0	ng/L	SW846 8270A SIM
Naphthalene	3.7 J	6.5	ng/L	SW846 8270A SIM
Acenaphthene	550	1.3	ng/L	SW846 8270A SIM
Acenaphthene	520	6.5	ng/L	SW846 8270A SIM
Dibenzofuran	25	1.0	ng/L	SW846 8270A SIM
Dibenzofuran	21	5.0	ng/L	SW846 8270A SIM
Fluorene	150	1.0	ng/L	SW846 8270A SIM
Fluorene	140	5.0	ng/L	SW846 8270A SIM
Phenanthrene	12	1.3	ng/L	SW846 8270A SIM
Phenanthrene	10	6.5	ng/L	SW846 8270A SIM
Anthracene	6.5	2.7	ng/L	SW846 8270A SIM
Carbazole	10	1.9	ng/L	SW846 8270A SIM
Carbazole	7.7 J	9.5	ng/L	SW846 8270A SIM
Fluoranthene	41	3.1	ng/L	SW846 8270A SIM
Fluoranthene	35	16	ng/L	SW846 8270A SIM
Pyrene	81	1.4	ng/L	SW846 8270A SIM
Pyrene	68	7.0	ng/L	SW846 8270A SIM
Indene	22	0.90	ng/L	SW846 8270A SIM
Indene	20	4.5	ng/L	SW846 8270A SIM
1-Methylnaphthalene	41	2.8	ng/L	SW846 8270A SIM
1-Methylnaphthalene	38	14	ng/L	SW846 8270A SIM
Biphenyl	11	4.3	ng/L	SW846 8270A SIM
Biphenyl	9.4 J	22	ng/L	SW846 8270A SIM
Quinoline	16	6.9	ng/L	SW846 8270A SIM
2,3-Benzofuran	2.7 J	5.1	ng/L	SW846 8270A SIM
2,3-Dihydroindene	260	5.0	ng/L	SW846 8270A SIM
2,3-Dihydroindene	220	25	ng/L	SW846 8270A SIM
Benzo(b)thiophene	29	0.90	ng/L	SW846 8270A SIM
Benzo(b)thiophene	27	4.5	ng/L	SW846 8270A SIM
Acridine	5.1 J	6.1	ng/L	SW846 8270A SIM
Dibenzothiophene	23	1.1	ng/L	SW846 8270A SIM
Dibenzothiophene	21	5.5	ng/L	SW846 8270A SIM
PCJ-SLP10D-051799 05/17/99 12:00 002				
Acenaphthylene	110	1.4	ng/L	SW846 8270A SIM
Acenaphthylene	79	7.0	ng/L	SW846 8270A SIM
Naphthalene	3.7 J	6.5	ng/L	SW846 8270A SIM
Acenaphthene	560	1.3	ng/L	SW846 8270A SIM
Acenaphthene	570	6.5	ng/L	SW846 8270A SIM
Dibenzofuran	25	1.0	ng/L	SW846 8270A SIM
Dibenzofuran	23	5.0	ng/L	SW846 8270A SIM

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SECTION 4.3.4

GAC

Quanterra

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CASE NARRATIVE

FOR

City of St Louis Park

April 8, 1999

Quanterra , Inc.

Project Lot Number D9C160130

Introduction

Six aqueous samples (including matrix QC) were received at Quanterra Environmental Services, Denver Laboratory on March 16, 1999. The samples were logged in under Quanterra Denver's project lot number D9C160130. A cross reference associating Quanterra Denver's laboratory sample numbers to the actual field sample number is included. The samples were analyzed for semivolatile organics, acid fraction only by method 8270C using CLP protocol.

Data Quality Assessment

The results contained in this report were reviewed relative to data acceptance criteria as specified in the October 1998 QAPP for completeness, precision, accuracy, representativeness and defensibility of the data Unless otherwise stated below, no quality control problems or technical difficulties were encountered which would impact the interpretation or use of data in this report

The spike compound 4-nitrophenol was recovered in the laboratory control sample at 86% which is outside the 10% to 80% acceptance window in the CLP methodology. 86% is an acceptable recovery for the method No corrective action is necessary.

Except for the above, this data package is in compliance with the terms and conditions of the October 1998 QAPP, both technically and for completenes

Reported By: Kurt C. Ill **Date:** April 8, 1999

Kurt C. Ill
Customer Service Manger

ANALYTICAL REPORT

Reilly Tar & Chemical NPL Site

Lot #: D9C160130

Scott Anderson

City of St. Louis Park

QUANTERRA INCORPORATED

Kurt C. Ill
Project Manager

April 8, 1999

EXECUTIVE SUMMARY - Detection Highlights

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
NO DETECTABLE PARAMETERS				

ANALYTICAL METHODS SUMMARY

D9C160130

PARAMETER	ANALYTICAL METHOD
Semivolatile Organic Compounds by GC/MS	SW846 8270C

References:

SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 and its updates.

METHOD / ANALYST SUMMARY

D9C160130

ANALYTICAL METHOD	ANALYST	ANALYST ID
SW846 8270C	Deborah Coyle	001425

References:

SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 and its updates.

SAMPLE SUMMARY

D9C160130

WO #	SAMPLE#	CLIENT SAMPLE ID	DATE	TIME
CRMC4	001	GAC-SLP10AF-031599	03/15/99	
CRMC8	002	GAC-SLP4AF-031599	03/15/99	
CRMCA	003	GAC-SLP4AFD-031599	03/15/99	
CRMCC	004	GAC-SLP4AFFB-031599	03/15/99	

NOTE(S):

- The analytical results of the samples listed above are presented on the following pages
- All calculations are performed before rounding to avoid round-off errors in calculated results
- Results noted as "ND" were not detected at or above the stated limit
- This report must not be reproduced, except in full, without the written approval of the laboratory
- Results for the following parameters are never reported on a dry weight basis color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight

CITY OF ST. LOUIS PARK

Client Sample ID: GAC-SLP10AF-031599

GC/MS Semivolatiles

Lot-Sample #...: D9C160130-001 Work Order #...: CRMC4102 Matrix.....: WATER
Date Sampled...: 03/15/99 Date Received..: 03/16/99
Prep Date.....: 03/16/99 Analysis Date..: 03/25/99
Prep Batch #...: 9093124 Analysis Time..: 11:16
Dilution Factor: 1

Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Phenol	ND	10	ug/L
2-Methylphenol	ND	10	ug/L
4-Methylphenol	ND	10	ug/L
2-Chlorophenol	ND	10	ug/L
2-Nitrophenol	ND	10	ug/L
2,4-Dimethylphenol	ND	10	ug/L
2,4-Dichlorophenol	ND	10	ug/L
4-Chloro-3-methylphenol	ND	10	ug/L
2,4,6-Trichlorophenol	ND	10	ug/L
2,4,5-Trichlorophenol	ND	50	ug/L
2,4-Dinitrophenol	ND	50	ug/L
4-Nitrophenol	ND	50	ug/L
4,6-Dinitro-2-methylphenol	ND	50	ug/L
Pentachlorophenol	ND	50	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
2-Fluorophenol	69	(21 - 110)
2,4,6-Tribromophenol	68	(10 - 123)
Phenol-d5	63	(10 - 110)

CITY OF ST. LOUIS PARK

Client Sample ID: GAC-SLP4AF-031599

GC/MS Semivolatiles

Lot-Sample #...: D9C160130-002 Work Order #...: CRMC8104 Matrix.....: WATER
Date Sampled...: 03/15/99 Date Received..: 03/16/99
Prep Date.....: 03/16/99 Analysis Date..: 03/25/99
Prep Batch #...: 9093124 Analysis Time..: 11:51
Dilution Factor: 1

Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Phenol	ND	10	ug/L
2-Methylphenol	ND	10	ug/L
4-Methylphenol	ND	10	ug/L
2-Chlorophenol	ND	10	ug/L
2-Nitrophenol	ND	10	ug/L
2,4-Dimethylphenol	ND	10	ug/L
2,4-Dichlorophenol	ND	10	ug/L
4-Chloro-3-methylphenol	ND	10	ug/L
2,4,6-Trichlorophenol	ND	10	ug/L
2,4,5-Trichlorophenol	ND	50	ug/L
2,4-Dinitrophenol	ND	50	ug/L
4-Nitrophenol	ND	50	ug/L
4,6-Dinitro-2-methylphenol	ND	50	ug/L
Pentachlorophenol	ND	50	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
2-Fluorophenol	84	(21 - 110)
2,4,6-Tribromophenol	68	(10 - 123)
Phenol-d5	77	(10 - 110)

CITY OF ST. LOUIS PARK

Client Sample ID: GAC-SLP4AFD-031599

GC/MS Semivolatiles

Lot-Sample #...: D9C160130-003 Work Order #...: CRMCA102 Matrix.....: WATER
Date Sampled...: 03/15/99 Date Received..: 03/16/99
Prep Date.....: 03/16/99 Analysis Date..: 03/25/99
Prep Batch #...: 9093124 Analysis Time..: 13:36
Dilution Factor: 1

Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Phenol	ND	10	ug/L
2-Methylphenol	ND	10	ug/L
4-Methylphenol	ND	10	ug/L
2-Chlorophenol	ND	10	ug/L
2-Nitrophenol	ND	10	ug/L
2,4-Dimethylphenol	ND	10	ug/L
2,4-Dichlorophenol	ND	10	ug/L
4-Chloro-3-methylphenol	ND	10	ug/L
2,4,6-Trichlorophenol	ND	10	ug/L
2,4,5-Trichlorophenol	ND	50	ug/L
2,4-Dinitrophenol	ND	50	ug/L
4-Nitrophenol	ND	50	ug/L
4,6-Dinitro-2-methylphenol	ND	50	ug/L
Pentachlorophenol	ND	50	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
2-Fluorophenol	66	(21 - 110)
2,4,6-Tribromophenol	72	(10 - 123)
Phenol-d5	61	(10 - 110)

CITY OF ST. LOUIS PARK

Client Sample ID: GAC-SLP4AFFB-031599

GC/MS Semivolatiles

Lot-Sample #...: D9C160130-004 Work Order #...: CRMCC102 Matrix.....: WATER
Date Sampled...: 03/15/99 Date Received..: 03/16/99
Prep Date.....: 03/16/99 Analysis Date..: 03/25/99
Prep Batch #...: 9093124 Analysis Time..: 14:10
Dilution Factor: 1

Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Phenol	ND	10	ug/L
2-Methylphenol	ND	10	ug/L
4-Methylphenol	ND	10	ug/L
2-Chlorophenol	ND	10	ug/L
2-Nitrophenol	ND	10	ug/L
2,4-Dimethylphenol	ND	10	ug/L
2,4-Dichlorophenol	ND	10	ug/L
4-Chloro-3-methylphenol	ND	10	ug/L
2,4,6-Trichlorophenol	ND	10	ug/L
2,4,5-Trichlorophenol	ND	50	ug/L
2,4-Dinitrophenol	ND	50	ug/L
4-Nitrophenol	ND	50	ug/L
4,6-Dinitro-2-methylphenol	ND	50	ug/L
Pentachlorophenol	ND	50	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
2-Fluorophenol	74	(21 - 110)
2,4,6-Tribromophenol	68	(10 - 123)
Phenol-d5	73	(10 - 110)

QC DATA ASSOCIATION SUMMARY

D9C160130

Sample Preparation and Analysis Control Numbers

SAMPLE#	MATRIX	ANALYTICAL METHOD	LEACH BATCH #	PREP BATCH #	MS RUN#
001	WATER	SW846 8270C		9093124	9093025
002	WATER	SW846 8270C		9093124	9093025
003	WATER	SW846 8270C		9093124	9093025
004	WATER	SW846 8270C		9093124	9093025

METHOD BLANK REPORT

GC/MS Semivolatiles

Client Lot #...: D9C160130 Work Order #...: CT99C101 Matrix.....: WATER
MB Lot-Sample #: D9D030000-124

Prep Date.....: 03/16/99 Analysis Time..: 09:34
Analysis Date..: 03/25/99 Prep Batch #...: 9093124
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Phenol	ND	10	ug/L	SW846 8270C
2-Methylphenol	ND	10	ug/L	SW846 8270C
4-Methylphenol	ND	10	ug/L	SW846 8270C
2-Chlorophenol	ND	10	ug/L	SW846 8270C
2-Nitrophenol	ND	10	ug/L	SW846 8270C
2,4-Dimethylphenol	ND	10	ug/L	SW846 8270C
2,4-Dichlorophenol	ND	10	ug/L	SW846 8270C
4-Chloro-3-methylphenol	ND	10	ug/L	SW846 8270C
2,4,6-Trichlorophenol	ND	10	ug/L	SW846 8270C
2,4,5-Trichlorophenol	ND	50	ug/L	SW846 8270C
2,4-Dinitrophenol	ND	50	ug/L	SW846 8270C
4-Nitrophenol	ND	50	ug/L	SW846 8270C
4,6-Dinitro-2-methylphenol	ND	50	ug/L	SW846 8270C
Pentachlorophenol	ND	50	ug/L	SW846 8270C

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
2-Fluorophenol	87	(21 - 110)
2,4,6-Tribromophenol	75	(10 - 123)
Phenol-d5	83	(10 - 110)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results

LABORATORY CONTROL SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #...: D9C160130 Work Order #...: CT99C102-LCS Matrix.....: WATER
LCS Lot-Sample#: D9D030000-124 CT99C103-LCSD
Prep Date.....: 03/16/99 Analysis Date..: 03/25/99
Prep Batch #...: 9093124 Analysis Time..: 10:08
Dilution Factor: 1

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	RPD	METHOD
Phenol	**150**	**107**	**ug/L**	**71**		**SW846 8270C**
	150	**97.3**	**ug/L**	**65**	**9.7**	**SW846 8270C**
2-Chlorophenol	**150**	**114**	**ug/L**	**76**		**SW846 8270C**
	150	**103**	**ug/L**	**69**	**10**	**SW846 8270C**
4-Chloro-3-methylphenol	**150**	**127**	**ug/L**	**84**		**SW846 8270C**
	150	**109**	**ug/L**	**73**	**15**	**SW846 8270C**
4-Nitrophenol	**150**	**129 a**	**ug/L**	**86**		**SW846 8270C**
	150	**106**	**ug/L**	**71**	**20**	**SW846 8270C**
Pentachlorophenol	**150**	**131**	**ug/L**	**87**		**SW846 8270C**
	150	**107**	**ug/L**	**72**	**20**	**SW846 8270C**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
2-Fluorophenol	71	(21 - 110)
	69	(21 - 110)
2,4,6-Tribromophenol	78	(10 - 123)
	68	(10 - 123)
Phenol-d5	70	(10 - 110)
	70	(10 - 110)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results

Bold print denotes control parameters

a Spiked analyte recovery is outside stated control limits

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: D9C160130 **Work Order #...:** CT99C102-LCS **Matrix.....:** WATER
LCS Lot-Sample#: D9D030000-124 CT99C103-LCSD
Prep Date.....: 03/16/99 **Analysis Date..:** 03/25/99
Prep Batch #...: 9093124 **Analysis Time..:** 10:08
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Phenol	**71**	**(12 - 110)**			**SW846 8270C**
	65	**(12 - 110)**	**9.7**	**(0-42)**	**SW846 8270C**
2-Chlorophenol	**76**	**(27 - 123)**			**SW846 8270C**
	69	**(27 - 123)**	**10**	**(0-40)**	**SW846 8270C**
4-Chloro-3-methylphenol	**84**	**(23 - 97)**			**SW846 8270C**
	73	**(23 - 97)**	**15**	**(0-42)**	**SW846 8270C**
4-Nitrophenol	**86 a**	**(10 - 80)**			**SW846 8270C**
	71	**(10 - 80)**	**20**	**(0-50)**	**SW846 8270C**
Pentachlorophenol	**87**	**(9.0- 103)**			**SW846 8270C**
	72	**(9.0- 103)**	**20**	**(0-50)**	**SW846 8270C**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
2-Fluorophenol	71	(21 - 110)
	69	(21 - 110)
2,4,6-Tribromophenol	78	(10 - 123)
	68	(10 - 123)
Phenol-d5	70	(10 - 110)
	70	(10 - 110)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results

Bold print denotes control parameters

a Spiked analyte recovery is outside stated control limits

MATRIX SPIKE SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #...: D9C160130 Work Order #...: CRMC8105-MS Matrix.....: WATER
MS Lot-Sample #: D9C160130-002 CRMC8106-MSD
Date Sampled...: 03/15/99 Date Received..: 03/16/99
Prep Date.....: 03/16/99 Analysis Date..: 03/25/99
Prep Batch #...: 9093124 Analysis Time..: 12:25
Dilution Factor: 1

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCENT RECOVERY	RPD	METHOD
Phenol	ND	152	93.4	ug/L	62		SW846 8270C
	ND	152	96.4	ug/L	63	2.6	SW846 8270C
2-Chlorophenol	ND	152	98.3	ug/L	65		SW846 8270C
	ND	152	101	ug/L	67	2.7	SW846 8270C
4-Chloro-3-methylphenol	ND	152	117	ug/L	77		SW846 8270C
	ND	152	107	ug/L	70	9.0	SW846 8270C
4-Nitrophenol	ND	152	121	ug/L	80		SW846 8270C
	ND	152	107	ug/L	70	13	SW846 8270C
Pentachlorophenol	ND	152	122	ug/L	80		SW846 8270C
	ND	152	112	ug/L	73	9.3	SW846 8270C

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
2-Fluorophenol	61	(21 - 110)
	70	(21 - 110)
2,4,6-Tribromophenol	79	(10 - 123)
	72	(10 - 123)
Phenol-d5	66	(10 - 110)
	69	(10 - 110)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results

Bold print denotes control parameters

MATRIX SPIKE SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: D9C160130 Work Order #...: CRMC8105-MS Matrix.....: WATER
MS Lot-Sample #: D9C160130-002 CRMC8106-MSD
Date Sampled...: 03/15/99 Date Received..: 03/16/99
Prep Date.....: 03/16/99 Analysis Date..: 03/25/99
Prep Batch #...: 9093124 Analysis Time..: 12:25
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Phenol	**62**	**(12 - 110)**			**SW846 8270C**
	63	**(12 - 110)**	**2.6**	**(0-42)**	**SW846 8270C**
2-Chlorophenol	**65**	**(27 - 123)**			**SW846 8270C**
	67	**(27 - 123)**	**2.7**	**(0-40)**	**SW846 8270C**
4-Chloro-3-methylphenol	**77**	**(23 - 97)**			**SW846 8270C**
	70	**(23 - 97)**	**9.0**	**(0-42)**	**SW846 8270C**
4-Nitrophenol	**80**	**(10 - 80)**			**SW846 8270C**
	70	**(10 - 80)**	**13**	**(0-50)**	**SW846 8270C**
Pentachlorophenol	**80**	**(9.0- 103)**			**SW846 8270C**
	73	**(9.0- 103)**	**9.3**	**(0-50)**	**SW846 8270C**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
2-Fluorophenol	61	(21 - 110)
	70	(21 - 110)
2,4,6-Tribromophenol	79	(10 - 123)
	72	(10 - 123)
Phenol-d5	66	(10 - 110)
	69	(10 - 110)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results

Bold print denotes control parameters