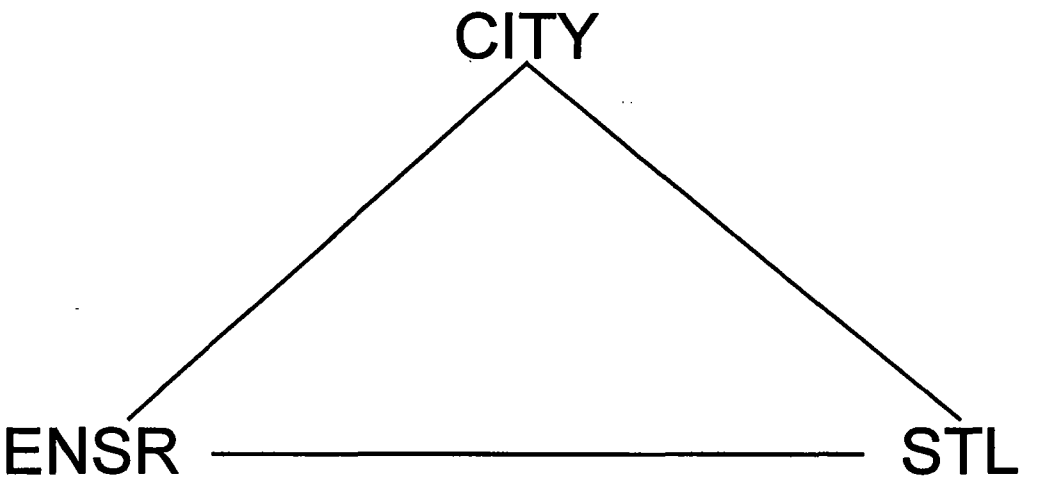
US EPA RECORDS CENTER REGION 5
513848
931262

ANNUAL MONITORING REPORT FOR 2002

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

SUBMITTED MARCH 15, 2003



ENSR INTERNATIONAL

ENSR International
4500 Park Glen Road
Suite 210
St. Louis Park, MN 55416-4889
(952) 924-0117
FAX (952) 924-0317
www.ensr.com

March 15, 2003

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

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

President
Reilly Industries, Inc.
300 North Meridian Street, Suite 1500
Indianapolis, Indiana 46204-1763

Re: United States of America, et al. vs. Reilly Tar & Chemical Corporation, et al.
File No. Civ. 4-80-469
CD-RAP Section 3.4

Gentlemen:

Enclosed is the 2002 Annual Monitoring Report submitted pursuant to Section 3.4 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).

Any questions regarding this submittal can be directed towards this office.

Sincerely,

William M. Gregg

William M. Gregg
Project Leader for the
City of St. Louis Park

Enclosure

cc: Ginny Yingling, Minnesota Department of Health
Scott Anderson, City of St. Louis Park
Mike Rardin (w/o enclosures), City of St. Louis Park

j:\projects\01620-032\AMR ltr.doc

ANNUAL MONITORING REPORT
FOR 2002

SUBMITTED TO THE

REGIONAL ADMINISTRATOR
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V

EXECUTIVE DIRECTOR
MINNESOTA POLLUTION CONTROL AGENCY

BY

THE CITY OF ST. LOUIS PARK, MINNESOTA

PURSUANT TO
CONSENT DECREE - REMEDIAL ACTION PLAN
SECTION 3.4

UNITED STATES OF AMERICA, ET AL.

vs.

REILLY TAR & CHEMICAL CORPORATION, ET AL.

UNITED STATES DISTRICT COURT
DISTRICT OF MINNESOTA
CIVIL NO. 4-80-469

MARCH 15, 2003

CONTENTS

1.0 INTRODUCTION 1-1

2.0 MT. SIMON-HINCKLEY AQUIFER 2-1

3.0 IRONTON-GALESVILLE AQUIFER 3-1

4.0 PRAIRIE DU CHIEN-JORDAN AQUIFER 4-1

5.0 ST. PETER AQUIFER 5-1

6.0 DRIFT-PLATTEVILLE AQUIFER SOURCE AND GRADIENT CONTROL WELLS 6-1

7.0 PLATTEVILLE AQUIFER 7-1

8.0 DRIFT AQUIFER 8-1

9.0 DATA QUALITY ASSESSMENT 9-1

APPENDICES

Please refer to the Guide to Appended Laboratory Results for all 2002 samples. This guide precedes the Appendices.

LIST OF TABLES

Table 2-1
Historical Summary of Other PAH and CPAH Analytical Results 1988 through 2002, SLP 11, 12, 13, 17 2-3

Table 3-1
Historical Summary of Other PAH and CPAH in Well W105, 1988 through 2002 3-2

Table 4-1
Historical Summary of Other PAH and CPAH Analytical Results for Prairie Du Chien-Jordan Aquifer Wells, 1988 through 2002 4-4

Table 5-1
Historical Summary of Other PAH and CPAH Analytical Results for St. Peter Aquifer Wells, 1988 through 2002 5-4

Table 6-1
Historical Summary of Other PAH and CPAH Analytical Results for Wells W420, W421, W434 and W439, 1988 through 2002 6-6

Table 7-1
Historical Summary of Other PAH and CPAH Analytical Results for Platteville Aquifer Wells, 1988 through 2002 7-4

Table 8-1
Historical Summary of Other PAH and CPAH Analytical Results for Drift Aquifer Wells, 1988 through 2002 8-4

LIST OF FIGURES

Figure 2-1
Summary of Ground Water Monitoring Results for the Mt. Simon-Hinckley Aquifer - 2002 2-2

Figure 4-1
Summary of Groundwater Monitoring Results For Prairie Du Chien–Jordan Aquifer - First Half, 2002 4-2

Figure 4-2
Summary of Groundwater Monitoring Results For Prairie Du Chien–Jordan Aquifer - Second Half, 2002 4-3

Figure 5-1
Summary of Groundwater Monitoring Results For St. Peter Aquifer - First Half, 2002 5-2

Figure 5-2
Summary of Groundwater Monitoring Results For St. Peter Aquifer - Second Half, 2002 5-3

Figure 6-1
Summary of Ground Water Monitoring Results for the Drift-Platteville Aquifer (Wells W420, W421, W434, W439) - First Quarter 2002 6-2

Figure 6-2
Summary of Ground Water Monitoring Results for the Drift-Platteville Aquifer (Wells W420, W421, W434, and W439) - Second Quarter 2002 6-3

Figure 6-3
Summary of Ground Water Monitoring Results for the Drift-Platteville Aquifer (Wells W420, W421, W434, and W439) - Third Quarter 2002 6-4

Figure 6-4
Summary of Ground Water Monitoring Results for the Drift-Platteville Aquifer (Wells W420, W421, W434, and W439) - Fourth Quarter 2002 6-5

Figure 7-1
Summary of Groundwater Monitoring Results For Platteville Aquifer - First Half, 2002 7-2

Figure 7-2
Summary of Groundwater Monitoring Results For Platteville Aquifer - Second Half 2002 7-3

Figure 8-1
Summary of Groundwater Monitoring Results For Drift Aquifer - First Half, 2002 8-2

Figure 8-2
Summary of Groundwater Monitoring Results For Drift Aquifer - Second Half, 2002 8-3

1.0 INTRODUCTION

Pursuant to Section 3.4 of the Consent Decree - Remedial Action Plan (CD-RAP) in the case of the United States of America, *et al.* vs. Reilly Tar & Chemical Corporation, *et al.*, this report presents the results of all chemical analyses and water level measurements for calendar year 2002 that are not presented in previous reports.

The groundwater monitoring conducted in 2002 was performed in accordance with the methods and procedures identified in the 2002 Sampling Plan. The City of St. Louis Park (City) has overall responsibility for conducting the groundwater monitoring required by the CD-RAP. In accordance with the Sampling Plan, the City was assisted in 2002 by ENSR who collected groundwater samples from monitor wells and by Severn Trent Laboratories who performed the analyses for PAH and phenolics. In February 2000, Severn Trent Laboratories purchased Quanterra and the laboratory is now known as STL-Denver.

The 2002 monitoring data are presented separately for each aquifer, starting with the Mt. Simon-Hinckley Aquifer, which is the deepest aquifer below the ground surface, and ending with the Drift Aquifer, which is the uppermost aquifer monitored. A series of maps has been prepared to help present the monitoring data. Maps for the Prairie du Chien-Jordan, St. Peter, Platteville, and Drift Aquifers are contained in this report.

A series of tables has been prepared for each aquifer to help present the analytical results since 1988. These tables illustrate trends in PAH concentrations in the groundwater for each monitoring well. The shaded tables represent wells that are no longer monitored as part of the sampling plan or wells that were unavailable for sampling during the scheduled time.

ENSR conducted a limited validation to assess the quality of the laboratory data. The data quality assessment can be found in the final section of this report.

Each appendix is a laboratory data package for a set of samples collected and submitted for analysis at the same time. The data Appendices are organized chronologically throughout the year, as shown in the Guide to Appended Laboratory Results immediately preceding the Appendices.

2.0 MT. SIMON-HINCKLEY AQUIFER

In accordance with RAP Section 5.1, the Mt. Simon-Hinckley Aquifer was sampled once in 2002. Wells SLP17 and SLP11 were out of service and no samples were collected from them in 2001. The 2002 analytical data for the Mt. Simon-Hinckley wells are shown on Figure 2-1. The laboratory reports of the analytical data are included in the Appendices. The Guide to Appended Laboratory Results for all of 2002 precedes the Appendices.

The sums of the concentrations of benzo(a)pyrene and dibenz(a,h)anthracene, carcinogenic PAH, and other PAH in each well are below the advisory levels for these compounds. The advisory levels for benzo(a)pyrene and dibenz(a,h)anthracene, carcinogenic PAH, and Other PAH are 3, 15 and 175 nanograms/liter (ng/l or parts per trillion), respectively. The results are consistent with historical water quality for the aquifer. Table 2-1 lists the historic results since 1988 of other PAH and carcinogenic PAH data collected from the four wells. Carcinogenic PAH were detected in SLP12 at a concentration of 3 ng/l in September 2002. It appears that the Mt. Simon-Hinckley Aquifer has not been significantly affected by contaminants originating from the former Reilly Tar & Chemical (Reilly) site.

NON-RESPONSIVE

[redacted]

REILLY SITE

WELL LOCATION
SLP 17 WELL IDENTIFICATION
809.79 WATER LEVEL
0 SUM-BENZO(a)PYRENE & DIBENZ(a,h)ANTHRACENE (PPT)
0 SUM-CARCINOGENIC PAH (PPT)
7 SUM-OTHER PAH'S (PPT)

Concentration in nanograms per liter
equivalent to parts per trillion

FIGURE 2-1

SUMMARY OF GROUNDWATER MONITORING RESULTS
FOR MOUNT SIMON HINKLEY AQUIFER
2002

DRAWN: A. TARARA	DATE: 2/14/03	REV:	ENSR
CHECKED: WMG	PROJECT: 01620-032		

Table 2-1
Historical Summary of Other PAH and CPAH Analytical Results
1988 through 2002
2 Mt. Simon SLP11,12,13,17

All concentrations reported in nanograms per liter (ng/l).

SLP17		
Sampling Date	Total CPAH[1]	Total Other PAH[2]
8-88	0	12
6-89	0	12
6-90	1	18
3-91	0	41
11-92	3	41
6-93	0	12
12-94	4	35
10-95	0	8
6-96	0	5
10-97	62	406
5-98	0	3
5-99	0	40
9-00	Out of Service	

SLP12		
Sampling Date	Total CPAH[1]	Total Other PAH[2]
6-88	0	11
6-89	0	16
3-90	0	109
3-91	0	21
5-92	1	25
3-93	0	9
3-94	0	21
10-95	0	9
6-96	0	3
10-97	0	12
5-98	0	3
9-99	0	10
9-00	0	11
8-01	0	2
9-02	3	7

SLP13		
Sampling Date	Total CPAH[1]	Total Other PAH[2]
6-88	0	15
6-89	0	9
3-90	0	14
3-91	0	13
5-92	2	11
6-93	0	11
12-94	0	28
10-95	0	9
6-96	0	5
10-97	0	22
5-98	0	4
5-99	0	15
9-00	0	6
8-01	0	0
9-02	0	0

SLP11		
Sampling Date	Total CPAH[1]	Total Other PAH[2]
6-88	0 [3]	42
6-89	0	34
90	Out of Service	
3-91	0	43
5-92	0	43
3-93	0	50
3-94	0	66
10-95	3	113
6-96	0	109
10-97	0	78
5-98	0	70
5-99	0	151
9-00	0	22
8-01	0	19
9-02	Out of Service	

[1] Total Carcinogenic PAHs (as listed in the CD/RAP (A.1.1)), consist of the sum of:

benzo(a) anthracene	chrysene	quinoline*
benzo(a)pyrene	dibenz(a,h)anthracene	benzo(j)fluoranthene**
benzo(b)flouranthene	indeno(1,2,3-cd)pyrene	benzo(g,h,i)perylene

*Quinoline is included in the sum of CPAH if other CPAHs were detected. If no CPAHs are detected, quinoline is included in the Total Other PAH.

**Benzo(j)fluoranthene will coelute with either benzo(b)fluoranthene or benzo(k)fluoranthene. Benzo(j)flouranthene can not be consistently separated by the laboratory. Therefore, if present, it will be reported as benzo(b)- and/or benzo(k)-fluoranthene.

[2] Total Other PAHs (as listed in the CD/RAP (A.1.2), consists of the sum of:

acenapthene	benzo(e)pyrene	2,3-dihydroindene	1-methylnaphthalene
acenaphthylene	benzo(b)thiophene	fluoranthene	2-methylnaphthalene
acridine	biphenyl	fluorene	naphthalene
anthracene	carbazole	indene	perylene
benzo(k)fluoranthene	dibenzothiophene	indole	phenanthrene
2,3-benzofuran			pyrene

[3] Result reported as 0 indicates that all parameters were not detected above the laboratory detection limit.

3.0 IRONTON-GALESVILLE AQUIFER

Analytical results from groundwater samples collected during 1987 through 1991 from well W105 had consistently met the criterion (less than 10 parts per billion [10,000 parts per trillion] total PAH) for discontinuing the 25 gallons per minute (gpm) pumping rate. Therefore, in accordance with CD-RAP Section 6.1.5, the pump in well W105 was inactivated on December 23, 1991, and remains inactivated.

Groundwater samples were required to be collected from well W105 in 2002. Well W105 is required to be sampled once per year on the even-numbered years (i.e. 2000, 2002, 2004).

The historical analytical results for well W105 from 1988 through 2002 are presented on Table 3-1. Concentrations have remained below the 10,000 ng/l cessation criterion since well W105 ceased pumping in 1991.

Table 3-1

Historical Summary of Other PAH and CPAH in Well W105
1988 through 2002

All concentrations repoprted in nanograms per liter (ng/l).

W105		
Sampling Date	Total CPAH[1]	Total Other PAH[2]
2-88	0 [3]	9,000
6-88	0	2,400
9-88	0	3,670
12-88	0	2,035
6-89	0	1,400
12-89	0	1,086
5-90	0	2,347
8-90	0	2,600
5-91	9.5	2,164
8-91	0	1,014
2-92	0	2,185
6-92	355	5,057
11-92	0	30,900
1-93	38	1,797
1-93	23	1,966
3-94	60	2,576
5-96	29	2,746
4-98	0	5,493
5-00	89	5,593
6-02	98	5,247

NOTES:

[1] Total Carcinogenic PAHs (as listed in the CD/RAP (A.1.1), consist of the sum of:

benzo(a) anthracene
benzo(a)pyrene
benzo(b)flouranthene
chryserie
dibenz(a,h)anthracene
indeno(1,2,3-cd)pyrene
quinoline*
benzo(j)fluoranthene**
benzo(g,h,i)perylene

*Quinoline is included in the sum of CPAH if other CPAHs were detected. If no CPAHs are detected, quinoline is included in the Total Other PAH.

**Benzo(j)fluoranthene will coelute with either benzo(b)fluoranthene or benzo(k)fluoranthene. Benzo-(j)flouranthene can not be consistantly separated by the laboratory. Therefore if present, it will be reported as benzo(b)- and/or benzo(k)-fluoranthene.

[2] Total Other PAHs (as listed in the CD/RAP (A.1.2)), consists of the sum of:

acenapthene
acenaphthylene
acridine
anthracene
benzo(k)fluoranthene
2,3-benzofuran
benzo(e)pyrene
benzo(b)thiophene
biphenyl
carbazole
dibenzofuran
dibenzothiophene
2,3-dihydroindene
fluoranthene
fluorene
indene
indole
1-methylnaphthalene
2-methylnaphthalene
naphthalene
perylene
phenanthrene
pyrene

[3] Result reported as 0 indicates that all parameters were not detected above the laboratory detection limit.

4.0 PRAIRIE DU CHIEN-JORDAN AQUIFER

Prairie du Chien-Jordan Aquifer wells were monitored in accordance with the 2002 Sampling Plan. In addition to water quality monitoring, groundwater elevations were measured at the Prairie du Chien-Jordan Aquifer wells on June 21, 2002, and September 27, 2002. A total of 21 wells were used to collect groundwater samples during 2002.

Summaries of analytical data and groundwater elevations for the sampling rounds are shown in Figures 4-1 and 4-2. These two figures indicate that groundwater flow in the aquifer is greatly affected by the pumping of wells and is dependent upon the pumping rate and the time the specific measurements were recorded (e.g., pump may have been recently shut off, or turned on). Some of the municipal wells (i.e. SLP10/15, E7, and SLP4) pump at greater than 1,000 gpm and have a considerable effect on localized groundwater flow. However, these wells systematically turn on and turn off, therefore, the general groundwater flow is affected by which wells are pumping and at what rates. According to several literature resources, including the USGS (Water Supply Paper 2211, 1984), Norvitch and others (Water Resources Outlook of the Minneapolis and St. Paul Metropolitan Area, 1973), the general groundwater flow in the Prairie du Chien-Jordan Aquifer is towards the east. Figures 4-1 and 4-2 indicate a snapshot in time of the groundwater flow and are not indicative of the long-term flow.

Table 4-1 presents a historical summary of analytical results from 1988 through 2002 for Prairie du Chien-Jordan Aquifer wells. The laboratory reports of the analytical data are included in the Appendices. The Guide to Appended Laboratory Results for all of 2002 precedes the Appendices.

The sums of the concentrations of benzo(a)pyrene and dibenz(a,h)anthracene, carcinogenic PAH, and other PAH were below the drinking water criteria level of 280ng/l in all of the Prairie du Chien-Jordan Aquifer wells, except for wells W23, SLP4, and SLP10. These three wells are all treated with granular activated carbon prior to discharge. Carcinogenic PAH were detected in four of the 18 wells that were sampled.

The amount and distribution of PAH in the aquifer in 2002 was consistent with historical patterns and continues to show a decreasing trend of PAH concentrations in several wells. For example, W29 had an all time low concentration of 44ng/l in 2002.

NON-RESPONSIVE

LEGEND

Reilly Site

Well ID
Water Level (ft)
Sum of Benzo(a)Pyrene and Dibenz(a,h)anthracene (ppt)
Total Carcinogenic PAH (ppt)
Total Other PAH (ppt)
0 = Not detected
- = Not sampled

5 Foot Groundwater Level Contour

N
W E
S

0 2,500 5,000 10,000 Feet

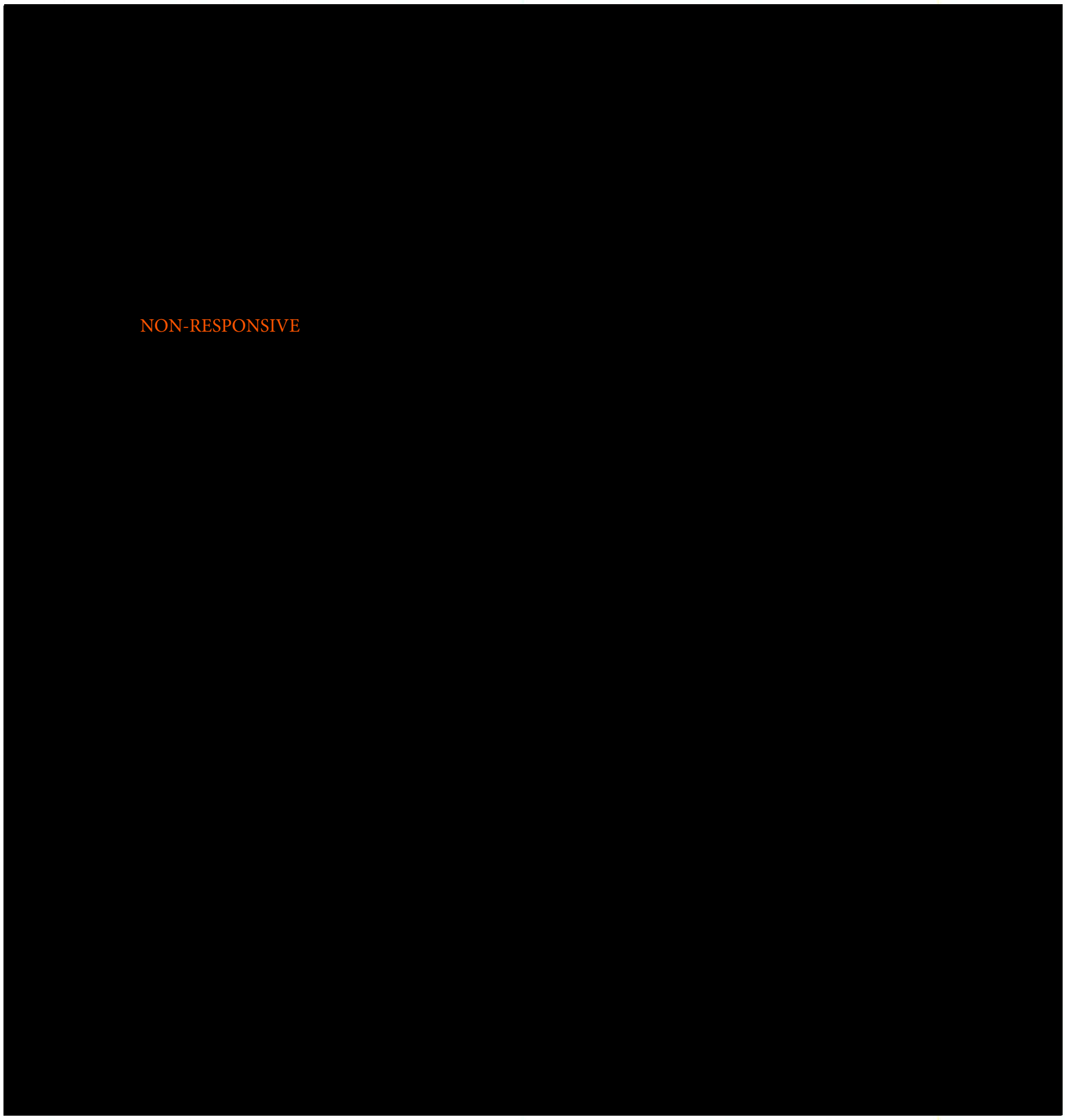
FIGURE 4-1

Summary of Groundwater Monitoring Results Prairie Du Chien-Jordan Aquifer First Half, 2002

DRAWN: S. KELLY	DATE: 2/4/2002	REV: 1	ENSR INTERNATIONAL
CHECKED: B. GREGG	PROJECT: 1620-032		

C:\Temp\~DFC390.tmp

CITY OF ST. LOUIS PARK



LEGEND

Reilly Site

Well ID
Water Level (ft)
Sum of Benzo(a)Pyrene and
Dibenz(a,h)anthracene (ppt)
Total Carcinogenic PAH (ppt)
Total Other PAH (ppt)
0 = Not detected
- = Not sampled

5 Foot Groundwater
Level Contour

N
W E
S

0 2,500 5,000 10,000
Feet

FIGURE 4-2

Summary of
Groundwater Monitoring Results
Prairie Du Chien-Jordan Aquifer
Second Half, 2002

DRAWN: S. KELLY	DATE: 2/4/2002	REV: 1	ENSR INTERNATIONAL
CHECKED: B. GREGG	PROJECT: 1620-032		

J:\Water\ProjectFiles\P10\1620\1620-013Reilly\PCJSecondHalf02.mxd

Table 4-1
Historical Summary of Other PAH and CPAH Analytical Results
1988 through 2002
Prairie du Chien-Jordan Aquifer Wells

All concentrations reported in nanograms per liter (ng/l)

SLP4		
Sampling Date	Total CPAH[1]	Total Other PAH[2]
8-88	0 [3]	244
10-89	0	232
3-90	0	210
6-90	2	239
11-92	3	309
3-93	0	237
6-93	0	259
3-94	0	552
10-94	1	571
9-95	3	561
12-95	6	229
6-96	0	431
9-96	0	526
4-97	0	596
9-97	0	533
4-98	0	440
9-98	1	361
11-98	5	91
5-99	0	485
8-99	0	328
5-00	0	465
9-00	0	376
5-01	3	397
5-02	0	281

SLP5		
Sampling Date	Total CPAH[1]	Total Other PAH[2]
10-88	0	613
6-89	0	94
6-90	0	49
5-91	1	42
6-92	1	71
8-93	5	77

SLP8		
Sampling Date	Total CPAH[1]	Total Other PAH[2]
8-88	0	18
6-89	0	8
10-89	0	9
3-90	0	15
3-91	0	50
5-92	1	19
11-92	2	9

SLP10		
Sampling Date	Total CPAH[1]	Total Other PAH[2]
8-88	0	8,200
10-89	0	5,120
6-90	0	5,403
8-90	0	7,386
5-91	5	315
6-92	0	3,070
8-93	0	2,091
6-94	0	2,174
6-95	0	1,737
6-96	0	1,742
10-97	0	1,859
5-98	0	1,354
5-99	0	1,452
5-00	0	2,947
5-01	0	1,929
6-02	2	1,453

SLP14		
Sampling Date	Total CPAH[1]	Total Other PAH[2]
8-88	0	112
6-89	0	134
9-89	0	84
3-90	0	98
8-90	0	145
5-91	1	99
8-91	0	19
5-92	1	90
8-93	0	78
9-94	0	57
6-95	0	89
6-96	0	52
4-97	0	46
5-98	0	55
5-99	0	49
5-00	0	50
5-02	0	25

SLP6		
Sampling Date	Total CPAH[1]	Total Other PAH[2]
8-88	0	33
10-88	0	55
6-89	7	52
9-89	0	36
10-89	0	40
3-90	0	45
6-90	3	80
8-90	0	117
10-90	0	68
8-91	0	123
5-92	1	123
11-92	0	173
3-93	0	212
6-93	0	113
2-94	1	74
6-95	0	88
6-96	1	180
8-96	0	178
10-96	0	189
1-97	0	236
2-97	0	210
3-97	0	277
6-97	0	217
5-98	0	146
8-98	0	173
8-99	0	174
5-00	0	218
8-01	0	158
11-01	0	138
3-02	0	181
5-02	0	189
9-02	0	219
10-02	0	178

SLP7		
Sampling Date	Total CPAH[1]	Total Other PAH[2]
8-88	0	78
10-88	0	51
6-89	0	61
9-89	0	25
10-89	0	25
3-90	0	43
6-90	2	48
8-90	2	91
10-90	0	49
3-91	0	50
5-91	0	37
8-91	0	65
5-92	1	40
3-93	0	32
6-94	0	60
6-95	0	28
6-96	0	22
4-97	0	11
5-98	0	17
5-99	0	17
well not in service		

SLP15		
Sampling Date	Total CPAH[1]	Total Other PAH[2]
6-89	0	4,026
11-92	0	3,206
8-93	0	2,091

Table 4-1
Historical Summary of Other PAH and CPAH Analytical Results
1988 through 2002
Prairie du Chien-Jordan Aquifer Wells

All concentrations reported in nanograms per liter (ng/l)

SLP16		
Sampling Date	Total CPAH[1]	Total Other PAH[2]
8-88	0	48
6-89	0	28
9-89	0	24
8-90	8	374
11-90	0	59
5-91	1	32
8-91	0	64
11-92	1	42
8-93	0	11
6-94	0	22
6-95	0	13
6-96	0	8
9-97	0	9
5-98	0	7
5-99	0	0
5-00	0	9
5-02	0	0

E2		
Sampling Date	Total CPAH[1]	Total Other PAH[2]
8-88	0	14
6-89	0	21
9-89	0	8
6-90	3	22
8-90	0	14
5-91	4	21
8-91	0	17
5-92	0	19
8-93	0	9
6-94	0	16
12-95	0	10
6-96	0	14
10-96	0	20
4-97	0	45
10-97	0	13
5-98	0	13
8-98	0	196
10-98	0	34
8-99	0	6
5-00	0	8
9-00	0	6
5-01	0	16
9-02	0	0

E3		
Sampling Date	Total CPAH[1]	Total Other PAH[2]
8-88	0	15
6-89	0	15
6-90	1	17
8-91	0	13
5-92	4	21
8-93	0	5
6-94	0	7
6-95	0	8
6-96	0	3
6-97	0	4
5-98	0	3
5-99	0	0
5-00	0	0
5-01	0	16
5-02	0	0

E7		
Sampling Date	Total CPAH[1]	Total Other PAH[2]
6-96	0	3
10-96	0	5
6-97	0	3
10-97	0	2
5-98	0	1
8-98	0	6
5-99	0	5
8-99	0	2
5-00	0	16
9-00	0	9
5-01	0	22
5-02	0	29

E13		
Sampling Date	Total CPAH[1]	Total Other PAH[2]
8-88	0	4
6-89	0	20
9-89	0	6
6-90	0	13
8-90	2	227
5-91	1	11
8-91	0	12
5-92	0	43
8-93	0	4
6-94	0	3
6-96	0	3
10-96	0	4
4-97	0	38
10-97	0	8
5-98	0	21
8-98	0	36
5-99	0	15
8-99	0	35
5-00	0	39
9-00	0	49
5-01	0	41
5-02	0	80

E15		
Sampling Date	Total CPAH[1]	Total Other PAH[2]
8-88	0	11
6-89	0	16
6-90	0	11
5-91	0	13
5-92	0	23
8-93	0	4
6-94	0	6
6-95	0	8
6-96	0	10
10-96	0	29
6-97	0	3
10-97	0	14
5-98	0	22
8-98	0	7
5-99	0	38
8-99	0	18
5-00	0	26
9-00	0	14
5-01	0	27
9-02	0	5

H3		
Sampling Date	Total CPAH[1]	Total Other PAH[2]
8-88	0	378
6-89	0	93
9-89	0	370
6-90	0	188
8-90	0	5,300
Abandoned		

H6		
Sampling Date	Total CPAH[1]	Total Other PAH[2]
8-88	0	19
6-89	0	16
6-90	0	15
5-91	0	16
5-92	0	16
8-93	0	3
6-94	0	6
6-95	0	3
6-96	0	3
4-97	0	2
5-98	0	5
5-99	0	5
5-00	0	5
5-02	0	0

Table 4-1
Historical Summary of Other PAH and CPAH Analytical Results
1988 through 2002
Prairie du Chien-Jordan Aquifer Wells

All concentrations reported in nanograms per liter (ng/l)

MTK6		
Sampling Date	Total CPAH[1]	Total Other PAH[2]
8-88	0	4
6-89	0	12
6-90	5	22
5-91	0	17
5-92	4	19
8-93	0	7
6-94	0	8
6-95	0	15
6-96	0	4
4-97	0	3
5-98	0	0
5-99	0	2
5-00	0	3
5-02	0	0

W48		
Sampling Date	Total CPAH[1]	Total Other PAH[2]
8-88	0	2,418
6-89	0	1,636
9-89	0	1,850
10-89	0	1,130
3-90	0	1,690
6-90	0	1,809
8-90	22	4,566
8-93	2	428
6-94	1	285
6-95	3	310
6-96	3	259
6-97	0	316
10-97	0	290
5-98	0	186
8-98	0	50
5-99	0	226
8-99	0	226
5-00	0	222
9-00	0	130
5-01	0	234
8-01	0	149
11-01	0	180
3-02	0	222
5-02	0	185
9-02	0	138
10-02	0	187

W23		
Sampling Date	Total CPAH[1]	Total Other PAH[2]
9-88	0	111,100
12-88	0	123,100
3-89	0	120,200
6-89	0	117,600
9-89	0	106,300
3-90	0	129,100
8-90	0	114,700
3-91	0	87,800
6-91	0	71,800
9-91	0	91,200
10-91	0	82,600
2-92	0	67,600
9-92	0	78,000
6-94	0	60,000
10-94	0	64,000
5-95	4,000	128,000
9-95	0	70,000
4-96	0	48,000
7-96	0	50,000
4-97	0	34,000
10-97	0	47,000
2-98	0	0[3]
11-98	0	42,090
4-99	0	25,970
8-99	0	14,850
5-00	0	8,790
9-00	0	37,980
12-00	0	25,000
4-01	332	25,840
3-02	0	28,700
6-02	364	29,832

W40		
Sampling Date	Total CPAH[1]	Total Other PAH[2]
8-88	0	1,062
6-89	0	540
6-90	16	705
5-91	5	474
5-92	2	283
8-93	5	345
6-94	0	484
6-95	0	369
6-96	0	498
4-97	0	624
5-98	0	220
5-99	0	299
5-00	2	129
5-01	5	390
Well is out of service		

W119		
Sampling Date	Total CPAH[1]	Total Other PAH[2]
8-88	0	3
6-89	0	18
9-89	0	11
9-01	0	294
Well is out of service		

W70		
Sampling Date	Total CPAH[1]	Total Other PAH[2]
8-88	0	481
6-89	5	426
9-89	0	280
6-90	9	560
5-91	8	669
6-92	8	401
8-93	2	317
6-94	4	299
6-95	0	384
6-96	0	342
4-97	0	335
5-98	0	307
5-99	0	254
5-00	0	3
Well is out of service		

W29		
Sampling Date	Total CPAH[1]	Total Other PAH[2]
8-88	0	495
6-89	28	338
6-90	4	372
5-91	6	405
5-92	12	531
8-93	39	1,887
6-94	9	749
6-95	0	1,164
6-96	0	82
4-97	0	418
5-98	0	261
5-99	0	99
5-00	3	212
5-01	3	175
5-02	0	44

W401		
Sampling Date	Total CPAH[1]	Total Other PAH[2]
8-88	0	12
6-89	0	15
6-90	0	27
5-91	0	28
5-92	0	10
8-93	1	10
6-94	0	8
6-95	0	16
6-96	0	19
10-96	0	29
6-97	0	174
10-97	0	121
5-98	0	66
8-98	0	5
5-99	0	64
8-99	0	23
5-00	0	105
9-00	0	158
5-01	0	295
5-02	0	149

Table 4-1
Historical Summary of Other PAH and CPAH Analytical Results
1988 through 2002
Prairie du Chien-Jordan Aquifer Wells

All concentrations reported in nanograms per liter (ng/l)

W402		
Sampling Date	Total CPAH[1]	Total Other PAH[2]
9-89	0	151
6-90	47	720
8-90	16	133
5-91	16	408
8-91	0	18,320
6-92	12	895
8-93	7	145
6-94	5	104
6-95	0	567
6-96	13	383
4-97	0	257
5-98	0	349
5-99	1	545
5-00	0	1,287
5-01	0	267
5-02	8	165

W403		
Sampling Date	Total CPAH[1]	Total Other PAH[2]
8-88	0	57
6-89	40	974
9-89	0	177
8-90	49	1,102
5-91	110	976
8-91	0	11,570
6-92	19	816
8-93	7	516
6-94	7	1,271
6-95	0	543
6-96	3	182
4-97	0	172
5-98	0	11
5-99	0	169
5-00	0	195
5-01	0	458
5-02	3	134

W406		
Sampling Date	Total CPAH[1]	Total Other PAH[2]
6-89	0	36
10-89	0	26
6-90	8	43
8-90	15	119
5-91	1	30
8-91	1	40
5-92	6	53
8-93	0	22
6-94	0	31
6-95	0	34
6-96	0	21
4-97	0	27
5-98	0	15
5-99	0	28
5-00	0	30
5-02	well out of service	

NOTES:

[1] Total Carcinogenic PAHs (as listed in the CD/RAP (A.1.1)), consist of the sum of:

benzo(a)anthracene
benzo(a)pyrene
benzo(b)flouranthene
chrysene
dibenz(a,h)anthracene
indeno(1,2,3-cd)pyrene
quinoline*
benzo(j)fluoranthene**
benzo(g,h,i)perylene

*Quinoline is included in the sum of CPAH if other CPAHs were detected. If no CPAHs are detected, quinoline is included in the Total Other PAH.

**Benzo(j)fluoranthene will coelute with either benzo(b)fluoranthene or benzo(k)fluoranthene. Benzo(j)fluoranthene can not be consistantly separated by the laboratory. Therefore if present, it will be reported as benzo(b)- and/or benzo(k)-fluoranthene.

[2] Total Other PAHs (as listed in the CD/RAP (A.1.2), consists of the sum of:

acenapthene
acenaphthylene
acridine
anthracene
benzo(k)fluoranthene
2,3-benzofuran
benzo(e)pyrene
benzo(b)thiophene
biphenyl
carbazole
dibenzofuran
dibenzothiophene
2,3-dihydroindene
fluoranthene
fluorene
indene
indole
1-methylnaphthalene
2-methylnaphthalene
naphthalene
perylene
phenanthrene
pyrene

[3] Result reported as 0 indicates that all parameters were not detected above the laboratory detection limit.

5.0 ST. PETER AQUIFER

Nine St. Peter Aquifer wells were monitored twice (first half/second half) in 2002. In addition to water quality monitoring, groundwater elevations were measured in 11 St. Peter Aquifer wells on June 21, 2002, and September 27, 2002. Summaries of analytical data and groundwater elevations for the first and second half of 2002 are shown in Figures 5-1 and 5-2. Laboratory reports of the analytical data are included in the Appendices. The Guide to Appended Laboratory Results for all of 2002 precedes the appendices.

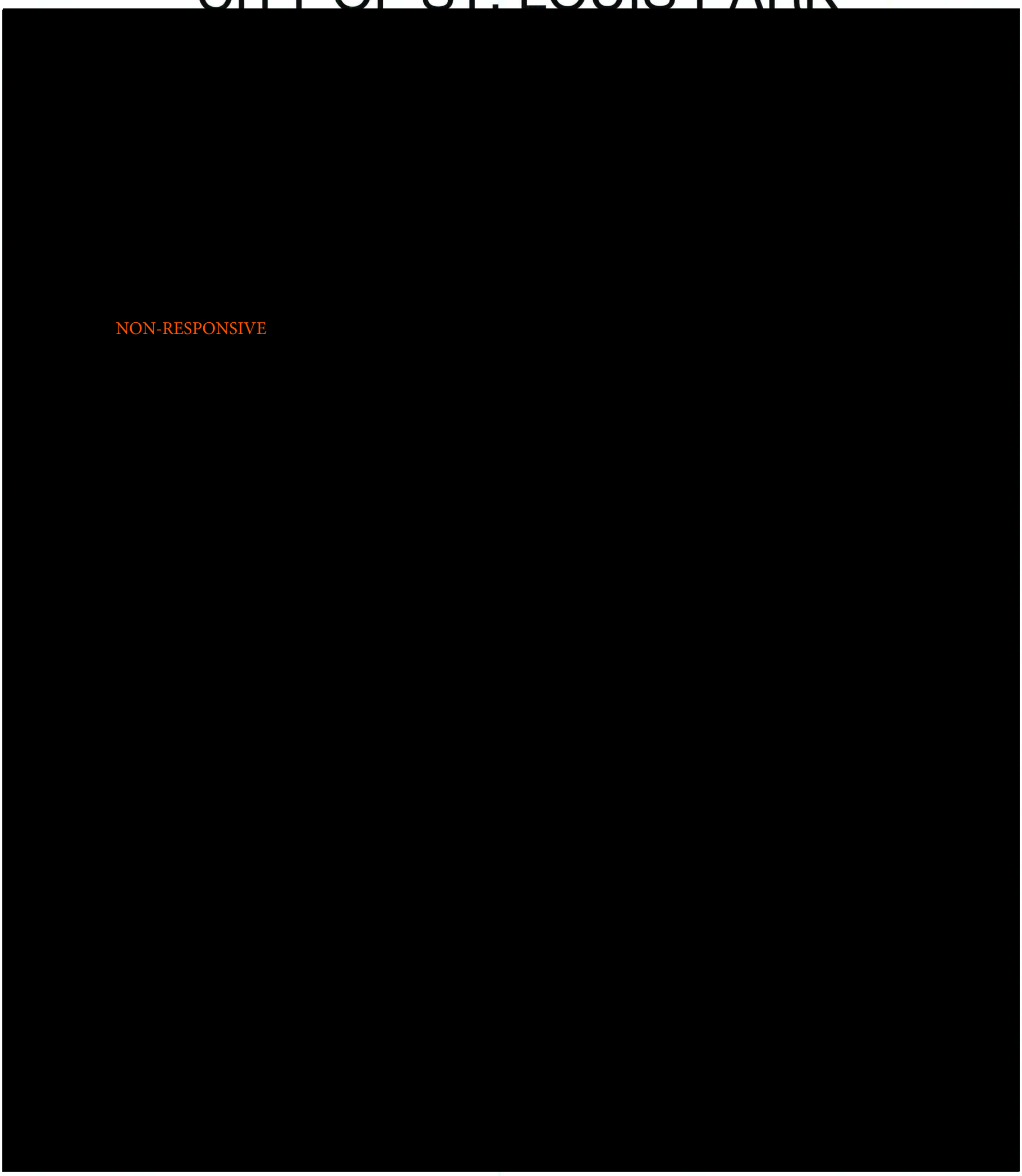
A historical summary of total Other PAH and carcinogenic PAH results from 1988 through 2002 is presented in Table 5-1. The data in Table 5-1 show several trends. Total PAH concentrations have remained relatively stable for wells SLP3, W122, and W133. Total PAH concentrations show a downward trend in groundwater samples collected from W24, W33, W409, W410, W411, and W412.

Groundwater samples collected from well W409 have shown a variation in total PAH concentrations, apparently in response to pumping well W410. The PAH concentration increased from 1991 to 1996, decreased for two years, then reached an all-time high in May of 2000. Total PAH concentrations have steadily decreased in well W409 since the May 2000 sample.

The total PAH concentration at well W410 appears to have reached a high near 21 micrograms per liter in 1994/1995 and since then has shown a general downward trend.

In conclusion, the 2002 sampling results for the St. Peter Aquifer appear to accurately represent water quality conditions in the aquifer. The operation of well W410 does appear to be effective in controlling the flow of groundwater as evidenced by the 2002 water quality, and the water level contours shown in Figures 5-1 and 5-2. Continued monitoring in accordance with the Sampling Plan will allow continued evaluation of water quality in the St. Peter Aquifer.

CITY OF ST. LOUIS PARK



LEGEND

Reilly Site

N
W E
S

0 500 1,000 2,000 3,000 Feet

Well ID
Water Level (ft)
Sum of Benzo(a)Pyrene and Dibenz(a,h)anthracene (ppt)
Total Carcinogenic PAH (ppt)
Total Other PAH (ppt)
0 = Not detected
- = Not sampled

2 Foot Groundwater Level Contour

FIGURE 5-1

Summary of
Groundwater Monitoring Results
St. Peter Aquifer
First Half, 2002

DRAWN: S. KELLY	DATE: 2/4/2002	REV: 1	ENSR INTERNATIONAL
CHECKED: B. GREGG	PROJECT: 1620-032		

J:\Water\ProjectFiles\P10\1620\1620-013Reilly\PlatteFirstHalf02.mxd

CITY OF ST. LOUIS PARK

LEGEND

Reilly Site

N
W E
S

0 500 1,000 2,000 3,000 Feet

Well ID
Water Level (ft)
Sum of Benzo(a)Pyrene and Dibenz(a,h)anthracene (ppt)
Total Carcinogenic PAH (ppt)
Total Other PAH (ppt)
0 = Not detected
- = Not sampled

2 Foot Groundwater Level Contour

FIGURE 5-2

Summary of
Groundwater Monitoring Results
St. Peter Aquifer
Second Half, 2002

DRAWN: S. KELLY	DATE: 2/4/2002	REV: 1	ENSR INTERNATIONAL
CHECKED: B. GREGG	PROJECT: 1620-032		

J:\Water\ProjectFiles\P10\1620\1620-013Reilly\STPFirstHalf02.mxd

Historical Summary of Other PAH and CPAH Analytical Results 1988 Through 2002

St. Peter Aquifer Wells

All concentrations reported in nanograms per liter (ng/l).

SLP3		
Sampling Date	Total CPAH[1]	Total Other PAH[2]
7-88	0 [3]	8
10-88	0	9
6-89	0	10
10-89	0	15
6-90	5	29
8-90	1	18
8-91	1	23
6-92	0	16
11-92	0	13
4-93	0	9
7-93	0	5
5-94	0	8
10-94	0	5
5-95	0	7
10-95	0	16
6-96	0	11
10-96	0	4
4-97	0	6
10-97	0	5
4-98	0	7
9-98	0	247
5-99	0	7
8-99	0	0
5-00	0	5
9-00	2	25
5-01	0	10
8-01	0	2
5-02	0	15
9-02	0	0

P116		
Sampling Date	Total CPAH[1]	Total Other PAH[2]
7-88	8	196
10-88	0	3,770
6-89	1	82
10-89	3	42
8-90	2	20
4-91	0	61
8-91	3	40
6-92	13	118
11-92	10	219
4-93	4	52
7-93	2	38
5-94	1	64
11-94	0	66
5-95	0	50
10-95	0	53
6-96	0	7
10-96	0	43
4-97	0	35
10-97	0	82
4-98	5	148
9-98	0	60
5-99	4	50
8-99	0	55
5-00	2	36
Well not available		

W14		
Sampling Date	Total CPAH[1]	Total Other PAH[2]
7-88	57	95
10-88	0	439

W24		
Sampling Date	Total CPAH[1]	Total Other PAH[2]
7-88	0	3,309
10-88	0	3,622
4-91	0	4,023
8-91	0	4,160
6-92	0	3,380
11-92	0	3,650
4-93	0	2,950
7-93	0	3,294
5-94	0	2,669
11-94	0	4,029
5-95	0	3,190
10-95	0	1,550
5-96	0	974
10-96	0	1,603
4-97	0	1,513
10-97	0	1,340
4-98	0	689
9-98	0	1,120
4-99	0	2,085
9-99	0	3,590
5-00	0	940
5-01	0	152
9-01	0	619
6-02	0	439
9-02	0	307

T. l

Historical Summary of Other PAH and CPAH Analytical Results 1988 Through 2002

St. Peter Aquifer Wells

All concentrations reported in nanograms per liter (ng/l).

W33		
Sampling Date	Total CPAH[1]	Total Other PAH[2]
7-88	0	16,430
10-88	0	12,455
8-90	0	290
4-91	0	17,912
8-91	0	9,921
6-92	0	3,448
11-92	14	3,304
4-93	0	1,334
7-93	0	1,000
5-94	8	968
11-94	0	1,700
5-95	0	1,901
10-95	0	1,062
5-96	0	566
10-96	0	655
4-97	0	651
10-97	0	1,779
4-98	0	2,516
9-98	0	4,792
4-99	2	2,383
9-99	0	1,355
5-00	235	1,139
9-00	1	925
5-01	0	1,411
9-01	6	698
6-02	0	80
9-02	1	54

W122		
Sampling Date	Total CPAH[1]	Total Other PAH[2]
7-88	21	142
10-88	0	2,246
6-89	20	965
10-89	15	114
4-91	36	757
8-91	10	853
6-92	43	568
11-92	7	179
4-93	32	308
7-93	24	330
5-94	23	583
10-94	10	374
5-95	0	281
10-95	11	220
6-96	0	144
10-96	0	235
4-97	0	256
10-97	0	243
4-98	7	370
9-98	0	99
5-99	0	71
8-99	7	46
5-00	39	65
9-00	6	142
5-01	0	92
8-01	0	24
5-02	0	92
9-02	5	73

W129		
Sampling Date	Total CPAH[1]	Total Other PAH[2]
7-88	0	88
10-88	0	290
6-89	0	27
10-89	0	43
6-90	0	143
8-90	0	96
4-91	27	159
8-91	0	430
6-92	47	247
11-92	5	296
4-93	15	121
7-93	2	53
5-94	0	171
11-94	2	110
5-95	12	94
10-95	0	55
6-96	0	53
10-96	0	75
4-97	0	104
10-97	0	181
4-98	9	88
9-98	0	8
5-99	1	79
8-99	0	80
5-00	26	223
9-00	8	150

W133		
Sampling Date	Total CPAH[1]	Total Other PAH[2]
7-88	0	52,370
10-88	0	29,830
6-89	0	37,870
10-89	0	21,099
6-90	0	19,448
8-90	0	14,030
4-91	5	2,587
8-91	0	4,610
6-92	0	2,453
11-92	0	1,920
4-93	0	1,134
7-93	0	836
5-94	5	665
10-94	0	434
5-95	0	165
10-95	0	157
5-96	0	142
10-96	0	285
4-97	0	241
10-97	0	108
4-98	0	88
9-98	0	299
4-99	7	633
9-99	0	190
5-00	0	167
9-00	0	327
5-01	0	156
8-01	0	40
5-02	0	904
9-02	0	338

Historical Summary of Other PAH and CPAH Analytical Results 1988 Through 2002

St. Peter Aquifer Wells

All concentrations reported in nanograms per liter (ng/l).

W408		
Sampling Date	Total CPAH[1]	Total Other PAH[2]
7-88	2	151
10-88	0	34
6-89	5	145
10-89	0	110
6-90	0	24
8-90	28	130
4-91	13	343
8-91	25	1,163
6-92	32	283
11-92	2	172
4-93	4	150
7-93	6	217
5-94	5	70
11-94	0	170
5-95	9	143
10-95	15	135
6-96	0	66
10-96	0	103
4-97	0	169
10-97	0	166
4-98	1	96
9-98	0	62
5-99	0	64
8-99	2	51
5-00	89	103
9-00	0	53

W409		
Sampling Date	Total CPAH[1]	Total Other PAH[2]
7-88	159	2,198
10-88	0	890
6-89	53	571
10-89	0	830
6-90	0	141
8-90	43	200
4-91	0	360
8-91	0	3,833
6-92	0	49,660
11-92	0	49,399
4-93	0	50,060
7-93	0	42,440
5-95	0	173,000
10-95	0	167,000
4-96	0	805,420
10-96	0	312,500
5-97	0	157,000
9-97	0	64,000
5-98	0	159,200
9-98	0	107,700
4-99	0	446,860
8-99	0	342,000
5-00	0	1,196,900
9-00	620	468,710
5-01	0	269,800
8-01	0	228,300
5-02	0	324,300
9-02	0	135,200

W410		
Sampling Date	Total CPAH[1]	Total Other PAH[2]
7-88	0	1,288
10-88	0	1,435
6-89	5	424
10-89	0	357
4-91	0	85
8-91	0	5,330
2-92	0	14,070
6-92	0	12,850
11-92	0	16,470
4-93	0	17,600
7-93	0	16,609
5-94	0	14,505
10-94	0	20,880
5-95	0	21,640
10-95	0	13,940
5-96	0	15,970
10-96	0	14,170
4-97	0	14,690
10-97	0	10,150
4-98	0	8,620
5-98	0	1,900
9-98	0	9,690
11-98	0	5,942
3-99	0	8,780
4-99	0	21,606
9-99	0	8,780
11-99	0	3,800
2-00	0	4,750
5-00	0	6,502
9-00	0	6,269
12-00	0	1,500
3-01	0	2,940
5-01	0	6,217
9-01	0	2,854
3-02	0	2,090
6-02	0	2,142
9-02	0	3,327

W411		
Sampling Date	Total CPAH[1]	Total Other PAH[2]
7-88	0	1,274
10-88	0	1,161
6-89	8	200
10-89	0	460
6-90	15	451
8-90	0	336
4-91	12	384
8-91	0	251
6-92	24	313
11-92	1	181
4-93	7	189
7-93	5	113
5-94	3	120
11-94	6	219
5-95	6	235
10-95	1	183
6-96	0	79
10-96	0	253
4-97	0	82
10-97	3	253
4-98	1	120
9-98	61	424
5-99	0	99
8-99	0	79
5-00	0	56
9-00	17	138
5-01	0	124
8-01	0	46
5-02	0	34
9-02	0	16

Ta l
Historical Summary of Other PAH and CPAH Analytical Results 1988 Through 2002

St. Peter Aquifer Wells

W412		
Sampling Date	Total CPAH[1]	Total Other PAH[2]
7-88	8	1,309
10-88	0	209
6-89	18	211
10-89	0	132
8-90	1	484
4-91	48	1,470
8-91	0	5,283
6-92	12	1,319
11-92	0	3,796
4-93	154	842
7-93	16	777
5-94	25	291
10-94	10	538
5-95	18	369
10-95	0	402
5-96	0	139
10-96	0	1,620
4-97	0	806
10-97	0	614
4-98	30	260
9-98	60	557
4-99	20	267
9-99	0	764
5-00	250	105
9-00	1	164
5-01	4	363
8-01	0	1125
5-02	8	243
9-02	3	135

NOTES:

All concentrations reported in micrograms per liter (ug/l).

[1] Total Carcinogenic PAHs (as listed in the CD/RAP (A.1.1)), consist of the sum of:

benzo(a) anthracene	indeno(1,2,3-cd)pyrene
benzo(a)pyrene	quinoline*
benzo(b)flouranthene	benzo(j)fluoranthene**
chrysene	benzo(g,h,i)perylene
dibenz(a,h)anthracene	

*Quinoline is included in the sum of CPAH if other CPAHs were detected. If no CPAHs are detected, quinoline is included with the Total Other PAH.

**Benzo(j)fluoranthene will coelute with either benzo(b)fluoranthene or benzo(k)fluoranthene. Benzo(j)fluoranthene can not be consistantly separated by the laboratory. Therefore if present, it will be reported as benzo(b)- and/or benzo(k)-fluoranthene.

[2] Total Other PAHs (as listed in the CD/RAP (A.1.2), consists of the sum of:

acenapthene	2,3-dihydroindene
acenaphthylene	fluoranthene
acridine	fluorene
anthracene	indene
benzo(k)fluoranthene	indole
2,3-benzofuran	1-methylnaphthalene
benzo(e)pyrene	2-methylnaphthalene
benzo(b)thiophene	naphthalene
biphenyl	perylene
carbazole	phenanthrene
dibenzofuran	pyrene

[3] Result reported as 0 indicates that all parameters were not detected above the laboratory detection limit.

6.0 DRIFT-PLATTEVILLE AQUIFER SOURCE AND GRADIENT CONTROL WELLS

Groundwater monitoring for the Drift and Platteville Aquifers in 2002 included quarterly PAH monitoring of wells W420 and W439, the active Drift Aquifer source and gradient control wells, and W421 and W434, the Platteville Aquifer source and gradient control wells. Wells W420 and W421 have been monitored quarterly since they began pumping in 1987. This is the eighth year of quarterly monitoring for well W439 since pumping began in early 1995 and the sixth year of quarterly monitoring for well W434 since the pump was activated in June 1997. Average pumping rates for wells W420, W421, W434, and W439 were 34, 27, 22, and 52 gpm, respectively. The monitoring data are presented on Figures 6-1, 6-2, 6-3, and 6-4. The laboratory reports of the analytical data are included in the Appendices. Please refer to the Guide to Appended Laboratory Results for all of 2002 that precedes the Appendices to locate the individual sample results.

Other PAH, carcinogenic PAH and phenolic data for wells W420, W421, W434, and W439 are summarized in Table 6-1. The trends of these data suggest a gradual decreasing trend in total PAH concentrations in wells W421, W434 and W439 since pumping started in each well. Total PAH concentrations in well W420 averaged approximately 5,000 ug/l in 2002 and indicate a stable PAH concentration. 2002 total Other PAH concentrations in well W421 averaged approximately 500 ug/l and well W439 averaged 1,100 ug/l. Total Other PAH concentrations in well W434 averaged approximately 5 ug/l in 2002.

The evaluation of the effectiveness of each source and gradient control well is provided in Section 7.0 and 8.0 of this report.

Former Drift Aquifer gradient control well W422 continues to be monitored, but is no longer used for pumping. Well W422 was inactivated in October 2000 in accordance with the Agencies' approval letter dated October 3, 2000, because it was no longer needed to control the spread of PAH in the Drift Aquifer.

CITY OF ST. LOUIS PARK

REILLY SITE

WELL LOCATION
W420 WELL IDENTIFICATION
787.74 WATER LEVEL
0 SUM-BENZO(a)PYRENE & DIBENZ(a,h)ANTHRACENE (PPB)
0 SUM-CARCINOGENIC PAH (PPB)
78 SUM-OTHER PAH'S (PPB)
200 TOTAL PHENOLICS (PPB)

Concentration in micrograms per liter equivalent to parts per billion

FIGURE 6-1

SUMMARY OF GROUND WATER MONITORING RESULTS FOR DRIFT-PLATTVILLE AQUIFER MARCH 2002 FIRST QUARTER

DRAWN: A. TARARA	DATE: 2/14/03	REV:	ENSR
CHECKED: WMG	PROJECT: 01620-032		

CITY OF ST. LOUIS PARK

[redacted]

NON-RESPONSIVE

N

REILLY SITE

WELL LOCATION
W420 WELL IDENTIFICATION
875.54 WATER LEVEL
0 SUM-BENZO(a)PYRENE & DIBENZ(a,h)ANTHRACENE (PPB)
0 SUM-CARCINOGENIC PAH (PPB)
78 SUM-OTHER PAH'S (PPB)
200 TOTAL PHENOLICS (PPB)

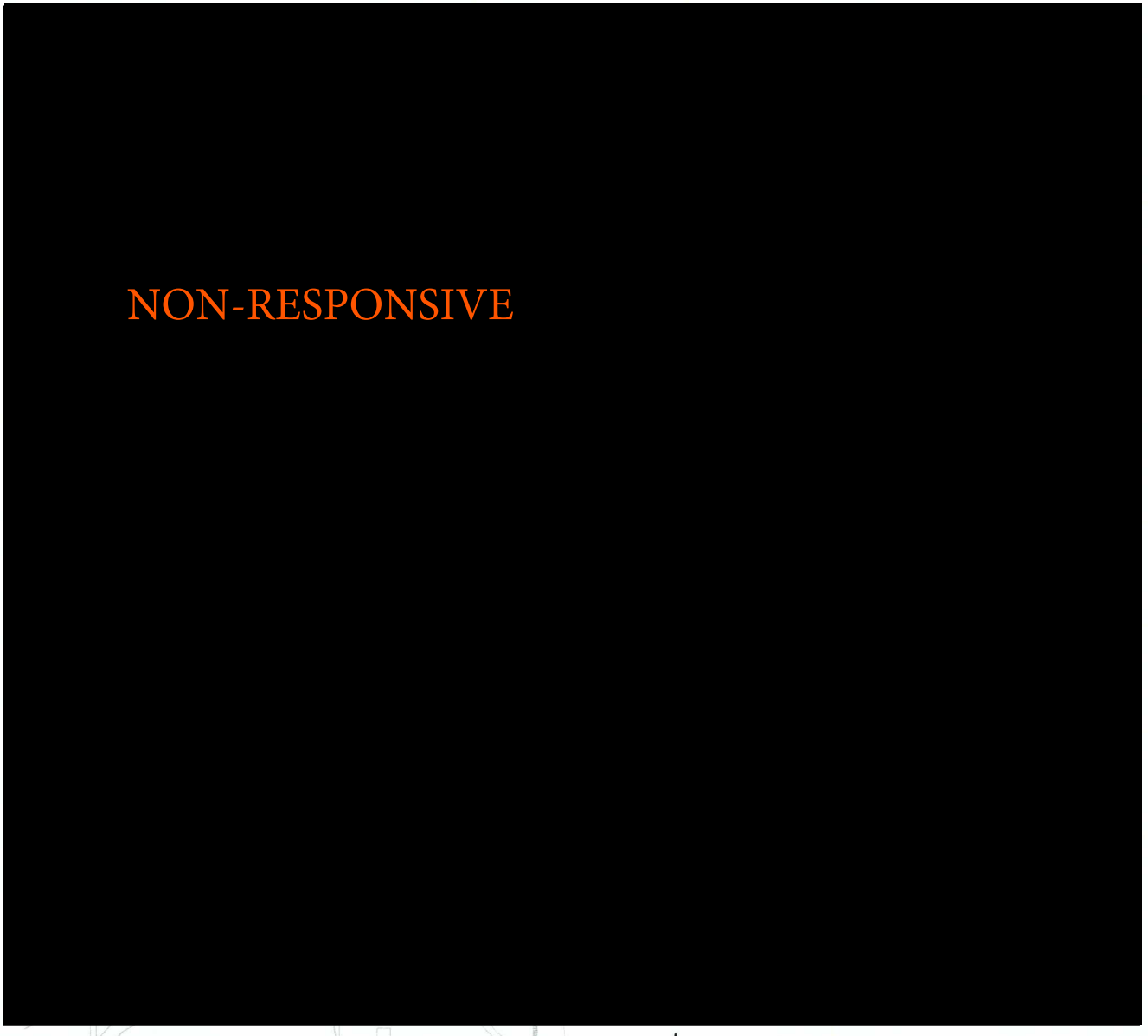
Concentration in micrograms per liter equivalent to parts per billion

FIGURE 6-2

SUMMARY OF GROUND WATER MONITORING RESULTS FOR DRIFT-PLATTVILLE AQUIFER MAY 2002 SECOND QUARTER

DRAWN: A. TARARA	DATE: 2/14/03	REV:	ENSR
CHECKED: WMG	PROJECT: 01620-032		

CITY OF ST. LOUIS PARK



REILLY SITE

WELL LOCATION
W420 WELL IDENTIFICATION
877.12 WATER LEVEL
0 SUM-BENZO(a)PYRENE & DIBENZ(a,h)ANTHRACENE (PPB)
0 SUM-CARCINOGENIC PAH (PPB)
3,981 SUM-OTHER PAH'S (PPB)
– TOTAL PHENOLICS (PPB)

Concentration in micrograms per liter equivalent to parts per billion

FIGURE 6-3

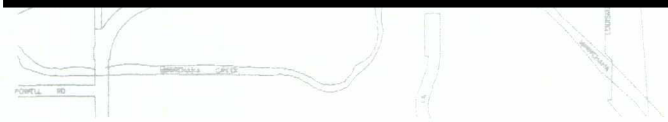
SUMMARY OF GROUND WATER MONITORING RESULTS FOR DRIFT-PLATTVILLE AQUIFER SEPTEMBER 2002 THIRD QUARTER

DRAWN: A. TARARA	DATE: 2/14/03	REV:	ENSR
CHECKED: WMG	PROJECT: 01620-032		

CITY OF ST. LOUIS PARK

[redacted]

NON-RESPONSIVE



REILLY SITE

WELL LOCATION
W420 WELL IDENTIFICATION
– WATER LEVEL
0 SUM–BENZO(a)PYRENE & DIBENZ(a,h)ANTHRACENE (PPB)
0 SUM–CARCINOGENIC PAH (PPB)
78 SUM–OTHER PAH'S (PPB)
– TOTAL PHENOLICS (PPB)

Concentration in micrograms per liter equivalent to parts per billion

FIGURE 6–4

SUMMARY OF GROUND WATER MONITORING RESULTS FOR DRIFT–PLATTVILLE AQUIFER OCTOBER 2002 FOURTH QUARTER

DRAWN: A. TARARA	DATE: 2/14/03	REV:	ENSR
CHECKED: WMG	PROJECT: 01620–032		

Table 6-1

Historical Summary of Other PAH and CPAH and Phenolics
Wells W420, W421, W422, W434 and W439
1988 through 2002
All concentrations in micrograms per liter (ug/l)

W420			
Sampling Date	Total CPAH[1]	Total Other PAH[2]	Total Phenolics
1st Quarter	0[3]	3,242	440
2nd Quarter	0	3,420	330
8-88	0	2,477	220
10-88	0	1,148	44
3-89	0	2,400	120
6-89	0	3,400	129
9-89	0	3,400	220
12-89	0	3,400	110
3-90	0	3,950	239
5-90	0	2,430	231
8-90	0	3,150	244
12-90	0	3,030	228
3-91	0	4,200	232
6-91	0	2,494	221
9-91	0	4,967	210
10-91	0	4,163	194
2-92	0	1,526	177
6-92	0	3,229	204
9-92	0	2,281	167
10-92	0	2,374	236
3-93	0	4,337	18
4-93	0	2,929	207
8-93	0	1,825	136
11-93	0	2,052	148
2-94	0	2,033	109
6-94	0	2,181	151
8-94	0	2,026	147
10-94	0	2,082	151
3-95	0	2,431	143
5-95	0	1,873	134
9-95	0	2,523	91
10-95	0	2,332	113
2-96	0	1,968	121
4-96	0	2,165	130
7-96	0	2,725	87
10-96	0	2,164	118
2-97	0	2,324	122
5-97	0	3,343	134
9-97	0	2,151	261
1-98	0	2,483	140
2-98	0	2,938	124
5-98	0	2,933	160
9-98	0	3,144	80
11-98	0	2,570	180
3-99	0	3,314	200
4-99	0	3,414	170
8-99	0	2,425	140
11-99	0	2,345	170
2-00	0	2,312	150
5-00	0	4,441	190
9-00	0	3,070	110
12-00	0	2,500	90
3-01	0	3,680	110
5-01	0	6,956	300
8-01	0	2,535	140
10-01	0	3,608	190
3-02	0	8,578	110
5-02	0	4,163	NA
9-02	0	3,981	NA
10-02	0	3,456	NA

W421			
Sampling Date	Total CPAH[1]	Total Other PAH[2]	Total Phenolics
1st Quarter	0	566	33
2nd Quarter	0	821	0
8-88	0	764	30
10-88	0	1,107	35
3-89	0	878	29
6-89	0	1,000	26
9-89	0	1,000	33
12-89	0	730	27
3-90	0	1,420	33
5-90	0	715	29
8-90	0	1,410	36
12-90	0	1,145	29
3-91	0	1,449	30
6-91	10	1,389	31
9-91	0	1,226	27
10-91	0	1,285	30
2-92	0	988	31
6-92	0	1,163	26
9-92	0	1,547	28
10-92	0	1,299	45
3-93	0	1,332	15
4-93	0	1,184	21
8-93	0	1,025	32
11-93	0	1,017	29
2-94	0	1,045	14
6-94	0	939	17
8-94	0	788	31
10-94	0	966	24
3-95	0	949	31
5-95	0	911	19
9-95	0	966	29
10-95	0	764	20
2-96	0	618	28
4-96	0	630	123
7-96	0	884	24
10-96	0	843	24
2-97	0	709	26
5-97	0	741	27
9-97	0	699	25
1-98	0	787	26
2-98	0	915	20
5-98	0	684	21
9-98	0	306	5
11-98	0	518	26
3-99	0	393	21
4-99	0	611	21
8-99	0	389	25
11-99	0	479	12
2-00	0	462	23
5-00	0	626	24
9-00	44	1,022	19
12-00	0	376	18
3-01	6	341	21
5-01	5	717	29
8-01	25	415	23
10-01	30	266	27
3-02	6	557	7
5-02	3	410	NA
9-02	0	551	NA
10-02	5	530	NA

Table 6-1

Historical Summary of Other PAH and CPAH and Phenolics
Wells W420, W421, W422, W434 and W439
1988 through 2002
All concentrations in micrograms per liter (ug/l)

W434			
Sampling Date	Total CPAH[1]	Total Other PAH[2]	Total Phenolics
2-92	0	4	9
10-96	0	4	NA
4-97	0	7	NA
9-97[4]	0	5	8
10-97	0	3	NA
1-98	0	4	0
2-98	0	3	5
5-98	0	3	5
9-98	0	73	0
11-98	0	12	0
3-99	0	14	0
4-99	0	1	0
8-99	0	1	6
11-99	0	1	0
2-00	0	2	0
5-00	0	5	3
9-00	0.27	4	0
12-00	0	1	0
3-01	0	3	5
5-01	0	6	6
9-01	0	4	NA
10-01	0	4	5
3-02	0	5	25
5-02	0	5	NA
9-02	0	5	NA

W439			
Sampling Date	Total CPAH[1]	Total Other PAH[2]	Total Phenolics
3-95	0	3,933	91
5-95	0	4,053	74
9-95	0	2,564	54
10-95	0	2,115	50
2-96	0	1,552	46
4-96	0	1,419	43
7-96	0	1,765	43
10-96	0	1,557	45
2-97	0	1,277	43
5-97	0	1,683	48
9-97	0	1,547	42
1-98	0	1,236	34
2-98	0	1,377	31
5-98	0	1,221	35
9-98	0	978	12
11-98	0	954	53
3-99	0	1,385	29
4-99	0	1,278	31
8-99	0	755	45
11-99	0	1,123	17
2-00	0	1,081	31
5-00	0	1,975	31
9-00	0	1,859	26
12-00	0	1,187	37
3-01	0	1,498	34
5-01	0	1,623	37
8-01	0	1,056	NA
10-01	0	1,095	42
3-02	0	1,205	27
5-02	0	1,214	NA
9-02	0	1,027	NA

[1] Total Carcinogenic PAHs (as listed in the CD/RAP (A.1.1)), consist of the sum of:

benzo(a) anthracene	chrysene	quinoline*
benzo(a)pyrene	dibenz(a,h)anthracene	benzo(j)fluoranthene**
benzo(b)flouranthene	indeno(1,2,3-cd)pyrene	benzo(g,h,i)perylene

*Quinoline is included in the sum of CPAH if other CPAHs were detected. If no CPAHs are detected, quinoline is included in the Total Other PAH.
**Benzo(j)fluoranthene will coelute with either benzo(b)fluoranthene or benzo(k)fluoranthene. Benzo(j)flouranthene can not be consistently separated by the laboratory. Therefore, if present, it will be reported as benzo(b)- and/or benzo(k)-fluoranthene.

[2] Total Other PAHs (as listed in the CD/RAP (A.1.2), consists of the sum of:

acenapthene	benzo(e)pyrene	2,3-dihydroindene	1-methylnaphthalene
acenaphthylene	benzo(b)thiophene	fluoranthene	2-methylnaphthalene
acridine	biphenyl	fluorene	naphthalene
anthracene	carbazole	indene	perylene
benzo(k)fluoranthene	dibenzothiophene	indole	phenanthrene
2,3-benzofuran			pyrene

[3] Result reported as 0 indicates that all parameters were not detected above the laboratory detection limit.

[4] Pump was activated in W434 in June of 1997

NA = Not analyzed for identified compound class.

7.0 PLATTEVILLE AQUIFER

In accordance with the 2002 Sampling Plan, 11 Platteville Aquifer monitoring wells were sampled twice in 2002. In addition to water quality monitoring, groundwater elevations were measured in 22 Platteville Aquifer wells on June 21, 2002, and September 27, 2002. Summaries of analytical data and groundwater elevations for the first and second half of 2002 are shown in Figures 7-1 and 7-2. Laboratory reports of the analytical data are included in the Appendices. The Guide to Appended Laboratory Results for all of 2002 precedes the Appendices.

Table 7-1 is a historical summary since 1988 of Other PAH, carcinogenic PAH and phenolic data for Platteville Aquifer wells. The analytical results for all Platteville Aquifer wells are reported in micrograms per liter (ug/l). The historical water quality data shown in Table 7-1 indicates a stable or decreasing trend in PAH concentrations in most Platteville Aquifer wells. The 2002 water quality data for the Platteville Aquifer indicate little change in the overall distribution of PAH compared to prior years.

The water level contours in Figures 7-1 and 7-2 illustrate the influence of the Platteville Aquifer source control wells on the regional east-southeast groundwater flow direction. Well W421 is currently being pumped at a rate of approximately 27 gpm, in accordance with the CD-RAP, and appears to be effective in controlling groundwater in an area at least the size of the bog between Walker and Lake Streets.

Figures 7-1 and 7-2 show that pumping well W434 has little effect on the Platteville Aquifer. Well W434 pumped at approximately 22 gpm in 2002. It appears that the well has a local effect in controlling groundwater in the Platteville Aquifer in the immediate area, however, due to the low transmissivity of the Platteville Aquifer in this area, the capture zone is limited. The capture zone of W434 is likely affected by leakage above from the Drift Aquifer recharging the Platteville Aquifer and this effect decreases the lateral extent of the capture area of W434.

Concentrations of PAH were detected in eight of the 11 Platteville Aquifer monitoring wells sampled. The highest concentration was 5,438 ug/l detected in well W437. Carcinogenic PAH concentrations were not detected in any of the 11 wells sampled.

CITY OF ST. LOUIS PARK

LEGEND

Reilly Site

N
W E
S

0 500 1,000 2,000 3,000 Feet

Well ID
Water Level (ft)
Sum of Benzo(a)Pyrene and Dibenz(a,h)anthracene (ppb)
Total Carcinogenic PAH (ppb)
Total Other PAH (ppb)
0 = Not detected
- = Not sampled

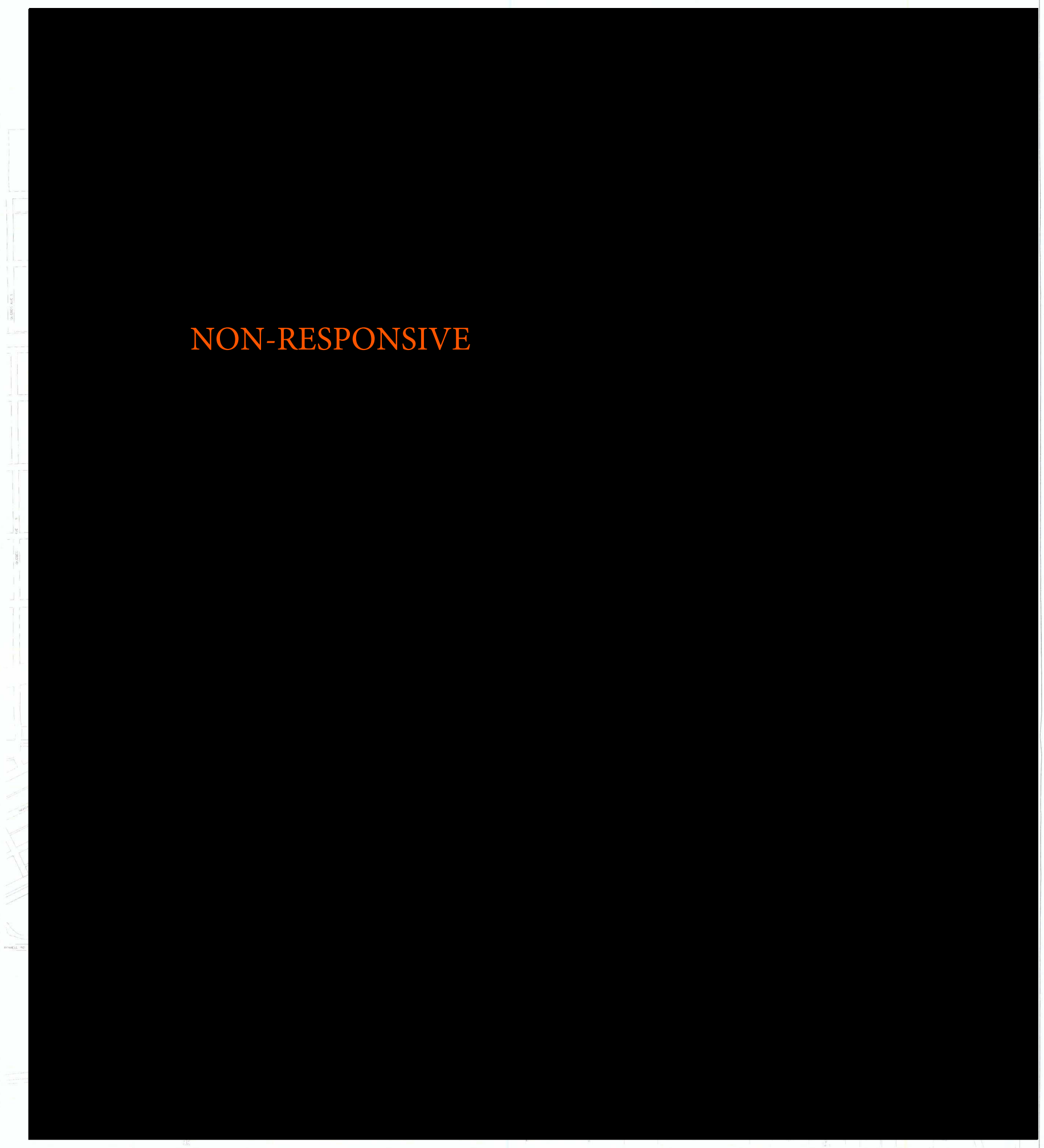
2 Foot Groundwater Level Contour

FIGURE 7-1

Summary of
Groundwater Monitoring Results
Platteville Aquifer
First Half, 2002

DRAWN: S. KELLY	DATE: 2/4/2002	REV: 1	ENSR INTERNATIONAL
CHECKED: B. GREGG	PROJECT: 1620-032		

CITY OF ST. LOUIS PARK



LEGEND

Reilly Site

N
W E
S

0 500 1,000 2,000 3,000 Feet

Well ID
Water Level (ft)
Sum of Benzo(a)Pyrene and Dibenz(a,h)anthracene (ppb)
Total Carcinogenic PAH (ppb)
Total Other PAH (ppb)
0 = Not detected
- = Not sampled

2 Foot Groundwater Level Contour

FIGURE 7-2

Summary of
Groundwater Monitoring Results
Platteville Aquifer
Second Half, 2002

DRAWN: S. KELLY	DATE: 2/4/2002	REV: 1	ENSR INTERNATIONAL
CHECKED: B. GREGG	PROJECT: 1620-032		

Table 7-1
Historical Summar[illegible]er PAH, CPAH, and
Phenolic [illegible]al Results
1988 T[illegible]gh 2002

7 Platteville Aquifer Wells

PAH concentrations in micrograms per liter (ug/l)
Phenolic concentrations in micrograms per liter (ug/l)

W18			
Sampling Date	Total CPAH[1]	Total Other PAH[2]	Total Phenolics
8-88	0[3]	0	20
10-88	0	361	20
6-89	0	39	44
2-92	0	10	8
5-96	0	2	NA
9-96	0	2	NA
4-97	0	1	NA
9-97	0	1	NA
5-98	0	1	NA
9-98	0	0	NA
5-99	0	1	NA
9-99	0	1	NA
5-00	0	1	NA
9-00	0	1	NA

W19			
Sampling Date	Total CPAH[1]	Total Other PAH[2]	Total Phenolics
8-88	0	0	0
10-88	0	0	35
6-89	0	0	26
2-92	0	0	0
5-94	0	0	0
5-96	0	0	NA
9-96	0	0	NA
4-97	0	0	NA
9-97	0	0	NA
5-98	0	0	NA
9-98	0	0	NA
5-99	0	0	NA
9-99	0	0	NA
5-00	0	0	NA
9-00	0	0	NA

W22			
Sampling Date	Total CPAH[1]	Total Other PAH[2]	Total Phenolics
5-90	0	0	0
2-92	0	1	0
3-92	0	5	NA
5-96	0	0	NA
9-96	0	0	NA
4-97	0	2	NA
9-97	0	2	NA
4-98	0	1	NA
9-98	0	8	NA
4-99	0	22	NA
9-99	0	24	NA
5-00	0	3	NA
9-00	0	42	NA

W27			
Sampling Date	Total CPAH[1]	Total Other PAH[2]	Total Phenolics
10-88	0	1,882	NA
6-89	0	1,345	NA
5-96	0	1	NA
10-96	0	9	NA
4-97	0	281	NA
9-97	0	416	NA
4-98	0	184	NA
9-98	0	422	NA
4-99	0	312	NA
8-99	0	158	NA
5-00	0	415	NA
9-00	0	243	NA
5-01	0	199	NA
8-01[4]	0	99	NA
5-02	0	123	NA
9-02	0	193	NA

W100			
Sampling Date	Total CPAH[1]	Total Other PAH[2]	Total Phenolics
5-94	0	0	1

W20			
Sampling Date	Total CPAH[1]	Total Other PAH[2]	Total Phenolics
8-88	0	0	28
10-88	0	3	16
6-89	0	6	34
5-90	0	7	9
5-94	0	1	0
5-96	0	1	NA
9-96	0	1	NA
4-97	0	2	NA
10-97	0	2	NA
5-98	0	1	NA
9-98	0	0	NA
5-99	0	1	NA
9-99	0	1	NA
5-00	0	1	NA
9-00	0	1	NA
5-01	0	0	NA
8-01[4]	0	0	NA
5-02	0	0	NA
9-02	0	0	NA

Table 7-1
Historical Summary of Other PAH, CPAH, and Phenolic Analytical Results
1988 Through 2002

7 Platteville Aquifer Wells

PAH concentrations in micrograms per liter (ug/l)
Phenolic concentrations in micrograms per liter (ug/l)

W1			
Sampling Date	Total CPAH[1]	Total Other PAH[2]	Total Phenolics
8-88	0	0	0
10-88	0	1	96
6-89	0	0	34
5-94	0	1	0
5-96	0	1	NA
9-96	0	0	NA
4-97	0	0	NA
9-97	0	1	NA
5-98	0	0	NA
9-98	0	0	NA
5-99	0	0	NA
9-99	0	0	NA
5-00	0	0	NA
9-00	0	0	NA

W121			
Sampling Date	Total CPAH[1]	Total Other PAH[2]	Total Phenolics
8-88	0	0	73
10-88	0	0	35
6-89	0	0	35
5-90	0	0	0
5-94	0	0	0
5-96	0	0	NA
10-96	0	0	NA
4-97	0	0	NA
10-97	0	0	NA
5-98	0	0	NA
9-98	0	0	NA
5-99	0	0	NA
9-99	0	0	NA
5-00	0	0	NA
9-00	0	0	NA

W124			
Sampling Date	Total CPAH[1]	Total Other PAH[2]	Total Phenolics
8-88	0	0	0
10-88	0	0	0
6-89	0	0	0
5-90	0	0	0
5-94	0	0	0
6-96	0	0	NA
9-96	0	0	NA
4-97	0	0	NA
10-97	0	0	NA
5-98	0	0	NA
9-98	0	0	NA
5-99	0	0	NA
9-99	0	0	NA
5-00	0	0	NA
9-00	0	0	NA

W101			
Sampling Date	Total CPAH[1]	Total Other PAH[2]	Total Phenolics
8-88	0	4	7
10-88	0	23	0
6-89	0	48	20
5-90	0	22	0
2-92	0	18	6
5-94	0	11	0
5-96	0	5	NA
10-96	0	32	NA
4-97	0	31	NA
9-97	0	15	NA
4-98	0	17	NA
9-98	0	125	NA
4-99	0	32	NA
9-99	0	24	NA
5-00	0	41	NA
9-00	0	32	NA
4-01	0	18	NA
9-01[4]	0	12	NA
5-02	0	17	NA
9-02	0	6	NA

W130			
Sampling Date	Total CPAH[1]	Total Other PAH[2]	Total Phenolics
8-88	0	0	0
10-88	0	0	0
6-89	0	0	0
5-90	0	0	0
5-96	0	0	NA
10-96	0	0	NA
4-97	0	0	NA
10-97	0	0	NA
5-98	0	0	NA
9-98	0	0	NA
5-99	0	0	NA
9-99	0	0	NA
5-00	0	0	NA
9-00	0	0	NA

W131			
Sampling Date	Total CPAH[1]	Total Other PAH[2]	Total Phenolics
8-88	0	0	0
10-88	0	0	13
6-89	0	0	0
2-92	0	13	0
5-94	0	0	0
5-96	0	0	NA
10-96	0	0	NA
4-97	0	0	NA
10-97	0	0	NA
5-98	0	0	NA
9-98	0	0	NA
5-99	0	0	NA
9-99	0	0	NA
5-00	0	0	NA
5-01	0	0	NA
8-01[4]	0	0	NA
5-02	0	0	NA
9-02	0	0	NA

Table 7-1
Historical Summar[illegible]er PAH, CPAH, and
Phenolic [illegible]al Results
1988 T[illegible]gh 2002

7 Platteville Aquifer Wells

PAH concentrations in micrograms per liter (ug/l)
Phenolic concentrations in micrograms per liter (ug/l)

W143			
Sampling Date	Total CPAH[1]	Total Other PAH[2]	Total Phenolics
8-88	0	0	0
10-88	0	0	0
6-89	0	1	33
5-96	0	1	NA
10-96	0	1	NA
4-97	0	9	NA
9-97	0	1	NA
4-98	0	4	NA
9-98	0	10	NA
4-99	0	15	NA
9-99	0	4	NA
5-00	0	0	NA
5-01	0	5	NA
9-01[4]	0	3	NA
5-02	0	10	NA
9-02	0	0	NA

W426			
Sampling Date	Total CPAH[1]	Total Other PAH[2]	Total Phenolics
8-88	1	905	25
10-88	0	639	35
6-89	0	498	80
2-92	0	82	15
3-92	0	47	NA
5-96	0	55	NA
4-97	0	76	NA
9-97	0	64	NA
4-98	0	108	NA
9-98	0	1,508	NA
4-99	0	642	NA
8-99	0	258	NA
5-00	0	112	NA
9-00	0	160	NA
5-01	0	131	NA
8-01[4]	0	32	NA
5-02	0	564	NA
9-02	0	271	NA

W428			
Sampling Date	Total CPAH[1]	Total Other PAH[2]	Total Phenolics
8-88	0	0	0
10-88	0	1	8
6-89	0	1	16
5-90	0	0	0
2-92	0	2	6
3-92	0	9	NA
5-94	0	0	0
5-96	0	0	NA
10-96	0	0	NA
4-97	0	0	NA
5-98	0	0	NA
9-98	0	1	NA
5-99	0	1	NA
9-99	0	0	NA
5-00	0	2	NA
9-00	0	1	NA
5-01	0	2	NA
8-01[4]	0	0	NA
5-02	0	0	NA
9-02	0	0	NA

W424			
Sampling Date	Total CPAH[1]	Total Other PAH[2]	Total Phenolics
8-88	0	0	10
10-88	0	0	0
6-89	0	1	17
5-90	0	0	0
2-92	0	5	0
3-92	0	11	0
5-94	0	0	0
5-96	0	0	NA
10-96	0	0	NA
4-97	0	0	NA
9-97	0	0	NA
5-98	0	0	NA
9-98	0	0	NA
5-99	0	0	NA
9-99	0	0	NA
5-00	0	0	NA
9-00	0	0	NA

W430			
Sampling Date	Total CPAH[1]	Total Other PAH[2]	Total Phenolics
5-90	0	0	0

W132			
Sampling Date	Total CPAH[1]	Total Other PAH[2]	Total Phenolics
5-90	0	1	0

Table 7-1
Historical Summary of PAH, CPAH, and Phenolic Analytical Results
1988 Through 2002

7 Platteville Aquifer Wells

PAH concentrations in micrograms per liter (ug/l)
Phenolic concentrations in micrograms per liter (ug/l)

W432			
Sampling Date	Total CPAH[1]	Total Other PAH[2]	Total Phenolics
2-92	0	8	6
3-92	0	4	NA
5-96	0	1	NA
10-96	0	3	NA
4-97	0	10	NA
9-97	0	9	NA
4-98	0	9	NA
9-98	0	19	NA
4-99	0	33	NA
9-99	0	12	NA
5-00	0	13	NA
9-00	0	27	NA

W431			
Sampling Date	Total CPAH[1]	Total Other PAH[2]	Total Phenolics
2-92	0	4	0
3-92	0	2	0
5-96	0	1	NA
10-96	0	2	NA
4-97	0	1	NA
9-97	0	1	NA
5-98	0	1	NA
9-98	0	0	NA
5-99	0	1	NA
9-99	0	0	NA
5-00	0	0	NA
9-00	0	0	NA
5-01	0	0	NA
8-01[4]	0	0	NA
5-02	0	0	NA
9-02	0	6	NA

W433			
Sampling Date	Total CPAH[1]	Total Other PAH[2]	Total Phenolics
5-96	0	0	NA
10-96	0	1	NA
4-97	0	0	NA
10-97	0	2	NA
5-98	0	1	NA
9-98	0	2	NA
4-99	0	3	NA
9-99	0	1	NA
5-00	0	1	NA
9-00	0	1	NA
5-01	0	1	NA
9-01[4]	0	1	NA
5-02	0	0	NA
9-02	0	3	NA

W435			
Sampling Date	Total CPAH[1]	Total Other PAH[2]	Total Phenolics
2-92	0	0	0
3-92	0	1	0

W437			
Sampling Date	Total CPAH[1]	Total Other PAH[2]	Total Phenolics
2-92	0	3,096	20
3-92	0	489	NA
5-01	0	6,305	NA
8-01[4]	0	5,342	NA
5-02	0	5,438	NA
9-02	0	5,292	NA

W438			
Sampling Date	Total CPAH[1]	Total Other PAH[2]	Total Phenolics
2-92	0	20	5
3-92	0	0	NA
5-01	0	1	NA
9-01[4]	0	1	NA
5-02	0	5	NA
9-02	0	0	NA

Table 7-1
Historical Summary [illegible]her PAH, CPAH, and Phenolic A[illegible]al Results
1988 Th[illegible]gh 2002

7 Platteville Aquifer Wells

PAH concentrations in micrograms per liter (ug/l)
Phenolic concentrations in micrograms per liter (ug/l)

W120			
Sampling Date	Total CPAH[1]	Total Other PAH[2]	Total Phenolics
8-88	0	35	44
10-88	0	41	57
6-89	0	76	48
5-96	0	2	NA
10-96	0	11	NA
4-97	0	12	NA
9-97	0	6	NA
4-98	0	2	NA
9-98	0	4	NA
4-99	0	3	NA
9-99	0	2	NA
5-00	0	2	NA
9-00	0	2	NA

NOTES:

[1] Total Carcinogenic PAHs (as listed in the CD/RAP (A.1.1)), consist of the sum of:

benzo(a) anthracene
benzo(a)pyrene
benzo(b)flouranthene
chrysene
dibenz(a,h)anthracene
indeno(1,2,3-cd)pyrene
quinoline*
benzo(j)fluoranthene**
benzo(g,h,i)perylene

*Quinoline is included in the sum of CPAH if other CPAHs were detected. If no CPAHs are detected, quinoline is included in the Total Other PAH.

**Benzo(j)fluoranthene will coelute with either benzo(b)fluoranthene or benzo(k)fluoranthene. Benzo(j)fluoranthene can not be consistantly separated by the laboratory. Therefore if present, it will be reported as benzo(b)- and/or benzo(k)-fluoranthene.

[2] Total Other PAHs (as listed in the CD/RAP (A.1.2), consists of the sum of:

acenapthene
acenaphthylene
acridine
anthracene
benzo(k)fluoranthene
2,3-benzofuran
benzo(e)pyrene
benzo(b)thiophene
biphenyl
carbazole
dibenzofuran
dibenzothiophene
2,3-dihydroindene
fluoranthene
fluorene
indene
indole
1-methylnaphthalene
2-methylnaphthalene
naphthalene
perylene
phenanthrene
pyrene

[3] Result reported as 0 indicates that all parameters were not detected above the laboratory detection limit, or were below 0.5 ug/l.

[4] For this report, the analytical results prior to 2002 have been rounded to the nearest part per billion.

NA = Not analyzed for identified compound class.

8.0 DRIFT AQUIFER

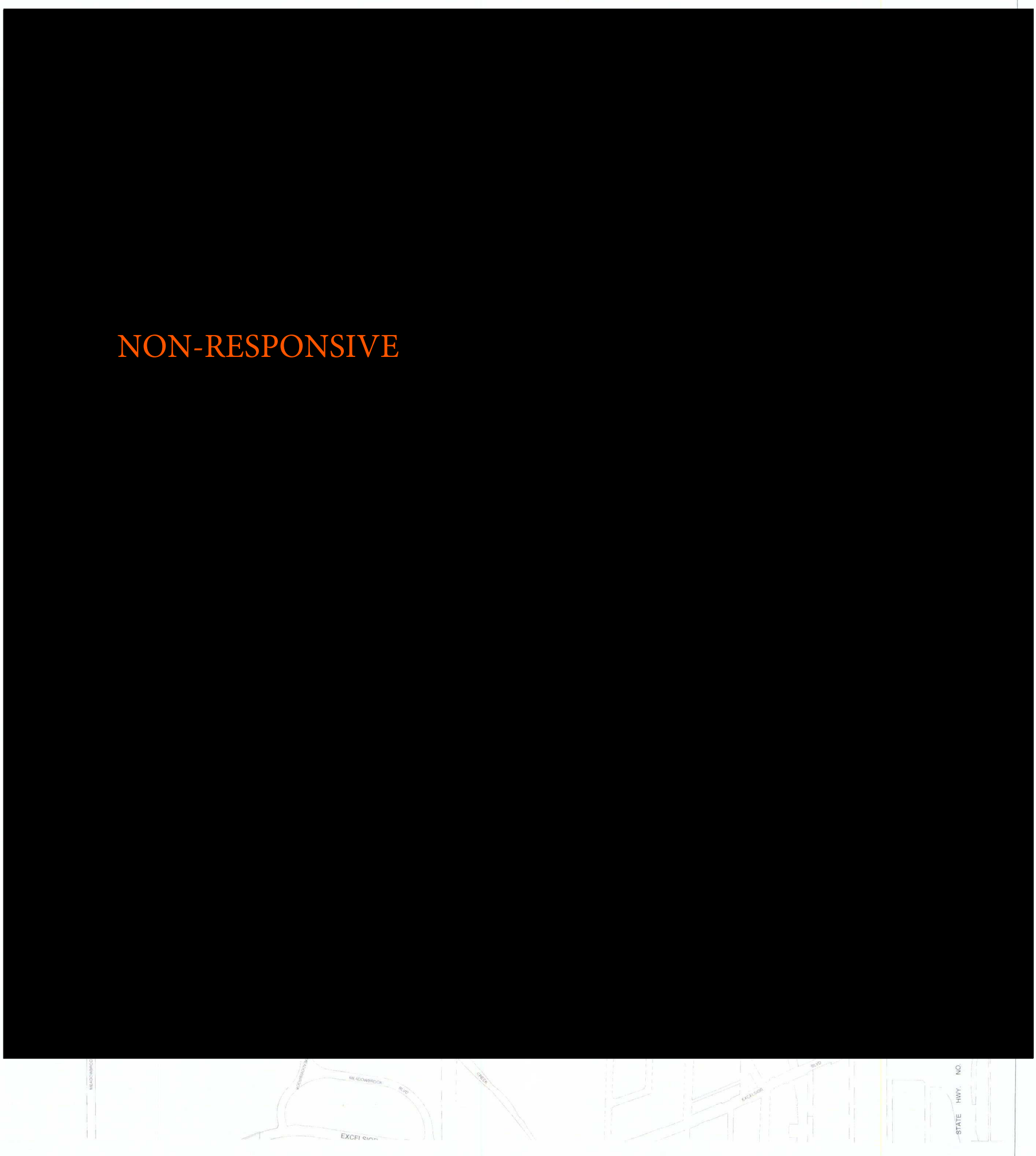
In accordance with the 2002 Sampling Plan, 11 Drift Aquifer monitoring wells were sampled in 2002. In addition to water quality monitoring, groundwater elevations were measured in 20 Drift Aquifer wells on June 21, 2002, and September 27, 2002. Summaries of analytical data and groundwater elevations for the first and second half of 2002 are shown in Figures 8-1 and 8-2. Laboratory reports of the analytical data are included in the Appendices. The Guide to Appended Laboratory Results for all of 2002 precedes the Appendices.

Table 8-1 is a historical summary since 1988 of Other PAH, carcinogenic PAH, and phenolic data for the Drift Aquifer wells. The 2002 analytical results for all Drift Aquifer wells are reported in micrograms per liter (ug/l). Most of the wells sampled indicate a decrease in total PAH concentrations from prior years.

PAH concentrations were found in six of the 11 wells sampled in 2002. Concentrations ranged from a high of 89 ug/l in P307 to a low of 3 ug/l in P308. Carcinogenic PAH were not detected above the parts per billion detection limits in any of the Drift Aquifer wells sampled. Water quality in the Drift Aquifer remains unchanged from prior years.

The water level contours illustrated in Figures 8-1 and 8-2 show that the source control well W420 is capturing the groundwater flow beneath the bog area located between Lake Street and Walker Street. The source control well W439 is limiting the further spread of PAH in the Northern Area of the Drift Aquifer. The two Drift Aquifer source control wells combine to limit the spread of PAH in the regional east-southeast groundwater flow direction.

CITY OF ST. LOUIS PARK



LEGEND

Reilly Site

N
W E
S

0 500 1,000 2,000 3,000 Feet

Well ID
Water Level (ft)
Sum of Benzo(a)Pyrene and Dibenz(a,h)anthracene (ppb)
Total Carcinogenic PAH (ppb)
Total Other PAH (ppb)
0 = Not detected
- = Not sampled

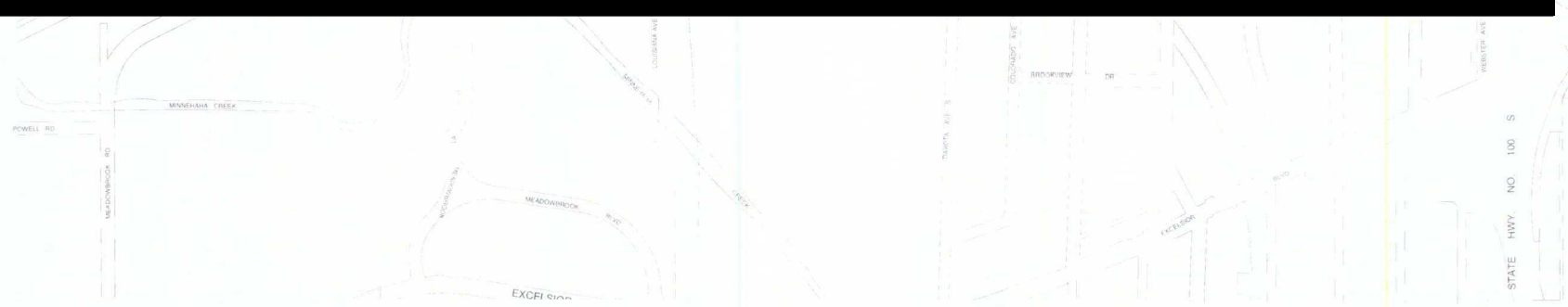
2 Foot Groundwater Level Contour

FIGURE 8-1

Summary of
Groundwater Monitoring Results
Drift Aquifer
First Half, 2002

DRAWN: S. KELLY	DATE: 2/4/2002	REV: 1	ENSR INTERNATIONAL
CHECKED: B. GREGG	PROJECT: 1620-032		

CITY OF ST. LOUIS PARK



LEGEND

Reilly Site

Well ID
Water Level (ft)
Sum of Benzo(a)Pyrene and Dibenz(a,h)anthracene (ppb)
Total Carcinogenic PAH (ppb)
Total Other PAH (ppb)
0 = Not detected
- = Not sampled

2 Foot Groundwater Level Contour

N
W E
S

0 500 1,000 2,000 3,000 Feet

FIGURE 8-2

Summary of
Groundwater Monitoring Results
Drift Aquifer
Second Half, 2002

DRAWN: S. KELLY	DATE: 2/4/2002	REV: 1	ENSR INTERNATIONAL
CHECKED: B. GREGG	PROJECT: 1620-032		

Table 8-1
Historical Summary of Other PAH, CPAH, and Phenolic Analytical Results
1988 Through 2002

8 Drift Aquifer Wells

PAH concentrations in micrograms per liter (ug/l).
Phenolic concentrations in micrograms per liter (ug/l).

P109

Sampling Date	Total CPAH[1]	Total Other PAH[2]	Total Phenolics
8-88	0[3]	3	8
10-88	0	4	0
6-89	0	4	15.5
5-90	0	5	0
4-01	0	1	NA
9-01[4]	0	0	NA
5-02	0	0	NA
9-02	0	0	NA

W11

Sampling Date	Total CPAH[1]	Total Other PAH[2]	Total Phenolics
8-88	0	13	7.1
10-88	0	37	7.2
6-89	0	147	22.1
5-01	0	0	NA
Well was abandoned in 2001			

P307

Sampling Date	Total CPAH[1]	Total Other PAH[2]	Total Phenolics
4-91	0	226	18.5
8-01[4]	0	76	NA
5-02	0	42	NA
9-02	0	89	NA

P308

Sampling Date	Total CPAH[1]	Total Other PAH[2]	Total Phenolics
4-91	0	98	10.5
2-92	0	0	11.7
10-94	0	41	NA
5-01	0	2	NA
8-01[4]	0	12	NA
5-02	0	3	NA
9-02	0	0	NA

P112

Sampling Date	Total CPAH[1]	Total Other PAH[2]	Total Phenolics
8-88	0	0	0
10-88	0	0	8.6
6-89	0	0	35.7
5-90	0	0	0
2-92	0	0	0
5-01	0	0	NA
8-01[4]	0	0	NA
5-02	0	0	NA
9-02	0	0	NA

P310

Sampling Date	Total CPAH[1]	Total Other PAH[2]	Total Phenolics
4-91	0	33	8
5-01	0	13	NA
8-01[4]	0	31	NA
5-02	0	14	NA
9-02	0	10	NA

W117

Sampling Date	Total CPAH[1]	Total Other PAH[2]	Total Phenolics
8-88	0	2	8.3
10-88	0	18	0
6-89	0	28	13.5
5-90	0	29	10.5
2-92	0	1	0
5-94	0	5	0
10-94	0	2	NA
4-01	0	2	NA
9-01[4]	0	1	NA
5-02	0	0	NA
9-02	0	0	NA

P312

Sampling Date	Total CPAH[1]	Total Other PAH[2]	Total Phenolics
4-91	0	14	13
2-92	0	23	15
4-01	0	3	NA
9-01[4]	0	4	NA
5-02	0	4	NA
9-02	0	5	NA

P309

Sampling Date	Total CPAH[1]	Total Other PAH[2]	Total Phenolics
6-89	0	1	0
4-91	0	318	22.5
5-01	0	27	NA
8-01[4]	0	40	NA
5-02	0	50	NA
9-02	0	24	NA

Table 8-1
Historical Summary of Other PAH, CPAH, and Phenolic Analytical Results
1988 Through 2002

8 Drift Aquifer Wells

PAH concentrations in micrograms per liter (ug/l).
Phenolic concentrations in micrograms per liter (ug/l).

W136			
Sampling Date	Total CPAH[1]	Total Other PAH[2]	Total Phenolics
8-88	0	0	50
10-88	0	0	0
6-89	0	1	0
2-92	0	1	0
5-94	0	0	0
10-94	0	0	NA
5-01	0	0	NA
8-01[4]	0	0	NA
5-02	0	0	NA
9-02	0	0	NA

W427			
Sampling Date	Total CPAH[1]	Total Other PAH[2]	Total Phenolics
8-88	0	0	7
10-88	0	0	0
6-89	0	1	0
5-90	0	0	0
2-92	0	5	0
10-94	0	0	NA
5-01[4]	0	0	NA
5-02	0	0	NA
9-02	0	0	NA

W422			
Sampling Date	Total CPAH[1]	Total Other PAH[2]	Total Phenolics
1st Quarter	0	27	11
2nd Quarter	0	57	0
8-88	0	77	24
10-88	0	50	84
3-89	0	50	11
6-89	0	50	14
9-89	0	60	20
12-89	0	50	13
3-90	0	75	21
5-90	0	60	14
8-90	0	90	14
12-90	0	60	18
4-91	0	67	13
9-91	0	-	17
10-91	0	88	18
2-92	0	121	16
6-92	0	872	-
9-92	0	91	9
10-92	0	89	28
3-93	0	94	0
4-93	0	96	10
8-93	0	81	16
11-93	0	74	16
2-94	0	61	0
6-94	0	66	7
8-94	0	66	30
10-94	0	59	11
3-95	0	54	11
5-95	0	62	5
9-95	0	53	14
10-95	0	29	10
2-96	0	24	12
4-96	0	26	11
7-96	0	26	9
10-96	0	23	8
2-97	0	21	9
5-97	0	20	11
9-97	0	19	18
1-98	0	18	11
2-98	0	21	6
5-98	0	17	9
9-98	0	7	0
11-98	0	13	9
3-99	0	20	0
4-99	0	14	8
8-99	0	13	10
11-99	0	13	4
2-00	0	12	10
5-00	0	19	10
9-00	0	13	5
12-00	0	6	4
5-01	0	19	5
9-01	0	13	-
10-01	0	7	5
3-02	0	15	11
5-02	0	15	-
9-02	0	9	-

[1] Total Carcinogenic PAHs (as listed in the CD/RAP (A.1.1)), consist of the sum of:

benzo(a) anthracene
benzo(a)pyrene
benzo(b)flouranthene
chrysene
dibenz(a,h)anthracene
indeno(1,2,3-cd)pyrene
quinoline*
benzo(j)fluoranthene**
benzo(g,h,i)perylene

*Quinoline is included in the sum of CPAH if other CPAHs were detected. If no CPAHs are detected, quinoline is included in the Total Other PAH.

**Benzo(j)fluoranthene will coelute with either benzo(b)fluoranthene or benzo(k)fluoranthene. Benzo(j)fluoranthene can not be consistantly separated by the laboratory. Therefore if present, it will be reported as benzo(b)- and/or benzo(k)-fluoranthene.

[2] Total Other PAHs (as listed in the CD/RAP (A.1.2), consists of the sum of:

acenapthene
acenaphthylene
acridine
anthracene
benzo(k)fluoranthene
2,3-benzofuran
benzo(e)pyrene
benzo(b)thiophene
biphenyl
carbazole
dibenzofuran
dibenzothiophene
2,3-dihydroindene
fluoranthene
fluorene
indene
indole
1-methylnaphthalene
2-methylnaphthalene
naphthalene
perylene
phenanthrene
pyrene

[3] Result reported as 0 indicates that all parameters were not detected above the laboratory detection limit, or were below 0.5 ug/l.

[4] For this report, the analytical results prior to 2002 have been rounded to the nearest part per billion.

NA = Not analyzed for identified compound class.

9.0 DATA QUALITY ASSESSMENT

In accordance with the 2002 Sampling Plan, all laboratory data packages underwent a data quality assessment conducted by ENSR. Two laboratory data packages underwent a full validation following the "Region 5, Standard Operating Procedure for Validation of CLP Organic Data", (April 1991, Revised February 1997). A limited validation was performed for the remaining laboratory data packages.

The basis of the review (elements to be reviewed, applicable validation guidelines (was defined in the Quality Assurance Project Plan (QAPP). The limited validation of 2002 data was conducted as follows. The number of samples was checked to verify that the results corresponded to the analytical requests designated on the chain of custody. The chain of custody was examined to determine the completeness pertaining to sampling dates, times, quantities, and analyses performed. The sample holding times, preservation, and cooler temperatures were noted. The method blanks, field blanks, equipment blanks, and trip blanks were examined for any contamination problems. Surrogate spike recoveries were checked to confirm they were within the range determined by the QAPP QC limits. Matrix spikes and LCS were reviewed to confirm they meet the QC acceptance criteria. All duplicate samples were checked for precision. In addition, sample quantitation limits (SQLs) were compared to those required in the QAPP.

The full validation of 2002 data included all of the information in the limited validation with additional assessment pertaining to the laboratory instrumentation and practices. This included initial and continuing instrument calibration, instrument tuning, compound identification, and internal standard performance. The data validation is generally used to determine whether or not the reported laboratory data may be used for decision-making purposes.

This project benefits from many years of collecting high quality data in accordance with the Agency approved sampling plan and QAPP. Therefore, an additional measure of quality assurance is gained by comparing current analytical results to the historical analytical results.

Criteria for validation actions were specified in the QAPP, data validation worksheets or the appropriate validation guidelines, and were given precedence in that order. QAPP criteria were used for surrogate, MS/MSD, and LCS recoveries.

Validation actions were documented on data validation worksheets and were summarized in narrative reports that included the following:

- Samples included in the validation,
- Validation guidelines used, including any project-specific modifications,
- Analyses performed,
- Review elements, and
- Discussion of validation results, including any qualifiers appended.

The 2002 sampling data has been reviewed and the QAPP goals for field and laboratory completeness have been met. The Laboratory reports of the analytical data are included in the Appendices. The Guide to Appended Laboratory Results for all of 2002 precedes the Appendices.

APPENDIX

GUIDE TO APPENDED LABORATOR .SULTS FOR ALL 2002 SAMPLES

Well Name	Analysis	1st Quarter	Appendix ID	2nd Quarter	Appendix ID	3rd Quarter	Appendix ID	4th Quarter	Appendix ID
Ironton-Galesville Aquifer									
W105	PPT 75			4-Jun	U				
Mount Simon Hinckley Aquifer									
SLP 11									
SLP 12	PPT 5					9-Sep	V		
SLP 13	PPT 5					9-Sep	V		
SLP 17	not sampled								
Prairie du Chien-Jordan Aquifer									
SLP 4	PPT 5			20-May	O				
W 23	PPT 75			4-Jun	U				
SLP 6	PPT 5	4-Mar	D	28-May	S	10-Sep	W	14-Oct	GG
SLP 7 or SLP 9	not sampled								
SLP 10 or SLP 15	PPT 75			4-Jun	U				
SLP 14	PPT 5			28-May	S				
SLP 16	PPT 5			28-May	S				
W 119	not sampled								
W 402	PPT 5			20-May	N				
W 403	PPT 5			20-May	N				
W 405 or W 406	not sampled								
W70	not sampled								
W 29	PPT 5			20-May	N				
W 40	not sampled								
E 3	PPT 5			21-May	P				
H 6	PPT 5			21-May	P				
MTKA 6	PPT 5			21-May	P				
W48	PPT 5	12-Mar	E	28-May	S	10-Sep	X	14-Oct	GG
W401	PPT 5			21-May	P				
E2	PPT 5					9-Sep	Y		
E7	PPT 5			21-May	P				
E13	PPT 5			21-May	P				
E15	PPT 5					9-Sep	Y		

GUIDE TO APPENDED LABORATOR .SULTS FOR ALL 2002 SAMPLES

Well Name	Analysis	1st Quarter	Appendix ID	2nd Quarter	Appendix ID	3rd Quarter	Appendix ID	4th Quarter	Appendix ID
St. Peter Aquifer									
SLP 3	PPT 5			29-May	Q	10-Sep	W		
W 122	PPT 5			29-May	R	10-Sep	X		
W 411	PPT 5			29-May	R	10-Sep	X		
W 24	PPT 75			4-Jun	T	16-Sep	AA		
W 33	PPT 75			4-Jun	T	16-Sep	AA		
W 133	PPT 5			29-May	R	10-Sep	X		
W 410	PPT 75			4-Jun	U	16-Sep	AA		
W 412	PPT 5			29-May	R	10-Sep	X		
W 409	PPB			14-May	L	23-Sep	CC		
Drift-Platteville Aquifer Pumping Wells									
W 420	PAH-PPB	12-Mar	C	6-May	G	17-Sep	Z	14-Oct	FF
	PHENOLICS	12-Mar	A						
W 421	PAH-PPB	12-Mar	C	6-May	G	17-Sep	Z	24-Oct	HH
	PHENOLICS	12-Mar	A						
W 434	PAH-PPB	12-Mar	C	13-May	M	24-Sep	DD		
	PHENOLICS	12-Mar	A						
W 439	PAH-PPB	12-Mar	C	14-May	J	23-Sep	BB		
	PHENOLICS	15-Mar	B						
Platteville Aquifer									
W20	PPB			13-May	K	24-Sep	EE		
W131	PPB			13-May	K	24-Sep	EE		
W428	PPB			13-May	K	24-Sep	EE		
W431	PPB			14-May	L	24-Sep	EE		
W 101	PPB			14-May	L	17-Sep	Z		
W433	PPB			13-May	L	17-Sep	Z		
W27	PPB			13-May	K	24-Sep	EE		
W143	PPB			14-May	L	23-Sep	CC		
W437	PPB			13-May	K	24-Sep	EE		
W438	PPB			14-May	L	24-Sep	EE		
W426	PPB			7-May	H	23-Sep	CC		
Drift Aquifer									
P109	PPB			7-May	H	23-Sep	CC		
P112	PPB			6-May	F	17-Sep	Z		
P307	PPB			6-May	F	17-Sep	Z		
P308	PPB			6-May	F	17-Sep	Z		
P309	PPB			6-May	F	23-Sep	CC		
P310	PPB			7-May	H	23-Sep	CC		
P312	PPB			7-May	H	24-Sep	EE		
W11	not sampled								
W117	PPB			7-May	H	23-Sep	CC		
W136	PPB			7-May	H	17-Sep	Z		
W422	PPB	12-Mar	C	7-May	I	24-Sep	DD		
W427	PPB			7-May	H	17-Sep	Z		

A

SEVERN
TRENT
SERVICES

STL Denver
4955 Yarrow Street
Arvada, CO 80002-4517

Tel: 303 736 0100
Fax: 303 431 7171
www.stl-inc.com

ANALYTICAL REPORT

City of St. Louis Park

Project: Reilly Tar & Chemical Corporation

STL Lot Number: D2C130248

Mr. Scott Anderson

City of St. Louis Park
Utility Division
3752 Wooddale Avenue
St. Louis Park, MN 55416

STL DENVER

Brian Stringer
Project Manager

April 22, 2002

Table Of Contents

Standard Deliverables

Report Contents	Total Number of Pages
Standard Deliverables *The **Cover Letter** and the **Report Cover** page are considered integral parts of this Standard Deliverable package. This report is incomplete unless all pages indicated in this Table of Contents are included.*	24

- **Table of Contents**
- **Project Narrative**
- **Executive Summary – Detection Highlights**
- **Methods Summary**
- **Method/Analyst Summary**
- **Sample Summary**
- **Analytical Results**
- **QC Data Association Summary**
- **QC Evaluation and/or Data Reports**
- **Chain-of-Custody**

CASE NARRATIVE

STL Lot Number D2C130248

Introduction

STL Denver received eleven aqueous samples and a set of MS/MSD samples on March 13, 2002 for Total Phenols analyses.

The cooler temperatures were 1.2 and 1.8 °C. The sample containers were received in acceptable condition for all but two of the samples. The sample containers were received broken for W422TP-031202 and W439TP-031202. The client recollected those two samples and the results are included with the analytical report for STL lot D2C190251.

The cooler custody seals were not intact when the coolers were received at STL Denver. The client was contacted and directed that the analyses proceed, noting that the data will be compared with historical results.

Data Quality Assessment

The results included in this report have been reviewed for compliance with STL Denver's Laboratory Quality Manual. The test results shown in this report meet all requirements of NELAC and any exceptions are noted below.

Dilution factors and footnotes have been provided to assist in the interpretation of the results. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at concentrations above the linear calibration curve, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

STL utilizes USEPA approved methods in all analytical work. The samples presented in this report were analyzed for the parameters listed on the analytical methods summary page in accordance with the methods indicated.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Phenolics

All target analytes were in control for the LCS.

Total Phenols were reported below the reporting limit in the Method Blank for prep batch 2092415. This may indicate a high bias for phenols in the associated samples. However, because the result in the Method Blank is an estimated result below the reporting limit, no further corrective action is required.

As requested on the chain of custody record, the MS/MSD was performed on client sample "W420TP-031202". The MS/MSD demonstrated recoveries for total phenols above the established QC limits. It is likely but not entirely clear, that the high recovery is due to matrix interference.

Samples W420TP-031202 and W420TPD-031202 were analyzed at a dilution due to the analyte levels. As a result, the reporting limits are elevated accordingly.

Data Completeness for Phenolics – Method 420.1

The results contained in the report were reviewed relative to data acceptance criteria as specified in the 2002 QAPP. Based on the exceptions noted we achieved 55.6% completeness. A limited number of data points are used to calculate completeness for total phenols. The MS/MSD recoveries are out of control, as noted above, and the FB and FBD exhibited hits above the reporting limits.

Data Completion Calculation

Lot D2C130248
Analysis Phenolics by EPA 420.1

QC Parameter	Data Planned	Valid Data Obtained
Method Blank	1	1
FB/FBD	2	0
MS*	1	0
MSD*	1	0
MS/MSD RPD*	1	1
Sample Dup RPD	1	1
FBD RPD	1	1
LCS	1	1
TOTAL	**9**	**5**
% Completeness	**55.6%**	

* Client specific MS/MSD was performed on sample "W420TP-031202".

Sample Duplicate RPD Calculation

Lot D2C130248
Analysis Phenolics by EPA 420.1

	Sample W420TP-031202	Duplicate W420TPD-031202		
Compound	**Result**	**Result**	**RPD**	**RPD>70%**
Total Phenols	0.11	0.12	8.70	

EXECUTIVE SUMMARY - Detection Highlights

D2C130248

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
W420TP-031202 03/12/02 001				
Total Phenols	0.11 J,Q	0.025	mg/L	MCAWW 420.1
W420TPD-031202 03/12/02 002				
Total Phenols	0.12 J,Q	0.025	mg/L	MCAWW 420.1
W420TPFB-031202 03/12/02 003				
Total Phenols	0.0063 J	0.0050	mg/L	MCAWW 420.1
W420TPFBD-031202 03/12/02 004				
Total Phenols	0.0059 J	0.0050	mg/L	MCAWW 420.1
W421TP-031202 03/12/02 005				
Total Phenols	0.0069 J	0.0050	mg/L	MCAWW 420.1
W434TP-031202 03/12/02 006				
Total Phenols	0.025 J	0.0050	mg/L	MCAWW 420.1
SLP4TP-031202 03/12/02 007				
Total Phenols	0.0077 J	0.0050	mg/L	MCAWW 420.1
W410TP-031202 03/12/02 008				
Total Phenols	0.0059 J	0.0050	mg/L	MCAWW 420.1
PTF-ACFETP-031202 03/12/02 009				
Total Phenols	0.010 J	0.0050	mg/L	MCAWW 420.1

METHODS SUMMARY

D2C130248

PARAMETER	ANALYTICAL METHOD	PREPARATION METHOD
Phenolics	MCAWW 420.1	

References:

MCAWW "Methods for Chemical Analysis of Water and Wastes", EPA-600/4-79-020, March 1983 and subsequent revisions.

METHOD / ANALYST SUMMARY

D2C130248

ANALYTICAL METHOD	ANALYST	ANALYST ID
MCAWW 420.1	Maria Fayard	002596

References:

MCAWW "Methods for Chemical Analysis of Water and Wastes", EPA-600/4-79-020, March 1983 and subsequent revisions.

SAMPLE SUMMARY

D2C130248

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
EWCKT	001	W420TP-031202	03/12/02	
EWCK0	002	W420TPD-031202	03/12/02	
EWCK2	003	W420TPFB-031202	03/12/02	
EWCK5	004	W420TPFBD-031202	03/12/02	
EWCK7	005	W421TP-031202	03/12/02	
EWCK9	006	W434TP-031202	03/12/02	
EWCLC	007	SLP4TP-031202	03/12/02	
EWCLD	008	W410TP-031202	03/12/02	
EWCLF	009	PTF-ACFETP-031202	03/12/02	

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: W420TP-031202

General Chemistry

Lot-Sample #...: D2C130248-001 Work Order #...: EWCKT Matrix.....: WATER
Date Sampled...: 03/12/02 Date Received..: 03/13/02

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Total Phenols	0.11 J,Q	0.025	mg/L	MCAWW 420.1	04/02-04/04/02	2092415

Dilution Factor: 5 Analysis Time..: 13:00

NOTE(S):

RL Reporting Limit

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

Q Elevated reporting limit. The reporting limit is elevated due to high analyte levels.

CITY OF ST. LOUIS PARK

Client Sample ID: W420TPD-031202

General Chemistry

Lot-Sample #...: D2C130248-002 **Work Order #...:** EWCK0 **Matrix.....:** WATER
Date Sampled...: 03/12/02 **Date Received..:** 03/13/02

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Total Phenols	**0.12 J,Q**	**0.025**	**mg/L**	**MCAWW 420.1**	**04/02-04/04/02**	**2092415**

Dilution Factor: 5 Analysis Time..: 13:00

NOTE(S):

RL Reporting Limit

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

Q Elevated reporting limit. The reporting limit is elevated due to high analyte levels.

CITY OF ST. LOUIS PARK

Client Sample ID: W420TPFB-031202

General Chemistry

Lot-Sample #...: D2C130248-003 Work Order #...: EWCK2 Matrix.....: WATER
Date Sampled...: 03/12/02 Date Received..: 03/13/02

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Total Phenols	0.0063 J	0.0050	mg/L	MCAWW 420.1	04/02-04/04/02	2092415

Dilution Factor: 1 Analysis Time..: 13:00

NOTE(S):

RL Reporting Limit

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

CITY OF ST. LOUIS PARK

Client Sample ID: W420TPFBD-031202

General Chemistry

Lot-Sample #...: D2C130248-004 Work Order #...: EWCK5 Matrix.....: WATER
Date Sampled...: 03/12/02 Date Received..: 03/13/02

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Total Phenols	0.0059 J	0.0050	mg/L	MCAWW 420.1	04/02-04/04/02	2092415

Dilution Factor: 1 Analysis Time..: 13:00

NOTE(S):

RL Reporting Limit

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

CITY OF ST. LOUIS PARK

Client Sample ID: W421TP-031202

General Chemistry

Lot-Sample #...: D2C130248-005 Work Order #...: EWCK7 Matrix.....: WATER
Date Sampled...: 03/12/02 Date Received..: 03/13/02

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Total Phenols	0.0069 J	0.0050	mg/L	MCAWW 420.1	04/02-04/04/02	2092415

Dilution Factor: 1 Analysis Time..: 13:00

NOTE(S):

RL Reporting Limit

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

CITY OF ST. LOUIS PARK

Client Sample ID: W434TP-031202

General Chemistry

Lot-Sample #...: D2C130248-006 Work Order #...: EWCK9 Matrix.....: WATER
Date Sampled...: 03/12/02 Date Received..: 03/13/02

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Total Phenols	0.025 J	0.0050	mg/L	MCAWW 420.1	04/02-04/04/02	2092415

Dilution Factor: 1 Analysis Time..: 13:00

NOTE(S):

RL Reporting Limit

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

CITY OF ST. LOUIS PARK

Client Sample ID: SLP4TP-031202

General Chemistry

Lot-Sample #...: D2C130248-007 Work Order #...: EWCLC Matrix.....: WATER
Date Sampled...: 03/12/02 Date Received..: 03/13/02

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Total Phenols	0.0077 J	0.0050	mg/L	MCAWW 420.1	04/02-04/04/02	2092415

Dilution Factor: 1 Analysis Time..: 13:00

NOTE(S):

RL Reporting Limit

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

CITY OF ST. LOUIS PARK

Client Sample ID: W410TP-031202

General Chemistry

Lot-Sample #...: D2C130248-008 Work Order #...: EWCLD Matrix.....: WATER
Date Sampled...: 03/12/02 Date Received..: 03/13/02

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Total Phenols	0.0059 J	0.0050	mg/L	MCAWW 420.1	04/02-04/04/02	2092415

Dilution Factor: 1 Analysis Time..: 13:00

NOTE(S):

RL Reporting Limit

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

CITY OF ST. LOUIS PARK

Client Sample ID: PTF-ACFETP-031202

General Chemistry

Lot-Sample #...: D2C130248-009 Work Order #...: EWCLF Matrix.....: WATER
Date Sampled...: 03/12/02 Date Received..: 03/13/02

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Total Phenols	0.010 J	0.0050	mg/L	MCAWW 420.1	04/02-04/04/02	2092415

Dilution Factor: 1 Analysis Time..: 13:00

NOTE(S):

RL Reporting Limit

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

QC DATA ASSOCIATION SUMMARY

D2C130248

Sample Preparation and Analysis Control Numbers

SAMPLE#	MATRIX	ANALYTICAL METHOD	LEACH BATCH #	PREP BATCH #	MS RUN#
001	WATER	MCAWW 420.1		2092415	2092249
002	WATER	MCAWW 420.1		2092415	2092249
003	WATER	MCAWW 420.1		2092415	2092249
004	WATER	MCAWW 420.1		2092415	2092249
005	WATER	MCAWW 420.1		2092415	2092249
006	WATER	MCAWW 420.1		2092415	2092249
007	WATER	MCAWW 420.1		2092415	2092249
008	WATER	MCAWW 420.1		2092415	2092249
009	WATER	MCAWW 420.1		2092415	2092249

METHOD BLANK REPORT

General Chemistry

Client Lot #...: D2C130248 Matrix.....: WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Total Phenols		Work Order #: EW9WA1AA		MB Lot-Sample #:	D2D020000-415	
	0.0042 B	0.0050	mg/L	MCAWW 420.1	04/02-04/04/02	2092415
		Dilution Factor: 1				
		Analysis Time..: 13:00				

NOTE(S):

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

B Estimated result. Result is less than RL.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

General Chemistry

Client Lot #...: D2C130248 Matrix.....: WATER

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Total Phenols		Work Order #: EW9WA1AC	LCS Lot-Sample#: D2D020000-415		
	91	(90 - 110)	MCAWW 420.1	04/02-04/04/02	2092415
		Dilution Factor: 1			
		Analysis Time..: 13:00			

NOTE(S):

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

LABORATORY CONTROL SAMPLE DATA REPORT

General Chemistry

Client Lot #...: D2C130248 Matrix.....: WATER

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Total Phenols			Work Order #:	EW9WA1AC	LCS Lot-Sample#:	D2D020000-415	
	0.0500	0.0454	mg/L	91	MCAWW 420.1	04/02-04/04/02	2092415
			Dilution Factor: 1				
			Analysis Time..: 13:00				

NOTE(S):

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

MATRIX SPIKE SAMPLE EVALUATION REPORT

General Chemistry

Client Lot #...: D2C130248 Matrix.....: WATER
Date Sampled...: 03/12/02 Date Received..: 03/13/02

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Total Phenols		WO#:	EWCKT1AC-MS/EWCKT1AD-MSD			MS Lot-Sample #: D2C130248-001	
	130 N	(90 - 110)			MCAWW 420.1	04/02-04/04/02	2092415
	114 N	(90 - 110)	4.6	(0-16)	MCAWW 420.1	04/02-04/04/02	2092415

Dilution Factor: 1
Analysis Time..: 13:00

NOTE(S):

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

N Spiked analyte recovery is outside stated control limits.

MATRIX SPIKE SAMPLE DATA REPORT

General Chemistry

Client Lot #...: D2C130248 Matrix.....: WATER
Date Sampled...: 03/12/02 Date Received..: 03/13/02

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Total Phenols			WO#: EWCKT1AC-MS/EWCKT1AD-MSD				MS Lot-Sample #: D2C130248-001		
	0.11	0.0500	0.179 N	mg/L	130		MCAWW 420.1	04/02-04/04/02	2092415
	0.11	0.0500	0.171 N	mg/L	114	4.6	MCAWW 420.1	04/02-04/04/02	2092415
			Dilution Factor: 1						
			Analysis Time..: 13:00						

NOTE(S):

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

N Spiked analyte recovery is outside stated control limits.

Chain of Custody Record

STL Denver
4955 Yarrow Street
Arvada, CO 80002

1.2°C
1.8°C
OP 3/12

SEVERN TRENT SERVICES

Severn Trent Laboratories, Inc.

23

STL-4124 (0700) **DEN (0900)**

Client	CITY OF ST. LOUIS PARK
Address	UTILITY DIVISION 3752 WOODDALE AVENUE
City	ST. LOUIS PARK, MN 55416
Project Name and Location (State)	SAME
Contract/Purchase Order/Quote No.	
Project Manager	SCOTT ANDERSON
Telephone Number (Area Code)/Fax Number	924-2570 (952) 924-2570
Site Contact	SAME
Lab Contact	
Carrier/Waybill Number	FED EX 800846316047
Date	3-12-02
Chain of Custody Number	017835
Lab Number	
Page ____ of ____	

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil		Containers & Preservatives: Unpres.	H2SO4	HNOS	HCl	NaOH	ZnAc/NaOH		Phenols	Special Instructions/ Conditions of Receipt
W420TP-031202 CF# 0061	3-12-02			X					X					1	X	
W420TPD-031202																
W420TPMS-031202																
W420TPMSD-031202																
W420TPFB-031202																
W420TPFBD-031202																
W421TP-031202																
W422TP-031202																
W439TP-031202																
W434TP-031202																
SLP4TP-031202																
W410TP-031202	3-12-02			X					X					1	X	

Possible Hazard Identification: [X] Non-Hazard [ ] Flammable [ ] Skin Irritant [ ] Poison B [ ] Unknown

Sample Disposal: [ ] Return To Client [X] Disposal By Lab [ ] Archive For ____ Months (A fee may be assessed if samples are retained longer than 3 months)

Turn Around Time Required: [ ] 24 Hours [ ] 48 Hours [ ] 7 Days [ ] 14 Days [ ] 21 Days [ ] Other ____

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished By: MZW	3-12-02	1400	1. Received By: Brown	3/13/02	0830
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

DISTRIBUTION: WHITE - Stays with the Sample; CANARY - Returned to Client with Report; PINK - Field Copy

Chain of Custody Record

STL Denver
4955 Yarrow Street
Arvada, CO 80002

SEVERN TRENT SERVICES

Severn Trent Laboratories, Inc.

STL-4124 (0700) DEN (0900)

Client: CITY OF ST. LOUIS PARK	Project Manager: Scott Anderson	Date: 3-12-02	Chain of Custody Number: 017836
Address: UTILITY DIVISION, 3752 WOODDALE AVENUE	Telephone Number (Area Code)/Fax Number: 924-2557 (952) 924-2570	Lab Number:	Page ____ of ____
City: ST. LOUIS PARK, MN 55416	Site Contact: SAME	Lab Contact:	
Project Name and Location (State): SAME	Carrier/Waybill Number: FED EX 800846316047		
Contract/Purchase Order/Quote No.:			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Matrix: Aqueous	Matrix: Sed.	Matrix: Soil	Containers & Preservatives: Unpres.	H2SO4	HNOS	HCl	NaOH	ZnAc/NaOH		Analysis (Attach list if more space is needed): Phenols	Special Instructions/ Conditions of Receipt
RTF-ACFE-TP-031202000014 CH	3-12-02			X				X					1	X	

Possible Hazard Identification: [X] Non-Hazard [ ] Flammable [ ] Skin Irritant [ ] Poison B [ ] Unknown

Sample Disposal: [ ] Return To Client [X] Disposal By Lab [ ] Archive For ____ Months (A lee may be assessed if samples are retained longer than 3 months)

Turn Around Time Required: [ ] 24 Hours [ ] 48 Hours [ ] 7 Days [ ] 14 Days [ ] 21 Days [ ] Other____

QC Requirements (Specify):

	Date	Time		Date	Time
1. Relinquished By: MZH	3-12-02	1400	1. Received By: [signature]	3/13/02	0830
2. Relinquished By:			2. Received By:		
3. Relinquished By:			3. Received By:		

Comments

DISTRIBUTION: WHITE - Stays with the Sample; CANARY - Returned to Client with Report; PINK - Field Copy

B

SEVERN
TRENT
SERVICES

STL Denver
4955 Yarrow Street
Arvada, CO 80002-4517

Tel: 303 736 0100
Fax: 303 431 7171
www.stl-inc.com

ANALYTICAL REPORT

City of St. Louis Park

Project: Reilly Tar & Chemical Corporation

STL Lot Number: D2C190251

Mr. Scott Anderson

City of St. Louis Park
Utility Division
3752 Wooddale Avenue
St. Louis Park, MN 55416

STL DENVER

Brian Stringer
Project Manager

April 22, 2002

Table Of Contents

Standard Deliverables

Report Contents	Total Number of Pages
Standard Deliverables *The **Cover Letter** and the **Report Cover** page are considered integral parts of this Standard Deliverable package. This report is incomplete unless all pages indicated in this Table of Contents are included.*	16

- **Table of Contents**
- **Project Narrative**
- **Executive Summary – Detection Highlights**
- **Methods Summary**
- **Method/Analyst Summary**
- **Sample Summary**
- **Analytical Results**
- **QC Data Association Summary**
- **QC Evaluation and/or Data Reports**
- **Chain-of-Custody**

CASE NARRATIVE

STL Lot Number D2C190251

Introduction

STL Denver received two aqueous samples on March 19, 2002 for Total Phenols analyses.

The cooler temperatures was 2.6 °C. All containers were received in acceptable condition.

Samples W422TP-031502 and W439TP-031502 are replacements for samples W422TP-031202 and W439TP-031202 that were received broken.

Data Quality Assessment

The results included in this report have been reviewed for compliance with STL Denver's Laboratory Quality Manual. The test results shown in this report meet all requirements of NELAC and any exceptions are noted below.

Dilution factors and footnotes have been provided to assist in the interpretation of the results. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at concentrations above the linear calibration curve, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

STL utilizes USEPA approved methods in all analytical work. The samples presented in this report were analyzed for the parameters listed on the analytical methods summary page in accordance with the methods indicated.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Phenolics

All target analytes were in control for the LCS.

Total Phenols were reported below the reporting limit in the Method Blank for prep batch 2092415. This may indicate a high bias for phenols in the associated samples. However, because the result in the Method Blank is an estimated result below the reporting limit, no further corrective action is required.

The MS/MSD was performed on client sample "W420TP-031202", logged in as STL sample D2C130248-001. The MS/MSD demonstrated recoveries for total phenols above the established QC limits. It is likely but not entirely clear, that the high recovery is due to matrix interference.

Data Completeness for Phenolics – Method 420.1

The results contained in the report were reviewed relative to data acceptance criteria as specified in the 2002 QAPP. Based on the exceptions noted we achieved 100.0% completeness. This calculation is based on a very limited number of data points.

Data Completion Calculation

Lot D2C190251
Analysis Phenolics by EPA 420.1

QC Parameter	Data Planned	Valid Data Obtained
Method Blank	1	1
LCS	1	1
TOTAL	**2**	**2**
% Completeness	**100.0%**	

* The data for the MS/MSD is not included in the completeness calculation because it was performed on a client-specified sample from another lot, and they are included with the report for that sample.

EXECUTIVE SUMMARY - Detection Highlights

D2C190251

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
W422TP-031502 03/15/02 001				
Total Phenols	0.011 J	0.0050	mg/L	MCAWW 420.1
W439TP-031502 03/15/02 002				
Total Phenols	0.027 J	0.0050	mg/L	MCAWW 420.1

METHODS SUMMARY

D2C190251

PARAMETER	ANALYTICAL METHOD	PREPARATION METHOD
Phenolics	MCAWW 420.1	

References:

MCAWW "Methods for Chemical Analysis of Water and Wastes", EPA-600/4-79-020, March 1983 and subsequent revisions.

METHOD / ANALYST SUMMARY

D2C190251

ANALYTICAL METHOD	ANALYST	ANALYST ID
MCAWW 420.1	Maria Fayard	002596

References:

MCAWW "Methods for Chemical Analysis of Water and Wastes", EPA-600/4-79-020, March 1983 and subsequent revisions.

SAMPLE SUMMARY

D2C190251

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
EWLPH	001	W422TP-031502	03/15/02	
EWLPJ	002	W439TP-031502	03/15/02	

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: W422TP-031502

General Chemistry

Lot-Sample #...: D2C190251-001 Work Order #...: EWLPH Matrix.....: WATER
Date Sampled...: 03/15/02 Date Received..: 03/19/02

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Total Phenols	0.011 J	0.0050	mg/L	MCAWW 420.1	04/02-04/04/02	2092415

Dilution Factor: 1 Analysis Time..: 13:00

NOTE(S):

RL Reporting Limit

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

CITY OF ST. LOUIS PARK

Client Sample ID: W439TP-031502

General Chemistry

Lot-Sample #...: D2C190251-002 Work Order #...: EWLPJ Matrix.....: WATER
Date Sampled...: 03/15/02 Date Received..: 03/19/02

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Total Phenols	0.027 J	0.0050	mg/L	MCAWW 420.1	04/02-04/04/02	2092415

Dilution Factor: 1 Analysis Time..: 13:00

NOTE(S):

RL Reporting Limit

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

QC DATA ASSOCIATION SUMMARY

D2C190251

Sample Preparation and Analysis Control Numbers

SAMPLE#	MATRIX	ANALYTICAL METHOD	LEACH BATCH #	PREP BATCH #	MS RUN#
001	WATER	MCAWW 420.1		2092415	2092249
002	WATER	MCAWW 420.1		2092415	2092249

METHOD BLANK REPORT

General Chemistry

Client Lot #...: D2C190251 Matrix.....: WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Total Phenols		Work Order #: EW9WA1AA		MB Lot-Sample #:	D2D020000-415	
	0.0042 B	0.0050	mg/L	MCAWW 420.1	04/02-04/04/02	2092415
		Dilution Factor: 1				
		Analysis Time..: 13:00				

NOTE(S):

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

B Estimated result. Result is less than RL.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

General Chemistry

Client Lot #...: D2C190251 Matrix.....: WATER

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Total Phenols		Work Order #: EW9WA1AC	LCS Lot-Sample#: D2D020000-415		
	91	(90 - 110)	MCAWW 420.1	04/02-04/04/02	2092415

Dilution Factor: 1

Analysis Time..: 13:00

NOTE(S):

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

LABORATORY CONTROL SAMPLE DATA REPORT

General Chemistry

Client Lot #...: D2C190251 Matrix.....: WATER

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Total Phenols			Work Order #:	EW9WA1AC	LCS Lot-Sample#:	D2D020000-415	
	0.0500	0.0454	mg/L	91	MCAWW 420.1	04/02-04/04/02	2092415
			Dilution Factor: 1				
			Analysis Time..: 13:00				

NOTE(S):

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

MATRIX SPIKE SAMPLE EVALUATION REPORT

General Chemistry

Client Lot #...: D2C190251 **Matrix.....:** WATER
Date Sampled...: 03/12/02 **Date Received..:** 03/13/02

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Total Phenols		WO#:	EWCKT1AC-MS/EWCKT1AD-MSD			MS Lot-Sample #: D2C130248-001	
	130 N	(90 - 110)			MCAWW 420.1	04/02-04/04/02	2092415
	114 N	(90 - 110)	4.6	(0-16)	MCAWW 420.1	04/02-04/04/02	2092415

Dilution Factor: 1
Analysis Time..: 13:00

NOTE(S):

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

N Spiked analyte recovery is outside stated control limits.

MATRIX SPIKE SAMPLE DATA REPORT

General Chemistry

Client Lot #...: D2C190251 **Matrix.....:** WATER
Date Sampled...: 03/12/02 **Date Received..:** 03/13/02

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Total Phenols			WO#: EWCKT1AC-MS/EWCKT1AD-MSD				MS Lot-Sample #: D2C130248-001		
	0.11	0.0500	0.179 N	mg/L	130		MCAWW 420.1	04/02-04/04/02	2092415
	0.11	0.0500	0.171 N	mg/L	114	4.6	MCAWW 420.1	04/02-04/04/02	2092415

Dilution Factor: 1
Analysis Time..: 13:00

NOTE(S):

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

N Spiked analyte recovery is outside stated control limits.

[redacted]

Chain of Custody Record

2.6E
3/19

STL Denver
4955 Yarrow Street
Arvada, CO 80002

SEVERN TRENT SERVICES

Severn Trent Laboratories, Inc.

STL-4124 (0700) **DEN (0900)**

Client: CITY OF ST. LOUIS PARK Address: UTILITY DIVISION 3752 WOODDALE AVENUE City: ST. LOUIS PARK, MN 55416	Project Manager: SCOTT ANDERSON	Date: 3-18-02	Chain of Custody Number: 017837
	Telephone Number (Area Code)/Fax Number: 924-2557 (952) 924-2520	Lab Number:	Page ____ of ____
	Site Contact: SAME	Lab Contact:	
Project Name and Location (State): SAME	Carrier/Waybill Number: FED EX 800846316025		
Contract/Purchase Order/Quote No.:			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil		Containers & Preservatives: Unpres.	H2SO4	HNOS	HCl	NaOH	ZnAc/NaOH		Analysis (Attach list if more space is needed): Phenols	Special Instructions/ Conditions of Receipt
W 422TP-031502	8-15-02			X					X					1	X	
W 439TP-031502	8-15-02			X					X					1	X	

Possible Hazard Identification: [X] Non-Hazard [ ] Flammable [ ] Skin Irritant [ ] Poison B [ ] Unknown

Sample Disposal: [ ] Return To Client [X] Disposal By Lab [ ] Archive For ____ Months (A fee may be assessed if samples are retained longer than 3 months)

Turn Around Time Required: [ ] 24 Hours [ ] 48 Hours [ ] 7 Days [ ] 14 Days [ ] 21 Days [ ] Other____

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished By: MZAL	3-18-02	1400	1. Received By: [signature]	3/19/02	0845
2. Relinquished By:			2. Received By:		
3. Relinquished By:			3. Received By:		

Comments

DISTRIBUTION: WHITE - Stays with the Sample; CANARY - Returned to Client with Report; PINK - Field Copy

16

C

SEVERN TRENT SERVICES

STL Denver
4955 Yarrow Street
Arvada, CO 80002-4517

Tel: 303 736 0100
Fax: 303 431 7171
www.stl-inc.com

ANALYTICAL REPORT

City of St. Louis Park

Project: Reilly Tar & Chemical Corporation

Lot #: D2C130245

Mr. Scott Anderson

City of St. Louis Park
Utility Division
3752 Wooddale Avenue
St. Louis Park, MN 55416

STL DENVER

Brian Stringer
Project Manager

April 23, 2002

C

Table Of Contents

Standard Deliverables

Report Contents	Total Number of Pages
Standard Deliverables *The **Cover Letter** and the **Report Cover** page are considered integral parts of this Standard Deliverable package. This report is incomplete unless all pages indicated in this Table of Contents are included.*	35

- **Table of Contents**
- **Project Narrative**
- **Executive Summary – Detection Highlights**
- **Methods Summary**
- **Method/Analyst Summary**
- **Sample Summary**
- **Analytical Results**
- **QC Data Association Summary**
- **QC Evaluation and/or Data Reports**
- **Chain-of-Custody**

CASE NARRATIVE

STL Lot Number D2C130245

Introduction

STL Denver received eleven aqueous samples and a set of MS/MSD samples on March 13, 2002 for ppb level, full scan PAH analysis.

The cooler temperatures were 3.4 and 3.8 °C. All containers were received in acceptable condition.

The cooler custody seals were not intact when the coolers were received at STL Denver. The client was contacted and directed that the analyses proceed, noting that the data will be compared with historical results.

Data Quality Assessment

The results included in this report have been reviewed for compliance with STL Denver's Laboratory Quality Manual. The test results shown in this report meet all requirements of NELAC and any exceptions are noted below.

Dilution factors and footnotes have been provided to assist in the interpretation of the results. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at concentrations above the linear calibration curve, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

STL utilizes USEPA approved methods in all analytical work. The samples presented in this report were analyzed for the parameters listed on the analytical methods summary page in accordance with the methods indicated.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Polynuclear Aromatic Hydrocarbons – Method 8270C

The LCS, MS/MSD, and surrogate recovery limits in this analytical report were determined from historical data. A project-specific lower acceptable recovery limit of 30% for all QC samples and surrogates has been requested for analytical work performed under the 2002 Quality Assurance Project Plan (QAPP) for the Reilly Industries, Inc. NPL Site. All recoveries in this report are above the 30% minimum threshold.

Client samples "W420-031202", "W420D-031202", "W421-031202", and "W439-031202" were analyzed undiluted and then utilizing successive dilutions due high concentrations of target compounds. The results that are within the linear calibration range are reported from the undiluted sample, and the results for the target compounds that were above the calibration range are then reported from the appropriate. The reporting limits are elevated according to the dilutions. Additionally, the surrogate recoveries for the diluted analyses were not calculated since the surrogates were diluted below the level of quantification.

The MS/MSD was performed on the client-specified sample "W420-031202" for prep batch 2078311. The recoveries for 2-Methylnaphthalene were below control limits in the MSD, however the MS/MSD average recovery is within control limits. Additionally, the MS/MSD individual recoveries and average recovery for Naphthalene were below control limits. The spiked results for both 2-Methylnaphthalene and Naphthalene were above the calibration range of the instrument. The precision (RPD) was within control limits for all analytes.

The 2-fold dilution for sample W421-031202 was inadvertently spiked with an internal standard that contained the surrogates for this method. As a result, the surrogate recoveries could not be calculated. The target analyte results from the 2-fold dilution closely match the results from the undiluted sample that were above the linear calibration range and no further corrective action was taken.

Data Completeness for Polynuclear Aromatic Hydrocarbons – Method 8270C

The results contained in the report were reviewed relative to data acceptance criteria as specified in the 2002 QAPP. Based on the exceptions noted we achieved 97.6% completeness.

DATA COMPLETENESS CALCULATION

LOT D2C130245

ANALYSIS PAHs by SW846-8270C

QC Parameter	Data Planned	Valid Data Obtained
Method Blanks	31	31
MB Surrogates	3	3
LCS	7	7
LCS Surrogates	3	3
MS*	7	6
MS Surrogates*	3	3
MSD*	7	5
MSD Surrogates*	3	3
MS/MSD RPD*	7	7
FB/FBD hits	62	62
Sample/Dup. RPD	31	31
Sample Surrogates	39	36
Internal STD Area	45	45
TOTAL	**248**	**242**
% Completeness	**97.6%**	

* The MS/MSD data provided for this table was performed on client sample "W420-031202".

Sample Duplicate
RPD
LOT D2C130245

Sample W420-031202 Compound	Result	Duplicate W420D-031202 Compound	Result	RPD	RPD>50%
Acenaphthene	160	Acenaphthene	140	13.3	OK
Acenaphthylene	ND	Acenaphthylene	ND	0	OK
Acridine	2.4	Acridine	2.3	4.3	OK
Anthracene	2.1	Anthracene	2.0	4.9	OK
Benzo(a)anthracene	ND	Benzo(a)anthracene	ND	0	OK
Benzo(b)fluoranthene	ND	Benzo(b)fluoranthene	ND	0	OK
Benzo(k)fluoranthene	ND	Benzo(k)fluoranthene	ND	0	OK
2,3-Benzofuran	47	2,3-Benzofuran	45	4.4	OK
Benzo(ghi)perylene	ND	Benzo(ghi)perylene	ND	0	OK
Benzo(a)pyrene	ND	Benzo(a)pyrene	ND	0	OK
Benzo(e)pyrene	ND	Benzo(e)pyrene	ND	0	OK
Benzo(b)thiophene	150	Benzo(b)thiophene	130	14.3	OK
Biphenyl	26	Biphenyl	24	8.0	OK
Carbazole	99	Carbazole	77	25.0	OK
Chrysene	ND	Chrysene	ND	0	OK
Dibenz(a,h)anthracene	ND	Dibenz(a,h)anthracene	ND	0	OK
Dibenzofuran	50	Dibenzofuran	47	6.2	OK
Dibenzothiophene	5.7	Dibenzothiophene	9.0	44.9	OK
2,3-Dihydroindene	430	2,3-Dihydroindene	320	29.3	OK
Fluoranthene	ND	Fluoranthene	ND	0	OK
Fluorene	50	Fluorene	47	6.2	OK
Indene	48	Indene	46	4.3	OK
Indeno(1,2,3-cd)pyrene	ND	Indeno(1,2,3-cd)pyrene	ND	0	OK
Indole	ND	Indole	ND	0	OK
2-Methylnaphthalene	140	2-Methylnaphthalene	120	15.4	OK
1-Methylnaphthalene	160	1-Methylnaphthalene	150	6.5	OK
Naphthalene	3000	Naphthalene	2600	14.3	OK
Perylene	ND	Perylene	ND	0	OK
Phenanthrene	35	Phenanthrene	33	5.9	OK
Pyrene	ND	Pyrene	ND	0	OK
Quinoline	ND	Quinoline	ND	0	OK

RTD = Relative Percent Difference
ND = Compound not detected in the sample
OK = RPD acceptable
p = RPD is outside of control limits
*NC = RPD not calculated, one positive result and one ND. Considered acceptable because the positive result is less than 4x the RL.

Please note that the data for the sample are from the undiluted or diluted analyses.

EXECUTIVE SUMMARY - Detection Highlights

D2C130245

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
W420-031202 03/12/02 001				
Acenaphthene	160	20	ug/L	SW846 8270C
Acridine	2.4 J	5.0	ug/L	SW846 8270C
Anthracene	2.1 J	5.0	ug/L	SW846 8270C
2,3-Benzofuran	47	5.0	ug/L	SW846 8270C
Benzo(b)thiophene	150	20	ug/L	SW846 8270C
Biphenyl	26	5.0	ug/L	SW846 8270C
Carbazole	99	20	ug/L	SW846 8270C
Dibenzofuran	50	5.0	ug/L	SW846 8270C
Dibenzothiophene	5.7	5.0	ug/L	SW846 8270C
2,3-Dihydroindene	430	250	ug/L	SW846 8270C
Fluorene	50	5.0	ug/L	SW846 8270C
Indene	48	5.0	ug/L	SW846 8270C
2-Methylnaphthalene	140	20	ug/L	SW846 8270C
1-Methylnaphthalene	160	20	ug/L	SW846 8270C
Naphthalene	3000	250	ug/L	SW846 8270C
Phenanthrene	35	5.0	ug/L	SW846 8270C
W420D-031202 03/12/02 002				
Acenaphthene	140	50	ug/L	SW846 8270C
Acridine	2.3 J	5.0	ug/L	SW846 8270C
Anthracene	2.0 J	5.0	ug/L	SW846 8270C
2,3-Benzofuran	45	5.0	ug/L	SW846 8270C
Benzo(b)thiophene	130	50	ug/L	SW846 8270C
Biphenyl	24	5.0	ug/L	SW846 8270C
Carbazole	77	5.0	ug/L	SW846 8270C
Dibenzofuran	47	5.0	ug/L	SW846 8270C
Dibenzothiophene	9.0	5.0	ug/L	SW846 8270C
2,3-Dihydroindene	380	200	ug/L	SW846 8270C
2,3-Dihydroindene	320	50	ug/L	SW846 8270C
Fluorene	47	5.0	ug/L	SW846 8270C
Indene	46	5.0	ug/L	SW846 8270C
2-Methylnaphthalene	120	50	ug/L	SW846 8270C
1-Methylnaphthalene	150	50	ug/L	SW846 8270C
Naphthalene	2600	200	ug/L	SW846 8270C
Phenanthrene	33	5.0	ug/L	SW846 8270C
W421-031202 03/12/02 005				
Acenaphthene	53	5.0	ug/L	SW846 8270C
Acridine	2.9 J	5.0	ug/L	SW846 8270C
Anthracene	3.4 J	5.0	ug/L	SW846 8270C
Benzo(a)anthracene	3.1 J	5.0	ug/L	SW846 8270C

(Continued on next page)

EXECUTIVE SUMMARY - Detection Highlights

D2C130245

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
W421-031202 03/12/02 005				
Benzo(b)fluoranthene	2.8 J	5.0	ug/L	SW846 8270C
Benzo(e)pyrene	1.4 J	5.0	ug/L	SW846 8270C
Benzo(b)thiophene	32	5.0	ug/L	SW846 8270C
Biphenyl	6.3	5.0	ug/L	SW846 8270C
Carbazole	33	5.0	ug/L	SW846 8270C
Chrysene	2.4 J	5.0	ug/L	SW846 8270C
Dibenzofuran	15	5.0	ug/L	SW846 8270C
Dibenzothiophene	3.9 J	5.0	ug/L	SW846 8270C
2,3-Dihydroindene	120	10	ug/L	SW846 8270C
Fluoranthene	14	5.0	ug/L	SW846 8270C
Fluorene	22	5.0	ug/L	SW846 8270C
Indene	33	5.0	ug/L	SW846 8270C
2-Methylnaphthalene	12	5.0	ug/L	SW846 8270C
1-Methylnaphthalene	50	5.0	ug/L	SW846 8270C
Naphthalene	120	10	ug/L	SW846 8270C
Perylene	0.48 J	5.0	ug/L	SW846 8270C
Phenanthrene	25	5.0	ug/L	SW846 8270C
Pyrene	9.5	5.0	ug/L	SW846 8270C
W422-031202 03/12/02 006				
Acenaphthene	14	5.0	ug/L	SW846 8270C
Dibenzothiophene	0.54 J	5.0	ug/L	SW846 8270C
W439-031202 03/12/02 007				
Acenaphthene	64	5.0	ug/L	SW846 8270C
2,3-Benzofuran	4.3 J	5.0	ug/L	SW846 8270C
Benzo(b)thiophene	46	5.0	ug/L	SW846 8270C
Biphenyl	7.8	5.0	ug/L	SW846 8270C
Carbazole	17	5.0	ug/L	SW846 8270C
Dibenzofuran	13	5.0	ug/L	SW846 8270C
Dibenzothiophene	3.0 J	5.0	ug/L	SW846 8270C
2,3-Dihydroindene	210	50	ug/L	SW846 8270C
Fluorene	10	5.0	ug/L	SW846 8270C
Indene	72	5.0	ug/L	SW846 8270C
2-Methylnaphthalene	20	5.0	ug/L	SW846 8270C
1-Methylnaphthalene	68	5.0	ug/L	SW846 8270C
Naphthalene	660	50	ug/L	SW846 8270C
Phenanthrene	9.4	5.0	ug/L	SW846 8270C

(Continued on next page)

EXECUTIVE SUMMARY - Detection Highlights

D2C130245

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
W434-031202 03/12/02 008				
Acenaphthene	1.5 J	5.0	ug/L	SW846 8270C
Benzo(b)thiophene	0.48 J	5.0	ug/L	SW846 8270C
2,3-Dihydroindene	2.7 J	5.0	ug/L	SW846 8270C
W410-031202 03/12/02 009				
Benzo(b)thiophene	0.49 J	5.0	ug/L	SW846 8270C
2,3-Dihydroindene	1.6 J	5.0	ug/L	SW846 8270C
W23-031202 03/12/02 010				
Acenaphthene	5.4	5.0	ug/L	SW846 8270C
Dibenzofuran	1.6 J	5.0	ug/L	SW846 8270C
2,3-Dihydroindene	1.5 J	5.0	ug/L	SW846 8270C
Fluoranthene	2.0 J	5.0	ug/L	SW846 8270C
Fluorene	3.6 J	5.0	ug/L	SW846 8270C
1-Methylnaphthalene	2.5 J	5.0	ug/L	SW846 8270C
Naphthalene	8.1	5.0	ug/L	SW846 8270C
Phenanthrene	2.0 J	5.0	ug/L	SW846 8270C
Pyrene	2.0 J	5.0	ug/L	SW846 8270C

METHODS SUMMARY

D2C130245

PARAMETER	ANALYTICAL METHOD	PREPARATION METHOD
Semivolatile Organic Compounds by GC/MS	SW846 8270C	SW846 3520C

References:

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

METHOD / ANALYST SUMMARY

D2C130245

ANALYTICAL METHOD	ANALYST	ANALYST ID
SW846 8270C	Tim O'Donnell	000443

References:

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

SAMPLE SUMMARY

D2C130245

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
EWCJM	001	W420-031202	03/12/02	
EWCJR	002	W420D-031202	03/12/02	
EWCJV	003	W420FB-031202	03/12/02	
EWCJW	004	W420FBD-031202	03/12/02	
EWCJ0	005	W421-031202	03/12/02	
EWCJ1	006	W422-031202	03/12/02	
EWCJ2	007	W439-031202	03/12/02	
EWCJ3	008	W434-031202	03/12/02	
EWCJ4	009	W410-031202	03/12/02	
EWCJ5	010	W23-031202	03/12/02	
EWCJ6	011	GTF-ACFE-031202	03/12/02	

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: W420-031202

GC/MS Semivolatiles

Lot-Sample #...: D2C130245-001 Work Order #...: EWCJM1AA Matrix.....: WATER
Date Sampled...: 03/12/02 Date Received..: 03/13/02
Prep Date.....: 03/19/02 Analysis Date..: 04/07/02
Prep Batch #...: 2078311 Analysis Time..: 20:02
Dilution Factor: 1

Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	ND	5.0	ug/L
Acridine	**2.4 J**	**5.0**	**ug/L**
Anthracene	**2.1 J**	**5.0**	**ug/L**
Benzo(a)anthracene	ND	5.0	ug/L
Benzo(b)fluoranthene	ND	5.0	ug/L
Benzo(k)fluoranthene	ND	5.0	ug/L
2,3-Benzofuran	**47**	**5.0**	**ug/L**
Benzo(ghi)perylene	ND	5.0	ug/L
Benzo(a)pyrene	ND	5.0	ug/L
Benzo(e)pyrene	ND	5.0	ug/L
Biphenyl	**26**	**5.0**	**ug/L**
Chrysene	ND	5.0	ug/L
Dibenzo(a,h)anthracene	ND	5.0	ug/L
Dibenzofuran	**50**	**5.0**	**ug/L**
Dibenzothiophene	**5.7**	**5.0**	**ug/L**
Fluoranthene	ND	5.0	ug/L
Fluorene	**50**	**5.0**	**ug/L**
Indene	**48**	**5.0**	**ug/L**
Indeno(1,2,3-cd)pyrene	ND	5.0	ug/L
Indole	ND	5.0	ug/L
Perylene	ND	5.0	ug/L
Phenanthrene	**35**	**5.0**	**ug/L**
Pyrene	ND	5.0	ug/L
Quinoline	ND	5.0	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	47	(25 - 160)
Fluorene d-10	66	(36 - 127)
Naphthalene-d8	76	(37 - 107)

NOTE(S):

J Estimated result. Result is less than RL.

CITY OF ST. LOUIS PARK

Client Sample ID: W420-031202

GC/MS Semivolatiles

Lot-Sample #...:	D2C130245-001	Work Order #...:	EWCJM2AA	Matrix.....:	WATER
Date Sampled...:	03/12/02	Date Received..:	03/13/02		
Prep Date.....:	03/19/02	Analysis Date..:	04/08/02		
Prep Batch #...:	2078311	Analysis Time..:	04:42		
Dilution Factor:	4				
		Method.....:	SW846 8270C		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	**160**	**20**	**ug/L**
Benzo(ghi)perylene	ND	20	ug/L
Benzo(a)pyrene	ND	20	ug/L
Benzo(b)thiophene	**150**	**20**	**ug/L**
Carbazole	**99**	**20**	**ug/L**
Fluoranthene	ND	20	ug/L
2-Methylnaphthalene	**140**	**20**	**ug/L**
1-Methylnaphthalene	**160**	**20**	**ug/L**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	51	(25 - 160)
Fluorene d-10	75	(36 - 127)
Naphthalene-d8	91	(37 - 107)

CITY OF ST. LOUIS PARK

Client Sample ID: W420-031202

GC/MS Semivolatiles

Lot-Sample #...: D2C130245-001 Work Order #...: EWCJM3AA Matrix.....: WATER
Date Sampled...: 03/12/02 Date Received..: 03/13/02
Prep Date.....: 03/19/02 Analysis Date..: 04/08/02
Prep Batch #...: 2078311 Analysis Time..: 04:08
Dilution Factor: 50

Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
2,3-Dihydroindene	**430**	**250**	**ug/L**
Naphthalene	**3000**	**250**	**ug/L**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	DIL,NC	(25 - 160)
Fluorene d-10	DIL,NC	(36 - 127)
Naphthalene-d8	DIL,NC	(37 - 107)

NOTE(S):

DIL The concentration is estimated or not reported due to dilution or the presence of interfering analytes.

NC The recovery and/or RPD were not calculated.

CITY OF ST. LOUIS PARK

Client Sample ID: W420D-031202

GC/MS Semivolatiles

Lot-Sample #...: D2C130245-002 Work Order #...: EWCJR1AA Matrix.....: WATER
Date Sampled...: 03/12/02 Date Received..: 03/13/02
Prep Date.....: 03/19/02 Analysis Date..: 04/07/02
Prep Batch #...: 2078311 Analysis Time..: 21:46
Dilution Factor: 1

Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	ND	5.0	ug/L
Acridine	**2.3 J**	**5.0**	**ug/L**
Anthracene	**2.0 J**	**5.0**	**ug/L**
Benzo(a)anthracene	ND	5.0	ug/L
Benzo(b)fluoranthene	ND	5.0	ug/L
Benzo(k)fluoranthene	ND	5.0	ug/L
2,3-Benzofuran	**45**	**5.0**	**ug/L**
Benzo(ghi)perylene	ND	5.0	ug/L
Benzo(a)pyrene	ND	5.0	ug/L
Benzo(e)pyrene	ND	5.0	ug/L
Biphenyl	**24**	**5.0**	**ug/L**
Carbazole	**77**	**5.0**	**ug/L**
Chrysene	ND	5.0	ug/L
Dibenzo(a,h)anthracene	ND	5.0	ug/L
Dibenzofuran	**47**	**5.0**	**ug/L**
Dibenzothiophene	**9.0**	**5.0**	**ug/L**
Fluoranthene	ND	5.0	ug/L
Fluorene	**47**	**5.0**	**ug/L**
Indene	**46**	**5.0**	**ug/L**
Indeno(1,2,3-cd)pyrene	ND	5.0	ug/L
Indole	ND	5.0	ug/L
Perylene	ND	5.0	ug/L
Phenanthrene	**33**	**5.0**	**ug/L**
Pyrene	ND	5.0	ug/L
Quinoline	ND	5.0	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	58	(25 - 160)
Fluorene d-10	64	(36 - 127)
Naphthalene-d8	72	(37 - 107)

NOTE(S):

J Estimated result. Result is less than RL.

CITY OF ST. LOUIS PARK

Client Sample ID: W420D-031202

GC/MS Semivolatiles

Lot-Sample #...: D2C130245-002
Date Sampled...: 03/12/02
Prep Date.....: 03/19/02
Prep Batch #...: 2078311
Dilution Factor: 10

Work Order #...: EWCJR3AA
Date Received..: 03/13/02
Analysis Date..: 04/08/02
Analysis Time..: 16:18

Matrix.....: WATER

Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	**140**	**50**	**ug/L**
Benzo(b)thiophene	**130**	**50**	**ug/L**
2,3-Dihydroindene	**320**	**50**	**ug/L**
2-Methylnaphthalene	**120**	**50**	**ug/L**
1-Methylnaphthalene	**150**	**50**	**ug/L**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	DIL,NC	(25 - 160)
Fluorene d-10	DIL,NC	(36 - 127)
Naphthalene-d8	ND DIL	(37 - 107)

NOTE(S):

DIL The concentration is estimated or not reported due to dilution or the presence of interfering analytes.

NC The recovery and/or RPD were not calculated.

CITY OF ST. LOUIS PARK

Client Sample ID: W420D-031202

GC/MS Semivolatiles

Lot-Sample #...:	D2C130245-002	Work Order #...:	EWCJR2AA	Matrix.....:	WATER
Date Sampled...:	03/12/02	Date Received..:	03/13/02		
Prep Date.....:	03/19/02	Analysis Date..:	04/09/02		
Prep Batch #...:	2078311	Analysis Time..:	11:25		
Dilution Factor:	40				
		Method.....:	SW846 8270C		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
2,3-Dihydroindene	380	200	ug/L
Naphthalene	2600	200	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	DIL,NC	(25 - 160)
Fluorene d-10	DIL,NC	(36 - 127)
Naphthalene-d8	DIL,NC	(37 - 107)

NOTE(S):

DIL The concentration is estimated or not reported due to dilution or the presence of interfering analytes.

NC The recovery and/or RPD were not calculated.

CITY OF ST. LOUIS PARK

Client Sample ID: W420FB-031202

GC/MS Semivolatiles

Lot-Sample #...: D2C130245-003 **Work Order #...:** EWCJV1AA **Matrix.....:** WATER
Date Sampled...: 03/12/02 **Date Received..:** 03/13/02
Prep Date.....: 03/19/02 **Analysis Date..:** 04/07/02
Prep Batch #...: 2078311 **Analysis Time..:** 22:21
Dilution Factor: 1

Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	5.0	ug/L
Acenaphthylene	ND	5.0	ug/L
Acridine	ND	5.0	ug/L
Anthracene	ND	5.0	ug/L
Benzo(a)anthracene	ND	5.0	ug/L
Benzo(b)fluoranthene	ND	5.0	ug/L
Benzo(k)fluoranthene	ND	5.0	ug/L
2,3-Benzofuran	ND	5.0	ug/L
Benzo(ghi)perylene	ND	5.0	ug/L
Benzo(a)pyrene	ND	5.0	ug/L
Benzo(e)pyrene	ND	5.0	ug/L
Benzo(b)thiophene	ND	5.0	ug/L
Biphenyl	ND	5.0	ug/L
Carbazole	ND	5.0	ug/L
Chrysene	ND	5.0	ug/L
Dibenzo(a,h)anthracene	ND	5.0	ug/L
Dibenzofuran	ND	5.0	ug/L
Dibenzothiophene	ND	5.0	ug/L
2,3-Dihydroindene	ND	5.0	ug/L
Fluoranthene	ND	5.0	ug/L
Fluorene	ND	5.0	ug/L
Indene	ND	5.0	ug/L
Indeno(1,2,3-cd)pyrene	ND	5.0	ug/L
Indole	ND	5.0	ug/L
2-Methylnaphthalene	ND	5.0	ug/L
1-Methylnaphthalene	ND	5.0	ug/L
Naphthalene	ND	5.0	ug/L
Perylene	ND	5.0	ug/L
Phenanthrene	ND	5.0	ug/L
Pyrene	ND	5.0	ug/L
Quinoline	ND	5.0	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	98	(25 - 160)
Fluorene d-10	69	(36 - 127)
Naphthalene-d8	85	(37 - 107)

CITY OF ST. LOUIS PARK

Client Sample ID: W420FBD-031202

GC/MS Semivolatiles

Lot-Sample #...: D2C130245-004 Work Order #...: EWCJW1AA Matrix.....: WATER
Date Sampled...: 03/12/02 Date Received..: 03/13/02
Prep Date.....: 03/19/02 Analysis Date..: 04/07/02
Prep Batch #...: 2078311 Analysis Time..: 22:56
Dilution Factor: 1

Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	5.0	ug/L
Acenaphthylene	ND	5.0	ug/L
Acridine	ND	5.0	ug/L
Anthracene	ND	5.0	ug/L
Benzo(a)anthracene	ND	5.0	ug/L
Benzo(b)fluoranthene	ND	5.0	ug/L
Benzo(k)fluoranthene	ND	5.0	ug/L
2,3-Benzofuran	ND	5.0	ug/L
Benzo(ghi)perylene	ND	5.0	ug/L
Benzo(a)pyrene	ND	5.0	ug/L
Benzo(e)pyrene	ND	5.0	ug/L
Benzo(b)thiophene	ND	5.0	ug/L
[illegible]phenyl	ND	5.0	ug/L
Carbazole	ND	5.0	ug/L
Chrysene	ND	5.0	ug/L
Dibenzo(a,h)anthracene	ND	5.0	ug/L
Dibenzofuran	ND	5.0	ug/L
Dibenzothiophene	ND	5.0	ug/L
2,3-Dihydroindene	ND	5.0	ug/L
Fluoranthene	ND	5.0	ug/L
Fluorene	ND	5.0	ug/L
Indene	ND	5.0	ug/L
Indeno(1,2,3-cd)pyrene	ND	5.0	ug/L
Indole	ND	5.0	ug/L
2-Methylnaphthalene	ND	5.0	ug/L
1-Methylnaphthalene	ND	5.0	ug/L
Naphthalene	ND	5.0	ug/L
Perylene	ND	5.0	ug/L
Phenanthrene	ND	5.0	ug/L
Pyrene	ND	5.0	ug/L
Quinoline	ND	5.0	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	99	(25 - 160)
Fluorene d-10	69	(36 - 127)
Naphthalene-d8	86	(37 - 107)

CITY OF ST. LOUIS PARK

Client Sample ID: W421-031202

GC/MS Semivolatiles

Lot-Sample #...: D2C130245-005 Work Order #...: EWCJ01AA Matrix.....: WATER
Date Sampled...: 03/12/02 Date Received..: 03/13/02
Prep Date.....: 03/19/02 Analysis Date..: 04/07/02
Prep Batch #...: 2078311 Analysis Time..: 23:32
Dilution Factor: 1

Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	**53**	**5.0**	**ug/L**
Acenaphthylene	ND	5.0	ug/L
Acridine	**2.9 J**	**5.0**	**ug/L**
Anthracene	**3.4 J**	**5.0**	**ug/L**
Benzo(a)anthracene	**3.1 J**	**5.0**	**ug/L**
Benzo(b)fluoranthene	**2.8 J**	**5.0**	**ug/L**
Benzo(k)fluoranthene	ND	5.0	ug/L
2,3-Benzofuran	ND	5.0	ug/L
Benzo(ghi)perylene	ND	5.0	ug/L
Benzo(a)pyrene	ND	5.0	ug/L
Benzo(e)pyrene	**1.4 J**	**5.0**	**ug/L**
Benzo(b)thiophene	**32**	**5.0**	**ug/L**
Biphenyl	**6.3**	**5.0**	**ug/L**
Carbazole	**33**	**5.0**	**ug/L**
Chrysene	**2.4 J**	**5.0**	**ug/L**
Dibenzo(a,h)anthracene	ND	5.0	ug/L
Dibenzofuran	**15**	**5.0**	**ug/L**
Dibenzothiophene	**3.9 J**	**5.0**	**ug/L**
Fluoranthene	**14**	**5.0**	**ug/L**
Fluorene	**22**	**5.0**	**ug/L**
Indene	**33**	**5.0**	**ug/L**
Indeno(1,2,3-cd)pyrene	ND	5.0	ug/L
Indole	ND	5.0	ug/L
2-Methylnaphthalene	**12**	**5.0**	**ug/L**
1-Methylnaphthalene	**50**	**5.0**	**ug/L**
Perylene	**0.48 J**	**5.0**	**ug/L**
Phenanthrene	**25**	**5.0**	**ug/L**
Pyrene	**9.5**	**5.0**	**ug/L**
Quinoline	ND	5.0	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	61	(25 - 160)
Fluorene d-10	65	(36 - 127)
Naphthalene-d8	76	(37 - 107)

NOTE(S):

J Estimated result. Result is less than RL.

CITY OF ST. LOUIS PARK

Client Sample ID: W421-031202

GC/MS Semivolatiles

Lot-Sample #...: D2C130245-005 Work Order #...: EWCJ02AA Matrix.....: WATER
Date Sampled...: 03/12/02 Date Received..: 03/13/02
Prep Date.....: 03/19/02 Analysis Date..: 04/08/02
Prep Batch #...: 2078311 Analysis Time..: 16:53
Dilution Factor: 2

Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
2,3-Dihydroindene	120	10	ug/L
Naphthalene	120	10	ug/L

CITY OF ST. LOUIS PARK

Client Sample ID: W422-031202

GC/MS Semivolatiles

Lot-Sample #...: D2C130245-006 **Work Order #...:** EWCJ11AA **Matrix.....:** WATER
Date Sampled...: 03/12/02 **Date Received..:** 03/13/02
Prep Date.....: 03/19/02 **Analysis Date..:** 04/08/02
Prep Batch #...: 2078311 **Analysis Time..:** 00:07
Dilution Factor: 1

Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	**14**	**5.0**	**ug/L**
Acenaphthylene	ND	5.0	ug/L
Acridine	ND	5.0	ug/L
Anthracene	ND	5.0	ug/L
Benzo(a)anthracene	ND	5.0	ug/L
Benzo(b)fluoranthene	ND	5.0	ug/L
Benzo(k)fluoranthene	ND	5.0	ug/L
2,3-Benzofuran	ND	5.0	ug/L
Benzo(ghi)perylene	ND	5.0	ug/L
Benzo(a)pyrene	ND	5.0	ug/L
Benzo(e)pyrene	ND	5.0	ug/L
Benzo(b)thiophene	ND	5.0	ug/L
Biphenyl	ND	5.0	ug/L
Carbazole	ND	5.0	ug/L
Chrysene	ND	5.0	ug/L
Dibenzo(a,h)anthracene	ND	5.0	ug/L
Dibenzofuran	ND	5.0	ug/L
Dibenzothiophene	**0.54 J**	**5.0**	**ug/L**
2,3-Dihydroindene	ND	5.0	ug/L
Fluoranthene	ND	5.0	ug/L
Fluorene	ND	5.0	ug/L
Indene	ND	5.0	ug/L
Indeno(1,2,3-cd)pyrene	ND	5.0	ug/L
Indole	ND	5.0	ug/L
2-Methylnaphthalene	ND	5.0	ug/L
1-Methylnaphthalene	ND	5.0	ug/L
Naphthalene	ND	5.0	ug/L
Perylene	ND	5.0	ug/L
Phenanthrene	ND	5.0	ug/L
Pyrene	ND	5.0	ug/L
Quinoline	ND	5.0	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	57	(25 - 160)
Fluorene d-10	64	(36 - 127)
Naphthalene-d8	79	(37 - 107)

NOTE(S):

J Estimated result. Result is less than RL.

CITY OF ST. LOUIS PARK

Client Sample ID: W439-031202

GC/MS Semivolatiles

Lot-Sample #...: D2C130245-007 Work Order #...: EWCJ21AA Matrix.....: WATER
Date Sampled...: 03/12/02 Date Received..: 03/13/02
Prep Date.....: 03/19/02 Analysis Date..: 04/08/02
Prep Batch #...: 2078311 Analysis Time..: 00:42
Dilution Factor: 1

Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	**64**	**5.0**	**ug/L**
Acenaphthylene	ND	5.0	ug/L
Acridine	ND	5.0	ug/L
Anthracene	ND	5.0	ug/L
Benzo(a)anthracene	ND	5.0	ug/L
Benzo(b)fluoranthene	ND	5.0	ug/L
Benzo(k)fluoranthene	ND	5.0	ug/L
2,3-Benzofuran	**4.3 J**	**5.0**	**ug/L**
Benzo(ghi)perylene	ND	5.0	ug/L
Benzo(a)pyrene	ND	5.0	ug/L
Benzo(e)pyrene	ND	5.0	ug/L
Benzo(b)thiophene	**46**	**5.0**	**ug/L**
Biphenyl	**7.8**	**5.0**	**ug/L**
Carbazole	**17**	**5.0**	**ug/L**
Chrysene	ND	5.0	ug/L
Dibenzo(a,h)anthracene	ND	5.0	ug/L
Dibenzofuran	**13**	**5.0**	**ug/L**
Dibenzothiophene	**3.0 J**	**5.0**	**ug/L**
Fluoranthene	ND	5.0	ug/L
Fluorene	**10**	**5.0**	**ug/L**
Indene	**72**	**5.0**	**ug/L**
Indeno(1,2,3-cd)pyrene	ND	5.0	ug/L
Indole	ND	5.0	ug/L
2-Methylnaphthalene	**20**	**5.0**	**ug/L**
1-Methylnaphthalene	**68**	**5.0**	**ug/L**
Perylene	ND	5.0	ug/L
Phenanthrene	**9.4**	**5.0**	**ug/L**
Pyrene	ND	5.0	ug/L
Quinoline	ND	5.0	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	71	(25 - 160)
Fluorene d-10	65	(36 - 127)
Naphthalene-d8	80	(37 - 107)

NOTE(S):

J Estimated result. Result is less than RL.

CITY OF ST. LOUIS PARK

Client Sample ID: W439-031202

GC/MS Semivolatiles

Lot-Sample #...: D2C130245-007 Work Order #...: EWCJ22AA Matrix.....: WATER
Date Sampled...: 03/12/02 Date Received..: 03/13/02
Prep Date.....: 03/19/02 Analysis Date..: 04/09/02
Prep Batch #...: 2078311 Analysis Time..: 12:00
Dilution Factor: 10

Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
2,3-Dihydroindene	**210**	**50**	**ug/L**
Naphthalene	**660**	**50**	**ug/L**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	DIL,NC	(25 - 160)
Fluorene d-10	DIL,NC	(36 - 127)
Naphthalene-d8	DIL,NC	(37 - 107)

NOTE(S):

DIL The concentration is estimated or not reported due to dilution or the presence of interfering analytes.

NC The recovery and/or RPD were not calculated.

CITY OF ST. LOUIS PARK

Client Sample ID: W434-031202

GC/MS Semivolatiles

Lot-Sample #...:	D2C130245-008	**Work Order #...:**	EWCJ31AA	**Matrix.....:**	WATER
Date Sampled...:	03/12/02	**Date Received..:**	03/13/02		
Prep Date.....:	03/19/02	**Analysis Date..:**	04/08/02		
Prep Batch #...:	2078311	**Analysis Time..:**	01:16		
Dilution Factor:	1				
		Method.....:	SW846 8270C		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	**1.5 J**	**5.0**	**ug/L**
Acenaphthylene	ND	5.0	ug/L
Acridine	ND	5.0	ug/L
Anthracene	ND	5.0	ug/L
Benzo(a)anthracene	ND	5.0	ug/L
Benzo(b)fluoranthene	ND	5.0	ug/L
Benzo(k)fluoranthene	ND	5.0	ug/L
2,3-Benzofuran	ND	5.0	ug/L
Benzo(ghi)perylene	ND	5.0	ug/L
Benzo(a)pyrene	ND	5.0	ug/L
Benzo(e)pyrene	ND	5.0	ug/L
Benzo(b)thiophene	**0.48 J**	**5.0**	**ug/L**
Biphenyl	ND	5.0	ug/L
Carbazole	ND	5.0	ug/L
Chrysene	ND	5.0	ug/L
Dibenzo(a,h)anthracene	ND	5.0	ug/L
Dibenzofuran	ND	5.0	ug/L
Dibenzothiophene	ND	5.0	ug/L
2,3-Dihydroindene	**2.7 J**	**5.0**	**ug/L**
Fluoranthene	ND	5.0	ug/L
Fluorene	ND	5.0	ug/L
Indene	ND	5.0	ug/L
Indeno(1,2,3-cd)pyrene	ND	5.0	ug/L
Indole	ND	5.0	ug/L
2-Methylnaphthalene	ND	5.0	ug/L
1-Methylnaphthalene	ND	5.0	ug/L
Naphthalene	ND	5.0	ug/L
Perylene	ND	5.0	ug/L
Phenanthrene	ND	5.0	ug/L
Pyrene	ND	5.0	ug/L
Quinoline	ND	5.0	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	62	(25 - 160)
Fluorene d-10	61	(36 - 127)
Naphthalene-d8	73	(37 - 107)

NOTE(S):

J Estimated result. Result is less than RL.

CITY OF ST. LOUIS PARK

Client Sample ID: W410-031202

GC/MS Semivolatiles

Lot-Sample #...:	D2C130245-009	**Work Order #...:**	EWCJ41AA	**Matrix.....:**	WATER
Date Sampled...:	03/12/02	**Date Received..:**	03/13/02		
Prep Date.....:	03/19/02	**Analysis Date..:**	04/08/02		
Prep Batch #...:	2078311	**Analysis Time..:**	01:51		
Dilution Factor:	1				
		Method.....:	SW846 8270C		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	5.0	ug/L
Acenaphthylene	ND	5.0	ug/L
Acridine	ND	5.0	ug/L
Anthracene	ND	5.0	ug/L
Benzo(a)anthracene	ND	5.0	ug/L
Benzo(b)fluoranthene	ND	5.0	ug/L
Benzo(k)fluoranthene	ND	5.0	ug/L
2,3-Benzofuran	ND	5.0	ug/L
Benzo(ghi)perylene	ND	5.0	ug/L
Benzo(a)pyrene	ND	5.0	ug/L
Benzo(e)pyrene	ND	5.0	ug/L
Benzo(b)thiophene	**0.49 J**	**5.0**	**ug/L**
Biphenyl	ND	5.0	ug/L
Carbazole	ND	5.0	ug/L
Chrysene	ND	5.0	ug/L
Dibenzo(a,h)anthracene	ND	5.0	ug/L
Dibenzofuran	ND	5.0	ug/L
Dibenzothiophene	ND	5.0	ug/L
2,3-Dihydroindene	**1.6 J**	**5.0**	**ug/L**
Fluoranthene	ND	5.0	ug/L
Fluorene	ND	5.0	ug/L
Indene	ND	5.0	ug/L
Indeno(1,2,3-cd)pyrene	ND	5.0	ug/L
Indole	ND	5.0	ug/L
2-Methylnaphthalene	ND	5.0	ug/L
1-Methylnaphthalene	ND	5.0	ug/L
Naphthalene	ND	5.0	ug/L
Perylene	ND	5.0	ug/L
Phenanthrene	ND	5.0	ug/L
Pyrene	ND	5.0	ug/L
Quinoline	ND	5.0	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	80	(25 - 160)
Fluorene d-10	66	(36 - 127)
Naphthalene-d8	83	(37 - 107)

NOTE(S):

J Estimated result. Result is less than RL.

CITY OF ST. LOUIS PARK

Client Sample ID: W23-031202

GC/MS Semivolatiles

Lot-Sample #...: D2C130245-010 Work Order #...: EWCJ51AA Matrix.....: WATER
Date Sampled...: 03/12/02 Date Received..: 03/13/02
Prep Date.....: 03/19/02 Analysis Date..: 04/08/02
Prep Batch #...: 2078311 Analysis Time..: 02:25
Dilution Factor: 1

Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	**5.4**	**5.0**	**ug/L**
Acenaphthylene	ND	5.0	ug/L
Acridine	ND	5.0	ug/L
Anthracene	ND	5.0	ug/L
Benzo(a)anthracene	ND	5.0	ug/L
Benzo(b)fluoranthene	ND	5.0	ug/L
Benzo(k)fluoranthene	ND	5.0	ug/L
2,3-Benzofuran	ND	5.0	ug/L
Benzo(ghi)perylene	ND	5.0	ug/L
Benzo(a)pyrene	ND	5.0	ug/L
Benzo(e)pyrene	ND	5.0	ug/L
Benzo(b)thiophene	ND	5.0	ug/L
Biphenyl	ND	5.0	ug/L
Carbazole	ND	5.0	ug/L
Chrysene	ND	5.0	ug/L
Dibenzo(a,h)anthracene	ND	5.0	ug/L
Dibenzofuran	**1.6 J**	**5.0**	**ug/L**
Dibenzothiophene	ND	5.0	ug/L
2,3-Dihydroindene	**1.5 J**	**5.0**	**ug/L**
Fluoranthene	**2.0 J**	**5.0**	**ug/L**
Fluorene	**3.6 J**	**5.0**	**ug/L**
Indene	ND	5.0	ug/L
Indeno(1,2,3-cd)pyrene	ND	5.0	ug/L
Indole	ND	5.0	ug/L
2-Methylnaphthalene	ND	5.0	ug/L
1-Methylnaphthalene	**2.5 J**	**5.0**	**ug/L**
Naphthalene	**8.1**	**5.0**	**ug/L**
Perylene	ND	5.0	ug/L
Phenanthrene	**2.0 J**	**5.0**	**ug/L**
Pyrene	**2.0 J**	**5.0**	**ug/L**
Quinoline	ND	5.0	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	92	(25 - 160)
Fluorene d-10	67	(36 - 127)
Naphthalene-d8	81	(37 - 107)

NOTE(S):

J Estimated result. Result is less than RL.

CITY OF ST. LOUIS PARK

Client Sample ID: GTF-ACFE-031202

GC/MS Semivolatiles

Lot-Sample #...: D2C130245-011 Work Order #...: EWCJ61AA Matrix.....: WATER
Date Sampled...: 03/12/02 Date Received..: 03/13/02
Prep Date.....: 03/19/02 Analysis Date..: 04/08/02
Prep Batch #...: 2078311 Analysis Time..: 03:00
Dilution Factor: 1

Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	5.0	ug/L
Acenaphthylene	ND	5.0	ug/L
Acridine	ND	5.0	ug/L
Anthracene	ND	5.0	ug/L
Benzo(a)anthracene	ND	5.0	ug/L
Benzo(b)fluoranthene	ND	5.0	ug/L
Benzo(k)fluoranthene	ND	5.0	ug/L
2,3-Benzofuran	ND	5.0	ug/L
Benzo(ghi)perylene	ND	5.0	ug/L
Benzo(a)pyrene	ND	5.0	ug/L
Benzo(e)pyrene	ND	5.0	ug/L
Benzo(b)thiophene	ND	5.0	ug/L
Biphenyl	ND	5.0	ug/L
Carbazole	ND	5.0	ug/L
Chrysene	ND	5.0	ug/L
Dibenzo(a,h)anthracene	ND	5.0	ug/L
Dibenzofuran	ND	5.0	ug/L
Dibenzothiophene	ND	5.0	ug/L
2,3-Dihydroindene	ND	5.0	ug/L
Fluoranthene	ND	5.0	ug/L
Fluorene	ND	5.0	ug/L
Indene	ND	5.0	ug/L
Indeno(1,2,3-cd)pyrene	ND	5.0	ug/L
Indole	ND	5.0	ug/L
2-Methylnaphthalene	ND	5.0	ug/L
1-Methylnaphthalene	ND	5.0	ug/L
Naphthalene	ND	5.0	ug/L
Perylene	ND	5.0	ug/L
Phenanthrene	ND	5.0	ug/L
Pyrene	ND	5.0	ug/L
Quinoline	ND	5.0	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	66	(25 - 160)
Fluorene d-10	67	(36 - 127)
Naphthalene-d8	84	(37 - 107)

QC DATA ASSOCIATION SUMMARY

D2C130245

Sample Preparation and Analysis Control Numbers

SAMPLE#	MATRIX	ANALYTICAL METHOD	LEACH BATCH #	PREP BATCH #	MS RUN#
001	WATER	SW846 8270C		2078311	2078161
002	WATER	SW846 8270C		2078311	2078161
003	WATER	SW846 8270C		2078311	2078161
004	WATER	SW846 8270C		2078311	2078161
005	WATER	SW846 8270C		2078311	2078161
006	WATER	SW846 8270C		2078311	2078161
007	WATER	SW846 8270C		2078311	2078161
008	WATER	SW846 8270C		2078311	2078161
009	WATER	SW846 8270C		2078311	2078161
010	WATER	SW846 8270C		2078311	2078161
011	WATER	SW846 8270C		2078311	2078161

METHOD BLANK REPORT

GC/MS Semivolatiles

Client Lot #...: D2C130245 Work Order #...: EWK2D1AA Matrix.....: WATER
MB Lot-Sample #: D2C190000-311

Prep Date.....: 03/19/02 Analysis Time..: 03:34
Analysis Date..: 04/08/02 Prep Batch #...: 2078311
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Acenaphthene	ND	5.0	ug/L	SW846 8270C
Acenaphthylene	ND	5.0	ug/L	SW846 8270C
Acridine	ND	5.0	ug/L	SW846 8270C
Anthracene	ND	5.0	ug/L	SW846 8270C
Benzo(a)anthracene	ND	5.0	ug/L	SW846 8270C
Benzo(b)fluoranthene	ND	5.0	ug/L	SW846 8270C
Benzo(k)fluoranthene	ND	5.0	ug/L	SW846 8270C
2,3-Benzofuran	ND	5.0	ug/L	SW846 8270C
Benzo(ghi)perylene	ND	5.0	ug/L	SW846 8270C
Benzo(a)pyrene	ND	5.0	ug/L	SW846 8270C
Benzo(e)pyrene	ND	5.0	ug/L	SW846 8270C
Benzo(b)thiophene	ND	5.0	ug/L	SW846 8270C
Biphenyl	ND	5.0	ug/L	SW846 8270C
Carbazole	ND	5.0	ug/L	SW846 8270C
Chrysene	ND	5.0	ug/L	SW846 8270C
Dibenzo(a,h)anthracene	ND	5.0	ug/L	SW846 8270C
Dibenzofuran	ND	5.0	ug/L	SW846 8270C
Dibenzothiophene	ND	5.0	ug/L	SW846 8270C
2,3-Dihydroindene	ND	5.0	ug/L	SW846 8270C
Fluoranthene	ND	5.0	ug/L	SW846 8270C
Fluorene	ND	5.0	ug/L	SW846 8270C
Indene	ND	5.0	ug/L	SW846 8270C
Indeno(1,2,3-cd)pyrene	ND	5.0	ug/L	SW846 8270C
Indole	ND	5.0	ug/L	SW846 8270C
2-Methylnaphthalene	ND	5.0	ug/L	SW846 8270C
1-Methylnaphthalene	ND	5.0	ug/L	SW846 8270C
Naphthalene	ND	5.0	ug/L	SW846 8270C
Perylene	ND	5.0	ug/L	SW846 8270C
Phenanthrene	ND	5.0	ug/L	SW846 8270C
Pyrene	ND	5.0	ug/L	SW846 8270C
Quinoline	ND	5.0	ug/L	SW846 8270C

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	104	(25 - 160)
Fluorene d-10	67	(36 - 127)
Naphthalene-d8	88	(37 - 107)

NOTE(S):

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

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: D2C130245 Work Order #...: EWK2D1AC Matrix.....: WATER
LCS Lot-Sample#: D2C190000-311
Prep Date.....: 03/19/02 Analysis Date..: 04/07/02
Prep Batch #...: 2078311 Analysis Time..: 19:27
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD
Benzo(e)pyrene	**84**	**(20 - 150)**	**SW846 8270C**
Chrysene	**81**	**(43 - 124)**	**SW846 8270C**
Fluorene	**82**	**(51 - 120)**	**SW846 8270C**
Indene	**84**	**(49 - 108)**	**SW846 8270C**
2-Methylnaphthalene	**78**	**(47 - 138)**	**SW846 8270C**
Naphthalene	**83**	**(43 - 128)**	**SW846 8270C**
Quinoline	**72**	**(40 - 126)**	**SW846 8270C**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	75	(25 - 160)
Fluorene d-10	66	(36 - 127)
Naphthalene-d8	82	(37 - 107)

NOTE(S):

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

Bold print denotes control parameters

LABORATORY CONTROL SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #...: D2C130245 Work Order #...: EWK2D1AC Matrix.....: WATER
LCS Lot-Sample#: D2C190000-311
Prep Date.....: 03/19/02 Analysis Date..: 04/07/02
Prep Batch #...: 2078311 Analysis Time..: 19:27
Dilution Factor: 1

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD
Benzo(e)pyrene	**50.0**	**41.8**	**ug/L**	**84**	**SW846 8270C**
Chrysene	**50.0**	**40.7**	**ug/L**	**81**	**SW846 8270C**
Fluorene	**50.0**	**40.9**	**ug/L**	**82**	**SW846 8270C**
Indene	**50.0**	**42.0**	**ug/L**	**84**	**SW846 8270C**
2-Methylnaphthalene	**50.0**	**38.8**	**ug/L**	**78**	**SW846 8270C**
Naphthalene	**50.0**	**41.7**	**ug/L**	**83**	**SW846 8270C**
Quinoline	**50.0**	**36.2**	**ug/L**	**72**	**SW846 8270C**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	75	(25 - 160)
Fluorene d-10	66	(36 - 127)
Naphthalene-d8	82	(37 - 107)

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 #...: D2C130245 Work Order #...: EWCJM1AC-MS Matrix.....: WG
MS Lot-Sample #: D2C130245-001 EWCJM1AD-MSD
Date Sampled...: 03/12/02 Date Received..: 03/13/02
Prep Date.....: 03/19/02 Analysis Date..: 04/07/02
Prep Batch #...: 2078311 Analysis Time..: 20:36
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Benzo(e)pyrene	**61**	**(20 - 150)**			**SW846 8270C**
	71	**(20 - 150)**	**16**	**(0-30)**	**SW846 8270C**
Chrysene	**61**	**(43 - 124)**			**SW846 8270C**
	72	**(43 - 124)**	**16**	**(0-30)**	**SW846 8270C**
Fluorene	**72**	**(51 - 120)**			**SW846 8270C**
	65	**(51 - 120)**	**4.0**	**(0-30)**	**SW846 8270C**
Indene	**65**	**(49 - 108)**			**SW846 8270C**
	60	**(49 - 108)**	**3.5**	**(0-30)**	**SW846 8270C**
2-Methylnaphthalene	**56**	**(47 - 138)**			**SW846 8270C**
	39 a	**(47 - 138)**	**6.3**	**(0-30)**	**SW846 8270C**
Naphthalene	**0.0 a**	**(43 - 128)**			**SW846 8270C**
	0.0 a	**(43 - 128)**	**0.0**	**(0-30)**	**SW846 8270C**
[illegible]noline	**85**	**(40 - 126)**			**SW846 8270C**
	83	**(40 - 126)**	**2.5**	**(0-30)**	**SW846 8270C**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	53	(25 - 160)
	67	(25 - 160)
Fluorene d-10	68	(36 - 127)
	67	(36 - 127)
Naphthalene-d8	76	(37 - 107)
	73	(37 - 107)

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 #...: D2C130245 Work Order #...: EWCJM1AC-MS Matrix.....: WG
MS Lot-Sample #: D2C130245-001 EWCJM1AD-MSD
Date Sampled...: 03/12/02 Date Received..: 03/13/02
Prep Date.....: 03/19/02 Analysis Date..: 04/07/02
Prep Batch #...: 2078311 Analysis Time..: 20:36
Dilution Factor: 1

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD
Benzo(e)pyrene	ND	47.4	28.8	ug/L	61		SW846 8270C
	ND	47.3	33.7	ug/L	71	16	SW846 8270C
Chrysene	ND	47.4	29.1	ug/L	61		SW846 8270C
	ND	47.3	34.2	ug/L	72	16	SW846 8270C
Fluorene	50	47.4	84.4	ug/L	72		SW846 8270C
	50	47.3	81.1	ug/L	65	4.0	SW846 8270C
Indene	48	47.4	79.5	ug/L	65		SW846 8270C
	48	47.3	76.7	ug/L	60	3.5	SW846 8270C
2-Methylnaphthalene	110	47.4	137	ug/L	56		SW846 8270C
	110	47.3	128	ug/L	39 a	6.3	SW846 8270C
Naphthalene	620	47.4	621	ug/L	0.0 a		SW846 8270C
	620	47.3	546	ug/L	0.0 a	0.0	SW846 8270C
Quinoline	ND	47.4	40.3	ug/L	85		SW846 8270C
	ND	47.3	39.3	ug/L	83	2.5	SW846 8270C

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	53	(25 - 160)
	67	(25 - 160)
Fluorene d-10	68	(36 - 127)
	67	(36 - 127)
Naphthalene-d8	76	(37 - 107)
	73	(37 - 107)

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.

Chain of Custody Record

STL Denver
4955 Yarrow Street
Arvada, CO 80002

SEVERN TRENT SERVICES

Severn Trent Laboratories, Inc.

STL-4124 (0700) **DEN (0900)**

Client: CITY OF ST. LOUIS PARK UTILITY DIVISION	Project Manager: SCOTT ANDERSON	Date: 3-12-03	Chain of Custody Number: 017846
Address: 3752 WOODDALE AVENUE	Telephone Number (Area Code)/Fax Number: 924-2557 (952) 924-2570	Lab Number	Page ____ of ____
City: ST. LOUIS PARK, MN 55416	Site Contact: SAME	Lab Contact	
Project Name and Location (State): SAME	Carrier/Waybill Number: FED EX 800846316047		
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil		Containers & Preservatives: Unpres.	H2SO4	HNOS	HCl	NaOH	ZnAc/NaOH		Analysis (Attach list if more space is needed): PPB PAH	Special Instructions/ Conditions of Receipt
W420 -031202 CH. 0004	3-12-02			X				X						2	X	8270 C PAH
W420D -031202																
W420MS -031202																
W420MSD -031202																
W420FB -031202																
W420FBD -031202	3-12-02			X				X						2	X	8270 C PAH

Possible Hazard Identification: [X] Non-Hazard [ ] Flammable [ ] Skin Irritant [ ] Poison B [ ] Unknown

Sample Disposal: [ ] Return To Client [X] Disposal By Lab [ ] Archive For ____ Months (A fee may be assessed if samples are retained longer than 3 months)

Turn Around Time Required: [ ] 24 Hours [ ] 48 Hours [ ] 7 Days [ ] 14 Days [ ] 21 Days [ ] Other ____

QC Requirements (Specify):

	Date	Time		Date	Time
1. Relinquished By: MJK	3-12-02	1400	1. Received By: Brown	3/13/02	0830
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

DISTRIBUTION: WHITE - Stays with the Sample; CANARY - Returned to Client with Report; PINK - Field Copy

Chain of Custody Record

STL Denver
4955 Yarrow Street
Arvada, CO 80002

SEVERN TRENT SERVICES

Severn Trent Laboratories, Inc.

STL-4124 (0700) DEN (0900)

Client: CITY OF ST. LOUIS PARK UTILITY DIVISION	Project Manager: SCOTT ANDERSON	Date: 3-12-02	Chain of Custody Number: 017834
Address: 3752 WOODDALE AVENUE	Telephone Number (Area Code)/Fax Number: 924-2557 (952) 924-2570	Lab Number	Page ____ of ____
City: ST. LOUIS PARK, MN 55416	Site Contact: SAME	Lab Contact	
Project Name and Location (State): SAME	Carrier/Waybill Number: FED EX 8008463160 47		
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil		Containers & Preservatives: Unpres.	H2SO4	HNOS	HCl	NaOH	ZnAc/NaOH		Analysis (Attach list if more space is needed): PPB PAH	Special Instructions/ Conditions of Receipt
W420 - 031202 C# 0014	3-12-02			X				X						2	X	8270C PAH
W420 - 031202																
W434 - 031202																
W434 - 031202																
W-410 - 031202																
W23 - 031202																
GTF-ACFE-031202 CH 0014	3-12-02			X				X						2	X	8270C PAH

Possible Hazard Identification: [X] Non-Hazard [ ] Flammable [ ] Skin Irritant [ ] Poison B [ ] Unknown

Sample Disposal: [ ] Return To Client [X] Disposal By Lab [ ] Archive For ____ Months (A fee may be assessed if samples are retained longer than 3 months)

Turn Around Time Required: [ ] 24 Hours [ ] 48 Hours [ ] 7 Days [ ] 14 Days [ ] 21 Days [ ] Other ____

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished By: [signature]	3-12-02	1400	1. Received By: [signature]	3/13/02	0830
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

DISTRIBUTION: WHITE - Stays with the Sample; CANARY - Returned to Client with Report; PINK - Field Copy

D

SEVERN
TRENT
SERVICES

STL Denver
4955 Yarrow Street
Arvada, CO 80002-4517

Tel: 303 736 0100
Fax: 303 431 7171
www.stl-inc.com

ANALYTICAL REPORT

City of St. Louis Park

Project: Reilly Tar & Chemical Corporation

Lot #: D2C120138

Mr. Scott Anderson

City of St. Louis Park
Utility Division
3752 Wooddale Avenue
St. Louis Park, MN 55416

STL DENVER

Brian Stringer
Project Manager

April 24, 2002

D

Table Of Contents

Standard Deliverables

Report Contents	Total Number of Pages
Standard Deliverables *The **Cover Letter** and the **Report Cover** page are considered integral parts of this Standard Deliverable package. This report is incomplete unless all pages indicated in this Table of Contents are included.*	23

- **Table of Contents**
- **Project Narrative**
- **Executive Summary – Detection Highlights**
- **Methods Summary**
- **Method/Analyst Summary**
- **Sample Summary**
- **Analytical Results**
- **QC Data Association Summary**
- **QC Evaluation and/or Data Reports**
- **Chain-of-Custody**

CASE NARRATIVE

STL Lot Number D2C120138

Introduction

STL Denver received seven aqueous samples and a set of MS/MSD samples on March 12, 2002 for PAH SIM (ppt-5) analysis.

The cooler temperatures were 2.3, 1.6, 0.8, and 1.2 °C. All containers were received in acceptable condition.

Data Quality Assessment

The results included in this report have been reviewed for compliance with STL Denver's Laboratory Quality Manual. The test results shown in this report meet all requirements of NELAC and any exceptions are noted below.

Dilution factors and footnotes have been provided to assist in the interpretation of the results. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at concentrations above the linear calibration curve, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

STL utilizes USEPA approved methods in all analytical work. The samples presented in this report were analyzed for the parameters listed on the analytical methods summary page in accordance with the methods indicated.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Polynuclear Aromatic Hydrocarbons – Method 8270C SIM

The LCS, MS/MSD, and surrogate recovery limits in this analytical report were determined from historical data. A project-specific lower acceptable recovery limit of 30% for all QC samples and surrogates has been requested for analytical work performed under the 2002 Quality Assurance Project Plan (QAPP) for the Reilly Industries, Inc. NPL Site. All recoveries in this report are above the 30% minimum threshold, with the following exceptions below.

The recoveries for the surrogate Chrysene-d12 were within established control limits for the method, but were below the 30% control limit designated for the project for several samples. The Chrysene d-12 recoveries are 28%, 27%, 29%, 29%, and 28% for samples D2C120138-002, 005, 006, 007, and the matrix spike performed on sample 001, respectively. This may be an indication of a possible low bias for these samples. The other two surrogate recoveries were in control and above 30% for all samples, and Chrysene d-12 was in control and well above 30% for the associated LCS and method blank. All indications are that the system was operating normally and that these anomalies are due to sample matrix interference. There was insufficient sample volume remaining for re-extraction and analysis.

The method blank for prep batch 2072378 demonstrated results below the reporting limit for Fluoranthene. This may indicate that the results for the associated compounds may be biased high for these samples. Fluoranthene was reported in samples "GAC-SLP4TLEAD-031102", "GAC-SLP10T-031102", and "PCV-SLP6-031102", also below the reporting limits. Because these results are less than the reporting limit and less than five times the MDL of 1.5 ng/L, no immediate corrective action was taken.

The MS/MSD was performed on the client-specified sample "GAC-SLP4T-031102" for prep batch 2072378. The individual MS, MSD, and MS/MSD average recoveries were below control limits for Benzo(e)pyrene. Additionally, the MS, MSD, and MS/MSD average recoveries were within established control limits for the method, but were below the 30% control limit designated for the project for several samples. The associated LCS and method blank were in control for all parameters.

Data Completeness for Polynuclear Aromatic Hydrocarbons – Method 8270C SIM

The results contained in the report were reviewed relative to data acceptance criteria as specified in the 2002 QAPP. Based on the exceptions noted we achieved 95.9% completeness.

DATA COMPLETENESS CALCULATION

LOT D2C120138

ANALYSIS PAHs by SW846-8270C SIM

QC Parameter	Data Planned	Valid Data Obtained
Method Blanks	31	31
MB Surrogates	3	3
LCS	7	7
LCS Surrogates	3	3
MS*	7	5
MS Surrogates*	3	2
MSD*	7	6
MSD Surrogates*	3	3
MS/MSD RPD*	7	7
FB/FBD hits	62	61
Sample/Dup. RPD	31	31
Sample Surrogates	21	17
Internal STD Area	33	33
TOTAL	**218**	**209**
% Completeness		**95.9%**

* The MS/MSD data provided for this table was performed on client sample "W420-031202".

Sample Duplicate
RPD
LOT D2C120138

Sample GAC-SLP4T-031102 Compound	Result	Duplicate GAC-SLP4TD-031102 Compound	Result	RPD	RPD>50%
Acenaphthene	ND	Acenaphthene	ND	0	OK
Acenaphthylene	ND	Acenaphthylene	ND	0	OK
Acridine	ND	Acridine	ND	0	OK
Anthracene	ND	Anthracene	ND	0	OK
Benzo(a)anthracene	ND	Benzo(a)anthracene	ND	0	OK
Benzo(b)fluoranthene	ND	Benzo(b)fluoranthene	ND	0	OK
Benzo(k)fluoranthene	ND	Benzo(k)fluoranthene	ND	0	OK
2,3-Benzofuran	ND	2,3-Benzofuran	ND	0	OK
Benzo(ghi)perylene	ND	Benzo(ghi)perylene	ND	0	OK
Benzo(a)pyrene	ND	Benzo(a)pyrene	ND	0	OK
Benzo(e)pyrene	ND	Benzo(e)pyrene	ND	0	OK
Benzo(b)thiophene	ND	Benzo(b)thiophene	ND	0	OK
Biphenyl	ND	Biphenyl	ND	0	OK
Carbazole	ND	Carbazole	ND	0	OK
Chrysene	ND	Chrysene	ND	0	OK
Dibenz(a,h)anthracene	ND	Dibenz(a,h)anthracene	ND	0	OK
Dibenzofuran	ND	Dibenzofuran	ND	0	OK
Dibenzothiophene	ND	Dibenzothiophene	ND	0	OK
2,3-Dihydroindene	ND	2,3-Dihydroindene	ND	0	OK
Fluoranthene	ND	Fluoranthene	ND	0	OK
Fluorene	ND	Fluorene	ND	0	OK
Indene	ND	Indene	ND	0	OK
Indeno(1,2,3-cd)pyrene	ND	Indeno(1,2,3-cd)pyrene	ND	0	OK
Indole	ND	Indole	ND	0	OK
2-Methylnaphthalene	ND	2-Methylnaphthalene	ND	0	OK
1-Methylnaphthalene	ND	1-Methylnaphthalene	ND	0	OK
Naphthalene	ND	Naphthalene	ND	0	OK
Perylene	ND	Perylene	ND	0	OK
Phenanthrene	1.8	Phenanthrene	ND	*NC	OK
Pyrene	ND	Pyrene	ND	0	OK
Quinoline	ND	Quinoline	ND	0	OK

RTD = Relative Percent Difference
ND = Compound not detected in the sample
OK = RPD acceptable
p = RPD is outside of control limits
*NC = RPD not calculated, one positive result and one ND. Considered acceptable because the positive result is less than 4x the RL.

EXECUTIVE SUMMARY - Detection Highlights

D2C120138

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
GAC-SLP4T-031102 03/11/02 001				
Phenanthrene	1.8	1.6	ng/L	SW846 8270C SIM
GAC-SLP4TFBD-031102 03/11/02 004				
Benzo(e)pyrene	2.0	1.9	ng/L	SW846 8270C SIM
GAC-SLP4TLEAD-031102 03/11/02 005				
Acenaphthene	130	1.9	ng/L	SW846 8270C SIM
Benzo(b)thiophene	7.4	1.8	ng/L	SW846 8270C SIM
Carbazole	9.2	1.9	ng/L	SW846 8270C SIM
2,3-Dihydroindene	82	5.0	ng/L	SW846 8270C SIM
Fluoranthene	2.0 J,B	3.1	ng/L	SW846 8270C SIM
Indene	25	1.6	ng/L	SW846 8270C SIM
Phenanthrene	3.1	1.6	ng/L	SW846 8270C SIM
Pyrene	2.6 J	6.9	ng/L	SW846 8270C SIM
GAC-SLP10T-031102 03/11/02 006				
Acenaphthene	50	1.9	ng/L	SW846 8270C SIM
Acenaphthylene	7.8	1.6	ng/L	SW846 8270C SIM
Benzo(b)thiophene	2.8	1.8	ng/L	SW846 8270C SIM
Carbazole	1.6 J	1.9	ng/L	SW846 8270C SIM
Dibenzofuran	2.9	1.9	ng/L	SW846 8270C SIM
Dibenzothiophene	1.7	1.4	ng/L	SW846 8270C SIM
2,3-Dihydroindene	24	5.0	ng/L	SW846 8270C SIM
Fluoranthene	2.6 J,B	3.1	ng/L	SW846 8270C SIM
Fluorene	11	1.4	ng/L	SW846 8270C SIM
Indene	4.4	1.6	ng/L	SW846 8270C SIM
1-Methylnaphthalene	7.2	2.8	ng/L	SW846 8270C SIM
Phenanthrene	3.8	1.6	ng/L	SW846 8270C SIM
Pyrene	4.1 J	6.9	ng/L	SW846 8270C SIM
PCV-SLP6-031102 03/11/02 007				
Acenaphthene	83	1.9	ng/L	SW846 8270C SIM
Acenaphthylene	18	1.6	ng/L	SW846 8270C SIM
Benzo(b)thiophene	2.8	1.8	ng/L	SW846 8270C SIM
2,3-Dihydroindene	59	5.0	ng/L	SW846 8270C SIM
Fluoranthene	1.8 J,B	3.1	ng/L	SW846 8270C SIM
Fluorene	8.7	1.4	ng/L	SW846 8270C SIM
Indene	2.5	1.6	ng/L	SW846 8270C SIM
Naphthalene	3.1 J	6.5	ng/L	SW846 8270C SIM

(Continued on next page)

EXECUTIVE SUMMARY - Detection Highlights

D2C120138

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
PCV-SLP6-031102 03/11/02 007				
Phenanthrene	2.2	1.6	ng/L	SW846 8270C SIM

METHODS SUMMARY

D2C120138

PARAMETER	ANALYTICAL METHOD	PREPARATION METHOD
Base/Neutrals and Acids	SW846 8270C SIM	SW846 3520C

References:

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

METHOD / ANALYST SUMMARY

D2C120138

ANALYTICAL METHOD	ANALYST	ANALYST ID
SW846 8270C SIM	Tim O'Donnell	000443

References:

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

SAMPLE SUMMARY

D2C120138

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
EV87M	001	GAC-SLP4T-031102	03/11/02	
EV87P	002	GAC-SLP4TD-031102	03/11/02	
EV87Q	003	GAC-SLP4TFB-031102	03/11/02	
EV87V	004	GAC-SLP4TFBD-031102	03/11/02	
EV872	005	GAC-SLP4TLEAD-031102	03/11/02	
EV877	006	GAC-SLP10T-031102	03/11/02	
EV878	007	PCV-SLP6-031102	03/11/02	

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-031102

GC/MS Semivolatiles

Lot-Sample #...: D2C120138-001 **Work Order #...:** EV87M1AA **Matrix.....:** WATER
Date Sampled...: 03/11/02 **Date Received..:** 03/12/02
Prep Date.....: 03/13/02 **Analysis Date..:** 04/01/02
Prep Batch #...: 2072378 **Analysis Time..:** 20:33
Dilution Factor: 1

Method.....: SW846 8270C SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	1.9	ng/L
Acenaphthylene	ND	1.6	ng/L
Acridine	ND	6.1	ng/L
Anthracene	ND	1.8	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
2,3-Benzofuran	ND	5.1	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
Benzo(b)thiophene	ND	1.8	ng/L
Biphenyl	ND	4.3	ng/L
Carbazole	ND	1.9	ng/L
Chrysene	ND	2.8	ng/L
Dibenzo(a,h)anthracene	ND	2.0	ng/L
Dibenzofuran	ND	1.9	ng/L
Dibenzothiophene	ND	1.4	ng/L
2,3-Dihydroindene	ND	5.0	ng/L
Fluoranthene	ND	3.1	ng/L
Fluorene	ND	1.4	ng/L
Indene	ND	1.6	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Indole	ND	2.5	ng/L
2-Methylnaphthalene	ND	3.9	ng/L
1-Methylnaphthalene	ND	2.8	ng/L
Naphthalene	ND	6.5	ng/L
Perylene	ND	2.5	ng/L
Phenanthrene	**1.8**	**1.6**	**ng/L**
Pyrene	ND	6.9	ng/L
Quinoline	ND	6.9	ng/L

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

CITY OF ST. LOUIS PARK

Client Sample ID: GAC-SLP4TD-031102

GC/MS Semivolatiles

Lot-Sample #...: D2C120138-002 **Work Order #...:** EV87P1AA **Matrix.....:** WATER
Date Sampled...: 03/11/02 **Date Received..:** 03/12/02
Prep Date.....: 03/13/02 **Analysis Date..:** 04/01/02
Prep Batch #...: 2072378 **Analysis Time..:** 22:16
Dilution Factor: 1

Method.....: SW846 8270C SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	1.9	ng/L
Acenaphthylene	ND	1.6	ng/L
Acridine	ND	6.1	ng/L
Anthracene	ND	1.8	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
2,3-Benzofuran	ND	5.1	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
Benzo(b)thiophene	ND	1.8	ng/L
Biphenyl	ND	4.3	ng/L
Carbazole	ND	1.9	ng/L
Chrysene	ND	2.8	ng/L
Dibenzo(a,h)anthracene	ND	2.0	ng/L
Dibenzofuran	ND	1.9	ng/L
Dibenzothiophene	ND	1.4	ng/L
2,3-Dihydroindene	ND	5.0	ng/L
Fluoranthene	ND	3.1	ng/L
Fluorene	ND	1.4	ng/L
Indene	ND	1.6	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Indole	ND	2.5	ng/L
2-Methylnaphthalene	ND	3.9	ng/L
1-Methylnaphthalene	ND	2.8	ng/L
Naphthalene	ND	6.5	ng/L
Perylene	ND	2.5	ng/L
Phenanthrene	ND	1.6	ng/L
Pyrene	ND	6.9	ng/L
Quinoline	ND	6.9	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	28	(10 - 118)
Fluorene d-10	44	(41 - 162)
Naphthalene-d8	49	(21 - 108)

CITY OF ST. LOUIS PARK

Client Sample ID: GAC-SLP4TFB-031102

GC/MS Semivolatiles

Lot-Sample #...: D2C120138-003 Work Order #...: EV87Q1AA Matrix.....: WATER
Date Sampled...: 03/11/02 Date Received..: 03/12/02
Prep Date.....: 03/13/02 Analysis Date..: 04/01/02
Prep Batch #...: 2072378 Analysis Time..: 22:49
Dilution Factor: 1

Method.....: SW846 8270C SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	1.9	ng/L
Acenaphthylene	ND	1.6	ng/L
Acridine	ND	6.1	ng/L
Anthracene	ND	1.8	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
2,3-Benzofuran	ND	5.1	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
Benzo(b)thiophene	ND	1.8	ng/L
Biphenyl	ND	4.3	ng/L
Carbazole	ND	1.9	ng/L
Chrysene	ND	2.8	ng/L
Dibenzo(a,h)anthracene	ND	2.0	ng/L
Dibenzofuran	ND	1.9	ng/L
Dibenzothiophene	ND	1.4	ng/L
2,3-Dihydroindene	ND	5.0	ng/L
Fluoranthene	ND	3.1	ng/L
Fluorene	ND	1.4	ng/L
Indene	ND	1.6	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Indole	ND	2.5	ng/L
2-Methylnaphthalene	ND	3.9	ng/L
1-Methylnaphthalene	ND	2.8	ng/L
Naphthalene	ND	6.5	ng/L
Perylene	ND	2.5	ng/L
Phenanthrene	ND	1.6	ng/L
Pyrene	ND	6.9	ng/L
Quinoline	ND	6.9	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	75	(10 - 118)
Fluorene d-10	41	(41 - 162)
Naphthalene-d8	49	(21 - 108)

CITY OF ST. LOUIS PARK

Client Sample ID: GAC-SLP4TFBD-031102

GC/MS Semivolatiles

Lot-Sample #...:	D2C120138-004	**Work Order #...:**	EV87V1AA	**Matrix.....:**	WATER
Date Sampled...:	03/11/02	**Date Received..:**	03/12/02		
Prep Date.....:	03/13/02	**Analysis Date..:**	04/03/02		
Prep Batch #...:	2072378	**Analysis Time..:**	15:50		
Dilution Factor:	1				
		Method.....:	SW846 8270C SIM		

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

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	83	(10 - 118)
Fluorene d-10	49	(41 - 162)
Naphthalene-d8	62	(21 - 108)

CITY OF ST. LOUIS PARK

Client Sample ID: GAC-SLP4TLEAD-031102

GC/MS Semivolatiles

Lot-Sample #...:	D2C120138-005	**Work Order #...:**	EV8721AA	**Matrix.....:**	WATER
Date Sampled...:	03/11/02	**Date Received..:**	03/12/02		
Prep Date.....:	03/13/02	**Analysis Date..:**	04/01/02		
Prep Batch #...:	2072378	**Analysis Time..:**	23:56		
Dilution Factor:	1				
		Method.....:	SW846 8270C SIM		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	**130**	**1.9**	**ng/L**
Acenaphthylene	ND	1.6	ng/L
Acridine	ND	6.1	ng/L
Anthracene	ND	1.8	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
2,3-Benzofuran	ND	5.1	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
Benzo(b)thiophene	**7.4**	**1.8**	**ng/L**
Biphenyl	ND	4.3	ng/L
Carbazole	**9.2**	**1.9**	**ng/L**
Chrysene	ND	2.8	ng/L
Dibenzo(a,h)anthracene	ND	2.0	ng/L
Dibenzofuran	ND	1.9	ng/L
Dibenzothiophene	ND	1.4	ng/L
2,3-Dihydroindene	**82**	**5.0**	**ng/L**
Fluoranthene	**2.0 J,B**	**3.1**	**ng/L**
Fluorene	ND	1.4	ng/L
Indene	**25**	**1.6**	**ng/L**
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Indole	ND	2.5	ng/L
2-Methylnaphthalene	ND	3.9	ng/L
1-Methylnaphthalene	ND	2.8	ng/L
Naphthalene	ND	6.5	ng/L
Perylene	ND	2.5	ng/L
Phenanthrene	**3.1**	**1.6**	**ng/L**
Pyrene	**2.6 J**	**6.9**	**ng/L**
Quinoline	ND	6.9	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	27	(10 - 118)
Fluorene d-10	54	(41 - 162)
Naphthalene-d8	68	(21 - 108)

NOTE(S):

J Estimated result. Result is less than RL.

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

CITY OF ST. LOUIS PARK

Client Sample ID: GAC-SLP10T-031102

GC/MS Semivolatiles

Lot-Sample #...:	D2C120138-006	**Work Order #...:**	EV8771AA	**Matrix.....:**	WATER
Date Sampled...:	03/11/02	**Date Received..:**	03/12/02		
Prep Date.....:	03/13/02	**Analysis Date..:**	04/02/02		
Prep Batch #...:	2072378	**Analysis Time..:**	00:28		
Dilution Factor:	1				
		Method.....:	SW846 8270C SIM		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	**50**	**1.9**	**ng/L**
Acenaphthylene	**7.8**	**1.6**	**ng/L**
Acridine	ND	6.1	ng/L
Anthracene	ND	1.8	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
2,3-Benzofuran	ND	5.1	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
Benzo(b)thiophene	**2.8**	**1.8**	**ng/L**
Biphenyl	ND	4.3	ng/L
Carbazole	**1.6 J**	**1.9**	**ng/L**
Chrysene	ND	2.8	ng/L
Dibenzo(a,h)anthracene	ND	2.0	ng/L
Dibenzofuran	**2.9**	**1.9**	**ng/L**
Dibenzothiophene	**1.7**	**1.4**	**ng/L**
2,3-Dihydroindene	**24**	**5.0**	**ng/L**
Fluoranthene	**2.6 J,B**	**3.1**	**ng/L**
Fluorene	**11**	**1.4**	**ng/L**
Indene	**4.4**	**1.6**	**ng/L**
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Indole	ND	2.5	ng/L
2-Methylnaphthalene	ND	3.9	ng/L
1-Methylnaphthalene	**7.2**	**2.8**	**ng/L**
Naphthalene	ND	6.5	ng/L
Perylene	ND	2.5	ng/L
Phenanthrene	**3.8**	**1.6**	**ng/L**
Pyrene	**4.1 J**	**6.9**	**ng/L**
Quinoline	ND	6.9	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	29	(10 - 118)
Fluorene d-10	53	(41 - 162)
Naphthalene-d8	64	(21 - 108)

NOTE(S):

J Estimated result. Result is less than RL.

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

CITY OF ST. LOUIS PARK

Client Sample ID: PCV-SLP6-031102

GC/MS Semivolatiles

Lot-Sample #...: D2C120138-007 Work Order #...: EV8781AA Matrix.....: WATER
Date Sampled...: 03/11/02 Date Received..: 03/12/02
Prep Date.....: 03/13/02 Analysis Date..: 04/02/02
Prep Batch #...: 2072378 Analysis Time..: 01:01
Dilution Factor: 1

Method.....: SW846 8270C SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	**83**	**1.9**	**ng/L**
Acenaphthylene	**18**	**1.6**	**ng/L**
Acridine	ND	6.1	ng/L
Anthracene	ND	1.8	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
2,3-Benzofuran	ND	5.1	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
Benzo(b)thiophene	**2.8**	**1.8**	**ng/L**
Biphenyl	ND	4.3	ng/L
Carbazole	ND	1.9	ng/L
Chrysene	ND	2.8	ng/L
Dibenzo(a,h)anthracene	ND	2.0	ng/L
Dibenzofuran	ND	1.9	ng/L
Dibenzothiophene	ND	1.4	ng/L
2,3-Dihydroindene	**59**	**5.0**	**ng/L**
Fluoranthene	**1.8 J,B**	**3.1**	**ng/L**
Fluorene	**8.7**	**1.4**	**ng/L**
Indene	**2.5**	**1.6**	**ng/L**
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Indole	ND	2.5	ng/L
2-Methylnaphthalene	ND	3.9	ng/L
1-Methylnaphthalene	ND	2.8	ng/L
Naphthalene	**3.1 J**	**6.5**	**ng/L**
Perylene	ND	2.5	ng/L
Phenanthrene	**2.2**	**1.6**	**ng/L**
Pyrene	ND	6.9	ng/L
Quinoline	ND	6.9	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	29	(10 - 118)
Fluorene d-10	60	(41 - 162)
Naphthalene-d8	65	(21 - 108)

NOTE(S):

J Estimated result. Result is less than RL.

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

QC DATA ASSOCIATION SUMMARY

D2C120138

Sample Preparation and Analysis Control Numbers

SAMPLE#	MATRIX	ANALYTICAL METHOD	LEACH BATCH #	PREP BATCH #	MS RUN#
001	WATER	SW846 8270C SIM		2072378	2072202
002	WATER	SW846 8270C SIM		2072378	2072202
003	WATER	SW846 8270C SIM		2072378	2072202
004	WATER	SW846 8270C SIM		2072378	2072202
005	WATER	SW846 8270C SIM		2072378	2072202
006	WATER	SW846 8270C SIM		2072378	2072202
007	WATER	SW846 8270C SIM		2072378	2072202

METHOD BLANK REPORT

GC/MS Semivolatiles

Client Lot #...: D2C120138
MB Lot-Sample #: D2C130000-378

Work Order #...: EWCHE1AA

Matrix.....: WATER

Prep Date.....: 03/13/02

Analysis Time..: 15:44

Analysis Date..: 04/01/02

Prep Batch #...: 2072378

Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Acenaphthene	ND	1.9	ng/L	SW846 8270C SIM
Acenaphthylene	ND	1.6	ng/L	SW846 8270C SIM
Acridine	ND	6.1	ng/L	SW846 8270C SIM
Anthracene	ND	1.8	ng/L	SW846 8270C SIM
Benzo(a)anthracene	ND	2.5	ng/L	SW846 8270C SIM
Benzo(b)fluoranthene	ND	2.5	ng/L	SW846 8270C SIM
Benzo(k)fluoranthene	ND	2.3	ng/L	SW846 8270C SIM
2,3-Benzofuran	ND	5.1	ng/L	SW846 8270C SIM
Benzo(ghi)perylene	ND	2.8	ng/L	SW846 8270C SIM
Benzo(a)pyrene	ND	2.3	ng/L	SW846 8270C SIM
Benzo(e)pyrene	ND	1.9	ng/L	SW846 8270C SIM
Benzo(b)thiophene	ND	1.8	ng/L	SW846 8270C SIM
Biphenyl	ND	4.3	ng/L	SW846 8270C SIM
Carbazole	ND	1.9	ng/L	SW846 8270C SIM
Chrysene	ND	2.8	ng/L	SW846 8270C SIM
Dibenzo(a,h)anthracene	ND	2.0	ng/L	SW846 8270C SIM
Dibenzofuran	ND	1.9	ng/L	SW846 8270C SIM
Dibenzothiophene	ND	1.4	ng/L	SW846 8270C SIM
2,3-Dihydroindene	ND	5.0	ng/L	SW846 8270C SIM
Fluoranthene	**1.8 J**	**3.1**	**ng/L**	**SW846 8270C SIM**
Fluorene	ND	1.4	ng/L	SW846 8270C SIM
Indene	ND	1.6	ng/L	SW846 8270C SIM
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L	SW846 8270C SIM
Indole	ND	2.5	ng/L	SW846 8270C SIM
2-Methylnaphthalene	ND	3.9	ng/L	SW846 8270C SIM
1-Methylnaphthalene	ND	2.8	ng/L	SW846 8270C SIM
Naphthalene	ND	6.5	ng/L	SW846 8270C SIM
Perylene	ND	2.5	ng/L	SW846 8270C SIM
Phenanthrene	ND	1.6	ng/L	SW846 8270C SIM
Pyrene	ND	6.9	ng/L	SW846 8270C SIM
Quinoline	ND	6.9	ng/L	SW846 8270C SIM

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	75	(10 - 118)
Fluorene d-10	53	(41 - 162)
Naphthalene-d8	63	(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 EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: D2C120138 Work Order #...: EWCHE1AC Matrix.....: WATER
LCS Lot-Sample#: D2C130000-378
Prep Date.....: 03/13/02 Analysis Date..: 04/01/02
Prep Batch #...: 2072378 Analysis Time..: 16:58
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD
Benzo(e)pyrene	**68**	**(20 - 150)**	**SW846 8270C SIM**
Chrysene	**62**	**(20 - 132)**	**SW846 8270C SIM**
Fluorene	**70**	**(20 - 132)**	**SW846 8270C SIM**
Indene	**66**	**(20 - 150)**	**SW846 8270C SIM**
2-Methylnaphthalene	**73**	**(20 - 150)**	**SW846 8270C SIM**
Naphthalene	**84**	**(20 - 150)**	**SW846 8270C SIM**
Quinoline	**59**	**(20 - 150)**	**SW846 8270C SIM**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	75	(10 - 118)
Fluorene d-10	59	(41 - 162)
Naphthalene-d8	74	(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 DATA REPORT

GC/MS Semivolatiles

Client Lot #...: D2C120138 Work Order #...: EWCHE1AC Matrix.....: WATER
LCS Lot-Sample#: D2C130000-378
Prep Date.....: 03/13/02 Analysis Date..: 04/01/02
Prep Batch #...: 2072378 Analysis Time..: 16:58
Dilution Factor: 1

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD
Benzo(e)pyrene	**10.0**	**6.78**	**ng/L**	**68**	**SW846 8270C S**
Chrysene	**10.0**	**6.20**	**ng/L**	**62**	**SW846 8270C S**
Fluorene	**10.0**	**6.97**	**ng/L**	**70**	**SW846 8270C S**
Indene	**10.0**	**6.56**	**ng/L**	**66**	**SW846 8270C S**
2-Methylnaphthalene	**10.0**	**7.30**	**ng/L**	**73**	**SW846 8270C S**
Naphthalene	**10.0**	**8.35**	**ng/L**	**84**	**SW846 8270C S**
Quinoline	**10.0**	**5.94**	**ng/L**	**59**	**SW846 8270C S**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	75	(10 - 118)
Fluorene d-10	59	(41 - 162)
Naphthalene-d8	74	(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 #...: D2C120138 Work Order #...: EV87M1AC-MS Matrix.....: WG
MS Lot-Sample #: D2C120138-001 EV87M1AD-MSD
Date Sampled...: 03/11/02 Date Received..: 03/12/02
Prep Date.....: 03/13/02 Analysis Date..: 04/01/02
Prep Batch #...: 2072378 Analysis Time..: 21:08
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Benzo(e)pyrene	**0.0 a**	**(20 - 150)**			**SW846 8270C SIM**
	0.0 a	**(20 - 150)**	**0.0**	**(0-50)**	**SW846 8270C SIM**
Chrysene	**20**	**(20 - 132)**			**SW846 8270C SIM**
	26	**(20 - 132)**	**28**	**(0-50)**	**SW846 8270C SIM**
Fluorene	**64**	**(20 - 132)**			**SW846 8270C SIM**
	72	**(20 - 132)**	**12**	**(0-50)**	**SW846 8270C SIM**
Indene	**56**	**(20 - 150)**			**SW846 8270C SIM**
	67	**(20 - 150)**	**18**	**(0-50)**	**SW846 8270C SIM**
2-Methylnaphthalene	**84**	**(20 - 150)**			**SW846 8270C SIM**
	70	**(20 - 150)**	**17**	**(0-50)**	**SW846 8270C SIM**
Naphthalene	**77**	**(20 - 150)**			**SW846 8270C SIM**
	82	**(20 - 150)**	**6.7**	**(0-50)**	**SW846 8270C SIM**
Quinoline	**49**	**(20 - 150)**			**SW846 8270C SIM**
	54	**(20 - 150)**	**9.2**	**(0-50)**	**SW846 8270C SIM**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	28	(10 - 118)
	30	(10 - 118)
Fluorene d-10	51	(41 - 162)
	59	(41 - 162)
Naphthalene-d8	63	(21 - 108)
	69	(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.

MATRIX SPIKE SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #...: D2C120138 Work Order #...: EV87M1AC-MS Matrix.....: WG
MS Lot-Sample #: D2C120138-001 EV87M1AD-MSD
Date Sampled...: 03/11/02 Date Received..: 03/12/02
Prep Date.....: 03/13/02 Analysis Date..: 04/01/02
Prep Batch #...: 2072378 Analysis Time..: 21:08
Dilution Factor: 1

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD
Benzo(e)pyrene	ND	9.55	0.0	ng/L	0.0 a		SW846 8270C SIM
	ND	9.59	0.0	ng/L	0.0 a	0.0	SW846 8270C SIM
Chrysene	ND	9.55	1.93	ng/L	20		SW846 8270C SIM
	ND	9.59	2.54	ng/L	26	28	SW846 8270C SIM
Fluorene	ND	9.55	6.12	ng/L	64		SW846 8270C SIM
	ND	9.59	6.93	ng/L	72	12	SW846 8270C SIM
Indene	ND	9.55	5.31	ng/L	56		SW846 8270C SIM
	ND	9.59	6.39	ng/L	67	18	SW846 8270C SIM
2-Methylnaphthalene	ND	9.55	7.98	ng/L	84		SW846 8270C SIM
	ND	9.59	6.76	ng/L	70	17	SW846 8270C SIM
Naphthalene	ND	9.55	7.35	ng/L	77		SW846 8270C SIM
	ND	9.59	7.86	ng/L	82	6.7	SW846 8270C SIM
Quinoline	ND	9.55	4.71	ng/L	49		SW846 8270C SIM
	ND	9.59	5.16	ng/L	54	9.2	SW846 8270C SIM

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	28	(10 - 118)
	30	(10 - 118)
Fluorene d-10	51	(41 - 162)
	59	(41 - 162)
Naphthalene-d8	63	(21 - 108)
	69	(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.

[redacted]

Chain of Custody Record

STL Denver
4955 Yarrow Street
Arvada, CO 80002

SEVERN TRENT SERVICES

1.6°C
0.4°C
1.2°C
3/12

Severn Trent Laboratories, Inc.

STL-4124 (0700) **DEN (0900)**

Client	CITY OF ST. LOUIS PARK
Address	UTILITY DIVISION
City	3752 WOODDALE AVENUE ST. LOUIS PARK, MN 55416
Project Name and Location (State)	SAME
Contract/Purchase Order/Quote No.	
Project Manager	SCOTT ANDERSON
Telephone Number (Area Code)/Fax Number	924-2557 (952) 924-2570
Site Contact	SAME
Lab Contact	
Carrier/Waybill Number	FEDEX 800846316036
Date	3-11-03
Chain of Custody Number	017833
Lab Number	
Page ____ of ____	

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Containers & Preservatives: Unpres.	H2SO4	HNOS	HCl	NaOH	ZnAc/NaOH		Analysis (Attach list if more space is needed): PPL PAH	Special Instructions/ Conditions of Receipt
GAC-SLP4T-031102 CA# 0011	3-11-02			X			X						6	X	PPT 5
GAC-SLP4TD-031102															
GAC-SLP4TMS-031102 CA# 0015															
GAC-SLP4TMSD-031102															
GAC-SLP4TFB-031102 CA# 0006															
GAC-SLP4TFBD-031102															
GAC-SLP4TLEAD-031102 CA# 0010															
GAC-SLP10T-031102 CA# 0008															
PCD-SLP6-031102 CA# 0010	3-11-02			X			X						6	X	PPT 5

Possible Hazard Identification
☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal
☐ Return To Client ☒ Disposal By Lab ☐ Archive For ____ Months (A fee may be assessed if samples are retained longer than 3 months)

Turn Around Time Required
☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other ____

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished By: [signature]	3-11-02	1400	1. Received By: Brown	3/12/02	0830
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

DISTRIBUTION: WHITE - Stays with the Sample; CANARY - Returned to Client with Report; PINK - Field Copy

E

SEVERN
TRENT
SERVICES

STL Denver
4955 Yarrow Street
Arvada, CO 80002-4517

Tel: 303 736 0100
Fax: 303 431 7171
www.stl-inc.com

ANALYTICAL REPORT

City of St. Louis Park

Project: Reilly Tar & Chemical Corporation

Lot #: D2C130250

Mr. Scott Anderson

City of St. Louis Park
Utility Division
3752 Wooddale Avenue
St. Louis Park, MN 55416

STL DENVER

Brian Stringer
Project Manager

April 24, 2002

Table Of Contents

Standard Deliverables

Report Contents	Total Number of Pages
Standard Deliverables *The **Cover Letter** and the **Report Cover** page are considered integral parts of this Standard Deliverable package. This report is incomplete unless all pages indicated in this Table of Contents are included.*	13

- **Table of Contents**
- **Project Narrative**
- **Executive Summary – Detection Highlights**
- **Methods Summary**
- **Method/Analyst Summary**
- **Sample Summary**
- **Analytical Results**
- **QC Data Association Summary**
- **QC Evaluation and/or Data Reports**
- **Chain-of-Custody**

CASE NARRATIVE

STL Lot Number D2C130250

Introduction

STL Denver received one aqueous sample on March 13, 2002 for PAH SIM (ppt-5) analysis.

The sample was in one of three coolers with temperatures of 1.2, 1.8, and 4.4 °C. All containers were received in acceptable condition.

The cooler custody seals were not intact when the coolers were received at STL Denver. The client was contacted and directed that the analyses proceed, noting that the data will be compared with historical results.

Data Quality Assessment

The results included in this report have been reviewed for compliance with STL Denver's Laboratory Quality Manual. The test results shown in this report meet all requirements of NELAC and any exceptions are noted below.

Dilution factors and footnotes have been provided to assist in the interpretation of the results. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at concentrations above the linear calibration curve, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

STL utilizes USEPA approved methods in all analytical work. The samples presented in this report were analyzed for the parameters listed on the analytical methods summary page in accordance with the methods indicated.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Polynuclear Aromatic Hydrocarbons – Method 8270C SIM

The LCS and surrogate recovery limits in this analytical report were determined from historical data. A project-specific lower acceptable recovery limit of 30% for all QC samples and surrogates has been requested for analytical work performed under the 2002 Quality Assurance Project Plan (QAPP) for the Reilly Industries, Inc. NPL Site. All recoveries in this report are above the 30% minimum threshold.

There was not a client-specified sample for MS/MSD on the associated chain of custody record, and there was insufficient sample volume to perform them with prep batch 2077395. In addition to the method required LCS, a duplicate LCS (LCSD) was prepared but was lost during extraction. The associated LCS and method blank were in control for all parameters.

Data Completeness for Polynuclear Aromatic Hydrocarbons – Method 8270C SIM

The results contained in the report were reviewed relative to data acceptance criteria as specified in the 2002 QAPP. Based on the exceptions noted we achieved 100% completeness.

DATA COMPLETENESS CALCULATION

LOT D2C130250

ANALYSIS PAHs by SW846-8270C SIM

QC Parameter	Data Planned	Valid Data Obtained
Method Blanks	31	31
MB Surrogates	3	3
LCS	7	7
LCS Surrogates	3	3
Sample Surrogates	3	3
Internal STD Area	9	9
TOTAL	**56**	**56**
% Completeness		**100%**

* There is no MS/MSD, sample duplicate, or field blanks associated with this lot.

EXECUTIVE SUMMARY - Detection Highlights

D2C130250

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
W48-031202 03/12/02 14:30 001				
Acenaphthene	110	1.9	ng/L	SW846 8270C SIM
Acridine	32	6.1	ng/L	SW846 8270C SIM
Anthracene	7.9	1.8	ng/L	SW846 8270C SIM
Benzo(b)thiophene	9.7	1.8	ng/L	SW846 8270C SIM
Carbazole	3.1	1.9	ng/L	SW846 8270C SIM
2,3-Dihydroindene	12	5.0	ng/L	SW846 8270C SIM
Fluoranthene	3.2	3.1	ng/L	SW846 8270C SIM
Indene	20	1.6	ng/L	SW846 8270C SIM
2-Methylnaphthalene	2.5 J	3.9	ng/L	SW846 8270C SIM
1-Methylnaphthalene	2.9	2.8	ng/L	SW846 8270C SIM
Naphthalene	4.2 J	6.5	ng/L	SW846 8270C SIM
Phenanthrene	3.3	1.6	ng/L	SW846 8270C SIM
Pyrene	6.9	6.9	ng/L	SW846 8270C SIM
Quinoline	3.8 J	6.9	ng/L	SW846 8270C SIM

METHODS SUMMARY

D2C130250

PARAMETER	ANALYTICAL METHOD	PREPARATION METHOD
Base/Neutrals and Acids	SW846 8270C SIM	SW846 3520C

References:

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

METHOD / ANALYST SUMMARY

D2C130250

ANALYTICAL METHOD	ANALYST	ANALYST ID
SW846 8270C SIM	Tim O'Donnell	000443

References:

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

SAMPLE SUMMARY

D2C130250

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
EWCLN	001	W48-031202	03/12/02	14:30

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: W48-031202

GC/MS Semivolatiles

Lot-Sample #...: D2C130250-001 Work Order #...: EWCLN1AA Matrix.....: WATER
Date Sampled...: 03/12/02 Date Received..: 03/13/02
Prep Date.....: 03/18/02 Analysis Date..: 04/05/02
Prep Batch #...: 2077395 Analysis Time..: 15:52
Dilution Factor: 1

Method.....: SW846 8270C SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	**110**	**1.9**	**ng/L**
Acenaphthylene	ND	1.6	ng/L
Acridine	**32**	**6.1**	**ng/L**
Anthracene	**7.9**	**1.8**	**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
2,3-Benzofuran	ND	5.1	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
Benzo(b)thiophene	**9.7**	**1.8**	**ng/L**
Biphenyl	ND	4.3	ng/L
Carbazole	**3.1**	**1.9**	**ng/L**
Chrysene	ND	2.8	ng/L
Dibenzo(a,h)anthracene	ND	2.0	ng/L
Dibenzofuran	ND	1.9	ng/L
Dibenzothiophene	ND	1.4	ng/L
2,3-Dihydroindene	**12**	**5.0**	**ng/L**
Fluoranthene	**3.2**	**3.1**	**ng/L**
Fluorene	ND	1.4	ng/L
Indene	**20**	**1.6**	**ng/L**
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Indole	ND	2.5	ng/L
2-Methylnaphthalene	**2.5 J**	**3.9**	**ng/L**
1-Methylnaphthalene	**2.9**	**2.8**	**ng/L**
Naphthalene	**4.2 J**	**6.5**	**ng/L**
Perylene	ND	2.5	ng/L
Phenanthrene	**3.3**	**1.6**	**ng/L**
Pyrene	**6.9**	**6.9**	**ng/L**
Quinoline	**3.8 J**	**6.9**	**ng/L**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	46	(10 - 118)
Fluorene d-10	69	(41 - 162)
Naphthalene-d8	81	(21 - 108)

NOTE(S):

J Estimated result. Result is less than RL.

QC DATA ASSOCIATION SUMMARY

D2C130250

Sample Preparation and Analysis Control Numbers

SAMPLE#	MATRIX	ANALYTICAL METHOD	LEACH BATCH #	PREP BATCH #	MS RUN#
001	WATER	SW846 8270C SIM		2077395	

METHOD BLANK REPORT

GC/MS Semivolatiles

Client Lot #...: D2C130250
MB Lot-Sample #: D2C180000-395

Work Order #...: EWJL81AA

Matrix.....: WATER

Prep Date.....: 03/18/02

Analysis Time..: 14:41

Analysis Date..: 04/05/02

Prep Batch #...: 2077395

Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Acenaphthene	ND	1.9	ng/L	SW846 8270C SIM
Acenaphthylene	ND	1.6	ng/L	SW846 8270C SIM
Acridine	ND	6.1	ng/L	SW846 8270C SIM
Anthracene	ND	1.8	ng/L	SW846 8270C SIM
Benzo(a)anthracene	ND	2.5	ng/L	SW846 8270C SIM
Benzo(b)fluoranthene	ND	2.5	ng/L	SW846 8270C SIM
Benzo(k)fluoranthene	ND	2.3	ng/L	SW846 8270C SIM
2,3-Benzofuran	ND	5.1	ng/L	SW846 8270C SIM
Benzo(ghi)perylene	ND	2.8	ng/L	SW846 8270C SIM
Benzo(a)pyrene	ND	2.3	ng/L	SW846 8270C SIM
Benzo(e)pyrene	ND	1.9	ng/L	SW846 8270C SIM
Benzo(b)thiophene	ND	1.8	ng/L	SW846 8270C SIM
Biphenyl	ND	4.3	ng/L	SW846 8270C SIM
Carbazole	ND	1.9	ng/L	SW846 8270C SIM
Chrysene	ND	2.8	ng/L	SW846 8270C SIM
Dibenzo(a,h)anthracene	ND	2.0	ng/L	SW846 8270C SIM
Dibenzofuran	ND	1.9	ng/L	SW846 8270C SIM
Dibenzothiophene	ND	1.4	ng/L	SW846 8270C SIM
2,3-Dihydroindene	ND	5.0	ng/L	SW846 8270C SIM
Fluoranthene	ND	3.1	ng/L	SW846 8270C SIM
Fluorene	ND	1.4	ng/L	SW846 8270C SIM
Indene	ND	1.6	ng/L	SW846 8270C SIM
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L	SW846 8270C SIM
Indole	ND	2.5	ng/L	SW846 8270C SIM
2-Methylnaphthalene	ND	3.9	ng/L	SW846 8270C SIM
1-Methylnaphthalene	ND	2.8	ng/L	SW846 8270C SIM
Naphthalene	ND	6.5	ng/L	SW846 8270C SIM
Perylene	ND	2.5	ng/L	SW846 8270C SIM
Phenanthrene	ND	1.6	ng/L	SW846 8270C SIM
Pyrene	ND	6.9	ng/L	SW846 8270C SIM
Quinoline	ND	6.9	ng/L	SW846 8270C SIM

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	89	(10 - 118)
Fluorene d-10	71	(41 - 162)
Naphthalene-d8	97	(21 - 108)

NOTE(S):

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

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: D2C130250 Work Order #...: EWJL81AC Matrix.....: WATER
LCS Lot-Sample#: D2C180000-395
Prep Date.....: 03/18/02 Analysis Date..: 04/05/02
Prep Batch #...: 2077395 Analysis Time..: 15:17
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD
Benzo(e)pyrene	**96**	**(20 - 150)**	**SW846 8270C SIM**
Chrysene	**76**	**(20 - 132)**	**SW846 8270C SIM**
Fluorene	**95**	**(20 - 132)**	**SW846 8270C SIM**
Indene	**94**	**(20 - 150)**	**SW846 8270C SIM**
2-Methylnaphthalene	**105**	**(20 - 150)**	**SW846 8270C SIM**
Naphthalene	**113**	**(20 - 150)**	**SW846 8270C SIM**
Quinoline	**100**	**(20 - 150)**	**SW846 8270C SIM**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	91	(10 - 118)
Fluorene d-10	73	(41 - 162)
Naphthalene-d8	95	(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 DATA REPORT

GC/MS Semivolatiles

Client Lot #...: D2C130250 Work Order #...: EWJL81AC Matrix.....: WATER
LCS Lot-Sample#: D2C180000-395
Prep Date.....: 03/18/02 Analysis Date..: 04/05/02
Prep Batch #...: 2077395 Analysis Time..: 15:17
Dilution Factor: 1

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD
Benzo(e)pyrene	**10.0**	**9.63**	**ng/L**	**96**	**SW846 8270C S**
Chrysene	**10.0**	**7.59**	**ng/L**	**76**	**SW846 8270C S**
Fluorene	**10.0**	**9.53**	**ng/L**	**95**	**SW846 8270C S**
Indene	**10.0**	**9.37**	**ng/L**	**94**	**SW846 8270C S**
2-Methylnaphthalene	**10.0**	**10.5**	**ng/L**	**105**	**SW846 8270C S**
Naphthalene	**10.0**	**11.3**	**ng/L**	**113**	**SW846 8270C S**
Quinoline	**10.0**	**10.0**	**ng/L**	**100**	**SW846 8270C S**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	91	(10 - 118)
Fluorene d-10	73	(41 - 162)
Naphthalene-d8	95	(21 - 108)

NOTE(S):

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

Bold print denotes control parameters

Chain of Custody Record

STL Denver
4955 Yarrow Street
Arvada, CO 80002

SEVERN TRENT SERVICES

Severn Trent Laboratories, Inc.

4.4°C
3/13/02

STL-4124 (0700) **DEN (0900)**

Client: City of St. Louis Park	Project Manager: Bill Gregg	Date: 3/12/02	Chain of Custody Number: 017832
Address: 3757 Wooddale Ave	Telephone Number (Area Code)/Fax Number: 952-924-2557	Lab Number:	Page 1 of 1
City: St. Louis Park; State: MN; Zip Code: 55416	Site Contact: Scott Anderson	Lab Contact: Brian Stringer	
Project Name and Location (State): Reilly	Carrier/Waybill Number:		
Contract/Purchase Order/Quote No.:			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil		Containers & Preservatives: Unpres.	H2SO4	HNOS	HCl	NaOH	ZnAc/NaOH		Analysis (Attach list if more space is needed): PAH - PPTS	Special Instructions/ Conditions of Receipt
W48-031202	3/12/02	1430		X											X	

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months (A fee may be assessed if samples are retained longer than 3 months)

Turn Around Time Required: ☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other_____

QC Requirements (Specify):

	Date	Time		Date	Time
1. Relinquished By: Chris Brehm	3/12/02	1500	1. Received By: Brown	3/13/02	0830
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

DISTRIBUTION: WHITE - Stays with the Sample; CANARY - Returned to Client with Report; PINK - Field Copy

F

SEVERN TRENT SERVICES

STL Denver
4955 Yarrow Street
Arvada, CO 80002-4517

Tel: 303 736 0100
Fax: 303 431 7171
www.stl-inc.com

ANALYTICAL REPORT

City of St. Louis Park

Project: Reilly Tar & Chemical Corporation

Lot #: D2E070224

Mr. Scott Anderson

City of St. Louis Park
Utility Division
3752 Wooddale Avenue
St. Louis Park, MN 55416

STL DENVER

Brian Stringer
Project Manager

June 21, 2002

F

Table Of Contents

Standard Deliverables

Report Contents	Total Number of Pages
Standard Deliverables *The **Cover Letter** and the **Report Cover** page are considered integral parts of this Standard Deliverable package. This report is incomplete unless all pages indicated in this Table of Contents are included.*	24

- **Table of Contents**
- **Project Narrative**
- **Executive Summary – Detection Highlights**
- **Methods Summary**
- **Method/Analyst Summary**
- **Sample Summary**
- **Analytical Results**
- **QC Data Association Summary**
- **QC Evaluation and/or Data Reports**
- **Chain-of-Custody**

CASE NARRATIVE

STL Lot Number D2E070224

Introduction

STL Denver received four aqueous samples on May 7, 2002 for ppb level, full scan PAH analysis.

The cooler temperatures was 1.7 °C. All containers were received in acceptable condition.

Data Quality Assessment

The results included in this report have been reviewed for compliance with STL Denver's Laboratory Quality Manual. The test results shown in this report meet all requirements of NELAC and any exceptions are noted below.

Dilution factors and footnotes have been provided to assist in the interpretation of the results. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at concentrations above the linear calibration curve, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

STL utilizes USEPA approved methods in all analytical work. The samples presented in this report were analyzed for the parameters listed on the analytical methods summary page in accordance with the methods indicated.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Polynuclear Aromatic Hydrocarbons – Method 8270C

A project-specific lower acceptable recovery limit of 30% for all QC samples and surrogates has been designated for analytical work performed under the 2002 Quality Assurance Project Plan (QAPP) for the Reilly Industries, Inc. NPL Site. All recoveries in this report are above the 30% minimum threshold.

The method blank for prep batch 2130162 demonstrated results below the reporting limit for perylene. This may indicate that sample results may be biased high, however perylene was not detected in the associated samples. Because these results are less than the reporting limit and less than five times the MDL, no immediate corrective action was taken.

One of the two matrix spikes performed on a sample from another lot for prep batch 2130162 demonstrated recoveries for fluorene, indene, and 2-methylnaphthalene outside the control limits in the MSD and for 2-methylnaphthalene in the MS. The MS/MSD average recovery is also outside control limits for these four spike compounds. Additionally, the percent recoveries and RPD were not calculated for naphthalene because the sample concentration was greater than four times the spike amount.

Case Narrative for D2E070224 (continued)

Data Completeness for Polynuclear Aromatic Hydrocarbons – Method 8270C

The results contained in the report were reviewed relative to data acceptance criteria as specified in the 2002 QAPP. Based on the exceptions noted we achieved 100% completeness.

DATA COMPLETENESS CALCULATION

LOT D2E070224

ANALYSIS PAHs by SW846-8270C

QC Parameter	Data Planned	Valid Data Obtained
Method Blanks	31	31
MB Surrogates	3	3
LCS	7	7
LCS Surrogates	3	3
MS*	NA	NA
MS Surrogates*	NA	NA
MSD*	NA	NA
MSD Surrogates*	NA	NA
MS/MSD RPD*	NA	NA
FB/FBD hits	NA	NA
Sample/Dup. RPD	NA	NA
Sample Surrogates	12	12
Internal STD Area	18	18
TOTAL	**74**	**74**
% Completeness	**100%**	

* There is no MS/MSD, sample duplicate, or field blank samples on this lot.

EXECUTIVE SUMMARY - Detection Highlights

D2E070224

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
P309-050602 05/06/02 14:20 002				
Acenaphthene	19	10	ug/L	SW846 8270C
Benzo(b)thiophene	1.0 J	10	ug/L	SW846 8270C
Carbazole	8.5 J	10	ug/L	SW846 8270C
2,3-Dihydroindene	17	10	ug/L	SW846 8270C
1-Methylnaphthalene	1.8 J	10	ug/L	SW846 8270C
Naphthalene	2.2 J	10	ug/L	SW846 8270C
P307-050602 05/06/02 15:10 003				
Acenaphthene	7.3 J	10	ug/L	SW846 8270C
Benzo(b)thiophene	4.1 J	10	ug/L	SW846 8270C
Carbazole	2.9 J	10	ug/L	SW846 8270C
2,3-Dihydroindene	22	10	ug/L	SW846 8270C
1-Methylnaphthalene	6.1 J	10	ug/L	SW846 8270C
P308-050602 05/06/02 16:00 004				
Acenaphthene	1.1 J	10	ug/L	SW846 8270C
2,3-Dihydroindene	1.6 J	10	ug/L	SW846 8270C

METHODS SUMMARY

D2E070224

PARAMETER	ANALYTICAL METHOD	PREPARATION METHOD
Semivolatile Organic Compounds by GC/MS	SW846 8270C	SW846 3520C

References:

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

METHOD / ANALYST SUMMARY

D2E070224

ANALYTICAL METHOD	ANALYST	ANALYST ID
SW846 8270C	Tim O'Donnell	000443

References:

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

SAMPLE SUMMARY

D2E070224

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
E023A	001	P112-050602	05/06/02	12:20
E023F	002	P309-050602	05/06/02	14:20
E023G	003	P307-050602	05/06/02	15:10
E023H	004	P308-050602	05/06/02	16:00

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: P112-050602

GC/MS Semivolatiles

Lot-Sample #...: D2E070224-001 Work Order #...: E023A1AA Matrix.....: WATER
Date Sampled...: 05/06/02 Date Received..: 05/07/02
Prep Date.....: 05/10/02 Analysis Date..: 05/29/02
Prep Batch #...: 2130162 Analysis Time..: 16:49
Dilution Factor: 1

Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	10	ug/L
Acenaphthylene	ND	10	ug/L
Acridine	ND	10	ug/L
Anthracene	ND	10	ug/L
Benzo(a)anthracene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
2,3-Benzofuran	ND	10	ug/L
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Benzo(e)pyrene	ND	10	ug/L
Benzo(b)thiophene	ND	10	ug/L
Biphenyl	ND	10	ug/L
Carbazole	ND	10	ug/L
Chrysene	ND	10	ug/L
Dibenzo(a,h)anthracene	ND	10	ug/L
Dibenzofuran	ND	10	ug/L
Dibenzothiophene	ND	10	ug/L
2,3-Dihydroindene	ND	10	ug/L
Fluoranthene	ND	10	ug/L
Fluorene	ND	10	ug/L
Indene	ND	10	ug/L
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Indole	ND	10	ug/L
2-Methylnaphthalene	ND	10	ug/L
1-Methylnaphthalene	ND	10	ug/L
Naphthalene	ND	10	ug/L
Perylene	ND	10	ug/L
Phenanthrene	ND	10	ug/L
Pyrene	ND	10	ug/L
Quinoline	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	47	(30 - 160)
Fluorene d-10	73	(36 - 127)
Naphthalene-d8	73	(37 - 107)

CITY OF ST. LOUIS PARK

Client Sample ID: P309-050602

GC/MS Semivolatiles

Lot-Sample #...: D2E070224-002 Work Order #...: E023F1AA Matrix.....: WATER
Date Sampled...: 05/06/02 Date Received..: 05/07/02
Prep Date.....: 05/10/02 Analysis Date..: 05/29/02
Prep Batch #...: 2130162 Analysis Time..: 17:26
Dilution Factor: 1

Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	**19**	**10**	**ug/L**
Acenaphthylene	ND	10	ug/L
Acridine	ND	10	ug/L
Anthracene	ND	10	ug/L
Benzo(a)anthracene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
2,3-Benzofuran	ND	10	ug/L
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Benzo(e)pyrene	ND	10	ug/L
Benzo(b)thiophene	**1.0 J**	**10**	**ug/L**
Biphenyl	ND	10	ug/L
Carbazole	**8.5 J**	**10**	**ug/L**
Chrysene	ND	10	ug/L
Dibenzo(a,h)anthracene	ND	10	ug/L
Dibenzofuran	ND	10	ug/L
Dibenzothiophene	ND	10	ug/L
2,3-Dihydroindene	**17**	**10**	**ug/L**
Fluoranthene	ND	10	ug/L
Fluorene	ND	10	ug/L
Indene	ND	10	ug/L
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Indole	ND	10	ug/L
2-Methylnaphthalene	ND	10	ug/L
1-Methylnaphthalene	**1.8 J**	**10**	**ug/L**
Naphthalene	**2.2 J**	**10**	**ug/L**
Perylene	ND	10	ug/L
Phenanthrene	ND	10	ug/L
Pyrene	ND	10	ug/L
Quinoline	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	35	(30 - 160)
Fluorene d-10	71	(36 - 127)
Naphthalene-d8	77	(37 - 107)

NOTE(S):

J Estimated result. Result is less than RL.

CITY OF ST. LOUIS PARK

Client Sample ID: P307-050602

GC/MS Semivolatiles

Lot-Sample #...: D2E070224-003 Work Order #...: E023G1AA Matrix.....: WATER
Date Sampled...: 05/06/02 Date Received..: 05/07/02
Prep Date.....: 05/10/02 Analysis Date..: 05/30/02
Prep Batch #...: 2130162 Analysis Time..: 11:46
Dilution Factor: 1

Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	**7.3 J**	**10**	**ug/L**
Acenaphthylene	ND	10	ug/L
Acridine	ND	10	ug/L
Anthracene	ND	10	ug/L
Benzo(a)anthracene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
2,3-Benzofuran	ND	10	ug/L
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Benzo(e)pyrene	ND	10	ug/L
Benzo(b)thiophene	**4.1 J**	**10**	**ug/L**
1-phenyl	ND	10	ug/L
Carbazole	**2.9 J**	**10**	**ug/L**
Chrysene	ND	10	ug/L
Dibenzo(a,h)anthracene	ND	10	ug/L
Dibenzofuran	ND	10	ug/L
Dibenzothiophene	ND	10	ug/L
2,3-Dihydroindene	**22**	**10**	**ug/L**
Fluoranthene	ND	10	ug/L
Fluorene	ND	10	ug/L
Indene	ND	10	ug/L
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Indole	ND	10	ug/L
2-Methylnaphthalene	ND	10	ug/L
1-Methylnaphthalene	**6.1 J**	**10**	**ug/L**
Naphthalene	ND	10	ug/L
Perylene	ND	10	ug/L
Phenanthrene	ND	10	ug/L
Pyrene	ND	10	ug/L
Quinoline	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	48	(30 - 160)
Fluorene d-10	71	(36 - 127)
Naphthalene-d8	81	(37 - 107)

NOTE(S):

J Estimated result. Result is less than RL.

CITY OF ST. LOUIS PARK

Client Sample ID: P308-050602

GC/MS Semivolatiles

Lot-Sample #...: D2E070224-004 Work Order #...: E023H1AA Matrix.....: WATER
Date Sampled...: 05/06/02 Date Received..: 05/07/02
Prep Date.....: 05/10/02 Analysis Date..: 05/29/02
Prep Batch #...: 2130162 Analysis Time..: 18:41
Dilution Factor: 1

Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	**1.1 J**	**10**	**ug/L**
Acenaphthylene	ND	10	ug/L
Acridine	ND	10	ug/L
Anthracene	ND	10	ug/L
Benzo(a)anthracene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
2,3-Benzofuran	ND	10	ug/L
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Benzo(e)pyrene	ND	10	ug/L
Benzo(b)thiophene	ND	10	ug/L
Biphenyl	ND	10	ug/L
Carbazole	ND	10	ug/L
Chrysene	ND	10	ug/L
Dibenzo(a,h)anthracene	ND	10	ug/L
Dibenzofuran	ND	10	ug/L
Dibenzothiophene	ND	10	ug/L
2,3-Dihydroindene	**1.6 J**	**10**	**ug/L**
Fluoranthene	ND	10	ug/L
Fluorene	ND	10	ug/L
Indene	ND	10	ug/L
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Indole	ND	10	ug/L
2-Methylnaphthalene	ND	10	ug/L
1-Methylnaphthalene	ND	10	ug/L
Naphthalene	ND	10	ug/L
Perylene	ND	10	ug/L
Phenanthrene	ND	10	ug/L
Pyrene	ND	10	ug/L
Quinoline	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	55	(30 - 160)
Fluorene d-10	63	(36 - 127)
Naphthalene-d8	66	(37 - 107)

NOTE(S):

J Estimated result. Result is less than RL.

QC DATA ASSOCIATION SUMMARY

D2E070224

Sample Preparation and Analysis Control Numbers

SAMPLE#	MATRIX	ANALYTICAL METHOD	LEACH BATCH #	PREP BATCH #	MS RUN#
001	WATER	SW846 8270C		2130162	2130050
002	WATER	SW846 8270C		2130162	2130050
003	WATER	SW846 8270C		2130162	2130050
004	WATER	SW846 8270C		2130162	2130050

METHOD BLANK REPORT

GC/MS Semivolatiles

Client Lot #...: D2E070224 Work Order #...: E07PT1AA Matrix.....: WATER
MB Lot-Sample #: D2E100000-162

Prep Date.....: 05/10/02 Analysis Time..: 15:34
Analysis Date..: 05/29/02 Prep Batch #...: 2130162
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Acenaphthene	ND	10	ug/L	SW846 8270C
Acenaphthylene	ND	10	ug/L	SW846 8270C
Acridine	ND	10	ug/L	SW846 8270C
Anthracene	ND	10	ug/L	SW846 8270C
Benzo(a)anthracene	ND	10	ug/L	SW846 8270C
Benzo(b)fluoranthene	ND	10	ug/L	SW846 8270C
Benzo(k)fluoranthene	ND	10	ug/L	SW846 8270C
2,3-Benzofuran	ND	10	ug/L	SW846 8270C
Benzo(ghi)perylene	ND	10	ug/L	SW846 8270C
Benzo(a)pyrene	ND	10	ug/L	SW846 8270C
Benzo(e)pyrene	ND	10	ug/L	SW846 8270C
Benzo(b)thiophene	ND	10	ug/L	SW846 8270C
Biphenyl	ND	10	ug/L	SW846 8270C
Carbazole	ND	10	ug/L	SW846 8270C
Chrysene	ND	10	ug/L	SW846 8270C
Dibenzo(a,h)anthracene	ND	10	ug/L	SW846 8270C
Dibenzofuran	ND	10	ug/L	SW846 8270C
Dibenzothiophene	ND	10	ug/L	SW846 8270C
2,3-Dihydroindene	ND	10	ug/L	SW846 8270C
Fluoranthene	ND	10	ug/L	SW846 8270C
Fluorene	ND	10	ug/L	SW846 8270C
Indene	ND	10	ug/L	SW846 8270C
Indeno(1,2,3-cd)pyrene	ND	10	ug/L	SW846 8270C
Indole	ND	10	ug/L	SW846 8270C
2-Methylnaphthalene	ND	10	ug/L	SW846 8270C
1-Methylnaphthalene	ND	10	ug/L	SW846 8270C
Naphthalene	ND	10	ug/L	SW846 8270C
Perylene	**1.1 J**	**10**	**ug/L**	**SW846 8270C**
Phenanthrene	ND	10	ug/L	SW846 8270C
Pyrene	ND	10	ug/L	SW846 8270C
Quinoline	ND	10	ug/L	SW846 8270C

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	100	(30 - 160)
Fluorene d-10	76	(36 - 127)
Naphthalene-d8	73	(37 - 107)

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 EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: D2E070224 Work Order #...: E07PT1AC Matrix.....: WATER
LCS Lot-Sample#: D2E100000-162
Prep Date.....: 05/10/02 Analysis Date..: 05/29/02
Prep Batch #...: 2130162 Analysis Time..: 16:11
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD
Benzo(e)pyrene	**83**	**(30 - 150)**	**SW846 8270C**
Chrysene	**79**	**(43 - 124)**	**SW846 8270C**
Fluorene	**77**	**(51 - 120)**	**SW846 8270C**
Indene	**60**	**(49 - 108)**	**SW846 8270C**
2-Methylnaphthalene	**52**	**(47 - 138)**	**SW846 8270C**
Naphthalene	**61**	**(43 - 128)**	**SW846 8270C**
Quinoline	**60**	**(40 - 126)**	**SW846 8270C**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	91	(30 - 160)
Fluorene d-10	73	(36 - 127)
Naphthalene-d8	78	(37 - 107)

NOTE(S):

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

Bold print denotes control parameters

LABORATORY CONTROL SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #...: D2E070224 Work Order #...: E07PT1AC Matrix.....: WATER
LCS Lot-Sample#: D2E100000-162
Prep Date.....: 05/10/02 Analysis Date..: 05/29/02
Prep Batch #...: 2130162 Analysis Time..: 16:11
Dilution Factor: 1

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD
Benzo(e)pyrene	**50.0**	**41.5**	**ug/L**	**83**	**SW846 8270C**
Chrysene	**50.0**	**39.7**	**ug/L**	**79**	**SW846 8270C**
Fluorene	**50.0**	**38.6**	**ug/L**	**77**	**SW846 8270C**
Indene	**50.0**	**30.2**	**ug/L**	**60**	**SW846 8270C**
2-Methylnaphthalene	**50.0**	**26.0**	**ug/L**	**52**	**SW846 8270C**
Naphthalene	**50.0**	**30.3**	**ug/L**	**61**	**SW846 8270C**
Quinoline	**50.0**	**30.1**	**ug/L**	**60**	**SW846 8270C**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	91	(30 - 160)
Fluorene d-10	73	(36 - 127)
Naphthalene-d8	78	(37 - 107)

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 #...: D2E070224 Work Order #...: E04HC1AC-MS Matrix.....: WATER
MS Lot-Sample #: D2E080204-001 E04HC1AD-MSD
Date Sampled...: 05/07/02 Date Received..: 05/08/02
Prep Date.....: 05/10/02 Analysis Date..: 05/30/02
Prep Batch #...: 2130162 Analysis Time..: 19:22
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Benzo(e)pyrene	82	(30 - 150)			SW846 8270C
	79	(30 - 150)	3.3	(0-30)	SW846 8270C
Chrysene	75	(43 - 124)			SW846 8270C
	73	(43 - 124)	1.4	(0-30)	SW846 8270C
Fluorene	77	(51 - 120)			SW846 8270C
	74	(51 - 120)	3.1	(0-30)	SW846 8270C
Indene	69	(49 - 108)			SW846 8270C
	67	(49 - 108)	2.7	(0-30)	SW846 8270C
2-Methylnaphthalene	63	(47 - 138)			SW846 8270C
	59	(47 - 138)	4.9	(0-30)	SW846 8270C
Naphthalene	68	(43 - 128)			SW846 8270C
	67	(43 - 128)	0.83	(0-30)	SW846 8270C
Quinoline	72	(40 - 126)			SW846 8270C
	71	(40 - 126)	1.2	(0-30)	SW846 8270C

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	53	(30 - 160)
	43	(30 - 160)
Fluorene d-10	73	(36 - 127)
	72	(36 - 127)
Naphthalene-d8	85	(37 - 107)
	80	(37 - 107)

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 #...: D2E070224 Work Order #...: E04HC1AC-MS Matrix.....: WATER
MS Lot-Sample #: D2E080204-001 E04HC1AD-MSD
Date Sampled...: 05/07/02 Date Received..: 05/08/02
Prep Date.....: 05/10/02 Analysis Date..: 05/30/02
Prep Batch #...: 2130162 Analysis Time..: 19:22
Dilution Factor: 1

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD
Benzo(e)pyrene	ND	47.4	38.8	ug/L	82		SW846 8270C
	ND	47.7	37.6	ug/L	79	3.3	SW846 8270C
Chrysene	ND	47.4	35.4	ug/L	75		SW846 8270C
	ND	47.7	35.0	ug/L	73	1.4	SW846 8270C
Fluorene	ND	47.4	36.4	ug/L	77		SW846 8270C
	ND	47.7	35.3	ug/L	74	3.1	SW846 8270C
Indene	ND	47.4	32.9	ug/L	69		SW846 8270C
	ND	47.7	32.0	ug/L	67	2.7	SW846 8270C
2-Methylnaphthalene	ND	47.4	29.8	ug/L	63		SW846 8270C
	ND	47.7	28.3	ug/L	59	4.9	SW846 8270C
Naphthalene	ND	47.4	32.3	ug/L	68		SW846 8270C
	ND	47.7	32.1	ug/L	67	0.83	SW846 8270C
Quinoline	ND	47.4	34.4	ug/L	72		SW846 8270C
	ND	47.7	34.0	ug/L	71	1.2	SW846 8270C

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	53	(30 - 160)
	43	(30 - 160)
Fluorene d-10	73	(36 - 127)
	72	(36 - 127)
Naphthalene-d8	85	(37 - 107)
	80	(37 - 107)

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 #...: D2E070224 Work Order #...: E02411AC-MS Matrix.....: WATER
MS Lot-Sample #: D2E070230-001 E02411AD-MSD
Date Sampled...: 05/06/02 Date Received..: 05/07/02
Prep Date.....: 05/10/02 Analysis Date..: 05/29/02
Prep Batch #...: 2130162 Analysis Time..: 19:55
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Benzo(e)pyrene	75	(30 - 150)			SW846 8270C
	65	(30 - 150)	14	(0-30)	SW846 8270C
Chrysene	72	(43 - 124)			SW846 8270C
	62	(43 - 124)	15	(0-30)	SW846 8270C
Fluorene	58	(51 - 120)			SW846 8270C
	40 a	(51 - 120)	10	(0-30)	SW846 8270C
Indene	51	(49 - 108)			SW846 8270C
	29 a	(49 - 108)	14	(0-30)	SW846 8270C
2-Methylnaphthalene	29 a	(47 - 138)			SW846 8270C
	0.0 a	(47 - 138)	0.0	(0-30)	SW846 8270C
Naphthalene	NC,DIL	(43 - 128)			SW846 8270C
	NC,DIL	(43 - 128)		(0-30)	SW846 8270C
inoline	82	(40 - 126)			SW846 8270C
	77	(40 - 126)	5.4	(0-30)	SW846 8270C

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	54	(30 - 160)
	42	(30 - 160)
Fluorene d-10	70	(36 - 127)
	64	(36 - 127)
Naphthalene-d8	78	(37 - 107)
	69	(37 - 107)

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.

NC The recovery and/or RPD were not calculated.

DIL The concentration is estimated or not reported due to dilution or the presence of interfering analytes.

MATRIX SPIKE SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #...: D2E070224 Work Order #...: E02411AC-MS Matrix.....: WATER
MS Lot-Sample #: D2E070230-001 E02411AD-MSD
Date Sampled...: 05/06/02 Date Received..: 05/07/02
Prep Date.....: 05/10/02 Analysis Date..: 05/29/02
Prep Batch #...: 2130162 Analysis Time..: 19:55
Dilution Factor: 1

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD
Benzo(e)pyrene	ND	47.8	35.8	ug/L	75		SW846 8270C
	ND	48.1	31.2	ug/L	65	14	SW846 8270C
Chrysene	ND	47.8	34.6	ug/L	72		SW846 8270C
	ND	48.1	29.9	ug/L	62	15	SW846 8270C
Fluorene	58	47.8	85.6	ug/L	58		SW846 8270C
	58	48.1	77.0	ug/L	40 a	10	SW846 8270C
Indene	54	47.8	78.7	ug/L	51		SW846 8270C
	54	48.1	68.2	ug/L	29 a	14	SW846 8270C
2-Methylnaphthalene	130	47.8	143	ug/L	29 a		SW846 8270C
	130	48.1	127	ug/L	0.0 a	0.0	SW846 8270C
Naphthalene	1100	47.8	980	ug/L	NC,DIL		SW846 8270C
	1100	48.1	960	ug/L	NC,DIL		SW846 8270C
Quinoline	ND	47.8	39.2	ug/L	82		SW846 8270C
	ND	48.1	37.2	ug/L	77	5.4	SW846 8270C

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	54	(30 - 160)
	42	(30 - 160)
Fluorene d-10	70	(36 - 127)
	64	(36 - 127)
Naphthalene-d8	78	(37 - 107)
	69	(37 - 107)

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.

NC The recovery and/or RPD were not calculated.

DIL The concentration is estimated or not reported due to dilution or the presence of interfering analytes.

Chain of Custody Record

STL Denver
4955 Yarrow Street
Arvada, CO 80002

SEVERN TRENT SERVICES

Severn Trent Laboratories, Inc.

1.7°C
0.5
5/7

STL-4124 (0700) DEN (0900)

Client: City of St. Louis Park	Project Manager: Scott Anderson	Date: 5/6/02	Chain of Custody Number: 017827
Address: 3527 Wooddale Ave	Telephone Number (Area Code)/Fax Number: 952-924-2557	Lab Number	Page 1 of 1
City: St. Louis Park; State: MN; Zip Code: 55416	Site Contact: Bill Greg	Lab Contact	
Project Name and Location (State): Reilly	Carrier/Waybill Number		
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil		Containers & Preservatives: Unpres.	H2SO4	HNOS	HCl	NaOH	ZnAc/NaOH		Analysis (Attach list if more space is needed): PAH - PPB	Special Instructions/ Conditions of Receipt
P112-050602	5/6/02	1220		X				2							X	
P309-050602	↓	1420		↓				↓							↓	
P307-050602	↓	1510		↓				↓							↓	
P308-050602	↓	1600		↓				↓							↓	

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months (A fee may be assessed if samples are retained longer than 3 months)

Turn Around Time Required: ☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other_____

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished By: Chris Boek	5/6/02	1700	1. Received By: [illegible]	5/7/02	0930
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments: RO

DISTRIBUTION: WHITE - Stays with the Sample; CANARY - Returned to Client with Report; PINK - Field Copy

G

SEVERN TRENT SERVICES

STL Denver
4955 Yarrow Street
Arvada, CO 80002-4517

Tel: 303 736 0100
Fax: 303 431 7171
www.stl-inc.com

ANALYTICAL REPORT

City of St. Louis Park

Project: Reilly Tar & Chemical Corporation

Lot #: D2E070230

Mr. Scott Anderson

City of St. Louis Park
Utility Division
3752 Wooddale Avenue
St. Louis Park, MN 55416

STL DENVER

Brian Stringer
Project Manager

June 21, 2002

G

Table Of Contents

Standard Deliverables

Report Contents	Total Number of Pages
Standard Deliverables *The **Cover Letter** and the **Report Cover** page are considered integral parts of this Standard Deliverable package. This report is incomplete unless all pages indicated in this Table of Contents are included.*	35

- **Table of Contents**
- **Project Narrative**
- **Executive Summary – Detection Highlights**
- **Methods Summary**
- **Method/Analyst Summary**
- **Sample Summary**
- **Analytical Results**
- **QC Data Association Summary**
- **QC Evaluation and/or Data Reports**
- **Chain-of-Custody**

CASE NARRATIVE

STL Lot Number D2E070230

Introduction

STL Denver received five aqueous samples and a MS/MSD on May 7, 2002 for ppb level, full scan PAH analysis.

The cooler temperatures was 3.6 °C. All containers were received in acceptable condition.

Data Quality Assessment

The results included in this report have been reviewed for compliance with STL Denver's Laboratory Quality Manual. The test results shown in this report meet all requirements of NELAC and any exceptions are noted below.

Dilution factors and footnotes have been provided to assist in the interpretation of the results. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at concentrations above the linear calibration curve, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

STL utilizes USEPA approved methods in all analytical work. The samples presented in this report were analyzed for the parameters listed on the analytical methods summary page in accordance with the methods indicated.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Polynuclear Aromatic Hydrocarbons – Method 8270C

A project-specific lower acceptable recovery limit of 30% for all QC samples and surrogates has been designated for analytical work performed under the 2002 Quality Assurance Project Plan (QAPP) for the Reilly Industries, Inc. NPL Site. All recoveries in this report are above the 30% minimum threshold.

Client samples "W420-050602" and "W420D-050602" were analyzed undiluted and then at a dilution due high concentrations of target compounds. The results that are within the linear calibration range are reported from the undiluted sample, and the results for the target compounds that were above the calibration range are then reported from the appropriate dilution. The reporting limits are elevated according to the dilutions. Additionally, the surrogate recoveries for the diluted analyses were not calculated since the surrogates were diluted below the level of quantification.

The method blank for prep batch 2130162 demonstrated results below the reporting limit for perylene. This may indicate that sample results may be biased high, however perylene was not detected in the associated samples. Because these results are less than the reporting limit and less than five times the MDL, no immediate corrective action was taken.

The MS/MSD was performed on the client-specified sample "W420-050602" for prep batch 2130162. The recoveries for fluorene, indene, and 2-methylnaphthalene were outside the control limits in the MSD and for 2-methylnaphthalene in the MS. The MS/MSD average recovery is also outside control limits for these four spike compounds. Additionally, the percent recoveries and RPD were not calculated for naphthalene because the sample concentration was greater than four times the spike amount.

Data Completeness for Polynuclear Aromatic Hydrocarbons – Method 8270C

The results contained in the report were reviewed relative to data acceptance criteria as specified in the 2002 QAPP. Based on the exceptions noted we achieved 98.3% completeness.

DATA COMPLETENESS CALCULATION

LOT D2E070230

ANALYSIS PAHs by SW846-8270C

QC Parameter	Data Planned	Valid Data Obtained
Method Blanks	31	31
MB Surrogates	3	3
LCS	7	7
LCS Surrogates	3	3
MS*	13	12
MS Surrogates*	6	6
MSD*	13	10
MSD Surrogates*	6	6
MS/MSD RPD*	13	13
FB/FBD hits	62	62
Sample/Dup. RPD	31	31
Sample Surrogates	15	15
Internal STD Area	33	33
TOTAL	**236**	**232**
% Completeness	**98.3%**	

* The MS/MSD data provided for this table was performed on client sample "W420-050602".

Sample Duplicate RPD
LOT D2E070230

Sample W420-050602 Compound	Result	Duplicate W420D-050602 Compound	Result	RPD	RPD>50%
Acenaphthene	130	Acenaphthene	130	0	OK
Acenaphthylene	ND	Acenaphthylene	ND	0	OK
Acridine	2.2	Acridine	1.8	20.00	OK
Anthracene	2.4	Anthracene	2.4	0	OK
Benzo(a)anthracene	ND	Benzo(a)anthracene	ND	0	OK
Benzo(b)fluoranthene	ND	Benzo(b)fluoranthene	ND	0	OK
Benzo(k)fluoranthene	ND	Benzo(k)fluoranthene	ND	0	OK
2,3-Benzofuran	56	2,3-Benzofuran	52	7.41	OK
Benzo(ghi)perylene	ND	Benzo(ghi)perylene	ND	0	OK
Benzo(a)pyrene	ND	Benzo(a)pyrene	ND	0	OK
Benzo(e)pyrene	ND	Benzo(e)pyrene	ND	0	OK
Benzo(b)thiophene	140	Benzo(b)thiophene	130	7.41	OK
Biphenyl	28	Biphenyl	26	7.41	OK
Carbazole	87	Carbazole	84	3.51	OK
Chrysene	ND	Chrysene	ND	0	OK
Dibenz(a,h)anthracene	ND	Dibenz(a,h)anthracene	ND	0	OK
Dibenzofuran	52	Dibenzofuran	49	5.94	OK
Dibenzothiophene	14	Dibenzothiophene	13	7.41	OK
2,3-Dihydroindene	380	2,3-Dihydroindene	420	10.00	OK
Fluoranthene	ND	Fluoranthene	ND	0	OK
Fluorene	58	Fluorene	54	7.14	OK
Indene	54	Indene	51	5.71	OK
Indeno(1,2,3-cd)pyrene	ND	Indeno(1,2,3-cd)pyrene	ND	0	OK
Indole	ND	Indole	ND	0	OK
2-Methylnaphthalene	130	2-Methylnaphthalene	120	8.00	OK
1-Methylnaphthalene	150	1-Methylnaphthalene	140	6.90	OK
Naphthalene	2700	Naphthalene	2800	3.64	OK
Perylene	ND	Perylene	ND	0	OK
Phenanthrene	39	Phenanthrene	37	5.26	OK
Pyrene	ND	Pyrene	ND	0	OK
Quinoline	ND	Quinoline	ND	0	OK

RTD = Relative Percent Difference
ND = Compound not detected in the sample
OK = RPD acceptable
p = RPD is outside of control limits
*NC = RPD not calculated, one positive result and one ND. Considered acceptable because the positive result is less than 4x the RL.

Please note that the data for the sample are from either the undiluted or diluted analyses.

EXECUTIVE SUMMARY - Detection Highlights

D2E070230

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
W420-050602 05/06/02 001				
Acenaphthene	130	10	ug/L	SW846 8270C
Acridine	2.2 J	10	ug/L	SW846 8270C
Anthracene	2.4 J	10	ug/L	SW846 8270C
2,3-Benzofuran	56	10	ug/L	SW846 8270C
Benzo(b)thiophene	140	10	ug/L	SW846 8270C
Biphenyl	28	10	ug/L	SW846 8270C
Carbazole	87	10	ug/L	SW846 8270C
Dibenzofuran	52	10	ug/L	SW846 8270C
Dibenzothiophene	14	10	ug/L	SW846 8270C
2,3-Dihydroindene	380	200	ug/L	SW846 8270C
Fluorene	58	10	ug/L	SW846 8270C
Indene	54	10	ug/L	SW846 8270C
2-Methylnaphthalene	130	10	ug/L	SW846 8270C
1-Methylnaphthalene	150	10	ug/L	SW846 8270C
Naphthalene	2700	200	ug/L	SW846 8270C
Phenanthrene	39	10	ug/L	SW846 8270C
W420D-050602 05/06/02 002				
Acenaphthene	130	10	ug/L	SW846 8270C
Acridine	1.8 J	10	ug/L	SW846 8270C
Anthracene	2.4 J	10	ug/L	SW846 8270C
2,3-Benzofuran	52	10	ug/L	SW846 8270C
Benzo(b)thiophene	130	10	ug/L	SW846 8270C
Biphenyl	26	10	ug/L	SW846 8270C
Carbazole	84	10	ug/L	SW846 8270C
Dibenzofuran	49	10	ug/L	SW846 8270C
Dibenzothiophene	13	10	ug/L	SW846 8270C
2,3-Dihydroindene	420	200	ug/L	SW846 8270C
Fluorene	54	10	ug/L	SW846 8270C
Indene	51	10	ug/L	SW846 8270C
2-Methylnaphthalene	120	10	ug/L	SW846 8270C
1-Methylnaphthalene	140	10	ug/L	SW846 8270C
Naphthalene	2800	200	ug/L	SW846 8270C
Phenanthrene	37	10	ug/L	SW846 8270C
W421-050602 05/06/02 005				
Acenaphthene	44	10	ug/L	SW846 8270C
Acridine	1.8 J	10	ug/L	SW846 8270C
Anthracene	4.6 J	10	ug/L	SW846 8270C
Benzo(a)anthracene	3.2 J	10	ug/L	SW846 8270C
Benzo(e)pyrene	1.4 J	10	ug/L	SW846 8270C

(Continued on next page)

EXECUTIVE SUMMARY - Detection Highlights

D2E070230

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
W421-050602 05/06/02 005				
Benzo(b)thiophene	19	10	ug/L	SW846 8270C
Biphenyl	5.3 J	10	ug/L	SW846 8270C
Carbazole	21	10	ug/L	SW846 8270C
Chrysene	2.6 J	10	ug/L	SW846 8270C
Dibenzofuran	15	10	ug/L	SW846 8270C
Dibenzothiophene	4.1 J	10	ug/L	SW846 8270C
2,3-Dihydroindene	61	10	ug/L	SW846 8270C
Fluoranthene	17	10	ug/L	SW846 8270C
Fluorene	25	10	ug/L	SW846 8270C
Indene	17	10	ug/L	SW846 8270C
2-Methylnaphthalene	12	10	ug/L	SW846 8270C
1-Methylnaphthalene	34	10	ug/L	SW846 8270C
Naphthalene	75	10	ug/L	SW846 8270C
Phenanthrene	41	10	ug/L	SW846 8270C
Pyrene	12	10	ug/L	SW846 8270C

METHODS SUMMARY

D2E070230

PARAMETER	ANALYTICAL METHOD	PREPARATION METHOD
Semivolatile Organic Compounds by GC/MS	SW846 8270C	SW846 3520C

References:

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

METHOD / ANALYST SUMMARY

D2E070230

ANALYTICAL METHOD	ANALYST	ANALYST ID
SW846 8270C	Tim O'Donnell	000443

References:

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

SAMPLE SUMMARY

D2E070230

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
E0241	001	W420-050602	05/06/02	
E0242	002	W420D-050602	05/06/02	
E0245	003	W420FB-050602	05/06/02	
E0248	004	W420FBD-050602	05/06/02	
E025D	005	W421-050602	05/06/02	

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: W420-050602

GC/MS Semivolatiles

Lot-Sample #...: D2E070230-001 Work Order #...: E02411AA Matrix.....: WATER
Date Sampled...: 05/06/02 Date Received..: 05/07/02
Prep Date.....: 05/10/02 Analysis Date..: 05/29/02
Prep Batch #...: 2130162 Analysis Time..: 19:18
Dilution Factor: 1

Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	**130**	**10**	**ug/L**
Acenaphthylene	ND	10	ug/L
Acridine	**2.2 J**	**10**	**ug/L**
Anthracene	**2.4 J**	**10**	**ug/L**
Benzo(a)anthracene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
2,3-Benzofuran	**56**	**10**	**ug/L**
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Benzo(e)pyrene	ND	10	ug/L
Benzo(b)thiophene	**140**	**10**	**ug/L**
Biphenyl	**28**	**10**	**ug/L**
Carbazole	**87**	**10**	**ug/L**
Chrysene	ND	10	ug/L
Dibenzo(a,h)anthracene	ND	10	ug/L
Dibenzofuran	**52**	**10**	**ug/L**
Dibenzothiophene	**14**	**10**	**ug/L**
Fluoranthene	ND	10	ug/L
Fluorene	**58**	**10**	**ug/L**
Indene	**54**	**10**	**ug/L**
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Indole	ND	10	ug/L
2-Methylnaphthalene	**130**	**10**	**ug/L**
1-Methylnaphthalene	**150**	**10**	**ug/L**
Perylene	ND	10	ug/L
Phenanthrene	**39**	**10**	**ug/L**
Pyrene	ND	10	ug/L
Quinoline	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	59	(30 - 160)
Fluorene d-10	76	(36 - 127)
Naphthalene-d8	85	(37 - 107)

NOTE(S):

J Estimated result. Result is less than RL.

CITY OF ST. LOUIS PARK

Client Sample ID: W420-050602

GC/MS Semivolatiles

Lot-Sample #...: D2E070230-001 Work Order #...: E02412AA Matrix.....: WATER
Date Sampled...: 05/06/02 Date Received..: 05/07/02
Prep Date.....: 05/10/02 Analysis Date..: 05/30/02
Prep Batch #...: 2130162 Analysis Time..: 12:24
Dilution Factor: 20

Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
2,3-Dihydroindene	380	200	ug/L
Naphthalene	2700	200	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	DIL,NC	(30 - 160)
Fluorene d-10	DIL,NC	(36 - 127)
Naphthalene-d8	DIL,NC	(37 - 107)

NOTE(S):

DIL The concentration is estimated or not reported due to dilution or the presence of interfering analytes.

NC The recovery and/or RPD were not calculated.

CITY OF ST. LOUIS PARK

Client Sample ID: W420D-050602

GC/MS Semivolatiles

Lot-Sample #...: D2E070230-002 Work Order #...: E02421AA Matrix.....: WATER
Date Sampled...: 05/06/02 Date Received..: 05/07/02
Prep Date.....: 05/10/02 Analysis Date..: 05/29/02
Prep Batch #...: 2130162 Analysis Time..: 21:09
Dilution Factor: 1

Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	**130**	**10**	**ug/L**
Acenaphthylene	ND	10	ug/L
Acridine	**1.8 J**	**10**	**ug/L**
Anthracene	**2.4 J**	**10**	**ug/L**
Benzo(a)anthracene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
2,3-Benzofuran	**52**	**10**	**ug/L**
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Benzo(e)pyrene	ND	10	ug/L
Benzo(b)thiophene	**130**	**10**	**ug/L**
Biphenyl	**26**	**10**	**ug/L**
Carbazole	**84**	**10**	**ug/L**
Chrysene	ND	10	ug/L
Dibenzo(a,h)anthracene	ND	10	ug/L
Dibenzofuran	**49**	**10**	**ug/L**
Dibenzothiophene	**13**	**10**	**ug/L**
Fluoranthene	ND	10	ug/L
Fluorene	**54**	**10**	**ug/L**
Indene	**51**	**10**	**ug/L**
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Indole	ND	10	ug/L
2-Methylnaphthalene	**120**	**10**	**ug/L**
1-Methylnaphthalene	**140**	**10**	**ug/L**
Perylene	ND	10	ug/L
Phenanthrene	**37**	**10**	**ug/L**
Pyrene	ND	10	ug/L
Quinoline	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	54	(30 - 160)
Fluorene d-10	69	(36 - 127)
Naphthalene-d8	81	(37 - 107)

NOTE(S):

J Estimated result. Result is less than RL.

CITY OF ST. LOUIS PARK

Client Sample ID: W420D-050602

GC/MS Semivolatiles

Lot-Sample #...:	D2E070230-002	Work Order #...:	E02422AA	Matrix.....:	WATER
Date Sampled...:	05/06/02	Date Received..:	05/07/02		
Prep Date.....:	05/10/02	Analysis Date..:	05/30/02		
Prep Batch #...:	2130162	Analysis Time..:	13:40		
Dilution Factor:	20				
		Method.....:	SW846 8270C		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
2,3-Dihydroindene	420	200	ug/L
Naphthalene	2800	200	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	DIL,NC	(30 - 160)
Fluorene d-10	DIL,NC	(36 - 127)
Naphthalene-d8	DIL,NC	(37 - 107)

NOTE(S):

DIL The concentration is estimated or not reported due to dilution or the presence of interfering analytes.

NC The recovery and/or RPD were not calculated.

CITY OF ST. LOUIS PARK

Client Sample ID: W420FB-050602

GC/MS Semivolatiles

Lot-Sample #...: D2E070230-003 Work Order #...: E02451AA Matrix.....: WATER
Date Sampled...: 05/06/02 Date Received..: 05/07/02
Prep Date.....: 05/10/02 Analysis Date..: 05/29/02
Prep Batch #...: 2130162 Analysis Time..: 21:46
Dilution Factor: 1

Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	10	ug/L
Acenaphthylene	ND	10	ug/L
Acridine	ND	10	ug/L
Anthracene	ND	10	ug/L
Benzo(a)anthracene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
2,3-Benzofuran	ND	10	ug/L
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Benzo(e)pyrene	ND	10	ug/L
Benzo(b)thiophene	ND	10	ug/L
Biphenyl	ND	10	ug/L
Carbazole	ND	10	ug/L
Chrysene	ND	10	ug/L
Dibenzo(a,h)anthracene	ND	10	ug/L
Dibenzofuran	ND	10	ug/L
Dibenzothiophene	ND	10	ug/L
2,3-Dihydroindene	ND	10	ug/L
Fluoranthene	ND	10	ug/L
Fluorene	ND	10	ug/L
Indene	ND	10	ug/L
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Indole	ND	10	ug/L
2-Methylnaphthalene	ND	10	ug/L
1-Methylnaphthalene	ND	10	ug/L
Naphthalene	ND	10	ug/L
Perylene	ND	10	ug/L
Phenanthrene	ND	10	ug/L
Pyrene	ND	10	ug/L
Quinoline	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	90	(30 - 160)
Fluorene d-10	69	(36 - 127)
Naphthalene-d8	70	(37 - 107)

CITY OF ST. LOUIS PARK

Client Sample ID: W420FBD-050602

GC/MS Semivolatiles

Lot-Sample #...: D2E070230-004 Work Order #...: E02481AA Matrix.....: WATER
Date Sampled...: 05/06/02 Date Received..: 05/07/02
Prep Date.....: 05/10/02 Analysis Date..: 05/29/02
Prep Batch #...: 2130162 Analysis Time..: 22:23
Dilution Factor: 1

Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	10	ug/L
Acenaphthylene	ND	10	ug/L
Acridine	ND	10	ug/L
Anthracene	ND	10	ug/L
Benzo(a)anthracene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
2,3-Benzofuran	ND	10	ug/L
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Benzo(e)pyrene	ND	10	ug/L
Benzo(b)thiophene	ND	10	ug/L
Biphenyl	ND	10	ug/L
Carbazole	ND	10	ug/L
Chrysene	ND	10	ug/L
Dibenzo(a,h)anthracene	ND	10	ug/L
Dibenzofuran	ND	10	ug/L
Dibenzothiophene	ND	10	ug/L
2,3-Dihydroindene	ND	10	ug/L
Fluoranthene	ND	10	ug/L
Fluorene	ND	10	ug/L
Indene	ND	10	ug/L
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Indole	ND	10	ug/L
2-Methylnaphthalene	ND	10	ug/L
1-Methylnaphthalene	ND	10	ug/L
Naphthalene	ND	10	ug/L
Perylene	ND	10	ug/L
Phenanthrene	ND	10	ug/L
Pyrene	ND	10	ug/L
Quinoline	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	89	(30 - 160)
Fluorene d-10	70	(36 - 127)
Naphthalene-d8	74	(37 - 107)

CITY OF ST. LOUIS PARK

Client Sample ID: W421-050602

GC/MS Semivolatiles

Lot-Sample #...: D2E070230-005 Work Order #...: E025D1AA Matrix.....: WG
Date Sampled...: 05/06/02 Date Received..: 05/07/02
Prep Date.....: 05/10/02 Analysis Date..: 05/29/02
Prep Batch #...: 2130162 Analysis Time..: 23:00
Dilution Factor: 1

Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	**44**	**10**	**ug/L**
Acenaphthylene	ND	10	ug/L
Acridine	**1.8 J**	**10**	**ug/L**
Anthracene	**4.6 J**	**10**	**ug/L**
Benzo(a)anthracene	**3.2 J**	**10**	**ug/L**
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
2,3-Benzofuran	ND	10	ug/L
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Benzo(e)pyrene	**1.4 J**	**10**	**ug/L**
Benzo(b)thiophene	**19**	**10**	**ug/L**
Biphenyl	**5.3 J**	**10**	**ug/L**
Carbazole	**21**	**10**	**ug/L**
Chrysene	**2.6 J**	**10**	**ug/L**
Dibenzo(a,h)anthracene	ND	10	ug/L
Dibenzofuran	**15**	**10**	**ug/L**
Dibenzothiophene	**4.1 J**	**10**	**ug/L**
2,3-Dihydroindene	**61**	**10**	**ug/L**
Fluoranthene	**17**	**10**	**ug/L**
Fluorene	**25**	**10**	**ug/L**
Indene	**17**	**10**	**ug/L**
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Indole	ND	10	ug/L
2-Methylnaphthalene	**12**	**10**	**ug/L**
1-Methylnaphthalene	**34**	**10**	**ug/L**
Naphthalene	**75**	**10**	**ug/L**
Perylene	ND	10	ug/L
Phenanthrene	**41**	**10**	**ug/L**
Pyrene	**12**	**10**	**ug/L**
Quinoline	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	58	(30 - 160)
Fluorene d-10	46	(36 - 127)
Naphthalene-d8	45	(37 - 107)

NOTE(S):

J Estimated result. Result is less than RL.

QC DATA ASSOCIATION SUMMARY

D2E070230

Sample Preparation and Analysis Control Numbers

SAMPLE#	MATRIX	ANALYTICAL METHOD	LEACH BATCH #	PREP BATCH #	MS RUN#
001	WATER	SW846 8270C		2130162	2130050
002	WATER	SW846 8270C		2130162	2130050
003	WATER	SW846 8270C		2130162	2130050
004	WATER	SW846 8270C		2130162	2130050
005	WATER	SW846 8270C		2130162	2130050

METHOD BLANK REPORT

GC/MS Semivolatiles

Client Lot #...: D2E070230 Work Order #...: E07PT1AA Matrix.....: WATER
MB Lot-Sample #: D2E100000-162

Prep Date.....: 05/10/02 Analysis Time..: 15:34
Analysis Date..: 05/29/02 Prep Batch #...: 2130162
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Acenaphthene	ND	10	ug/L	SW846 8270C
Acenaphthylene	ND	10	ug/L	SW846 8270C
Acridine	ND	10	ug/L	SW846 8270C
Anthracene	ND	10	ug/L	SW846 8270C
Benzo(a)anthracene	ND	10	ug/L	SW846 8270C
Benzo(b)fluoranthene	ND	10	ug/L	SW846 8270C
Benzo(k)fluoranthene	ND	10	ug/L	SW846 8270C
2,3-Benzofuran	ND	10	ug/L	SW846 8270C
Benzo(ghi)perylene	ND	10	ug/L	SW846 8270C
Benzo(a)pyrene	ND	10	ug/L	SW846 8270C
Benzo(e)pyrene	ND	10	ug/L	SW846 8270C
Benzo(b)thiophene	ND	10	ug/L	SW846 8270C
[illegible]phenyl	ND	10	ug/L	SW846 8270C
Carbazole	ND	10	ug/L	SW846 8270C
Chrysene	ND	10	ug/L	SW846 8270C
Dibenzo(a,h)anthracene	ND	10	ug/L	SW846 8270C
Dibenzofuran	ND	10	ug/L	SW846 8270C
Dibenzothiophene	ND	10	ug/L	SW846 8270C
2,3-Dihydroindene	ND	10	ug/L	SW846 8270C
Fluoranthene	ND	10	ug/L	SW846 8270C
Fluorene	ND	10	ug/L	SW846 8270C
Indene	ND	10	ug/L	SW846 8270C
Indeno(1,2,3-cd)pyrene	ND	10	ug/L	SW846 8270C
Indole	ND	10	ug/L	SW846 8270C
2-Methylnaphthalene	ND	10	ug/L	SW846 8270C
1-Methylnaphthalene	ND	10	ug/L	SW846 8270C
Naphthalene	ND	10	ug/L	SW846 8270C
Perylene	**1.1 J**	**10**	**ug/L**	**SW846 8270C**
Phenanthrene	ND	10	ug/L	SW846 8270C
Pyrene	ND	10	ug/L	SW846 8270C
Quinoline	ND	10	ug/L	SW846 8270C

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	100	(30 - 160)
Fluorene d-10	76	(36 - 127)
Naphthalene-d8	73	(37 - 107)

[illegible]TE(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 EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: D2E070230 Work Order #...: E07PT1AC Matrix.....: WATER
LCS Lot-Sample#: D2E100000-162
Prep Date.....: 05/10/02 Analysis Date..: 05/29/02
Prep Batch #...: 2130162 Analysis Time..: 16:11
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD
Benzo(e)pyrene	**83**	**(30 - 150)**	**SW846 8270C**
Chrysene	**79**	**(43 - 124)**	**SW846 8270C**
Fluorene	**77**	**(51 - 120)**	**SW846 8270C**
Indene	**60**	**(49 - 108)**	**SW846 8270C**
2-Methylnaphthalene	**52**	**(47 - 138)**	**SW846 8270C**
Naphthalene	**61**	**(43 - 128)**	**SW846 8270C**
Quinoline	**60**	**(40 - 126)**	**SW846 8270C**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	91	(30 - 160)
Fluorene d-10	73	(36 - 127)
Naphthalene-d8	78	(37 - 107)

NOTE(S):

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

Bold print denotes control parameters

LABORATORY CONTROL SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #...: D2E070230 Work Order #...: E07PT1AC Matrix.....: WATER
LCS Lot-Sample#: D2E100000-162
Prep Date.....: 05/10/02 Analysis Date..: 05/29/02
Prep Batch #...: 2130162 Analysis Time..: 16:11
Dilution Factor: 1

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD
Benzo(e)pyrene	50.0	41.5	ug/L	83	SW846 8270C
Chrysene	50.0	39.7	ug/L	79	SW846 8270C
Fluorene	50.0	38.6	ug/L	77	SW846 8270C
Indene	50.0	30.2	ug/L	60	SW846 8270C
2-Methylnaphthalene	50.0	26.0	ug/L	52	SW846 8270C
Naphthalene	50.0	30.3	ug/L	61	SW846 8270C
Quinoline	50.0	30.1	ug/L	60	SW846 8270C

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	91	(30 - 160)
Fluorene d-10	73	(36 - 127)
Naphthalene-d8	78	(37 - 107)

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 #...: D2E070230 Work Order #...: E04HC1AC-MS Matrix.....: WATER
MS Lot-Sample #: D2E080204-001 E04HC1AD-MSD
Date Sampled...: 05/07/02 Date Received..: 05/08/02
Prep Date.....: 05/10/02 Analysis Date..: 05/30/02
Prep Batch #...: 2130162 Analysis Time..: 19:22
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Benzo(e)pyrene	82	(30 - 150)			SW846 8270C
	79	(30 - 150)	3.3	(0-30)	SW846 8270C
Chrysene	75	(43 - 124)			SW846 8270C
	73	(43 - 124)	1.4	(0-30)	SW846 8270C
Fluorene	77	(51 - 120)			SW846 8270C
	74	(51 - 120)	3.1	(0-30)	SW846 8270C
Indene	69	(49 - 108)			SW846 8270C
	67	(49 - 108)	2.7	(0-30)	SW846 8270C
2-Methylnaphthalene	63	(47 - 138)			SW846 8270C
	59	(47 - 138)	4.9	(0-30)	SW846 8270C
Naphthalene	68	(43 - 128)			SW846 8270C
	67	(43 - 128)	0.83	(0-30)	SW846 8270C
Quinoline	72	(40 - 126)			SW846 8270C
	71	(40 - 126)	1.2	(0-30)	SW846 8270C

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	53	(30 - 160)
	43	(30 - 160)
Fluorene d-10	73	(36 - 127)
	72	(36 - 127)
Naphthalene-d8	85	(37 - 107)
	80	(37 - 107)

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 #...: D2E070230 Work Order #...: E04HC1AC-MS Matrix.....: WATER
MS Lot-Sample #: D2E080204-001 E04HC1AD-MSD
Date Sampled...: 05/07/02 Date Received..: 05/08/02
Prep Date.....: 05/10/02 Analysis Date..: 05/30/02
Prep Batch #...: 2130162 Analysis Time..: 19:22
Dilution Factor: 1

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD
Benzo(e)pyrene	ND	47.4	38.8	ug/L	82		SW846 8270C
	ND	47.7	37.6	ug/L	79	3.3	SW846 8270C
Chrysene	ND	47.4	35.4	ug/L	75		SW846 8270C
	ND	47.7	35.0	ug/L	73	1.4	SW846 8270C
Fluorene	ND	47.4	36.4	ug/L	77		SW846 8270C
	ND	47.7	35.3	ug/L	74	3.1	SW846 8270C
Indene	ND	47.4	32.9	ug/L	69		SW846 8270C
	ND	47.7	32.0	ug/L	67	2.7	SW846 8270C
2-Methylnaphthalene	ND	47.4	29.8	ug/L	63		SW846 8270C
	ND	47.7	28.3	ug/L	59	4.9	SW846 8270C
Naphthalene	ND	47.4	32.3	ug/L	68		SW846 8270C
	ND	47.7	32.1	ug/L	67	0.83	SW846 8270C
Quinoline	ND	47.4	34.4	ug/L	72		SW846 8270C
	ND	47.7	34.0	ug/L	71	1.2	SW846 8270C

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	53	(30 - 160)
	43	(30 - 160)
Fluorene d-10	73	(36 - 127)
	72	(36 - 127)
Naphthalene-d8	85	(37 - 107)
	80	(37 - 107)

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 #...: D2E070230 Work Order #...: E02411AC-MS Matrix.....: WG
MS Lot-Sample #: D2E070230-001 E02411AD-MSD
Date Sampled...: 05/06/02 Date Received..: 05/07/02
Prep Date.....: 05/10/02 Analysis Date..: 05/29/02
Prep Batch #...: 2130162 Analysis Time..: 19:55
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Benzo(e)pyrene	75	(30 - 150)			SW846 8270C
	65	(30 - 150)	14	(0-30)	SW846 8270C
Chrysene	72	(43 - 124)			SW846 8270C
	62	(43 - 124)	15	(0-30)	SW846 8270C
Fluorene	58	(51 - 120)			SW846 8270C
	40 a	(51 - 120)	10	(0-30)	SW846 8270C
Indene	51	(49 - 108)			SW846 8270C
	29 a	(49 - 108)	14	(0-30)	SW846 8270C
2-Methylnaphthalene	29 a	(47 - 138)			SW846 8270C
	0.0 a	(47 - 138)	0.0	(0-30)	SW846 8270C
Naphthalene	NC,DIL	(43 - 128)			SW846 8270C
	NC,DIL	(43 - 128)		(0-30)	SW846 8270C
Quinoline	82	(40 - 126)			SW846 8270C
	77	(40 - 126)	5.4	(0-30)	SW846 8270C

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	54	(30 - 160)
	42	(30 - 160)
Fluorene d-10	70	(36 - 127)
	64	(36 - 127)
Naphthalene-d8	78	(37 - 107)
	69	(37 - 107)

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.*

NC The recovery and/or RPD were not calculated.

DIL The concentration is estimated or not reported due to dilution or the presence of interfering analytes.

MATRIX SPIKE SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #...: D2E070230 Work Order #...: E02411AC-MS Matrix.....: WG
MS Lot-Sample #: D2E070230-001 E02411AD-MSD
Date Sampled...: 05/06/02 Date Received..: 05/07/02
Prep Date.....: 05/10/02 Analysis Date..: 05/29/02
Prep Batch #...: 2130162 Analysis Time..: 19:55
Dilution Factor: 1

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD
Benzo(e)pyrene	ND	47.8	35.8	ug/L	75		SW846 8270C
	ND	48.1	31.2	ug/L	65	14	SW846 8270C
Chrysene	ND	47.8	34.6	ug/L	72		SW846 8270C
	ND	48.1	29.9	ug/L	62	15	SW846 8270C
Fluorene	58	47.8	85.6	ug/L	58		SW846 8270C
	58	48.1	77.0	ug/L	40 a	10	SW846 8270C
Indene	54	47.8	78.7	ug/L	51		SW846 8270C
	54	48.1	68.2	ug/L	29 a	14	SW846 8270C
2-Methylnaphthalene	130	47.8	143	ug/L	29 a		SW846 8270C
	130	48.1	127	ug/L	0.0 a	0.0	SW846 8270C
Naphthalene	1100	47.8	980	ug/L	NC,DIL		SW846 8270C
	1100	48.1	960	ug/L	NC,DIL		SW846 8270C
Quinoline	ND	47.8	39.2	ug/L	82		SW846 8270C
	ND	48.1	37.2	ug/L	77	5.4	SW846 8270C

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	54	(30 - 160)
	42	(30 - 160)
Fluorene d-10	70	(36 - 127)
	64	(36 - 127)
Naphthalene-d8	78	(37 - 107)
	69	(37 - 107)

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.

NC The recovery and/or RPD were not calculated.

DIL The concentration is estimated or not reported due to dilution or the presence of interfering analytes.

[redacted]

Chain of Custody Record

STL Denver
4955 Yarrow Street
Arvada, CO 80002

SEVERN TRENT SERVICES

Severn Trent Laboratories, Inc.

F.D.C. P.S. 5/7

STL-4124 (0700) DEN (0900)

Client: CITY OF ST. LOUIS PARK	Project Manager: Scott Anderson	Date: 5-6-02	Chain of Custody Number: 017824
Address: UTILITY DIVISION, 3752 WOODDALE AVENUE	Telephone Number (Area Code)/Fax Number: 924-2557 (952) 924-2570	Lab Number:	Page ____ of ____
City: ST. LOUIS PARK, MN 55416	Site Contact: SAME	Lab Contact:	
Project Name and Location (State): SAME	Carrier/Waybill Number: FED EX 800846316003		
Contract/Purchase Order/Quote No.:			

Analysis (Attach list if more space is needed)

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Containers & Preservatives: Unpres.	H2SO4	HNOS	HCl	NaOH	ZnAc/NaOH		PPB PAH	Special Instructions/ Conditions of Receipt
W420-050602 C#0005	5-6-02			X			X						2	X	
W420D050602															
W420MS-050602															
W420MSD-050602															
W420FB-050602															
W420FBD-050602															
W421-050602 C#0008	5-6-02			X			X						2	X	

Possible Hazard Identification: [X] Non-Hazard [ ] Flammable [ ] Skin Irritant [ ] Poison B [ ] Unknown

Sample Disposal: [ ] Return To Client [X] Disposal By Lab [ ] Archive For ____ Months (A fee may be assessed if samples are retained longer than 3 months)

Turn Around Time Required: [ ] 24 Hours [ ] 48 Hours [ ] 7 Days [ ] 14 Days [ ] 21 Days [ ] Other____

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished By: [signature]	5-6-02	1400	1. Received By: [signature]	~~5/6/02~~ 5/7/02	0930
2. Relinquished By:			2. Received By:		
3. Relinquished By:			3. Received By:		

Comments

25

DISTRIBUTION: WHITE - Stays with the Sample; CANARY - Returned to Client with Report; PINK - Field Copy

H

SEVERN TRENT SERVICES

STL Denver
4955 Yarrow Street
Arvada, CO 80002-4517

Tel: 303 736 0100
Fax: 303 431 7171
www.stl-inc.com

ANALYTICAL REPORT

City of St. Louis Park

Project: Reilly Tar & Chemical Corporation

Lot #: D2E080200

Mr. Scott Anderson

City of St. Louis Park
Utility Division
3752 Wooddale Avenue
St. Louis Park, MN 55416

STL DENVER

Brian Stringer
Project Manager

June 24, 2002

H

Table Of Contents

Standard Deliverables

Report Contents	Total Number of Pages
Standard Deliverables *The **Cover Letter** and the **Report Cover** page are considered integral parts of this Standard Deliverable package. This report is incomplete unless all pages indicated in this Table of Contents are included.*	23

- **Table of Contents**
- **Project Narrative**
- **Executive Summary – Detection Highlights**
- **Methods Summary**
- **Method/Analyst Summary**
- **Sample Summary**
- **Analytical Results**
- **QC Data Association Summary**
- **QC Evaluation and/or Data Reports**
- **Chain-of-Custody**

CASE NARRATIVE

STL Lot Number D2E080200

Introduction

STL Denver received four aqueous samples on May 8, 2002 for ppb level, full scan PAH analysis.

The cooler temperatures were 1.8 and 4.8 °C. All containers were received in acceptable condition.

Data Quality Assessment

The results included in this report have been reviewed for compliance with STL Denver's Laboratory Quality Manual. The test results shown in this report meet all requirements of NELAC and any exceptions are noted below.

Dilution factors and footnotes have been provided to assist in the interpretation of the results. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at concentrations above the linear calibration curve, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

STL utilizes USEPA approved methods in all analytical work. The samples presented in this report were analyzed for the parameters listed on the analytical methods summary page in accordance with the methods indicated.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Polynuclear Aromatic Hydrocarbons – Method 8270C

A project-specific lower acceptable recovery limit of 30% for all QC samples and surrogates has been designated for analytical work performed under the 2002 Quality Assurance Project Plan (QAPP) for the Reilly Industries, Inc. NPL Site. All recoveries in this report are above the 30% minimum threshold.

The method blank for prep batch 2130162 demonstrated results below the reporting limit for perylene. This may indicate that sample results may be biased high, however perylene was not detected in the associated samples. Because these results are less than the reporting limit and less than five times the MDL, no immediate corrective action was taken.

One of the two matrix spikes performed on a sample from another lot for prep batch 2130162 demonstrated recoveries for fluorene, indene, and 2-methylnaphthalene outside the control limits in the MSD and for 2-methylnaphthalene in the MS. The MS/MSD average recovery is also outside control limits for these four spike compounds. Additionally, the percent recoveries and RPD were not calculated for naphthalene because the sample concentration was greater than four times the spike amount.

Case Narrative for D2E080200 (continued)

Data Completeness for Polynuclear Aromatic Hydrocarbons – Method 8270C

The results contained in the report were reviewed relative to data acceptance criteria as specified in the 2002 QAPP. Based on the exceptions noted we achieved 100% completeness.

DATA COMPLETENESS CALCULATION

LOT D2E080200

ANALYSIS PAHs by SW846-8270C

QC Parameter	Data Planned	Valid Data Obtained
Method Blanks	31	31
MB Surrogates	3	3
LCS	7	7
LCS Surrogates	3	3
MS*	NA	NA
MS Surrogates*	NA	NA
MSD*	NA	NA
MSD Surrogates*	NA	NA
MS/MSD RPD*	NA	NA
FB/FBD hits*	NA	NA
Sample/Dup. RPD*	NA	NA
Sample Surrogates	21	21
Internal STD Area*	27	27
TOTAL	**92**	**92**
% Completeness	**100%**	

* There is no MS/MSD, sample duplicate, or field blank samples on this lot.

EXECUTIVE SUMMARY - Detection Highlights

D2E080200

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
W426 05/07/02 09:30 001				
Acenaphthene	110	10	ug/L	SW846 8270C
Anthracene	4.3 J	10	ug/L	SW846 8270C
Benzo(b)thiophene	9.1 J	10	ug/L	SW846 8270C
Biphenyl	25	10	ug/L	SW846 8270C
Carbazole	23	10	ug/L	SW846 8270C
Dibenzofuran	38	10	ug/L	SW846 8270C
Dibenzothiophene	5.4 J	10	ug/L	SW846 8270C
2,3-Dihydroindene	48	10	ug/L	SW846 8270C
Fluoranthene	4.2 J	10	ug/L	SW846 8270C
Fluorene	59	10	ug/L	SW846 8270C
Indene	13	10	ug/L	SW846 8270C
1-Methylnaphthalene	140	10	ug/L	SW846 8270C
Naphthalene	23	10	ug/L	SW846 8270C
Phenanthrene	62	10	ug/L	SW846 8270C
P312 05/07/02 14:15 005				
Acenaphthene	4.1 J	10	ug/L	SW846 8270C
P310 05/07/02 17:15 007				
Acenaphthene	9.0 J	10	ug/L	SW846 8270C
Benzo(b)thiophene	1.4 J	10	ug/L	SW846 8270C
Carbazole	4.0 J	10	ug/L	SW846 8270C

METHODS SUMMARY

D2E080200

PARAMETER	ANALYTICAL METHOD	PREPARATION METHOD
Semivolatile Organic Compounds by GC/MS	SW846 8270C	SW846 3520C

References:

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

METHOD / ANALYST SUMMARY

D2E080200

ANALYTICAL METHOD	ANALYST	ANALYST ID
SW846 8270C	Tim O'Donnell	000443

References:

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

SAMPLE SUMMARY

D2E080200

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
E04GD	001	W426	05/07/02	09:30
E04GP	002	W427	05/07/02	10:45
E04GR	003	W117	05/07/02	11:15
E04GV	004	P109	05/07/02	13:25
E04G2	005	P312	05/07/02	14:15
E04G3	006	W136	05/07/02	16:30
E04G4	007	P310	05/07/02	17:15

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: W426

GC/MS Semivolatiles

Lot-Sample #...: D2E080200-001 Work Order #...: E04GD1AA Matrix.....: WATER
Date Sampled...: 05/07/02 Date Received..: 05/08/02
Prep Date.....: 05/10/02 Analysis Date..: 05/30/02
Prep Batch #...: 2130162 Analysis Time..: 14:18
Dilution Factor: 1

Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	**110**	**10**	**ug/L**
Acenaphthylene	ND	10	ug/L
Acridine	ND	10	ug/L
Anthracene	**4.3 J**	**10**	**ug/L**
Benzo(a)anthracene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
2,3-Benzofuran	ND	10	ug/L
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Benzo(e)pyrene	ND	10	ug/L
Benzo(b)thiophene	**9.1 J**	**10**	**ug/L**
[illegible]phenyl	**25**	**10**	**ug/L**
[illegible]arbazole	**23**	**10**	**ug/L**
Chrysene	ND	10	ug/L
Dibenzo(a,h)anthracene	ND	10	ug/L
Dibenzofuran	**38**	**10**	**ug/L**
Dibenzothiophene	**5.4 J**	**10**	**ug/L**
2,3-Dihydroindene	**48**	**10**	**ug/L**
Fluoranthene	**4.2 J**	**10**	**ug/L**
Fluorene	**59**	**10**	**ug/L**
Indene	**13**	**10**	**ug/L**
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Indole	ND	10	ug/L
2-Methylnaphthalene	ND	10	ug/L
1-Methylnaphthalene	**140**	**10**	**ug/L**
Naphthalene	**23**	**10**	**ug/L**
Perylene	ND	10	ug/L
Phenanthrene	**62**	**10**	**ug/L**
Pyrene	ND	10	ug/L
Quinoline	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	75	(30 - 160)
Fluorene d-10	62	(36 - 127)
Naphthalene-d8	62	(37 - 107)

[illegible]TE(S):

J Estimated result. Result is less than RL.

CITY OF ST. LOUIS PARK

Client Sample ID: W427

GC/MS Semivolatiles

Lot-Sample #...: D2E080200-002 Work Order #...: E04GP1AA Matrix.....: WATER
Date Sampled...: 05/07/02 Date Received..: 05/08/02
Prep Date.....: 05/10/02 Analysis Date..: 05/30/02
Prep Batch #...: 2130162 Analysis Time..: 14:56
Dilution Factor: 1

Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	10	ug/L
Acenaphthylene	ND	10	ug/L
Acridine	ND	10	ug/L
Anthracene	ND	10	ug/L
Benzo(a)anthracene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
2,3-Benzofuran	ND	10	ug/L
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Benzo(e)pyrene	ND	10	ug/L
Benzo(b)thiophene	ND	10	ug/L
Biphenyl	ND	10	ug/L
Carbazole	ND	10	ug/L
Chrysene	ND	10	ug/L
Dibenzo(a,h)anthracene	ND	10	ug/L
Dibenzofuran	ND	10	ug/L
Dibenzothiophene	ND	10	ug/L
2,3-Dihydroindene	ND	10	ug/L
Fluoranthene	ND	10	ug/L
Fluorene	ND	10	ug/L
Indene	ND	10	ug/L
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Indole	ND	10	ug/L
2-Methylnaphthalene	ND	10	ug/L
1-Methylnaphthalene	ND	10	ug/L
Naphthalene	ND	10	ug/L
Perylene	ND	10	ug/L
Phenanthrene	ND	10	ug/L
Pyrene	ND	10	ug/L
Quinoline	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	86	(30 - 160)
Fluorene d-10	72	(36 - 127)
Naphthalene-d8	77	(37 - 107)

CITY OF ST. LOUIS PARK

Client Sample ID: W117

GC/MS Semivolatiles

Lot-Sample #...: D2E080200-003 **Work Order #...:** E04GR1AA **Matrix.....:** WATER
Date Sampled...: 05/07/02 **Date Received..:** 05/08/02
Prep Date.....: 05/10/02 **Analysis Date..:** 05/30/02
Prep Batch #...: 2130162 **Analysis Time..:** 15:34
Dilution Factor: 1

Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	10	ug/L
Acenaphthylene	ND	10	ug/L
Acridine	ND	10	ug/L
Anthracene	ND	10	ug/L
Benzo(a)anthracene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
2,3-Benzofuran	ND	10	ug/L
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Benzo(e)pyrene	ND	10	ug/L
Benzo(b)thiophene	ND	10	ug/L
Biphenyl	ND	10	ug/L
Carbazole	ND	10	ug/L
Chrysene	ND	10	ug/L
Dibenzo(a,h)anthracene	ND	10	ug/L
Dibenzofuran	ND	10	ug/L
Dibenzothiophene	ND	10	ug/L
2,3-Dihydroindene	ND	10	ug/L
Fluoranthene	ND	10	ug/L
Fluorene	ND	10	ug/L
Indene	ND	10	ug/L
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Indole	ND	10	ug/L
2-Methylnaphthalene	ND	10	ug/L
1-Methylnaphthalene	ND	10	ug/L
Naphthalene	ND	10	ug/L
Perylene	ND	10	ug/L
Phenanthrene	ND	10	ug/L
Pyrene	ND	10	ug/L
Quinoline	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	74	(30 - 160)
Fluorene d-10	61	(36 - 127)
Naphthalene-d8	63	(37 - 107)

CITY OF ST. LOUIS PARK

Client Sample ID: P109

GC/MS Semivolatiles

Lot-Sample #...: D2E080200-004 Work Order #...: E04GV1AA Matrix.....: WATER
Date Sampled...: 05/07/02 Date Received..: 05/08/02
Prep Date.....: 05/10/02 Analysis Date..: 05/30/02
Prep Batch #...: 2130162 Analysis Time..: 16:13
Dilution Factor: 1

Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	10	ug/L
Acenaphthylene	ND	10	ug/L
Acridine	ND	10	ug/L
Anthracene	ND	10	ug/L
Benzo(a)anthracene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
2,3-Benzofuran	ND	10	ug/L
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Benzo(e)pyrene	ND	10	ug/L
Benzo(b)thiophene	ND	10	ug/L
Biphenyl	ND	10	ug/L
Carbazole	ND	10	ug/L
Chrysene	ND	10	ug/L
Dibenzo(a,h)anthracene	ND	10	ug/L
Dibenzofuran	ND	10	ug/L
Dibenzothiophene	ND	10	ug/L
2,3-Dihydroindene	ND	10	ug/L
Fluoranthene	ND	10	ug/L
Fluorene	ND	10	ug/L
Indene	ND	10	ug/L
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Indole	ND	10	ug/L
2-Methylnaphthalene	ND	10	ug/L
1-Methylnaphthalene	ND	10	ug/L
Naphthalene	ND	10	ug/L
Perylene	ND	10	ug/L
Phenanthrene	ND	10	ug/L
Pyrene	ND	10	ug/L
Quinoline	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	81	(30 - 160)
Fluorene d-10	69	(36 - 127)
Naphthalene-d8	73	(37 - 107)

CITY OF ST. LOUIS PARK

Client Sample ID: P312

GC/MS Semivolatiles

Lot-Sample #...: D2E080200-005 **Work Order #...:** E04G21AA **Matrix.....:** WATER
Date Sampled...: 05/07/02 **Date Received..:** 05/08/02
Prep Date.....: 05/10/02 **Analysis Date..:** 05/30/02
Prep Batch #...: 2130162 **Analysis Time..:** 16:51
Dilution Factor: 1

Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	**4.1 J**	**10**	**ug/L**
Acenaphthylene	ND	10	ug/L
Acridine	ND	10	ug/L
Anthracene	ND	10	ug/L
Benzo(a)anthracene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
2,3-Benzofuran	ND	10	ug/L
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Benzo(e)pyrene	ND	10	ug/L
Benzo(b)thiophene	ND	10	ug/L
Biphenyl	ND	10	ug/L
Carbazole	ND	10	ug/L
Chrysene	ND	10	ug/L
Dibenzo(a,h)anthracene	ND	10	ug/L
Dibenzofuran	ND	10	ug/L
Dibenzothiophene	ND	10	ug/L
2,3-Dihydroindene	ND	10	ug/L
Fluoranthene	ND	10	ug/L
Fluorene	ND	10	ug/L
Indene	ND	10	ug/L
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Indole	ND	10	ug/L
2-Methylnaphthalene	ND	10	ug/L
1-Methylnaphthalene	ND	10	ug/L
Naphthalene	ND	10	ug/L
Perylene	ND	10	ug/L
Phenanthrene	ND	10	ug/L
Pyrene	ND	10	ug/L
Quinoline	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	74	(30 - 160)
Fluorene d-10	61	(36 - 127)
Naphthalene-d8	66	(37 - 107)

NOTE(S):

J Estimated result. Result is less than RL.

CITY OF ST. LOUIS PARK

Client Sample ID: W136

GC/MS Semivolatiles

Lot-Sample #...: D2E080200-006 Work Order #...: E04G31AA Matrix.....: WATER
Date Sampled...: 05/07/02 Date Received..: 05/08/02
Prep Date.....: 05/10/02 Analysis Date..: 05/30/02
Prep Batch #...: 2130162 Analysis Time..: 17:29
Dilution Factor: 1

Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	10	ug/L
Acenaphthylene	ND	10	ug/L
Acridine	ND	10	ug/L
Anthracene	ND	10	ug/L
Benzo(a)anthracene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
2,3-Benzofuran	ND	10	ug/L
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Benzo(e)pyrene	ND	10	ug/L
Benzo(b)thiophene	ND	10	ug/L
Biphenyl	ND	10	ug/L
Carbazole	ND	10	ug/L
Chrysene	ND	10	ug/L
Dibenzo(a,h)anthracene	ND	10	ug/L
Dibenzofuran	ND	10	ug/L
Dibenzothiophene	ND	10	ug/L
2,3-Dihydroindene	ND	10	ug/L
Fluoranthene	ND	10	ug/L
Fluorene	ND	10	ug/L
Indene	ND	10	ug/L
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Indole	ND	10	ug/L
2-Methylnaphthalene	ND	10	ug/L
1-Methylnaphthalene	ND	10	ug/L
Naphthalene	ND	10	ug/L
Perylene	ND	10	ug/L
Phenanthrene	ND	10	ug/L
Pyrene	ND	10	ug/L
Quinoline	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	76	(30 - 160)
Fluorene d-10	68	(36 - 127)
Naphthalene-d8	68	(37 - 107)

CITY OF ST. LOUIS PARK

Client Sample ID: P310

GC/MS Semivolatiles

Lot-Sample #...: D2E080200-007
Date Sampled...: 05/07/02
Prep Date.....: 05/10/02
Prep Batch #...: 2130162
Dilution Factor: 1

Work Order #...: E04G41AA
Date Received..: 05/08/02
Analysis Date..: 05/30/02
Analysis Time..: 18:07

Matrix.....: WATER

Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	**9.0 J**	**10**	**ug/L**
Acenaphthylene	ND	10	ug/L
Acridine	ND	10	ug/L
Anthracene	ND	10	ug/L
Benzo(a)anthracene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
2,3-Benzofuran	ND	10	ug/L
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Benzo(e)pyrene	ND	10	ug/L
Benzo(b)thiophene	**1.4 J**	**10**	**ug/L**
Biphenyl	ND	10	ug/L
Carbazole	**4.0 J**	**10**	**ug/L**
Chrysene	ND	10	ug/L
Dibenzo(a,h)anthracene	ND	10	ug/L
Dibenzofuran	ND	10	ug/L
Dibenzothiophene	ND	10	ug/L
2,3-Dihydroindene	ND	10	ug/L
Fluoranthene	ND	10	ug/L
Fluorene	ND	10	ug/L
Indene	ND	10	ug/L
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Indole	ND	10	ug/L
2-Methylnaphthalene	ND	10	ug/L
1-Methylnaphthalene	ND	10	ug/L
Naphthalene	ND	10	ug/L
Perylene	ND	10	ug/L
Phenanthrene	ND	10	ug/L
Pyrene	ND	10	ug/L
Quinoline	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	83	(30 - 160)
Fluorene d-10	67	(36 - 127)
Naphthalene-d8	76	(37 - 107)

NOTE(S):

J Estimated result. Result is less than RL.

QC DATA ASSOCIATION SUMMARY

D2E080200

Sample Preparation and Analysis Control Numbers

SAMPLE#	MATRIX	ANALYTICAL METHOD	LEACH BATCH #	PREP BATCH #	MS RUN#
001	WATER	SW846 8270C		2130162	2130050
002	WATER	SW846 8270C		2130162	2130050
003	WATER	SW846 8270C		2130162	2130050
004	WATER	SW846 8270C		2130162	2130050
005	WATER	SW846 8270C		2130162	2130050
006	WATER	SW846 8270C		2130162	2130050
007	WATER	SW846 8270C		2130162	2130050

METHOD BLANK REPORT

GC/MS Semivolatiles

Client Lot #...: D2E080200
MB Lot-Sample #: D2E100000-162

Work Order #...: E07PT1AA

Matrix.....: WATER

Prep Date.....: 05/10/02

Analysis Time..: 15:34

Analysis Date..: 05/29/02

Prep Batch #...: 2130162

Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Acenaphthene	ND	10	ug/L	SW846 8270C
Acenaphthylene	ND	10	ug/L	SW846 8270C
Acridine	ND	10	ug/L	SW846 8270C
Anthracene	ND	10	ug/L	SW846 8270C
Benzo(a)anthracene	ND	10	ug/L	SW846 8270C
Benzo(b)fluoranthene	ND	10	ug/L	SW846 8270C
Benzo(k)fluoranthene	ND	10	ug/L	SW846 8270C
2,3-Benzofuran	ND	10	ug/L	SW846 8270C
Benzo(ghi)perylene	ND	10	ug/L	SW846 8270C
Benzo(a)pyrene	ND	10	ug/L	SW846 8270C
Benzo(e)pyrene	ND	10	ug/L	SW846 8270C
Benzo(b)thiophene	ND	10	ug/L	SW846 8270C
Biphenyl	ND	10	ug/L	SW846 8270C
Carbazole	ND	10	ug/L	SW846 8270C
Chrysene	ND	10	ug/L	SW846 8270C
Dibenzo(a,h)anthracene	ND	10	ug/L	SW846 8270C
Dibenzofuran	ND	10	ug/L	SW846 8270C
Dibenzothiophene	ND	10	ug/L	SW846 8270C
2,3-Dihydroindene	ND	10	ug/L	SW846 8270C
Fluoranthene	ND	10	ug/L	SW846 8270C
Fluorene	ND	10	ug/L	SW846 8270C
Indene	ND	10	ug/L	SW846 8270C
Indeno(1,2,3-cd)pyrene	ND	10	ug/L	SW846 8270C
Indole	ND	10	ug/L	SW846 8270C
2-Methylnaphthalene	ND	10	ug/L	SW846 8270C
1-Methylnaphthalene	ND	10	ug/L	SW846 8270C
Naphthalene	ND	10	ug/L	SW846 8270C
Perylene	**1.1 J**	**10**	**ug/L**	**SW846 8270C**
Phenanthrene	ND	10	ug/L	SW846 8270C
Pyrene	ND	10	ug/L	SW846 8270C
Quinoline	ND	10	ug/L	SW846 8270C

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	100	(30 - 160)
Fluorene d-10	76	(36 - 127)
Naphthalene-d8	73	(37 - 107)

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 EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: D2E080200 Work Order #...: E07PT1AC Matrix.....: WATER
LCS Lot-Sample#: D2E100000-162
Prep Date.....: 05/10/02 Analysis Date..: 05/29/02
Prep Batch #...: 2130162 Analysis Time..: 16:11
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD
Benzo(e)pyrene	83	(30 - 150)	**SW846 8270C**
Chrysene	79	(43 - 124)	**SW846 8270C**
Fluorene	77	(51 - 120)	**SW846 8270C**
Indene	60	(49 - 108)	**SW846 8270C**
2-Methylnaphthalene	52	(47 - 138)	**SW846 8270C**
Naphthalene	61	(43 - 128)	**SW846 8270C**
Quinoline	60	(40 - 126)	**SW846 8270C**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	91	(30 - 160)
Fluorene d-10	73	(36 - 127)
Naphthalene-d8	78	(37 - 107)

NOTE(S):

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

Bold print denotes control parameters

LABORATORY CONTROL SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #...: D2E080200 Work Order #...: E07PT1AC Matrix.....: WATER
LCS Lot-Sample#: D2E100000-162
Prep Date.....: 05/10/02 Analysis Date..: 05/29/02
Prep Batch #...: 2130162 Analysis Time..: 16:11
Dilution Factor: 1

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD
Benzo(e)pyrene	**50.0**	**41.5**	**ug/L**	**83**	**SW846 8270C**
Chrysene	**50.0**	**39.7**	**ug/L**	**79**	**SW846 8270C**
Fluorene	**50.0**	**38.6**	**ug/L**	**77**	**SW846 8270C**
Indene	**50.0**	**30.2**	**ug/L**	**60**	**SW846 8270C**
2-Methylnaphthalene	**50.0**	**26.0**	**ug/L**	**52**	**SW846 8270C**
Naphthalene	**50.0**	**30.3**	**ug/L**	**61**	**SW846 8270C**
Quinoline	**50.0**	**30.1**	**ug/L**	**60**	**SW846 8270C**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	91	(30 - 160)
Fluorene d-10	73	(36 - 127)
Naphthalene-d8	78	(37 - 107)

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 #...: D2E080200 Work Order #...: E02411AC-MS Matrix.....: WATER
MS Lot-Sample #: D2E070230-001 E02411AD-MSD
Date Sampled...: 05/06/02 Date Received..: 05/07/02
Prep Date.....: 05/10/02 Analysis Date..: 05/29/02
Prep Batch #...: 2130162 Analysis Time..: 19:55
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Benzo(e)pyrene	**75**	**(30 - 150)**			**SW846 8270C**
	65	**(30 - 150)**	**14**	**(0-30)**	**SW846 8270C**
Chrysene	**72**	**(43 - 124)**			**SW846 8270C**
	62	**(43 - 124)**	**15**	**(0-30)**	**SW846 8270C**
Fluorene	**58**	**(51 - 120)**			**SW846 8270C**
	40 a	**(51 - 120)**	**10**	**(0-30)**	**SW846 8270C**
Indene	**51**	**(49 - 108)**			**SW846 8270C**
	29 a	**(49 - 108)**	**14**	**(0-30)**	**SW846 8270C**
2-Methylnaphthalene	**29 a**	**(47 - 138)**			**SW846 8270C**
	0.0 a	**(47 - 138)**	**0.0**	**(0-30)**	**SW846 8270C**
Naphthalene	**NC,DIL**	**(43 - 128)**			**SW846 8270C**
	NC,DIL	**(43 - 128)**		**(0-30)**	**SW846 8270C**
Quinoline	**82**	**(40 - 126)**			**SW846 8270C**
	77	**(40 - 126)**	**5.4**	**(0-30)**	**SW846 8270C**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	54	(30 - 160)
	42	(30 - 160)
Fluorene d-10	70	(36 - 127)
	64	(36 - 127)
Naphthalene-d8	78	(37 - 107)
	69	(37 - 107)

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.

NC The recovery and/or RPD were not calculated.

DIL The concentration is estimated or not reported due to dilution or the presence of interfering analytes.

MATRIX SPIKE SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #...: D2E080200 Work Order #...: E02411AC-MS Matrix.....: WATER
MS Lot-Sample #: D2E070230-001 E02411AD-MSD
Date Sampled...: 05/06/02 Date Received..: 05/07/02
Prep Date.....: 05/10/02 Analysis Date..: 05/29/02
Prep Batch #...: 2130162 Analysis Time..: 19:55
Dilution Factor: 1

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD
Benzo(e)pyrene	ND	47.8	35.8	ug/L	75		SW846 8270C
	ND	48.1	31.2	ug/L	65	14	SW846 8270C
Chrysene	ND	47.8	34.6	ug/L	72		SW846 8270C
	ND	48.1	29.9	ug/L	62	15	SW846 8270C
Fluorene	58	47.8	85.6	ug/L	58		SW846 8270C
	58	48.1	77.0	ug/L	40 a	10	SW846 8270C
Indene	54	47.8	78.7	ug/L	51		SW846 8270C
	54	48.1	68.2	ug/L	29 a	14	SW846 8270C
2-Methylnaphthalene	130	47.8	143	ug/L	29 a		SW846 8270C
	130	48.1	127	ug/L	0.0 a	0.0	SW846 8270C
Naphthalene	1100	47.8	980	ug/L	NC,DIL		SW846 8270C
	1100	48.1	960	ug/L	NC,DIL		SW846 8270C
inoline	ND	47.8	39.2	ug/L	82		SW846 8270C
	ND	48.1	37.2	ug/L	77	5.4	SW846 8270C

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	54	(30 - 160)
	42	(30 - 160)
Fluorene d-10	70	(36 - 127)
	64	(36 - 127)
Naphthalene-d8	78	(37 - 107)
	69	(37 - 107)

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.

NC The recovery and/or RPD were not calculated.

DIL The concentration is estimated or not reported due to dilution or the presence of interfering analytes.

MATRIX SPIKE SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: D2E080200 Work Order #...: E04HC1AC-MS Matrix.....: WATER
MS Lot-Sample #: D2E080204-001 E04HC1AD-MSD
Date Sampled...: 05/07/02 Date Received..: 05/08/02
Prep Date.....: 05/10/02 Analysis Date..: 05/30/02
Prep Batch #...: 2130162 Analysis Time..: 19:22
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Benzo(e)pyrene	82	(30 - 150)			SW846 8270C
	79	(30 - 150)	3.3	(0-30)	SW846 8270C
Chrysene	75	(43 - 124)			SW846 8270C
	73	(43 - 124)	1.4	(0-30)	SW846 8270C
Fluorene	77	(51 - 120)			SW846 8270C
	74	(51 - 120)	3.1	(0-30)	SW846 8270C
Indene	69	(49 - 108)			SW846 8270C
	67	(49 - 108)	2.7	(0-30)	SW846 8270C
2-Methylnaphthalene	63	(47 - 138)			SW846 8270C
	59	(47 - 138)	4.9	(0-30)	SW846 8270C
Naphthalene	68	(43 - 128)			SW846 8270C
	67	(43 - 128)	0.83	(0-30)	SW846 8270C
Quinoline	72	(40 - 126)			SW846 8270C
	71	(40 - 126)	1.2	(0-30)	SW846 8270C

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	53	(30 - 160)
	43	(30 - 160)
Fluorene d-10	73	(36 - 127)
	72	(36 - 127)
Naphthalene-d8	85	(37 - 107)
	80	(37 - 107)

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 #...: D2E080200 Work Order #...: E04HC1AC-MS Matrix.....: WATER
MS Lot-Sample #: D2E080204-001 E04HC1AD-MSD
Date Sampled...: 05/07/02 Date Received..: 05/08/02
Prep Date.....: 05/10/02 Analysis Date..: 05/30/02
Prep Batch #...: 2130162 Analysis Time..: 19:22
Dilution Factor: 1

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD
Benzo(e)pyrene	ND	47.4	38.8	ug/L	82		SW846 8270C
	ND	47.7	37.6	ug/L	79	3.3	SW846 8270C
Chrysene	ND	47.4	35.4	ug/L	75		SW846 8270C
	ND	47.7	35.0	ug/L	73	1.4	SW846 8270C
Fluorene	ND	47.4	36.4	ug/L	77		SW846 8270C
	ND	47.7	35.3	ug/L	74	3.1	SW846 8270C
Indene	ND	47.4	32.9	ug/L	69		SW846 8270C
	ND	47.7	32.0	ug/L	67	2.7	SW846 8270C
2-Methylnaphthalene	ND	47.4	29.8	ug/L	63		SW846 8270C
	ND	47.7	28.3	ug/L	59	4.9	SW846 8270C
Naphthalene	ND	47.4	32.3	ug/L	68		SW846 8270C
	ND	47.7	32.1	ug/L	67	0.83	SW846 8270C
Quinoline	ND	47.4	34.4	ug/L	72		SW846 8270C
	ND	47.7	34.0	ug/L	71	1.2	SW846 8270C

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	53	(30 - 160)
	43	(30 - 160)
Fluorene d-10	73	(36 - 127)
	72	(36 - 127)
Naphthalene-d8	85	(37 - 107)
	80	(37 - 107)

NOTE(S):

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

Bold print denotes control parameters

Chain of Custody Record

STL Denver
4955 Yarrow Street
Arvada, CO 80002

SEVERN TRENT SERVICES

Severn Trent Laboratories, Inc.

3K 5/8/02

STL-4124 (0700) **DEN (0900)**

Client: City of St. Louis Park	Project Manager: Scott Anderson	Date: 5/7/02	Chain of Custody Number: 017828
Address: 5237 Wooddale Ave	Telephone Number (Area Code)/Fax Number: 952-924-2557	Lab Number:	Page 1 of 1
City: St. Louis Park; State: MN; Zip Code: 55416	Site Contact: Bill Gregg	Lab Contact:	
Project Name and Location (State): Reilly	Carrier/Waybill Number:		
Contract/Purchase Order/Quote No.:			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Containers & Preservatives: Unpres.	H2SO4	HNOS	HCl	NaOH	ZnAc/NaOH	Analysis (Attach list if more space is needed): PAH-PPB	Special Instructions/ Conditions of Receipt
W426	5/7/02	930		X			2						X	
W427		1045												
W117		1115												
P109		1325												
P312		1415												
W136		1630												
P310		1715												

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months (A fee may be assessed if samples are retained longer than 3 months)

Turn Around Time Required: ☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other_____

QC Requirements (Specify):

	Date	Time		Date	Time
1. Relinquished By: Chris Boehm	5/7/02	1730	1. Received By: [signature]	5/8/02	0645
2. Relinquished By:			2. Received By:		
3. Relinquished By:			3. Received By:		

Comments: 23

DISTRIBUTION: WHITE - Stays with the Sample; CANARY - Returned to Client with Report; PINK - Field Copy

SEVERN TRENT SERVICES

STL Denver
4955 Yarrow Street
Arvada, CO 80002-4517

Tel: 303 736 0100
Fax: 303 431 7171
www.stl-inc.com

ANALYTICAL REPORT

City of St. Louis Park

Project: Reilly Tar & Chemical Corporation

Lot #: D2E080204

Mr. Scott Anderson

City of St. Louis Park
Utility Division
3752 Wooddale Avenue
St. Louis Park, MN 55416

STL DENVER

Brian Stringer
Project Manager

June 24, 2002

Table Of Contents

Standard Deliverables

Report Contents	Total Number of Pages
Standard Deliverables *The **Cover Letter** and the **Report Cover** page are considered integral parts of this Standard Deliverable package. This report is incomplete unless all pages indicated in this Table of Contents are included.*	21

- **Table of Contents**
- **Project Narrative**
- **Executive Summary – Detection Highlights**
- **Methods Summary**
- **Method/Analyst Summary**
- **Sample Summary**
- **Analytical Results**
- **QC Data Association Summary**
- **QC Evaluation and/or Data Reports**
- **Chain-of-Custody**

CASE NARRATIVE

STL Lot Number D2E080204

Introduction

STL Denver received four aqueous samples and a MS/MSD on May 8, 2002 for ppb level, full scan PAH analysis.

The cooler temperatures was 3.6 °C. All containers were received in acceptable condition.

Data Quality Assessment

The results included in this report have been reviewed for compliance with STL Denver's Laboratory Quality Manual. The test results shown in this report meet all requirements of NELAC and any exceptions are noted below.

Dilution factors and footnotes have been provided to assist in the interpretation of the results. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at concentrations above the linear calibration curve, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

STL utilizes USEPA approved methods in all analytical work. The samples presented in this report were analyzed for the parameters listed on the analytical methods summary page in accordance with the methods indicated.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Polynuclear Aromatic Hydrocarbons – Method 8270C

A project-specific lower acceptable recovery limit of 30% for all QC samples and surrogates has been designated for analytical work performed under the 2002 Quality Assurance Project Plan (QAPP) for the Reilly Industries, Inc. NPL Site. All recoveries in this report are above the 30% minimum threshold.

The method blank for prep batch 2130162 demonstrated results below the reporting limit for perylene. This may indicate that sample results may be biased high, however perylene was not detected in the associated samples. Because these results are less than the reporting limit and less than five times the MDL, no immediate corrective action was taken.

The MS/MSD was performed on the client-specified sample "W422-050702" for prep batch 2130162. All recoveries and RPD were within control limits.

The other matrix spike performed on a sample from another lot for prep batch 2130162 demonstrated recoveries for fluorene, indene, and 2-methylnaphthalene outside the control limits in the MSD and for 2-methylnaphthalene in the MS. The MS/MSD average recovery is also outside control limits for these four spike compounds. Additionally, the percent recoveries and RPD were not calculated for naphthalene because the sample concentration was greater than four times the spike amount.

Data Completeness for Polynuclear Aromatic Hydrocarbons – Method 8270C

The results contained in the report were reviewed relative to data acceptance criteria as specified in the 2002 QAPP. Based on the exceptions noted we achieved 100% completeness.

DATA COMPLETENESS CALCULATION

LOT D2E080204

ANALYSIS PAHs by SW846-8270C

QC Parameter	Data Planned	Valid Data Obtained
Method Blanks	31	31
MB Surrogates	3	3
LCS	7	7
LCS Surrogates	3	3
MS*	7	7
MS Surrogates*	3	3
MSD*	7	7
MSD Surrogates*	3	3
MS/MSD RPD*	7	7
FB/FBD hits	62	62
Sample/Dup. RPD	31	31
Sample Surrogates	12	12
Internal STD Area*	24	24
TOTAL	**200**	**200**
% Completeness	**100%**	

* The MS/MSD data provided for this table was performed on client sample "W422-050702".

Case Narrative for **D2E080204** (continued)

Sample Duplicate RPD
LOT D2E080204

Sample W422-050702 Compound	Result	Duplicate W422D-050702 Compound	Result	RPD	RPD>50%
Acenaphthene	15	Acenaphthene	14	6.90	OK
Acenaphthylene	ND	Acenaphthylene	ND	0	OK
Acridine	ND	Acridine	ND	0	OK
Anthracene	ND	Anthracene	ND	0	OK
Benzo(a)anthracene	ND	Benzo(a)anthracene	ND	0	OK
Benzo(b)fluoranthene	ND	Benzo(b)fluoranthene	ND	0	OK
Benzo(k)fluoranthene	ND	Benzo(k)fluoranthene	ND	0	OK
2,3-Benzofuran	ND	2,3-Benzofuran	ND	0	OK
Benzo(ghi)perylene	ND	Benzo(ghi)perylene	ND	0	OK
Benzo(a)pyrene	ND	Benzo(a)pyrene	ND	0	OK
Benzo(e)pyrene	ND	Benzo(e)pyrene	ND	0	OK
Benzo(b)thiophene	ND	Benzo(b)thiophene	ND	0	OK
Biphenyl	ND	Biphenyl	ND	0	OK
Carbazole	ND	Carbazole	ND	0	OK
Chrysene	ND	Chrysene	ND	0	OK
Dibenz(a,h)anthracene	ND	Dibenz(a,h)anthracene	ND	0	OK
Dibenzofuran	ND	Dibenzofuran	ND	0	OK
Dibenzothiophene	ND	Dibenzothiophene	ND	0	OK
2,3-Dihydroindene	ND	2,3-Dihydroindene	ND	0	OK
Fluoranthene	ND	Fluoranthene	ND	0	OK
Fluorene	ND	Fluorene	ND	0	OK
Indene	ND	Indene	ND	0	OK
Indeno(1,2,3-cd)pyrene	ND	Indeno(1,2,3-cd)pyrene	ND	0	OK
Indole	ND	Indole	ND	0	OK
2-Methylnaphthalene	ND	2-Methylnaphthalene	ND	0	OK
1-Methylnaphthalene	ND	1-Methylnaphthalene	ND	0	OK
Naphthalene	ND	Naphthalene	ND	0	OK
Perylene	ND	Perylene	ND	0	OK
Phenanthrene	ND	Phenanthrene	ND	0	OK
Pyrene	ND	Pyrene	ND	0	OK
Quinoline	ND	Quinoline	ND	0	OK

RTD = Relative Percent Difference
ND = Compound not detected in the sample
OK = RPD acceptable
p = RPD is outside of control limits
*NC = RPD not calculated, one positive result and one ND. Considered acceptable because the positive result is less than 4x the RL.

Please note that the data for the sample are from either the undiluted or diluted analyses.

EXECUTIVE SUMMARY - Detection Highlights

D2E080204

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
W422-050702 05/07/02 001				
Acenaphthene	15	10	ug/L	SW846 8270C
W422D-050702 05/07/02 002				
Acenaphthene	14	10	ug/L	SW846 8270C

METHODS SUMMARY

D2E080204

PARAMETER	ANALYTICAL METHOD	PREPARATION METHOD
Semivolatile Organic Compounds by GC/MS	SW846 8270C	SW846 3520C

References:

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

METHOD / ANALYST SUMMARY

D2E080204

ANALYTICAL METHOD	ANALYST	ANALYST ID
SW846 8270C	Tim O'Donnell	000443

References:

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

SAMPLE SUMMARY

D2E080204

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
E04HC	001	W422-050702	05/07/02	
E04HG	002	W422D-050702	05/07/02	
E04HH	003	W422FB-050702	05/07/02	
E04HJ	004	W422FBD-050702	05/07/02	

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: W422-050702

GC/MS Semivolatiles

Lot-Sample #...: D2E080204-001 Work Order #...: E04HC1AA Matrix.....: WATER
Date Sampled...: 05/07/02 Date Received..: 05/08/02
Prep Date.....: 05/10/02 Analysis Date..: 05/30/02
Prep Batch #...: 2130162 Analysis Time..: 18:44
Dilution Factor: 1

Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	**15**	**10**	**ug/L**
Acenaphthylene	ND	10	ug/L
Acridine	ND	10	ug/L
Anthracene	ND	10	ug/L
Benzo(a)anthracene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
2,3-Benzofuran	ND	10	ug/L
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Benzo(e)pyrene	ND	10	ug/L
Benzo(b)thiophene	ND	10	ug/L
Biphenyl	ND	10	ug/L
Carbazole	ND	10	ug/L
Chrysene	ND	10	ug/L
Dibenzo(a,h)anthracene	ND	10	ug/L
Dibenzofuran	ND	10	ug/L
Dibenzothiophene	ND	10	ug/L
2,3-Dihydroindene	ND	10	ug/L
Fluoranthene	ND	10	ug/L
Fluorene	ND	10	ug/L
Indene	ND	10	ug/L
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Indole	ND	10	ug/L
2-Methylnaphthalene	ND	10	ug/L
1-Methylnaphthalene	ND	10	ug/L
Naphthalene	ND	10	ug/L
Perylene	ND	10	ug/L
Phenanthrene	ND	10	ug/L
Pyrene	ND	10	ug/L
Quinoline	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	59	(30 - 160)
Fluorene d-10	69	(36 - 127)
Naphthalene-d8	71	(37 - 107)

CITY OF ST. LOUIS PARK

Client Sample ID: W422D-050702

GC/MS Semivolatiles

Lot-Sample #...: D2E080204-002 Work Order #...: E04HG1AA Matrix.....: WATER
Date Sampled...: 05/07/02 Date Received..: 05/08/02
Prep Date.....: 05/10/02 Analysis Date..: 05/30/02
Prep Batch #...: 2130162 Analysis Time..: 20:37
Dilution Factor: 1

Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	**14**	**10**	**ug/L**
Acenaphthylene	ND	10	ug/L
Acridine	ND	10	ug/L
Anthracene	ND	10	ug/L
Benzo(a)anthracene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
2,3-Benzofuran	ND	10	ug/L
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Benzo(e)pyrene	ND	10	ug/L
Benzo(b)thiophene	ND	10	ug/L
Biphenyl	ND	10	ug/L
Carbazole	ND	10	ug/L
Chrysene	ND	10	ug/L
Dibenzo(a,h)anthracene	ND	10	ug/L
Dibenzofuran	ND	10	ug/L
Dibenzothiophene	ND	10	ug/L
2,3-Dihydroindene	ND	10	ug/L
Fluoranthene	ND	10	ug/L
Fluorene	ND	10	ug/L
Indene	ND	10	ug/L
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Indole	ND	10	ug/L
2-Methylnaphthalene	ND	10	ug/L
1-Methylnaphthalene	ND	10	ug/L
Naphthalene	ND	10	ug/L
Perylene	ND	10	ug/L
Phenanthrene	ND	10	ug/L
Pyrene	ND	10	ug/L
Quinoline	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	77	(30 - 160)
Fluorene d-10	66	(36 - 127)
Naphthalene-d8	68	(37 - 107)

CITY OF ST. LOUIS PARK

Client Sample ID: W422FB-050702

GC/MS Semivolatiles

Lot-Sample #...: D2E080204-003 Work Order #...: E04HH1AA Matrix.....: WATER
Date Sampled...: 05/07/02 Date Received..: 05/08/02
Prep Date.....: 05/10/02 Analysis Date..: 05/30/02
Prep Batch #...: 2130162 Analysis Time..: 21:14
Dilution Factor: 1

Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	10	ug/L
Acenaphthylene	ND	10	ug/L
Acridine	ND	10	ug/L
Anthracene	ND	10	ug/L
Benzo(a)anthracene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
2,3-Benzofuran	ND	10	ug/L
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Benzo(e)pyrene	ND	10	ug/L
Benzo(b)thiophene	ND	10	ug/L
Biphenyl	ND	10	ug/L
Carbazole	ND	10	ug/L
Chrysene	ND	10	ug/L
Dibenzo(a,h)anthracene	ND	10	ug/L
Dibenzofuran	ND	10	ug/L
Dibenzothiophene	ND	10	ug/L
2,3-Dihydroindene	ND	10	ug/L
Fluoranthene	ND	10	ug/L
Fluorene	ND	10	ug/L
Indene	ND	10	ug/L
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Indole	ND	10	ug/L
2-Methylnaphthalene	ND	10	ug/L
1-Methylnaphthalene	ND	10	ug/L
Naphthalene	ND	10	ug/L
Perylene	ND	10	ug/L
Phenanthrene	ND	10	ug/L
Pyrene	ND	10	ug/L
Quinoline	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	93	(30 - 160)
Fluorene d-10	74	(36 - 127)
Naphthalene-d8	83	(37 - 107)

CITY OF ST. LOUIS PARK

Client Sample ID: W422FBD-050702

GC/MS Semivolatiles

Lot-Sample #...: D2E080204-004 Work Order #...: E04HJ1AA Matrix.....: WATER
Date Sampled...: 05/07/02 Date Received..: 05/08/02
Prep Date.....: 05/10/02 Analysis Date..: 05/30/02
Prep Batch #...: 2130162 Analysis Time..: 21:51
Dilution Factor: 1

Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	10	ug/L
Acenaphthylene	ND	10	ug/L
Acridine	ND	10	ug/L
Anthracene	ND	10	ug/L
Benzo(a)anthracene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
2,3-Benzofuran	ND	10	ug/L
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Benzo(e)pyrene	ND	10	ug/L
Benzo(b)thiophene	ND	10	ug/L
[illegible]phenyl	ND	10	ug/L
Carbazole	ND	10	ug/L
Chrysene	ND	10	ug/L
Dibenzo(a,h)anthracene	ND	10	ug/L
Dibenzofuran	ND	10	ug/L
Dibenzothiophene	ND	10	ug/L
2,3-Dihydroindene	ND	10	ug/L
Fluoranthene	ND	10	ug/L
Fluorene	ND	10	ug/L
Indene	ND	10	ug/L
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Indole	ND	10	ug/L
2-Methylnaphthalene	ND	10	ug/L
1-Methylnaphthalene	ND	10	ug/L
Naphthalene	ND	10	ug/L
Perylene	ND	10	ug/L
Phenanthrene	ND	10	ug/L
Pyrene	ND	10	ug/L
Quinoline	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	94	(30 - 160)
Fluorene d-10	73	(36 - 127)
Naphthalene-d8	81	(37 - 107)

QC DATA ASSOCIATION SUMMARY

D2E080204

Sample Preparation and Analysis Control Numbers

SAMPLE#	MATRIX	ANALYTICAL METHOD	LEACH BATCH #	PREP BATCH #	MS RUN#
001	WATER	SW846 8270C		2130162	2130050
002	WATER	SW846 8270C		2130162	2130050
003	WATER	SW846 8270C		2130162	2130050
004	WATER	SW846 8270C		2130162	2130050

METHOD BLANK REPORT

GC/MS Semivolatiles

Client Lot #...: D2E080204
MB Lot-Sample #: D2E100000-162
Work Order #...: E07PT1AA
Matrix.....: WATER
Prep Date.....: 05/10/02
Analysis Time..: 15:34
Analysis Date..: 05/29/02
Prep Batch #...: 2130162
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Acenaphthene	ND	10	ug/L	SW846 8270C
Acenaphthylene	ND	10	ug/L	SW846 8270C
Acridine	ND	10	ug/L	SW846 8270C
Anthracene	ND	10	ug/L	SW846 8270C
Benzo(a)anthracene	ND	10	ug/L	SW846 8270C
Benzo(b)fluoranthene	ND	10	ug/L	SW846 8270C
Benzo(k)fluoranthene	ND	10	ug/L	SW846 8270C
2,3-Benzofuran	ND	10	ug/L	SW846 8270C
Benzo(ghi)perylene	ND	10	ug/L	SW846 8270C
Benzo(a)pyrene	ND	10	ug/L	SW846 8270C
Benzo(e)pyrene	ND	10	ug/L	SW846 8270C
Benzo(b)thiophene	ND	10	ug/L	SW846 8270C
Biphenyl	ND	10	ug/L	SW846 8270C
Carbazole	ND	10	ug/L	SW846 8270C
Chrysene	ND	10	ug/L	SW846 8270C
Dibenzo(a,h)anthracene	ND	10	ug/L	SW846 8270C
Dibenzofuran	ND	10	ug/L	SW846 8270C
Dibenzothiophene	ND	10	ug/L	SW846 8270C
2,3-Dihydroindene	ND	10	ug/L	SW846 8270C
Fluoranthene	ND	10	ug/L	SW846 8270C
Fluorene	ND	10	ug/L	SW846 8270C
Indene	ND	10	ug/L	SW846 8270C
Indeno(1,2,3-cd)pyrene	ND	10	ug/L	SW846 8270C
Indole	ND	10	ug/L	SW846 8270C
2-Methylnaphthalene	ND	10	ug/L	SW846 8270C
1-Methylnaphthalene	ND	10	ug/L	SW846 8270C
Naphthalene	ND	10	ug/L	SW846 8270C
Perylene	**1.1 J**	**10**	**ug/L**	**SW846 8270C**
Phenanthrene	ND	10	ug/L	SW846 8270C
Pyrene	ND	10	ug/L	SW846 8270C
Quinoline	ND	10	ug/L	SW846 8270C

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	100	(30 - 160)
Fluorene d-10	76	(36 - 127)
Naphthalene-d8	73	(37 - 107)

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 EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: D2E080204 Work Order #...: E07PT1AC Matrix.....: WATER
LCS Lot-Sample#: D2E100000-162
Prep Date.....: 05/10/02 Analysis Date..: 05/29/02
Prep Batch #...: 2130162 Analysis Time..: 16:11
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD
Benzo(e)pyrene	**83**	**(30 - 150)**	**SW846 8270C**
Chrysene	**79**	**(43 - 124)**	**SW846 8270C**
Fluorene	**77**	**(51 - 120)**	**SW846 8270C**
Indene	**60**	**(49 - 108)**	**SW846 8270C**
2-Methylnaphthalene	**52**	**(47 - 138)**	**SW846 8270C**
Naphthalene	**61**	**(43 - 128)**	**SW846 8270C**
Quinoline	**60**	**(40 - 126)**	**SW846 8270C**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	91	(30 - 160)
Fluorene d-10	73	(36 - 127)
Naphthalene-d8	78	(37 - 107)

NOTE(S):

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

Bold print denotes control parameters

LABORATORY CONTROL SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #...: D2E080204 Work Order #...: E07PT1AC Matrix.....: WATER
LCS Lot-Sample#: D2E100000-162
Prep Date.....: 05/10/02 Analysis Date..: 05/29/02
Prep Batch #...: 2130162 Analysis Time..: 16:11
Dilution Factor: 1

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD
Benzo(e)pyrene	**50.0**	**41.5**	**ug/L**	**83**	**SW846 8270C**
Chrysene	**50.0**	**39.7**	**ug/L**	**79**	**SW846 8270C**
Fluorene	**50.0**	**38.6**	**ug/L**	**77**	**SW846 8270C**
Indene	**50.0**	**30.2**	**ug/L**	**60**	**SW846 8270C**
2-Methylnaphthalene	**50.0**	**26.0**	**ug/L**	**52**	**SW846 8270C**
Naphthalene	**50.0**	**30.3**	**ug/L**	**61**	**SW846 8270C**
Quinoline	**50.0**	**30.1**	**ug/L**	**60**	**SW846 8270C**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	91	(30 - 160)
Fluorene d-10	73	(36 - 127)
Naphthalene-d8	78	(37 - 107)

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 #...: D2E080204 Work Order #...: E02411AC-MS Matrix.....: WATER
MS Lot-Sample #: D2E070230-001 E02411AD-MSD
Date Sampled...: 05/06/02 Date Received..: 05/07/02
Prep Date.....: 05/10/02 Analysis Date..: 05/29/02
Prep Batch #...: 2130162 Analysis Time..: 19:55
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Benzo(e)pyrene	75	(30 - 150)			SW846 8270C
	65	(30 - 150)	14	(0-30)	SW846 8270C
Chrysene	72	(43 - 124)			SW846 8270C
	62	(43 - 124)	15	(0-30)	SW846 8270C
Fluorene	58	(51 - 120)			SW846 8270C
	40 a	(51 - 120)	10	(0-30)	SW846 8270C
Indene	51	(49 - 108)			SW846 8270C
	29 a	(49 - 108)	14	(0-30)	SW846 8270C
2-Methylnaphthalene	29 a	(47 - 138)			SW846 8270C
	0.0 a	(47 - 138)	0.0	(0-30)	SW846 8270C
Naphthalene	NC,DIL	(43 - 128)			SW846 8270C
	NC,DIL	(43 - 128)		(0-30)	SW846 8270C
Quinoline	82	(40 - 126)			SW846 8270C
	77	(40 - 126)	5.4	(0-30)	SW846 8270C

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	54	(30 - 160)
	42	(30 - 160)
Fluorene d-10	70	(36 - 127)
	64	(36 - 127)
Naphthalene-d8	78	(37 - 107)
	69	(37 - 107)

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.

NC The recovery and/or RPD were not calculated.

DIL The concentration is estimated or not reported due to dilution or the presence of interfering analytes.

MATRIX SPIKE SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #...: D2E080204 Work Order #...: E02411AC-MS Matrix.....: WATER
MS Lot-Sample #: D2E070230-001 E02411AD-MSD
Date Sampled...: 05/06/02 Date Received..: 05/07/02
Prep Date.....: 05/10/02 Analysis Date..: 05/29/02
Prep Batch #...: 2130162 Analysis Time..: 19:55
Dilution Factor: 1

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD
Benzo(e)pyrene	ND	47.8	35.8	ug/L	75		SW846 8270C
	ND	48.1	31.2	ug/L	65	14	SW846 8270C
Chrysene	ND	47.8	34.6	ug/L	72		SW846 8270C
	ND	48.1	29.9	ug/L	62	15	SW846 8270C
Fluorene	58	47.8	85.6	ug/L	58		SW846 8270C
	58	48.1	77.0	ug/L	40 a	10	SW846 8270C
Indene	54	47.8	78.7	ug/L	51		SW846 8270C
	54	48.1	68.2	ug/L	29 a	14	SW846 8270C
2-Methylnaphthalene	130	47.8	143	ug/L	29 a		SW846 8270C
	130	48.1	127	ug/L	0.0 a	0.0	SW846 8270C
Naphthalene	1100	47.8	980	ug/L	NC,DIL		SW846 8270C
	1100	48.1	960	ug/L	NC,DIL		SW846 8270C
Quinoline	ND	47.8	39.2	ug/L	82		SW846 8270C
	ND	48.1	37.2	ug/L	77	5.4	SW846 8270C

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	54	(30 - 160)
	42	(30 - 160)
Fluorene d-10	70	(36 - 127)
	64	(36 - 127)
Naphthalene-d8	78	(37 - 107)
	69	(37 - 107)

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.

NC The recovery and/or RPD were not calculated.

DIL The concentration is estimated or not reported due to dilution or the presence of interfering analytes.

MATRIX SPIKE SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: D2E080204 Work Order #...: E04HC1AC-MS Matrix.....: WATER
MS Lot-Sample #: D2E080204-001 E04HC1AD-MSD
Date Sampled...: 05/07/02 Date Received..: 05/08/02
Prep Date.....: 05/10/02 Analysis Date..: 05/30/02
Prep Batch #...: 2130162 Analysis Time..: 19:22
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Benzo(e)pyrene	82	(30 - 150)			SW846 8270C
	79	(30 - 150)	3.3	(0-30)	SW846 8270C
Chrysene	75	(43 - 124)			SW846 8270C
	73	(43 - 124)	1.4	(0-30)	SW846 8270C
Fluorene	77	(51 - 120)			SW846 8270C
	74	(51 - 120)	3.1	(0-30)	SW846 8270C
Indene	69	(49 - 108)			SW846 8270C
	67	(49 - 108)	2.7	(0-30)	SW846 8270C
2-Methylnaphthalene	63	(47 - 138)			SW846 8270C
	59	(47 - 138)	4.9	(0-30)	SW846 8270C
Naphthalene	68	(43 - 128)			SW846 8270C
	67	(43 - 128)	0.83	(0-30)	SW846 8270C
Quinoline	72	(40 - 126)			SW846 8270C
	71	(40 - 126)	1.2	(0-30)	SW846 8270C

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	53	(30 - 160)
	43	(30 - 160)
Fluorene d-10	73	(36 - 127)
	72	(36 - 127)
Naphthalene-d8	85	(37 - 107)
	80	(37 - 107)

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 #...: D2E080204 Work Order #...: E04HC1AC-MS Matrix.....: WATER
MS Lot-Sample #: D2E080204-001 E04HC1AD-MSD
Date Sampled...: 05/07/02 Date Received..: 05/08/02
Prep Date.....: 05/10/02 Analysis Date..: 05/30/02
Prep Batch #...: 2130162 Analysis Time..: 19:22
Dilution Factor: 1

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD
Benzo(e)pyrene	ND	47.4	38.8	ug/L	82		SW846 8270C
	ND	47.7	37.6	ug/L	79	3.3	SW846 8270C
Chrysene	ND	47.4	35.4	ug/L	75		SW846 8270C
	ND	47.7	35.0	ug/L	73	1.4	SW846 8270C
Fluorene	ND	47.4	36.4	ug/L	77		SW846 8270C
	ND	47.7	35.3	ug/L	74	3.1	SW846 8270C
Indene	ND	47.4	32.9	ug/L	69		SW846 8270C
	ND	47.7	32.0	ug/L	67	2.7	SW846 8270C
2-Methylnaphthalene	ND	47.4	29.8	ug/L	63		SW846 8270C
	ND	47.7	28.3	ug/L	59	4.9	SW846 8270C
Naphthalene	ND	47.4	32.3	ug/L	68		SW846 8270C
	ND	47.7	32.1	ug/L	67	0.83	SW846 8270C
Quinoline	ND	47.4	34.4	ug/L	72		SW846 8270C
	ND	47.7	34.0	ug/L	71	1.2	SW846 8270C

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	53	(30 - 160)
	43	(30 - 160)
Fluorene d-10	73	(36 - 127)
	72	(36 - 127)
Naphthalene-d8	85	(37 - 107)
	80	(37 - 107)

NOTE(S):

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

Bold print denotes control parameters

[redacted]

Chain of Custody Record

STL Denver
4955 Yarrow Street
Arvada, CO 80002

SEVERN TRENT SERVICES

Severn Trent Laboratories, Inc.

BK 5/8/02
3.6 c

STL-4124 (0700) **DEN (0900)**

Client: CITY OF ST. LOUIS PARK	Project Manager: SCOTT ANDERSON	Date: 5-7-02	Chain of Custody Number: 017825
Address: UTILITY DIVISION, 3752 WOODDALE AVENUE	Telephone Number (Area Code)/Fax Number: 924-2557 (952) 924-2570	Lab Number:	Page ____ of ____
City: ST. LOUIS PARK, MN 55416	Site Contact: SAME	Lab Contact:	
Project Name and Location (State): SAME	Carrier/Waybill Number: FED EX 800846316014		
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Containers & Preservatives: Unpres.	H2SO4	HNOS	HCl	NaOH	ZnAc/NaOH		Analysis (Attach list if more space is needed): PPB PAH	Special Instructions/ Conditions of Receipt
W422-050702	5-7-02			X			X						2	X	
W422D-050702															
W422MS-050702															
W422MSD-050702															
W422FB-050702															
W422FBD-050702	5-7-02			X			X						2	X	

Possible Hazard Identification: ☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return To Client ☒ Disposal By Lab ☐ Archive For ____ Months (A fee may be assessed if samples are retained longer than 3 months)

Turn Around Time Required: ☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other ____

QC Requirements (Specify):

	Date	Time		Date	Time
1. Relinquished By: MZ	5-7-02	1400	1. Received By: David G. Stout	5/8/02	0645
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

21

DISTRIBUTION: WHITE - Stays with the Sample; CANARY - Returned to Client with Report; PINK - Field Copy

J

SEVERN TRENT SERVICES

STL Denver
4955 Yarrow Street
Arvada, CO 80002-4517

Tel: 303 736 0100
Fax: 303 431 7171
www.stl-inc.com

ANALYTICAL REPORT

City of St. Louis Park

Project: Reilly Tar & Chemical Corporation

Lot #: D2E150223

Mr. Scott Anderson

City of St. Louis Park
Utility Division
3752 Wooddale Avenue
St. Louis Park, MN 55416

STL DENVER

Brian Stringer
Project Manager

June 25, 2002

Table Of Contents

Standard Deliverables

Report Contents	Total Number of Pages
Standard Deliverables *The **Cover Letter** and the **Report Cover** page are considered integral parts of this Standard Deliverable package. This report is incomplete unless all pages indicated in this Table of Contents are included.*	21

- **Table of Contents**
- **Project Narrative**
- **Executive Summary – Detection Highlights**
- **Methods Summary**
- **Method/Analyst Summary**
- **Sample Summary**
- **Analytical Results**
- **QC Data Association Summary**
- **QC Evaluation and/or Data Reports**
- **Chain-of-Custody**

CASE NARRATIVE

STL Lot Number D2E150223

Introduction

STL Denver received four aqueous samples and a MS/MSD on May 14, 2002 for ppb level, full scan PAH analysis.

The cooler temperature was 3.4°C. All containers were received in acceptable condition.

Data Quality Assessment

The results included in this report have been reviewed for compliance with STL Denver's Laboratory Quality Manual. The test results shown in this report meet all requirements of NELAC and any exceptions are noted below.

Dilution factors and footnotes have been provided to assist in the interpretation of the results. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at concentrations above the linear calibration curve, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

STL utilizes USEPA approved methods in all analytical work. The samples presented in this report were analyzed for the parameters listed on the analytical methods summary page in accordance with the methods indicated.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Polynuclear Aromatic Hydrocarbons – Method 8270C

A project-specific lower acceptable recovery limit of 30% for all QC samples and surrogates has been designated for analytical work performed under the 2002 Quality Assurance Project Plan (QAPP) for the Reilly Industries, Inc. NPL Site. All recoveries in this report are above the 30% minimum threshold.

The concentrations of 2,3-Dihydroindene and Naphthalene in samples "W439-051302" and "W439D-051402" exceeded the calibration range of the instrument during the initial analysis. The samples were reanalyzed at the necessary dilutions to bring all concentrations within range and the reporting limits are raised accordingly. Only the diluted results are provided for these analytes.

The surrogate recoveries for the diluted analyses of samples "W439-051302" and "W439D-051402" were not calculated since the surrogates were diluted below the level of quantification. The samples were analyzed at dilutions due to the high concentrations of target analytes and the reporting limits are raised accordingly.

The method blank for batch 2137337 demonstrated results below the reporting limit for benzo (ghi) perylene. This may indicate that sample results may be biased high, however benzo (ghi) perylene was not detected in the associated samples. Because the blank result is less than the reporting limit, the results are considered valid and no corrective action was taken.

The MS/MSD was performed on the client-specified sample "W439-051402" demonstrated recoveries for naphthalene outside the control limits in the MS and the MSD. Because the recoveries were in control in the LCS and Method Blank, this anomaly is attributed to likely matrix interference and no further corrective action was taken.

Data Completeness for Polynuclear Aromatic Hydrocarbons – Method 8270C

The results contained in the report were reviewed relative to data acceptance criteria as specified in the 2002 QAPP. Based on the exceptions noted we achieved 99.0% completeness.

DATA COMPLETENESS CALCULATION
LOT D2E150223
ANALYSIS PAHs by SW846-8270C

QC Parameter	Data Planned	Valid Data Obtained
Method Blanks	31	31
MB Surrogates	3	3
LCS	7	7
LCS Surrogates	3	3
MS*	7	6
MS Surrogates*	3	3
MSD*	7	6
MSD Surrogates*	3	3
MS/MSD RPD*	7	7
FB/FBD hits	62	62
Sample/Dup. RPD	31	31
Sample Surrogates	12	12
Internal STD Area*	24	24
TOTAL	**200**	**198**
% Completeness	**99.0%**	

* The MS/MSD data provided for this table was performed on client sample "W434-051302".

Case Narrative for D2E150223 (continued)

Sample Duplicate RPD
LOT D2E150223

Sample W439-051402 Compound	Result	Duplicate W439D-051402 Compound	Result	RPD	RPD>50%
Acenaphthene	66	Acenaphthene	63	4.65	OK
Acenaphthylene	ND	Acenaphthylene	ND	0	OK
Acridine	ND	Acridine	ND	0	OK
Anthracene	ND	Anthracene	ND	0	OK
Benzo(a)anthracene	ND	Benzo(a)anthracene	ND	0	OK
Benzo(b)fluoranthene	ND	Benzo(b)fluoranthene	ND	0	OK
Benzo(k)fluoranthene	ND	Benzo(k)fluoranthene	ND	0	OK
2,3-Benzofuran	4.6	2,3-Benzofuran	4.7	2.15	OK
Benzo(ghi)perylene	ND	Benzo(ghi)perylene	ND	0	OK
Benzo(a)pyrene	ND	Benzo(a)pyrene	ND	0	OK
Benzo(e)pyrene	ND	Benzo(e)pyrene	ND	0	OK
Benzo(b)thiophene	52	Benzo(b)thiophene	52	0.00	OK
Biphenyl	8.3	Biphenyl	8.0	3.68	OK
Carbazole	17	Carbazole	17	0.0	OK
Chrysene	ND	Chrysene	ND	0	OK
Dibenz(a,h)anthracene	ND	Dibenz(a,h)anthracene	ND	0	OK
Dibenzofuran	14	Dibenzofuran	13	7.41	OK
Dibenzothiophene	1.0	Dibenzothiophene	1.1	9.52	OK
2,3-Dihydroindene	210	2,3-Dihydroindene	200	4.88	OK
Fluoranthene	ND	Fluoranthene	ND	0	OK
Fluorene	12	Fluorene	12	0.0	OK
Indene	84	Indene	84	0.0	OK
Indeno(1,2,3-cd)pyrene	ND	Indeno(1,2,3-cd)pyrene	ND	0	OK
Indole	ND	Indole	ND	0	OK
2-Methylnaphthalene	21	2-Methylnaphthalene	20	4.88	OK
1-Methylnaphthalene	74	1-Methylnaphthalene	73	1.36	OK
Naphthalene	640	Naphthalene	630	1.57	OK
Perylene	ND	Perylene	ND	0	OK
Phenanthrene	10	Phenanthrene	9.6	4.08	OK
Pyrene	ND	Pyrene	ND	0	OK
Quinoline	ND	Quinoline	ND	0	OK

RTD = Relative Percent Difference
ND = Compound not detected in the sample
OK = RPD acceptable
p = RPD is outside of control limits
*NC = RPD not calculated, one positive result and one ND. Considered acceptable because the positive result is less than 4x the RL.

Please note that the data for the sample are from either the undiluted or diluted analyses.

EXECUTIVE SUMMARY - Detection Highlights

D2E150223

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
W439-051402 05/14/02 001				
Acenaphthene	66	10	ug/L	SW846 8270C
2,3-Benzofuran	4.6 J	10	ug/L	SW846 8270C
Benzo(b)thiophene	52	10	ug/L	SW846 8270C
Biphenyl	8.3 J	10	ug/L	SW846 8270C
Carbazole	17	10	ug/L	SW846 8270C
Dibenzofuran	14	10	ug/L	SW846 8270C
Dibenzothiophene	1.0 J	10	ug/L	SW846 8270C
2,3-Dihydroindene	210	50	ug/L	SW846 8270C
Fluorene	12	10	ug/L	SW846 8270C
Indene	84	10	ug/L	SW846 8270C
2-Methylnaphthalene	21	10	ug/L	SW846 8270C
1-Methylnaphthalene	74	10	ug/L	SW846 8270C
Naphthalene	640	50	ug/L	SW846 8270C
Phenanthrene	10	10	ug/L	SW846 8270C
W439D-051402 05/14/02 002				
Acenaphthene	63	10	ug/L	SW846 8270C
2,3-Benzofuran	4.7 J	10	ug/L	SW846 8270C
Benzo(b)thiophene	52	10	ug/L	SW846 8270C
Biphenyl	8.0 J	10	ug/L	SW846 8270C
Carbazole	17	10	ug/L	SW846 8270C
Dibenzofuran	13	10	ug/L	SW846 8270C
Dibenzothiophene	1.1 J	10	ug/L	SW846 8270C
2,3-Dihydroindene	200	50	ug/L	SW846 8270C
Fluorene	12	10	ug/L	SW846 8270C
Indene	84	10	ug/L	SW846 8270C
2-Methylnaphthalene	20	10	ug/L	SW846 8270C
1-Methylnaphthalene	73	10	ug/L	SW846 8270C
Naphthalene	630	50	ug/L	SW846 8270C
Phenanthrene	9.6 J	10	ug/L	SW846 8270C

METHODS SUMMARY

D2E150223

PARAMETER	ANALYTICAL METHOD	PREPARATION METHOD
Semivolatile Organic Compounds by GC/MS	SW846 8270C	SW846 3520C

References:

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

METHOD / ANALYST SUMMARY

D2E150223

ANALYTICAL METHOD	ANALYST	ANALYST ID
SW846 8270C	Tim O'Donnell	000443

References:

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

SAMPLE SUMMARY

D2E150223

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
E1F72	001	W439-051402	05/14/02	
E1F8A	002	W439D-051402	05/14/02	
E1F8F	003	W439FB-051402	05/14/02	
E1F8M	004	W439FBD-051402	05/14/02	

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: W439-051402

GC/MS Semivolatiles

Lot-Sample #...: D2E150223-001 Work Order #...: E1F721AA Matrix.....: WATER
Date Sampled...: 05/14/02 Date Received..: 05/15/02
Prep Date.....: 05/18/02 Analysis Date..: 05/31/02
Prep Batch #...: 2137337 Analysis Time..: 18:20
Dilution Factor: 1

Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	**66**	**10**	**ug/L**
Acenaphthylene	ND	10	ug/L
Acridine	ND	10	ug/L
Anthracene	ND	10	ug/L
Benzo(a)anthracene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
2,3-Benzofuran	**4.6 J**	**10**	**ug/L**
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Benzo(e)pyrene	ND	10	ug/L
Benzo(b)thiophene	**52**	**10**	**ug/L**
Biphenyl	**8.3 J**	**10**	**ug/L**
Carbazole	**17**	**10**	**ug/L**
Chrysene	ND	10	ug/L
Dibenzo(a,h)anthracene	ND	10	ug/L
Dibenzofuran	**14**	**10**	**ug/L**
Dibenzothiophene	**1.0 J**	**10**	**ug/L**
Fluoranthene	ND	10	ug/L
Fluorene	**12**	**10**	**ug/L**
Indene	**84**	**10**	**ug/L**
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Indole	ND	10	ug/L
2-Methylnaphthalene	**21**	**10**	**ug/L**
1-Methylnaphthalene	**74**	**10**	**ug/L**
Perylene	ND	10	ug/L
Phenanthrene	**10**	**10**	**ug/L**
Pyrene	ND	10	ug/L
Quinoline	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	34	(30 - 160)
Fluorene d-10	70	(36 - 127)
Naphthalene-d8	80	(37 - 107)

NOTE(S):

J Estimated result. Result is less than RL.

CITY OF ST. LOUIS PARK

Client Sample ID: W439-051402

GC/MS Semivolatiles

Lot-Sample #...: D2E150223-001 Work Order #...: E1F722AA Matrix.....: WATER
Date Sampled...: 05/14/02 Date Received..: 05/15/02
Prep Date.....: 05/18/02 Analysis Date..: 06/05/02
Prep Batch #...: 2137337 Analysis Time..: 19:28
Dilution Factor: 5

Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
2,3-Dihydroindene	210	50	ug/L
Naphthalene	640	50	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	DIL,NC	(30 - 160)
Fluorene d-10	DIL,NC	(36 - 127)
Naphthalene-d8	DIL,NC	(37 - 107)

NOTE(S):

DIL The concentration is estimated or not reported due to dilution or the presence of interfering analytes.

NC The recovery and/or RPD were not calculated.

CITY OF ST. LOUIS PARK

Client Sample ID: W439D-051402

GC/MS Semivolatiles

Lot-Sample #...: D2E150223-002 Work Order #...: E1F8A1AA Matrix.....: WATER
Date Sampled...: 05/14/02 Date Received..: 05/15/02
Prep Date.....: 05/18/02 Analysis Date..: 05/31/02
Prep Batch #...: 2137337 Analysis Time..: 20:12
Dilution Factor: 1

Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	**63**	**10**	**ug/L**
Acenaphthylene	ND	10	ug/L
Acridine	ND	10	ug/L
Anthracene	ND	10	ug/L
Benzo(a)anthracene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
2,3-Benzofuran	**4.7 J**	**10**	**ug/L**
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Benzo(e)pyrene	ND	10	ug/L
Benzo(b)thiophene	**52**	**10**	**ug/L**
Biphenyl	**8.0 J**	**10**	**ug/L**
Carbazole	**17**	**10**	**ug/L**
Chrysene	ND	10	ug/L
Dibenzo(a,h)anthracene	ND	10	ug/L
Dibenzofuran	**13**	**10**	**ug/L**
Dibenzothiophene	**1.1 J**	**10**	**ug/L**
Fluoranthene	ND	10	ug/L
Fluorene	**12**	**10**	**ug/L**
Indene	**84**	**10**	**ug/L**
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Indole	ND	10	ug/L
2-Methylnaphthalene	**20**	**10**	**ug/L**
1-Methylnaphthalene	**73**	**10**	**ug/L**
Perylene	ND	10	ug/L
Phenanthrene	**9.6 J**	**10**	**ug/L**
Pyrene	ND	10	ug/L
Quinoline	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	50	(30 - 160)
Fluorene d-10	73	(36 - 127)
Naphthalene-d8	84	(37 - 107)

NOTE(S):

J Estimated result. Result is less than RL.

CITY OF ST. LOUIS PARK

Client Sample ID: W439D-051402

GC/MS Semivolatiles

Lot-Sample #...:	D2E150223-002	Work Order #...:	E1F8A2AA	Matrix.....:	WATER
Date Sampled...:	05/14/02	Date Received..:	05/15/02		
Prep Date.....:	05/18/02	Analysis Date..:	06/05/02		
Prep Batch #...:	2137337	Analysis Time..:	20:06		
Dilution Factor:	5				
		Method.....:	SW846 8270C		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
2,3-Dihydroindene	**200**	**50**	**ug/L**
Naphthalene	**630**	**50**	**ug/L**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	DIL,NC	(30 - 160)
Fluorene d-10	DIL,NC	(36 - 127)
Naphthalene-d8	DIL,NC	(37 - 107)

NOTE(S):

DIL The concentration is estimated or not reported due to dilution or the presence of interfering analytes.

NC The recovery and/or RPD were not calculated.

CITY OF ST. LOUIS PARK

Client Sample ID: W439FB-051402

GC/MS Semivolatiles

Lot-Sample #...: D2E150223-003 Work Order #...: E1F8F1AA Matrix.....: WATER
Date Sampled...: 05/14/02 Date Received..: 05/15/02
Prep Date.....: 05/18/02 Analysis Date..: 05/31/02
Prep Batch #...: 2137337 Analysis Time..: 20:50
Dilution Factor: 1

Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	10	ug/L
Acenaphthylene	ND	10	ug/L
Acridine	ND	10	ug/L
Anthracene	ND	10	ug/L
Benzo(a)anthracene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
2,3-Benzofuran	ND	10	ug/L
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Benzo(e)pyrene	ND	10	ug/L
Benzo(b)thiophene	ND	10	ug/L
Biphenyl	ND	10	ug/L
Carbazole	ND	10	ug/L
Chrysene	ND	10	ug/L
Dibenzo(a,h)anthracene	ND	10	ug/L
Dibenzofuran	ND	10	ug/L
Dibenzothiophene	ND	10	ug/L
2,3-Dihydroindene	ND	10	ug/L
Fluoranthene	ND	10	ug/L
Fluorene	ND	10	ug/L
Indene	ND	10	ug/L
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Indole	ND	10	ug/L
2-Methylnaphthalene	ND	10	ug/L
1-Methylnaphthalene	ND	10	ug/L
Naphthalene	ND	10	ug/L
Perylene	ND	10	ug/L
Phenanthrene	ND	10	ug/L
Pyrene	ND	10	ug/L
Quinoline	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	92	(30 - 160)
Fluorene d-10	68	(36 - 127)
Naphthalene-d8	84	(37 - 107)

CITY OF ST. LOUIS PARK

Client Sample ID: W439FBD-051402

GC/MS Semivolatiles

Lot-Sample #...: D2E150223-004 **Work Order #...:** E1F8M1AA **Matrix.....:** WATER
Date Sampled...: 05/14/02 **Date Received..:** 05/15/02
Prep Date.....: 05/18/02 **Analysis Date..:** 05/31/02
Prep Batch #...: 2137337 **Analysis Time..:** 21:27
Dilution Factor: 1

Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	10	ug/L
Acenaphthylene	ND	10	ug/L
Acridine	ND	10	ug/L
Anthracene	ND	10	ug/L
Benzo(a)anthracene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
2,3-Benzofuran	ND	10	ug/L
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Benzo(e)pyrene	ND	10	ug/L
Benzo(b)thiophene	ND	10	ug/L
Biphenyl	ND	10	ug/L
Carbazole	ND	10	ug/L
Chrysene	ND	10	ug/L
Dibenzo(a,h)anthracene	ND	10	ug/L
Dibenzofuran	ND	10	ug/L
Dibenzothiophene	ND	10	ug/L
2,3-Dihydroindene	ND	10	ug/L
Fluoranthene	ND	10	ug/L
Fluorene	ND	10	ug/L
Indene	ND	10	ug/L
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Indole	ND	10	ug/L
2-Methylnaphthalene	ND	10	ug/L
1-Methylnaphthalene	ND	10	ug/L
Naphthalene	ND	10	ug/L
Perylene	ND	10	ug/L
Phenanthrene	ND	10	ug/L
Pyrene	ND	10	ug/L
Quinoline	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	94	(30 - 160)
Fluorene d-10	72	(36 - 127)
Naphthalene-d8	86	(37 - 107)

QC DATA ASSOCIATION SUMMARY

D2E150223

Sample Preparation and Analysis Control Numbers

SAMPLE#	MATRIX	ANALYTICAL METHOD	LEACH BATCH #	PREP BATCH #	MS RUN#
001	WATER	SW846 8270C		2137337	2137140
002	WATER	SW846 8270C		2137337	2137140
003	WATER	SW846 8270C		2137337	2137140
004	WATER	SW846 8270C		2137337	2137140

METHOD BLANK REPORT

GC/MS Semivolatiles

Client Lot #...: D2E150223 Work Order #...: E1LW11AA Matrix.....: WATER
MB Lot-Sample #: D2E170000-337

Prep Date.....: 05/18/02 Analysis Time..: 11:24
Analysis Date..: 05/31/02 Prep Batch #...: 2137337
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Acenaphthene	ND	10	ug/L	SW846 8270C
Acenaphthylene	ND	10	ug/L	SW846 8270C
Acridine	ND	10	ug/L	SW846 8270C
Anthracene	ND	10	ug/L	SW846 8270C
Benzo(a)anthracene	ND	10	ug/L	SW846 8270C
Benzo(b)fluoranthene	ND	10	ug/L	SW846 8270C
Benzo(k)fluoranthene	ND	10	ug/L	SW846 8270C
2,3-Benzofuran	ND	10	ug/L	SW846 8270C
Benzo(ghi)perylene	**1.6 J**	**10**	**ug/L**	**SW846 8270C**
Benzo(a)pyrene	ND	10	ug/L	SW846 8270C
Benzo(e)pyrene	ND	10	ug/L	SW846 8270C
Benzo(b)thiophene	ND	10	ug/L	SW846 8270C
[illegible]phenyl	ND	10	ug/L	SW846 8270C
[illegible]rbazole	ND	10	ug/L	SW846 8270C
Chrysene	ND	10	ug/L	SW846 8270C
Dibenzo(a,h)anthracene	ND	10	ug/L	SW846 8270C
Dibenzofuran	ND	10	ug/L	SW846 8270C
Dibenzothiophene	ND	10	ug/L	SW846 8270C
2,3-Dihydroindene	ND	10	ug/L	SW846 8270C
Fluoranthene	ND	10	ug/L	SW846 8270C
Fluorene	ND	10	ug/L	SW846 8270C
Indene	ND	10	ug/L	SW846 8270C
Indeno(1,2,3-cd)pyrene	ND	10	ug/L	SW846 8270C
Indole	ND	10	ug/L	SW846 8270C
2-Methylnaphthalene	ND	10	ug/L	SW846 8270C
1-Methylnaphthalene	ND	10	ug/L	SW846 8270C
Naphthalene	ND	10	ug/L	SW846 8270C
Perylene	ND	10	ug/L	SW846 8270C
Phenanthrene	ND	10	ug/L	SW846 8270C
Pyrene	ND	10	ug/L	SW846 8270C
Quinoline	ND	10	ug/L	SW846 8270C

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	88	(30 - 160)
Fluorene d-10	68	(36 - 127)
Naphthalene-d8	74	(37 - 107)

[illegible]TE(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 EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: D2E150223 Work Order #...: E1LW11AC Matrix.....: WATER
LCS Lot-Sample#: D2E170000-337
Prep Date.....: 05/18/02 Analysis Date..: 05/31/02
Prep Batch #...: 2137337 Analysis Time..: 12:02
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD
Benzo(e)pyrene	**88**	**(30 - 150)**	**SW846 8270C**
Chrysene	**83**	**(43 - 124)**	**SW846 8270C**
Fluorene	**90**	**(51 - 120)**	**SW846 8270C**
Indene	**78**	**(49 - 108)**	**SW846 8270C**
2-Methylnaphthalene	**72**	**(47 - 138)**	**SW846 8270C**
Naphthalene	**80**	**(43 - 128)**	**SW846 8270C**
Quinoline	**77**	**(40 - 126)**	**SW846 8270C**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	92	(30 - 160)
Fluorene d-10	73	(36 - 127)
Naphthalene-d8	85	(37 - 107)

NOTE(S):

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

Bold print denotes control parameters

LABORATORY CONTROL SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #...: D2E150223 Work Order #...: E1LW11AC Matrix.....: WATER
LCS Lot-Sample#: D2E170000-337
Prep Date.....: 05/18/02 Analysis Date..: 05/31/02
Prep Batch #...: 2137337 Analysis Time..: 12:02
Dilution Factor: 1

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD
Benzo(e)pyrene	**50.0**	**44.1**	**ug/L**	**88**	**SW846 8270C**
Chrysene	**50.0**	**41.3**	**ug/L**	**83**	**SW846 8270C**
Fluorene	**50.0**	**45.1**	**ug/L**	**90**	**SW846 8270C**
Indene	**50.0**	**39.0**	**ug/L**	**78**	**SW846 8270C**
2-Methylnaphthalene	**50.0**	**36.2**	**ug/L**	**72**	**SW846 8270C**
Naphthalene	**50.0**	**39.9**	**ug/L**	**80**	**SW846 8270C**
Quinoline	**50.0**	**38.3**	**ug/L**	**77**	**SW846 8270C**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	92	(30 - 160)
Fluorene d-10	73	(36 - 127)
Naphthalene-d8	85	(37 - 107)

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 #...: D2E150223 Work Order #...: E1F721AC-MS Matrix.....: WATER
MS Lot-Sample #: D2E150223-001 E1F721AD-MSD
Date Sampled...: 05/14/02 Date Received..: 05/15/02
Prep Date.....: 05/18/02 Analysis Date..: 05/31/02
Prep Batch #...: 2137337 Analysis Time..: 18:57
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Benzo(e)pyrene	**63**	**(30 - 150)**			**SW846 8270C**
	67	**(30 - 150)**	**10**	**(0-30)**	**SW846 8270C**
Chrysene	**63**	**(43 - 124)**			**SW846 8270C**
	68	**(43 - 124)**	**11**	**(0-30)**	**SW846 8270C**
Fluorene	**88**	**(51 - 120)**			**SW846 8270C**
	83	**(51 - 120)**	**1.1**	**(0-30)**	**SW846 8270C**
Indene	**85**	**(49 - 108)**			**SW846 8270C**
	73	**(49 - 108)**	**3.8**	**(0-30)**	**SW846 8270C**
2-Methylnaphthalene	**76**	**(47 - 138)**			**SW846 8270C**
	72	**(47 - 138)**	**1.8**	**(0-30)**	**SW846 8270C**
Naphthalene	**0.0 a**	**(43 - 128)**			**SW846 8270C**
	0.0 a	**(43 - 128)**	**0.0**	**(0-30)**	**SW846 8270C**
Quinoline	**86**	**(40 - 126)**			**SW846 8270C**
	83	**(40 - 126)**	**0.16**	**(0-30)**	**SW846 8270C**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	42	(30 - 160)
	50	(30 - 160)
Fluorene d-10	74	(36 - 127)
	71	(36 - 127)
Naphthalene-d8	87	(37 - 107)
	82	(37 - 107)

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 #...: D2E150223 Work Order #...: E1F721AC-MS Matrix.....: WATER
MS Lot-Sample #: D2E150223-001 E1F721AD-MSD
Date Sampled...: 05/14/02 Date Received..: 05/15/02
Prep Date.....: 05/18/02 Analysis Date..: 05/31/02
Prep Batch #...: 2137337 Analysis Time..: 18:57
Dilution Factor: 1

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD
Benzo(e)pyrene	ND	48.4	30.4	ug/L	63		SW846 8270C
	ND	50.1	33.7	ug/L	67	10	SW846 8270C
Chrysene	ND	48.4	30.5	ug/L	63		SW846 8270C
	ND	50.1	34.2	ug/L	68	11	SW846 8270C
Fluorene	12	48.4	54.0	ug/L	88		SW846 8270C
	12	50.1	53.4	ug/L	83	1.1	SW846 8270C
Indene	84	48.4	125	ug/L	85		SW846 8270C
	84	50.1	120	ug/L	73	3.8	SW846 8270C
2-Methylnaphthalene	21	48.4	57.6	ug/L	76		SW846 8270C
	21	50.1	56.6	ug/L	72	1.8	SW846 8270C
Naphthalene	640	48.4	491	ug/L	0.0 a		SW846 8270C
	640	50.1	465	ug/L	0.0 a	0.0	SW846 8270C
Quinoline	ND	48.4	41.6	ug/L	86		SW846 8270C
	ND	50.1	41.6	ug/L	83	0.16	SW846 8270C

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	42	(30 - 160)
	50	(30 - 160)
Fluorene d-10	74	(36 - 127)
	71	(36 - 127)
Naphthalene-d8	87	(37 - 107)
	82	(37 - 107)

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.

[redacted]

Chain of Custody Record

3.47
5/15

STL Denver
4955 Yarrow Street
Arvada, CO 80002

SEVERN TRENT SERVICES

Severn Trent Laboratories, Inc.

STL-4124 (0700) **DEN (0900)**

Client: CITY OF ST. LOUIS PARK UTILITY DIVISION	Project Manager: SCOTT ANDERSON	Date: 5-14-02	Chain of Custody Number: 017823
Address: 3752 WOODDALE AVENUE	Telephone Number (Area Code)/Fax Number: 924-2557 (952) 924-2570	Lab Number:	Page ____ of ____
City: ST. LOUIS PARK, MN 55416	Site Contact: SAME	Lab Contact:	
Project Name and Location (State): SAME	Carrier/Waybill Number: FED EX 800846315990		
Contract/Purchase Order/Quote No.:			

Analysis (Attach list if more space is needed): PPB PAH

Special Instructions/ Conditions of Receipt

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil		Containers & Preservatives: Unpres.	H2SO4	HNOS	HCl	NaOH	ZnAc/ NaOH		PPB PAH
W439-051402 (#0001)	5-14-02			X				X						2	X
W439D-051402															
W439MS-051402															
W439MSD-051402															
W439FB-051402															
W439FBD-051402	5-14-02			X				X						2	X

Possible Hazard Identification: ☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return To Client ☒ Disposal By Lab ☐ Archive For ____ Months (A fee may be assessed if samples are retained longer than 3 months)

Turn Around Time Required: ☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other____

QC Requirements (Specify):

	Date	Time		Date	Time
1. Relinquished By: [signature]	5-14-02	1400	1. Received By: Brown	5-15-02	0830
2. Relinquished By:			2. Received By:		
3. Relinquished By:			3. Received By:		

Comments: KS

DISTRIBUTION: WHITE - Stays with the Sample; CANARY - Returned to Client with Report; PINK - Field Copy

K

SEVERN TRENT SERVICES

STL Denver
4955 Yarrow Street
Arvada, CO 80002-4517

Tel: 303 736 0100
Fax: 303 431 7171
www.stl-inc.com

ANALYTICAL REPORT

City of St. Louis Park

Project: Reilly Tar & Chemical Corporation

Lot #: D2E140280

Mr. Scott Anderson

City of St. Louis Park
Utility Division
3752 Wooddale Avenue
St. Louis Park, MN 55416

STL DENVER

Brian Stringer
Project Manager

June 25, 2002

Table Of Contents

Standard Deliverables

Report Contents	Total Number of Pages
Standard Deliverables *The Cover Letter and the **Report Cover** page are considered integral parts of this Standard Deliverable package. This report is incomplete unless all pages indicated in this Table of Contents are included.*	21

- **Table of Contents**
- **Project Narrative**
- **Executive Summary – Detection Highlights**
- **Methods Summary**
- **Method/Analyst Summary**
- **Sample Summary**
- **Analytical Results**
- **QC Data Association Summary**
- **QC Evaluation and/or Data Reports**
- **Chain-of-Custody**

CASE NARRATIVE

STL Lot Number D2E140280

Introduction

STL Denver received five aqueous samples May 14, 2002 for ppb level, full scan PAH analysis.

The cooler temperature was 1.3 °C. All containers were received in acceptable condition.

Data Quality Assessment

The results included in this report have been reviewed for compliance with STL Denver's Laboratory Quality Manual. The test results shown in this report meet all requirements of NELAC and any exceptions are noted below.

Dilution factors and footnotes have been provided to assist in the interpretation of the results. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at concentrations above the linear calibration curve, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

STL utilizes USEPA approved methods in all analytical work. The samples presented in this report were analyzed for the parameters listed on the analytical methods summary page in accordance with the methods indicated.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Polynuclear Aromatic Hydrocarbons – Method 8270C

A project-specific lower acceptable recovery limit of 30% for all QC samples and surrogates has been designated for analytical work performed under the 2002 Quality Assurance Project Plan (QAPP) for the Reilly Industries, Inc. NPL Site. All recoveries in this report are above the 30% minimum threshold.

The concentrations of 1-Methylnaphthalene and Naphthalene in sample "W437-051302" exceeded the calibration range of the instrument during the initial analysis. The sample was reanalyzed at the necessary dilution to bring all concentrations within range and the reporting limits are raised accordingly. Only the diluted results are provided for these analytes.

The surrogate recoveries for the diluted analyses of sample "W437-05132" were not calculated since the surrogates were diluted below the level of quantification. The samples were analyzed at dilutions due to the high concentrations of target analytes and the reporting limits are raised accordingly.

Data Completeness for Polynuclear Aromatic Hydrocarbons – Method 8270C

The results contained in the report were reviewed relative to data acceptance criteria as specified in the 2002 QAPP. Based on the exceptions noted we achieved 100% completeness.

DATA COMPLETENESS CALCULATION

LOT D2E140280

ANALYSIS PAHs by SW846-8270C

QC Parameter	Data Planned	Valid Data Obtained
Method Blanks	31	31
MB Surrogates	3	3
LCS	7	7
LCS Surrogates	3	3
MS*	NA	NA
MS Surrogates*	NA	NA
MSD*	NA	NA
MSD Surrogates*	NA	NA
MS/MSD RPD*	NA	NA
FB/FBD hits*	NA	NA
Sample/Dup. RPD*	NA	NA
Sample Surrogates	21	21
Internal STD Area*	21	21
TOTAL	**86**	**86**
% Completeness	**100%**	

* There is no MS/MSD, sample duplicate, or field blank samples on this lot.

EXECUTIVE SUMMARY - Detection Highlights

D2E140280

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
W27-051302 05/13/02 15:00 004				
Acenaphthene	21	10	ug/L	SW846 8270C
Benzo(b)thiophene	5.0 J	10	ug/L	SW846 8270C
Biphenyl	3.7 J	10	ug/L	SW846 8270C
Carbazole	2.9 J	10	ug/L	SW846 8270C
Dibenzofuran	6.0 J	10	ug/L	SW846 8270C
2,3-Dihydroindene	37	10	ug/L	SW846 8270C
Fluorene	8.2 J	10	ug/L	SW846 8270C
Indene	13	10	ug/L	SW846 8270C
1-Methylnaphthalene	16	10	ug/L	SW846 8270C
Naphthalene	10	10	ug/L	SW846 8270C
W437-051302 05/13/02 16:40 005				
Acenaphthene	150	10	ug/L	SW846 8270C
Acenaphthylene	1.1 J	10	ug/L	SW846 8270C
Acridine	4.2 J	10	ug/L	SW846 8270C
2,3-Benzofuran	5.2 J	10	ug/L	SW846 8270C
Benzo(b)thiophene	140	10	ug/L	SW846 8270C
Biphenyl	38	10	ug/L	SW846 8270C
Carbazole	82	10	ug/L	SW846 8270C
Dibenzofuran	51	10	ug/L	SW846 8270C
2,3-Dihydroindene	140	10	ug/L	SW846 8270C
Fluorene	52	10	ug/L	SW846 8270C
Indene	100	10	ug/L	SW846 8270C
2-Methylnaphthalene	84	10	ug/L	SW846 8270C
1-Methylnaphthalene	390	100	ug/L	SW846 8270C
Naphthalene	4200	400	ug/L	SW846 8270C

METHODS SUMMARY

D2E140280

PARAMETER	ANALYTICAL METHOD	PREPARATION METHOD
Semivolatile Organic Compounds by GC/MS	SW846 8270C	SW846 3520C

References:

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

METHOD / ANALYST SUMMARY

D2E140280

ANALYTICAL METHOD	ANALYST	ANALYST ID
SW846 8270C	Tim O'Donnell	000443

References:

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

SAMPLE SUMMARY

D2E140280

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
E1EQR	001	W428-051302	05/13/02	11:20
E1EQT	002	W20-051302	05/13/02	14:30
E1EQW	003	W131-051302	05/13/02	15:30
E1EQ0	004	W27-051302	05/13/02	15:00
E1EQ2	005	W437-051302	05/13/02	16:40

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: W428-051302

GC/MS Semivolatiles

Lot-Sample #...: D2E140280-001 **Work Order #...:** E1EQR1AA **Matrix.....:** WATER
Date Sampled...: 05/13/02 **Date Received..:** 05/14/02
Prep Date.....: 05/16/02 **Analysis Date..:** 06/05/02
Prep Batch #...: 2136165 **Analysis Time..:** 16:19
Dilution Factor: 1

Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	10	ug/L
Acenaphthylene	ND	10	ug/L
Acridine	ND	10	ug/L
Anthracene	ND	10	ug/L
Benzo(a)anthracene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
2,3-Benzofuran	ND	10	ug/L
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Benzo(e)pyrene	ND	10	ug/L
Benzo(b)thiophene	ND	10	ug/L
Biphenyl	ND	10	ug/L
Carbazole	ND	10	ug/L
Chrysene	ND	10	ug/L
Dibenzo(a,h)anthracene	ND	10	ug/L
Dibenzofuran	ND	10	ug/L
Dibenzothiophene	ND	10	ug/L
2,3-Dihydroindene	ND	10	ug/L
Fluoranthene	ND	10	ug/L
Fluorene	ND	10	ug/L
Indene	ND	10	ug/L
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Indole	ND	10	ug/L
2-Methylnaphthalene	ND	10	ug/L
1-Methylnaphthalene	ND	10	ug/L
Naphthalene	ND	10	ug/L
Perylene	ND	10	ug/L
Phenanthrene	ND	10	ug/L
Pyrene	ND	10	ug/L
Quinoline	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	48	(30 - 160)
Fluorene d-10	60	(36 - 127)
Naphthalene-d8	72	(37 - 107)

CITY OF ST. LOUIS PARK

Client Sample ID: W20-051302

GC/MS Semivolatiles

Lot-Sample #...: D2E140280-002 Work Order #...: E1EQT1AA Matrix.....: WATER
Date Sampled...: 05/13/02 Date Received..: 05/14/02
Prep Date.....: 05/16/02 Analysis Date..: 06/05/02
Prep Batch #...: 2136165 Analysis Time..: 16:57
Dilution Factor: 1

Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	10	ug/L
Acenaphthylene	ND	10	ug/L
Acridine	ND	10	ug/L
Anthracene	ND	10	ug/L
Benzo(a)anthracene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
2,3-Benzofuran	ND	10	ug/L
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Benzo(e)pyrene	ND	10	ug/L
Benzo(b)thiophene	ND	10	ug/L
Biphenyl	ND	10	ug/L
Carbazole	ND	10	ug/L
Chrysene	ND	10	ug/L
Dibenzo(a,h)anthracene	ND	10	ug/L
Dibenzofuran	ND	10	ug/L
Dibenzothiophene	ND	10	ug/L
2,3-Dihydroindene	ND	10	ug/L
Fluoranthene	ND	10	ug/L
Fluorene	ND	10	ug/L
Indene	ND	10	ug/L
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Indole	ND	10	ug/L
2-Methylnaphthalene	ND	10	ug/L
1-Methylnaphthalene	ND	10	ug/L
Naphthalene	ND	10	ug/L
Perylene	ND	10	ug/L
Phenanthrene	ND	10	ug/L
Pyrene	ND	10	ug/L
Quinoline	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	63	(30 - 160)
Fluorene d-10	70	(36 - 127)
Naphthalene-d8	85	(37 - 107)

CITY OF ST. LOUIS PARK

Client Sample ID: W131-051302

GC/MS Semivolatiles

Lot-Sample #...: D2E140280-003 **Work Order #...:** E1EQW1AA **Matrix.....:** WATER
Date Sampled...: 05/13/02 **Date Received..:** 05/14/02
Prep Date.....: 05/16/02 **Analysis Date..:** 06/05/02
Prep Batch #...: 2136165 **Analysis Time..:** 17:34
Dilution Factor: 1

Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	10	ug/L
Acenaphthylene	ND	10	ug/L
Acridine	ND	10	ug/L
Anthracene	ND	10	ug/L
Benzo(a)anthracene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
2,3-Benzofuran	ND	10	ug/L
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Benzo(e)pyrene	ND	10	ug/L
Benzo(b)thiophene	ND	10	ug/L
Biphenyl	ND	10	ug/L
Carbazole	ND	10	ug/L
Chrysene	ND	10	ug/L
Dibenzo(a,h)anthracene	ND	10	ug/L
Dibenzofuran	ND	10	ug/L
Dibenzothiophene	ND	10	ug/L
2,3-Dihydroindene	ND	10	ug/L
Fluoranthene	ND	10	ug/L
Fluorene	ND	10	ug/L
Indene	ND	10	ug/L
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Indole	ND	10	ug/L
2-Methylnaphthalene	ND	10	ug/L
1-Methylnaphthalene	ND	10	ug/L
Naphthalene	ND	10	ug/L
Perylene	ND	10	ug/L
Phenanthrene	ND	10	ug/L
Pyrene	ND	10	ug/L
Quinoline	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	60	(30 - 160)
Fluorene d-10	69	(36 - 127)
Naphthalene-d8	82	(37 - 107)

CITY OF ST. LOUIS PARK

Client Sample ID: W27-051302

GC/MS Semivolatiles

Lot-Sample #...:	D2E140280-004	**Work Order #...:**	E1EQ01AA	**Matrix.....:**	WATER
Date Sampled...:	05/13/02	**Date Received..:**	05/14/02		
Prep Date.....:	05/16/02	**Analysis Date..:**	06/05/02		
Prep Batch #...:	2136165	**Analysis Time..:**	18:12		
Dilution Factor:	1				
		Method.....:	SW846 8270C		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	**21**	**10**	**ug/L**
Acenaphthylene	ND	10	ug/L
Acridine	ND	10	ug/L
Anthracene	ND	10	ug/L
Benzo(a)anthracene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
2,3-Benzofuran	ND	10	ug/L
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Benzo(e)pyrene	ND	10	ug/L
Benzo(b)thiophene	**5.0 J**	**10**	**ug/L**
Biphenyl	**3.7 J**	**10**	**ug/L**
Carbazole	**2.9 J**	**10**	**ug/L**
Chrysene	ND	10	ug/L
Dibenzo(a,h)anthracene	ND	10	ug/L
Dibenzofuran	**6.0 J**	**10**	**ug/L**
Dibenzothiophene	ND	10	ug/L
2,3-Dihydroindene	**37**	**10**	**ug/L**
Fluoranthene	ND	10	ug/L
Fluorene	**8.2 J**	**10**	**ug/L**
Indene	**13**	**10**	**ug/L**
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Indole	ND	10	ug/L
2-Methylnaphthalene	ND	10	ug/L
1-Methylnaphthalene	**16**	**10**	**ug/L**
Naphthalene	**10**	**10**	**ug/L**
Perylene	ND	10	ug/L
Phenanthrene	ND	10	ug/L
Pyrene	ND	10	ug/L
Quinoline	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	57	(30 - 160)
Fluorene d-10	66	(36 - 127)
Naphthalene-d8	75	(37 - 107)

NOTE(S):

J Estimated result. Result is less than RL.

CITY OF ST. LOUIS PARK

Client Sample ID: W437-051302

GC/MS Semivolatiles

Lot-Sample #...:	D2E140280-005	**Work Order #...:**	E1EQ21AA	**Matrix.....:**	WATER
Date Sampled...:	05/13/02	**Date Received..:**	05/14/02		
Prep Date.....:	05/16/02	**Analysis Date..:**	06/05/02		
Prep Batch #...:	2136165	**Analysis Time..:**	18:50		
Dilution Factor:	1				
		Method.....:	SW846 8270C		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	**150**	**10**	**ug/L**
Acenaphthylene	**1.1 J**	**10**	**ug/L**
Acridine	**4.2 J**	**10**	**ug/L**
Anthracene	ND	10	ug/L
Benzo(a)anthracene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
2,3-Benzofuran	**5.2 J**	**10**	**ug/L**
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Benzo(e)pyrene	ND	10	ug/L
Benzo(b)thiophene	**140**	**10**	**ug/L**
Biphenyl	**38**	**10**	**ug/L**
Carbazole	**82**	**10**	**ug/L**
Chrysene	ND	10	ug/L
Dibenzo(a,h)anthracene	ND	10	ug/L
Dibenzofuran	**51**	**10**	**ug/L**
Dibenzothiophene	ND	10	ug/L
2,3-Dihydroindene	**140**	**10**	**ug/L**
Fluoranthene	ND	10	ug/L
Fluorene	**52**	**10**	**ug/L**
Indene	**100**	**10**	**ug/L**
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Indole	ND	10	ug/L
2-Methylnaphthalene	**84**	**10**	**ug/L**
Perylene	ND	10	ug/L
Phenanthrene	ND	10	ug/L
Pyrene	ND	10	ug/L
Quinoline	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	68	(30 - 160)
Fluorene d-10	63	(36 - 127)
Naphthalene-d8	79	(37 - 107)

NOTE(S):

J Estimated result. Result is less than RL.

CITY OF ST. LOUIS PARK

Client Sample ID: W437-051302

GC/MS Semivolatiles

Lot-Sample #...:	D2E140280-005	**Work Order #...:**	E1EQ22AA	**Matrix.....:**	WATER
Date Sampled...:	05/13/02	**Date Received..:**	05/14/02		
Prep Date.....:	05/16/02	**Analysis Date..:**	06/06/02		
Prep Batch #...:	2136165	**Analysis Time..:**	12:38		
Dilution Factor:	10				
		Method.....:	SW846 8270C		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
1-Methylnaphthalene	**390**	**100**	**ug/L**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	DIL,NC	(30 - 160)
Fluorene d-10	DIL,NC	(36 - 127)
Naphthalene-d8	DIL,NC	(37 - 107)

NOTE(S):

DIL The concentration is estimated or not reported due to dilution or the presence of interfering analytes.

NC The recovery and/or RPD were not calculated.

CITY OF ST. LOUIS PARK

Client Sample ID: W437-051302

GC/MS Semivolatiles

Lot-Sample #...:	D2E140280-005	**Work Order #...:**	E1EQ23AA	**Matrix.....:**	WATER
Date Sampled...:	05/13/02	**Date Received..:**	05/14/02		
Prep Date.....:	05/16/02	**Analysis Date..:**	06/06/02		
Prep Batch #...:	2136165	**Analysis Time..:**	14:58		
Dilution Factor:	40				
		Method.....:	SW846 8270C		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Naphthalene	**4200**	**400**	**ug/L**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	DIL,NC	(30 - 160)
Fluorene d-10	DIL,NC	(36 - 127)
Naphthalene-d8	DIL,NC	(37 - 107)

NOTE(S):

DIL The concentration is estimated or not reported due to dilution or the presence of interfering analytes.

NC The recovery and/or RPD were not calculated.

QC DATA ASSOCIATION SUMMARY

D2E140280

Sample Preparation and Analysis Control Numbers

SAMPLE#	MATRIX	ANALYTICAL METHOD	LEACH BATCH #	PREP BATCH #	MS RUN#
001	WATER	SW846 8270C		2136165	2136059
002	WATER	SW846 8270C		2136165	2136059
003	WATER	SW846 8270C		2136165	2136059
004	WATER	SW846 8270C		2136165	2136059
005	WATER	SW846 8270C		2136165	2136059

METHOD BLANK REPORT

GC/MS Semivolatiles

Client Lot #...: D2E140280 Work Order #...: E1HQE1AA Matrix.....: WATER
MB Lot-Sample #: D2E160000-165

Prep Date.....: 05/16/02 Analysis Time..: 10:02

Analysis Date..: 06/05/02 Prep Batch #...: 2136165
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Acenaphthene	ND	10	ug/L	SW846 8270C
Acenaphthylene	ND	10	ug/L	SW846 8270C
Acridine	ND	10	ug/L	SW846 8270C
Anthracene	ND	10	ug/L	SW846 8270C
Benzo(a)anthracene	ND	10	ug/L	SW846 8270C
Benzo(b)fluoranthene	ND	10	ug/L	SW846 8270C
Benzo(k)fluoranthene	ND	10	ug/L	SW846 8270C
2,3-Benzofuran	ND	10	ug/L	SW846 8270C
Benzo(ghi)perylene	ND	10	ug/L	SW846 8270C
Benzo(a)pyrene	ND	10	ug/L	SW846 8270C
Benzo(e)pyrene	ND	10	ug/L	SW846 8270C
Benzo(b)thiophene	ND	10	ug/L	SW846 8270C
Biphenyl	ND	10	ug/L	SW846 8270C
Carbazole	ND	10	ug/L	SW846 8270C
Chrysene	ND	10	ug/L	SW846 8270C
Dibenzo(a,h)anthracene	ND	10	ug/L	SW846 8270C
Dibenzofuran	ND	10	ug/L	SW846 8270C
Dibenzothiophene	ND	10	ug/L	SW846 8270C
2,3-Dihydroindene	ND	10	ug/L	SW846 8270C
Fluoranthene	ND	10	ug/L	SW846 8270C
Fluorene	ND	10	ug/L	SW846 8270C
Indene	ND	10	ug/L	SW846 8270C
Indeno(1,2,3-cd)pyrene	ND	10	ug/L	SW846 8270C
Indole	ND	10	ug/L	SW846 8270C
2-Methylnaphthalene	ND	10	ug/L	SW846 8270C
1-Methylnaphthalene	ND	10	ug/L	SW846 8270C
Naphthalene	ND	10	ug/L	SW846 8270C
Perylene	ND	10	ug/L	SW846 8270C
Phenanthrene	ND	10	ug/L	SW846 8270C
Pyrene	ND	10	ug/L	SW846 8270C
Quinoline	ND	10	ug/L	SW846 8270C

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	88	(30 - 160)
Fluorene d-10	67	(36 - 127)
Naphthalene-d8	81	(37 - 107)

NOTE(S):

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

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: D2E140280 Work Order #...: E1HQE1AC Matrix.....: WATER
LCS Lot-Sample#: D2E160000-165
Prep Date.....: 05/16/02 Analysis Date..: 06/05/02
Prep Batch #...: 2136165 Analysis Time..: 10:39
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD
Benzo(e)pyrene	**94**	**(30 - 150)**	**SW846 8270C**
Chrysene	**93**	**(43 - 124)**	**SW846 8270C**
Fluorene	**90**	**(51 - 120)**	**SW846 8270C**
Indene	**84**	**(49 - 108)**	**SW846 8270C**
2-Methylnaphthalene	**75**	**(47 - 138)**	**SW846 8270C**
Naphthalene	**86**	**(43 - 128)**	**SW846 8270C**
Quinoline	**74**	**(40 - 126)**	**SW846 8270C**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	100	(30 - 160)
Fluorene d-10	71	(36 - 127)
Naphthalene-d8	91	(37 - 107)

NOTE(S):

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

Bold print denotes control parameters

LABORATORY CONTROL SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #...: D2E140280 Work Order #...: E1HQE1AC Matrix.....: WATER
LCS Lot-Sample#: D2E160000-165
Prep Date.....: 05/16/02 Analysis Date..: 06/05/02
Prep Batch #...: 2136165 Analysis Time..: 10:39
Dilution Factor: 1

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD
Benzo(e)pyrene	**50.0**	**46.9**	**ug/L**	**94**	**SW846 8270C**
Chrysene	**50.0**	**46.4**	**ug/L**	**93**	**SW846 8270C**
Fluorene	**50.0**	**44.8**	**ug/L**	**90**	**SW846 8270C**
Indene	**50.0**	**42.0**	**ug/L**	**84**	**SW846 8270C**
2-Methylnaphthalene	**50.0**	**37.6**	**ug/L**	**75**	**SW846 8270C**
Naphthalene	**50.0**	**42.9**	**ug/L**	**86**	**SW846 8270C**
Quinoline	**50.0**	**36.8**	**ug/L**	**74**	**SW846 8270C**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	100	(30 - 160)
Fluorene d-10	71	(36 - 127)
Naphthalene-d8	91	(37 - 107)

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 #...: D2E140280 Work Order #...: E1DT11AC-MS Matrix.....: WATER
MS Lot-Sample #: D2E140184-001 E1DT11AD-MSD
Date Sampled...: 05/13/02 Date Received..: 05/14/02
Prep Date.....: 05/16/02 Analysis Date..: 06/05/02
Prep Batch #...: 2136165 Analysis Time..: 13:47
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Benzo(e)pyrene	**76**	**(30 - 150)**			**SW846 8270C**
	80	**(30 - 150)**	**12**	**(0-30)**	**SW846 8270C**
Chrysene	**74**	**(43 - 124)**			**SW846 8270C**
	80	**(43 - 124)**	**15**	**(0-30)**	**SW846 8270C**
Fluorene	**84**	**(51 - 120)**			**SW846 8270C**
	88	**(51 - 120)**	**11**	**(0-30)**	**SW846 8270C**
Indene	**75**	**(49 - 108)**			**SW846 8270C**
	81	**(49 - 108)**	**13**	**(0-30)**	**SW846 8270C**
2-Methylnaphthalene	**70**	**(47 - 138)**			**SW846 8270C**
	73	**(47 - 138)**	**10**	**(0-30)**	**SW846 8270C**
Naphthalene	**78**	**(43 - 128)**			**SW846 8270C**
	82	**(43 - 128)**	**11**	**(0-30)**	**SW846 8270C**
Quinoline	**67**	**(40 - 126)**			**SW846 8270C**
	76	**(40 - 126)**	**19**	**(0-30)**	**SW846 8270C**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	44	(30 - 160)
	69	(30 - 160)
Fluorene d-10	67	(36 - 127)
	70	(36 - 127)
Naphthalene-d8	84	(37 - 107)
	90	(37 - 107)

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 #...: D2E140280 Work Order #...: E1DT11AC-MS Matrix.....: WATER
MS Lot-Sample #: D2E140184-001 E1DT11AD-MSD
Date Sampled...: 05/13/02 Date Received..: 05/14/02
Prep Date.....: 05/16/02 Analysis Date..: 06/05/02
Prep Batch #...: 2136165 Analysis Time..: 13:47
Dilution Factor: 1

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD
Benzo(e)pyrene	**ND**	**47.6**	**35.9**	**ug/L**	**76**		**SW846 8270C**
	ND	**50.7**	**40.4**	**ug/L**	**80**	**12**	**SW846 8270C**
Chrysene	**ND**	**47.6**	**35.0**	**ug/L**	**74**		**SW846 8270C**
	ND	**50.7**	**40.8**	**ug/L**	**80**	**15**	**SW846 8270C**
Fluorene	**ND**	**47.6**	**40.0**	**ug/L**	**84**		**SW846 8270C**
	ND	**50.7**	**44.8**	**ug/L**	**88**	**11**	**SW846 8270C**
Indene	**ND**	**47.6**	**35.7**	**ug/L**	**75**		**SW846 8270C**
	ND	**50.7**	**40.8**	**ug/L**	**81**	**13**	**SW846 8270C**
2-Methylnaphthalene	**ND**	**47.6**	**33.4**	**ug/L**	**70**		**SW846 8270C**
	ND	**50.7**	**37.2**	**ug/L**	**73**	**10**	**SW846 8270C**
Naphthalene	**ND**	**47.6**	**37.1**	**ug/L**	**78**		**SW846 8270C**
	ND	**50.7**	**41.6**	**ug/L**	**82**	**11**	**SW846 8270C**
Quinoline	**ND**	**47.6**	**31.8**	**ug/L**	**67**		**SW846 8270C**
	ND	**50.7**	**38.5**	**ug/L**	**76**	**19**	**SW846 8270C**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	44	(30 - 160)
	69	(30 - 160)
Fluorene d-10	67	(36 - 127)
	70	(36 - 127)
Naphthalene-d8	84	(37 - 107)
	90	(37 - 107)

NOTE(S):

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

Bold print denotes control parameters

[redacted]

Chain of Custody Record

STL Denver
4955 Yarrow Street
Arvada, CO 80002

SEVERN TRENT SERVICES

Severn Trent Laboratories, Inc.

STL-4124 (0700) **DEN (0900)**

Client: City of St. Louis Park	Project Manager: Scott Anderson	Date: 5/13/02	Chain of Custody Number: 017831
Address: 3557 Wooddale Ave	Telephone Number (Area Code)/Fax Number: 952-924-2557	Lab Number:	Page 1 of 1
City: St. Louis Park; State: MN; Zip Code: 55416	Site Contact: Bill Gregg	Lab Contact:	
Project Name and Location (State): Reilly	Carrier/Waybill Number:		
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil		Containers & Preservatives: Unpres.	H2SO4	HNOS	HCl	NaOH	ZnAc/NaOH		Analysis (Attach list if more space is needed): PAH-PRB	Special Instructions/ Conditions of Receipt
W428-051302 (CB)	5/13/02	1120		X				2							X	
W20-051302	↓	1430		↓				↓							↓	
W131-051302		1530														
W27-051302		1500														
W437-051302	↓	1640		↓				↓							↓	

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months (A fee may be assessed if samples are retained longer than 3 months)

Turn Around Time Required: ☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other_____

QC Requirements (Specify):

	Date	Time		Date	Time
1. Relinquished By: Chris Boel	5/13/02	1700	1. Received By: J Brown	5-14-02	0830
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

DISTRIBUTION: WHITE - Stays with the Sample; CANARY - Returned to Client with Report; PINK - Field Copy

L

SEVERN TRENT SERVICES

STL Denver
4955 Yarrow Street
Arvada, CO 80002-4517

Tel: 303 736 0100
Fax: 303 431 7171
www.stl-inc.com

ANALYTICAL REPORT

City of St. Louis Park

Project: Reilly Tar & Chemical Corporation

Lot #: D2E150219

Mr. Scott Anderson

City of St. Louis Park
Utility Division
3752 Wooddale Avenue
St. Louis Park, MN 55416

STL DENVER

Brian Stringer
Project Manager

June 25, 2002

Table Of Contents

Standard Deliverables

Report Contents	Total Number of Pages
Standard Deliverables *The **Cover Letter** and the **Report Cover** page are considered integral parts of this Standard Deliverable package. This report is incomplete unless all pages indicated in this Table of Contents are included.*	20

- **Table of Contents**
- **Project Narrative**
- **Executive Summary – Detection Highlights**
- **Methods Summary**
- **Method/Analyst Summary**
- **Sample Summary**
- **Analytical Results**
- **QC Data Association Summary**
- **QC Evaluation and/or Data Reports**
- **Chain-of-Custody**

CASE NARRATIVE

STL Lot Number D2E150219

Introduction

STL Denver received six aqueous samples May 15, 2002 for ppb level, full scan PAH analysis.

The cooler temperature was 1.1 °C. All containers were received in acceptable condition.

Data Quality Assessment

The results included in this report have been reviewed for compliance with STL Denver's Laboratory Quality Manual. The test results shown in this report meet all requirements of NELAC and any exceptions are noted below.

Dilution factors and footnotes have been provided to assist in the interpretation of the results. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at concentrations above the linear calibration curve, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

STL utilizes USEPA approved methods in all analytical work. The samples presented in this report were analyzed for the parameters listed on the analytical methods summary page in accordance with the methods indicated.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Polynuclear Aromatic Hydrocarbons – Method 8270C

A project-specific lower acceptable recovery limit of 30% for all QC samples and surrogates has been designated for analytical work performed under the 2002 Quality Assurance Project Plan (QAPP) for the Reilly Industries, Inc. NPL Site. All recoveries in this report are above the 30% minimum threshold, except where noted below.

The recovery of the surrogate chrysene-d12 in sample "W101-051402" was below the established control limits. This may indicate that the results for the associated compound may be biased low for this sample. All other calculable surrogate recoveries were above 30%. The recovery of the surrogate chrysene-d12 was 88% in the method blank and 92% in the LCS, indicating that the system was operating properly and the anomaly is isolated to the sample matrix.

The method blank demonstrated results below the reporting limit for benzo (ghi) perylene. This may indicate that sample results may be biased high, however benzo (ghi) perylene was not detected in the associated samples. Because the blank result is less than the reporting limit, the results are considered valid and no corrective action was taken.

The matrix spike performed on a sample from another lot demonstrated recoveries for naphthalene outside the control limits in the MS and the MSD. Because the recoveries were in control in the LCS and Method Blank, this anomaly is attributed to likely matrix interference and no further corrective action was taken.

Data Completeness for Polynuclear Aromatic Hydrocarbons – Method 8270C

The results contained in the report were reviewed relative to data acceptance criteria as specified in the 2002 QAPP. Based on the exceptions noted we achieved 98.9% completeness.

DATA COMPLETENESS CALCULATION

LOT D2E150219

ANALYSIS PAHs by SW846-8270C

QC Parameter	Data Planned	Valid Data Obtained
Method Blanks	31	31
MB Surrogates	3	3
LCS	7	7
LCS Surrogates	3	3
MS*	NA	NA
MS Surrogates*	NA	NA
MSD*	NA	NA
MSD Surrogates*	NA	NA
MS/MSD RPD*	NA	NA
FB/FBD hits*	NA	NA
Sample/Dup. RPD*	NA	NA
Sample Surrogates	21	20
Internal STD Area*	27	27
TOTAL	**92**	**91**
% Completeness	**98.9%**	

* There is no MS/MSD, sample duplicate, or field blank samples on this lot.

EXECUTIVE SUMMARY - Detection Highlights

D2E150219

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
W101-051402 05/14/02 10:20 001				
Benzo(b)thiophene	1.0 J	10	ug/L	SW846 8270C
2,3-Dihydroindene	16	10	ug/L	SW846 8270C
W409-051402 05/14/02 11:15 002				
Acenaphthene	42	10	ug/L	SW846 8270C
Acenaphthylene	2.7 J	10	ug/L	SW846 8270C
2,3-Benzofuran	1.1 J	10	ug/L	SW846 8270C
Benzo(b)thiophene	27	10	ug/L	SW846 8270C
Biphenyl	6.3 J	10	ug/L	SW846 8270C
Carbazole	14	10	ug/L	SW846 8270C
Dibenzofuran	14	10	ug/L	SW846 8270C
Dibenzothiophene	1.2 J	10	ug/L	SW846 8270C
2,3-Dihydroindene	19	10	ug/L	SW846 8270C
Fluorene	18	10	ug/L	SW846 8270C
Indene	55	10	ug/L	SW846 8270C
1-Methylnaphthalene	47	10	ug/L	SW846 8270C
Naphthalene	62	10	ug/L	SW846 8270C
Phenanthrene	15	10	ug/L	SW846 8270C
W438-051402 05/14/02 14:00 003				
Naphthalene	4.8 J	10	ug/L	SW846 8270C
W143-051402 05/14/02 17:15 006				
Benzo(b)thiophene	2.7 J	10	ug/L	SW846 8270C
2,3-Dihydroindene	5.0 J	10	ug/L	SW846 8270C
Naphthalene	2.4 J	10	ug/L	SW846 8270C

METHODS SUMMARY

D2E150219

PARAMETER	ANALYTICAL METHOD	PREPARATION METHOD
Semivolatile Organic Compounds by GC/MS	SW846 8270C	SW846 3520C

References:

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

METHOD / ANALYST SUMMARY

D2E150219

ANALYTICAL METHOD	ANALYST	ANALYST ID
SW846 8270C	Tim O'Donnell	000443

References:

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

SAMPLE SUMMARY

D2E150219

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
E1F6T	001	W101-051402	05/14/02	10:20
E1F66	002	W409-051402	05/14/02	11:15
E1F67	003	W438-051402	05/14/02	14:00
E1F68	004	W433-051402	05/14/02	14:45
E1F69	005	W431-051402	05/14/02	16:00
E1F7A	006	W143-051402	05/14/02	17:15

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: W101-051402

GC/MS Semivolatiles

Lot-Sample #...: D2E150219-001 Work Order #...: E1F6T1AA Matrix.....: WATER
Date Sampled...: 05/14/02 Date Received..: 05/15/02
Prep Date.....: 05/18/02 Analysis Date..: 05/31/02
Prep Batch #...: 2137337 Analysis Time..: 13:18
Dilution Factor: 1

Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	10	ug/L
Acenaphthylene	ND	10	ug/L
Acridine	ND	10	ug/L
Anthracene	ND	10	ug/L
Benzo(a)anthracene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
2,3-Benzofuran	ND	10	ug/L
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Benzo(e)pyrene	ND	10	ug/L
Benzo(b)thiophene	**1.0 J**	**10**	**ug/L**
Biphenyl	ND	10	ug/L
Carbazole	ND	10	ug/L
Chrysene	ND	10	ug/L
Dibenzo(a,h)anthracene	ND	10	ug/L
Dibenzofuran	ND	10	ug/L
Dibenzothiophene	ND	10	ug/L
2,3-Dihydroindene	**16**	**10**	**ug/L**
Fluoranthene	ND	10	ug/L
Fluorene	ND	10	ug/L
Indene	ND	10	ug/L
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Indole	ND	10	ug/L
2-Methylnaphthalene	ND	10	ug/L
1-Methylnaphthalene	ND	10	ug/L
Naphthalene	ND	10	ug/L
Perylene	ND	10	ug/L
Phenanthrene	ND	10	ug/L
Pyrene	ND	10	ug/L
Quinoline	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	15 *	(30 - 160)
Fluorene d-10	59	(36 - 127)
Naphthalene-d8	68	(37 - 107)

NOTE(S):

* Surrogate recovery is outside stated control limits.

J Estimated result. Result is less than RL.

CITY OF ST. LOUIS PARK

Client Sample ID: W409-051402

GC/MS Semivolatiles

Lot-Sample #...:	D2E150219-002	**Work Order #...:**	E1F661AA	**Matrix.....:**	WATER
Date Sampled...:	05/14/02	**Date Received..:**	05/15/02		
Prep Date.....:	05/18/02	**Analysis Date..:**	05/31/02		
Prep Batch #...:	2137337	**Analysis Time..:**	13:55		
Dilution Factor:	1				
		Method.....:	SW846 8270C		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	**42**	**10**	**ug/L**
Acenaphthylene	**2.7 J**	**10**	**ug/L**
Acridine	ND	10	ug/L
Anthracene	ND	10	ug/L
Benzo(a)anthracene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
2,3-Benzofuran	**1.1 J**	**10**	**ug/L**
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Benzo(e)pyrene	ND	10	ug/L
Benzo(b)thiophene	**27**	**10**	**ug/L**
Biphenyl	**6.3 J**	**10**	**ug/L**
Carbazole	**14**	**10**	**ug/L**
Chrysene	ND	10	ug/L
Dibenzo(a,h)anthracene	ND	10	ug/L
Dibenzofuran	**14**	**10**	**ug/L**
Dibenzothiophene	**1.2 J**	**10**	**ug/L**
2,3-Dihydroindene	**19**	**10**	**ug/L**
Fluoranthene	ND	10	ug/L
Fluorene	**18**	**10**	**ug/L**
Indene	**55**	**10**	**ug/L**
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Indole	ND	10	ug/L
2-Methylnaphthalene	ND	10	ug/L
1-Methylnaphthalene	**47**	**10**	**ug/L**
Naphthalene	**62**	**10**	**ug/L**
Perylene	ND	10	ug/L
Phenanthrene	**15**	**10**	**ug/L**
Pyrene	ND	10	ug/L
Quinoline	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	45	(30 - 160)
Fluorene d-10	72	(36 - 127)
Naphthalene-d8	82	(37 - 107)

NOTE(S):

J Estimated result. Result is less than RL.

CITY OF ST. LOUIS PARK

Client Sample ID: W438-051402

GC/MS Semivolatiles

Lot-Sample #...:	D2E150219-003	**Work Order #...:**	E1F671AA	**Matrix.....:**	WATER
Date Sampled...:	05/14/02	**Date Received..:**	05/15/02		
Prep Date.....:	05/18/02	**Analysis Date..:**	05/31/02		
Prep Batch #...:	2137337	**Analysis Time..:**	14:33		
Dilution Factor:	1				
		Method.....:	SW846 8270C		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	10	ug/L
Acenaphthylene	ND	10	ug/L
Acridine	ND	10	ug/L
Anthracene	ND	10	ug/L
Benzo(a)anthracene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
2,3-Benzofuran	ND	10	ug/L
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Benzo(e)pyrene	ND	10	ug/L
Benzo(b)thiophene	ND	10	ug/L
[illegible]phenyl	ND	10	ug/L
[illegible]rbazole	ND	10	ug/L
Chrysene	ND	10	ug/L
Dibenzo(a,h)anthracene	ND	10	ug/L
Dibenzofuran	ND	10	ug/L
Dibenzothiophene	ND	10	ug/L
2,3-Dihydroindene	ND	10	ug/L
Fluoranthene	ND	10	ug/L
Fluorene	ND	10	ug/L
Indene	ND	10	ug/L
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Indole	ND	10	ug/L
2-Methylnaphthalene	ND	10	ug/L
1-Methylnaphthalene	ND	10	ug/L
Naphthalene	**4.8 J**	**10**	**ug/L**
Perylene	ND	10	ug/L
Phenanthrene	ND	10	ug/L
Pyrene	ND	10	ug/L
Quinoline	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	48	(30 - 160)
Fluorene d-10	72	(36 - 127)
Naphthalene-d8	82	(37 - 107)

[illegible]TE(S):

J Estimated result. Result is less than RL.

CITY OF ST. LOUIS PARK

Client Sample ID: W433-051402

GC/MS Semivolatiles

Lot-Sample #...: D2E150219-004 **Work Order #...:** E1F681AA **Matrix.....:** WATER
Date Sampled...: 05/14/02 **Date Received..:** 05/15/02
Prep Date.....: 05/18/02 **Analysis Date..:** 05/31/02
Prep Batch #...: 2137337 **Analysis Time..:** 15:11
Dilution Factor: 1

Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	10	ug/L
Acenaphthylene	ND	10	ug/L
Acridine	ND	10	ug/L
Anthracene	ND	10	ug/L
Benzo(a)anthracene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
2,3-Benzofuran	ND	10	ug/L
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Benzo(e)pyrene	ND	10	ug/L
Benzo(b)thiophene	ND	10	ug/L
Biphenyl	ND	10	ug/L
Carbazole	ND	10	ug/L
Chrysene	ND	10	ug/L
Dibenzo(a,h)anthracene	ND	10	ug/L
Dibenzofuran	ND	10	ug/L
Dibenzothiophene	ND	10	ug/L
2,3-Dihydroindene	ND	10	ug/L
Fluoranthene	ND	10	ug/L
Fluorene	ND	10	ug/L
Indene	ND	10	ug/L
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Indole	ND	10	ug/L
2-Methylnaphthalene	ND	10	ug/L
1-Methylnaphthalene	ND	10	ug/L
Naphthalene	ND	10	ug/L
Perylene	ND	10	ug/L
Phenanthrene	ND	10	ug/L
Pyrene	ND	10	ug/L
Quinoline	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	48	(30 - 160)
Fluorene d-10	71	(36 - 127)
Naphthalene-d8	81	(37 - 107)

CITY OF ST. LOUIS PARK

Client Sample ID: W431-051402

GC/MS Semivolatiles

Lot-Sample #...:	D2E150219-005	**Work Order #...:**	E1F691AA	**Matrix.....:**	WATER
Date Sampled...:	05/14/02	**Date Received..:**	05/15/02		
Prep Date.....:	05/18/02	**Analysis Date..:**	05/31/02		
Prep Batch #...:	2137337	**Analysis Time..:**	15:49		
Dilution Factor:	1				
		Method.....:	SW846 8270C		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	10	ug/L
Acenaphthylene	ND	10	ug/L
Acridine	ND	10	ug/L
Anthracene	ND	10	ug/L
Benzo(a)anthracene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
2,3-Benzofuran	ND	10	ug/L
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Benzo(e)pyrene	ND	10	ug/L
Benzo(b)thiophene	ND	10	ug/L
Biphenyl	ND	10	ug/L
Carbazole	ND	10	ug/L
Chrysene	ND	10	ug/L
Dibenzo(a,h)anthracene	ND	10	ug/L
Dibenzofuran	ND	10	ug/L
Dibenzothiophene	ND	10	ug/L
2,3-Dihydroindene	ND	10	ug/L
Fluoranthene	ND	10	ug/L
Fluorene	ND	10	ug/L
Indene	ND	10	ug/L
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Indole	ND	10	ug/L
2-Methylnaphthalene	ND	10	ug/L
1-Methylnaphthalene	ND	10	ug/L
Naphthalene	ND	10	ug/L
Perylene	ND	10	ug/L
Phenanthrene	ND	10	ug/L
Pyrene	ND	10	ug/L
Quinoline	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	51	(30 - 160)
Fluorene d-10	69	(36 - 127)
Naphthalene-d8	82	(37 - 107)

CITY OF ST. LOUIS PARK

Client Sample ID: W143-051402

GC/MS Semivolatiles

Lot-Sample #...: D2E150219-006 **Work Order #...:** E1F7A1AA **Matrix.....:** WATER
Date Sampled...: 05/14/02 **Date Received..:** 05/15/02
Prep Date.....: 05/18/02 **Analysis Date..:** 05/31/02
Prep Batch #...: 2137337 **Analysis Time..:** 16:26
Dilution Factor: 1

Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	10	ug/L
Acenaphthylene	ND	10	ug/L
Acridine	ND	10	ug/L
Anthracene	ND	10	ug/L
Benzo(a)anthracene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
2,3-Benzofuran	ND	10	ug/L
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Benzo(e)pyrene	ND	10	ug/L
Benzo(b)thiophene	**2.7 J**	**10**	**ug/L**
Biphenyl	ND	10	ug/L
Carbazole	ND	10	ug/L
Chrysene	ND	10	ug/L
Dibenzo(a,h)anthracene	ND	10	ug/L
Dibenzofuran	ND	10	ug/L
Dibenzothiophene	ND	10	ug/L
2,3-Dihydroindene	**5.0 J**	**10**	**ug/L**
Fluoranthene	ND	10	ug/L
Fluorene	ND	10	ug/L
Indene	ND	10	ug/L
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Indole	ND	10	ug/L
2-Methylnaphthalene	ND	10	ug/L
1-Methylnaphthalene	ND	10	ug/L
Naphthalene	**2.4 J**	**10**	**ug/L**
Perylene	ND	10	ug/L
Phenanthrene	ND	10	ug/L
Pyrene	ND	10	ug/L
Quinoline	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	36	(30 - 160)
Fluorene d-10	73	(36 - 127)
Naphthalene-d8	84	(37 - 107)

NOTE(S):

J Estimated result. Result is less than RL.

QC DATA ASSOCIATION SUMMARY

D2E150219

Sample Preparation and Analysis Control Numbers

SAMPLE#	MATRIX	ANALYTICAL METHOD	LEACH BATCH #	PREP BATCH #	MS RUN#
001	WATER	SW846 8270C		2137337	2137140
002	WATER	SW846 8270C		2137337	2137140
003	WATER	SW846 8270C		2137337	2137140
004	WATER	SW846 8270C		2137337	2137140
005	WATER	SW846 8270C		2137337	2137140
006	WATER	SW846 8270C		2137337	2137140

METHOD BLANK REPORT

GC/MS Semivolatiles

Client Lot #...: D2E150219 Work Order #...: E1LW11AA Matrix.....: WATER
MB Lot-Sample #: D2E170000-337

Prep Date.....: 05/18/02 Analysis Time..: 11:24
Analysis Date..: 05/31/02 Prep Batch #...: 2137337
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Acenaphthene	ND	10	ug/L	SW846 8270C
Acenaphthylene	ND	10	ug/L	SW846 8270C
Acridine	ND	10	ug/L	SW846 8270C
Anthracene	ND	10	ug/L	SW846 8270C
Benzo(a)anthracene	ND	10	ug/L	SW846 8270C
Benzo(b)fluoranthene	ND	10	ug/L	SW846 8270C
Benzo(k)fluoranthene	ND	10	ug/L	SW846 8270C
2,3-Benzofuran	ND	10	ug/L	SW846 8270C
Benzo(ghi)perylene	**1.6 J**	**10**	**ug/L**	**SW846 8270C**
Benzo(a)pyrene	ND	10	ug/L	SW846 8270C
Benzo(e)pyrene	ND	10	ug/L	SW846 8270C
Benzo(b)thiophene	ND	10	ug/L	SW846 8270C
Biphenyl	ND	10	ug/L	SW846 8270C
Carbazole	ND	10	ug/L	SW846 8270C
Chrysene	ND	10	ug/L	SW846 8270C
Dibenzo(a,h)anthracene	ND	10	ug/L	SW846 8270C
Dibenzofuran	ND	10	ug/L	SW846 8270C
Dibenzothiophene	ND	10	ug/L	SW846 8270C
2,3-Dihydroindene	ND	10	ug/L	SW846 8270C
Fluoranthene	ND	10	ug/L	SW846 8270C
Fluorene	ND	10	ug/L	SW846 8270C
Indene	ND	10	ug/L	SW846 8270C
Indeno(1,2,3-cd)pyrene	ND	10	ug/L	SW846 8270C
Indole	ND	10	ug/L	SW846 8270C
2-Methylnaphthalene	ND	10	ug/L	SW846 8270C
1-Methylnaphthalene	ND	10	ug/L	SW846 8270C
Naphthalene	ND	10	ug/L	SW846 8270C
Perylene	ND	10	ug/L	SW846 8270C
Phenanthrene	ND	10	ug/L	SW846 8270C
Pyrene	ND	10	ug/L	SW846 8270C
Quinoline	ND	10	ug/L	SW846 8270C

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	88	(30 - 160)
Fluorene d-10	68	(36 - 127)
Naphthalene-d8	74	(37 - 107)

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 EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: D2E150219 Work Order #...: E1LW11AC Matrix.....: WATER
LCS Lot-Sample#: D2E170000-337
Prep Date.....: 05/18/02 Analysis Date..: 05/31/02
Prep Batch #...: 2137337 Analysis Time..: 12:02
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD
Benzo(e)pyrene	**88**	**(30 - 150)**	**SW846 8270C**
Chrysene	**83**	**(43 - 124)**	**SW846 8270C**
Fluorene	**90**	**(51 - 120)**	**SW846 8270C**
Indene	**78**	**(49 - 108)**	**SW846 8270C**
2-Methylnaphthalene	**72**	**(47 - 138)**	**SW846 8270C**
Naphthalene	**80**	**(43 - 128)**	**SW846 8270C**
Quinoline	**77**	**(40 - 126)**	**SW846 8270C**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	92	(30 - 160)
Fluorene d-10	73	(36 - 127)
Naphthalene-d8	85	(37 - 107)

NOTE(S):

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

Bold print denotes control parameters

LABORATORY CONTROL SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #...: D2E150219 Work Order #...: E1LW11AC Matrix.....: WATER
LCS Lot-Sample#: D2E170000-337
Prep Date.....: 05/18/02 Analysis Date..: 05/31/02
Prep Batch #...: 2137337 Analysis Time..: 12:02
Dilution Factor: 1

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD
Benzo(e)pyrene	**50.0**	**44.1**	**ug/L**	**88**	**SW846 8270C**
Chrysene	**50.0**	**41.3**	**ug/L**	**83**	**SW846 8270C**
Fluorene	**50.0**	**45.1**	**ug/L**	**90**	**SW846 8270C**
Indene	**50.0**	**39.0**	**ug/L**	**78**	**SW846 8270C**
2-Methylnaphthalene	**50.0**	**36.2**	**ug/L**	**72**	**SW846 8270C**
Naphthalene	**50.0**	**39.9**	**ug/L**	**80**	**SW846 8270C**
Quinoline	**50.0**	**38.3**	**ug/L**	**77**	**SW846 8270C**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	92	(30 - 160)
Fluorene d-10	73	(36 - 127)
Naphthalene-d8	85	(37 - 107)

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 #...: D2E150219 Work Order #...: E1F721AC-MS Matrix.....: WATER
MS Lot-Sample #: D2E150223-001 E1F721AD-MSD
Date Sampled...: 05/14/02 Date Received..: 05/15/02
Prep Date.....: 05/18/02 Analysis Date..: 05/31/02
Prep Batch #...: 2137337 Analysis Time..: 18:57
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Benzo(e)pyrene	**63**	**(30 - 150)**			**SW846 8270C**
	67	**(30 - 150)**	**10**	**(0-30)**	**SW846 8270C**
Chrysene	**63**	**(43 - 124)**			**SW846 8270C**
	68	**(43 - 124)**	**11**	**(0-30)**	**SW846 8270C**
Fluorene	**88**	**(51 - 120)**			**SW846 8270C**
	83	**(51 - 120)**	**1.1**	**(0-30)**	**SW846 8270C**
Indene	**85**	**(49 - 108)**			**SW846 8270C**
	73	**(49 - 108)**	**3.8**	**(0-30)**	**SW846 8270C**
2-Methylnaphthalene	**76**	**(47 - 138)**			**SW846 8270C**
	72	**(47 - 138)**	**1.8**	**(0-30)**	**SW846 8270C**
Naphthalene	**0.0 a**	**(43 - 128)**			**SW846 8270C**
	0.0 a	**(43 - 128)**	**0.0**	**(0-30)**	**SW846 8270C**
inoline	**86**	**(40 - 126)**			**SW846 8270C**
	83	**(40 - 126)**	**0.16**	**(0-30)**	**SW846 8270C**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	42	(30 - 160)
	50	(30 - 160)
Fluorene d-10	74	(36 - 127)
	71	(36 - 127)
Naphthalene-d8	87	(37 - 107)
	82	(37 - 107)

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 #...: D2E150219 Work Order #...: E1F721AC-MS Matrix.....: WATER
MS Lot-Sample #: D2E150223-001 E1F721AD-MSD
Date Sampled...: 05/14/02 Date Received..: 05/15/02
Prep Date.....: 05/18/02 Analysis Date..: 05/31/02
Prep Batch #...: 2137337 Analysis Time..: 18:57
Dilution Factor: 1

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD
Benzo(e)pyrene	**ND**	**48.4**	**30.4**	**ug/L**	**63**		**SW846 8270C**
	ND	**50.1**	**33.7**	**ug/L**	**67**	**10**	**SW846 8270C**
Chrysene	**ND**	**48.4**	**30.5**	**ug/L**	**63**		**SW846 8270C**
	ND	**50.1**	**34.2**	**ug/L**	**68**	**11**	**SW846 8270C**
Fluorene	**12**	**48.4**	**54.0**	**ug/L**	**88**		**SW846 8270C**
	12	**50.1**	**53.4**	**ug/L**	**83**	**1.1**	**SW846 8270C**
Indene	**84**	**48.4**	**125**	**ug/L**	**85**		**SW846 8270C**
	84	**50.1**	**120**	**ug/L**	**73**	**3.8**	**SW846 8270C**
2-Methylnaphthalene	**21**	**48.4**	**57.6**	**ug/L**	**76**		**SW846 8270C**
	21	**50.1**	**56.6**	**ug/L**	**72**	**1.8**	**SW846 8270C**
Naphthalene	**640**	**48.4**	**491**	**ug/L**	**0.0 a**		**SW846 8270C**
	640	**50.1**	**465**	**ug/L**	**0.0 a**	**0.0**	**SW846 8270C**
Quinoline	**ND**	**48.4**	**41.6**	**ug/L**	**86**		**SW846 8270C**
	ND	**50.1**	**41.6**	**ug/L**	**83**	**0.16**	**SW846 8270C**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	42	(30 - 160)
	50	(30 - 160)
Fluorene d-10	74	(36 - 127)
	71	(36 - 127)
Naphthalene-d8	87	(37 - 107)
	82	(37 - 107)

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.

[redacted]

Chain of Custody Record

9B
5/15

STL Denver
4955 Yarrow Street
Arvada, CO 80002

SEVERN TRENT SERVICES

Severn Trent Laboratories, Inc.

STL-4124 (0700) **DEN (0900)**

Client: City of St. Louis Park	Project Manager: Scott Anderson	Date: 5/14/02	Chain of Custody Number: 017829
Address: Wooddale Ave	Telephone Number (Area Code)/Fax Number: 952-924-2557	Lab Number:	Page 1 of 1
City: St. Louis Park; State: MN; Zip Code: 55416	Site Contact: Bill Gregg	Lab Contact:	
Project Name and Location (State): Reilly	Carrier/Waybill Number:		
Contract/Purchase Order/Quote No.:			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil		Containers & Preservatives: Unpres.	H2SO4	HNOS	HCl	NaOH	ZnAc/NaOH		Analysis (Attach list if more space is needed): PAH-PPB	Special Instructions/ Conditions of Receipt
W101-051402	5/14/02	1020		X				2							X	
W409-051402	↓	1115		↓				↓							↓	
W438-051402		1400														
W433-051402		1445														
W431-051402		1600														
W143-051402		1715														

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months (A fee may be assessed if samples are retained longer than 3 months)

Turn Around Time Required: ☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other _____

QC Requirements (Specify):

	Date	Time		Date	Time
1. Relinquished By: Chris Boek	5/14/02	1730	1. Received By: Brown	5/15/02	0830
2. Relinquished By:			2. Received By:		
3. Relinquished By:			3. Received By:		

Comments:

DISTRIBUTION: WHITE - Stays with the Sample; CANARY - Returned to Client with Report; PINK - Field Copy

M

SEVERN TRENT SERVICES

STL Denver
4955 Yarrow Street
Arvada, CO 80002-4517

Tel: 303 736 0100
Fax: 303 431 7171
www.stl-inc.com

ANALYTICAL REPORT

City of St. Louis Park

Project: Reilly Tar & Chemical Corporation

Lot #: D2E140184

Mr. Scott Anderson

City of St. Louis Park
Utility Division
3752 Wooddale Avenue
St. Louis Park, MN 55416

STL DENVER

Brian Stringer
Project Manager

June 25, 2002

M

Table Of Contents

Standard Deliverables

Report Contents	Total Number of Pages
Standard Deliverables *The **Cover Letter** and the **Report Cover** page are considered integral parts of this Standard Deliverable package. This report is incomplete unless all pages indicated in this Table of Contents are included.*	24

- **Table of Contents**
- **Project Narrative**
- **Executive Summary – Detection Highlights**
- **Methods Summary**
- **Method/Analyst Summary**
- **Sample Summary**
- **Analytical Results**
- **QC Data Association Summary**
- **QC Evaluation and/or Data Reports**
- **Chain-of-Custody**

CASE NARRATIVE

STL Lot Number D2E140184

Introduction

STL Denver received four aqueous samples and a MS/MSD on May 14, 2002 for ppb level, full scan PAH analysis.

The cooler temperature was 1.2 °C. All containers were received in acceptable condition.

Data Quality Assessment

The results included in this report have been reviewed for compliance with STL Denver's Laboratory Quality Manual. The test results shown in this report meet all requirements of NELAC and any exceptions are noted below.

Dilution factors and footnotes have been provided to assist in the interpretation of the results. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at concentrations above the linear calibration curve, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

STL utilizes USEPA approved methods in all analytical work. The samples presented in this report were analyzed for the parameters listed on the analytical methods summary page in accordance with the methods indicated.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Polynuclear Aromatic Hydrocarbons – Method 8270C

A project-specific lower acceptable recovery limit of 30% for all QC samples and surrogates has been designated for analytical work performed under the 2002 Quality Assurance Project Plan (QAPP) for the Reilly Industries, Inc. NPL Site. All recoveries in this report are above the 30% minimum threshold.

The method blank for batch 2137337 demonstrated results below the reporting limit for benzo (ghi) perylene. This may indicate that sample results may be biased high, however benzo (ghi) perylene was not detected in the associated samples. Because the blank result is less than the reporting limit, the results are considered valid and no corrective action was taken.

The MS/MSD was performed on the client-specified sample "W434-051302" for prep batch 2136165. All MS, MSD, and MS/MSD average recoveries and RPD were within control limits.

The other matrix spike performed on a sample from another lot for prep batch 2137337 demonstrated recoveries for naphthalene outside the control limits in the MS and the MSD. Because the recoveries were in control in the LCS and Method Blank, this anomaly is attributed to likely matrix interference and no further corrective action was taken.

Data Completeness for Polynuclear Aromatic Hydrocarbons – Method 8270C

The results contained in the report were reviewed relative to data acceptance criteria as specified in the 2002 QAPP. Based on the exceptions noted we achieved 100% completeness.

DATA COMPLETENESS CALCULATION

LOT D2E140184

ANALYSIS PAHs by SW846-8270C

QC Parameter	Data Planned	Valid Data Obtained
Method Blanks	62	62
MB Surrogates	6	6
LCS	14	14
LCS Surrogates	6	6
MS*	7	7
MS Surrogates*	3	3
MSD*	7	7
MSD Surrogates*	3	3
MS/MSD RPD*	7	7
FB/FBD hits	62	62
Sample/Dup. RPD	31	31
Sample Surrogates	12	12
Internal STD Area*	30	30
TOTAL	**250**	**250**
% Completeness	**100%**	

* The MS/MSD data provided for this table was performed on client sample "W434-051302".

Case Narrative for **D2E140184** (continued)

Sample Duplicate RPD
LOT D2E140184

Sample W434-051302 Compound	Result	Duplicate W434D-051302 Compound	Result	RPD	RPD>50%
Acenaphthene	1.6	Acenaphthene	1.7	6.06	OK
Acenaphthylene	ND	Acenaphthylene	ND	0	OK
Acridine	ND	Acridine	ND	0	OK
Anthracene	ND	Anthracene	ND	0	OK
Benzo(a)anthracene	ND	Benzo(a)anthracene	ND	0	OK
Benzo(b)fluoranthene	ND	Benzo(b)fluoranthene	ND	0	OK
Benzo(k)fluoranthene	ND	Benzo(k)fluoranthene	ND	0	OK
2,3-Benzofuran	ND	2,3-Benzofuran	ND	0	OK
Benzo(ghi)perylene	ND	Benzo(ghi)perylene	ND	0	OK
Benzo(a)pyrene	ND	Benzo(a)pyrene	ND	0	OK
Benzo(e)pyrene	ND	Benzo(e)pyrene	ND	0	OK
Benzo(b)thiophene	ND	Benzo(b)thiophene	ND	0	OK
Biphenyl	ND	Biphenyl	ND	0	OK
Carbazole	ND	Carbazole	ND	0	OK
Chrysene	ND	Chrysene	ND	0	OK
Dibenz(a,h)anthracene	ND	Dibenz(a,h)anthracene	ND	0	OK
Dibenzofuran	ND	Dibenzofuran	ND	0	OK
Dibenzothiophene	ND	Dibenzothiophene	ND	0	OK
2,3-Dihydroindene	2.9	2,3-Dihydroindene	3.0	3.39	OK
Fluoranthene	ND	Fluoranthene	ND	0	OK
Fluorene	ND	Fluorene	ND	0	OK
Indene	ND	Indene	ND	0	OK
Indeno(1,2,3-cd)pyrene	ND	Indeno(1,2,3-cd)pyrene	ND	0	OK
Indole	ND	Indole	ND	0	OK
2-Methylnaphthalene	ND	2-Methylnaphthalene	ND	0	OK
1-Methylnaphthalene	ND	1-Methylnaphthalene	ND	0	OK
Naphthalene	ND	Naphthalene	ND	0	OK
Perylene	ND	Perylene	ND	0	OK
Phenanthrene	ND	Phenanthrene	ND	0	OK
Pyrene	ND	Pyrene	ND	0	OK
Quinoline	ND	Quinoline	ND	0	OK

RTD = Relative Percent Difference
ND = Compound not detected in the sample
OK = RPD acceptable
p = RPD is outside of control limits
*NC = RPD not calculated, one positive result and one ND. Considered acceptable because the positive result is less than 4x the RL.

Please note that the data for the sample are from either the undiluted or diluted analyses.

EXECUTIVE SUMMARY - Detection Highlights

D2E140184

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
W434-051302 05/13/02 001				
Acenaphthene	1.6 J	10	ug/L	SW846 8270C
2,3-Dihydroindene	2.9 J	10	ug/L	SW846 8270C
W434D-051302 05/13/02 002				
Acenaphthene	1.7 J	10	ug/L	SW846 8270C
2,3-Dihydroindene	3.0 J	10	ug/L	SW846 8270C

METHODS SUMMARY

D2E140184

PARAMETER	ANALYTICAL METHOD	PREPARATION METHOD
Semivolatile Organic Compounds by GC/MS	SW846 8270C	SW846 3520C

References:

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

METHOD / ANALYST SUMMARY

D2E140184

ANALYTICAL METHOD	ANALYST	ANALYST ID
SW846 8270C	Tim O'Donnell	000443

References:

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

SAMPLE SUMMARY

D2E140184

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
E1DT1	001	W434-051302	05/13/02	
E1DVD	002	W434D-051302	05/13/02	
E1DV0	003	W434FB-051302	05/13/02	
E1DV4	004	W434FBD-051302	05/13/02	

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: W434-051302

GC/MS Semivolatiles

Lot-Sample #...: D2E140184-001 **Work Order #...:** E1DT11AA **Matrix.....:** WATER
Date Sampled...: 05/13/02 **Date Received..:** 05/14/02
Prep Date.....: 05/16/02 **Analysis Date..:** 06/05/02
Prep Batch #...: 2136165 **Analysis Time..:** 13:10
Dilution Factor: 1

Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	**1.6 J**	**10**	**ug/L**
Acenaphthylene	ND	10	ug/L
Acridine	ND	10	ug/L
Anthracene	ND	10	ug/L
Benzo(a)anthracene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
2,3-Benzofuran	ND	10	ug/L
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Benzo(e)pyrene	ND	10	ug/L
Benzo(b)thiophene	ND	10	ug/L
Biphenyl	ND	10	ug/L
Carbazole	ND	10	ug/L
Chrysene	ND	10	ug/L
Dibenzo(a,h)anthracene	ND	10	ug/L
Dibenzofuran	ND	10	ug/L
Dibenzothiophene	ND	10	ug/L
2,3-Dihydroindene	**2.9 J**	**10**	**ug/L**
Fluoranthene	ND	10	ug/L
Fluorene	ND	10	ug/L
Indene	ND	10	ug/L
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Indole	ND	10	ug/L
2-Methylnaphthalene	ND	10	ug/L
1-Methylnaphthalene	ND	10	ug/L
Naphthalene	ND	10	ug/L
Perylene	ND	10	ug/L
Phenanthrene	ND	10	ug/L
Pyrene	ND	10	ug/L
Quinoline	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	58	(30 - 160)
Fluorene d-10	62	(36 - 127)
Naphthalene-d8	80	(37 - 107)

NOTE(S):

J Estimated result. Result is less than RL.

CITY OF ST. LOUIS PARK

Client Sample ID: W434D-051302

GC/MS Semivolatiles

Lot-Sample #...: D2E140184-002 **Work Order #...:** E1DVD1AA **Matrix.....:** WATER
Date Sampled...: 05/13/02 **Date Received..:** 05/14/02
Prep Date.....: 05/16/02 **Analysis Date..:** 06/05/02
Prep Batch #...: 2136165 **Analysis Time..:** 15:03
Dilution Factor: 1

Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	**1.7 J**	**10**	**ug/L**
Acenaphthylene	ND	10	ug/L
Acridine	ND	10	ug/L
Anthracene	ND	10	ug/L
Benzo(a)anthracene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
2,3-Benzofuran	ND	10	ug/L
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Benzo(e)pyrene	ND	10	ug/L
Benzo(b)thiophene	ND	10	ug/L
[illegible]phenyl	ND	10	ug/L
Carbazole	ND	10	ug/L
Chrysene	ND	10	ug/L
Dibenzo(a,h)anthracene	ND	10	ug/L
Dibenzofuran	ND	10	ug/L
Dibenzothiophene	ND	10	ug/L
2,3-Dihydroindene	**3.0 J**	**10**	**ug/L**
Fluoranthene	ND	10	ug/L
Fluorene	ND	10	ug/L
Indene	ND	10	ug/L
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Indole	ND	10	ug/L
2-Methylnaphthalene	ND	10	ug/L
1-Methylnaphthalene	ND	10	ug/L
Naphthalene	ND	10	ug/L
Perylene	ND	10	ug/L
Phenanthrene	ND	10	ug/L
Pyrene	ND	10	ug/L
Quinoline	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	63	(30 - 160)
Fluorene d-10	71	(36 - 127)
Naphthalene-d8	89	(37 - 107)

NOTE(S):

J Estimated result. Result is less than RL.

CITY OF ST. LOUIS PARK

Client Sample ID: W434FB-051302

GC/MS Semivolatiles

Lot-Sample #...: D2E140184-003 **Work Order #...:** E1DV01AA **Matrix.....:** WATER
Date Sampled...: 05/13/02 **Date Received..:** 05/14/02
Prep Date.....: 05/16/02 **Analysis Date..:** 06/05/02
Prep Batch #...: 2136165 **Analysis Time..:** 15:41
Dilution Factor: 1

Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	10	ug/L
Acenaphthylene	ND	10	ug/L
Acridine	ND	10	ug/L
Anthracene	ND	10	ug/L
Benzo(a)anthracene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
2,3-Benzofuran	ND	10	ug/L
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Benzo(e)pyrene	ND	10	ug/L
Benzo(b)thiophene	ND	10	ug/L
Biphenyl	ND	10	ug/L
Carbazole	ND	10	ug/L
Chrysene	ND	10	ug/L
Dibenzo(a,h)anthracene	ND	10	ug/L
Dibenzofuran	ND	10	ug/L
Dibenzothiophene	ND	10	ug/L
2,3-Dihydroindene	ND	10	ug/L
Fluoranthene	ND	10	ug/L
Fluorene	ND	10	ug/L
Indene	ND	10	ug/L
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Indole	ND	10	ug/L
2-Methylnaphthalene	ND	10	ug/L
1-Methylnaphthalene	ND	10	ug/L
Naphthalene	ND	10	ug/L
Perylene	ND	10	ug/L
Phenanthrene	ND	10	ug/L
Pyrene	ND	10	ug/L
Quinoline	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	94	(30 - 160)
Fluorene d-10	70	(36 - 127)
Naphthalene-d8	84	(37 - 107)

CITY OF ST. LOUIS PARK

Client Sample ID: W434FBD-051302

GC/MS Semivolatiles

Lot-Sample #...: D2E140184-004 Work Order #...: E1DV41AA Matrix.....: WATER
Date Sampled...: 05/13/02 Date Received..: 05/14/02
Prep Date.....: 05/18/02 Analysis Date..: 05/31/02
Prep Batch #...: 2137337 Analysis Time..: 12:40
Dilution Factor: 1

Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	10	ug/L
Acenaphthylene	ND	10	ug/L
Acridine	ND	10	ug/L
Anthracene	ND	10	ug/L
Benzo(a)anthracene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
2,3-Benzofuran	ND	10	ug/L
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Benzo(e)pyrene	ND	10	ug/L
Benzo(b)thiophene	ND	10	ug/L
Biphenyl	ND	10	ug/L
Carbazole	ND	10	ug/L
Chrysene	ND	10	ug/L
Dibenzo(a,h)anthracene	ND	10	ug/L
Dibenzofuran	ND	10	ug/L
Dibenzothiophene	ND	10	ug/L
2,3-Dihydroindene	ND	10	ug/L
Fluoranthene	ND	10	ug/L
Fluorene	ND	10	ug/L
Indene	ND	10	ug/L
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Indole	ND	10	ug/L
2-Methylnaphthalene	ND	10	ug/L
1-Methylnaphthalene	ND	10	ug/L
Naphthalene	ND	10	ug/L
Perylene	ND	10	ug/L
Phenanthrene	ND	10	ug/L
Pyrene	ND	10	ug/L
Quinoline	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	94	(30 - 160)
Fluorene d-10	74	(36 - 127)
Naphthalene-d8	84	(37 - 107)

QC DATA ASSOCIATION SUMMARY

D2E140184

Sample Preparation and Analysis Control Numbers

SAMPLE#	MATRIX	ANALYTICAL METHOD	LEACH BATCH #	PREP BATCH #	MS RUN#
001	WATER	SW846 8270C		2136165	2136059
002	WATER	SW846 8270C		2136165	2136059
003	WATER	SW846 8270C		2136165	2136059
004	WATER	SW846 8270C		2137337	2137140

METHOD BLANK REPORT

GC/MS Semivolatiles

Client Lot #...: D2E140184 Work Order #...: E1LW11AA Matrix.....: WATER
MB Lot-Sample #: D2E170000-337

Prep Date.....: 05/18/02 Analysis Time..: 11:24

Analysis Date..: 05/31/02 Prep Batch #...: 2137337
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Acenaphthene	ND	10	ug/L	SW846 8270C
Acenaphthylene	ND	10	ug/L	SW846 8270C
Acridine	ND	10	ug/L	SW846 8270C
Anthracene	ND	10	ug/L	SW846 8270C
Benzo(a)anthracene	ND	10	ug/L	SW846 8270C
Benzo(b)fluoranthene	ND	10	ug/L	SW846 8270C
Benzo(k)fluoranthene	ND	10	ug/L	SW846 8270C
2,3-Benzofuran	ND	10	ug/L	SW846 8270C
Benzo(ghi)perylene	**1.6 J**	**10**	**ug/L**	**SW846 8270C**
Benzo(a)pyrene	ND	10	ug/L	SW846 8270C
Benzo(e)pyrene	ND	10	ug/L	SW846 8270C
Benzo(b)thiophene	ND	10	ug/L	SW846 8270C
Biphenyl	ND	10	ug/L	SW846 8270C
Carbazole	ND	10	ug/L	SW846 8270C
Chrysene	ND	10	ug/L	SW846 8270C
Dibenzo(a,h)anthracene	ND	10	ug/L	SW846 8270C
Dibenzofuran	ND	10	ug/L	SW846 8270C
Dibenzothiophene	ND	10	ug/L	SW846 8270C
2,3-Dihydroindene	ND	10	ug/L	SW846 8270C
Fluoranthene	ND	10	ug/L	SW846 8270C
Fluorene	ND	10	ug/L	SW846 8270C
Indene	ND	10	ug/L	SW846 8270C
Indeno(1,2,3-cd)pyrene	ND	10	ug/L	SW846 8270C
Indole	ND	10	ug/L	SW846 8270C
2-Methylnaphthalene	ND	10	ug/L	SW846 8270C
1-Methylnaphthalene	ND	10	ug/L	SW846 8270C
Naphthalene	ND	10	ug/L	SW846 8270C
Perylene	ND	10	ug/L	SW846 8270C
Phenanthrene	ND	10	ug/L	SW846 8270C
Pyrene	ND	10	ug/L	SW846 8270C
Quinoline	ND	10	ug/L	SW846 8270C

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	88	(30 - 160)
Fluorene d-10	68	(36 - 127)
Naphthalene-d8	74	(37 - 107)

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 #...: D2E140184 Work Order #...: E1LW11AC Matrix.....: WATER
LCS Lot-Sample#: D2E170000-337
Prep Date.....: 05/18/02 Analysis Date..: 05/31/02
Prep Batch #...: 2137337 Analysis Time..: 12:02
Dilution Factor: 1

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD
Benzo(e)pyrene	**50.0**	**44.1**	**ug/L**	**88**	**SW846 8270C**
Chrysene	**50.0**	**41.3**	**ug/L**	**83**	**SW846 8270C**
Fluorene	**50.0**	**45.1**	**ug/L**	**90**	**SW846 8270C**
Indene	**50.0**	**39.0**	**ug/L**	**78**	**SW846 8270C**
2-Methylnaphthalene	**50.0**	**36.2**	**ug/L**	**72**	**SW846 8270C**
Naphthalene	**50.0**	**39.9**	**ug/L**	**80**	**SW846 8270C**
Quinoline	**50.0**	**38.3**	**ug/L**	**77**	**SW846 8270C**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	92	(30 - 160)
Fluorene d-10	73	(36 - 127)
Naphthalene-d8	85	(37 - 107)

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 #...: D2E140184 Work Order #...: E1LW11AC Matrix.....: WATER
LCS Lot-Sample#: D2E170000-337
Prep Date.....: 05/18/02 Analysis Date..: 05/31/02
Prep Batch #...: 2137337 Analysis Time..: 12:02
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD
Benzo(e)pyrene	**88**	**(30 - 150)**	**SW846 8270C**
Chrysene	**83**	**(43 - 124)**	**SW846 8270C**
Fluorene	**90**	**(51 - 120)**	**SW846 8270C**
Indene	**78**	**(49 - 108)**	**SW846 8270C**
2-Methylnaphthalene	**72**	**(47 - 138)**	**SW846 8270C**
Naphthalene	**80**	**(43 - 128)**	**SW846 8270C**
Quinoline	**77**	**(40 - 126)**	**SW846 8270C**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	92	(30 - 160)
Fluorene d-10	73	(36 - 127)
Naphthalene-d8	85	(37 - 107)

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 #...: D2E140184 Work Order #...: E1F721AC-MS Matrix.....: WATER
MS Lot-Sample #: D2E150223-001 E1F721AD-MSD
Date Sampled...: 05/14/02 Date Received..: 05/15/02
Prep Date.....: 05/18/02 Analysis Date..: 05/31/02
Prep Batch #...: 2137337 Analysis Time..: 18:57
Dilution Factor: 1

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD
Benzo(e)pyrene	ND	48.4	30.4	ug/L	63		SW846 8270C
	ND	50.1	33.7	ug/L	67	10	SW846 8270C
Chrysene	ND	48.4	30.5	ug/L	63		SW846 8270C
	ND	50.1	34.2	ug/L	68	11	SW846 8270C
Fluorene	12	48.4	54.0	ug/L	88		SW846 8270C
	12	50.1	53.4	ug/L	83	1.1	SW846 8270C
Indene	84	48.4	125	ug/L	85		SW846 8270C
	84	50.1	120	ug/L	73	3.8	SW846 8270C
2-Methylnaphthalene	21	48.4	57.6	ug/L	76		SW846 8270C
	21	50.1	56.6	ug/L	72	1.8	SW846 8270C
Naphthalene	640	48.4	491	ug/L	0.0 a		SW846 8270C
	640	50.1	465	ug/L	0.0 a	0.0	SW846 8270C
Quinoline	ND	48.4	41.6	ug/L	86		SW846 8270C
	ND	50.1	41.6	ug/L	83	0.16	SW846 8270C

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	42	(30 - 160)
	50	(30 - 160)
Fluorene d-10	74	(36 - 127)
	71	(36 - 127)
Naphthalene-d8	87	(37 - 107)
	82	(37 - 107)

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 EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: D2E140184 Work Order #...: E1F721AC-MS Matrix.....: WATER
MS Lot-Sample #: D2E150223-001 E1F721AD-MSD
Date Sampled...: 05/14/02 Date Received..: 05/15/02
Prep Date.....: 05/18/02 Analysis Date..: 05/31/02
Prep Batch #...: 2137337 Analysis Time..: 18:57
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Benzo(e)pyrene	**63**	**(30 - 150)**			**SW846 8270C**
	67	**(30 - 150)**	**10**	**(0-30)**	**SW846 8270C**
Chrysene	**63**	**(43 - 124)**			**SW846 8270C**
	68	**(43 - 124)**	**11**	**(0-30)**	**SW846 8270C**
Fluorene	**88**	**(51 - 120)**			**SW846 8270C**
	83	**(51 - 120)**	**1.1**	**(0-30)**	**SW846 8270C**
Indene	**85**	**(49 - 108)**			**SW846 8270C**
	73	**(49 - 108)**	**3.8**	**(0-30)**	**SW846 8270C**
2-Methylnaphthalene	**76**	**(47 - 138)**			**SW846 8270C**
	72	**(47 - 138)**	**1.8**	**(0-30)**	**SW846 8270C**
Naphthalene	**0.0 a**	**(43 - 128)**			**SW846 8270C**
	0.0 a	**(43 - 128)**	**0.0**	**(0-30)**	**SW846 8270C**
Quinoline	**86**	**(40 - 126)**			**SW846 8270C**
	83	**(40 - 126)**	**0.16**	**(0-30)**	**SW846 8270C**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	42	(30 - 160)
	50	(30 - 160)
Fluorene d-10	74	(36 - 127)
	71	(36 - 127)
Naphthalene-d8	87	(37 - 107)
	82	(37 - 107)

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.

METHOD BLANK REPORT

GC/MS Semivolatiles

Client Lot #...: D2E140184 **Work Order #...:** E1HQE1AA **Matrix.....:** WATER
MB Lot-Sample #: D2E160000-165

Prep Date.....: 05/16/02 **Analysis Time..:** 10:02

Analysis Date..: 06/05/02 **Prep Batch #...:** 2136165
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Acenaphthene	ND	10	ug/L	SW846 8270C
Acenaphthylene	ND	10	ug/L	SW846 8270C
Acridine	ND	10	ug/L	SW846 8270C
Anthracene	ND	10	ug/L	SW846 8270C
Benzo(a)anthracene	ND	10	ug/L	SW846 8270C
Benzo(b)fluoranthene	ND	10	ug/L	SW846 8270C
Benzo(k)fluoranthene	ND	10	ug/L	SW846 8270C
2,3-Benzofuran	ND	10	ug/L	SW846 8270C
Benzo(ghi)perylene	ND	10	ug/L	SW846 8270C
Benzo(a)pyrene	ND	10	ug/L	SW846 8270C
Benzo(e)pyrene	ND	10	ug/L	SW846 8270C
Benzo(b)thiophene	ND	10	ug/L	SW846 8270C
Biphenyl	ND	10	ug/L	SW846 8270C
Carbazole	ND	10	ug/L	SW846 8270C
Chrysene	ND	10	ug/L	SW846 8270C
Dibenzo(a,h)anthracene	ND	10	ug/L	SW846 8270C
Dibenzofuran	ND	10	ug/L	SW846 8270C
Dibenzothiophene	ND	10	ug/L	SW846 8270C
2,3-Dihydroindene	ND	10	ug/L	SW846 8270C
Fluoranthene	ND	10	ug/L	SW846 8270C
Fluorene	ND	10	ug/L	SW846 8270C
Indene	ND	10	ug/L	SW846 8270C
Indeno(1,2,3-cd)pyrene	ND	10	ug/L	SW846 8270C
Indole	ND	10	ug/L	SW846 8270C
2-Methylnaphthalene	ND	10	ug/L	SW846 8270C
1-Methylnaphthalene	ND	10	ug/L	SW846 8270C
Naphthalene	ND	10	ug/L	SW846 8270C
Perylene	ND	10	ug/L	SW846 8270C
Phenanthrene	ND	10	ug/L	SW846 8270C
Pyrene	ND	10	ug/L	SW846 8270C
Quinoline	ND	10	ug/L	SW846 8270C

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	88	(30 - 160)
Fluorene d-10	67	(36 - 127)
Naphthalene-d8	81	(37 - 107)

NOTE(S):

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

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: D2E140184 Work Order #...: E1HQE1AC Matrix.....: WATER
LCS Lot-Sample#: D2E160000-165
Prep Date.....: 05/16/02 Analysis Date..: 06/05/02
Prep Batch #...: 2136165 Analysis Time..: 10:39
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD
Benzo(e)pyrene	**94**	**(30 - 150)**	**SW846 8270C**
Chrysene	**93**	**(43 - 124)**	**SW846 8270C**
Fluorene	**90**	**(51 - 120)**	**SW846 8270C**
Indene	**84**	**(49 - 108)**	**SW846 8270C**
2-Methylnaphthalene	**75**	**(47 - 138)**	**SW846 8270C**
Naphthalene	**86**	**(43 - 128)**	**SW846 8270C**
Quinoline	**74**	**(40 - 126)**	**SW846 8270C**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	100	(30 - 160)
Fluorene d-10	71	(36 - 127)
Naphthalene-d8	91	(37 - 107)

NOTE(S):

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

Bold print denotes control parameters

LABORATORY CONTROL SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #...: D2E140184 Work Order #...: E1HQE1AC Matrix.....: WATER
LCS Lot-Sample#: D2E160000-165
Prep Date.....: 05/16/02 Analysis Date..: 06/05/02
Prep Batch #...: 2136165 Analysis Time..: 10:39
Dilution Factor: 1

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD
Benzo(e)pyrene	**50.0**	**46.9**	**ug/L**	**94**	**SW846 8270C**
Chrysene	**50.0**	**46.4**	**ug/L**	**93**	**SW846 8270C**
Fluorene	**50.0**	**44.8**	**ug/L**	**90**	**SW846 8270C**
Indene	**50.0**	**42.0**	**ug/L**	**84**	**SW846 8270C**
2-Methylnaphthalene	**50.0**	**37.6**	**ug/L**	**75**	**SW846 8270C**
Naphthalene	**50.0**	**42.9**	**ug/L**	**86**	**SW846 8270C**
Quinoline	**50.0**	**36.8**	**ug/L**	**74**	**SW846 8270C**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	100	(30 - 160)
Fluorene d-10	71	(36 - 127)
Naphthalene-d8	91	(37 - 107)

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 #...: D2E140184 Work Order #...: E1DT11AC-MS Matrix.....: WATER
MS Lot-Sample #: D2E140184-001 E1DT11AD-MSD
Date Sampled...: 05/13/02 Date Received..: 05/14/02
Prep Date.....: 05/16/02 Analysis Date..: 06/05/02
Prep Batch #...: 2136165 Analysis Time..: 13:47
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Benzo(e)pyrene	76	(30 - 150)			SW846 8270C
	80	(30 - 150)	12	(0-30)	SW846 8270C
Chrysene	74	(43 - 124)			SW846 8270C
	80	(43 - 124)	15	(0-30)	SW846 8270C
Fluorene	84	(51 - 120)			SW846 8270C
	88	(51 - 120)	11	(0-30)	SW846 8270C
Indene	75	(49 - 108)			SW846 8270C
	81	(49 - 108)	13	(0-30)	SW846 8270C
2-Methylnaphthalene	70	(47 - 138)			SW846 8270C
	73	(47 - 138)	10	(0-30)	SW846 8270C
Naphthalene	78	(43 - 128)			SW846 8270C
	82	(43 - 128)	11	(0-30)	SW846 8270C
Quinoline	67	(40 - 126)			SW846 8270C
	76	(40 - 126)	19	(0-30)	SW846 8270C

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	44	(30 - 160)
	69	(30 - 160)
Fluorene d-10	67	(36 - 127)
	70	(36 - 127)
Naphthalene-d8	84	(37 - 107)
	90	(37 - 107)

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 #...: D2E140184 Work Order #...: E1DT11AC-MS Matrix.....: WATER
MS Lot-Sample #: D2E140184-001 E1DT11AD-MSD
Date Sampled...: 05/13/02 Date Received..: 05/14/02
Prep Date.....: 05/16/02 Analysis Date..: 06/05/02
Prep Batch #...: 2136165 Analysis Time..: 13:47
Dilution Factor: 1

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD
Benzo(e)pyrene	ND	47.6	35.9	ug/L	76		SW846 8270C
	ND	50.7	40.4	ug/L	80	12	SW846 8270C
Chrysene	ND	47.6	35.0	ug/L	74		SW846 8270C
	ND	50.7	40.8	ug/L	80	15	SW846 8270C
Fluorene	ND	47.6	40.0	ug/L	84		SW846 8270C
	ND	50.7	44.8	ug/L	88	11	SW846 8270C
Indene	ND	47.6	35.7	ug/L	75		SW846 8270C
	ND	50.7	40.8	ug/L	81	13	SW846 8270C
2-Methylnaphthalene	ND	47.6	33.4	ug/L	70		SW846 8270C
	ND	50.7	37.2	ug/L	73	10	SW846 8270C
Naphthalene	ND	47.6	37.1	ug/L	78		SW846 8270C
	ND	50.7	41.6	ug/L	82	11	SW846 8270C
Quinoline	ND	47.6	31.8	ug/L	67		SW846 8270C
	ND	50.7	38.5	ug/L	76	19	SW846 8270C

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	44	(30 - 160)
	69	(30 - 160)
Fluorene d-10	67	(36 - 127)
	70	(36 - 127)
Naphthalene-d8	84	(37 - 107)
	90	(37 - 107)

NOTE(S):

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

Bold print denotes control parameters

[redacted]

Chain of Custody Record

1.2C
JB
5/14

STL Denver
4955 Yarrow Street
Arvada, CO 80002

SEVERN TRENT SERVICES

Severn Trent Laboratories, Inc.

STL-4124 (0700) DEN (0900)

Client: CITY OF ST. LOUIS PARK UTILITY DIVISION	Project Manager: Scott Anderson	Date: 5-13-02	Chain of Custody Number: 017822
Address: 3752 WOODDALE AVENUE	Telephone Number (Area Code)/Fax Number: 924-2557 (952) 924-2570	Lab Number:	Page ____ of ____
City: ST. LOUIS PARK, MN 55416	Site Contact: SAME	Lab Contact:	
Project Name and Location (State): SAME	Carrier/Waybill Number: FED EX 8068241020		
Contract/Purchase Order/Quote No.:			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Matrix: Aqueous	Matrix: Sed.	Matrix: Soil	Containers & Preservatives: Unpres.	H2SO4	HNOS	HCl	NaOH	ZnAc/NaOH		Analysis (Attach list if more space is needed): PPB PAH	Special Instructions/ Conditions of Receipt
W434-051302 E# 0004	5-13-02			X			X						2	X	
W434D-051302															
W434MS-051302															
W434MSD-051302															
W434FB-051302															
W434FBD-051302	5-13-02			X			X						2	X	

Possible Hazard Identification: [X] Non-Hazard [ ] Flammable [ ] Skin Irritant [ ] Poison B [ ] Unknown

Sample Disposal: [ ] Return To Client [X] Disposal By Lab [ ] Archive For ____ Months (A fee may be assessed if samples are retained longer than 3 months)

Turn Around Time Required: [ ] 24 Hours [ ] 48 Hours [ ] 7 Days [ ] 14 Days [ ] 21 Days [ ] Other____

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished By: MJH	5-13-02	1400	1. Received By: [signature]	5/14/02	8:30
2. Relinquished By:			2. Received By:		
3. Relinquished By:			3. Received By:		

Comments

24

DISTRIBUTION: WHITE - Stays with the Sample; CANARY - Returned to Client with Report; PINK - Field Copy

N

SEVERN TRENT SERVICES

STL Denver
4955 Yarrow Street
Arvada, CO 80002-4517

Tel: 303 736 0100
Fax: 303 431 7171
www.stl-inc.com

ANALYTICAL REPORT

City of St. Louis Park

Project: Reilly Tar & Chemical Corporation

Lot #: D2E210178

Mr. Scott Anderson

City of St. Louis Park
Utility Division
3752 Wooddale Avenue
St. Louis Park, MN 55416

STL DENVER

Brian Stringer
Project Manager

June 27, 2002

Table Of Contents

Standard Deliverables

Report Contents	Total Number of Pages
Standard Deliverables *The Cover Letter and the Report Cover page are considered integral parts of this Standard Deliverable package. This report is incomplete unless all pages indicated in this Table of Contents are included.*	19

- Table of Contents
- Case Narrative
- Executive Summary – Detection Highlights
- Methods Summary
- Method/Analyst Summary
- Lot Sample Summary
- Analytical Results
- QC Data Association Summary
- Chain-of-Custody

CASE NARRATIVE

STL Lot Number D2E210178

Introduction

STL Denver received three aqueous samples May 20, 2002 for PAH SIM (ppt-5) analysis.

The cooler temperature were 1.4, 1.2, 0.6, 2.3, and 2.3 °C. All containers were received in acceptable condition.

Data Quality Assessment

The results included in this report have been reviewed for compliance with STL Denver's Laboratory Quality Manual. The test results shown in this report meet all requirements of NELAC and any exceptions are noted below.

Dilution factors and footnotes have been provided to assist in the interpretation of the results. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at concentrations above the linear calibration curve, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

STL utilizes USEPA approved methods in all analytical work. The samples presented in this report were analyzed for the parameters listed on the analytical methods summary page in accordance with the methods indicated.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Polynuclear Aromatic Hydrocarbons – Method 8270C SIM

A project-specific lower acceptable recovery limit of 30% for all QC samples and surrogates has been designated for analytical work performed under the 2002 Quality Assurance Project Plan (QAPP) for the Reilly Industries, Inc. NPL Site. This lower limit is used for this project, rather than historically generated lower recovery limits. All recoveries in this report are above the 30% minimum threshold with the exceptions noted below.

The method blank for prep batch 2143240 demonstrated recoveries for the surrogate Chrysene-d12 above the established control limits, and for the surrogates Fluorene-d10 and Naphthalene-d8 below control limits. There are no hits in the method blank, indicating that the high Chrysene-d12 is an isolated anomaly and results were not biased high. However, the two low surrogate recoveries are an indication that the results in the method blank may be biased low. Additionally, the batch LCS demonstrated a recovery for the surrogate Chrysene-d12 above control limits. The other two LCS surrogates were within control limits, as were all LCS spiked compounds. Investigation did not determine the cause of the out of control results in the method blank or the LCS, however it is possible that either background interference or contamination during the addition of Chrysene-d12 would result in both high recoveries. All other indications are that the system was operating normally. All surrogate recoveries are in control in the associated samples, indicating that these anomalies are isolated to the QC samples. There was insufficient sample volume remaining for re-extraction and analysis.

The MS/MSD for prep batch 2072378 performed on a sample from another lot from this same site, demonstrated individual MS, MSD, and MS/MSD average recoveries were below control limits for Benzo(e)pyrene. The associated LCS and method blank were in control for all parameters.

Case Narrative for D2E210178 (continued)

The internal standard perylene-d12 was at 108%, above the area acceptance criteria of 50% to 100% in client sample "W402-052002". Reanalysis confirmed that these results are due to matrix effects. The sample surrogate recoveries were all within established control limits. There was insufficient sample volume for reanalysis and no further corrective action was taken.

Data Completeness for Polynuclear Aromatic Hydrocarbons – Method 8270C SIM

The results contained in the report were reviewed relative to data acceptance criteria as specified in the 2002 QAPP. Based on the exceptions noted we achieved 92.7% completeness.

DATA COMPLETENESS CALCULATION

LOT D2E210178

ANALYSIS PAHs by SW846-8270C SIM

QC Parameter	Data Planned	Valid Data Obtained
Method Blanks	31	31
MB Surrogates	3	0
LCS	7	7
LCS Surrogates	3	2
MS*	NA	NA
MS Surrogates*	NA	NA
MSD*	NA	NA
MSD Surrogates*	NA	NA
MS/MSD RPD*	NA	NA
FB/FBD hits*	NA	NA
Sample/Dup. RPD*	NA	NA
Sample Surrogates	9	9
Internal STD Area*	15	14
TOTAL	**68**	**63**
% Completeness	**92.7%**	

* There is no MS/MSD, sample duplicate, or field blank samples on this lot.

Table Of Contents

Standard Deliverables

Report Contents	Total Number of Pages
Standard Deliverables *The **Cover Letter** and the **Report Cover** page are considered integral parts of this Standard Deliverable package. This report is incomplete unless all pages indicated in this Table of Contents are included.*	

- **Table of Contents**
- **Project Narrative**
- **Executive Summary – Detection Highlights**
- **Methods Summary**
- **Method/Analyst Summary**
- **Sample Summary**
- **Analytical Results**
- **QC Data Association Summary**
- **QC Evaluation and/or Data Reports**
- **Chain-of-Custody**

EXECUTIVE SUMMARY - Detection Highlights

D2E210178

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
W29-052002 05/20/02 11:50 001				
Acenaphthene	8.2	1.9	ng/L	SW846 8270C SIM
Acridine	2.8 J	6.1	ng/L	SW846 8270C SIM
Anthracene	3.0	1.8	ng/L	SW846 8270C SIM
Carbazole	1.6 J	1.9	ng/L	SW846 8270C SIM
2,3-Dihydroindene	6.0	5.0	ng/L	SW846 8270C SIM
Fluoranthene	8.4	3.1	ng/L	SW846 8270C SIM
Fluorene	4.1	1.4	ng/L	SW846 8270C SIM
Phenanthrene	2.4	1.6	ng/L	SW846 8270C SIM
Pyrene	7.7	6.9	ng/L	SW846 8270C SIM
W403-052002 05/20/02 15:10 002				
Acenaphthene	5.2	1.9	ng/L	SW846 8270C SIM
Acridine	4.4 J	6.1	ng/L	SW846 8270C SIM
Anthracene	1.9	1.8	ng/L	SW846 8270C SIM
Benzo(b)fluoranthene	1.7 J	2.5	ng/L	SW846 8270C SIM
Benzo(k)fluoranthene	1.4 J	2.3	ng/L	SW846 8270C SIM
Benzo(e)pyrene	1.9	1.9	ng/L	SW846 8270C SIM
Benzo(b)thiophene	19	1.8	ng/L	SW846 8270C SIM
Dibenzothiophene	1.5	1.4	ng/L	SW846 8270C SIM
2,3-Dihydroindene	9.4	5.0	ng/L	SW846 8270C SIM
Fluoranthene	14	3.1	ng/L	SW846 8270C SIM
Fluorene	3.5	1.4	ng/L	SW846 8270C SIM
Indene	8.9	1.6	ng/L	SW846 8270C SIM
2-Methylnaphthalene	5.7	3.9	ng/L	SW846 8270C SIM
1-Methylnaphthalene	5.4	2.8	ng/L	SW846 8270C SIM
Naphthalene	19	6.5	ng/L	SW846 8270C SIM
Phenanthrene	14	1.6	ng/L	SW846 8270C SIM
Pyrene	20	6.9	ng/L	SW846 8270C SIM
W402-052002 05/20/02 17:00 003				
Acenaphthene	4.3	1.9	ng/L	SW846 8270C SIM
Acridine	4.9 J	6.1	ng/L	SW846 8270C SIM
Benzo(a)anthracene	2.5	2.5	ng/L	SW846 8270C SIM
Benzo(b)fluoranthene	2.0 J	2.5	ng/L	SW846 8270C SIM
Benzo(k)fluoranthene	2.3	2.3	ng/L	SW846 8270C SIM
Benzo(a)pyrene	1.4 J	2.3	ng/L	SW846 8270C SIM
Benzo(e)pyrene	1.8 J	1.9	ng/L	SW846 8270C SIM
Benzo(b)thiophene	4.4	1.8	ng/L	SW846 8270C SIM
Biphenyl	2.0 J	4.3	ng/L	SW846 8270C SIM
Carbazole	20	1.9	ng/L	SW846 8270C SIM
Chrysene	4.9	2.8	ng/L	SW846 8270C SIM

(Continued on next page)

EXECUTIVE SUMMARY - Detection Highlights

D2E210178

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
W402-052002 05/20/02 17:00 003				
Dibenzofuran	2.1	1.9	ng/L	SW846 8270C SIM
2,3-Dihydroindene	12	5.0	ng/L	SW846 8270C SIM
Fluoranthene	17	3.1	ng/L	SW846 8270C SIM
Fluorene	3.5	1.4	ng/L	SW846 8270C SIM
Indene	6.5	1.6	ng/L	SW846 8270C SIM
2-Methylnaphthalene	17	3.9	ng/L	SW846 8270C SIM
1-Methylnaphthalene	11	2.8	ng/L	SW846 8270C SIM
Naphthalene	27	6.5	ng/L	SW846 8270C SIM
Phenanthrene	10	1.6	ng/L	SW846 8270C SIM
Pyrene	21	6.9	ng/L	SW846 8270C SIM

METHODS SUMMARY

D2E210178

PARAMETER	ANALYTICAL METHOD	PREPARATION METHOD
Base/Neutrals and Acids	SW846 8270C SIM	SW846 3520C

References:

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

METHOD / ANALYST SUMMARY

D2E210178

ANALYTICAL METHOD	ANALYST	ANALYST ID
SW846 8270C SIM	Tim O'Donnell	000443

References:

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

SAMPLE SUMMARY

D2E210178

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
E1Q9M	001	W29-052002	05/20/02	11:50
E1RAE	002	W403-052002	05/20/02	15:10
E1RAH	003	W402-052002	05/20/02	17:00

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: W29-052002

GC/MS Semivolatiles

Lot-Sample #...: D2E210178-001 Work Order #...: E1Q9M1AA Matrix.....: WATER
Date Sampled...: 05/20/02 Date Received..: 05/21/02
Prep Date.....: 05/23/02 Analysis Date..: 06/13/02
Prep Batch #...: 2143240 Analysis Time..: 15:40
Dilution Factor: 1

Method.....: SW846 8270C SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	**8.2**	**1.9**	**ng/L**
Acenaphthylene	ND	1.6	ng/L
Acridine	**2.8 J**	**6.1**	**ng/L**
Anthracene	**3.0**	**1.8**	**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
2,3-Benzofuran	ND	5.1	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
Benzo(b)thiophene	ND	1.8	ng/L
Biphenyl	ND	4.3	ng/L
Carbazole	**1.6 J**	**1.9**	**ng/L**
Chrysene	ND	2.8	ng/L
Dibenzo(a,h)anthracene	ND	2.0	ng/L
Dibenzofuran	ND	1.9	ng/L
Dibenzothiophene	ND	1.4	ng/L
2,3-Dihydroindene	**6.0**	**5.0**	**ng/L**
Fluoranthene	**8.4**	**3.1**	**ng/L**
Fluorene	**4.1**	**1.4**	**ng/L**
Indene	ND	1.6	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Indole	ND	2.5	ng/L
2-Methylnaphthalene	ND	3.9	ng/L
1-Methylnaphthalene	ND	2.8	ng/L
Naphthalene	ND	6.5	ng/L
Perylene	ND	2.5	ng/L
Phenanthrene	**2.4**	**1.6**	**ng/L**
Pyrene	**7.7**	**6.9**	**ng/L**
Quinoline	ND	6.9	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	74	(30 - 118)
Fluorene d-10	67	(41 - 162)
Naphthalene-d8	85	(30 - 108)

NOTE(S):

J Estimated result. Result is less than RL.

CITY OF ST. LOUIS PARK

Client Sample ID: W403-052002

GC/MS Semivolatiles

Lot-Sample #...: D2E210178-002 Work Order #...: E1RAE1AA Matrix.....: WATER
Date Sampled...: 05/20/02 Date Received..: 05/21/02
Prep Date.....: 05/23/02 Analysis Date..: 06/13/02
Prep Batch #...: 2143240 Analysis Time..: 17:37
Dilution Factor: 1

Method.....: SW846 8270C SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	**5.2**	**1.9**	**ng/L**
Acenaphthylene	ND	1.6	ng/L
Acridine	**4.4 J**	**6.1**	**ng/L**
Anthracene	**1.9**	**1.8**	**ng/L**
Benzo(a)anthracene	ND	2.5	ng/L
Benzo(b)fluoranthene	**1.7 J**	**2.5**	**ng/L**
Benzo(k)fluoranthene	**1.4 J**	**2.3**	**ng/L**
2,3-Benzofuran	ND	5.1	ng/L
Benzo(ghi)perylene	ND	2.8	ng/L
Benzo(a)pyrene	ND	2.3	ng/L
Benzo(e)pyrene	**1.9**	**1.9**	**ng/L**
Benzo(b)thiophene	**19**	**1.8**	**ng/L**
Biphenyl	ND	4.3	ng/L
Carbazole	ND	1.9	ng/L
Chrysene	ND	2.8	ng/L
Dibenzo(a,h)anthracene	ND	2.0	ng/L
Dibenzofuran	ND	1.9	ng/L
Dibenzothiophene	**1.5**	**1.4**	**ng/L**
2,3-Dihydroindene	**9.4**	**5.0**	**ng/L**
Fluoranthene	**14**	**3.1**	**ng/L**
Fluorene	**3.5**	**1.4**	**ng/L**
Indene	**8.9**	**1.6**	**ng/L**
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Indole	ND	2.5	ng/L
2-Methylnaphthalene	**5.7**	**3.9**	**ng/L**
1-Methylnaphthalene	**5.4**	**2.8**	**ng/L**
Naphthalene	**19**	**6.5**	**ng/L**
Perylene	ND	2.5	ng/L
Phenanthrene	**14**	**1.6**	**ng/L**
Pyrene	**20**	**6.9**	**ng/L**
Quinoline	ND	6.9	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	57	(30 - 118)
Fluorene d-10	60	(41 - 162)
Naphthalene-d8	75	(30 - 108)

NOTE(S):

J Estimated result. Result is less than RL.

CITY OF ST. LOUIS PARK

Client Sample ID: W402-052002

GC/MS Semivolatiles

Lot-Sample #...: D2E210178-003 Work Order #...: E1RAH1AA Matrix.....: WATER
Date Sampled...: 05/20/02 Date Received..: 05/21/02
Prep Date.....: 05/23/02 Analysis Date..: 06/13/02
Prep Batch #...: 2143240 Analysis Time..: 18:14
Dilution Factor: 1

Method.....: SW846 8270C SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	**4.3**	**1.9**	**ng/L**
Acenaphthylene	ND	1.6	ng/L
Acridine	**4.9 J**	**6.1**	**ng/L**
Anthracene	ND	1.8	ng/L
Benzo(a)anthracene	**2.5**	**2.5**	**ng/L**
Benzo(b)fluoranthene	**2.0 J**	**2.5**	**ng/L**
Benzo(k)fluoranthene	**2.3**	**2.3**	**ng/L**
2,3-Benzofuran	ND	5.1	ng/L
Benzo(ghi)perylene	ND	2.8	ng/L
Benzo(a)pyrene	**1.4 J**	**2.3**	**ng/L**
Benzo(e)pyrene	**1.8 J**	**1.9**	**ng/L**
Benzo(b)thiophene	**4.4**	**1.8**	**ng/L**
Biphenyl	**2.0 J**	**4.3**	**ng/L**
Carbazole	**20**	**1.9**	**ng/L**
Chrysene	**4.9**	**2.8**	**ng/L**
Dibenzo(a,h)anthracene	ND	2.0	ng/L
Dibenzofuran	**2.1**	**1.9**	**ng/L**
Dibenzothiophene	ND	1.4	ng/L
2,3-Dihydroindene	**12**	**5.0**	**ng/L**
Fluoranthene	**17**	**3.1**	**ng/L**
Fluorene	**3.5**	**1.4**	**ng/L**
Indene	**6.5**	**1.6**	**ng/L**
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Indole	ND	2.5	ng/L
2-Methylnaphthalene	**17**	**3.9**	**ng/L**
1-Methylnaphthalene	**11**	**2.8**	**ng/L**
Naphthalene	**27**	**6.5**	**ng/L**
Perylene	ND	2.5	ng/L
Phenanthrene	**10**	**1.6**	**ng/L**
Pyrene	**21**	**6.9**	**ng/L**
Quinoline	ND	6.9	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	54	(30 - 118)
Fluorene d-10	61	(41 - 162)
Naphthalene-d8	67	(30 - 108)

NOTE(S):

J Estimated result. Result is less than RL.

QC DATA ASSOCIATION SUMMARY

D2E210178

Sample Preparation and Analysis Control Numbers

SAMPLE#	MATRIX	ANALYTICAL METHOD	LEACH BATCH #	PREP BATCH #	MS RUN#
001	WATER	SW846 8270C SIM		2143240	2143102
002	WATER	SW846 8270C SIM		2143240	2143102
003	WATER	SW846 8270C SIM		2143240	2143102

METHOD BLANK REPORT

GC/MS Semivolatiles

Client Lot #...: D2E210178 Work Order #...: E1W661AA Matrix.....: WATER
MB Lot-Sample #: D2E230000-240

Prep Date.....: 05/23/02 Analysis Time..: 14:26

Analysis Date..: 06/13/02 Prep Batch #...: 2143240
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Acenaphthene	ND	1.9	ng/L	SW846 8270C SIM
Acenaphthylene	ND	1.6	ng/L	SW846 8270C SIM
Acridine	ND	6.1	ng/L	SW846 8270C SIM
Anthracene	ND	1.8	ng/L	SW846 8270C SIM
Benzo(a)anthracene	ND	2.5	ng/L	SW846 8270C SIM
Benzo(b)fluoranthene	ND	2.5	ng/L	SW846 8270C SIM
Benzo(k)fluoranthene	ND	2.3	ng/L	SW846 8270C SIM
2,3-Benzofuran	ND	5.1	ng/L	SW846 8270C SIM
Benzo(ghi)perylene	ND	2.8	ng/L	SW846 8270C SIM
Benzo(a)pyrene	ND	2.3	ng/L	SW846 8270C SIM
Benzo(e)pyrene	ND	1.9	ng/L	SW846 8270C SIM
Benzo(b)thiophene	ND	1.8	ng/L	SW846 8270C SIM
[illegible]phenyl	ND	4.3	ng/L	SW846 8270C SIM
[illegible]rbazole	ND	1.9	ng/L	SW846 8270C SIM
Chrysene	ND	2.8	ng/L	SW846 8270C SIM
Dibenzo(a,h)anthracene	ND	2.0	ng/L	SW846 8270C SIM
Dibenzofuran	ND	1.9	ng/L	SW846 8270C SIM
Dibenzothiophene	ND	1.4	ng/L	SW846 8270C SIM
2,3-Dihydroindene	ND	5.0	ng/L	SW846 8270C SIM
Fluoranthene	ND	3.1	ng/L	SW846 8270C SIM
Fluorene	ND	1.4	ng/L	SW846 8270C SIM
Indene	ND	1.6	ng/L	SW846 8270C SIM
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L	SW846 8270C SIM
Indole	ND	2.5	ng/L	SW846 8270C SIM
2-Methylnaphthalene	ND	3.9	ng/L	SW846 8270C SIM
1-Methylnaphthalene	ND	2.8	ng/L	SW846 8270C SIM
Naphthalene	ND	6.5	ng/L	SW846 8270C SIM
Perylene	ND	2.5	ng/L	SW846 8270C SIM
Phenanthrene	ND	1.6	ng/L	SW846 8270C SIM
Pyrene	ND	6.9	ng/L	SW846 8270C SIM
Quinoline	ND	6.9	ng/L	SW846 8270C SIM

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	143 *	(30 - 118)
Fluorene d-10	33 *	(41 - 162)
Naphthalene-d8	18 *	(30 - 108)

[illegible]TE(S):

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

* Surrogate recovery is outside stated control limits.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: D2E210178 Work Order #...: E1W661AC Matrix.....: WATER
LCS Lot-Sample#: D2E230000-240
Prep Date.....: 05/23/02 Analysis Date..: 06/13/02
Prep Batch #...: 2143240 Analysis Time..: 15:03
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD
Benzo(e)pyrene	**84**	**(30 - 150)**	**SW846 8270C SIM**
Chrysene	**99**	**(30 - 132)**	**SW846 8270C SIM**
Fluorene	**76**	**(30 - 132)**	**SW846 8270C SIM**
Indene	**73**	**(30 - 150)**	**SW846 8270C SIM**
2-Methylnaphthalene	**76**	**(30 - 150)**	**SW846 8270C SIM**
Naphthalene	**88**	**(30 - 150)**	**SW846 8270C SIM**
Quinoline	**61**	**(30 - 150)**	**SW846 8270C SIM**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	150 *	(30 - 118)
Fluorene d-10	64	(41 - 162)
Naphthalene-d8	90	(30 - 108)

NOTE(S):

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

Bold print denotes control parameters

* Surrogate recovery is outside stated control limits.

LABORATORY CONTROL SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #...: D2E210178 Work Order #...: E1W661AC Matrix.....: WATER
LCS Lot-Sample#: D2E230000-240
Prep Date.....: 05/23/02 Analysis Date..: 06/13/02
Prep Batch #...: 2143240 Analysis Time..: 15:03
Dilution Factor: 1

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD
Benzo(e)pyrene	10.0	8.45	ng/L	84	SW846 8270C S
Chrysene	10.0	9.93	ng/L	99	SW846 8270C S
Fluorene	10.0	7.56	ng/L	76	SW846 8270C S
Indene	10.0	7.34	ng/L	73	SW846 8270C S
2-Methylnaphthalene	10.0	7.58	ng/L	76	SW846 8270C S
Naphthalene	10.0	8.77	ng/L	88	SW846 8270C S
Quinoline	10.0	6.06	ng/L	61	SW846 8270C S

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	150 *	(30 - 118)
Fluorene d-10	64	(41 - 162)
Naphthalene-d8	90	(30 - 108)

NOTE(S):

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

Bold print denotes control parameters

* Surrogate recovery is outside stated control limits.

MATRIX SPIKE SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: D2E210178 Work Order #...: E1RCX1AC-MS Matrix.....: WATER
MS Lot-Sample #: D2E210185-001 E1RCX1AD-MSD
Date Sampled...: 05/20/02 Date Received..: 05/21/02
Prep Date.....: 05/23/02 Analysis Date..: 06/13/02
Prep Batch #...: 2143240 Analysis Time..: 19:28
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Benzo(e)pyrene	25 a	(30 - 150)			SW846 8270C SIM
	17 a	(30 - 150)	26	(0-50)	SW846 8270C SIM
Chrysene	44	(30 - 132)			SW846 8270C SIM
	42	(30 - 132)	3.9	(0-50)	SW846 8270C SIM
Fluorene	69	(30 - 132)			SW846 8270C SIM
	69	(30 - 132)	7.1	(0-50)	SW846 8270C SIM
Indene	78	(30 - 150)			SW846 8270C SIM
	137	(30 - 150)	16	(0-50)	SW846 8270C SIM
2-Methylnaphthalene	69	(30 - 150)			SW846 8270C SIM
	76	(30 - 150)	17	(0-50)	SW846 8270C SIM
Naphthalene	89	(30 - 150)			SW846 8270C SIM
	97	(30 - 150)	16	(0-50)	SW846 8270C SIM
Quinoline	77	(30 - 150)			SW846 8270C SIM
	79	(30 - 150)	11	(0-50)	SW846 8270C SIM

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	75	(30 - 118)
	76	(30 - 118)
Fluorene d-10	64	(41 - 162)
	60	(41 - 162)
Naphthalene-d8	81	(30 - 108)
	82	(30 - 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.

MATRIX SPIKE SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #...: D2E210178 Work Order #...: E1RCX1AC-MS Matrix.....: WATER
MS Lot-Sample #: D2E210185-001 E1RCX1AD-MSD
Date Sampled...: 05/20/02 Date Received..: 05/21/02
Prep Date.....: 05/23/02 Analysis Date..: 06/13/02
Prep Batch #...: 2143240 Analysis Time..: 19:28
Dilution Factor: 1

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD
Benzo(e)pyrene	ND	9.62	2.36	ng/L	25 a		SW846 8270C SIM
	ND	10.4	1.81	ng/L	17 a	26	SW846 8270C SIM
Chrysene	ND	9.62	4.20	ng/L	44		SW846 8270C SIM
	ND	10.4	4.37	ng/L	42	3.9	SW846 8270C SIM
Fluorene	ND	9.62	6.64	ng/L	69		SW846 8270C SIM
	ND	10.4	7.12	ng/L	69	7.1	SW846 8270C SIM
Indene	32	9.62	39.6	ng/L	78		SW846 8270C SIM
	32	10.4	46.3	ng/L	137	16	SW846 8270C SIM
2-Methylnaphthalene	ND	9.62	6.64	ng/L	69		SW846 8270C SIM
	ND	10.4	7.86	ng/L	76	17	SW846 8270C SIM
Naphthalene	ND	9.62	8.56	ng/L	89		SW846 8270C SIM
	ND	10.4	10.1	ng/L	97	16	SW846 8270C SIM
inoline	ND	9.62	7.38	ng/L	77		SW846 8270C SIM
	ND	10.4	8.23	ng/L	79	11	SW846 8270C SIM

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	75	(30 - 118)
	76	(30 - 118)
Fluorene d-10	64	(41 - 162)
	60	(41 - 162)
Naphthalene-d8	81	(30 - 108)
	82	(30 - 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.

[redacted]

Chain of Custody Record

STL Denver
4955 Yarrow Street
Arvada, CO 80002

SEVERN TRENT SERVICES

Severn Trent Laboratories, Inc.

2.5°C D.S. 0.6°C 2.3°
DS
5/21/02

STL-4124 (0700) DEN (0900)

Client: City of St. Louis Park	Project Manager: Scott Anderson	Date: 5/20/02	Chain of Custody Number: 017830
Address: 5237 Wooddale Ave	Telephone Number (Area Code)/Fax Number: 952-924-2557	Lab Number:	Page 1 of 1
City: St. Louis Park; State: MN; Zip Code: 55416	Site Contact: Bill Gregg; Lab Contact:		
Project Name and Location (State): Reilly	Carrier/Waybill Number:		
Contract/Purchase Order/Quote No.:			

Analysis (Attach list if more space is needed)

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Containers & Preservatives: Unpres.	H2SO4	HNOS	HCl	NaOH	ZnAc/NaOH	PAH-PPT-5	Special Instructions/ Conditions of Receipt
W29-052002	5/20/02	1150		X			6						X	
W403-052002	↓	1510 ~~1310~~ CB		↓			↓						↓	
W402-052002	↓	1700		↓			↓						↓	

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months (A fee may be assessed if samples are retained longer than 3 months)

Turn Around Time Required: ☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other _____

QC Requirements (Specify):

1. Relinquished By: Chris Boehm	Date: 5/20/02	Time: CB 1700	1. Received By: [signature]	Date: 5/21/02	Time: 0830
2. Relinquished By:	Date:	Time:	2. Received By:	Date:	Time:
3. Relinquished By:	Date:	Time:	3. Received By:	Date:	Time:

Comments

DISTRIBUTION: WHITE - Stays with the Sample; CANARY - Returned to Client with Report; PINK - Field Copy

O

SEVERN
TRENT
SERVICES

STL Denver
4955 Yarrow Street
Arvada, CO 80002-4517

Tel: 303 736 0100
Fax: 303 431 7171
www.stl-inc.com

ANALYTICAL REPORT

City of St. Louis Park

Project: Reilly Tar & Chemical Corporation

Lot #: D2E210185

Mr. Scott Anderson

City of St. Louis Park
Utility Division
3752 Wooddale Avenue
St. Louis Park, MN 55416

STL DENVER

Brian Stringer
Project Manager

June 28, 2002

Table Of Contents

Standard Deliverables

Report Contents	Total Number of Pages
Standard Deliverables *The **Cover Letter** and the **Report Cover** page are considered integral parts of this Standard Deliverable package. This report is incomplete unless all pages indicated in this Table of Contents are included.*	19

- **Table of Contents**
- **Project Narrative**
- **Executive Summary – Detection Highlights**
- **Methods Summary**
- **Method/Analyst Summary**
- **Sample Summary**
- **Analytical Results**
- **QC Data Association Summary**
- **QC Evaluation and/or Data Reports**
- **Chain-of-Custody**

CASE NARRATIVE

STL Lot Number D2E210185

Introduction

STL Denver received four aqueous samples and a MS/MSD May 21, 2002 for PAH SIM (ppt-5) analysis.

The cooler temperatures were 1.4, 1.2, 0.6, 2.3, and 2.3 °C. All containers were received in acceptable condition.

Data Quality Assessment

The results included in this report have been reviewed for compliance with STL Denver's Laboratory Quality Manual. The test results shown in this report meet all requirements of NELAC and any exceptions are noted below.

Dilution factors and footnotes have been provided to assist in the interpretation of the results. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at concentrations above the linear calibration curve, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

STL utilizes USEPA approved methods in all analytical work. The samples presented in this report were analyzed for the parameters listed on the analytical methods summary page in accordance with the methods indicated.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Polynuclear Aromatic Hydrocarbons – Method 8270C SIM

A project-specific lower acceptable recovery limit of 30% for all QC samples and surrogates has been designated for analytical work performed under the 2002 Quality Assurance Project Plan (QAPP) for the Reilly Industries, Inc. NPL Site. This lower limit is used for this project, rather than historically generated lower recovery limits. All recoveries in this report are above the 30% minimum threshold with the exceptions noted below.

The method blank for prep batch 2143240 demonstrated recoveries for the surrogate Chrysene-d12 above the established control limits, and for the surrogates Fluorene-d10 and Naphthalene-d8 below control limits. There are no hits in the method blank, indicating that the high Chrysene-d12 is an isolated anomaly and results were not biased high. However, the two low surrogate recoveries are an indication that the results in the method blank may be biased low. Additionally, the batch LCS demonstrated a recovery for the surrogate Chrysene-d12 above control limits. The other two LCS surrogates were within control limits, as were all LCS spiked compounds. Investigation did not determine the cause of the out of control results in the method blank or the LCS, however it is possible that either background interference or contamination during the addition of Chrysene-d12 would result in both high recoveries. All other indications are that the system was operating normally. All surrogate recoveries are in control in the associated samples, indicating that these anomalies are isolated to the QC samples. There was insufficient sample volume remaining for re-extraction and analysis.

The MS/MSD was performed on the client-specified sample "SLP4-052002" for prep batch 2143240. The individual MS and MSD recoveries, as well as the MS/MSD average recovery were below control limits for Benzo(e)pyrene. The RPD was in control for all spiked compounds. The associated LCS and method blank were in control for all parameters.

Case Narrative for D2E210185 (continued)

Data Completeness for Polynuclear Aromatic Hydrocarbons – Method 8270C SIM

The results contained in the report were reviewed relative to data acceptance criteria as specified in the 2002 QAPP. Based on the exceptions noted we achieved 96.5% completeness.

DATA COMPLETENESS CALCULATION

LOT D2E210185

ANALYSIS PAHs by SW846-8270C SIM

QC Parameter	Data Planned	Valid Data Obtained
Method Blanks	31	31
MB Surrogates	3	0
LCS	7	7
LCS Surrogates	3	2
MS*	7	6
MS Surrogates*	3	3
MSD*	7	6
MSD Surrogates*	3	3
MS/MSD RPD*	7	7
FB/FBD hits	62	62
Sample/Dup. RPD	31	30
Sample Surrogates	12	12
Internal STD Area*	24	24
TOTAL	**200**	**193**
% Completeness	**96.5**	

* The MS/MSD data provided for this table was performed on client sample "SLP4-052002".

Sample Duplicate RPD
LOT D2E210185

Sample SLP4-052002 Compound	Result	Duplicate SLP4D-052002 Compound	Result	RPD	RPD>50%
Acenaphthene	79	Acenaphthene	92	15.20	OK
Acenaphthylene		Acenaphthylene		0.00	OK
Acridine		Acridine		0.00	OK
Anthracene	ND	Anthracene	3.9	NC	OK
Benzo(a)anthracene		Benzo(a)anthracene		0.00	OK
Benzo(b)fluoranthene		Benzo(b)fluoranthene		0.00	OK
Benzo(k)fluoranthene		Benzo(k)fluoranthene		0.00	OK
2,3-Benzofuran		2,3-Benzofuran		0.00	OK
Benzo(ghi)perylene		Benzo(ghi)perylene		0.00	OK
Benzo(a)pyrene		Benzo(a)pyrene		0.00	OK
Benzo(e)pyrene		Benzo(e)pyrene		0.00	OK
Benzo(b)thiophene	10	Benzo(b)thiophene	12	18.18	OK
Biphenyl		Biphenyl		0.00	OK
Carbazole	8.3	Carbazole	10	18.58	OK
Chrysene		Chrysene		0.00	OK
Dibenz(a,h)anthracene		Dibenz(a,h)anthracene		0.00	OK
Dibenzofuran	2.2	Dibenzofuran	2.5	12.77	OK
Dibenzothiophene	ND	Dibenzothiophene	14	OUT	p
2,3-Dihydroindene	80	2,3-Dihydroindene	91	12.87	OK
Fluoranthene	3.3	Fluoranthene	3.6	8.70	OK
Fluorene	ND	Fluorene	1.5	NC	OK
Indene	32	Indene	37	14.49	OK
Indeno(1,2,3-cd)pyrene		Indeno(1,2,3-cd)pyrene		0.00	OK
Indole		Indole		0.00	OK
2-Methylnaphthalene		2-Methylnaphthalene		0.00	OK
1-Methylnaphthalene		1-Methylnaphthalene		0.00	OK
Naphthalene		Naphthalene		0.00	OK
Perylene		Perylene		0.00	OK
Phenanthrene	2.9	Phenanthrene	3.1	6.67	OK
Pyrene	9.4	Pyrene	9.9	5.18	OK
Quinoline		Quinoline		0.00	OK

RTD = Relative Percent Difference
ND = Compound not detected in the sample
OK = RPD acceptable
p = RPD is outside of control limits
*NC = RPD not calculated, one positive result and one ND. Considered acceptable if the positive result is less than 4x the RL.

Please note that the data for the sample are from either the undiluted or diluted analyses.

EXECUTIVE SUMMARY - Detection Highlights

D2E210185

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
SLP4-052002 05/20/02 001				
Acenaphthene	79	1.9	ng/L	SW846 8270C SIM
Benzo(b)thiophene	10	1.8	ng/L	SW846 8270C SIM
Carbazole	8.3	1.9	ng/L	SW846 8270C SIM
Dibenzofuran	2.2	1.9	ng/L	SW846 8270C SIM
2,3-Dihydroindene	80	5.0	ng/L	SW846 8270C SIM
Fluoranthene	3.3	3.1	ng/L	SW846 8270C SIM
Indene	32	1.6	ng/L	SW846 8270C SIM
Phenanthrene	2.9	1.6	ng/L	SW846 8270C SIM
Pyrene	9.4	6.9	ng/L	SW846 8270C SIM
SLP4D-052002 05/20/02 002				
Acenaphthene	92	1.9	ng/L	SW846 8270C SIM
Anthracene	3.9	1.8	ng/L	SW846 8270C SIM
Benzo(b)thiophene	12	1.8	ng/L	SW846 8270C SIM
Carbazole	10	1.9	ng/L	SW846 8270C SIM
Dibenzofuran	2.5	1.9	ng/L	SW846 8270C SIM
Dibenzothiophene	14	1.4	ng/L	SW846 8270C SIM
2,3-Dihydroindene	91	5.0	ng/L	SW846 8270C SIM
Fluoranthene	3.6	3.1	ng/L	SW846 8270C SIM
Fluorene	1.5	1.4	ng/L	SW846 8270C SIM
Indene	37	1.6	ng/L	SW846 8270C SIM
Phenanthrene	3.1	1.6	ng/L	SW846 8270C SIM
Pyrene	9.9	6.9	ng/L	SW846 8270C SIM

METHODS SUMMARY

D2E210185

PARAMETER	ANALYTICAL METHOD	PREPARATION METHOD
Base/Neutrals and Acids	SW846 8270C SIM	SW846 3520C

References:

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

METHOD / ANALYST SUMMARY

D2E210185

ANALYTICAL METHOD	ANALYST	ANALYST ID
SW846 8270C SIM	Tim O'Donnell	000443

References:

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

SAMPLE SUMMARY

D2E210185

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
E1RCX	001	SLP4-052002	05/20/02	
E1RC7	002	SLP4D-052002	05/20/02	
E1RC8	003	SLP4FB-052002	05/20/02	
E1RDC	004	SLP4FBD-052002	05/20/02	

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: SLP4-052002

GC/MS Semivolatiles

Lot-Sample #...:	D2E210185-001	**Work Order #...:**	E1RCX1AA	**Matrix.....:**	WATER
Date Sampled...:	05/20/02	**Date Received..:**	05/21/02		
Prep Date.....:	05/23/02	**Analysis Date..:**	06/13/02		
Prep Batch #...:	2143240	**Analysis Time..:**	18:51		
Dilution Factor:	1				
		Method.....:	SW846 8270C SIM		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	**79**	**1.9**	**ng/L**
Acenaphthylene	ND	1.6	ng/L
Acridine	ND	6.1	ng/L
Anthracene	ND	1.8	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
2,3-Benzofuran	ND	5.1	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
Benzo(b)thiophene	**10**	**1.8**	**ng/L**
Biphenyl	ND	4.3	ng/L
Carbazole	**8.3**	**1.9**	**ng/L**
Chrysene	ND	2.8	ng/L
Dibenzo(a,h)anthracene	ND	2.0	ng/L
Dibenzofuran	**2.2**	**1.9**	**ng/L**
Dibenzothiophene	ND	1.4	ng/L
2,3-Dihydroindene	**80**	**5.0**	**ng/L**
Fluoranthene	**3.3**	**3.1**	**ng/L**
Fluorene	ND	1.4	ng/L
Indene	**32**	**1.6**	**ng/L**
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Indole	ND	2.5	ng/L
2-Methylnaphthalene	ND	3.9	ng/L
1-Methylnaphthalene	ND	2.8	ng/L
Naphthalene	ND	6.5	ng/L
Perylene	ND	2.5	ng/L
Phenanthrene	**2.9**	**1.6**	**ng/L**
Pyrene	**9.4**	**6.9**	**ng/L**
Quinoline	ND	6.9	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	66	(30 - 118)
Fluorene d-10	51	(41 - 162)
Naphthalene-d8	66	(30 - 108)

CITY OF ST. LOUIS PARK

Client Sample ID: SLP4D-052002

GC/MS Semivolatiles

Lot-Sample #...:	D2E210185-002	**Work Order #...:**	E1RC71AA	**Matrix.....:**	WATER
Date Sampled...:	05/20/02	**Date Received..:**	05/21/02		
Prep Date.....:	05/23/02	**Analysis Date..:**	06/13/02		
Prep Batch #...:	2143240	**Analysis Time..:**	20:41		
Dilution Factor:	1				
		Method.....:	SW846 8270C SIM		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	**92**	**1.9**	**ng/L**
Acenaphthylene	ND	1.6	ng/L
Acridine	ND	6.1	ng/L
Anthracene	**3.9**	**1.8**	**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
2,3-Benzofuran	ND	5.1	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
Benzo(b)thiophene	**12**	**1.8**	**ng/L**
[illegible]phenyl	ND	4.3	ng/L
[illegible]rbazole	**10**	**1.9**	**ng/L**
Chrysene	ND	2.8	ng/L
Dibenzo(a,h)anthracene	ND	2.0	ng/L
Dibenzofuran	**2.5**	**1.9**	**ng/L**
Dibenzothiophene	**14**	**1.4**	**ng/L**
2,3-Dihydroindene	**91**	**5.0**	**ng/L**
Fluoranthene	**3.6**	**3.1**	**ng/L**
Fluorene	**1.5**	**1.4**	**ng/L**
Indene	**37**	**1.6**	**ng/L**
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Indole	ND	2.5	ng/L
2-Methylnaphthalene	ND	3.9	ng/L
1-Methylnaphthalene	ND	2.8	ng/L
Naphthalene	ND	6.5	ng/L
Perylene	ND	2.5	ng/L
Phenanthrene	**3.1**	**1.6**	**ng/L**
Pyrene	**9.9**	**6.9**	**ng/L**
Quinoline	ND	6.9	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	67	(30 - 118)
Fluorene d-10	56	(41 - 162)
Naphthalene-d8	74	(30 - 108)

CITY OF ST. LOUIS PARK

Client Sample ID: SLP4FB-052002

GC/MS Semivolatiles

Lot-Sample #...: D2E210185-003 **Work Order #...:** E1RC81AA **Matrix.....:** WATER
Date Sampled...: 05/20/02 **Date Received..:** 05/21/02
Prep Date.....: 05/23/02 **Analysis Date..:** 06/14/02
Prep Batch #...: 2143240 **Analysis Time..:** 18:25
Dilution Factor: 1

Method.....: SW846 8270C SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	1.9	ng/L
Acenaphthylene	ND	1.6	ng/L
Acridine	ND	6.1	ng/L
Anthracene	ND	1.8	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
2,3-Benzofuran	ND	5.1	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
Benzo(b)thiophene	ND	1.8	ng/L
Biphenyl	ND	4.3	ng/L
Carbazole	ND	1.9	ng/L
Chrysene	ND	2.8	ng/L
Dibenzo(a,h)anthracene	ND	2.0	ng/L
Dibenzofuran	ND	1.9	ng/L
Dibenzothiophene	ND	1.4	ng/L
2,3-Dihydroindene	ND	5.0	ng/L
Fluoranthene	ND	3.1	ng/L
Fluorene	ND	1.4	ng/L
Indene	ND	1.6	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Indole	ND	2.5	ng/L
2-Methylnaphthalene	ND	3.9	ng/L
1-Methylnaphthalene	ND	2.8	ng/L
Naphthalene	ND	6.5	ng/L
Perylene	ND	2.5	ng/L
Phenanthrene	ND	1.6	ng/L
Pyrene	ND	6.9	ng/L
Quinoline	ND	6.9	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	106	(30 - 118)
Fluorene d-10	41	(41 - 162)
Naphthalene-d8	38	(30 - 108)

CITY OF ST. LOUIS PARK

Client Sample ID: SLP4FBD-052002

GC/MS Semivolatiles

Lot-Sample #...: D2E210185-004 **Work Order #...:** E1RDC1AA **Matrix.....:** WATER
Date Sampled...: 05/20/02 **Date Received..:** 05/21/02
Prep Date.....: 05/23/02 **Analysis Date..:** 06/13/02
Prep Batch #...: 2143240 **Analysis Time..:** 21:55
Dilution Factor: 1

Method.....: SW846 8270C SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	1.9	ng/L
Acenaphthylene	ND	1.6	ng/L
Acridine	ND	6.1	ng/L
Anthracene	ND	1.8	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
2,3-Benzofuran	ND	5.1	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
Benzo(b)thiophene	ND	1.8	ng/L
[illegible]phenyl	ND	4.3	ng/L
[illegible]rbazole	ND	1.9	ng/L
Chrysene	ND	2.8	ng/L
Dibenzo(a,h)anthracene	ND	2.0	ng/L
Dibenzofuran	ND	1.9	ng/L
Dibenzothiophene	ND	1.4	ng/L
2,3-Dihydroindene	ND	5.0	ng/L
Fluoranthene	ND	3.1	ng/L
Fluorene	ND	1.4	ng/L
Indene	ND	1.6	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Indole	ND	2.5	ng/L
2-Methylnaphthalene	ND	3.9	ng/L
1-Methylnaphthalene	ND	2.8	ng/L
Naphthalene	ND	6.5	ng/L
Perylene	ND	2.5	ng/L
Phenanthrene	ND	1.6	ng/L
Pyrene	ND	6.9	ng/L
Quinoline	ND	6.9	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	113	(30 - 118)
Fluorene d-10	47	(41 - 162)
Naphthalene-d8	67	(30 - 108)

QC DATA ASSOCIATION SUMMARY

D2E210185

Sample Preparation and Analysis Control Numbers

SAMPLE#	MATRIX	ANALYTICAL METHOD	LEACH BATCH #	PREP BATCH #	MS RUN#
001	WATER	SW846 8270C SIM		2143240	2143102
002	WATER	SW846 8270C SIM		2143240	2143102
003	WATER	SW846 8270C SIM		2143240	2143102
004	WATER	SW846 8270C SIM		2143240	2143102

METHOD BLANK REPORT

GC/MS Semivolatiles

Client Lot #...: D2E210185 **Work Order #...:** E1W661AA **Matrix.....:** WATER
MB Lot-Sample #: D2E230000-240

Prep Date.....: 05/23/02 **Analysis Time..:** 14:26

Analysis Date..: 06/13/02 **Prep Batch #...:** 2143240
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Acenaphthene	ND	1.9	ng/L	SW846 8270C SIM
Acenaphthylene	ND	1.6	ng/L	SW846 8270C SIM
Acridine	ND	6.1	ng/L	SW846 8270C SIM
Anthracene	ND	1.8	ng/L	SW846 8270C SIM
Benzo(a)anthracene	ND	2.5	ng/L	SW846 8270C SIM
Benzo(b)fluoranthene	ND	2.5	ng/L	SW846 8270C SIM
Benzo(k)fluoranthene	ND	2.3	ng/L	SW846 8270C SIM
2,3-Benzofuran	ND	5.1	ng/L	SW846 8270C SIM
Benzo(ghi)perylene	ND	2.8	ng/L	SW846 8270C SIM
Benzo(a)pyrene	ND	2.3	ng/L	SW846 8270C SIM
Benzo(e)pyrene	ND	1.9	ng/L	SW846 8270C SIM
Benzo(b)thiophene	ND	1.8	ng/L	SW846 8270C SIM
Biphenyl	ND	4.3	ng/L	SW846 8270C SIM
Carbazole	ND	1.9	ng/L	SW846 8270C SIM
Chrysene	ND	2.8	ng/L	SW846 8270C SIM
Dibenzo(a,h)anthracene	ND	2.0	ng/L	SW846 8270C SIM
Dibenzofuran	ND	1.9	ng/L	SW846 8270C SIM
Dibenzothiophene	ND	1.4	ng/L	SW846 8270C SIM
2,3-Dihydroindene	ND	5.0	ng/L	SW846 8270C SIM
Fluoranthene	ND	3.1	ng/L	SW846 8270C SIM
Fluorene	ND	1.4	ng/L	SW846 8270C SIM
Indene	ND	1.6	ng/L	SW846 8270C SIM
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L	SW846 8270C SIM
Indole	ND	2.5	ng/L	SW846 8270C SIM
2-Methylnaphthalene	ND	3.9	ng/L	SW846 8270C SIM
1-Methylnaphthalene	ND	2.8	ng/L	SW846 8270C SIM
Naphthalene	ND	6.5	ng/L	SW846 8270C SIM
Perylene	ND	2.5	ng/L	SW846 8270C SIM
Phenanthrene	ND	1.6	ng/L	SW846 8270C SIM
Pyrene	ND	6.9	ng/L	SW846 8270C SIM
Quinoline	ND	6.9	ng/L	SW846 8270C SIM

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	143 *	(30 - 118)
Fluorene d-10	33 *	(41 - 162)
Naphthalene-d8	18 *	(30 - 108)

NOTE(S):

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

* Surrogate recovery is outside stated control limits.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: D2E210185 **Work Order #...:** E1W661AC **Matrix.....:** WATER
LCS Lot-Sample#: D2E230000-240
Prep Date.....: 05/23/02 **Analysis Date..:** 06/13/02
Prep Batch #...: 2143240 **Analysis Time..:** 15:03
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD
Benzo(e)pyrene	**84**	**(30 - 150)**	**SW846 8270C SIM**
Chrysene	**99**	**(30 - 132)**	**SW846 8270C SIM**
Fluorene	**76**	**(30 - 132)**	**SW846 8270C SIM**
Indene	**73**	**(30 - 150)**	**SW846 8270C SIM**
2-Methylnaphthalene	**76**	**(30 - 150)**	**SW846 8270C SIM**
Naphthalene	**88**	**(30 - 150)**	**SW846 8270C SIM**
Quinoline	**61**	**(30 - 150)**	**SW846 8270C SIM**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	150 *	(30 - 118)
Fluorene d-10	64	(41 - 162)
Naphthalene-d8	90	(30 - 108)

NOTE(S):

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

Bold print denotes control parameters

* Surrogate recovery is outside stated control limits.

LABORATORY CONTROL SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #...: D2E210185 Work Order #...: E1W661AC Matrix.....: WATER
LCS Lot-Sample#: D2E230000-240
Prep Date.....: 05/23/02 Analysis Date..: 06/13/02
Prep Batch #...: 2143240 Analysis Time..: 15:03
Dilution Factor: 1

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD
Benzo(e)pyrene	**10.0**	**8.45**	**ng/L**	**84**	**SW846 8270C S**
Chrysene	**10.0**	**9.93**	**ng/L**	**99**	**SW846 8270C S**
Fluorene	**10.0**	**7.56**	**ng/L**	**76**	**SW846 8270C S**
Indene	**10.0**	**7.34**	**ng/L**	**73**	**SW846 8270C S**
2-Methylnaphthalene	**10.0**	**7.58**	**ng/L**	**76**	**SW846 8270C S**
Naphthalene	**10.0**	**8.77**	**ng/L**	**88**	**SW846 8270C S**
Quinoline	**10.0**	**6.06**	**ng/L**	**61**	**SW846 8270C S**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	150 *	(30 - 118)
Fluorene d-10	64	(41 - 162)
Naphthalene-d8	90	(30 - 108)

NOTE(S):

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

Bold print denotes control parameters

* Surrogate recovery is outside stated control limits.

MATRIX SPIKE SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: D2E210185 **Work Order #...:** E1RCX1AC-MS **Matrix.....:** WATER
MS Lot-Sample #: D2E210185-001 E1RCX1AD-MSD
Date Sampled...: 05/20/02 **Date Received..:** 05/21/02
Prep Date.....: 05/23/02 **Analysis Date..:** 06/13/02
Prep Batch #...: 2143240 **Analysis Time..:** 19:28
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Benzo(e)pyrene	**25 a**	**(30 - 150)**			**SW846 8270C SIM**
	17 a	**(30 - 150)**	**26**	**(0-50)**	**SW846 8270C SIM**
Chrysene	**44**	**(30 - 132)**			**SW846 8270C SIM**
	42	**(30 - 132)**	**3.9**	**(0-50)**	**SW846 8270C SIM**
Fluorene	**69**	**(30 - 132)**			**SW846 8270C SIM**
	69	**(30 - 132)**	**7.1**	**(0-50)**	**SW846 8270C SIM**
Indene	**78**	**(30 - 150)**			**SW846 8270C SIM**
	137	**(30 - 150)**	**16**	**(0-50)**	**SW846 8270C SIM**
2-Methylnaphthalene	**69**	**(30 - 150)**			**SW846 8270C SIM**
	76	**(30 - 150)**	**17**	**(0-50)**	**SW846 8270C SIM**
Naphthalene	**89**	**(30 - 150)**			**SW846 8270C SIM**
	97	**(30 - 150)**	**16**	**(0-50)**	**SW846 8270C SIM**
Quinoline	**77**	**(30 - 150)**			**SW846 8270C SIM**
	79	**(30 - 150)**	**11**	**(0-50)**	**SW846 8270C SIM**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	75	(30 - 118)
	76	(30 - 118)
Fluorene d-10	64	(41 - 162)
	60	(41 - 162)
Naphthalene-d8	81	(30 - 108)
	82	(30 - 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.

MATRIX SPIKE SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #...: D2E210185 Work Order #...: E1RCX1AC-MS Matrix.....: WATER
MS Lot-Sample #: D2E210185-001 E1RCX1AD-MSD
Date Sampled...: 05/20/02 Date Received..: 05/21/02
Prep Date.....: 05/23/02 Analysis Date..: 06/13/02
Prep Batch #...: 2143240 Analysis Time..: 19:28
Dilution Factor: 1

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD
Benzo(e)pyrene	ND	9.62	2.36	ng/L	25 a		SW846 8270C SIM
	ND	10.4	1.81	ng/L	17 a	26	SW846 8270C SIM
Chrysene	ND	9.62	4.20	ng/L	44		SW846 8270C SIM
	ND	10.4	4.37	ng/L	42	3.9	SW846 8270C SIM
Fluorene	ND	9.62	6.64	ng/L	69		SW846 8270C SIM
	ND	10.4	7.12	ng/L	69	7.1	SW846 8270C SIM
Indene	32	9.62	39.6	ng/L	78		SW846 8270C SIM
	32	10.4	46.3	ng/L	137	16	SW846 8270C SIM
2-Methylnaphthalene	ND	9.62	6.64	ng/L	69		SW846 8270C SIM
	ND	10.4	7.86	ng/L	76	17	SW846 8270C SIM
Naphthalene	ND	9.62	8.56	ng/L	89		SW846 8270C SIM
	ND	10.4	10.1	ng/L	97	16	SW846 8270C SIM
Quinoline	ND	9.62	7.38	ng/L	77		SW846 8270C SIM
	ND	10.4	8.23	ng/L	79	11	SW846 8270C SIM

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	75	(30 - 118)
	76	(30 - 118)
Fluorene d-10	64	(41 - 162)
	60	(41 - 162)
Naphthalene-d8	81	(30 - 108)
	82	(30 - 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.

[redacted]

Chain of Custody Record

STL Denver
4955 Yarrow Street
Arvada, CO 80002

SEVERN TRENT SERVICES

2.3 U.S 5/2 VOC

Severn Trent Laboratories, Inc.

STL-4124 (0700) **DEN (0900)**

Client: CITY OF ST. LOUIS PARK	Project Manager: SCOTT ANDERSON	Date: 5-20-02	Chain of Custody Number: 017817
Address: UTILITY DIVISION, 3752 WOODDALE AVENUE	Telephone Number (Area Code)/Fax Number: 924-2557 (952) 924-2570	Lab Number:	Page ____ of ____
City: ST. LOUIS PARK, MN 55416	Site Contact: SAME	Lab Contact:	
Project Name and Location (State): SAME	Carrier/Waybill Number: FEDEX 8068241031		
Contract/Purchase Order/Quote No.:			

Analysis (Attach list if more space is needed)

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Containers & Preservatives: Unpres.	H2SO4	HNOS	HCl	NaOH	ZnAc/NaOH		PPE PAH 5	Special Instructions/ Conditions of Receipt
SLP4-052002 C# 0006	5-20-02			X			X						6	X	
SLP4D-052002 ~~C# 0011~~															
SLP4MS-052002 C# 0011															
SLP4MSD-052002															
SLP4FB-052002 C# 0008															
SLP4FBD-052002	5-20-02			X			X						6	X	

Possible Hazard Identification: [X] Non-Hazard [ ] Flammable [ ] Skin Irritant [ ] Poison B [ ] Unknown

Sample Disposal: [ ] Return To Client [X] Disposal By Lab [ ] Archive For ____ Months (A fee may be assessed if samples are retained longer than 3 months)

Turn Around Time Required: [ ] 24 Hours [ ] 48 Hours [ ] 7 Days [ ] 14 Days [ ] 21 Days [ ] Other ____

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished By: MZH	5-20-02	1400	1. Received By: [signature]	5/21/02	0830
2. Relinquished By:			2. Received By:		
3. Relinquished By:			3. Received By:		

Comments

DISTRIBUTIO[illegible] WHITE - Stays with the Sample; CANARY - Returned to Client with Report; PINK - Field Cop[illegible]

19

P

SEVERN
TRENT
SERVICES

STL Denver
4955 Yarrow Street
Arvada, CO 80002-4517

Tel: 303 736 0100
Fax: 303 431 7171
www.stl-inc.com

ANALYTICAL REPORT

City of St. Louis Park

Project: Reilly Tar & Chemical Corporation

Lot #: D2E220161

Mr. Scott Anderson

City of St. Louis Park
Utility Division
3752 Wooddale Avenue
St. Louis Park, MN 55416

STL DENVER

Brian Stringer
Project Manager

July 1, 2002

P

Table Of Contents

Standard Deliverables

Report Contents	Total Number of Pages
Standard Deliverables *The **Cover Letter** and the **Report Cover** page are considered integral parts of this Standard Deliverable package. This report is incomplete unless all pages indicated in this Table of Contents are included.*	34

- **Table of Contents**
- **Project Narrative**
- **Executive Summary – Detection Highlights**
- **Methods Summary**
- **Method/Analyst Summary**
- **Sample Summary**
- **Analytical Results**
- **QC Data Association Summary**
- **QC Evaluation and/or Data Reports**
- **Chain-of-Custody**

CASE NARRATIVE

STL Lot Number D2E220161

Introduction

STL Denver received nine aqueous samples and a MS/MSD on May 22, 2002 for PAH SIM (ppt-5) analysis.

The cooler temperatures were 1.4, 1.5, 1.0, 2.4, 1.2, and 1.5 °C. All containers were received in acceptable condition.

Data Quality Assessment

The results included in this report have been reviewed for compliance with STL Denver's Laboratory Quality Manual. The test results shown in this report meet all requirements of NELAC and any exceptions are noted below.

Dilution factors and footnotes have been provided to assist in the interpretation of the results. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at concentrations above the linear calibration curve, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

STL utilizes USEPA approved methods in all analytical work. The samples presented in this report were analyzed for the parameters listed on the analytical methods summary page in accordance with the methods indicated.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Polynuclear Aromatic Hydrocarbons – Method 8270C SIM

A project-specific lower acceptable recovery limit of 30% for all QC samples and surrogates has been designated for analytical work performed under the 2002 Quality Assurance Project Plan (QAPP) for the Reilly Industries, Inc. NPL Site. This lower limit is used for this project, rather than historically generated lower recovery limits. All recoveries in this report are above the 30% minimum threshold with the exceptions noted below.

The recoveries for the surrogate Chrysene-d12 were above the upper control limit for samples E3FB-052102 and E3FBD-052102. This may indicate a possible high bias in the associated samples. However, none of the target compounds were detected in these samples at levels above the reporting limits, and the results are accepted. All indications are that the system was operating normally and that these anomalies are isolated to these two samples.

The method blank for prep batch 2143240 demonstrated recoveries for the surrogate Chrysene-d12 above the established control limits, and for the surrogates Fluorene-d10 and Naphthalene-d8 below control limits. There are no hits in the method blank, indicating that the high Chrysene-d12 is an isolated anomaly and results were not biased high. However, the two low surrogate recoveries are an indication that the results in the method blank may be biased low. Additionally, the batch LCS demonstrated a recovery for the surrogate Chrysene-d12 above control limits. The other two LCS surrogates were within control limits, as were all LCS spiked compounds. Investigation did not determine the cause of the out of control results in the method blank or the LCS, however it is possible that either background interference or contamination during the addition of Chrysene-d12 would result in both high recoveries. All surrogate recoveries are in control in the associated samples, except for E3FB-052102 and E3FBD-052102 as listed above. All other indications are that the system was operating normally and that these anomalies are isolated to these samples. There was insufficient sample volume remaining for re-extraction and analysis.

The method blank and LCS associated with prep batch 2147103 were in control for all compounds and surrogates.

The MS/MSD was performed on the client-specified sample "E3-052102" for prep batch 2147103. The individual MS and MSD, as well as the MS/MSD average recoveries were below control limits for Benzo(e)pyrene. Additionally, the MSD recovery was below control limits for Chrysene, but the MS/MSD average recovery was within control limits. The RPD was in control for all spiked compounds. The associated LCS and method blank were in control for all parameters.

The other matrix spike performed on a sample from another lot for prep batch 2143240 demonstrated individual MS and MSD, as well as the MS/MSD average recoveries below control limits for Benzo(e)pyrene. The RPD was in control for all spiked compounds. The associated LCS and method blank were in control for all parameters.

Data Completeness for Polynuclear Aromatic Hydrocarbons – Method 8270C SIM

The results contained in the report were reviewed relative to data acceptance criteria as specified in the 2002 QAPP. Based on the exceptions noted we achieved 96.8% completeness.

DATA COMPLETENESS CALCULATION
LOT D2E220161
ANALYSIS PAHs by SW846-8270C SIM

QC Parameter	Data Planned	Valid Data Obtained
Method Blanks	62	62
MB Surrogates	6	3
LCS	14	14
LCS Surrogates	6	5
MS*	7	6
MS Surrogates*	3	3
MSD*	7	5
MSD Surrogates*	3	3
MS/MSD RPD*	7	7
FB/FBD hits	62	62
Sample/Dup. RPD	31	31
Sample Surrogates	27	25
Internal STD Area*	45	45
TOTAL	**280**	**271**
% Completeness	**96.8**	

* The MS/MSD data provided for this table was performed on client sample "E3-052102".

Sample Duplicate RPD
LOT D2E220161

Sample E3-052102 Compound	Result	Duplicate E3-DUP-052102 Compound	Result	RPD	RPD>50%
Acenaphthene		Acenaphthene		0.00	OK
Acenaphthylene		Acenaphthylene		0.00	OK
Acridine		Acridine		0.00	OK
Anthracene		Anthracene		0.00	OK
Benzo(a)anthracene		Benzo(a)anthracene		0.00	OK
Benzo(b)fluoranthene		Benzo(b)fluoranthene		0.00	OK
Benzo(k)fluoranthene		Benzo(k)fluoranthene		0.00	OK
2,3-Benzofuran		2,3-Benzofuran		0.00	OK
Benzo(ghi)perylene		Benzo(ghi)perylene		0.00	OK
Benzo(a)pyrene		Benzo(a)pyrene		0.00	OK
Benzo(e)pyrene		Benzo(e)pyrene		0.00	OK
Benzo(b)thiophene		Benzo(b)thiophene		0.00	OK
Biphenyl		Biphenyl		0.00	OK
Carbazole		Carbazole		0.00	OK
Chrysene		Chrysene		0.00	OK
Dibenz(a,h)anthracene		Dibenz(a,h)anthracene		0.00	OK
Dibenzofuran		Dibenzofuran		0.00	OK
Dibenzothiophene		Dibenzothiophene		0.00	OK
2,3-Dihydroindene		2,3-Dihydroindene		0.00	OK
Fluoranthene		Fluoranthene		0.00	OK
Fluorene		Fluorene		0.00	OK
Indene		Indene		0.00	OK
Indeno(1,2,3-cd)pyrene		Indeno(1,2,3-cd)pyrene		0.00	OK
Indole		Indole		0.00	OK
2-Methylnaphthalene		2-Methylnaphthalene		0.00	OK
1-Methylnaphthalene		1-Methylnaphthalene		0.00	OK
Naphthalene		Naphthalene		0.00	OK
Perylene		Perylene		0.00	OK
Phenanthrene		Phenanthrene		0.00	OK
Pyrene		Pyrene		0.00	OK
Quinoline		Quinoline		0.00	OK

RTD = Relative Percent Difference
ND = Compound not detected in the sample
OK = RPD acceptable
p = RPD is outside of control limits
*NC = RPD not calculated, one positive result and one ND. Considered acceptable if the positive result is less than 4x the RL.

Please note that the data for the sample are from either the undiluted or diluted analyses.

EXECUTIVE SUMMARY - Detection Highlights

D2E220161

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
W401-052102 05/21/02 06:00 003				
Acenaphthene	78	1.9	ng/L	SW846 8270C SIM
Acenaphthylene	5.2	1.6	ng/L	SW846 8270C SIM
Acridine	4.7 J	6.1	ng/L	SW846 8270C SIM
Anthracene	2.0	1.8	ng/L	SW846 8270C SIM
Benzo(b)thiophene	2.6	1.8	ng/L	SW846 8270C SIM
Dibenzothiophene	3.8	1.4	ng/L	SW846 8270C SIM
2,3-Dihydroindene	13	5.0	ng/L	SW846 8270C SIM
Fluoranthene	17	3.1	ng/L	SW846 8270C SIM
Fluorene	3.7	1.4	ng/L	SW846 8270C SIM
Indene	1.9	1.6	ng/L	SW846 8270C SIM
Naphthalene	3.7 J	6.5	ng/L	SW846 8270C SIM
Pyrene	13	6.9	ng/L	SW846 8270C SIM
E7-052102 05/21/02 12:45 006				
Acenaphthene	17	1.9	ng/L	SW846 8270C SIM
Acridine	2.3 J	6.1	ng/L	SW846 8270C SIM
Benzo(b)thiophene	2.1	1.8	ng/L	SW846 8270C SIM
2,3-Dihydroindene	5.0	5.0	ng/L	SW846 8270C SIM
Indene	2.1	1.6	ng/L	SW846 8270C SIM
E13-052102 05/21/02 11:30 007				
Acenaphthene	42	1.9	ng/L	SW846 8270C SIM
Acenaphthylene	7.4	1.6	ng/L	SW846 8270C SIM
2,3-Dihydroindene	17	5.0	ng/L	SW846 8270C SIM
Fluorene	14	1.4	ng/L	SW846 8270C SIM
E3FB-052102 05/21/02 12:25 008				
Pyrene	1.5 J	6.9	ng/L	SW846 8270C SIM

METHODS SUMMARY

D2E220161

PARAMETER	ANALYTICAL METHOD	PREPARATION METHOD
Base/Neutrals and Acids	SW846 8270C SIM	SW846 3520C

References:

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

METHOD / ANALYST SUMMARY

D2E220161

ANALYTICAL METHOD	ANALYST	ANALYST ID
SW846 8270C SIM	Tim O'Donnell	000443

References:

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

SAMPLE SUMMARY

D2E220161

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
E1T34	001	E3-052102	05/21/02	12:05
E1T47	002	E3DUP-052102	05/21/02	12:10
E1T51	003	W401-052102	05/21/02	06:00
E1T59	004	H6-052102	05/21/02	10:15
E1T6F	005	MTKA6-052102	05/21/02	13:50
E1T6G	006	E7-052102	05/21/02	12:45
E1T6L	007	E13-052102	05/21/02	11:30
E1T6Q	008	E3FB-052102	05/21/02	12:25
E1T6W	009	E3FBD-052102	05/21/02	12:30

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: E3-052102

GC/MS Semivolatiles

Lot-Sample #...: D2E220161-001 Work Order #...: E1T341AA Matrix.....: WG
Date Sampled...: 05/21/02 Date Received..: 05/22/02
Prep Date.....: 05/27/02 Analysis Date..: 06/12/02
Prep Batch #...: 2147103 Analysis Time..: 12:50
Dilution Factor: 1

Method.....: SW846 8270C SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	1.9	ng/L
Acenaphthylene	ND	1.6	ng/L
Acridine	ND	6.1	ng/L
Anthracene	ND	1.8	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
2,3-Benzofuran	ND	5.1	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
Benzo(b)thiophene	ND	1.8	ng/L
Biphenyl	ND	4.3	ng/L
Carbazole	ND	1.9	ng/L
Chrysene	ND	2.8	ng/L
Dibenzo(a,h)anthracene	ND	2.0	ng/L
Dibenzofuran	ND	1.9	ng/L
Dibenzothiophene	ND	1.4	ng/L
2,3-Dihydroindene	ND	5.0	ng/L
Fluoranthene	ND	3.1	ng/L
Fluorene	ND	1.4	ng/L
Indene	ND	1.6	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Indole	ND	2.5	ng/L
2-Methylnaphthalene	ND	3.9	ng/L
1-Methylnaphthalene	ND	2.8	ng/L
Naphthalene	ND	6.5	ng/L
Perylene	ND	2.5	ng/L
Phenanthrene	ND	1.6	ng/L
Pyrene	ND	6.9	ng/L
Quinoline	ND	6.9	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	71	(30 - 118)
Fluorene d-10	65	(41 - 162)
Naphthalene-d8	89	(30 - 108)

CITY OF ST. LOUIS PARK

Client Sample ID: E3DUP-052102

GC/MS Semivolatiles

Lot-Sample #...: D2E220161-002 Work Order #...: E1T471AA Matrix.....: WG
Date Sampled...: 05/21/02 Date Received..: 05/22/02
Prep Date.....: 05/27/02 Analysis Date..: 06/12/02
Prep Batch #...: 2147103 Analysis Time..: 14:44
Dilution Factor: 1

Method.....: SW846 8270C SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	1.9	ng/L
Acenaphthylene	ND	1.6	ng/L
Acridine	ND	6.1	ng/L
Anthracene	ND	1.8	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
2,3-Benzofuran	ND	5.1	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
Benzo(b)thiophene	ND	1.8	ng/L
Biphenyl	ND	4.3	ng/L
Carbazole	ND	1.9	ng/L
Chrysene	ND	2.8	ng/L
Dibenzo(a,h)anthracene	ND	2.0	ng/L
Dibenzofuran	ND	1.9	ng/L
Dibenzothiophene	ND	1.4	ng/L
2,3-Dihydroindene	ND	5.0	ng/L
Fluoranthene	ND	3.1	ng/L
Fluorene	ND	1.4	ng/L
Indene	ND	1.6	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Indole	ND	2.5	ng/L
2-Methylnaphthalene	ND	3.9	ng/L
1-Methylnaphthalene	ND	2.8	ng/L
Naphthalene	ND	6.5	ng/L
Perylene	ND	2.5	ng/L
Phenanthrene	ND	1.6	ng/L
Pyrene	ND	6.9	ng/L
Quinoline	ND	6.9	ng/L

SURROGATE	*PERCENT* RECOVERY	*RECOVERY* LIMITS
Chrysene-d12	73	(30 - 118)
Fluorene d-10	71	(41 - 162)
Naphthalene-d8	97	(30 - 108)

CITY OF ST. LOUIS PARK

Client Sample ID: W401-052102

GC/MS Semivolatiles

Lot-Sample #...:	D2E220161-003	**Work Order #...:**	E1T511AA	**Matrix.....:**	WG
Date Sampled...:	05/21/02	**Date Received..:**	05/22/02		
Prep Date.....:	05/27/02	**Analysis Date..:**	06/12/02		
Prep Batch #...:	2147103	**Analysis Time..:**	15:22		
Dilution Factor:	1				
		Method.....:	SW846 8270C SIM		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	**78**	**1.9**	**ng/L**
Acenaphthylene	**5.2**	**1.6**	**ng/L**
Acridine	**4.7 J**	**6.1**	**ng/L**
Anthracene	**2.0**	**1.8**	**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
2,3-Benzofuran	ND	5.1	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
Benzo(b)thiophene	**2.6**	**1.8**	**ng/L**
Biphenyl	ND	4.3	ng/L
Carbazole	ND	1.9	ng/L
Chrysene	ND	2.8	ng/L
Dibenzo(a,h)anthracene	ND	2.0	ng/L
Dibenzofuran	ND	1.9	ng/L
Dibenzothiophene	**3.8**	**1.4**	**ng/L**
2,3-Dihydroindene	**13**	**5.0**	**ng/L**
Fluoranthene	**17**	**3.1**	**ng/L**
Fluorene	**3.7**	**1.4**	**ng/L**
Indene	**1.9**	**1.6**	**ng/L**
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Indole	ND	2.5	ng/L
2-Methylnaphthalene	ND	3.9	ng/L
1-Methylnaphthalene	ND	2.8	ng/L
Naphthalene	**3.7 J**	**6.5**	**ng/L**
Perylene	ND	2.5	ng/L
Phenanthrene	ND	1.6	ng/L
Pyrene	**13**	**6.9**	**ng/L**
Quinoline	ND	6.9	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	66	(30 - 118)
Fluorene d-10	60	(41 - 162)
Naphthalene-d8	79	(30 - 108)

NOTE(S):

J Estimated result. Result is less than RL.

CITY OF ST. LOUIS PARK

Client Sample ID: H6-052102

GC/MS Semivolatiles

Lot-Sample #...: D2E220161-004 Work Order #...: E1T591AA Matrix.....: WG
Date Sampled...: 05/21/02 Date Received..: 05/22/02
Prep Date.....: 05/27/02 Analysis Date..: 06/12/02
Prep Batch #...: 2147103 Analysis Time..: 15:59
Dilution Factor: 1

Method.....: SW846 8270C SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	1.9	ng/L
Acenaphthylene	ND	1.6	ng/L
Acridine	ND	6.1	ng/L
Anthracene	ND	1.8	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
2,3-Benzofuran	ND	5.1	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
Benzo(b)thiophene	ND	1.8	ng/L
[illegible]phenyl	ND	4.3	ng/L
Carbazole	ND	1.9	ng/L
Chrysene	ND	2.8	ng/L
Dibenzo(a,h)anthracene	ND	2.0	ng/L
Dibenzofuran	ND	1.9	ng/L
Dibenzothiophene	ND	1.4	ng/L
2,3-Dihydroindene	ND	5.0	ng/L
Fluoranthene	ND	3.1	ng/L
Fluorene	ND	1.4	ng/L
Indene	ND	1.6	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Indole	ND	2.5	ng/L
2-Methylnaphthalene	ND	3.9	ng/L
1-Methylnaphthalene	ND	2.8	ng/L
Naphthalene	ND	6.5	ng/L
Perylene	ND	2.5	ng/L
Phenanthrene	ND	1.6	ng/L
Pyrene	ND	6.9	ng/L
Quinoline	ND	6.9	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	67	(30 - 118)
Fluorene d-10	62	(41 - 162)
Naphthalene-d8	88	(30 - 108)

CITY OF ST. LOUIS PARK

Client Sample ID: MTKA6-052102

GC/MS Semivolatiles

Lot-Sample #...: D2E220161-005 Work Order #...: E1T6F1AA Matrix.....: WG
Date Sampled...: 05/21/02 Date Received..: 05/22/02
Prep Date.....: 05/27/02 Analysis Date..: 06/12/02
Prep Batch #...: 2147103 Analysis Time..: 16:37
Dilution Factor: 1

Method.....: SW846 8270C SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	1.9	ng/L
Acenaphthylene	ND	1.6	ng/L
Acridine	ND	6.1	ng/L
Anthracene	ND	1.8	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
2,3-Benzofuran	ND	5.1	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
Benzo(b)thiophene	ND	1.8	ng/L
Biphenyl	ND	4.3	ng/L
Carbazole	ND	1.9	ng/L
Chrysene	ND	2.8	ng/L
Dibenzo(a,h)anthracene	ND	2.0	ng/L
Dibenzofuran	ND	1.9	ng/L
Dibenzothiophene	ND	1.4	ng/L
2,3-Dihydroindene	ND	5.0	ng/L
Fluoranthene	ND	3.1	ng/L
Fluorene	ND	1.4	ng/L
Indene	ND	1.6	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Indole	ND	2.5	ng/L
2-Methylnaphthalene	ND	3.9	ng/L
1-Methylnaphthalene	ND	2.8	ng/L
Naphthalene	ND	6.5	ng/L
Perylene	ND	2.5	ng/L
Phenanthrene	ND	1.6	ng/L
Pyrene	ND	6.9	ng/L
Quinoline	ND	6.9	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	66	(30 - 118)
Fluorene d-10	63	(41 - 162)
Naphthalene-d8	89	(30 - 108)

CITY OF ST. LOUIS PARK

Client Sample ID: E7-052102

GC/MS Semivolatiles

Lot-Sample #...:	D2E220161-006	**Work Order #...:**	E1T6G1AA	**Matrix.....:**	WG
Date Sampled...:	05/21/02	**Date Received..:**	05/22/02		
Prep Date.....:	05/27/02	**Analysis Date..:**	06/12/02		
Prep Batch #...:	2147103	**Analysis Time..:**	17:14		
Dilution Factor:	1				
		Method.....:	SW846 8270C SIM		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	**17**	**1.9**	**ng/L**
Acenaphthylene	ND	1.6	ng/L
Acridine	**2.3 J**	**6.1**	**ng/L**
Anthracene	ND	1.8	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
2,3-Benzofuran	ND	5.1	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
Benzo(b)thiophene	**2.1**	**1.8**	**ng/L**
[illegible]phenyl	ND	4.3	ng/L
Carbazole	ND	1.9	ng/L
Chrysene	ND	2.8	ng/L
Dibenzo(a,h)anthracene	ND	2.0	ng/L
Dibenzofuran	ND	1.9	ng/L
Dibenzothiophene	ND	1.4	ng/L
2,3-Dihydroindene	**5.0**	**5.0**	**ng/L**
Fluoranthene	ND	3.1	ng/L
Fluorene	ND	1.4	ng/L
Indene	**2.1**	**1.6**	**ng/L**
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Indole	ND	2.5	ng/L
2-Methylnaphthalene	ND	3.9	ng/L
1-Methylnaphthalene	ND	2.8	ng/L
Naphthalene	ND	6.5	ng/L
Perylene	ND	2.5	ng/L
Phenanthrene	ND	1.6	ng/L
Pyrene	ND	6.9	ng/L
Quinoline	ND	6.9	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	64	(30 - 118)
Fluorene d-10	62	(41 - 162)
Naphthalene-d8	82	(30 - 108)

NOTE(S):

J Estimated result. Result is less than RL.

CITY OF ST. LOUIS PARK

Client Sample ID: E13-052102

GC/MS Semivolatiles

Lot-Sample #...: D2E220161-007 Work Order #...: E1T6L1AA Matrix.....: WG
Date Sampled...: 05/21/02 Date Received..: 05/22/02
Prep Date.....: 05/27/02 Analysis Date..: 06/12/02
Prep Batch #...: 2147103 Analysis Time..: 17:51
Dilution Factor: 1

Method.....: SW846 8270C SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	**42**	**1.9**	**ng/L**
Acenaphthylene	**7.4**	**1.6**	**ng/L**
Acridine	ND	6.1	ng/L
Anthracene	ND	1.8	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
2,3-Benzofuran	ND	5.1	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
Benzo(b)thiophene	ND	1.8	ng/L
Biphenyl	ND	4.3	ng/L
Carbazole	ND	1.9	ng/L
Chrysene	ND	2.8	ng/L
Dibenzo(a,h)anthracene	ND	2.0	ng/L
Dibenzofuran	ND	1.9	ng/L
Dibenzothiophene	ND	1.4	ng/L
2,3-Dihydroindene	**17**	**5.0**	**ng/L**
Fluoranthene	ND	3.1	ng/L
Fluorene	**14**	**1.4**	**ng/L**
Indene	ND	1.6	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Indole	ND	2.5	ng/L
2-Methylnaphthalene	ND	3.9	ng/L
1-Methylnaphthalene	ND	2.8	ng/L
Naphthalene	ND	6.5	ng/L
Perylene	ND	2.5	ng/L
Phenanthrene	ND	1.6	ng/L
Pyrene	ND	6.9	ng/L
Quinoline	ND	6.9	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	75	(30 - 118)
Fluorene d-10	56	(41 - 162)
Naphthalene-d8	79	(30 - 108)

CITY OF ST. LOUIS PARK

Client Sample ID: E3FB-052102

GC/MS Semivolatiles

Lot-Sample #...: D2E220161-008 **Work Order #...:** E1T6Q1AA **Matrix.....:** WG
Date Sampled...: 05/21/02 **Date Received..:** 05/22/02
Prep Date.....: 05/23/02 **Analysis Date..:** 06/13/02
Prep Batch #...: 2143240 **Analysis Time..:** 22:32
Dilution Factor: 1

Method.....: SW846 8270C SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	1.9	ng/L
Acenaphthylene	ND	1.6	ng/L
Acridine	ND	6.1	ng/L
Anthracene	ND	1.8	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
2,3-Benzofuran	ND	5.1	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
Benzo(b)thiophene	ND	1.8	ng/L
[illegible]phenyl	ND	4.3	ng/L
Carbazole	ND	1.9	ng/L
Chrysene	ND	2.8	ng/L
Dibenzo(a,h)anthracene	ND	2.0	ng/L
Dibenzofuran	ND	1.9	ng/L
Dibenzothiophene	ND	1.4	ng/L
2,3-Dihydroindene	ND	5.0	ng/L
Fluoranthene	ND	3.1	ng/L
Fluorene	ND	1.4	ng/L
Indene	ND	1.6	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Indole	ND	2.5	ng/L
2-Methylnaphthalene	ND	3.9	ng/L
1-Methylnaphthalene	ND	2.8	ng/L
Naphthalene	ND	6.5	ng/L
Perylene	ND	2.5	ng/L
Phenanthrene	ND	1.6	ng/L
Pyrene	**1.5 J**	**6.9**	**ng/L**
Quinoline	ND	6.9	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	126 *	(30 - 118)
Fluorene d-10	52	(41 - 162)
Naphthalene-d8	35	(30 - 108)

NOTE(S):

* Surrogate recovery is outside stated control limits.

J Estimated result. Result is less than RL.

CITY OF ST. LOUIS PARK

Client Sample ID: E3FBD-052102

GC/MS Semivolatiles

Lot-Sample #...: D2E220161-009 Work Order #...: E1T6W1AA Matrix.....: WG
Date Sampled...: 05/21/02 Date Received..: 05/22/02
Prep Date.....: 05/23/02 Analysis Date..: 06/13/02
Prep Batch #...: 2143240 Analysis Time..: 23:09
Dilution Factor: 1

Method.....: SW846 8270C SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	1.9	ng/L
Acenaphthylene	ND	1.6	ng/L
Acridine	ND	6.1	ng/L
Anthracene	ND	1.8	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
2,3-Benzofuran	ND	5.1	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
Benzo(b)thiophene	ND	1.8	ng/L
Biphenyl	ND	4.3	ng/L
Carbazole	ND	1.9	ng/L
Chrysene	ND	2.8	ng/L
Dibenzo(a,h)anthracene	ND	2.0	ng/L
Dibenzofuran	ND	1.9	ng/L
Dibenzothiophene	ND	1.4	ng/L
2,3-Dihydroindene	ND	5.0	ng/L
Fluoranthene	ND	3.1	ng/L
Fluorene	ND	1.4	ng/L
Indene	ND	1.6	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Indole	ND	2.5	ng/L
2-Methylnaphthalene	ND	3.9	ng/L
1-Methylnaphthalene	ND	2.8	ng/L
Naphthalene	ND	6.5	ng/L
Perylene	ND	2.5	ng/L
Phenanthrene	ND	1.6	ng/L
Pyrene	ND	6.9	ng/L
Quinoline	ND	6.9	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	130 *	(30 - 118)
Fluorene d-10	49	(41 - 162)
Naphthalene-d8	75	(30 - 108)

NOTE(S):

* Surrogate recovery is outside stated control limits.

QC DATA ASSOCIATION SUMMARY

D2E220161

Sample Preparation and Analysis Control Numbers

SAMPLE#	MATRIX	ANALYTICAL METHOD	LEACH BATCH #	PREP BATCH #	MS RUN#
001	WATER	SW846 8270C SIM		2147103	2147008
002	WATER	SW846 8270C SIM		2147103	2147008
003	WATER	SW846 8270C SIM		2147103	2147008
004	WATER	SW846 8270C SIM		2147103	2147008
005	WATER	SW846 8270C SIM		2147103	2147008
006	WATER	SW846 8270C SIM		2147103	2147008
007	WATER	SW846 8270C SIM		2147103	2147008
008	WATER	SW846 8270C SIM		2143240	2143102
009	WATER	SW846 8270C SIM		2143240	2143102

METHOD BLANK REPORT

GC/MS Semivolatiles

Client Lot #...: D2E220161 **Work Order #...:** E1W661AA **Matrix.....:** WATER
MB Lot-Sample #: D2E230000-240

Prep Date.....: 05/23/02 **Analysis Time..:** 14:26

Analysis Date..: 06/13/02 **Prep Batch #...:** 2143240
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Acenaphthene	ND	1.9	ng/L	SW846 8270C SIM
Acenaphthylene	ND	1.6	ng/L	SW846 8270C SIM
Acridine	ND	6.1	ng/L	SW846 8270C SIM
Anthracene	ND	1.8	ng/L	SW846 8270C SIM
Benzo(a)anthracene	ND	2.5	ng/L	SW846 8270C SIM
Benzo(b)fluoranthene	ND	2.5	ng/L	SW846 8270C SIM
Benzo(k)fluoranthene	ND	2.3	ng/L	SW846 8270C SIM
2,3-Benzofuran	ND	5.1	ng/L	SW846 8270C SIM
Benzo(ghi)perylene	ND	2.8	ng/L	SW846 8270C SIM
Benzo(a)pyrene	ND	2.3	ng/L	SW846 8270C SIM
Benzo(e)pyrene	ND	1.9	ng/L	SW846 8270C SIM
Benzo(b)thiophene	ND	1.8	ng/L	SW846 8270C SIM
Biphenyl	ND	4.3	ng/L	SW846 8270C SIM
Carbazole	ND	1.9	ng/L	SW846 8270C SIM
Chrysene	ND	2.8	ng/L	SW846 8270C SIM
Dibenzo(a,h)anthracene	ND	2.0	ng/L	SW846 8270C SIM
Dibenzofuran	ND	1.9	ng/L	SW846 8270C SIM
Dibenzothiophene	ND	1.4	ng/L	SW846 8270C SIM
2,3-Dihydroindene	ND	5.0	ng/L	SW846 8270C SIM
Fluoranthene	ND	3.1	ng/L	SW846 8270C SIM
Fluorene	ND	1.4	ng/L	SW846 8270C SIM
Indene	ND	1.6	ng/L	SW846 8270C SIM
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L	SW846 8270C SIM
Indole	ND	2.5	ng/L	SW846 8270C SIM
2-Methylnaphthalene	ND	3.9	ng/L	SW846 8270C SIM
1-Methylnaphthalene	ND	2.8	ng/L	SW846 8270C SIM
Naphthalene	ND	6.5	ng/L	SW846 8270C SIM
Perylene	ND	2.5	ng/L	SW846 8270C SIM
Phenanthrene	ND	1.6	ng/L	SW846 8270C SIM
Pyrene	ND	6.9	ng/L	SW846 8270C SIM
Quinoline	ND	6.9	ng/L	SW846 8270C SIM

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	143 *	(30 - 118)
Fluorene d-10	33 *	(41 - 162)
Naphthalene-d8	18 *	(30 - 108)

NOTE(S):

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

* Surrogate recovery is outside stated control limits.

METHOD BLANK REPORT

GC/MS Semivolatiles

Client Lot #...: D2E220161 Work Order #...: E13QG1AA Matrix.....: WATER
MB Lot-Sample #: D2E270000-103

Prep Date.....: 05/27/02 Analysis Time..: 18:28

Analysis Date..: 06/12/02 Prep Batch #...: 2147103
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Acenaphthene	ND	1.9	ng/L	SW846 8270C SIM
Acenaphthylene	ND	1.6	ng/L	SW846 8270C SIM
Acridine	ND	6.1	ng/L	SW846 8270C SIM
Anthracene	ND	1.8	ng/L	SW846 8270C SIM
Benzo(a)anthracene	ND	2.5	ng/L	SW846 8270C SIM
Benzo(b)fluoranthene	ND	2.5	ng/L	SW846 8270C SIM
Benzo(k)fluoranthene	ND	2.3	ng/L	SW846 8270C SIM
2,3-Benzofuran	ND	5.1	ng/L	SW846 8270C SIM
Benzo(ghi)perylene	ND	2.8	ng/L	SW846 8270C SIM
Benzo(a)pyrene	ND	2.3	ng/L	SW846 8270C SIM
Benzo(e)pyrene	ND	1.9	ng/L	SW846 8270C SIM
Benzo(b)thiophene	ND	1.8	ng/L	SW846 8270C SIM
Biphenyl	ND	4.3	ng/L	SW846 8270C SIM
Carbazole	ND	1.9	ng/L	SW846 8270C SIM
Chrysene	ND	2.8	ng/L	SW846 8270C SIM
Dibenzo(a,h)anthracene	ND	2.0	ng/L	SW846 8270C SIM
Dibenzofuran	ND	1.9	ng/L	SW846 8270C SIM
Dibenzothiophene	ND	1.4	ng/L	SW846 8270C SIM
2,3-Dihydroindene	ND	5.0	ng/L	SW846 8270C SIM
Fluoranthene	ND	3.1	ng/L	SW846 8270C SIM
Fluorene	ND	1.4	ng/L	SW846 8270C SIM
Indene	ND	1.6	ng/L	SW846 8270C SIM
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L	SW846 8270C SIM
Indole	ND	2.5	ng/L	SW846 8270C SIM
2-Methylnaphthalene	ND	3.9	ng/L	SW846 8270C SIM
1-Methylnaphthalene	ND	2.8	ng/L	SW846 8270C SIM
Naphthalene	ND	6.5	ng/L	SW846 8270C SIM
Perylene	ND	2.5	ng/L	SW846 8270C SIM
Phenanthrene	ND	1.6	ng/L	SW846 8270C SIM
Pyrene	ND	6.9	ng/L	SW846 8270C SIM
Quinoline	ND	6.9	ng/L	SW846 8270C SIM

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	110	(30 - 118)
Fluorene d-10	62	(41 - 162)
Naphthalene-d8	84	(30 - 108)

NOTE(S):

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

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: D2E220161 **Work Order #...:** E1W661AC **Matrix.....:** WATER
LCS Lot-Sample#: D2E230000-240
Prep Date.....: 05/23/02 **Analysis Date..:** 06/13/02
Prep Batch #...: 2143240 **Analysis Time..:** 15:03
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD
Benzo(e)pyrene	**84**	**(30 - 150)**	**SW846 8270C SIM**
Chrysene	**99**	**(30 - 132)**	**SW846 8270C SIM**
Fluorene	**76**	**(30 - 132)**	**SW846 8270C SIM**
Indene	**73**	**(30 - 150)**	**SW846 8270C SIM**
2-Methylnaphthalene	**76**	**(30 - 150)**	**SW846 8270C SIM**
Naphthalene	**88**	**(30 - 150)**	**SW846 8270C SIM**
Quinoline	**61**	**(30 - 150)**	**SW846 8270C SIM**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	150 *	(30 - 118)
Fluorene d-10	64	(41 - 162)
Naphthalene-d8	90	(30 - 108)

NOTE(S):

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

Bold print denotes control parameters

* Surrogate recovery is outside stated control limits.

LABORATORY CONTROL SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #...: D2E220161 Work Order #...: E1W661AC Matrix.....: WATER
LCS Lot-Sample#: D2E230000-240
Prep Date.....: 05/23/02 Analysis Date..: 06/13/02
Prep Batch #...: 2143240 Analysis Time..: 15:03
Dilution Factor: 1

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD
Benzo(e)pyrene	**10.0**	**8.45**	**ng/L**	**84**	**SW846 8270C S**
Chrysene	**10.0**	**9.93**	**ng/L**	**99**	**SW846 8270C S**
Fluorene	**10.0**	**7.56**	**ng/L**	**76**	**SW846 8270C S**
Indene	**10.0**	**7.34**	**ng/L**	**73**	**SW846 8270C S**
2-Methylnaphthalene	**10.0**	**7.58**	**ng/L**	**76**	**SW846 8270C S**
Naphthalene	**10.0**	**8.77**	**ng/L**	**88**	**SW846 8270C S**
Quinoline	**10.0**	**6.06**	**ng/L**	**61**	**SW846 8270C S**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	150 *	(30 - 118)
Fluorene d-10	64	(41 - 162)
Naphthalene-d8	90	(30 - 108)

NOTE(S):

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

Bold print denotes control parameters

* Surrogate recovery is outside stated control limits.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: D2E220161 **Work Order #...:** E13QG1AC **Matrix.....:** WATER
LCS Lot-Sample#: D2E270000-103
Prep Date.....: 05/27/02 **Analysis Date..:** 06/12/02
Prep Batch #...: 2147103 **Analysis Time..:** 19:06
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD
Benzo(e)pyrene	**70**	**(30 - 150)**	**SW846 8270C SIM**
Chrysene	**77**	**(30 - 132)**	**SW846 8270C SIM**
Fluorene	**74**	**(30 - 132)**	**SW846 8270C SIM**
Indene	**71**	**(30 - 150)**	**SW846 8270C SIM**
2-Methylnaphthalene	**72**	**(30 - 150)**	**SW846 8270C SIM**
Naphthalene	**84**	**(30 - 150)**	**SW846 8270C SIM**
Quinoline	**51**	**(30 - 150)**	**SW846 8270C SIM**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	118	(30 - 118)
Fluorene d-10	60	(41 - 162)
Naphthalene-d8	87	(30 - 108)

NOTE(S):

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

Bold print denotes control parameters

LABORATORY CONTROL SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #...: D2E220161 Work Order #...: E13QG1AC Matrix.....: WATER
LCS Lot-Sample#: D2E270000-103
Prep Date.....: 05/27/02 Analysis Date..: 06/12/02
Prep Batch #...: 2147103 Analysis Time..: 19:06
Dilution Factor: 1

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD
Benzo(e)pyrene	**10.0**	**6.97**	**ng/L**	**70**	**SW846 8270C S**
Chrysene	**10.0**	**7.65**	**ng/L**	**77**	**SW846 8270C S**
Fluorene	**10.0**	**7.38**	**ng/L**	**74**	**SW846 8270C S**
Indene	**10.0**	**7.15**	**ng/L**	**71**	**SW846 8270C S**
2-Methylnaphthalene	**10.0**	**7.23**	**ng/L**	**72**	**SW846 8270C S**
Naphthalene	**10.0**	**8.36**	**ng/L**	**84**	**SW846 8270C S**
Quinoline	**10.0**	**5.14**	**ng/L**	**51**	**SW846 8270C S**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	118	(30 - 118)
Fluorene d-10	60	(41 - 162)
Naphthalene-d8	87	(30 - 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 #...: D2E220161 **Work Order #...:** E1RCX1AC-MS **Matrix.....:** WATER
MS Lot-Sample #: D2E210185-001 E1RCX1AD-MSD
Date Sampled...: 05/20/02 **Date Received..:** 05/21/02
Prep Date.....: 05/23/02 **Analysis Date..:** 06/13/02
Prep Batch #...: 2143240 **Analysis Time..:** 19:28
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Benzo(e)pyrene	**25 a**	**(30 - 150)**			**SW846 8270C SIM**
	17 a	**(30 - 150)**	**26**	**(0-50)**	**SW846 8270C SIM**
Chrysene	**44**	**(30 - 132)**			**SW846 8270C SIM**
	42	**(30 - 132)**	**3.9**	**(0-50)**	**SW846 8270C SIM**
Fluorene	**69**	**(30 - 132)**			**SW846 8270C SIM**
	69	**(30 - 132)**	**7.1**	**(0-50)**	**SW846 8270C SIM**
Indene	**78**	**(30 - 150)**			**SW846 8270C SIM**
	137	**(30 - 150)**	**16**	**(0-50)**	**SW846 8270C SIM**
2-Methylnaphthalene	**69**	**(30 - 150)**			**SW846 8270C SIM**
	76	**(30 - 150)**	**17**	**(0-50)**	**SW846 8270C SIM**
Naphthalene	**89**	**(30 - 150)**			**SW846 8270C SIM**
	97	**(30 - 150)**	**16**	**(0-50)**	**SW846 8270C SIM**
Quinoline	**77**	**(30 - 150)**			**SW846 8270C SIM**
	79	**(30 - 150)**	**11**	**(0-50)**	**SW846 8270C SIM**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	75	(30 - 118)
	76	(30 - 118)
Fluorene d-10	64	(41 - 162)
	60	(41 - 162)
Naphthalene-d8	81	(30 - 108)
	82	(30 - 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.

MATRIX SPIKE SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #...: D2E220161 Work Order #...: E1RCX1AC-MS Matrix.....: WATER
MS Lot-Sample #: D2E210185-001 E1RCX1AD-MSD
Date Sampled...: 05/20/02 Date Received..: 05/21/02
Prep Date.....: 05/23/02 Analysis Date..: 06/13/02
Prep Batch #...: 2143240 Analysis Time..: 19:28
Dilution Factor: 1

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD
Benzo(e)pyrene	ND	9.62	2.36	ng/L	25 a		SW846 8270C SIM
	ND	10.4	1.81	ng/L	17 a	26	SW846 8270C SIM
Chrysene	ND	9.62	4.20	ng/L	44		SW846 8270C SIM
	ND	10.4	4.37	ng/L	42	3.9	SW846 8270C SIM
Fluorene	ND	9.62	6.64	ng/L	69		SW846 8270C SIM
	ND	10.4	7.12	ng/L	69	7.1	SW846 8270C SIM
Indene	32	9.62	39.6	ng/L	78		SW846 8270C SIM
	32	10.4	46.3	ng/L	137	16	SW846 8270C SIM
2-Methylnaphthalene	ND	9.62	6.64	ng/L	69		SW846 8270C SIM
	ND	10.4	7.86	ng/L	76	17	SW846 8270C SIM
Naphthalene	ND	9.62	8.56	ng/L	89		SW846 8270C SIM
	ND	10.4	10.1	ng/L	97	16	SW846 8270C SIM
[illegible]noline	ND	9.62	7.38	ng/L	77		SW846 8270C SIM
	ND	10.4	8.23	ng/L	79	11	SW846 8270C SIM

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	75	(30 - 118)
	76	(30 - 118)
Fluorene d-10	64	(41 - 162)
	60	(41 - 162)
Naphthalene-d8	81	(30 - 108)
	82	(30 - 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.

MATRIX SPIKE SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: D2E220161 Work Order #...: E1T341AC-MS Matrix.....: WATER
MS Lot-Sample #: D2E220161-001 E1T341AD-MSD
Date Sampled...: 05/21/02 Date Received..: 05/22/02
Prep Date.....: 05/27/02 Analysis Date..: 06/12/02
Prep Batch #...: 2147103 Analysis Time..: 13:28
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Benzo(e)pyrene	**0.0 a**	**(30 - 150)**			**SW846 8270C SIM**
	0.0 a	**(30 - 150)**	**0.0**	**(0-50)**	**SW846 8270C SIM**
Chrysene	**35**	**(30 - 132)**			**SW846 8270C SIM**
	28 a	**(30 - 132)**	**19**	**(0-50)**	**SW846 8270C SIM**
Fluorene	**82**	**(30 - 132)**			**SW846 8270C SIM**
	72	**(30 - 132)**	**12**	**(0-50)**	**SW846 8270C SIM**
Indene	**85**	**(30 - 150)**			**SW846 8270C SIM**
	73	**(30 - 150)**	**15**	**(0-50)**	**SW846 8270C SIM**
2-Methylnaphthalene	**90**	**(30 - 150)**			**SW846 8270C SIM**
	75	**(30 - 150)**	**18**	**(0-50)**	**SW846 8270C SIM**
Naphthalene	**114**	**(30 - 150)**			**SW846 8270C SIM**
	88	**(30 - 150)**	**25**	**(0-50)**	**SW846 8270C SIM**
Quinoline	**83**	**(30 - 150)**			**SW846 8270C SIM**
	62	**(30 - 150)**	**29**	**(0-50)**	**SW846 8270C SIM**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	69	(30 - 118)
	59	(30 - 118)
Fluorene d-10	68	(41 - 162)
	66	(41 - 162)
Naphthalene-d8	94	(30 - 108)
	88	(30 - 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.

MATRIX SPIKE SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #...: D2E220161 Work Order #...: E1T341AC-MS Matrix.....: WATER
MS Lot-Sample #: D2E220161-001 E1T341AD-MSD
Date Sampled...: 05/21/02 Date Received..: 05/22/02
Prep Date.....: 05/27/02 Analysis Date..: 06/12/02
Prep Batch #...: 2147103 Analysis Time..: 13:28
Dilution Factor: 1

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD
Benzo(e)pyrene	ND	9.73	0.0	ng/L	0.0 a		SW846 8270C SIM
	ND	9.83	0.0	ng/L	0.0 a	0.0	SW846 8270C SIM
Chrysene	ND	9.73	3.39	ng/L	35		SW846 8270C SIM
	ND	9.83	2.79	ng/L	28 a	19	SW846 8270C SIM
Fluorene	ND	9.73	7.94	ng/L	82		SW846 8270C SIM
	ND	9.83	7.04	ng/L	72	12	SW846 8270C SIM
Indene	ND	9.73	8.26	ng/L	85		SW846 8270C SIM
	ND	9.83	7.14	ng/L	73	15	SW846 8270C SIM
2-Methylnaphthalene	ND	9.73	8.78	ng/L	90		SW846 8270C SIM
	ND	9.83	7.35	ng/L	75	18	SW846 8270C SIM
Naphthalene	ND	9.73	11.1	ng/L	114		SW846 8270C SIM
	ND	9.83	8.64	ng/L	88	25	SW846 8270C SIM
[illegible]noline	ND	9.73	8.12	ng/L	83		SW846 8270C SIM
	ND	9.83	6.05	ng/L	62	29	SW846 8270C SIM

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	69	(30 - 118)
	59	(30 - 118)
Fluorene d-10	68	(41 - 162)
	66	(41 - 162)
Naphthalene-d8	94	(30 - 108)
	88	(30 - 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.

Chain of Custody Record

1.4°C
93
5/22

STL Denver
4955 Yarrow Street
Arvada, CO 80002

SEVERN TRENT SERVICES

Severn Trent Laboratories, Inc.

STL-4124 (0700) **DEN (0900)**

Client: City of St. Louis Park	Project Manager: Scott Anderson	Date: 5/21/02	Chain of Custody Number: 017871
Address: 3557 Wooddale Ave	Telephone Number (Area Code)/Fax Number: 952 924 ~~0117~~ 2557	Lab Number:	Page 1 of 1
City: St. Louis Park; State: MN; Zip Code: 55416	Site Contact: Bill Gregg; Lab Contact:		
Project Name and Location (State): Reilly	Carrier/Waybill Number:		
Contract/Purchase Order/Quote No.:			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Matrix: Aqueous	Matrix: Sed.	Matrix: Soil	Containers & Preservatives: Unpres.	H2SO4	HNOS	HCl	NaOH	ZnAc/NaOH	Analysis (Attach list if more space is needed): PAH PPT-5	Special Instructions/ Conditions of Receipt
E3052102	5/21/02	1205		X			6						X	
E3DUP052102	↓	1210		↓			↓						↓	

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months (A fee may be assessed if samples are retained longer than 3 months)

Turn Around Time Required: ☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other_____

QC Requirements (Specify):

	Date	Time		Date	Time
1. Relinquished By: A. J. Garcia	5/21/02	1700	1. Received By: Brown	5-22-02	0915
2. Relinquished By:			2. Received By:		
3. Relinquished By:			3. Received By:		

Comments

2

DISTRIBUTION: WHITE - Stays with the Sample; CANARY - Returned to Client with Report; PINK - Field Copy

[redacted]

Chain of Custody Record

1.0°C
9B
5/22

STL Denver
4955 Yarrow Street
Arvada, CO 80002

SEVERN TRENT SERVICES

Severn Trent Laboratories, Inc.

STL-4124 (0700) **DEN (0900)**

Client: City of St. Louis Park	Project Manager: Scott Anderson	Date: 5/21/02	Chain of Custody Number: 017872
Address: 3557 Wooddale Ave	Telephone Number (Area Code)/Fax Number: 952 924 2557	Lab Number	Page 1 of 1
City: St. Louis Park; State: MN; Zip Code: 55416	Site Contact: Bill Gregg	Lab Contact	
Project Name and Location (State): Reilly	Carrier/Waybill Number		
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil		Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH		Analysis (Attach list if more space is needed): BAH PPT-5											Special Instructions/ Conditions of Receipt
W401052102	5/21/02	600		X				6							X											
H6052102	↓	1015		↓				↓							↓											

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months (A fee may be assessed if samples are retained longer than 3 months)

Turn Around Time Required: ☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other_____

QC Requirements (Specify)

1. Relinquished By: A.J. Tanda	Date: 5/21/02	Time: 1700	1. Received By: Brown	Date: 5-22-02	Time: 0915
2. Relinquished By	Date	Time	2. Received By	Date	Time
3. Relinquished By	Date	Time	3. Received By	Date	Time

Comments

DISTRIBUTION: WHITE - Stays with the Sample; CANARY - Returned to Client with Report; PINK - Field Copy

[redacted]

Chain of Custody Record

STL Denver
4955 Yarrow Street
Arvada, CO 80002

2.4°C
93
5/22

SEVERN TRENT SERVICES

Severn Trent Laboratories, Inc.

STL-4124 (0700) **DEN (0900)**

Client: City of St. Louis Park	Project Manager: Scott Anderson	Date: 5/21/02	Chain of Custody Number: 017813
Address: 3557 Wooddale Ave	Telephone Number (Area Code)/Fax Number: 952 924 2557	Lab Number:	Page 1 of 1
City: St. Louis Park; State: MN; Zip Code: 55416	Site Contact: Bill Gregg	Lab Contact:	
Project Name and Location (State): Reilly	Carrier/Waybill Number:		
Contract/Purchase Order/Quote No.:			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil		Containers & Preservatives: Unpres.	H2SO4	HNOS	HCl	NaOH	ZnAc/NaOH	Analysis (Attach list if more space is needed): PAH PPTS	Special Instructions/ Conditions of Receipt
MTKA6052102	5/21/02	1350		X				6						X	

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months (A fee may be assessed if samples are retained longer than 3 months)

Turn Around Time Required: ☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other_____

QC Requirements (Specify):

1. Relinquished By: [signature]	Date: 5/21/02	Time: 1700	1. Received By: [signature]	Date: 5-22-02	Time: 0915
2. Relinquished By:	Date:	Time:	2. Received By:	Date:	Time:
3. Relinquished By:	Date:	Time:	3. Received By:	Date:	Time:

Comments:
ω

DISTRIBUTION: WHITE - Stays with the Sample; CANARY - Returned to Client with Report; PINK - Field Copy

[redacted]

Chain of Custody Record

1.2°C
JB 5/22

STL Denver
4955 Yarrow Street
Arvada, CO 80002

SEVERN TRENT SERVICES

Severn Trent Laboratories, Inc.

STL-4124 (0700) **DEN (0900)**

Client: City of St. Louis Park	Project Manager: Scott Anderson	Date: 5/21/02	Chain of Custody Number: 017873
Address: 3557 Wooddale Ave	Telephone Number (Area Code)/Fax Number: 952 924 2557	Lab Number	Page 1 of 1
City: St. Louis Park; State: MN; Zip Code: 55416	Site Contact: Bill Gregg	Lab Contact	
Project Name and Location (State): Reilly	Carrier/Waybill Number		
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil		Containers & Preservatives: Unpres.	H2SO4	HNOS	HCl	NaOH	ZnAc/NaOH		Analysis (Attach list if more space is needed): PAH PPT-5	Special Instructions/ Conditions of Receipt
E7052102	5/21/02	1245		X				6							X	
E13052102	↓	1130		↓				↓							↓	

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months (A fee may be assessed if samples are retained longer than 3 months)

Turn Around Time Required: ☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other_____

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished By: [signature]	5/21/02	1700	1. Received By: [signature]	5-22-02	0915
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

DISTRIBUTION: WHITE - Stays with the Sample; CANARY - Returned to Client with Report; PINK - Field Copy

[redacted]

Chain of Custody Record

1.5°C
JB
5/22

STL Denver
4955 Yarrow Street
Arvada, CO 80002

SEVERN TRENT SERVICES

Severn Trent Laboratories, Inc.

STL-4124 (0700) **DEN (0900)**

Client: City of St. Louis Park	Project Manager: Scott Anderson	Date: 5/21/02	Chain of Custody Number: 017815
Address: 3557 Wooddale Ave	Telephone Number (Area Code)/Fax Number: 952 924-0557	Lab Number:	Page 1 of 1
City: St. Louis Park; State: MN; Zip Code: 55416	Site Contact: Bill Gregg	Lab Contact:	
Project Name and Location (State): Reilly	Carrier/Waybill Number:		
Contract/Purchase Order/Quote No.:			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Matrix: Aqueous	Matrix: Sed.	Matrix: Soil	Containers & Preservatives: Unpres.	H2SO4	HNOS	HCl	NaOH	ZnAc/NaOH	Analysis (Attach list if more space is needed): PAH PPT-5	Special Instructions/ Conditions of Receipt
E3FB052102	5/21/02	1225		X			6						X	
E3FBD052102	↓	1230		↓			↓						↓	

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months (A fee may be assessed if samples are retained longer than 3 months)

Turn Around Time Required: ☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other_____

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished By: A J Tavana	5/21/02	1700	1. Received By: J Brown	5-22-02	0915
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

3

3 STRIBUTIO[redacted]HITE - Stays with the Sample; CANARY - Returned to Client with Report; PINK - Field Cop[redacted]

Chain of Custody Record

STL Denver
4955 Yarrow Street
Arvada, CO 80002

1.5C
5/22

SEVERN TRENT SERVICES

Severn Trent Laboratories, Inc.

STL-4124 (0700) **DEN (0900)**

Client: City of St. Louis Park	Project Manager: Scott Anderson	Date: 5/21/02	Chain of Custody Number: 017814
Address: 3557 Wooddale Ave	Telephone Number (Area Code)/Fax Number: 952 924 2557	Lab Number	Page 1 of 1
City: St. Louis Park; State: MN; Zip Code: 55416	Site Contact: Bill Gregg	Lab Contact	
Project Name and Location (State): Reilly	Carrier/Waybill Number		
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil		Containers & Preservatives: Unpres.	H2SO4	HNOS	HCl	NaOH	ZnAc/NaOH	Analysis (Attach list if more space is needed): PAH PPT-5	Special Instructions/ Conditions of Receipt
E3MS052102	5/21/02	1215		X				6						X	
E3MSD052102	↓	1220		↓				↓						↓	

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months (A fee may be assessed if samples are retained longer than 3 months)

Turn Around Time Required: ☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other_____

QC Requirements (Specify)

1. Relinquished By: Anj Tarara	Date: 5/21/02	Time: 1700	1. Received By: Brown	Date: 5-22-02	Time: 0915
2. Relinquished By	Date	Time	2. Received By	Date	Time
3. Relinquished By	Date	Time	3. Received By	Date	Time

Comments

DISTRIBUTION: WHITE - Stays with the Sample; CANARY - Returned to Client with Report; PINK - Field Copy

Q

SEVERN TRENT SERVICES

STL Denver
4955 Yarrow Street
Arvada, CO 80002-4517

Tel: 303 736 0100
Fax: 303 431 7171
www.stl-inc.com

ANALYTICAL REPORT

City of St. Louis Park

Project: Reilly Tar & Chemical Corporation

Lot #: D2E300221

Mr. Scott Anderson

City of St. Louis Park
Utility Division
3752 Wooddale Avenue
St. Louis Park, MN 55416

STL DENVER

Brian Stringer
Project Manager

July 22, 2002

Table Of Contents

Standard Deliverables

Report Contents	Total Number of Pages
Standard Deliverables *The **Cover Letter** and the **Report Cover** page are considered integral parts of this Standard Deliverable package. This report is incomplete unless all pages indicated in this Table of Contents are included.*	19

- **Table of Contents**
- **Project Narrative**
- **Executive Summary – Detection Highlights**
- **Methods Summary**
- **Method/Analyst Summary**
- **Sample Summary**
- **Analytical Results**
- **QC Data Association Summary**
- **QC Evaluation and/or Data Reports**
- **Chain-of-Custody**

CASE NARRATIVE

STL Lot Number D2E290153

Introduction

STL Denver received seven aqueous samples and a MS/MSD May 29, 2002 for PAH SIM (ppt-5) analysis.

The cooler temperatures were 3.4, 4.4, 3.6, 2.8, and 1.8 °C. All containers were received in acceptable condition.

Data Quality Assessment

The results included in this report have been reviewed for compliance with STL Denver's Laboratory Quality Manual. The test results shown in this report meet all requirements of NELAC and any exceptions are noted below.

Dilution factors and footnotes have been provided to assist in the interpretation of the results. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at concentrations above the linear calibration curve, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

STL utilizes USEPA approved methods in all analytical work. The samples presented in this report were analyzed for the parameters listed on the analytical methods summary page in accordance with the methods indicated.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Polynuclear Aromatic Hydrocarbons – Method 8270C SIM

A project-specific lower acceptable recovery limit of 30% for all QC samples and surrogates has been designated for analytical work performed under the 2002 Quality Assurance Project Plan (QAPP) for the Reilly Industries, Inc. NPL Site. This lower limit is used for this project, rather than historically generated lower recovery limits. All recoveries in this report are above the 30% minimum threshold with the exceptions noted below.

The surrogate recovery on sample D2E290153-004 was below established control limits for Fluorene d-10, but above 30%. This is an indication of a possible low bias. The sample was ND for all target analytes. All other surrogate recoveries are in control for the associated method blank, LCS, MS/MSD, and client samples.

The LCS demonstrated a spike recovery for quinoline below the control limits. This compound has historically shown poor recoveries. The LCS surrogates were within control limits as were all other LCS spiked compounds. All other indications are that the system was operating normally and that these anomalies are isolated to this compound. There was insufficient sample volume remaining for re-extraction and analysis.

The MS/MSD was performed on the client-specified sample "SLP 14-052802" for prep batch 2149455. The MS, MSD, and MS/MSD average recoveries were below control limits for Benzo(e)pyrene. All other MS, MSD, and MS/MSD average recoveries and RPD were within control limits.

Data Completeness for Polynuclear Aromatic Hydrocarbons – Method 8270C SIM

The results contained in the report were reviewed relative to data acceptance criteria as specified in the 2002 QAPP. Based on the exceptions noted we achieved 96.4% completeness.

DATA COMPLETENESS CALCULATION

LOT D2E300221

ANALYSIS PAHs by SW846-8270C SIM

QC Parameter	Data Planned	Valid Data Obtained
Method Blanks	31	31
MB Surrogates	3	3
LCS	7	6
LCS Surrogates	3	3
MS*	7	5
MS Surrogates*	3	3
MSD*	7	6
MSD Surrogates*	3	3
MS/MSD RPD*	7	6
FB/FBD hits	62	62
Sample/Dup. RPD	31	30
Sample Surrogates	12	11
Internal STD Area*	18	18
TOTAL	**194**	**187**
% Completeness	**96.4**	

* The MS/MSD data provided for this table was performed on client sample "SLP 3-052902".

Case Narrative for D2E300221 (continued)

Sample Duplicate RPD					
LOT D2E290153					
Sample: SLP14-052802		DUP: SPL 14D-052802			
Compound	Result	Compound	Result	RPD	RPD>50%
Acenaphthene		Acenaphthene		0.00	OK
Acenaphthylene		Acenaphthylene		0.00	OK
Acridine		Acridine		0.00	OK
Anthracene	ND	Anthracene	1.6	NC	OK
Benzo(a)anthracene		Benzo(a)anthracene		0.00	OK
Benzo(b)fluoranthene		Benzo(b)fluoranthene		0.00	OK
Benzo(k)fluoranthene		Benzo(k)fluoranthene		0.00	OK
2,3-Benzofuran		2,3-Benzofuran		0.00	OK
Benzo(ghi)perylene		Benzo(ghi)perylene		0.00	OK
Benzo(a)pyrene		Benzo(a)pyrene		0.00	OK
Benzo(e)pyrene		Benzo(e)pyrene		0.00	OK
Benzo(b)thiophene		Benzo(b)thiophene		0.00	OK
Biphenyl		Biphenyl		0.00	OK
Carbazole		Carbazole		0.00	OK
Chrysene		Chrysene		0.00	OK
Dibenz(a,h)anthracene		Dibenz(a,h)anthracene		0.00	OK
Dibenzofuran		Dibenzofuran		0.00	OK
Dibenzothiophene	ND	Dibenzothiophene	13	NA	p
2,3-Dihydroindene		2,3-Dihydroindene		0.00	OK
Fluoranthene		Fluoranthene		0.00	OK
Fluorene		Fluorene		0.00	OK
Indene		Indene		0.00	OK
Indeno(1,2,3-cd)pyrene		Indeno(1,2,3-cd)pyrene		0.00	OK
Indole		Indole		0.00	OK
2-Methylnaphthalene		2-Methylnaphthalene		0.00	OK
1-Methylnaphthalene		1-Methylnaphthalene		0.00	OK
Naphthalene		Naphthalene		0.00	OK
Perylene		Perylene		0.00	OK
Phenanthrene		Phenanthrene		0.00	OK
Pyrene		Pyrene		0.00	OK
Quinoline		Quinoline		0.00	OK

RTD = Relative Percent Difference
ND = Compound not detected in the sample
OK = RPD acceptable
p = RPD is outside of control limits
NA = RPD not calculated, one positive result and one ND. Result is flagged p as out of control.
*NC = RPD not calculated, one positive result and one ND. Considered acceptable if the positive result is less than 4x the RL.

Please note that the data for the sample are from either the undiluted or diluted analyses.

EXECUTIVE SUMMARY - Detection Highlights

D2E300221

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
SLP3D-052902 05/29/02 002				
Anthracene	1.6 J	1.8	ng/L	SW846 8270C SIM
Dibenzothiophene	13	1.4	ng/L	SW846 8270C SIM

METHODS SUMMARY

D2E300221

PARAMETER	ANALYTICAL METHOD	PREPARATION METHOD
Base/Neutrals and Acids	SW846 8270C SIM	SW846 3520C

References:

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

METHOD / ANALYST SUMMARY

D2E300221

ANALYTICAL METHOD	ANALYST	ANALYST ID
SW846 8270C SIM	Tim O'Donnell	000443

References:

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

SAMPLE SUMMARY

D2E300221

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
E17NH	001	SLP3-052902	05/29/02	
E17NV	002	SLP3D-052902	05/29/02	
E17N1	003	SLP3FB-052902	05/29/02	
E17N2	004	SLP3FBD-052902	05/29/02	

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: SLP3-052902

GC/MS Semivolatiles

Lot-Sample #...: D2E300221-001 **Work Order #...:** E17NH1AA **Matrix.....:** WG
Date Sampled...: 05/29/02 **Date Received..:** 05/30/02
Prep Date.....: 06/03/02 **Analysis Date..:** 06/21/02
Prep Batch #...: 2154340 **Analysis Time..:** 14:52
Dilution Factor: 1

Method.....: SW846 8270C SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	1.9	ng/L
Acenaphthylene	ND	1.6	ng/L
Acridine	ND	6.1	ng/L
Anthracene	ND	1.8	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
2,3-Benzofuran	ND	5.1	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
Benzo(b)thiophene	ND	1.8	ng/L
Biphenyl	ND	4.3	ng/L
Carbazole	ND	1.9	ng/L
Chrysene	ND	2.8	ng/L
Dibenzo(a,h)anthracene	ND	2.0	ng/L
Dibenzofuran	ND	1.9	ng/L
Dibenzothiophene	ND	1.4	ng/L
2,3-Dihydroindene	ND	5.0	ng/L
Fluoranthene	ND	3.1	ng/L
Fluorene	ND	1.4	ng/L
Indene	ND	1.6	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Indole	ND	2.5	ng/L
2-Methylnaphthalene	ND	3.9	ng/L
1-Methylnaphthalene	ND	2.8	ng/L
Naphthalene	ND	6.5	ng/L
Perylene	ND	2.5	ng/L
Phenanthrene	ND	1.6	ng/L
Pyrene	ND	6.9	ng/L
Quinoline	ND	6.9	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	37	(30 - 118)
Fluorene d-10	59	(41 - 162)
Naphthalene-d8	68	(30 - 108)

CITY OF ST. LOUIS PARK

Client Sample ID: SLP3D-052902

GC/MS Semivolatiles

Lot-Sample #...: D2E300221-002 **Work Order #...:** E17NV1AA **Matrix.....:** WG
Date Sampled...: 05/29/02 **Date Received..:** 05/30/02
Prep Date.....: 06/03/02 **Analysis Date..:** 06/21/02
Prep Batch #...: 2154340 **Analysis Time..:** 16:44
Dilution Factor: 1

Method.....: SW846 8270C SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	1.9	ng/L
Acenaphthylene	ND	1.6	ng/L
Acridine	ND	6.1	ng/L
Anthracene	**1.6 J**	**1.8**	**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
2,3-Benzofuran	ND	5.1	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
Benzo(b)thiophene	ND	1.8	ng/L
[illegible]phenyl	ND	4.3	ng/L
[illegible]rbazole	ND	1.9	ng/L
Chrysene	ND	2.8	ng/L
Dibenzo(a,h)anthracene	ND	2.0	ng/L
Dibenzofuran	ND	1.9	ng/L
Dibenzothiophene	**13**	**1.4**	**ng/L**
2,3-Dihydroindene	ND	5.0	ng/L
Fluoranthene	ND	3.1	ng/L
Fluorene	ND	1.4	ng/L
Indene	ND	1.6	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Indole	ND	2.5	ng/L
2-Methylnaphthalene	ND	3.9	ng/L
1-Methylnaphthalene	ND	2.8	ng/L
Naphthalene	ND	6.5	ng/L
Perylene	ND	2.5	ng/L
Phenanthrene	ND	1.6	ng/L
Pyrene	ND	6.9	ng/L
Quinoline	ND	6.9	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	28 *	(30 - 118)
Fluorene d-10	56	(41 - 162)
Naphthalene-d8	68	(30 - 108)

[illegible]TE(S):

* Surrogate recovery is outside stated control limits.

J Estimated result. Result is less than RL.

CITY OF ST. LOUIS PARK

Client Sample ID: SLP3FB-052902

GC/MS Semivolatiles

Lot-Sample #...: D2E300221-003 Work Order #...: E17N11AA Matrix.....: WG
Date Sampled...: 05/29/02 Date Received..: 05/30/02
Prep Date.....: 06/03/02 Analysis Date..: 06/21/02
Prep Batch #...: 2154340 Analysis Time..: 17:21
Dilution Factor: 1

Method.....: SW846 8270C SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	1.9	ng/L
Acenaphthylene	ND	1.6	ng/L
Acridine	ND	6.1	ng/L
Anthracene	ND	1.8	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
2,3-Benzofuran	ND	5.1	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
Benzo(b)thiophene	ND	1.8	ng/L
Biphenyl	ND	4.3	ng/L
Carbazole	ND	1.9	ng/L
Chrysene	ND	2.8	ng/L
Dibenzo(a,h)anthracene	ND	2.0	ng/L
Dibenzofuran	ND	1.9	ng/L
Dibenzothiophene	ND	1.4	ng/L
2,3-Dihydroindene	ND	5.0	ng/L
Fluoranthene	ND	3.1	ng/L
Fluorene	ND	1.4	ng/L
Indene	ND	1.6	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Indole	ND	2.5	ng/L
2-Methylnaphthalene	ND	3.9	ng/L
1-Methylnaphthalene	ND	2.8	ng/L
Naphthalene	ND	6.5	ng/L
Perylene	ND	2.5	ng/L
Phenanthrene	ND	1.6	ng/L
Pyrene	ND	6.9	ng/L
Quinoline	ND	6.9	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	84	(30 - 118)
Fluorene d-10	60	(41 - 162)
Naphthalene-d8	76	(30 - 108)

CITY OF ST. LOUIS PARK

Client Sample ID: SLP3FBD-052902

GC/MS Semivolatiles

Lot-Sample #...: D2E300221-004 **Work Order #...:** E17N21AA **Matrix.....:** WG
Date Sampled...: 05/29/02 **Date Received..:** 05/30/02
Prep Date.....: 06/03/02 **Analysis Date..:** 06/21/02
Prep Batch #...: 2154340 **Analysis Time..:** 17:58
Dilution Factor: 1

Method.....: SW846 8270C SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	1.9	ng/L
Acenaphthylene	ND	1.6	ng/L
Acridine	ND	6.1	ng/L
Anthracene	ND	1.8	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
2,3-Benzofuran	ND	5.1	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
Benzo(b)thiophene	ND	1.8	ng/L
[illegible]phenyl	ND	4.3	ng/L
Carbazole	ND	1.9	ng/L
Chrysene	ND	2.8	ng/L
Dibenzo(a,h)anthracene	ND	2.0	ng/L
Dibenzofuran	ND	1.9	ng/L
Dibenzothiophene	ND	1.4	ng/L
2,3-Dihydroindene	ND	5.0	ng/L
Fluoranthene	ND	3.1	ng/L
Fluorene	ND	1.4	ng/L
Indene	ND	1.6	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Indole	ND	2.5	ng/L
2-Methylnaphthalene	ND	3.9	ng/L
1-Methylnaphthalene	ND	2.8	ng/L
Naphthalene	ND	6.5	ng/L
Perylene	ND	2.5	ng/L
Phenanthrene	ND	1.6	ng/L
Pyrene	ND	6.9	ng/L
Quinoline	ND	6.9	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	71	(30 - 118)
Fluorene d-10	58	(41 - 162)
Naphthalene-d8	71	(30 - 108)

QC DATA ASSOCIATION SUMMARY

D2E300221

Sample Preparation and Analysis Control Numbers

SAMPLE#	MATRIX	ANALYTICAL METHOD	LEACH BATCH #	PREP BATCH #	MS RUN#
001	WG	SW846 8270C SIM		2154340	2154152
002	WG	SW846 8270C SIM		2154340	2154152
003	WG	SW846 8270C SIM		2154340	2154152
004	WG	SW846 8270C SIM		2154340	2154152

METHOD BLANK REPORT

GC/MS Semivolatiles

Client Lot #...: D2E300221 **Work Order #...:** E2DGJ1AA **Matrix.....:** WATER
MB Lot-Sample #: D2F030000-340

Prep Date.....: 06/03/02 **Analysis Time..:** 13:36

Analysis Date..: 06/21/02 **Prep Batch #...:** 2154340
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Acenaphthene	ND	1.9	ng/L	SW846 8270C SIM
Acenaphthylene	ND	1.6	ng/L	SW846 8270C SIM
Acridine	ND	6.1	ng/L	SW846 8270C SIM
Anthracene	ND	1.8	ng/L	SW846 8270C SIM
Benzo(a)anthracene	ND	2.5	ng/L	SW846 8270C SIM
Benzo(b)fluoranthene	ND	2.5	ng/L	SW846 8270C SIM
Benzo(k)fluoranthene	ND	2.3	ng/L	SW846 8270C SIM
2,3-Benzofuran	ND	5.1	ng/L	SW846 8270C SIM
Benzo(ghi)perylene	ND	2.8	ng/L	SW846 8270C SIM
Benzo(a)pyrene	ND	2.3	ng/L	SW846 8270C SIM
Benzo(e)pyrene	ND	1.9	ng/L	SW846 8270C SIM
Benzo(b)thiophene	ND	1.8	ng/L	SW846 8270C SIM
Biphenyl	ND	4.3	ng/L	SW846 8270C SIM
Carbazole	ND	1.9	ng/L	SW846 8270C SIM
Chrysene	ND	2.8	ng/L	SW846 8270C SIM
Dibenzo(a,h)anthracene	ND	2.0	ng/L	SW846 8270C SIM
Dibenzofuran	ND	1.9	ng/L	SW846 8270C SIM
Dibenzothiophene	ND	1.4	ng/L	SW846 8270C SIM
2,3-Dihydroindene	ND	5.0	ng/L	SW846 8270C SIM
Fluoranthene	ND	3.1	ng/L	SW846 8270C SIM
Fluorene	ND	1.4	ng/L	SW846 8270C SIM
Indene	ND	1.6	ng/L	SW846 8270C SIM
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L	SW846 8270C SIM
Indole	ND	2.5	ng/L	SW846 8270C SIM
2-Methylnaphthalene	ND	3.9	ng/L	SW846 8270C SIM
1-Methylnaphthalene	ND	2.8	ng/L	SW846 8270C SIM
Naphthalene	ND	6.5	ng/L	SW846 8270C SIM
Perylene	ND	2.5	ng/L	SW846 8270C SIM
Phenanthrene	ND	1.6	ng/L	SW846 8270C SIM
Pyrene	ND	6.9	ng/L	SW846 8270C SIM
Quinoline	ND	6.9	ng/L	SW846 8270C SIM

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	71	(30 - 118)
Fluorene d-10	58	(41 - 162)
Naphthalene-d8	75	(30 - 108)

NOTE(S):

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

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: D2E300221 **Work Order #...:** E2DGJ1AC **Matrix.....:** WATER
LCS Lot-Sample#: D2F030000-340
Prep Date.....: 06/03/02 **Analysis Date..:** 06/21/02
Prep Batch #...: 2154340 **Analysis Time..:** 14:14
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD
Benzo(e)pyrene	**72**	**(30 - 150)**	**SW846 8270C SIM**
Chrysene	**61**	**(30 - 132)**	**SW846 8270C SIM**
Fluorene	**64**	**(30 - 132)**	**SW846 8270C SIM**
Indene	**71**	**(30 - 150)**	**SW846 8270C SIM**
2-Methylnaphthalene	**68**	**(30 - 150)**	**SW846 8270C SIM**
Naphthalene	**80**	**(30 - 150)**	**SW846 8270C SIM**
Quinoline	**28 a**	**(30 - 150)**	**SW846 8270C SIM**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	67	(30 - 118)
Fluorene d-10	57	(41 - 162)
Naphthalene-d8	75	(30 - 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.

LABORATORY CONTROL SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #...: D2E300221 Work Order #...: E2DGJ1AC Matrix.....: WATER
LCS Lot-Sample#: D2F030000-340
Prep Date.....: 06/03/02 Analysis Date..: 06/21/02
Prep Batch #...: 2154340 Analysis Time..: 14:14
Dilution Factor: 1

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD
Benzo(e)pyrene	**10.0**	**7.16**	**ng/L**	**72**	**SW846 8270C S**
Chrysene	**10.0**	**6.09**	**ng/L**	**61**	**SW846 8270C S**
Fluorene	**10.0**	**6.36**	**ng/L**	**64**	**SW846 8270C S**
Indene	**10.0**	**7.15**	**ng/L**	**71**	**SW846 8270C S**
2-Methylnaphthalene	**10.0**	**6.83**	**ng/L**	**68**	**SW846 8270C S**
Naphthalene	**10.0**	**8.02**	**ng/L**	**80**	**SW846 8270C S**
Quinoline	**10.0**	**2.81 a**	**ng/L**	**28**	**SW846 8270C S**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	67	(30 - 118)
Fluorene d-10	57	(41 - 162)
Naphthalene-d8	75	(30 - 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.

MATRIX SPIKE SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: D2E300221 **Work Order #...:** E17NH1AC-MS **Matrix.....:** WG
MS Lot-Sample #: D2E300221-001 E17NH1AD-MSD
Date Sampled...: 05/29/02 **Date Received..:** 05/30/02
Prep Date.....: 06/03/02 **Analysis Date..:** 06/21/02
Prep Batch #...: 2154340 **Analysis Time..:** 15:30
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Benzo(e)pyrene	**11 a**	**(30 - 150)**			**SW846 8270C SIM**
	0.0 a,p	**(30 - 150)**	**200**	**(0-50)**	**SW846 8270C SIM**
Chrysene	**27 a**	**(30 - 132)**			**SW846 8270C SIM**
	32	**(30 - 132)**	**15**	**(0-50)**	**SW846 8270C SIM**
Fluorene	**75**	**(30 - 132)**			**SW846 8270C SIM**
	71	**(30 - 132)**	**4.9**	**(0-50)**	**SW846 8270C SIM**
Indene	**72**	**(30 - 150)**			**SW846 8270C SIM**
	65	**(30 - 150)**	**9.8**	**(0-50)**	**SW846 8270C SIM**
2-Methylnaphthalene	**76**	**(30 - 150)**			**SW846 8270C SIM**
	71	**(30 - 150)**	**6.1**	**(0-50)**	**SW846 8270C SIM**
Naphthalene	**84**	**(30 - 150)**			**SW846 8270C SIM**
	79	**(30 - 150)**	**5.9**	**(0-50)**	**SW846 8270C SIM**
Quinoline	**75**	**(30 - 150)**			**SW846 8270C SIM**
	73	**(30 - 150)**	**2.7**	**(0-50)**	**SW846 8270C SIM**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	33	(30 - 118)
	39	(30 - 118)
Fluorene d-10	63	(41 - 162)
	59	(41 - 162)
Naphthalene-d8	76	(30 - 108)
	69	(30 - 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 #...: D2E300221 Work Order #...: E17NH1AC-MS Matrix.....: WG
MS Lot-Sample #: D2E300221-001 E17NH1AD-MSD
Date Sampled...: 05/29/02 Date Received..: 05/30/02
Prep Date.....: 06/03/02 Analysis Date..: 06/21/02
Prep Batch #...: 2154340 Analysis Time..: 15:30
Dilution Factor: 1

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD
Benzo(e)pyrene	**ND**	**10.2**	**1.08**	**ng/L**	**11 a**		**SW846 8270C SIM**
	ND	**10.2**	**0.0**	**ng/L**	**0.0**	**200**	**SW846 8270C SIM**
	Qualifiers:	a,p					
Chrysene	**ND**	**10.2**	**2.79**	**ng/L**	**27 a**		**SW846 8270C SIM**
	ND	**10.2**	**3.24**	**ng/L**	**32**	**15**	**SW846 8270C SIM**
Fluorene	**ND**	**10.2**	**7.61**	**ng/L**	**75**		**SW846 8270C SIM**
	ND	**10.2**	**7.25**	**ng/L**	**71**	**4.9**	**SW846 8270C SIM**
Indene	**ND**	**10.2**	**7.30**	**ng/L**	**72**		**SW846 8270C SIM**
	ND	**10.2**	**6.62**	**ng/L**	**65**	**9.8**	**SW846 8270C SIM**
2-Methylnaphthalene	**ND**	**10.2**	**7.69**	**ng/L**	**76**		**SW846 8270C SIM**
	ND	**10.2**	**7.24**	**ng/L**	**71**	**6.1**	**SW846 8270C SIM**
Naphthalene	**ND**	**10.2**	**8.52**	**ng/L**	**84**		**SW846 8270C SIM**
	ND	**10.2**	**8.03**	**ng/L**	**79**	**5.9**	**SW846 8270C SIM**
Quinoline	**ND**	**10.2**	**7.66**	**ng/L**	**75**		**SW846 8270C SIM**
	ND	**10.2**	**7.46**	**ng/L**	**73**	**2.7**	**SW846 8270C SIM**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	33	(30 - 118)
	39	(30 - 118)
Fluorene d-10	63	(41 - 162)
	59	(41 - 162)
Naphthalene-d8	76	(30 - 108)
	69	(30 - 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.

Chain of Custody Record

STL Denver
4955 Yarrow Street
Arvada, CO 80002

SEVERN TRENT SERVICES

Severn Trent Laboratories, Inc.

DG 5/30

STL-4124 (0700) DEN (0900)

Client: CITY OF ST. LOUIS PARK UTILITY DIVISION	Project Manager: SCOTT ANDERSON	Date: 5-29-02	Chain of Custody Number: 017821
Address: 3752 WOODDALE AVENUE	Telephone Number (Area Code)/Fax Number: 924-2557 (952) 924-2570	Lab Number	Page ____ of ____
City: ST. LOUIS PARK, MN 55416	Site Contact: SAME	Lab Contact	
Project Name and Location (State): SAME	Carrier/Waybill Number: FED EX 806824105 3		
Contract/Purchase Order/Quote No.			

Analysis (Attach list if more space is needed): PPC PAH 5

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Air	Aqueous	Sed.	Soil	Unpres.	H2SO4	HNOS	HCl	NaOH	ZnAc/NaOH		PPC PAH 5	Special Instructions/ Conditions of Receipt
SLP 3 - 052902 C# 0010	5-29-02			X			X						6	X	PPC PAH 5
SLP 3D - 052902															
SLP 3MS - 052902 C# 0013															
SLP 3MSD - 052902															
SLP 3FB - 052902 C# 0006															
SLP 3FBD - 052902	5-29-02			X			X						6	X	PPC PAH 5

Possible Hazard Identification: [X] Non-Hazard [ ] Flammable [ ] Skin Irritant [ ] Poison B [ ] Unknown

Sample Disposal: [ ] Return To Client [X] Disposal By Lab [ ] Archive For ____ Months (A fee may be assessed if samples are retained longer than 3 months)

Turn Around Time Required: [ ] 24 Hours [ ] 48 Hours [ ] 7 Days [ ] 14 Days [ ] 21 Days [ ] Other ____

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished By: MAK	5-29-02	1400	1. Received By: [signature]	5/30/02	0900
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

19

DISTRIBUTION: WHITE - Stays with the Sample; CANARY - Returned to Client with Report; PINK - Field Copy

R

SEVERN
TRENT
SERVICES

STL Denver
4955 Yarrow Street
Arvada, CO 80002-4517

Tel: 303 736 0100
Fax: 303 431 7171
www.stl-inc.com

ANALYTICAL REPORT

City of St. Louis Park

Project: Reilly Tar & Chemical Corporation

Lot #: D2E300239

Mr. Scott Anderson

City of St. Louis Park
Utility Division
3752 Wooddale Avenue
St. Louis Park, MN 55416

STL DENVER

Brian Stringer
Project Manager

July 22, 2002

R

Table Of Contents

Standard Deliverables

Report Contents	Total Number of Pages
Standard Deliverables *The **Cover Letter** and the **Report Cover** page are considered integral parts of this Standard Deliverable package. This report is incomplete unless all pages indicated in this Table of Contents are included.*	20

- **Table of Contents**
- **Project Narrative**
- **Executive Summary – Detection Highlights**
- **Methods Summary**
- **Method/Analyst Summary**
- **Sample Summary**
- **Analytical Results**
- **QC Data Association Summary**
- **QC Evaluation and/or Data Reports**
- **Chain-of-Custody**

CASE NARRATIVE

STL Lot Number D2E300239

Introduction

STL Denver received four aqueous samples on May 30, 2002 for ppb level, full scan PAH analysis.

The cooler temperatures were 1.9, 4.6 and 0.9 °C. All containers were received in acceptable condition.

Data Quality Assessment

The results included in this report have been reviewed for compliance with STL Denver's Laboratory Quality Manual. The test results shown in this report meet all requirements of NELAC and any exceptions are noted below.

Dilution factors and footnotes have been provided to assist in the interpretation of the results. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at concentrations above the linear calibration curve, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

STL utilizes USEPA approved methods in all analytical work. The samples presented in this report were analyzed for the parameters listed on the analytical methods summary page in accordance with the methods indicated.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Polynuclear Aromatic Hydrocarbons – Method 8270C

A project-specific lower acceptable recovery limit of 30% for all QC samples and surrogates has been designated for analytical work performed under the 2002 Quality Assurance Project Plan (QAPP) for the Reilly Industries, Inc. NPL Site. All recoveries in this report are above the 30% minimum threshold.

Client sample "W133-052902" was analyzed undiluted and then at a dilution due the high concentration of the target compound naphthalene. The results for other target compounds that are within the linear calibration range are reported from the undiluted sample, and the results for naphthalene is reported from analysis of the appropriate dilution. The reporting limits are elevated according to the dilutions.

The recoveries for the surrogate Chrysene-d12 were below the lower control limit for all samples in this lot. This is an indication of a possible low bias. All other surrogate recoveries are in control for the associated method blank, LCS, and MS/MSD samples.

The LCS demonstrated a spike recovery for quinoline below the control limits. This compound has historically shown poor recoveries. The LCS surrogates were within control limits as were all other LCS spiked compounds. All other indications are that the system was operating normally and that these anomalies are isolated to this compound. There was insufficient sample volume remaining for re-extraction and analysis.

The MS/MSD was performed on a sample from another lot prep batch 2154340. The individual MS and MSD, as well as the MS/MSD average recoveries were below control limits for Benzo(e)pyrene. Additionally, the MSD and the MS/MSD average recoveries were below control limits for Chrysene. The associated LCS and method blank were in control for all parameters.

Case Narrative for D2E300239 (continued)

Data Completeness for Polynuclear Aromatic Hydrocarbons – Method 8270C

The results contained in the report were reviewed relative to data acceptance criteria as specified in the 2002 QAPP. Based on the exceptions noted we achieved 93.2% completeness.

DATA COMPLETENESS CALCULATION

LOT D2E300239

ANALYSIS PAHs by SW846-8270C

QC Parameter	Data Planned	Valid Data Obtained
Method Blanks	31	31
MB Surrogates	3	3
LCS	7	6
LCS Surrogates	3	3
MS*	NA	NA
MS Surrogates*	NA	NA
MSD*	NA	NA
MSD Surrogates*	NA	NA
MS/MSD RPD*	NA	NA
FB/FBD hits*	NA	NA
Sample/Dup. RPD*	NA	NA
Sample Surrogates	12	8
Internal STD Area*	18	18
TOTAL	**74**	**69**
% Completeness	**93.2%**	

* There is no MS/MSD, sample duplicate, or field blank samples on this lot.

EXECUTIVE SUMMARY - Detection Highlights

D2E300239

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
W122-052902 05/29/02 10:50 001				
Acenaphthene	3.0	1.9	ng/L	SW846 8270C SIM
Anthracene	2.1	1.8	ng/L	SW846 8270C SIM
Benzo(b)thiophene	2.4	1.8	ng/L	SW846 8270C SIM
Carbazole	8.8	1.9	ng/L	SW846 8270C SIM
Dibenzofuran	2.1	1.9	ng/L	SW846 8270C SIM
2,3-Dihydroindene	6.0	5.0	ng/L	SW846 8270C SIM
Fluoranthene	4.9	3.1	ng/L	SW846 8270C SIM
Fluorene	2.7	1.4	ng/L	SW846 8270C SIM
Indene	5.3	1.6	ng/L	SW846 8270C SIM
2-Methylnaphthalene	7.7	3.9	ng/L	SW846 8270C SIM
1-Methylnaphthalene	6.4	2.8	ng/L	SW846 8270C SIM
Naphthalene	17	6.5	ng/L	SW846 8270C SIM
Phenanthrene	13	1.6	ng/L	SW846 8270C SIM
Pyrene	11	6.9	ng/L	SW846 8270C SIM
W412-052902 05/29/02 12:15 002				
Acenaphthene	6.0	1.9	ng/L	SW846 8270C SIM
Acridine	14	6.1	ng/L	SW846 8270C SIM
Anthracene	3.0	1.8	ng/L	SW846 8270C SIM
Benzo(b)fluoranthene	2.4 J	2.5	ng/L	SW846 8270C SIM
Benzo(ghi)perylene	3.6	2.8	ng/L	SW846 8270C SIM
Benzo(a)pyrene	1.5 J	2.3	ng/L	SW846 8270C SIM
Benzo(b)thiophene	21	1.8	ng/L	SW846 8270C SIM
Carbazole	11	1.9	ng/L	SW846 8270C SIM
Chrysene	2.6 J	2.8	ng/L	SW846 8270C SIM
Dibenzofuran	2.0	1.9	ng/L	SW846 8270C SIM
Dibenzothiophene	3.0	1.4	ng/L	SW846 8270C SIM
2,3-Dihydroindene	16	5.0	ng/L	SW846 8270C SIM
Fluoranthene	9.4	3.1	ng/L	SW846 8270C SIM
Fluorene	3.0	1.4	ng/L	SW846 8270C SIM
Indene	22	1.6	ng/L	SW846 8270C SIM
2-Methylnaphthalene	5.7	3.9	ng/L	SW846 8270C SIM
1-Methylnaphthalene	8.4	2.8	ng/L	SW846 8270C SIM
Naphthalene	87	6.5	ng/L	SW846 8270C SIM
Phenanthrene	11	1.6	ng/L	SW846 8270C SIM
Pyrene	20	6.9	ng/L	SW846 8270C SIM
W411-052902 05/29/02 15:50 003				
Acridine	9.4	6.1	ng/L	SW846 8270C SIM
Anthracene	1.8	1.8	ng/L	SW846 8270C SIM
Fluoranthene	2.2 J	3.1	ng/L	SW846 8270C SIM

(Continued on next page)

EXECUTIVE SUMMARY - Detection Highlights

D2E300239

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
W411-052902 05/29/02 15:50 003				
2-Methylnaphthalene	3.7 J	3.9	ng/L	SW846 8270C SIM
1-Methylnaphthalene	2.5 J	2.8	ng/L	SW846 8270C SIM
Naphthalene	7.1	6.5	ng/L	SW846 8270C SIM
Phenanthrene	3.3	1.6	ng/L	SW846 8270C SIM
Pyrene	4.0 J	6.9	ng/L	SW846 8270C SIM
W133-052902 05/29/02 17:00 004				
Acenaphthene	26	1.9	ng/L	SW846 8270C SIM
Acridine	7.0	6.1	ng/L	SW846 8270C SIM
2,3-Benzofuran	2.0 J	5.1	ng/L	SW846 8270C SIM
Benzo(b)thiophene	42	1.8	ng/L	SW846 8270C SIM
Biphenyl	4.4	4.3	ng/L	SW846 8270C SIM
Carbazole	26	1.9	ng/L	SW846 8270C SIM
Dibenzofuran	5.5	1.9	ng/L	SW846 8270C SIM
2,3-Dihydroindene	70	5.0	ng/L	SW846 8270C SIM
Fluoranthene	4.7	3.1	ng/L	SW846 8270C SIM
Fluorene	4.8	1.4	ng/L	SW846 8270C SIM
Indene	37	1.6	ng/L	SW846 8270C SIM
2-Methylnaphthalene	15	3.9	ng/L	SW846 8270C SIM
1-Methylnaphthalene	31	2.8	ng/L	SW846 8270C SIM
Naphthalene	620	130	ng/L	SW846 8270C SIM
Phenanthrene	5.0	1.6	ng/L	SW846 8270C SIM
Pyrene	3.5 J	6.9	ng/L	SW846 8270C SIM

METHODS SUMMARY

D2E300239

PARAMETER	ANALYTICAL METHOD	PREPARATION METHOD
Base/Neutrals and Acids	SW846 8270C SIM	SW846 3520C

References:

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

METHOD / ANALYST SUMMARY

D2E300239

ANALYTICAL METHOD	ANALYST	ANALYST ID
SW846 8270C SIM	Tim O'Donnell	000443

References:

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

SAMPLE SUMMARY

D2E300239

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
E17RW	001	W122-052902	05/29/02	10:50
E17R4	002	W412-052902	05/29/02	12:15
E17R5	003	W411-052902	05/29/02	15:50
E17R6	004	W133-052902	05/29/02	17:00

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: W122-052902

GC/MS Semivolatiles

Lot-Sample #...: D2E300239-001 **Work Order #...:** E17RW1AA **Matrix.....:** WG
Date Sampled...: 05/29/02 **Date Received..:** 05/30/02
Prep Date.....: 06/03/02 **Analysis Date..:** 06/21/02
Prep Batch #...: 2154340 **Analysis Time..:** 18:36
Dilution Factor: 1

Method.....: SW846 8270C SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	**3.0**	**1.9**	**ng/L**
Acenaphthylene	ND	1.6	ng/L
Acridine	ND	6.1	ng/L
Anthracene	**2.1**	**1.8**	**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
2,3-Benzofuran	ND	5.1	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
Benzo(b)thiophene	**2.4**	**1.8**	**ng/L**
Biphenyl	ND	4.3	ng/L
Carbazole	**8.8**	**1.9**	**ng/L**
Chrysene	ND	2.8	ng/L
Dibenzo(a,h)anthracene	ND	2.0	ng/L
Dibenzofuran	**2.1**	**1.9**	**ng/L**
Dibenzothiophene	ND	1.4	ng/L
2,3-Dihydroindene	**6.0**	**5.0**	**ng/L**
Fluoranthene	**4.9**	**3.1**	**ng/L**
Fluorene	**2.7**	**1.4**	**ng/L**
Indene	**5.3**	**1.6**	**ng/L**
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Indole	ND	2.5	ng/L
2-Methylnaphthalene	**7.7**	**3.9**	**ng/L**
1-Methylnaphthalene	**6.4**	**2.8**	**ng/L**
Naphthalene	**17**	**6.5**	**ng/L**
Perylene	ND	2.5	ng/L
Phenanthrene	**13**	**1.6**	**ng/L**
Pyrene	**11**	**6.9**	**ng/L**
Quinoline	ND	6.9	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	20 *	(30 - 118)
Fluorene d-10	46	(41 - 162)
Naphthalene-d8	61	(30 - 108)

NOTE(S):

* Surrogate recovery is outside stated control limits.

CITY OF ST. LOUIS PARK

Client Sample ID: W412-052902

GC/MS Semivolatiles

Lot-Sample #...: D2E300239-002 Work Order #...: E17R41AA Matrix.....: WG
Date Sampled...: 05/29/02 Date Received..: 05/30/02
Prep Date.....: 06/03/02 Analysis Date..: 06/21/02
Prep Batch #...: 2154340 Analysis Time..: 19:13
Dilution Factor: 1

Method.....: SW846 8270C SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	**6.0**	**1.9**	**ng/L**
Acenaphthylene	ND	1.6	ng/L
Acridine	**14**	**6.1**	**ng/L**
Anthracene	**3.0**	**1.8**	**ng/L**
Benzo(a)anthracene	ND	2.5	ng/L
Benzo(b)fluoranthene	**2.4 J**	**2.5**	**ng/L**
Benzo(k)fluoranthene	ND	2.3	ng/L
2,3-Benzofuran	ND	5.1	ng/L
Benzo(ghi)perylene	**3.6**	**2.8**	**ng/L**
Benzo(a)pyrene	**1.5 J**	**2.3**	**ng/L**
Benzo(e)pyrene	ND	1.9	ng/L
Benzo(b)thiophene	**21**	**1.8**	**ng/L**
Biphenyl	ND	4.3	ng/L
Carbazole	**11**	**1.9**	**ng/L**
Chrysene	**2.6 J**	**2.8**	**ng/L**
Dibenzo(a,h)anthracene	ND	2.0	ng/L
Dibenzofuran	**2.0**	**1.9**	**ng/L**
Dibenzothiophene	**3.0**	**1.4**	**ng/L**
2,3-Dihydroindene	**16**	**5.0**	**ng/L**
Fluoranthene	**9.4**	**3.1**	**ng/L**
Fluorene	**3.0**	**1.4**	**ng/L**
Indene	**22**	**1.6**	**ng/L**
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Indole	ND	2.5	ng/L
2-Methylnaphthalene	**5.7**	**3.9**	**ng/L**
1-Methylnaphthalene	**8.4**	**2.8**	**ng/L**
Naphthalene	**87**	**6.5**	**ng/L**
Perylene	ND	2.5	ng/L
Phenanthrene	**11**	**1.6**	**ng/L**
Pyrene	**20**	**6.9**	**ng/L**
Quinoline	ND	6.9	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	10 *	(30 - 118)
Fluorene d-10	70	(41 - 162)
Naphthalene-d8	68	(30 - 108)

NOTE(S):

* Surrogate recovery is outside stated control limits.

J Estimated result. Result is less than RL.

CITY OF ST. LOUIS PARK

Client Sample ID: W411-052902

GC/MS Semivolatiles

Lot-Sample #...: D2E300239-003 **Work Order #...:** E17R51AA **Matrix.....:** WG
Date Sampled...: 05/29/02 **Date Received..:** 05/30/02
Prep Date.....: 06/03/02 **Analysis Date..:** 06/21/02
Prep Batch #...: 2154340 **Analysis Time..:** 19:50
Dilution Factor: 1

Method.....: SW846 8270C SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	1.9	ng/L
Acenaphthylene	ND	1.6	ng/L
Acridine	**9.4**	**6.1**	**ng/L**
Anthracene	**1.8**	**1.8**	**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
2,3-Benzofuran	ND	5.1	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
Benzo(b)thiophene	ND	1.8	ng/L
Biphenyl	ND	4.3	ng/L
Carbazole	ND	1.9	ng/L
Chrysene	ND	2.8	ng/L
Dibenzo(a,h)anthracene	ND	2.0	ng/L
Dibenzofuran	ND	1.9	ng/L
Dibenzothiophene	ND	1.4	ng/L
2,3-Dihydroindene	ND	5.0	ng/L
Fluoranthene	**2.2 J**	**3.1**	**ng/L**
Fluorene	ND	1.4	ng/L
Indene	ND	1.6	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Indole	ND	2.5	ng/L
2-Methylnaphthalene	**3.7 J**	**3.9**	**ng/L**
1-Methylnaphthalene	**2.5 J**	**2.8**	**ng/L**
Naphthalene	**7.1**	**6.5**	**ng/L**
Perylene	ND	2.5	ng/L
Phenanthrene	**3.3**	**1.6**	**ng/L**
Pyrene	**4.0 J**	**6.9**	**ng/L**
Quinoline	ND	6.9	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	21 *	(30 - 118)
Fluorene d-10	44	(41 - 162)
Naphthalene-d8	55	(30 - 108)

NOTE(S):

* Surrogate recovery is outside stated control limits.

J Estimated result. Result is less than RL.

CITY OF ST. LOUIS PARK

Client Sample ID: W133-052902

GC/MS Semivolatiles

Lot-Sample #...: D2E300239-004 Work Order #...: E17R61AA Matrix.....: WG
Date Sampled...: 05/29/02 Date Received..: 05/30/02
Prep Date.....: 06/03/02 Analysis Date..: 06/21/02
Prep Batch #...: 2154340 Analysis Time..: 20:27
Dilution Factor: 1

Method.....: SW846 8270C SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	**26**	**1.9**	**ng/L**
Acenaphthylene	ND	1.6	ng/L
Acridine	**7.0**	**6.1**	**ng/L**
Anthracene	ND	1.8	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
2,3-Benzofuran	**2.0 J**	**5.1**	**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
[illegible]nzo(b)thiophene	**42**	**1.8**	**ng/L**
[illegible]phenyl	**4.4**	**4.3**	**ng/L**
Carbazole	**26**	**1.9**	**ng/L**
Chrysene	ND	2.8	ng/L
Dibenzo(a,h)anthracene	ND	2.0	ng/L
Dibenzofuran	**5.5**	**1.9**	**ng/L**
Dibenzothiophene	ND	1.4	ng/L
2,3-Dihydroindene	**70**	**5.0**	**ng/L**
Fluoranthene	**4.7**	**3.1**	**ng/L**
Fluorene	**4.8**	**1.4**	**ng/L**
Indene	**37**	**1.6**	**ng/L**
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Indole	ND	2.5	ng/L
2-Methylnaphthalene	**15**	**3.9**	**ng/L**
1-Methylnaphthalene	**31**	**2.8**	**ng/L**
Perylene	ND	2.5	ng/L
Phenanthrene	**5.0**	**1.6**	**ng/L**
Pyrene	**3.5 J**	**6.9**	**ng/L**
Quinoline	ND	6.9	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	18 *	(30 - 118)
Fluorene d-10	62	(41 - 162)
Naphthalene-d8	79	(30 - 108)

[illegible]TE(S):

* Surrogate recovery is outside stated control limits.

J Estimated result. Result is less than RL.

CITY OF ST. LOUIS PARK

Client Sample ID: W133-052902

GC/MS Semivolatiles

Lot-Sample #...:	D2E300239-004	**Work Order #...:**	E17R62AA	**Matrix.....:**	WG
Date Sampled...:	05/29/02	**Date Received..:**	05/30/02		
Prep Date.....:	06/03/02	**Analysis Date..:**	06/24/02		
Prep Batch #...:	2154340	**Analysis Time..:**	16:38		
Dilution Factor:	20				
		Method.....:	SW846 8270C SIM		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Naphthalene	**620**	**130**	**ng/L**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	70	(30 - 118)
Fluorene d-10	57	(41 - 162)
Naphthalene-d8	80	(30 - 108)

QC DATA ASSOCIATION SUMMARY

D2E300239

Sample Preparation and Analysis Control Numbers

SAMPLE#	MATRIX	ANALYTICAL METHOD	LEACH BATCH #	PREP BATCH #	MS RUN#
001	WG	SW846 8270C SIM		2154340	2154152
002	WG	SW846 8270C SIM		2154340	2154152
003	WG	SW846 8270C SIM		2154340	2154152
004	WG	SW846 8270C SIM		2154340	2154152

METHOD BLANK REPORT

GC/MS Semivolatiles

Client Lot #...: D2E300239 **Work Order #...:** E2DGJ1AA **Matrix.....:** WATER
MB Lot-Sample #: D2F030000-340

Prep Date.....: 06/03/02 **Analysis Time..:** 13:36
Analysis Date..: 06/21/02 **Prep Batch #...:** 2154340
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Acenaphthene	ND	1.9	ng/L	SW846 8270C SIM
Acenaphthylene	ND	1.6	ng/L	SW846 8270C SIM
Acridine	ND	6.1	ng/L	SW846 8270C SIM
Anthracene	ND	1.8	ng/L	SW846 8270C SIM
Benzo(a)anthracene	ND	2.5	ng/L	SW846 8270C SIM
Benzo(b)fluoranthene	ND	2.5	ng/L	SW846 8270C SIM
Benzo(k)fluoranthene	ND	2.3	ng/L	SW846 8270C SIM
2,3-Benzofuran	ND	5.1	ng/L	SW846 8270C SIM
Benzo(ghi)perylene	ND	2.8	ng/L	SW846 8270C SIM
Benzo(a)pyrene	ND	2.3	ng/L	SW846 8270C SIM
Benzo(e)pyrene	ND	1.9	ng/L	SW846 8270C SIM
Benzo(b)thiophene	ND	1.8	ng/L	SW846 8270C SIM
Biphenyl	ND	4.3	ng/L	SW846 8270C SIM
Carbazole	ND	1.9	ng/L	SW846 8270C SIM
Chrysene	ND	2.8	ng/L	SW846 8270C SIM
Dibenzo(a,h)anthracene	ND	2.0	ng/L	SW846 8270C SIM
Dibenzofuran	ND	1.9	ng/L	SW846 8270C SIM
Dibenzothiophene	ND	1.4	ng/L	SW846 8270C SIM
2,3-Dihydroindene	ND	5.0	ng/L	SW846 8270C SIM
Fluoranthene	ND	3.1	ng/L	SW846 8270C SIM
Fluorene	ND	1.4	ng/L	SW846 8270C SIM
Indene	ND	1.6	ng/L	SW846 8270C SIM
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L	SW846 8270C SIM
Indole	ND	2.5	ng/L	SW846 8270C SIM
2-Methylnaphthalene	ND	3.9	ng/L	SW846 8270C SIM
1-Methylnaphthalene	ND	2.8	ng/L	SW846 8270C SIM
Naphthalene	ND	6.5	ng/L	SW846 8270C SIM
Perylene	ND	2.5	ng/L	SW846 8270C SIM
Phenanthrene	ND	1.6	ng/L	SW846 8270C SIM
Pyrene	ND	6.9	ng/L	SW846 8270C SIM
Quinoline	ND	6.9	ng/L	SW846 8270C SIM

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	71	(30 - 118)
Fluorene d-10	58	(41 - 162)
Naphthalene-d8	75	(30 - 108)

NOTE(S):

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

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: D2E300239 Work Order #...: E2DGJ1AC Matrix.....: WATER
LCS Lot-Sample#: D2F030000-340
Prep Date.....: 06/03/02 Analysis Date..: 06/21/02
Prep Batch #...: 2154340 Analysis Time..: 14:14
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD
Benzo(e)pyrene	**72**	**(30 - 150)**	**SW846 8270C SIM**
Chrysene	**61**	**(30 - 132)**	**SW846 8270C SIM**
Fluorene	**64**	**(30 - 132)**	**SW846 8270C SIM**
Indene	**71**	**(30 - 150)**	**SW846 8270C SIM**
2-Methylnaphthalene	**68**	**(30 - 150)**	**SW846 8270C SIM**
Naphthalene	**80**	**(30 - 150)**	**SW846 8270C SIM**
Quinoline	**28 a**	**(30 - 150)**	**SW846 8270C SIM**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	67	(30 - 118)
Fluorene d-10	57	(41 - 162)
Naphthalene-d8	75	(30 - 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.

LABORATORY CONTROL SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #...: D2E300239 Work Order #...: E2DGJ1AC Matrix.....: WATER
LCS Lot-Sample#: D2F030000-340
Prep Date.....: 06/03/02 Analysis Date..: 06/21/02
Prep Batch #...: 2154340 Analysis Time..: 14:14
Dilution Factor: 1

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD
Benzo(e)pyrene	**10.0**	**7.16**	**ng/L**	**72**	**SW846 8270C S**
Chrysene	**10.0**	**6.09**	**ng/L**	**61**	**SW846 8270C S**
Fluorene	**10.0**	**6.36**	**ng/L**	**64**	**SW846 8270C S**
Indene	**10.0**	**7.15**	**ng/L**	**71**	**SW846 8270C S**
2-Methylnaphthalene	**10.0**	**6.83**	**ng/L**	**68**	**SW846 8270C S**
Naphthalene	**10.0**	**8.02**	**ng/L**	**80**	**SW846 8270C S**
Quinoline	**10.0**	**2.81 a**	**ng/L**	**28**	**SW846 8270C S**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	67	(30 - 118)
Fluorene d-10	57	(41 - 162)
Naphthalene-d8	75	(30 - 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.

MATRIX SPIKE SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: D2E300239 Work Order #...: E17NH1AC-MS Matrix.....: WATER
MS Lot-Sample #: D2E300221-001 E17NH1AD-MSD
Date Sampled...: 05/29/02 Date Received..: 05/30/02
Prep Date.....: 06/03/02 Analysis Date..: 06/21/02
Prep Batch #...: 2154340 Analysis Time..: 15:30
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Benzo(e)pyrene	**11 a**	**(30 - 150)**			**SW846 8270C SIM**
	0.0 a,p	**(30 - 150)**	**200**	**(0-50)**	**SW846 8270C SIM**
Chrysene	**27 a**	**(30 - 132)**			**SW846 8270C SIM**
	32	**(30 - 132)**	**15**	**(0-50)**	**SW846 8270C SIM**
Fluorene	**75**	**(30 - 132)**			**SW846 8270C SIM**
	71	**(30 - 132)**	**4.9**	**(0-50)**	**SW846 8270C SIM**
Indene	**72**	**(30 - 150)**			**SW846 8270C SIM**
	65	**(30 - 150)**	**9.8**	**(0-50)**	**SW846 8270C SIM**
2-Methylnaphthalene	**76**	**(30 - 150)**			**SW846 8270C SIM**
	71	**(30 - 150)**	**6.1**	**(0-50)**	**SW846 8270C SIM**
Naphthalene	**84**	**(30 - 150)**			**SW846 8270C SIM**
	79	**(30 - 150)**	**5.9**	**(0-50)**	**SW846 8270C SIM**
Quinoline	**75**	**(30 - 150)**			**SW846 8270C SIM**
	73	**(30 - 150)**	**2.7**	**(0-50)**	**SW846 8270C SIM**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	33	(30 - 118)
	39	(30 - 118)
Fluorene d-10	63	(41 - 162)
	59	(41 - 162)
Naphthalene-d8	76	(30 - 108)
	69	(30 - 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 #...: D2E300239 Work Order #...: E17NH1AC-MS Matrix.....: WATER
MS Lot-Sample #: D2E300221-001 E17NH1AD-MSD
Date Sampled...: 05/29/02 Date Received..: 05/30/02
Prep Date.....: 06/03/02 Analysis Date..: 06/21/02
Prep Batch #...: 2154340 Analysis Time..: 15:30
Dilution Factor: 1

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD
Benzo(e)pyrene	**ND**	**10.2**	**1.08**	**ng/L**	**11 a**		**SW846 8270C SIM**
	ND	**10.2**	**0.0**	**ng/L**	**0.0**	**200**	**SW846 8270C SIM**
	Qualifiers:		a,p				
Chrysene	**ND**	**10.2**	**2.79**	**ng/L**	**27 a**		**SW846 8270C SIM**
	ND	**10.2**	**3.24**	**ng/L**	**32**	**15**	**SW846 8270C SIM**
Fluorene	**ND**	**10.2**	**7.61**	**ng/L**	**75**		**SW846 8270C SIM**
	ND	**10.2**	**7.25**	**ng/L**	**71**	**4.9**	**SW846 8270C SIM**
Indene	**ND**	**10.2**	**7.30**	**ng/L**	**72**		**SW846 8270C SIM**
	ND	**10.2**	**6.62**	**ng/L**	**65**	**9.8**	**SW846 8270C SIM**
2-Methylnaphthalene	**ND**	**10.2**	**7.69**	**ng/L**	**76**		**SW846 8270C SIM**
	ND	**10.2**	**7.24**	**ng/L**	**71**	**6.1**	**SW846 8270C SIM**
Naphthalene	**ND**	**10.2**	**8.52**	**ng/L**	**84**		**SW846 8270C SIM**
	ND	**10.2**	**8.03**	**ng/L**	**79**	**5.9**	**SW846 8270C SIM**
Quinoline	**ND**	**10.2**	**7.66**	**ng/L**	**75**		**SW846 8270C SIM**
	ND	**10.2**	**7.46**	**ng/L**	**73**	**2.7**	**SW846 8270C SIM**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	33	(30 - 118)
	39	(30 - 118)
Fluorene d-10	63	(41 - 162)
	59	(41 - 162)
Naphthalene-d8	76	(30 - 108)
	69	(30 - 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.

BRAUN INTERTEC SM
Braun Intertec Corporation
6875 Washington Ave. S.
Edina, MN 55439-0108
Bottle orders and sampling inquires:
labservices@brauncorp.com
Phone: 952-942-4930 Fax: 952-942-4844

STL - Denver

REQUEST FOR LABORATORY ANALYTICAL SERVICES

IMPORTANT
Date Results Requested: _____
Time _____
Rush Charges Authorized? ____ Yes ____ No
Rush / Quote # _____

For Braun Intertec Use Only
Braun Intertec Project No.

0.9°C
DG
5/30

REPORT RESULTS TO

Contact Name Scott Anderson | Project ID/Project Name Rielly Site | P.O. #
Company City of St. Louis Park
Mailing Address 3557 Wooddale Ave
City, State, Zip St. Louis Park, MN 55416
Telephone # 952-924-2557 | Fax #
E-mail

SEND INVOICE TO

Contact Name Bill Gregg | Company ENSR
Address
City, State, Zip
Telephone # | Fax #

Special Instructions and/or Specific Regulatory Requirements:
(method, limit of detection, petrofund, reporting units)

Circle metals that require low detection limits

Ag	As	Be	Cd	Cr	Pb	Ni	Sb	Se	Tl	V	Other			

ANALYSIS REQUESTED
(Enter an 'X' in the box below to indicate request)

	CLIENT SAMPLE IDENTIFICATION	DATE SAMPLED	TIME SAMPLED	MATRIX/ MEDIA	AIR VOLUME (specify units)	Number of Containers	Metals Field Filtered Y/N	PAH-PPT-5										FOR LAB USE ONLY
1	W122-052902	5/29/02	1050	water		6		X										
2	W412-052902	↓	1215	↓		↓		↓										
3	W411-052902		1550															
4	W133-052902	↓	1700	↓		↓		↓										
5																		
6																		
7																		
8																		
9																		
10																		
11																		
12																		
13																		
14																		
15																		

CHAIN OF CUSTODY

Collected by: *(Print)* Chris Boehm | Collector's Signature: Chris Boehm
Relinquished by: Chris Boehm | Date/Time 5/29/02/1730 | Received by: [signature] | Date/Time 5/30/02 0900
Relinquished by: | Date/Time | Received Contents Not Verified: | Date/Time
Received Contents Verified: | Date/Time

Evidence Tape Intact ☐ Yes ☐ No ☐ N/A
Sample Condition Upon Receipt: ☐ Acceptable ☐ Other _____
Temperature _____ °C ☐ Received on Ice
Matrix Spike Samples Received: ☐ Yes ☐ No ☐ N/A

Comments: Note: 2 coolers are covered by this C.O.C - 0008 + 0012

S

SEVERN TRENT SERVICES

STL Denver
4955 Yarrow Street
Arvada, CO 80002-4517

Tel: 303 736 0100
Fax: 303 431 7171
www.stl-inc.com

ANALYTICAL REPORT

City of St. Louis Park

Project: Reilly Tar & Chemical Corporation

Lot #: D2E290153

Mr. Scott Anderson

City of St. Louis Park
Utility Division
3752 Wooddale Avenue
St. Louis Park, MN 55416

STL DENVER

Brian Stringer
Project Manager

July 22, 2002

S

Table Of Contents

Standard Deliverables

Report Contents	Total Number of Pages
Standard Deliverables *The **Cover Letter** and the **Report Cover** page are considered integral parts of this Standard Deliverable package. This report is incomplete unless all pages indicated in this Table of Contents are included.*	23

- **Table of Contents**
- **Project Narrative**
- **Executive Summary – Detection Highlights**
- **Methods Summary**
- **Method/Analyst Summary**
- **Sample Summary**
- **Analytical Results**
- **QC Data Association Summary**
- **QC Evaluation and/or Data Reports**
- **Chain-of-Custody**

CASE NARRATIVE

STL Lot Number D2E300221

Introduction

STL Denver received four aqueous samples and a MS/MSD on May 30, 2002 for PAH SIM (ppt-5) analysis.

The cooler temperatures were 4.3 and 2.1 °C. All containers were received in acceptable condition.

There were twelve sample containers labeled as SLP3FB-052902 but none labeled as SLP3FBD-052902. At the direction of the client, six of the bottles were logged in as FB and six were logged in as FBD.

Data Quality Assessment

The results included in this report have been reviewed for compliance with STL Denver's Laboratory Quality Manual. The test results shown in this report meet all requirements of NELAC and any exceptions are noted below.

Dilution factors and footnotes have been provided to assist in the interpretation of the results. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at concentrations above the linear calibration curve, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

STL utilizes USEPA approved methods in all analytical work. The samples presented in this report were analyzed for the parameters listed on the analytical methods summary page in accordance with the methods indicated.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Polynuclear Aromatic Hydrocarbons – Method 8270C SIM

A project-specific lower acceptable recovery limit of 30% for all QC samples and surrogates has been designated for analytical work performed under the 2002 Quality Assurance Project Plan (QAPP) for the Reilly Industries, Inc. NPL Site. This lower limit is used for this project, rather than historically generated lower recovery limits. All recoveries in this report are above the 30% minimum threshold with the exceptions noted below.

The recovery for the surrogate Chrysene-d12 was below the lower control limit for sample SLP 3D-052902. This is an indication of a possible low bias. All other surrogate recoveries are in control for the associated method blank, LCS, MS/MSD, and client samples.

The LCS demonstrated a spike recovery for quinoline below the control limits. This compound has historically shown poor recoveries. The LCS surrogates were within control limits as were all other LCS spiked compounds. All other indications are that the system was operating normally and that these anomalies are isolated to this compound. There was insufficient sample volume remaining for re-extraction and analysis.

The MS/MSD was performed on the client-specified sample "SLP3-052902" for prep batch 2154340. The individual MS and MSD, as well as the MS/MSD average recoveries were below control limits for Benzo(e)pyrene. Additionally, the MSD and the MS/MSD average recoveries were below control limits for Chrysene. The associated LCS and method blank were in control for all parameters.

Data Completeness for Polynuclear Aromatic Hydrocarbons – Method 8270C SIM

The results contained in the report were reviewed relative to data acceptance criteria as specified in the 2002 QAPP. Based on the exceptions noted we achieved 98.2% completeness.

DATA COMPLETENESS CALCULATION

LOT D2E290153

ANALYSIS PAHs by SW846-8270C SIM

QC Parameter	Data Planned	Valid Data Obtained
Method Blanks	31	31
MB Surrogates	3	3
LCS	7	6
LCS Surrogates	3	3
MS*	7	6
MS Surrogates*	3	3
MSD*	7	6
MSD Surrogates*	3	3
MS/MSD RPD*	7	7
FB/FBD hits	62	62
Sample/Dup. RPD	31	31
Sample Surrogates	21	20
Internal STD Area*	33	33
TOTAL	**218**	**214**
% Completeness	**98.2**	

* The MS/MSD data provided for this table was performed on client sample "SLP 14-052802".

Case Narrative for D2E290153

Sample Duplicate RPD					
LOT D2E290153					
Sample: SLP14-052802		DUP: SPLP14D-052802			
Compound	Result	Compound	Result	RPD	RPD>50%
Acenaphthene	9.1	Acenaphthene	9.1	0.00	OK
Acenaphthylene	3.0	Acenaphthylene	3.9	26.1	OK
Acridine		Acridine		0.00	OK
Anthracene		Anthracene		0.00	OK
Benzo(a)anthracene		Benzo(a)anthracene		0.00	OK
Benzo(b)fluoranthene		Benzo(b)fluoranthene		0.00	OK
Benzo(k)fluoranthene		Benzo(k)fluoranthene		0.00	OK
2,3-Benzofuran		2,3-Benzofuran		0.00	OK
Benzo(ghi)perylene		Benzo(ghi)perylene		0.00	OK
Benzo(a)pyrene		Benzo(a)pyrene		0.00	OK
Benzo(e)pyrene		Benzo(e)pyrene		0.00	OK
Benzo(b)thiophene		Benzo(b)thiophene		0.00	OK
Biphenyl		Biphenyl		0.00	OK
Carbazole		Carbazole		0.00	OK
Chrysene		Chrysene		0.00	OK
Dibenz(a,h)anthracene		Dibenz(a,h)anthracene		0.00	OK
Dibenzofuran		Dibenzofuran		0.00	OK
Dibenzothiophene		Dibenzothiophene		0.00	OK
2,3-Dihydroindene	6.8	2,3-Dihydroindene	7.9	15.0	OK
Fluoranthene		Fluoranthene		0.00	OK
Fluorene		Fluorene		0.00	OK
Indene		Indene		0.00	OK
Indeno(1,2,3-cd)pyrene		Indeno(1,2,3-cd)pyrene		0.00	OK
Indole		Indole		0.00	OK
2-Methylnaphthalene		2-Methylnaphthalene		0.00	OK
1-Methylnaphthalene		1-Methylnaphthalene		0.00	OK
Naphthalene		Naphthalene		0.00	OK
Perylene		Perylene		0.00	OK
Phenanthrene	1.9	Phenanthrene	1.7	11.11	OK
Pyrene	ND	Pyrene	2.1	NC	OK
Quinoline		Quinoline		0.00	OK
					OK

(continued)

RTD = Relative Percent Difference
ND = Compound not detected in the sample
OK = RPD acceptable
p = RPD is outside of control limits
*NC = RPD not calculated, one positive result and one ND. Considered acceptable if the positive result is less than 4x the RL.

Please note that the data for the sample are from either the undiluted or diluted analyses.

EXECUTIVE SUMMARY - Detection Highlights

D2E290153

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
SLP14-052802 05/28/02 001				
Acenaphthene	9.1	1.9	ng/L	SW846 8270C SIM
Acenaphthylene	3.0	1.6	ng/L	SW846 8270C SIM
2,3-Dihydroindene	6.8	5.0	ng/L	SW846 8270C SIM
Phenanthrene	1.9	1.6	ng/L	SW846 8270C SIM
SLP14D-052802 05/28/02 002				
Acenaphthene	9.1	1.9	ng/L	SW846 8270C SIM
Acenaphthylene	3.9	1.6	ng/L	SW846 8270C SIM
2,3-Dihydroindene	7.9	5.0	ng/L	SW846 8270C SIM
Phenanthrene	1.7	1.6	ng/L	SW846 8270C SIM
Pyrene	2.1 J	6.9	ng/L	SW846 8270C SIM
SLP6-052802 05/28/02 006				
Acenaphthene	87	1.9	ng/L	SW846 8270C SIM
Acenaphthylene	18	1.6	ng/L	SW846 8270C SIM
Acridine	2.9 J	6.1	ng/L	SW846 8270C SIM
Benzo(b)thiophene	2.7	1.8	ng/L	SW846 8270C SIM
Carbazole	1.4 J	1.9	ng/L	SW846 8270C SIM
Dibenzothiophene	1.9	1.4	ng/L	SW846 8270C SIM
2,3-Dihydroindene	63	5.0	ng/L	SW846 8270C SIM
Fluorene	8.2	1.4	ng/L	SW846 8270C SIM
Indene	2.6	1.6	ng/L	SW846 8270C SIM
Phenanthrene	1.6	1.6	ng/L	SW846 8270C SIM
W48-052802 05/28/02 13:30 007				
Acenaphthene	98	1.9	ng/L	SW846 8270C SIM
Acenaphthylene	3.2	1.6	ng/L	SW846 8270C SIM
Acridine	16	6.1	ng/L	SW846 8270C SIM
Anthracene	7.3	1.8	ng/L	SW846 8270C SIM
Benzo(b)thiophene	8.1	1.8	ng/L	SW846 8270C SIM
Carbazole	3.0	1.9	ng/L	SW846 8270C SIM
2,3-Dihydroindene	12	5.0	ng/L	SW846 8270C SIM
Fluoranthene	2.4 J	3.1	ng/L	SW846 8270C SIM
Indene	17	1.6	ng/L	SW846 8270C SIM
2-Methylnaphthalene	2.1 J	3.9	ng/L	SW846 8270C SIM
1-Methylnaphthalene	2.4 J	2.8	ng/L	SW846 8270C SIM
Naphthalene	5.2 J	6.5	ng/L	SW846 8270C SIM
Phenanthrene	2.6	1.6	ng/L	SW846 8270C SIM
Pyrene	5.8 J	6.9	ng/L	SW846 8270C SIM

SAMPLE SUMMARY

D2E290153

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
E15HX	001	SLP14-052802	05/28/02	
E15H5	002	SLP14D-052802	05/28/02	
E15H6	003	SLP14FB-052802	05/28/02	
E15H7	004	SLP14FBD-052802	05/28/02	
E15H8	005	SLP16-052802	05/28/02	
E15JD	006	SLP6-052802	05/28/02	
E15JE	007	W48-052802	05/28/02	13:30

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.

METHODS SUMMARY

D2E290153

PARAMETER	ANALYTICAL METHOD	PREPARATION METHOD
Base/Neutrals and Acids	SW846 8270C SIM	SW846 3520C

References:

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

METHOD / ANALYST SUMMARY

D2E290153

ANALYTICAL METHOD	ANALYST	ANALYST ID
SW846 8270C SIM	Tim O'Donnell	000443

References:

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

CITY OF ST. LOUIS PARK

Client Sample ID: SLP14-052802

GC/MS Semivolatiles

Lot-Sample #...: D2E290153-001 Work Order #...: E15HX1AA Matrix.....: WG
Date Sampled...: 05/28/02 Date Received..: 05/29/02
Prep Date.....: 05/29/02 Analysis Date..: 06/20/02
Prep Batch #...: 2149455 Analysis Time..: 16:23
Dilution Factor: 1

Method.....: SW846 8270C SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	**9.1**	**1.9**	**ng/L**
Acenaphthylene	**3.0**	**1.6**	**ng/L**
Acridine	ND	6.1	ng/L
Anthracene	ND	1.8	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
2,3-Benzofuran	ND	5.1	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
Benzo(b)thiophene	ND	1.8	ng/L
Biphenyl	ND	4.3	ng/L
Carbazole	ND	1.9	ng/L
Chrysene	ND	2.8	ng/L
Dibenzo(a,h)anthracene	ND	2.0	ng/L
Dibenzofuran	ND	1.9	ng/L
Dibenzothiophene	ND	1.4	ng/L
2,3-Dihydroindene	**6.8**	**5.0**	**ng/L**
Fluoranthene	ND	3.1	ng/L
Fluorene	ND	1.4	ng/L
Indene	ND	1.6	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Indole	ND	2.5	ng/L
2-Methylnaphthalene	ND	3.9	ng/L
1-Methylnaphthalene	ND	2.8	ng/L
Naphthalene	ND	6.5	ng/L
Perylene	ND	2.5	ng/L
Phenanthrene	**1.9**	**1.6**	**ng/L**
Pyrene	ND	6.9	ng/L
Quinoline	ND	6.9	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	38	(30 - 118)
Fluorene d-10	45	(41 - 162)
Naphthalene-d8	62	(30 - 108)

CITY OF ST. LOUIS PARK

Client Sample ID: SLP14D-052802

GC/MS Semivolatiles

Lot-Sample #...:	D2E290153-002	**Work Order #...:**	E15H51AA	**Matrix.....:**	WG
Date Sampled...:	05/28/02	**Date Received..:**	05/29/02		
Prep Date.....:	05/29/02	**Analysis Date..:**	06/20/02		
Prep Batch #...:	2149455	**Analysis Time..:**	18:14		
Dilution Factor:	1				
		Method.....:	SW846 8270C SIM		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	**9.1**	**1.9**	**ng/L**
Acenaphthylene	**3.9**	**1.6**	**ng/L**
Acridine	ND	6.1	ng/L
Anthracene	ND	1.8	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
2,3-Benzofuran	ND	5.1	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
Benzo(b)thiophene	ND	1.8	ng/L
Biphenyl	ND	4.3	ng/L
Carbazole	ND	1.9	ng/L
Chrysene	ND	2.8	ng/L
Dibenzo(a,h)anthracene	ND	2.0	ng/L
Dibenzofuran	ND	1.9	ng/L
Dibenzothiophene	ND	1.4	ng/L
2,3-Dihydroindene	**7.9**	**5.0**	**ng/L**
Fluoranthene	ND	3.1	ng/L
Fluorene	ND	1.4	ng/L
Indene	ND	1.6	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Indole	ND	2.5	ng/L
2-Methylnaphthalene	ND	3.9	ng/L
1-Methylnaphthalene	ND	2.8	ng/L
Naphthalene	ND	6.5	ng/L
Perylene	ND	2.5	ng/L
Phenanthrene	**1.7**	**1.6**	**ng/L**
Pyrene	**2.1 J**	**6.9**	**ng/L**
Quinoline	ND	6.9	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	46	(30 - 118)
Fluorene d-10	60	(41 - 162)
Naphthalene-d8	71	(30 - 108)

NOTE(S):

J Estimated result. Result is less than RL.

CITY OF ST. LOUIS PARK

Client Sample ID: SLP14FB-052802

GC/MS Semivolatiles

Lot-Sample #...:	D2E290153-003	**Work Order #...:**	E15H61AA	**Matrix.....:**	WG
Date Sampled...:	05/28/02	**Date Received..:**	05/29/02		
Prep Date.....:	05/29/02	**Analysis Date..:**	06/20/02		
Prep Batch #...:	2149455	**Analysis Time..:**	18:51		
Dilution Factor:	1				
		Method.....:	SW846 8270C SIM		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	1.9	ng/L
Acenaphthylene	ND	1.6	ng/L
Acridine	ND	6.1	ng/L
Anthracene	ND	1.8	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
2,3-Benzofuran	ND	5.1	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
Benzo(b)thiophene	ND	1.8	ng/L
Biphenyl	ND	4.3	ng/L
Carbazole	ND	1.9	ng/L
Chrysene	ND	2.8	ng/L
Dibenzo(a,h)anthracene	ND	2.0	ng/L
Dibenzofuran	ND	1.9	ng/L
Dibenzothiophene	ND	1.4	ng/L
2,3-Dihydroindene	ND	5.0	ng/L
Fluoranthene	ND	3.1	ng/L
Fluorene	ND	1.4	ng/L
Indene	ND	1.6	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Indole	ND	2.5	ng/L
2-Methylnaphthalene	ND	3.9	ng/L
1-Methylnaphthalene	ND	2.8	ng/L
Naphthalene	ND	6.5	ng/L
Perylene	ND	2.5	ng/L
Phenanthrene	ND	1.6	ng/L
Pyrene	ND	6.9	ng/L
Quinoline	ND	6.9	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	88	(30 - 118)
Fluorene d-10	54	(41 - 162)
Naphthalene-d8	72	(30 - 108)

CITY OF ST. LOUIS PARK

Client Sample ID: SLP14FBD-052802

GC/MS Semivolatiles

Lot-Sample #...: D2E290153-004 **Work Order #...:** E15H71AA **Matrix.....:** WG
Date Sampled...: 05/28/02 **Date Received..:** 05/29/02
Prep Date.....: 05/29/02 **Analysis Date..:** 06/20/02
Prep Batch #...: 2149455 **Analysis Time..:** 19:28
Dilution Factor: 1

Method.....: SW846 8270C SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	1.9	ng/L
Acenaphthylene	ND	1.6	ng/L
Acridine	ND	6.1	ng/L
Anthracene	ND	1.8	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
2,3-Benzofuran	ND	5.1	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
Benzo(b)thiophene	ND	1.8	ng/L
Biphenyl	ND	4.3	ng/L
Carbazole	ND	1.9	ng/L
Chrysene	ND	2.8	ng/L
Dibenzo(a,h)anthracene	ND	2.0	ng/L
Dibenzofuran	ND	1.9	ng/L
Dibenzothiophene	ND	1.4	ng/L
2,3-Dihydroindene	ND	5.0	ng/L
Fluoranthene	ND	3.1	ng/L
Fluorene	ND	1.4	ng/L
Indene	ND	1.6	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Indole	ND	2.5	ng/L
2-Methylnaphthalene	ND	3.9	ng/L
1-Methylnaphthalene	ND	2.8	ng/L
Naphthalene	ND	6.5	ng/L
Perylene	ND	2.5	ng/L
Phenanthrene	ND	1.6	ng/L
Pyrene	ND	6.9	ng/L
Quinoline	ND	6.9	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	69	(30 - 118)
Fluorene d-10	37 *	(41 - 162)
Naphthalene-d8	46	(30 - 108)

NOTE(S):

* Surrogate recovery is outside stated control limits.

CITY OF ST. LOUIS PARK

Client Sample ID: SLP16-052802

GC/MS Semivolatiles

Lot-Sample #...: D2E290153-005 **Work Order #...:** E15H81AA **Matrix.....:** WG
Date Sampled...: 05/28/02 **Date Received..:** 05/29/02
Prep Date.....: 05/29/02 **Analysis Date..:** 06/20/02
Prep Batch #...: 2149455 **Analysis Time..:** 20:05
Dilution Factor: 1

Method.....: SW846 8270C SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	1.9	ng/L
Acenaphthylene	ND	1.6	ng/L
Acridine	ND	6.1	ng/L
Anthracene	ND	1.8	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
2,3-Benzofuran	ND	5.1	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
Benzo(b)thiophene	ND	1.8	ng/L
Biphenyl	ND	4.3	ng/L
Carbazole	ND	1.9	ng/L
Chrysene	ND	2.8	ng/L
Dibenzo(a,h)anthracene	ND	2.0	ng/L
Dibenzofuran	ND	1.9	ng/L
Dibenzothiophene	ND	1.4	ng/L
2,3-Dihydroindene	ND	5.0	ng/L
Fluoranthene	ND	3.1	ng/L
Fluorene	ND	1.4	ng/L
Indene	ND	1.6	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Indole	ND	2.5	ng/L
2-Methylnaphthalene	ND	3.9	ng/L
1-Methylnaphthalene	ND	2.8	ng/L
Naphthalene	ND	6.5	ng/L
Perylene	ND	2.5	ng/L
Phenanthrene	ND	1.6	ng/L
Pyrene	ND	6.9	ng/L
Quinoline	ND	6.9	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	40	(30 - 118)
Fluorene d-10	58	(41 - 162)
Naphthalene-d8	68	(30 - 108)

CITY OF ST. LOUIS PARK

Client Sample ID: SLP6-052802

GC/MS Semivolatiles

Lot-Sample #...: D2E290153-006 **Work Order #...:** E15JD1AA **Matrix.....:** WG
Date Sampled...: 05/28/02 **Date Received..:** 05/29/02
Prep Date.....: 05/29/02 **Analysis Date..:** 06/20/02
Prep Batch #...: 2149455 **Analysis Time..:** 20:43
Dilution Factor: 1

Method.....: SW846 8270C SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	**87**	**1.9**	**ng/L**
Acenaphthylene	**18**	**1.6**	**ng/L**
Acridine	**2.9 J**	**6.1**	**ng/L**
Anthracene	ND	1.8	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
2,3-Benzofuran	ND	5.1	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
Benzo(b)thiophene	**2.7**	**1.8**	**ng/L**
[illegible]phenyl	ND	4.3	ng/L
Carbazole	**1.4 J**	**1.9**	**ng/L**
Chrysene	ND	2.8	ng/L
Dibenzo(a,h)anthracene	ND	2.0	ng/L
Dibenzofuran	ND	1.9	ng/L
Dibenzothiophene	**1.9**	**1.4**	**ng/L**
2,3-Dihydroindene	**63**	**5.0**	**ng/L**
Fluoranthene	ND	3.1	ng/L
Fluorene	**8.2**	**1.4**	**ng/L**
Indene	**2.6**	**1.6**	**ng/L**
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Indole	ND	2.5	ng/L
2-Methylnaphthalene	ND	3.9	ng/L
1-Methylnaphthalene	ND	2.8	ng/L
Naphthalene	ND	6.5	ng/L
Perylene	ND	2.5	ng/L
Phenanthrene	**1.6**	**1.6**	**ng/L**
Pyrene	ND	6.9	ng/L
Quinoline	ND	6.9	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	37	(30 - 118)
Fluorene d-10	59	(41 - 162)
Naphthalene-d8	72	(30 - 108)

NOTE(S):

J Estimated result. Result is less than RL.

CITY OF ST. LOUIS PARK

Client Sample ID: W48-052802

GC/MS Semivolatiles

Lot-Sample #...:	D2E290153-007	**Work Order #...:**	E15JE1AA	**Matrix.....:**	WG
Date Sampled...:	05/28/02	**Date Received..:**	05/29/02		
Prep Date.....:	05/29/02	**Analysis Date..:**	06/20/02		
Prep Batch #...:	2149455	**Analysis Time..:**	21:20		
Dilution Factor:	1				
		Method.....:	SW846 8270C SIM		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	**98**	**1.9**	**ng/L**
Acenaphthylene	**3.2**	**1.6**	**ng/L**
Acridine	**16**	**6.1**	**ng/L**
Anthracene	**7.3**	**1.8**	**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
2,3-Benzofuran	ND	5.1	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
Benzo(b)thiophene	**8.1**	**1.8**	**ng/L**
Biphenyl	ND	4.3	ng/L
Carbazole	**3.0**	**1.9**	**ng/L**
Chrysene	ND	2.8	ng/L
Dibenzo(a,h)anthracene	ND	2.0	ng/L
Dibenzofuran	ND	1.9	ng/L
Dibenzothiophene	ND	1.4	ng/L
2,3-Dihydroindene	**12**	**5.0**	**ng/L**
Fluoranthene	**2.4 J**	**3.1**	**ng/L**
Fluorene	ND	1.4	ng/L
Indene	**17**	**1.6**	**ng/L**
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Indole	ND	2.5	ng/L
2-Methylnaphthalene	**2.1 J**	**3.9**	**ng/L**
1-Methylnaphthalene	**2.4 J**	**2.8**	**ng/L**
Naphthalene	**5.2 J**	**6.5**	**ng/L**
Perylene	ND	2.5	ng/L
Phenanthrene	**2.6**	**1.6**	**ng/L**
Pyrene	**5.8 J**	**6.9**	**ng/L**
Quinoline	ND	6.9	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	44	(30 - 118)
Fluorene d-10	137	(41 - 162)
Naphthalene-d8	66	(30 - 108)

NOTE(S):

J Estimated result. Result is less than RL.

QC DATA ASSOCIATION SUMMARY

D2E290153

Sample Preparation and Analysis Control Numbers

SAMPLE#	MATRIX	ANALYTICAL METHOD	LEACH BATCH #	PREP BATCH #	MS RUN#
001	WG	SW846 8270C SIM		2149455	2149240
002	WG	SW846 8270C SIM		2149455	2149240
003	WG	SW846 8270C SIM		2149455	2149240
004	WG	SW846 8270C SIM		2149455	2149240
005	WG	SW846 8270C SIM		2149455	2149240
006	WG	SW846 8270C SIM		2149455	2149240
007	WG	SW846 8270C SIM		2149455	2149240

METHOD BLANK REPORT

GC/MS Semivolatiles

Client Lot #...: D2E290153 Work Order #...: E16CN1AA Matrix.....: WATER
MB Lot-Sample #: D2E290000-455

Prep Date.....: 05/29/02 Analysis Time..: 15:09
Analysis Date..: 06/20/02 Prep Batch #...: 2149455
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Acenaphthene	ND	1.9	ng/L	SW846 8270C SIM
Acenaphthylene	ND	1.6	ng/L	SW846 8270C SIM
Acridine	ND	6.1	ng/L	SW846 8270C SIM
Anthracene	ND	1.8	ng/L	SW846 8270C SIM
Benzo(a)anthracene	ND	2.5	ng/L	SW846 8270C SIM
Benzo(b)fluoranthene	ND	2.5	ng/L	SW846 8270C SIM
Benzo(k)fluoranthene	ND	2.3	ng/L	SW846 8270C SIM
2,3-Benzofuran	ND	5.1	ng/L	SW846 8270C SIM
Benzo(ghi)perylene	ND	2.8	ng/L	SW846 8270C SIM
Benzo(a)pyrene	ND	2.3	ng/L	SW846 8270C SIM
Benzo(e)pyrene	ND	1.9	ng/L	SW846 8270C SIM
Benzo(b)thiophene	ND	1.8	ng/L	SW846 8270C SIM
Biphenyl	ND	4.3	ng/L	SW846 8270C SIM
Carbazole	ND	1.9	ng/L	SW846 8270C SIM
Chrysene	ND	2.8	ng/L	SW846 8270C SIM
Dibenzo(a,h)anthracene	ND	2.0	ng/L	SW846 8270C SIM
Dibenzofuran	ND	1.9	ng/L	SW846 8270C SIM
Dibenzothiophene	ND	1.4	ng/L	SW846 8270C SIM
2,3-Dihydroindene	ND	5.0	ng/L	SW846 8270C SIM
Fluoranthene	ND	3.1	ng/L	SW846 8270C SIM
Fluorene	ND	1.4	ng/L	SW846 8270C SIM
Indene	ND	1.6	ng/L	SW846 8270C SIM
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L	SW846 8270C SIM
Indole	ND	2.5	ng/L	SW846 8270C SIM
2-Methylnaphthalene	ND	3.9	ng/L	SW846 8270C SIM
1-Methylnaphthalene	ND	2.8	ng/L	SW846 8270C SIM
Naphthalene	ND	6.5	ng/L	SW846 8270C SIM
Perylene	ND	2.5	ng/L	SW846 8270C SIM
Phenanthrene	ND	1.6	ng/L	SW846 8270C SIM
Pyrene	ND	6.9	ng/L	SW846 8270C SIM
Quinoline	ND	6.9	ng/L	SW846 8270C SIM

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	99	(30 - 118)
Fluorene d-10	58	(41 - 162)
Naphthalene-d8	70	(30 - 108)

NOTE(S):

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

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: D2E290153 Work Order #...: E16CN1AC Matrix.....: WATER
LCS Lot-Sample#: D2E290000-455
Prep Date.....: 05/29/02 Analysis Date..: 06/20/02
Prep Batch #...: 2149455 Analysis Time..: 15:46
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD
Benzo(e)pyrene	**71**	**(30 - 150)**	**SW846 8270C SIM**
Chrysene	**70**	**(30 - 132)**	**SW846 8270C SIM**
Fluorene	**66**	**(30 - 132)**	**SW846 8270C SIM**
Indene	**66**	**(30 - 150)**	**SW846 8270C SIM**
2-Methylnaphthalene	**71**	**(30 - 150)**	**SW846 8270C SIM**
Naphthalene	**79**	**(30 - 150)**	**SW846 8270C SIM**
Quinoline	**11 a**	**(30 - 150)**	**SW846 8270C SIM**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	85	(30 - 118)
Fluorene d-10	57	(41 - 162)
[illegible]phthalene-d8	72	(30 - 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.

LABORATORY CONTROL SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #...: D2E290153 Work Order #...: E16CN1AC Matrix.....: WATER
LCS Lot-Sample#: D2E290000-455
Prep Date.....: 05/29/02 Analysis Date..: 06/20/02
Prep Batch #...: 2149455 Analysis Time..: 15:46
Dilution Factor: 1

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD
Benzo(e)pyrene	**10.0**	**7.13**	**ng/L**	**71**	**SW846 8270C S**
Chrysene	**10.0**	**6.96**	**ng/L**	**70**	**SW846 8270C S**
Fluorene	**10.0**	**6.63**	**ng/L**	**66**	**SW846 8270C S**
Indene	**10.0**	**6.64**	**ng/L**	**66**	**SW846 8270C S**
2-Methylnaphthalene	**10.0**	**7.14**	**ng/L**	**71**	**SW846 8270C S**
Naphthalene	**10.0**	**7.92**	**ng/L**	**79**	**SW846 8270C S**
Quinoline	**10.0**	**1.09 a**	**ng/L**	**11**	**SW846 8270C S**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	85	(30 - 118)
Fluorene d-10	57	(41 - 162)
Naphthalene-d8	72	(30 - 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.

MATRIX SPIKE SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: D2E290153 Work Order #...: E15HX1AC-MS Matrix.....: WG
MS Lot-Sample #: D2E290153-001 E15HX1AD-MSD
Date Sampled...: 05/28/02 Date Received..: 05/29/02
Prep Date.....: 05/29/02 Analysis Date..: 06/20/02
Prep Batch #...: 2149455 Analysis Time..: 17:00
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Benzo(e)pyrene	**0.0 a**	**(30 - 150)**			**SW846 8270C SIM**
	0.0 a	**(30 - 150)**	**0.0**	**(0-50)**	**SW846 8270C SIM**
Chrysene	**39**	**(30 - 132)**			**SW846 8270C SIM**
	38	**(30 - 132)**	**1.6**	**(0-50)**	**SW846 8270C SIM**
Fluorene	**70**	**(30 - 132)**			**SW846 8270C SIM**
	75	**(30 - 132)**	**8.7**	**(0-50)**	**SW846 8270C SIM**
Indene	**65**	**(30 - 150)**			**SW846 8270C SIM**
	69	**(30 - 150)**	**7.6**	**(0-50)**	**SW846 8270C SIM**
2-Methylnaphthalene	**71**	**(30 - 150)**			**SW846 8270C SIM**
	74	**(30 - 150)**	**6.4**	**(0-50)**	**SW846 8270C SIM**
Naphthalene	**78**	**(30 - 150)**			**SW846 8270C SIM**
	82	**(30 - 150)**	**8.2**	**(0-50)**	**SW846 8270C SIM**
Quinoline	**74**	**(30 - 150)**			**SW846 8270C SIM**
	72	**(30 - 150)**	**0.09**	**(0-50)**	**SW846 8270C SIM**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	46	(30 - 118)
	42	(30 - 118)
Fluorene d-10	59	(41 - 162)
	62	(41 - 162)
Naphthalene-d8	67	(30 - 108)
	72	(30 - 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.

MATRIX SPIKE SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #...: D2E290153 Work Order #...: E15HX1AC-MS Matrix.....: WG
MS Lot-Sample #: D2E290153-001 E15HX1AD-MSD
Date Sampled...: 05/28/02 Date Received..: 05/29/02
Prep Date.....: 05/29/02 Analysis Date..: 06/20/02
Prep Batch #...: 2149455 Analysis Time..: 17:00
Dilution Factor: 1

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD
Benzo(e)pyrene	ND	9.81	0.0	ng/L	0.0 a		SW846 8270C SIM
	ND	10.0	0.0	ng/L	0.0 a	0.0	SW846 8270C SIM
Chrysene	ND	9.81	3.83	ng/L	39		SW846 8270C SIM
	ND	10.0	3.77	ng/L	38	1.6	SW846 8270C SIM
Fluorene	ND	9.81	6.88	ng/L	70		SW846 8270C SIM
	ND	10.0	7.51	ng/L	75	8.7	SW846 8270C SIM
Indene	ND	9.81	6.38	ng/L	65		SW846 8270C SIM
	ND	10.0	6.89	ng/L	69	7.6	SW846 8270C SIM
2-Methylnaphthalene	ND	9.81	6.92	ng/L	71		SW846 8270C SIM
	ND	10.0	7.38	ng/L	74	6.4	SW846 8270C SIM
Naphthalene	ND	9.81	7.62	ng/L	78		SW846 8270C SIM
	ND	10.0	8.27	ng/L	82	8.2	SW846 8270C SIM
Quinoline	ND	9.81	7.26	ng/L	74		SW846 8270C SIM
	ND	10.0	7.25	ng/L	72	0.09	SW846 8270C SIM

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	46	(30 - 118)
	42	(30 - 118)
Fluorene d-10	59	(41 - 162)
	62	(41 - 162)
Naphthalene-d8	67	(30 - 108)
	72	(30 - 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.

Chain of Custody Record

STL Denver
4955 Yarrow Street
Arvada, CO 80002

4.4°C
3.6°C
2.8°C
5/29

SEVERN TRENT SERVICES

Severn Trent Laboratories, Inc.

STL-4124 (0700) DEN (0900)

Client	CITY OF ST. LOUIS PARK UTILITY DIVISION 3752 WOODDALE AVENUE ST. LOUIS PARK, MN 55416
Address	
City	
Project Name and Location (State)	SAME
Contract/Purchase Order/Quote No.	
Project Manager	SCOTT ANDERSON
Telephone Number (Area Code)/Fax Number	924-2557 (952) 924-2570
Site Contact	SAME
Lab Contact	
Carrier/Waybill Number	FED EX
Date	5-28-02
Chain of Custody Number	017816
Lab Number	
Page ____ of ____	

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Containers & Preservatives: Unpres.	H2SO4	HNOS	HCl	NaOH	ZnAc/NaOH		Analysis (Attach list if more space is needed): PPL PAH'S	Special Instructions/ Conditions of Receipt
SLP 14-052802 C# 0001	5-28-02			X			X						6	X	PPL PAH 5
SLP 14D-052802															
SLP 14MS-052802 C# 0003															
SLP 14MSD-052802															
SLP14FB-052802 C# 0004															
SLP14FBD-052802															
SLP16-052802 C# 0005															
SLP6-052802	5-28-02			X			X						6	X	PPL PAH 5

Possible Hazard Identification: [X] Non-Hazard [ ] Flammable [ ] Skin Irritant [ ] Poison B [ ] Unknown

Sample Disposal: [ ] Return To Client [X] Disposal By Lab [ ] Archive For ____ Months (A fee may be assessed if samples are retained longer than 3 months)

Turn Around Time Required: [ ] 24 Hours [ ] 48 Hours [ ] 7 Days [ ] 14 Days [ ] 21 Days [ ] Other ____

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished By: [signature]	5-28-02	1400	1. Received By: [signature]	5/29/02	0845
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

22

DISTRIBUTION: WHITE - Stays with the Sample; CANARY - Returned to Client with Report; PINK - Field Copy

[redacted]

Chain of Custody Record

93 / 5/26

STL Denver
4955 Yarrow Street
Arvada, CO 80002

SEVERN TRENT SERVICES

Severn Trent Laboratories, Inc.

STL-4124 (0700) **DEN (0900)**

Client: City of St. Louis Park	Project Manager: Scott Anderson	Date: 5/28/02	Chain of Custody Number: 017812
Address: 3557 Woodlake Ave	Telephone Number (Area Code)/Fax Number: 952 924 2557	Lab Number	Page 1 of 1
City: St. Louis Park; State: MN; Zip Code: 55416	Site Contact: Bill Gregg	Lab Contact	
Project Name and Location (State)	Carrier/Waybill Number		
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil		Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH		Analysis (Attach list if more space is needed): PAH PPT 5	Special Instructions/ Conditions of Receipt
W48052802	5/28/02	1330		X				6							X	

Possible Hazard Identification: ☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months (A fee may be assessed if samples are retained longer than 3 months)

Turn Around Time Required: ☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other _____

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished By: [signature]	5/28/02	1700	1. Received By: [signature]	5/29/02	0845
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

23

DISTRIBUTION: WHITE - Stays with the Sample; CANARY - Returned to Client with Report; PINK - Field Copy

T

SEVERN TRENT SERVICES

STL Denver
4955 Yarrow Street
Arvada, CO 80002-4517

Tel: 303 736 0100
Fax: 303 431 7171
www.stl-inc.com

ANALYTICAL REPORT

City of St. Louis Park

Project: Reilly Tar & Chemical Corporation

Lot #: D2F050268

Mr. Scott Anderson

City of St. Louis Park
Utility Division
3752 Wooddale Avenue
St. Louis Park, MN 55416

STL DENVER

Brian Stringer
Project Manager

July 24, 2002

T

Table Of Contents

Standard Deliverables

Report Contents	Total Number of Pages
Standard Deliverables *The **Cover Letter** and the **Report Cover** page are considered integral parts of this Standard Deliverable package. This report is incomplete unless all pages indicated in this Table of Contents are included.*	17

- **Table of Contents**
- **Project Narrative**
- **Executive Summary – Detection Highlights**
- **Methods Summary**
- **Method/Analyst Summary**
- **Sample Summary**
- **Analytical Results**
- **QC Data Association Summary**
- **QC Evaluation and/or Data Reports**
- **Chain-of-Custody**

CASE NARRATIVE

STL Lot Number D2F050268

Introduction

STL Denver received two aqueous samples on June 5, 2002 for PAH SIM (ppt-75) analysis.

The cooler temperature was 0.3 °C. All containers were received in acceptable condition.

Data Quality Assessment

The results included in this report have been reviewed for compliance with STL Denver's Laboratory Quality Manual. The test results shown in this report meet all requirements of NELAC and any exceptions are noted below.

Dilution factors and footnotes have been provided to assist in the interpretation of the results. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at concentrations above the linear calibration curve, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

STL utilizes USEPA approved methods in all analytical work. The samples presented in this report were analyzed for the parameters listed on the analytical methods summary page in accordance with the methods indicated.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Polynuclear Aromatic Hydrocarbons – Method 8270C SIM

A project-specific lower acceptable recovery limit of 30% for all QC samples and surrogates has been designated for analytical work performed under the 2002 Quality Assurance Project Plan (QAPP) for the Reilly Industries, Inc. NPL Site. This lower limit is used for this project, rather than historically generated lower recovery limits. All recoveries in this report are above the 30% minimum threshold with the exceptions noted below.

The recoveries for the surrogates Chrysene-d12 and Fluorene d-10 were below the lower control limit for sample W33-060402. This is an indication of a possible low bias. All other surrogate recoveries are in control for the associated method blank, LCS, and MS/MSD samples, indicating that the system was operating normally and that this anomaly is isolated to this sample.

Client sample "W24-060402" was analyzed undiluted and then at a dilution due the high concentration of the target compound 2,3-Dihydroindene. The results for other target compounds that are within the linear calibration range are reported from the undiluted analysis and the result for 2,3-Dihydroindene is reported from analysis of the appropriate dilution. The reporting limits are elevated according to the dilutions.

The MS/MSD was performed on a client sample from another lot for prep batch 2161431. The MS and the MS/MSD average recoveries were below control limits for Benzo(e)pyrene and Chrysene. The MSD recoveries and the RPD were in control for both compounds. The associated LCS and method blank were in control for all parameters. The MS/MSD recoveries for the diluted analyses of the spiked sample were not calculated since the spikes were diluted below the level of quantification due to the high concentrations of target analytes.

Data Completeness for Polynuclear Aromatic Hydrocarbons – Method 8270C SIM

The results contained in the report were reviewed relative to data acceptance criteria as specified in the 2002 QAPP. Based on the exceptions noted we achieved 100% completeness.

DATA COMPLETENESS CALCULATION

LOT D2F050268

ANALYSIS PAHs by SW846-8270C SIM

QC Parameter	Data Planned	Valid Data Obtained
Method Blanks	31	31
MB Surrogates	3	3
LCS	7	7
LCS Surrogates	3	3
MS*	N/A	N/A
MS Surrogates*	N/A	N/A
MSD*	N/A	N/A
MSD Surrogates*	N/A	N/A
MS/MSD RPD*	N/A	N/A
FB/FBD hits	N/A	N/A
Sample/Dup. RPD	N/A	N/A
Sample Surrogates	9	9
Internal STD Area*	12	12
TOTAL	**65**	**65**
% Completeness	**100**	

* There is no MS/MSD, sample duplicate, or field blank samples on this lot.

EXECUTIVE SUMMARY - Detection Highlights

D2F050268

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
W33-060402 06/04/02 10:20 001				
Acenaphthene	6.6	1.9	ng/L	SW846 8270C SIM
Anthracene	1.3 J	1.8	ng/L	SW846 8270C SIM
Benzo(e)pyrene	1.8 J	1.9	ng/L	SW846 8270C SIM
Benzo(b)thiophene	2.1	1.8	ng/L	SW846 8270C SIM
Carbazole	7.7	1.9	ng/L	SW846 8270C SIM
2,3-Dihydroindene	25	5.0	ng/L	SW846 8270C SIM
Fluoranthene	4.7	3.1	ng/L	SW846 8270C SIM
Indene	1.9	1.6	ng/L	SW846 8270C SIM
2-Methylnaphthalene	4.3	3.9	ng/L	SW846 8270C SIM
1-Methylnaphthalene	3.1	2.8	ng/L	SW846 8270C SIM
Naphthalene	7.8	6.5	ng/L	SW846 8270C SIM
Phenanthrene	5.6	1.6	ng/L	SW846 8270C SIM
Pyrene	7.6	6.9	ng/L	SW846 8270C SIM
W24-060402 06/04/02 002				
Acenaphthene	30	1.9	ng/L	SW846 8270C SIM
Anthracene	5.8	1.8	ng/L	SW846 8270C SIM
Benzo(b)thiophene	3.9	1.8	ng/L	SW846 8270C SIM
Carbazole	2.5	1.9	ng/L	SW846 8270C SIM
2,3-Dihydroindene	370	25	ng/L	SW846 8270C SIM
Indene	10	1.6	ng/L	SW846 8270C SIM
2-Methylnaphthalene	2.3 J	3.9	ng/L	SW846 8270C SIM
1-Methylnaphthalene	2.2 J	2.8	ng/L	SW846 8270C SIM
Naphthalene	5.9 J	6.5	ng/L	SW846 8270C SIM
Phenanthrene	2.6	1.6	ng/L	SW846 8270C SIM
Pyrene	4.2 J	6.9	ng/L	SW846 8270C SIM

METHODS SUMMARY

D2F050268

PARAMETER	ANALYTICAL METHOD	PREPARATION METHOD
Base/Neutrals and Acids	SW846 8270C SIM	SW846 3520C

References:

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

METHOD / ANALYST SUMMARY

D2F050268

ANALYTICAL METHOD	ANALYST	ANALYST ID
SW846 8270C SIM	Tim O'Donnell	000443

References:

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

SAMPLE SUMMARY

D2F050268

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
E2HDD	001	W33-060402	06/04/02	10:20
E2HDP	002	W24-060402	06/04/02	

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: W33-060402

GC/MS Semivolatiles

Lot-Sample #...:	D2F050268-001	**Work Order #...:**	E2HDD1AA	**Matrix.....:**	WG
Date Sampled...:	06/04/02	**Date Received..:**	06/05/02		
Prep Date.....:	06/10/02	**Analysis Date..:**	06/26/02		
Prep Batch #...:	2161431	**Analysis Time..:**	10:10		
Dilution Factor:	1				
		Method.....:	SW846 8270C SIM		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	**6.6**	**1.9**	**ng/L**
Acenaphthylene	ND	1.6	ng/L
Acridine	ND	6.1	ng/L
Anthracene	**1.3 J**	**1.8**	**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
2,3-Benzofuran	ND	5.1	ng/L
Benzo(ghi)perylene	ND	2.8	ng/L
Benzo(a)pyrene	ND	2.3	ng/L
Benzo(e)pyrene	**1.8 J**	**1.9**	**ng/L**
Benzo(b)thiophene	**2.1**	**1.8**	**ng/L**
Biphenyl	ND	4.3	ng/L
Carbazole	**7.7**	**1.9**	**ng/L**
Chrysene	ND	2.8	ng/L
Dibenzo(a,h)anthracene	ND	2.0	ng/L
Dibenzofuran	ND	1.9	ng/L
Dibenzothiophene	ND	1.4	ng/L
2,3-Dihydroindene	**25**	**5.0**	**ng/L**
Fluoranthene	**4.7**	**3.1**	**ng/L**
Fluorene	ND	1.4	ng/L
Indene	**1.9**	**1.6**	**ng/L**
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Indole	ND	2.5	ng/L
2-Methylnaphthalene	**4.3**	**3.9**	**ng/L**
1-Methylnaphthalene	**3.1**	**2.8**	**ng/L**
Naphthalene	**7.8**	**6.5**	**ng/L**
Perylene	ND	2.5	ng/L
Phenanthrene	**5.6**	**1.6**	**ng/L**
Pyrene	**7.6**	**6.9**	**ng/L**
Quinoline	ND	6.9	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	13 *	(30 - 118)
Fluorene d-10	37 *	(41 - 162)
Naphthalene-d8	40	(30 - 108)

NOTE(S):

* Surrogate recovery is outside stated control limits.

J Estimated result. Result is less than RL.

CITY OF ST. LOUIS PARK

Client Sample ID: W24-060402

GC/MS Semivolatiles

Lot-Sample #...:	D2F050268-002	Work Order #...:	E2HDP1AA	Matrix.....:	WG
Date Sampled...:	06/04/02	Date Received..:	06/05/02		
Prep Date.....:	06/10/02	Analysis Date..:	06/26/02		
Prep Batch #...:	2161431	Analysis Time..:	18:25		
Dilution Factor:	1				
		Method.....:	SW846 8270C SIM		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	**30**	**1.9**	**ng/L**
Acenaphthylene	ND	1.6	ng/L
Acridine	ND	6.1	ng/L
Anthracene	**5.8**	**1.8**	**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
2,3-Benzofuran	ND	5.1	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
Benzo(b)thiophene	**3.9**	**1.8**	**ng/L**
Biphenyl	ND	4.3	ng/L
Carbazole	**2.5**	**1.9**	**ng/L**
Chrysene	ND	2.8	ng/L
Dibenzo(a,h)anthracene	ND	2.0	ng/L
Dibenzofuran	ND	1.9	ng/L
Dibenzothiophene	ND	1.4	ng/L
Fluoranthene	ND	3.1	ng/L
Fluorene	ND	1.4	ng/L
Indene	**10**	**1.6**	**ng/L**
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Indole	ND	2.5	ng/L
2-Methylnaphthalene	**2.3 J**	**3.9**	**ng/L**
1-Methylnaphthalene	**2.2 J**	**2.8**	**ng/L**
Naphthalene	**5.9 J**	**6.5**	**ng/L**
Perylene	ND	2.5	ng/L
Phenanthrene	**2.6**	**1.6**	**ng/L**
Pyrene	**4.2 J**	**6.9**	**ng/L**
Quinoline	ND	6.9	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	34	(30 - 118)
Fluorene d-10	46	(41 - 162)
Naphthalene-d8	50	(30 - 108)

NOTE(S):

J Estimated result. Result is less than RL.

CITY OF ST. LOUIS PARK

Client Sample ID: W24-060402

GC/MS Semivolatiles

Lot-Sample #...:	D2F050268-002	Work Order #...:	E2HDP2AA	Matrix.....:	WG
Date Sampled...:	06/04/02	Date Received..:	06/05/02		
Prep Date.....:	06/10/02	Analysis Date..:	06/27/02		
Prep Batch #...:	2161431	Analysis Time..:	15:15		
Dilution Factor:	5				
		Method.....:	SW846 8270C SIM		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
2,3-Dihydroindene	**370**	**25**	**ng/L**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	49	(30 - 118)
Fluorene d-10	41	(41 - 162)
Naphthalene-d8	53	(30 - 108)

QC DATA ASSOCIATION SUMMARY

D2F050268

Sample Preparation and Analysis Control Numbers

SAMPLE#	MATRIX	ANALYTICAL METHOD	LEACH BATCH #	PREP BATCH #	MS RUN#
001	WG	SW846 8270C SIM		2161431	2161201
002	WG	SW846 8270C SIM		2161431	2161201

METHOD BLANK REPORT

GC/MS Semivolatiles

Client Lot #...: D2F050268 **Work Order #...:** E2Q0V1AA **Matrix.....:** WATER
MB Lot-Sample #: D2F100000-431

Prep Date.....: 06/10/02 **Analysis Time..:** 12:14
Analysis Date..: 06/24/02 **Prep Batch #...:** 2161431
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Acenaphthene	ND	1.9	ng/L	SW846 8270C SIM
Acenaphthylene	ND	1.6	ng/L	SW846 8270C SIM
Acridine	ND	6.1	ng/L	SW846 8270C SIM
Anthracene	ND	1.8	ng/L	SW846 8270C SIM
Benzo(a)anthracene	ND	2.5	ng/L	SW846 8270C SIM
Benzo(b)fluoranthene	ND	2.5	ng/L	SW846 8270C SIM
Benzo(k)fluoranthene	ND	2.3	ng/L	SW846 8270C SIM
2,3-Benzofuran	ND	5.1	ng/L	SW846 8270C SIM
Benzo(ghi)perylene	ND	2.8	ng/L	SW846 8270C SIM
Benzo(a)pyrene	ND	2.3	ng/L	SW846 8270C SIM
Benzo(e)pyrene	ND	1.9	ng/L	SW846 8270C SIM
Benzo(b)thiophene	ND	1.8	ng/L	SW846 8270C SIM
Biphenyl	ND	4.3	ng/L	SW846 8270C SIM
Carbazole	ND	1.9	ng/L	SW846 8270C SIM
Chrysene	ND	2.8	ng/L	SW846 8270C SIM
Dibenzo(a,h)anthracene	ND	2.0	ng/L	SW846 8270C SIM
Dibenzofuran	ND	1.9	ng/L	SW846 8270C SIM
Dibenzothiophene	ND	1.4	ng/L	SW846 8270C SIM
2,3-Dihydroindene	ND	5.0	ng/L	SW846 8270C SIM
Fluoranthene	ND	3.1	ng/L	SW846 8270C SIM
Fluorene	ND	1.4	ng/L	SW846 8270C SIM
Indene	ND	1.6	ng/L	SW846 8270C SIM
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L	SW846 8270C SIM
Indole	ND	2.5	ng/L	SW846 8270C SIM
2-Methylnaphthalene	ND	3.9	ng/L	SW846 8270C SIM
1-Methylnaphthalene	ND	2.8	ng/L	SW846 8270C SIM
Naphthalene	ND	6.5	ng/L	SW846 8270C SIM
Perylene	ND	2.5	ng/L	SW846 8270C SIM
Phenanthrene	ND	1.6	ng/L	SW846 8270C SIM
Pyrene	ND	6.9	ng/L	SW846 8270C SIM
Quinoline	ND	6.9	ng/L	SW846 8270C SIM

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	58	(30 - 118)
Fluorene d-10	47	(41 - 162)
Naphthalene-d8	63	(30 - 108)

NOTE(S):

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

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: D2F050268 Work Order #...: E2Q0V1AC Matrix.....: WATER
LCS Lot-Sample#: D2F100000-431
Prep Date.....: 06/10/02 Analysis Date..: 06/24/02
Prep Batch #...: 2161431 Analysis Time..: 12:52
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD
Benzo(e)pyrene	**75**	**(30 - 150)**	**SW846 8270C SIM**
Chrysene	**67**	**(30 - 132)**	**SW846 8270C SIM**
Fluorene	**64**	**(30 - 132)**	**SW846 8270C SIM**
Indene	**60**	**(30 - 150)**	**SW846 8270C SIM**
2-Methylnaphthalene	**60**	**(30 - 150)**	**SW846 8270C SIM**
Naphthalene	**66**	**(30 - 150)**	**SW846 8270C SIM**
Quinoline	**60**	**(30 - 150)**	**SW846 8270C SIM**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	78	(30 - 118)
Fluorene d-10	52	(41 - 162)
Naphthalene-d8	61	(30 - 108)

NOTE(S):

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

Bold print denotes control parameters

LABORATORY CONTROL SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #...: D2F050268 Work Order #...: E2Q0V1AC Matrix.....: WATER
LCS Lot-Sample#: D2F100000-431
Prep Date.....: 06/10/02 Analysis Date..: 06/24/02
Prep Batch #...: 2161431 Analysis Time..: 12:52
Dilution Factor: 1

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD
Benzo(e)pyrene	**75.0**	**56.2**	**ng/L**	**75**	**SW846 8270C S**
Chrysene	**75.0**	**50.4**	**ng/L**	**67**	**SW846 8270C S**
Fluorene	**75.0**	**47.9**	**ng/L**	**64**	**SW846 8270C S**
Indene	**75.0**	**45.3**	**ng/L**	**60**	**SW846 8270C S**
2-Methylnaphthalene	**75.0**	**44.9**	**ng/L**	**60**	**SW846 8270C S**
Naphthalene	**75.0**	**49.6**	**ng/L**	**66**	**SW846 8270C S**
Quinoline	**75.0**	**44.8**	**ng/L**	**60**	**SW846 8270C S**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	78	(30 - 118)
Fluorene d-10	52	(41 - 162)
Naphthalene-d8	61	(30 - 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 #...: D2F050268 **Work Order #...:** E2HAE1AC-MS **Matrix.....:** WATER
MS Lot-Sample #: D2F050259-001 E2HAE1AD-MSD
Date Sampled...: 06/04/02 **Date Received..:** 06/05/02
Prep Date.....: 06/10/02 **Analysis Date..:** 06/24/02
Prep Batch #...: 2161431 **Analysis Time..:** 19:45
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Benzo(e)pyrene	**0.0 a**	**(30 - 150)**			**SW846 8270C SIM**
	65	**(30 - 150)**	**0.0**	**(0-50)**	**SW846 8270C SIM**
Chrysene	**0.0 a**	**(30 - 132)**			**SW846 8270C SIM**
	38	**(30 - 132)**	**0.0**	**(0-50)**	**SW846 8270C SIM**
Fluorene	**NC,DIL**	**(30 - 132)**			**SW846 8270C SIM**
	NC,DIL	**(30 - 132)**		**(0-50)**	**SW846 8270C SIM**
Indene	**NC,DIL**	**(30 - 150)**			**SW846 8270C SIM**
	NC,DIL	**(30 - 150)**		**(0-50)**	**SW846 8270C SIM**
2-Methylnaphthalene	**NC,DIL**	**(30 - 150)**			**SW846 8270C SIM**
	NC,DIL	**(30 - 150)**		**(0-50)**	**SW846 8270C SIM**
Naphthalene	**NC,DIL**	**(30 - 150)**			**SW846 8270C SIM**
	NC,DIL	**(30 - 150)**		**(0-50)**	**SW846 8270C SIM**
Quinoline	**139**	**(30 - 150)**			**SW846 8270C SIM**
	104	**(30 - 150)**	**29**	**(0-50)**	**SW846 8270C SIM**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	48	(30 - 118)
	60	(30 - 118)
Fluorene d-10	51	(41 - 162)
	50	(41 - 162)
Naphthalene-d8	55	(30 - 108)
	47	(30 - 108)

NOTE(S):

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

Bold print denotes control parameters

NC The recovery and/or RPD were not calculated.

DIL The concentration is estimated or not reported due to dilution or the presence of interfering analytes.

a Spiked analyte recovery is outside stated control limits.

MATRIX SPIKE SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #...: D2F050268 Work Order #...: E2HAE1AC-MS Matrix.....: WATER
MS Lot-Sample #: D2F050259-001 E2HAE1AD-MSD
Date Sampled...: 06/04/02 Date Received..: 06/05/02
Prep Date.....: 06/10/02 Analysis Date..: 06/24/02
Prep Batch #...: 2161431 Analysis Time..: 19:45
Dilution Factor: 1

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD
Benzo(e)pyrene	20	74.9	16.3	ng/L	0.0 a		SW846 8270C SIM
	20	75.2	69.1	ng/L	65	0.0	SW846 8270C SIM
Chrysene	150	74.9	125	ng/L	0.0 a		SW846 8270C SIM
	150	75.2	176	ng/L	38	0.0	SW846 8270C SIM
Fluorene	3100	74.9		ng/L	NC,DIL		SW846 8270C SIM
	3100	75.2		ng/L	NC,DIL		SW846 8270C SIM
Indene	220	74.9		ng/L	NC,DIL		SW846 8270C SIM
	220	75.2		ng/L	NC,DIL		SW846 8270C SIM
2-Methylnaphthalene	1800	74.9		ng/L	NC,DIL		SW846 8270C SIM
	1800	75.2		ng/L	NC,DIL		SW846 8270C SIM
Naphthalene	6700	74.9		ng/L	NC,DIL		SW846 8270C SIM
	6700	75.2		ng/L	NC,DIL		SW846 8270C SIM
Quinoline	ND	74.9	104	ng/L	139		SW846 8270C SIM
	ND	75.2	78.1	ng/L	104	29	SW846 8270C SIM

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	48	(30 - 118)
	60	(30 - 118)
Fluorene d-10	51	(41 - 162)
	50	(41 - 162)
Naphthalene-d8	55	(30 - 108)
	47	(30 - 108)

NOTE(S):

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

Bold print denotes control parameters

NC The recovery and/or RPD were not calculated.

DIL The concentration is estimated or not reported due to dilution or the presence of interfering analytes.

a Spiked analyte recovery is outside stated control limits.

BRAUN INTERTEC

Braun Intertec Corporation
6875 Washington Ave. S.
Edina, MN 55439-0108

Bottle orders and sampling inquires:
labservices@brauncorp.com
Phone: 952-942-4930 Fax: 952-942-4844

SIL Denver U.D.C

REQUEST FOR LABORATORY ANALYTICAL SERVICES

0.3° 6/6

IMPORTANT
Date Results Requested: _____
Time _____
Rush Charges Authorized? ____ Yes ____ No
Rush / Quote # _____

Page ____ of ____

For Braun Intertec Use Only
Braun Intertec Project No.

REPORT RESULTS TO

Contact Name: Scott Anderson
Project ID/Project Name: Reilly
P.O. #:
Company: City of St. Louis Park
Mailing Address: 3752 Wooddale Ave
City, State, Zip: St. Louis Park, MN 55416
Telephone #: 952-924-02557
Fax #:
E-mail:

SEND INVOICE TO

Site Contact Name: Bill Gregg
Company: ENSR
Address:
City, State, Zip:
Telephone #:
Fax #:

Special Instructions and/or Specific Regulatory Requirements:
(method, limit of detection, petrofund, reporting units)

Circle metals that require low detection limits

Ag	As	Be	Cd	Cr	Pb	Ni	Sb	Se	Tl	V	Other			

ANALYSIS REQUESTED
(Enter an 'X' in the box below to indicate request)

	CLIENT SAMPLE IDENTIFICATION	DATE SAMPLED	TIME SAMPLED	MATRIX/ MEDIA	AIR VOLUME (specify units)	Number of Containers	Metals Field Filtered Y/N	PAH-PPT-75										FOR LAB USE ONLY
1	W33-060402	6/4/02	1020	water		6		X										
2	W24-060402	6/4/02	1200	"		6		X										
3																		
4																		
5																		
6																		
7																		
8																		
9																		
10																		
11																		
12																		
13																		
14																		
15																		

CHAIN OF CUSTODY

Collected by: *(Print)* Chris Boehm
Collector's Signature: Chris Boehm
Relinquished by: Chris Boehm — Date/Time 6/4/02/1230
Received by: Brett VanDuk — Date/Time 6-5-02
Relinquished by: — Date/Time
Received Contents Not Verified: — Date/Time
Received Contents Verified: — Date/Time

Evidence Tape Intact ☐ Yes ☐ No ☐ N/A
Sample Condition Upon Receipt: ☐ Acceptable ☐ Other_____
Temperature _____ °C ☐ Received on Ice
Matrix Spike Samples Received: ☐ Yes ☐ No ☐ N/A

Comments:

U

SEVERN
TRENT
SERVICES

STL Denver
4955 Yarrow Street
Arvada, CO 80002-4517

Tel: 303 736 0100
Fax: 303 431 7171
www.stl-inc.com

ANALYTICAL REPORT

City of St. Louis Park

Project: Reilly Tar & Chemical Corporation

Lot #: D2F050259

Mr. Scott Anderson

City of St. Louis Park
Utility Division
3752 Wooddale Avenue
St. Louis Park, MN 55416

STL DENVER

Brian Stringer
Project Manager

July 24, 2002

Table Of Contents

Standard Deliverables

Report Contents	Total Number of Pages
Standard Deliverables *The **Cover Letter** and the **Report Cover** page are considered integral parts of this Standard Deliverable package. This report is incomplete unless all pages indicated in this Table of Contents are included.*	30

- **Table of Contents**
- **Project Narrative**
- **Executive Summary – Detection Highlights**
- **Methods Summary**
- **Method/Analyst Summary**
- **Sample Summary**
- **Analytical Results**
- **QC Data Association Summary**
- **QC Evaluation and/or Data Reports**
- **Chain-of-Custody**

CASE NARRATIVE

STL Lot Number D2F050259

Introduction

STL Denver received seven aqueous samples and a MS/MSD on June 5, 2002 for PAH SIM (ppt-5) analysis.

The cooler temperatures were 5.9, 2.1, 3.6, 0.2, and 3.5 °C. All containers were received in acceptable condition.

Data Quality Assessment

The results included in this report have been reviewed for compliance with STL Denver's Laboratory Quality Manual. The test results shown in this report meet all requirements of NELAC and any exceptions are noted below.

Dilution factors and footnotes have been provided to assist in the interpretation of the results. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at concentrations above the linear calibration curve, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

STL utilizes USEPA approved methods in all analytical work. The samples presented in this report were analyzed for the parameters listed on the analytical methods summary page in accordance with the methods indicated.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Polynuclear Aromatic Hydrocarbons – Method 8270C SIM

A project-specific lower acceptable recovery limit of 30% for all QC samples and surrogates has been designated for analytical work performed under the 2002 Quality Assurance Project Plan (QAPP) for the Reilly Industries, Inc. NPL Site. This lower limit is used for this project, rather than historically generated lower recovery limits. All recoveries in this report are above the 30% minimum threshold with the exceptions noted below.

The recovery of the surrogate Chrysene-d12 was below the lower control limit for sample "W410-060402". This is an indication of a possible low bias. All other surrogate recoveries are in control for the associated method blank, LCS, and MS/MSD samples, indication that the system was operating normally and that this anomaly is isolated to this sample.

Client samples "W23-060402", "W23D-060402", "SLP10-060402", "W105-060402" and "W410-060402" were analyzed undiluted and then at a dilution due to high concentrations of target compounds. The results for the target compounds that are within the linear calibration range are reported from the undiluted sample, and the results for the elevated compounds are reported from diluted analysis. The reporting limits are elevated according to the dilutions. Additionally, the surrogate recoveries for the diluted analyses were not calculated since the surrogates were diluted below the level of quantification.

The elevated results for some compounds are also included on the undiluted analysis report for sample W23-060402" because they are spiking compounds and need to be included in order to report them on the MS/MSD result pages. These values are flagged with "E" for over the calibration range, but again the valid results within the calibration range are included on the diluted analysis report page in each case.

Case Narrative for D2F050259 (continued)

The MS/MSD was performed on the client-specified sample "W23-060402" for prep batch 2161431. The MS and the MS/MSD average recoveries were below control limits for Benzo(e)pyrene and Chrysene. The MSD recoveries and the RPD were in control for both compounds. The associated LCS and method blank were in control for all parameters. The MS/MSD recoveries for the diluted analyses of sample "W23-060402" were not calculated since the spikes were diluted below the level of quantification. The samples were analyzed at dilutions due to the high concentrations of interfering analytes.

Data Completeness for Polynuclear Aromatic Hydrocarbons – Method 8270C SIM

The results contained in the report were reviewed relative to data acceptance criteria as specified in the 2002 QAPP. Based on the exceptions noted we achieved 95.2% completeness.

DATA COMPLETENESS CALCULATION

LOT D2F050259

ANALYSIS PAHs by SW846-8270C SIM

QC Parameter	Data Planned	Valid Data Obtained
Method Blanks	31	31
MB Surrogates	3	3
LCS	7	7
LCS Surrogates	3	3
MS*	3	1
MS Surrogates*	3	3
MSD*	3	3
MSD Surrogates*	3	3
MS/MSD RPD*	3	3
FB/FBD hits	62	60
Sample/Dup. RPD	31	26
Sample Surrogates	21	20
Internal STD Area*	33	33
TOTAL	**206**	**196**
% Completeness	**95.2**	

*The MS/MSD data provided for this table was performed on client sample "W23-060402", data not planned for diluted compounds.

Case Narrative for **D2F050259** (continued)

Sample Duplicate RPD					
LOT D2F050259					
Sample: W23-060402		**DUP: W23D-060402**			
Compound	**Result**	**Compound**	**Result**	**RPD**	**RPD>50%**
Acenaphthene	5300	Acenaphthene	4500	16	
Acenaphthylene	420	Acenaphthylene	350	18	
Acridine	440	Acridine	360	20	
Anthracene	400	Anthracene	350	13	
Benzo(a)anthracene	270	Benzo(a)anthracene	240	12	
Benzo(b)fluoranthene	29	Benzo(b)fluoranthene	14	70	p
Benzo(k)fluoranthene	31	Benzo(k)fluoranthene	14	76	p
2,3-Benzofuran	6.2	2,3-Benzofuran	6.1	1.6	
Benzo(ghi)perylene	ND	Benzo(ghi)perylene	ND	0.0	
Benzo(a)pyrene	34	Benzo(a)pyrene	16	72	p
Benzo(e)pyrene	20	Benzo(e)pyrene	9.7	69	p
Benzo(b)thiophene	270	Benzo(b)thiophene	230	16	
Biphenyl	820	Biphenyl	710	14	
Carbazole	360	Carbazole	320	11	
Chrysene	150	Chrysene	110	31	
Dibenz(a,h)anthracene	ND	Dibenz(a,h)anthracene	ND	0.0	
Dibenzofuran	1600	Dibenzofuran	1400	13	
Dibenzothiophene	430	Dibenzothiophene	370	15	
2,3-Dihydroindene	1300	2,3-Dihydroindene	1200	8.0	
Fluoranthene	1800	Fluoranthene	1500	18	
Fluorene	3100	Fluorene	2600	17	
Indene	220	Indene	200	9.5	
Indeno(1,2,3-cd)pyrene	ND	Indeno(1,2,3-cd)pyrene	ND	0.0	
Indole	ND	Indole	ND	0.0	
2-Methylnaphthalene	1800	2-Methylnaphthalene	1500	18	
1-Methylnaphthalene	2300	1-Methylnaphthalene	2000	14	
Naphthalene	6700	Naphthalene	5800	14	
Perylene	5.3	Perylene	2.6	68	p
Phenanthrene	1600	Phenanthrene	1400	13	
Pyrene	1700	Pyrene	1400	19	
Quinoline	ND	Quinoline	ND	0.0	

RTD = Relative Percent Difference
ND = Compound not detected in the sample
OK = RPD acceptable
p = RPD is outside of control limits
*NC = RPD not calculated, one positive result and one ND. Considered acceptable if the positive result is less than 4x the RL.

Please note that the data for the sample are from either the undiluted or diluted analyses.

EXECUTIVE SUMMARY - Detection Highlights

D2F050259

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
W23-060402 06/04/02 001				
Acenaphthene	5300	95	ng/L	SW846 8270C SIM
Acenaphthylene	420	80	ng/L	SW846 8270C SIM
Acridine	440	300	ng/L	SW846 8270C SIM
Anthracene	400	90	ng/L	SW846 8270C SIM
Benzo(a)anthracene	270	120	ng/L	SW846 8270C SIM
Benzo(b)fluoranthene	29	2.5	ng/L	SW846 8270C SIM
Benzo(k)fluoranthene	31	2.3	ng/L	SW846 8270C SIM
2,3-Benzofuran	6.2	5.1	ng/L	SW846 8270C SIM
Benzo(a)pyrene	34	2.3	ng/L	SW846 8270C SIM
Benzo(e)pyrene	20	1.9	ng/L	SW846 8270C SIM
Benzo(b)thiophene	270	90	ng/L	SW846 8270C SIM
Biphenyl	820	220	ng/L	SW846 8270C SIM
Carbazole	360	95	ng/L	SW846 8270C SIM
Chrysene	150	2.8	ng/L	SW846 8270C SIM
Dibenzofuran	1600	95	ng/L	SW846 8270C SIM
Dibenzothiophene	430	70	ng/L	SW846 8270C SIM
2,3-Dihydroindene	1300	250	ng/L	SW846 8270C SIM
Fluoranthene	1800	160	ng/L	SW846 8270C SIM
Fluorene	3100 E	1.4	ng/L	SW846 8270C SIM
Fluorene	3100	70	ng/L	SW846 8270C SIM
Indene	220 E	1.6	ng/L	SW846 8270C SIM
Indene	220	80	ng/L	SW846 8270C SIM
2-Methylnaphthalene	1800 E	3.9	ng/L	SW846 8270C SIM
2-Methylnaphthalene	1800	200	ng/L	SW846 8270C SIM
1-Methylnaphthalene	2300	140	ng/L	SW846 8270C SIM
Naphthalene	6700 E	6.5	ng/L	SW846 8270C SIM
Naphthalene	6700	320	ng/L	SW846 8270C SIM
Perylene	5.3	2.5	ng/L	SW846 8270C SIM
Phenanthrene	1600	80	ng/L	SW846 8270C SIM
Pyrene	1700	340	ng/L	SW846 8270C SIM
W23D-060402 06/04/02 002				
Acenaphthene	4500	95	ng/L	SW846 8270C SIM
Acenaphthylene	350	80	ng/L	SW846 8270C SIM
Acridine	360	300	ng/L	SW846 8270C SIM
Anthracene	350	90	ng/L	SW846 8270C SIM
Benzo(a)anthracene	240	120	ng/L	SW846 8270C SIM
Benzo(b)fluoranthene	14	2.5	ng/L	SW846 8270C SIM
Benzo(k)fluoranthene	14	2.3	ng/L	SW846 8270C SIM
2,3-Benzofuran	6.1	5.1	ng/L	SW846 8270C SIM
Benzo(a)pyrene	16	2.3	ng/L	SW846 8270C SIM
Benzo(e)pyrene	9.7	1.9	ng/L	SW846 8270C SIM

(Continued on next page)

EXECUTIVE SUMMARY - Detection Highlights

D2F050259

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
W23D-060402 06/04/02 002				
Benzo(b)thiophene	230	90	ng/L	SW846 8270C SIM
Biphenyl	710	220	ng/L	SW846 8270C SIM
Carbazole	320	95	ng/L	SW846 8270C SIM
Chrysene	110	2.8	ng/L	SW846 8270C SIM
Dibenzofuran	1400	95	ng/L	SW846 8270C SIM
Dibenzothiophene	370	70	ng/L	SW846 8270C SIM
2,3-Dihydroindene	1200	250	ng/L	SW846 8270C SIM
Fluoranthene	1500	160	ng/L	SW846 8270C SIM
Fluorene	2600	70	ng/L	SW846 8270C SIM
Indene	200	80	ng/L	SW846 8270C SIM
2-Methylnaphthalene	1500	200	ng/L	SW846 8270C SIM
1-Methylnaphthalene	2000	140	ng/L	SW846 8270C SIM
Naphthalene	5800	320	ng/L	SW846 8270C SIM
Perylene	2.6	2.5	ng/L	SW846 8270C SIM
Phenanthrene	1400	80	ng/L	SW846 8270C SIM
Pyrene	1400	340	ng/L	SW846 8270C SIM
W23FB-060402 06/04/02 003				
Naphthalene	3.8 J	6.5	ng/L	SW846 8270C SIM
W23FBD-060402 06/04/02 004				
Acenaphthene	2.8	1.9	ng/L	SW846 8270C SIM
Fluorene	1.8	1.4	ng/L	SW846 8270C SIM
Naphthalene	5.4 J	6.5	ng/L	SW846 8270C SIM
SLP10-060402 06/04/02 005				
Acenaphthene	580	190	ng/L	SW846 8270C SIM
Acenaphthylene	92	1.6	ng/L	SW846 8270C SIM
Anthracene	8.0	1.8	ng/L	SW846 8270C SIM
Benzo(a)anthracene	2.1 J	2.5	ng/L	SW846 8270C SIM
2,3-Benzofuran	3.3 J	5.1	ng/L	SW846 8270C SIM
Benzo(b)thiophene	35	1.8	ng/L	SW846 8270C SIM
Biphenyl	14	4.3	ng/L	SW846 8270C SIM
Carbazole	18	1.9	ng/L	SW846 8270C SIM
Dibenzofuran	41	1.9	ng/L	SW846 8270C SIM
Dibenzothiophene	21	1.4	ng/L	SW846 8270C SIM
2,3-Dihydroindene	290 J	500	ng/L	SW846 8270C SIM
Fluoranthene	31	3.1	ng/L	SW846 8270C SIM
Fluorene	120	1.4	ng/L	SW846 8270C SIM
Indene	47	1.6	ng/L	SW846 8270C SIM

(Continued on next page)

EXECUTIVE SUMMARY - Detection Highlights

D2F050259

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
SLP10-060402 06/04/02 005				
1-Methylnaphthalene	67	2.8	ng/L	SW846 8270C SIM
Naphthalene	5.5 J	6.5	ng/L	SW846 8270C SIM
Phenanthrene	19	1.6	ng/L	SW846 8270C SIM
Pyrene	61	6.9	ng/L	SW846 8270C SIM
W105-060402 06/04/02 006				
Acenaphthene	470	19	ng/L	SW846 8270C SIM
Acenaphthylene	72	1.6	ng/L	SW846 8270C SIM
Acridine	31	6.1	ng/L	SW846 8270C SIM
Anthracene	88	1.8	ng/L	SW846 8270C SIM
Benzo(a)anthracene	84	2.5	ng/L	SW846 8270C SIM
Benzo(b)fluoranthene	3.1	2.5	ng/L	SW846 8270C SIM
Benzo(k)fluoranthene	3.1	2.3	ng/L	SW846 8270C SIM
2,3-Benzofuran	7.8	5.1	ng/L	SW846 8270C SIM
Benzo(a)pyrene	2.9	2.3	ng/L	SW846 8270C SIM
Benzo(e)pyrene	2.2	1.9	ng/L	SW846 8270C SIM
Benzo(b)thiophene	67	1.8	ng/L	SW846 8270C SIM
Biphenyl	140	4.3	ng/L	SW846 8270C SIM
Carbazole	92	1.9	ng/L	SW846 8270C SIM
Chrysene	44	2.8	ng/L	SW846 8270C SIM
Dibenzofuran	160	19	ng/L	SW846 8270C SIM
Dibenzothiophene	65	1.4	ng/L	SW846 8270C SIM
2,3-Dihydroindene	190	50	ng/L	SW846 8270C SIM
Fluoranthene	820	31	ng/L	SW846 8270C SIM
Fluorene	460	14	ng/L	SW846 8270C SIM
Indene	72	1.6	ng/L	SW846 8270C SIM
Indole	42	2.5	ng/L	SW846 8270C SIM
2-Methylnaphthalene	150	3.9	ng/L	SW846 8270C SIM
1-Methylnaphthalene	250	28	ng/L	SW846 8270C SIM
Naphthalene	860	65	ng/L	SW846 8270C SIM
Phenanthrene	600	16	ng/L	SW846 8270C SIM
Pyrene	650	69	ng/L	SW846 8270C SIM
Quinoline	4.9 J	6.9	ng/L	SW846 8270C SIM
W410-060402 06/04/02 007				
Acenaphthene	150	1.9	ng/L	SW846 8270C SIM
Acenaphthylene	17	1.6	ng/L	SW846 8270C SIM
Acridine	5.7 J	6.1	ng/L	SW846 8270C SIM
Anthracene	4.2	1.8	ng/L	SW846 8270C SIM
Benzo(b)thiophene	300	18	ng/L	SW846 8270C SIM
Biphenyl	21	4.3	ng/L	SW846 8270C SIM

(Continued on next page)

EXECUTIVE SUMMARY - Detection Highlights

D2F050259

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
W410-060402 06/04/02 007				
Carbazole	94	1.9	ng/L	SW846 8270C SIM
Dibenzofuran	43	1.9	ng/L	SW846 8270C SIM
Dibenzothiophene	2.8	1.4	ng/L	SW846 8270C SIM
2,3-Dihydroindene	850	50	ng/L	SW846 8270C SIM
Fluorene	32	1.4	ng/L	SW846 8270C SIM
Indene	460	16	ng/L	SW846 8270C SIM
1-Methylnaphthalene	120	2.8	ng/L	SW846 8270C SIM
Naphthalene	16	6.5	ng/L	SW846 8270C SIM
Phenanthrene	26	1.6	ng/L	SW846 8270C SIM

METHODS SUMMARY

D2F050259

PARAMETER	ANALYTICAL METHOD	PREPARATION METHOD
Base/Neutrals and Acids	SW846 8270C SIM	SW846 3520C

References:

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

METHOD / ANALYST SUMMARY

D2F050259

ANALYTICAL METHOD	ANALYST	ANALYST ID
SW846 8270C SIM	Tim O'Donnell	000443

References:

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

SAMPLE SUMMARY

D2F050259

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
E2HAE	001	W23-060402	06/04/02	
E2HAG	002	W23D-060402	06/04/02	
E2HAH	003	W23FB-060402	06/04/02	
E2HAJ	004	W23FBD-060402	06/04/02	
E2HAK	005	SLP10-060402	06/04/02	
E2HAL	006	W105-060402	06/04/02	
E2HAM	007	W410-060402	06/04/02	

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: W23-060402

GC/MS Semivolatiles

Lot-Sample #...:	D2F050259-001	**Work Order #...:**	E2HAE1AA	**Matrix.....:**	WG
Date Sampled...:	06/04/02	**Date Received..:**	06/05/02		
Prep Date.....:	06/10/02	**Analysis Date..:**	06/26/02		
Prep Batch #...:	2161431	**Analysis Time..:**	12:02		
Dilution Factor:	1				
		Method.....:	SW846 8270C SIM		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Benzo(b)fluoranthene	**29**	**2.5**	**ng/L**
Benzo(k)fluoranthene	**31**	**2.3**	**ng/L**
2,3-Benzofuran	**6.2**	**5.1**	**ng/L**
Benzo(ghi)perylene	ND	2.8	ng/L
Benzo(a)pyrene	**34**	**2.3**	**ng/L**
Benzo(e)pyrene	**20**	**1.9**	**ng/L**
Chrysene	**150**	**2.8**	**ng/L**
Dibenzo(a,h)anthracene	ND	2.0	ng/L
Fluorene	**3100 E**	**1.4**	**ng/L**
Indene	**220 E**	**1.6**	**ng/L**
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
[illegible]dole	ND	2.5	ng/L
[illegible]Methylnaphthalene	**1800 E**	**3.9**	**ng/L**
Naphthalene	**6700 E**	**6.5**	**ng/L**
Perylene	**5.3**	**2.5**	**ng/L**
Quinoline	ND	6.9	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	63	(30 - 118)
Fluorene d-10	52	(41 - 162)
Naphthalene-d8	57	(30 - 108)

NOTE(S):

E Estimated result. Result concentration exceeds the calibration range.

CITY OF ST. LOUIS PARK

Client Sample ID: W23-060402

GC/MS Semivolatiles

Lot-Sample #...: D2F050259-001 Work Order #...: E2HAE2AA Matrix.....: WG
Date Sampled...: 06/04/02 Date Received..: 06/05/02
Prep Date.....: 06/10/02 Analysis Date..: 06/26/02
Prep Batch #...: 2161431 Analysis Time..: 11:24
Dilution Factor: 50

Method.....: SW846 8270C SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	5300	95	ng/L
Acenaphthylene	420	80	ng/L
Acridine	440	300	ng/L
Anthracene	400	90	ng/L
Benzo(a)anthracene	270	120	ng/L
Benzo(b)thiophene	270	90	ng/L
Biphenyl	820	220	ng/L
Carbazole	360	95	ng/L
Dibenzofuran	1600	95	ng/L
Dibenzothiophene	430	70	ng/L
2,3-Dihydroindene	1300	250	ng/L
Fluoranthene	1800	160	ng/L
Fluorene	3100	70	ng/L
Indene	220	80	ng/L
2-Methylnaphthalene	1800	200	ng/L
1-Methylnaphthalene	2300	140	ng/L
Naphthalene	6700	320	ng/L
Phenanthrene	1600	80	ng/L
Pyrene	1700	340	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	DIL,NC	(30 - 118)
Fluorene d-10	DIL,NC	(41 - 162)
Naphthalene-d8	DIL,NC	(30 - 108)

NOTE(S):

DIL The concentration is estimated or not reported due to dilution or the presence of interfering analytes.

NC The recovery and/or RPD were not calculated.

CITY OF ST. LOUIS PARK

Client Sample ID: W23D-060402

GC/MS Semivolatiles

Lot-Sample #...: D2F050259-002 Work Order #...: E2HAG1AA Matrix.....: WG
Date Sampled...: 06/04/02 Date Received..: 06/05/02
Prep Date.....: 06/10/02 Analysis Date..: 06/24/02
Prep Batch #...: 2161431 Analysis Time..: 20:59
Dilution Factor: 1

Method.....: SW846 8270C SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Benzo(b)fluoranthene	**14**	**2.5**	**ng/L**
Benzo(k)fluoranthene	**14**	**2.3**	**ng/L**
2,3-Benzofuran	**6.1**	**5.1**	**ng/L**
Benzo(ghi)perylene	ND	2.8	ng/L
Benzo(a)pyrene	**16**	**2.3**	**ng/L**
Benzo(e)pyrene	**9.7**	**1.9**	**ng/L**
Chrysene	**110**	**2.8**	**ng/L**
Dibenzo(a,h)anthracene	ND	2.0	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Indole	ND	2.5	ng/L
Perylene	**2.6**	**2.5**	**ng/L**
Quinoline	ND	6.9	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	50	(30 - 118)
Fluorene d-10	47	(41 - 162)
Naphthalene-d8	53	(30 - 108)

CITY OF ST. LOUIS PARK

Client Sample ID: W23D-060402

GC/MS Semivolatiles

Lot-Sample #...: D2F050259-002 Work Order #...: E2HAG2AA Matrix.....: WG
Date Sampled...: 06/04/02 Date Received..: 06/05/02
Prep Date.....: 06/10/02 Analysis Date..: 06/26/02
Prep Batch #...: 2161431 Analysis Time..: 12:39
Dilution Factor: 50

Method.....: SW846 8270C SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	4500	95	ng/L
Acenaphthylene	350	80	ng/L
Acridine	360	300	ng/L
Anthracene	350	90	ng/L
Benzo(a)anthracene	240	120	ng/L
Benzo(b)thiophene	230	90	ng/L
Biphenyl	710	220	ng/L
Carbazole	320	95	ng/L
Dibenzofuran	1400	95	ng/L
Dibenzothiophene	370	70	ng/L
2,3-Dihydroindene	1200	250	ng/L
Fluoranthene	1500	160	ng/L
Fluorene	2600	70	ng/L
Indene	200	80	ng/L
2-Methylnaphthalene	1500	200	ng/L
1-Methylnaphthalene	2000	140	ng/L
Naphthalene	5800	320	ng/L
Phenanthrene	1400	80	ng/L
Pyrene	1400	340	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	80	(30 - 118)
Fluorene d-10	47	(41 - 162)
Naphthalene-d8	64	(30 - 108)

CITY OF ST. LOUIS PARK

Client Sample ID: W23FB-060402

GC/MS Semivolatiles

Lot-Sample #...:	D2F050259-003	**Work Order #...:**	E2HAH1AA	**Matrix.....:**	WG
Date Sampled...:	06/04/02	**Date Received..:**	06/05/02		
Prep Date.....:	06/10/02	**Analysis Date..:**	06/24/02		
Prep Batch #...:	2161431	**Analysis Time..:**	21:37		
Dilution Factor:	1				
		Method.....:	SW846 8270C SIM		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	1.9	ng/L
Acenaphthylene	ND	1.6	ng/L
Acridine	ND	6.1	ng/L
Anthracene	ND	1.8	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
2,3-Benzofuran	ND	5.1	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
Benzo(b)thiophene	ND	1.8	ng/L
Biphenyl	ND	4.3	ng/L
Carbazole	ND	1.9	ng/L
Chrysene	ND	2.8	ng/L
Dibenzo(a,h)anthracene	ND	2.0	ng/L
Dibenzofuran	ND	1.9	ng/L
Dibenzothiophene	ND	1.4	ng/L
2,3-Dihydroindene	ND	5.0	ng/L
Fluoranthene	ND	3.1	ng/L
Fluorene	ND	1.4	ng/L
Indene	ND	1.6	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Indole	ND	2.5	ng/L
2-Methylnaphthalene	ND	3.9	ng/L
1-Methylnaphthalene	ND	2.8	ng/L
Naphthalene	**3.8 J**	**6.5**	**ng/L**
Perylene	ND	2.5	ng/L
Phenanthrene	ND	1.6	ng/L
Pyrene	ND	6.9	ng/L
Quinoline	ND	6.9	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	71	(30 - 118)
Fluorene d-10	55	(41 - 162)
Naphthalene-d8	67	(30 - 108)

NOTE(S):

J Estimated result. Result is less than RL.

CITY OF ST. LOUIS PARK

Client Sample ID: W23FBD-060402

GC/MS Semivolatiles

Lot-Sample #...: D2F050259-004 Work Order #...: E2HAJ1AA Matrix.....: WG
Date Sampled...: 06/04/02 Date Received..: 06/05/02
Prep Date.....: 06/10/02 Analysis Date..: 06/24/02
Prep Batch #...: 2161431 Analysis Time..: 22:14
Dilution Factor: 1

Method.....: SW846 8270C SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	**2.8**	**1.9**	**ng/L**
Acenaphthylene	ND	1.6	ng/L
Acridine	ND	6.1	ng/L
Anthracene	ND	1.8	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
2,3-Benzofuran	ND	5.1	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
Benzo(b)thiophene	ND	1.8	ng/L
Biphenyl	ND	4.3	ng/L
Carbazole	ND	1.9	ng/L
Chrysene	ND	2.8	ng/L
Dibenzo(a,h)anthracene	ND	2.0	ng/L
Dibenzofuran	ND	1.9	ng/L
Dibenzothiophene	ND	1.4	ng/L
2,3-Dihydroindene	ND	5.0	ng/L
Fluoranthene	ND	3.1	ng/L
Fluorene	**1.8**	**1.4**	**ng/L**
Indene	ND	1.6	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Indole	ND	2.5	ng/L
2-Methylnaphthalene	ND	3.9	ng/L
1-Methylnaphthalene	ND	2.8	ng/L
Naphthalene	**5.4 J**	**6.5**	**ng/L**
Perylene	ND	2.5	ng/L
Phenanthrene	ND	1.6	ng/L
Pyrene	ND	6.9	ng/L
Quinoline	ND	6.9	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	72	(30 - 118)
Fluorene d-10	54	(41 - 162)
Naphthalene-d8	66	(30 - 108)

NOTE(S):

J Estimated result. Result is less than RL.

CITY OF ST. LOUIS PARK

Client Sample ID: SLP10-060402

GC/MS Semivolatiles

Lot-Sample #...:	D2F050259-005	**Work Order #...:**	E2HAK1AA	**Matrix.....:**	WG
Date Sampled...:	06/04/02	**Date Received..:**	06/05/02		
Prep Date.....:	06/10/02	**Analysis Date..:**	06/26/02		
Prep Batch #...:	2161431	**Analysis Time..:**	13:54		
Dilution Factor:	1				
		Method.....:	SW846 8270C SIM		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	**92**	**1.6**	**ng/L**
Acridine	ND	6.1	ng/L
Anthracene	**8.0**	**1.8**	**ng/L**
Benzo(a)anthracene	**2.1 J**	**2.5**	**ng/L**
Benzo(b)fluoranthene	ND	2.5	ng/L
Benzo(k)fluoranthene	ND	2.3	ng/L
2,3-Benzofuran	**3.3 J**	**5.1**	**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
Benzo(b)thiophene	**35**	**1.8**	**ng/L**
Biphenyl	**14**	**4.3**	**ng/L**
Carbazole	**18**	**1.9**	**ng/L**
Chrysene	ND	2.8	ng/L
Dibenzo(a,h)anthracene	ND	2.0	ng/L
Dibenzofuran	**41**	**1.9**	**ng/L**
Dibenzothiophene	**21**	**1.4**	**ng/L**
Fluoranthene	**31**	**3.1**	**ng/L**
Fluorene	**120**	**1.4**	**ng/L**
Indene	**47**	**1.6**	**ng/L**
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Indole	ND	2.5	ng/L
2-Methylnaphthalene	ND	3.9	ng/L
1-Methylnaphthalene	**67**	**2.8**	**ng/L**
Naphthalene	**5.5 J**	**6.5**	**ng/L**
Perylene	ND	2.5	ng/L
Phenanthrene	**19**	**1.6**	**ng/L**
Pyrene	**61**	**6.9**	**ng/L**
Quinoline	ND	6.9	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	41	(30 - 118)
Fluorene d-10	45	(41 - 162)
Naphthalene-d8	56	(30 - 108)

NOTE(S):

J Estimated result. Result is less than RL.

CITY OF ST. LOUIS PARK

Client Sample ID: SLP10-060402

GC/MS Semivolatiles

Lot-Sample #...:	D2F050259-005	Work Order #...:	E2HAK2AA	Matrix.....:	WG
Date Sampled...:	06/04/02	Date Received..:	06/05/02		
Prep Date.....:	06/10/02	Analysis Date..:	06/26/02		
Prep Batch #...:	2161431	Analysis Time..:	13:17		
Dilution Factor:	10				
		Method.....:	SW846 8270C SIM		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	580	190	ng/L
2,3-Dihydroindene	290 J	500	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	DIL,NC	(30 - 118)
Fluorene d-10	DIL,NC	(41 - 162)
Naphthalene-d8	DIL,NC	(30 - 108)

NOTE(S):

DIL The concentration is estimated or not reported due to dilution or the presence of interfering analytes.

NC The recovery and/or RPD were not calculated.

J Estimated result. Result is less than RL.

CITY OF ST. LOUIS PARK

Client Sample ID: W105-060402

GC/MS Semivolatiles

Lot-Sample #...: D2F050259-006 Work Order #...: E2HAL1AA Matrix.....: WG
Date Sampled...: 06/04/02 Date Received..: 06/05/02
Prep Date.....: 06/10/02 Analysis Date..: 06/26/02
Prep Batch #...: 2161431 Analysis Time..: 15:09
Dilution Factor: 1

Method.....: SW846 8270C SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	72	1.6	ng/L
Acridine	31	6.1	ng/L
Anthracene	88	1.8	ng/L
Benzo(a)anthracene	84	2.5	ng/L
Benzo(b)fluoranthene	3.1	2.5	ng/L
Benzo(k)fluoranthene	3.1	2.3	ng/L
2,3-Benzofuran	7.8	5.1	ng/L
Benzo(ghi)perylene	ND	2.8	ng/L
Benzo(a)pyrene	2.9	2.3	ng/L
Benzo(e)pyrene	2.2	1.9	ng/L
Benzo(b)thiophene	67	1.8	ng/L
Biphenyl	140	4.3	ng/L
Carbazole	92	1.9	ng/L
Chrysene	44	2.8	ng/L
Dibenzo(a,h)anthracene	ND	2.0	ng/L
Dibenzothiophene	65	1.4	ng/L
Indene	72	1.6	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Indole	42	2.5	ng/L
2-Methylnaphthalene	150	3.9	ng/L
Perylene	ND	2.5	ng/L
Quinoline	4.9 J	6.9	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	67	(30 - 118)
Fluorene d-10	49	(41 - 162)
Naphthalene-d8	59	(30 - 108)

NOTE(S):

J Estimated result. Result is less than RL.

CITY OF ST. LOUIS PARK

Client Sample ID: W105-060402

GC/MS Semivolatiles

Lot-Sample #...: D2F050259-006 Work Order #...: E2HAL2AA Matrix.....: WG
Date Sampled...: 06/04/02 Date Received..: 06/05/02
Prep Date.....: 06/10/02 Analysis Date..: 06/26/02
Prep Batch #...: 2161431 Analysis Time..: 14:32
Dilution Factor: 10

Method.....: SW846 8270C SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	470	19	ng/L
Dibenzofuran	160	19	ng/L
2,3-Dihydroindene	190	50	ng/L
Fluoranthene	820	31	ng/L
Fluorene	460	14	ng/L
1-Methylnaphthalene	250	28	ng/L
Naphthalene	860	65	ng/L
Phenanthrene	600	16	ng/L
Pyrene	650	69	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	DIL,NC	(30 - 118)
Fluorene d-10	DIL,NC	(41 - 162)
Naphthalene-d8	DIL,NC	(30 - 108)

NOTE(S):

DIL The concentration is estimated or not reported due to dilution or the presence of interfering analytes.

NC The recovery and/or RPD were not calculated.

CITY OF ST. LOUIS PARK

Client Sample ID: W410-060402

GC/MS Semivolatiles

Lot-Sample #...: D2F050259-007 Work Order #...: E2HAM1AA Matrix.....: WG
Date Sampled...: 06/04/02 Date Received..: 06/05/02
Prep Date.....: 06/10/02 Analysis Date..: 06/26/02
Prep Batch #...: 2161431 Analysis Time..: 09:32
Dilution Factor: 1

Method.....: SW846 8270C SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	**150**	**1.9**	**ng/L**
Acenaphthylene	**17**	**1.6**	**ng/L**
Acridine	**5.7 J**	**6.1**	**ng/L**
Anthracene	**4.2**	**1.8**	**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
2,3-Benzofuran	ND	5.1	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	**21**	**4.3**	**ng/L**
Carbazole	**94**	**1.9**	**ng/L**
Chrysene	ND	2.8	ng/L
Dibenzo(a,h)anthracene	ND	2.0	ng/L
Dibenzofuran	**43**	**1.9**	**ng/L**
Dibenzothiophene	**2.8**	**1.4**	**ng/L**
Fluoranthene	ND	3.1	ng/L
Fluorene	**32**	**1.4**	**ng/L**
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Indole	ND	2.5	ng/L
2-Methylnaphthalene	ND	3.9	ng/L
1-Methylnaphthalene	**120**	**2.8**	**ng/L**
Naphthalene	**16**	**6.5**	**ng/L**
Perylene	ND	2.5	ng/L
Phenanthrene	**26**	**1.6**	**ng/L**
Pyrene	ND	6.9	ng/L
Quinoline	ND	6.9	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	27 *	(30 - 118)
Fluorene d-10	43	(41 - 162)
Naphthalene-d8	53	(30 - 108)

NOTE(S):

* Surrogate recovery is outside stated control limits.

J Estimated result. Result is less than RL.

CITY OF ST. LOUIS PARK

Client Sample ID: W410-060402

GC/MS Semivolatiles

Lot-Sample #...:	D2F050259-007	Work Order #...:	E2HAM2AA	Matrix.....:	WG
Date Sampled...:	06/04/02	Date Received..:	06/05/02		
Prep Date.....:	06/10/02	Analysis Date..:	06/26/02		
Prep Batch #...:	2161431	Analysis Time..:	15:56		
Dilution Factor:	10				
		Method.....:	SW846 8270C SIM		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Benzo(b)thiophene	300	18	ng/L
2,3-Dihydroindene	850	50	ng/L
Indene	460	16	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	DIL,NC	(30 - 118)
Fluorene d-10	DIL,NC	(41 - 162)
Naphthalene-d8	DIL,NC	(30 - 108)

NOTE(S):

DIL The concentration is estimated or not reported due to dilution or the presence of interfering analytes.

NC The recovery and/or RPD were not calculated.

QC DATA ASSOCIATION SUMMARY

D2F050259

Sample Preparation and Analysis Control Numbers

SAMPLE#	MATRIX	ANALYTICAL METHOD	LEACH BATCH #	PREP BATCH #	MS RUN#
001	WG	SW846 8270C SIM		2161431	2161201
002	WG	SW846 8270C SIM		2161431	2161201
003	WG	SW846 8270C SIM		2161431	2161201
004	WG	SW846 8270C SIM		2161431	2161201
005	WG	SW846 8270C SIM		2161431	2161201
006	WG	SW846 8270C SIM		2161431	2161201
007	WG	SW846 8270C SIM		2161431	2161201

METHOD BLANK REPORT

GC/MS Semivolatiles

Client Lot #...: D2F050259 **Work Order #...:** E2Q0V1AA **Matrix.....:** WATER
MB Lot-Sample #: D2F100000-431

Prep Date.....: 06/10/02 **Analysis Time..:** 12:14
Analysis Date..: 06/24/02 **Prep Batch #...:** 2161431
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Acenaphthene	ND	1.9	ng/L	SW846 8270C SIM
Acenaphthylene	ND	1.6	ng/L	SW846 8270C SIM
Acridine	ND	6.1	ng/L	SW846 8270C SIM
Anthracene	ND	1.8	ng/L	SW846 8270C SIM
Benzo(a)anthracene	ND	2.5	ng/L	SW846 8270C SIM
Benzo(b)fluoranthene	ND	2.5	ng/L	SW846 8270C SIM
Benzo(k)fluoranthene	ND	2.3	ng/L	SW846 8270C SIM
2,3-Benzofuran	ND	5.1	ng/L	SW846 8270C SIM
Benzo(ghi)perylene	ND	2.8	ng/L	SW846 8270C SIM
Benzo(a)pyrene	ND	2.3	ng/L	SW846 8270C SIM
Benzo(e)pyrene	ND	1.9	ng/L	SW846 8270C SIM
Benzo(b)thiophene	ND	1.8	ng/L	SW846 8270C SIM
Biphenyl	ND	4.3	ng/L	SW846 8270C SIM
Carbazole	ND	1.9	ng/L	SW846 8270C SIM
Chrysene	ND	2.8	ng/L	SW846 8270C SIM
Dibenzo(a,h)anthracene	ND	2.0	ng/L	SW846 8270C SIM
Dibenzofuran	ND	1.9	ng/L	SW846 8270C SIM
Dibenzothiophene	ND	1.4	ng/L	SW846 8270C SIM
2,3-Dihydroindene	ND	5.0	ng/L	SW846 8270C SIM
Fluoranthene	ND	3.1	ng/L	SW846 8270C SIM
Fluorene	ND	1.4	ng/L	SW846 8270C SIM
Indene	ND	1.6	ng/L	SW846 8270C SIM
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L	SW846 8270C SIM
Indole	ND	2.5	ng/L	SW846 8270C SIM
2-Methylnaphthalene	ND	3.9	ng/L	SW846 8270C SIM
1-Methylnaphthalene	ND	2.8	ng/L	SW846 8270C SIM
Naphthalene	ND	6.5	ng/L	SW846 8270C SIM
Perylene	ND	2.5	ng/L	SW846 8270C SIM
Phenanthrene	ND	1.6	ng/L	SW846 8270C SIM
Pyrene	ND	6.9	ng/L	SW846 8270C SIM
Quinoline	ND	6.9	ng/L	SW846 8270C SIM

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	58	(30 - 118)
Fluorene d-10	47	(41 - 162)
Naphthalene-d8	63	(30 - 108)

NOTE(S):

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

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: D2F050259 Work Order #...: E2Q0V1AC Matrix.....: WATER
LCS Lot-Sample#: D2F100000-431
Prep Date.....: 06/10/02 Analysis Date..: 06/24/02
Prep Batch #...: 2161431 Analysis Time..: 12:52
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD
Benzo(e)pyrene	**75**	**(30 - 150)**	**SW846 8270C SIM**
Chrysene	**67**	**(30 - 132)**	**SW846 8270C SIM**
Fluorene	**64**	**(30 - 132)**	**SW846 8270C SIM**
Indene	**60**	**(30 - 150)**	**SW846 8270C SIM**
2-Methylnaphthalene	**60**	**(30 - 150)**	**SW846 8270C SIM**
Naphthalene	**66**	**(30 - 150)**	**SW846 8270C SIM**
Quinoline	**60**	**(30 - 150)**	**SW846 8270C SIM**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	78	(30 - 118)
Fluorene d-10	52	(41 - 162)
Naphthalene-d8	61	(30 - 108)

NOTE(S):

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

Bold print denotes control parameters

LABORATORY CONTROL SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #...: D2F050259 Work Order #...: E2Q0V1AC Matrix.....: WATER
LCS Lot-Sample#: D2F100000-431
Prep Date.....: 06/10/02 Analysis Date..: 06/24/02
Prep Batch #...: 2161431 Analysis Time..: 12:52
Dilution Factor: 1

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD
Benzo(e)pyrene	**75.0**	**56.2**	**ng/L**	**75**	**SW846 8270C S**
Chrysene	**75.0**	**50.4**	**ng/L**	**67**	**SW846 8270C S**
Fluorene	**75.0**	**47.9**	**ng/L**	**64**	**SW846 8270C S**
Indene	**75.0**	**45.3**	**ng/L**	**60**	**SW846 8270C S**
2-Methylnaphthalene	**75.0**	**44.9**	**ng/L**	**60**	**SW846 8270C S**
Naphthalene	**75.0**	**49.6**	**ng/L**	**66**	**SW846 8270C S**
Quinoline	**75.0**	**44.8**	**ng/L**	**60**	**SW846 8270C S**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	78	(30 - 118)
Fluorene d-10	52	(41 - 162)
Naphthalene-d8	61	(30 - 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 #...: D2F050259 Work Order #...: E2HAE1AC-MS Matrix.....: WG
MS Lot-Sample #: D2F050259-001 E2HAE1AD-MSD
Date Sampled...: 06/04/02 Date Received..: 06/05/02
Prep Date.....: 06/10/02 Analysis Date..: 06/24/02
Prep Batch #...: 2161431 Analysis Time..: 19:45
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Benzo(e)pyrene	**0.0 a**	**(30 - 150)**			**SW846 8270C SIM**
	65	**(30 - 150)**	**0.0**	**(0-50)**	**SW846 8270C SIM**
Chrysene	**0.0 a**	**(30 - 132)**			**SW846 8270C SIM**
	38	**(30 - 132)**	**0.0**	**(0-50)**	**SW846 8270C SIM**
Fluorene	**NC,DIL**	**(30 - 132)**			**SW846 8270C SIM**
	NC,DIL	**(30 - 132)**		**(0-50)**	**SW846 8270C SIM**
Indene	**NC,DIL**	**(30 - 150)**			**SW846 8270C SIM**
	NC,DIL	**(30 - 150)**		**(0-50)**	**SW846 8270C SIM**
2-Methylnaphthalene	**NC,DIL**	**(30 - 150)**			**SW846 8270C SIM**
	NC,DIL	**(30 - 150)**		**(0-50)**	**SW846 8270C SIM**
Naphthalene	**NC,DIL**	**(30 - 150)**			**SW846 8270C SIM**
	NC,DIL	**(30 - 150)**		**(0-50)**	**SW846 8270C SIM**
[illegible]noline	**139**	**(30 - 150)**			**SW846 8270C SIM**
	104	**(30 - 150)**	**29**	**(0-50)**	**SW846 8270C SIM**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	48	(30 - 118)
	60	(30 - 118)
Fluorene d-10	51	(41 - 162)
	50	(41 - 162)
Naphthalene-d8	55	(30 - 108)
	47	(30 - 108)

NOTE(S):

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

Bold print denotes control parameters

NC The recovery and/or RPD were not calculated.

DIL The concentration is estimated or not reported due to dilution or the presence of interfering analytes.

a Spiked analyte recovery is outside stated control limits.

MATRIX SPIKE SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #...: D2F050259 Work Order #...: E2HAE1AC-MS Matrix.....: WG
MS Lot-Sample #: D2F050259-001 E2HAE1AD-MSD
Date Sampled...: 06/04/02 Date Received..: 06/05/02
Prep Date.....: 06/10/02 Analysis Date..: 06/24/02
Prep Batch #...: 2161431 Analysis Time..: 19:45
Dilution Factor: 1

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD
Benzo(e)pyrene	20	74.9	16.3	ng/L	0.0 a		SW846 8270C SIM
	20	75.2	69.1	ng/L	65	0.0	SW846 8270C SIM
Chrysene	150	74.9	125	ng/L	0.0 a		SW846 8270C SIM
	150	75.2	176	ng/L	38	0.0	SW846 8270C SIM
Fluorene	3100	74.9		ng/L	NC,DIL		SW846 8270C SIM
	3100	75.2		ng/L	NC,DIL		SW846 8270C SIM
Indene	220	74.9		ng/L	NC,DIL		SW846 8270C SIM
	220	75.2		ng/L	NC,DIL		SW846 8270C SIM
2-Methylnaphthalene	1800	74.9		ng/L	NC,DIL		SW846 8270C SIM
	1800	75.2		ng/L	NC,DIL		SW846 8270C SIM
Naphthalene	6700	74.9		ng/L	NC,DIL		SW846 8270C SIM
	6700	75.2		ng/L	NC,DIL		SW846 8270C SIM
Quinoline	ND	74.9	104	ng/L	139		SW846 8270C SIM
	ND	75.2	78.1	ng/L	104	29	SW846 8270C SIM

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	48	(30 - 118)
	60	(30 - 118)
Fluorene d-10	51	(41 - 162)
	50	(41 - 162)
Naphthalene-d8	55	(30 - 108)
	47	(30 - 108)

NOTE(S):

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

Bold print denotes control parameters

NC The recovery and/or RPD were not calculated.

DIL The concentration is estimated or not reported due to dilution or the presence of interfering analytes.

a Spiked analyte recovery is outside stated control limits.

Chain of Custody Record

STL Denver
4955 Yarrow Street
Arvada, CO 80002

5.7° 0.2°
2.1° 3.5°
3.6° 6/5/02

SEVERN TRENT SERVICES

Severn Trent Laboratories, Inc.

30

STL-4124 (0700) **DEN (0900)**

Client	CITY OF ST. LOUIS PARK
Address	UTILITY DIVISION 3752 WOODDALE AVENUE
City	ST. LOUIS PARK, MN 55416
Project Name and Location (State)	SAME
Contract/Purchase Order/Quote No.	
Project Manager	SCOTT ANDERSON
Telephone Number (Area Code)/Fax Number	924-2557 (952) 924-2570
Site Contact	SAME
Lab Contact	
Carrier/Waybill Number	FED EX 806824 1123
Date	6-4-02
Lab Number	
Chain of Custody Number	017820
Page ____ of ____	

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Air	Aqueous	Sed.	Soil		Unpres.	H2SO4	HNOS	HCl	NaOH	ZnAc/NaOH		PPL PAH 75	Special Instructions/ Conditions of Receipt
W23-060402 C# 0001	6-4-02			X				X						6	X	PPL PAH 75
W23D-060402																
W23MS-060402 C# 0002																
W23MSD-060402																
W23FD-060402 C# 0010																
W23FDD-060402																
SLP10-060402 C# 0011																
W105-060402																
W410-060402 C# 0008	6-4-02			X				X						6	X	PPL PAH 75

Possible Hazard Identification
[X] Non-Hazard [ ] Flammable [ ] Skin Irritant [ ] Poison B [ ] Unknown

Sample Disposal
[ ] Return To Client [X] Disposal By Lab [ ] Archive For ____ Months (A fee may be assessed if samples are retained longer than 3 months)

Turn Around Time Required
[ ] 24 Hours [ ] 48 Hours [ ] 7 Days [ ] 14 Days [ ] 21 Days [ ] Other ____

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished By: MZA	6-4-02	1400	1. Received By: [signature]	6/5/02	0930
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

DISTRIBUTION: WHITE - Stays with the Sample; CANARY - Returned to Client with Report; PINK - Field Copy

V

SEVERN TRENT SERVICES

STL Denver
4955 Yarrow Street
Arvada, CO 80002-4517

Tel: 303 736 0100
Fax: 303 431 7171
www.stl-inc.com

ANALYTICAL REPORT

City of St. Louis Park

Project: Reilly Tar & Chemical Corporation

Lot #: D2I100204

Mr. Scott Anderson

City of St. Louis Park
Utility Division
3752 Wooddale Avenue
St. Louis Park, MN 55416

STL DENVER

Brian Stringer
Project Manager

October 16, 2002

Table Of Contents

Standard Deliverable

Report Contents

- Table of Contents
- Case Narrative
- Executive Summary – Detection Highlights
- Analytical Method Summary
- Method/ Analyst Summary
- Sample Summary
- Analytical Results by Sample
- QC Data Association Summary
- Chain-of-Custody

Total Number of Pages 20

CASE NARRATIVE

STL Lot Number D2I100204

Introduction

STL Denver received five aqueous samples and a MS/MSD on September 10, 2002 for PAH SIM (ppt-5) analysis.

The cooler temperatures were 5.9°C, 5.9°C, 7.1°C, and 7.5°C. The client was contracted and instructed the laboratory to proceed with all analyses. Sample collection times were not listed on the chain of custody or the sample container labels; therefore sample collection times are not logged. All containers were received in otherwise acceptable condition.

Data Quality Assessment

The results included in this report have been reviewed for compliance with STL Denver's Laboratory Quality Manual. The test results shown in this report meet all requirements of NELAC and any exceptions are noted below.

Dilution factors and footnotes have been provided to assist in the interpretation of the results. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at concentrations above the linear calibration curve, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

STL utilizes USEPA approved methods in all analytical work. The samples presented in this report were analyzed for the parameters listed on the analytical methods summary page in accordance with the methods indicated.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Polynuclear Aromatic Hydrocarbons – Method 8270C SIM

A project-specific lower acceptable recovery limit of 30% for all QC samples and surrogates has been designated for analytical work performed under the 2002 Quality Assurance Project Plan (QAPP) for the Reilly Industries, Inc. NPL Site. This lower limit is used for this project, rather than historically generated lower recovery limits. All recoveries in this report are above the 30% minimum threshold with the exceptions noted below.

The recovery of the surrogate Chrysene-d12 was below the lower control limit for samples "SLP13-090902" and "SLP13D-090902". This is an indication of a possible low bias. Re-analysis confirmed the results, as did the results from the MS/MSD performed on sample "SLP13-090902". Since the extraction requires four liters of sample and only six 1-liter amber glass bottles were received per sample, re-extraction was not possible.

The method blank demonstrated a recovery of the surrogate fluorene d-10 below control limits. Since the extraction requires four liters of sample and only six 1-liter amber glass bottles were received per sample, re-extraction was not possible.

The LCS demonstrated a recovery of the analyte Quinoline below control limits. Historically, this compound is a poor performer for this method. Since the extraction requires four liters of sample and only six 1-liter amber glass bottles were received per sample, re-extraction was not possible.

The MS/MSD was performed on the client-specified sample "SLP13-090902" for prep batch 2254422. The MS/MSD percent recoveries were below control limits for benzo(e)pyrene, chrysene, and the surrogate chrysene-d12.

Data Completeness for Polynuclear Aromatic Hydrocarbons – Method 8270C SIM

The results contained in the report were reviewed relative to data acceptance criteria as specified in the 2002 QAPP. Based on the exceptions noted we achieved 93.2% completeness.

DATA COMPLETENESS CALCULATION

LOT D2I100204

ANALYSIS PAHs by SW846-8270C SIM

QC Parameter	Data Planned	Valid Data Obtained
Method Blanks	31	31
MB Surrogates	3	2
LCS	7	6
LCS Surrogates	3	3
MS*	7	5
MS Surrogates*	3	2
MSD*	7	5
MSD Surrogates*	3	2
MS/MSD RPD*	7	3
FB/FBD hits	62	62
Sample/Dup. RPD	31	31
Sample Surrogates	15	13
Internal STD Area*	27	27
TOTAL	**206**	**192**
% Completeness	**93.20**	

*The MS/MSD data provided for this table was performed on client sample "SLP13-090902"

Case Narrative for **D2i010204** (continued)

Sample Duplicate RPD					
LOT D2I100204					
Sample: SLP13-090902		DUP: SLP13D-090902			
Compound	Result	Compound	Result	RPD	RPD>50%
Acenaphthene	ND	Acenaphthene	ND	0.0	
Acenaphthylene	ND	Acenaphthylene	ND	0.0	
Acridine	ND	Acridine	ND	0.0	
Anthracene	ND	Anthracene	ND	0.0	
Benzo(a)anthracene	ND	Benzo(a)anthracene	ND	0.0	
Benzo(b)fluoranthene	ND	Benzo(b)fluoranthene	ND	0.0	
Benzo(k)fluoranthene	ND	Benzo(k)fluoranthene	ND	0.0	
2,3-Benzofuran	ND	2,3-Benzofuran	ND	0.0	
Benzo(ghi)perylene	ND	Benzo(ghi)perylene	ND	0.0	
Benzo(a)pyrene	ND	Benzo(a)pyrene	ND	0.0	
Benzo(e)pyrene	ND	Benzo(e)pyrene	ND	0.0	
Benzo(b)thiophene	ND	Benzo(b)thiophene	ND	0.0	
Biphenyl	ND	Biphenyl	ND	0.0	
Carbazole	ND	Carbazole	ND	0.0	
Chrysene	ND	Chrysene	ND	0.0	
Dibenz(a,h)anthracene	ND	Dibenz(a,h)anthracene	ND	0.0	
Dibenzofuran	ND	Dibenzofuran	ND	0.0	
Dibenzothiophene	ND	Dibenzothiophene	ND	0.0	
2,3-Dihydroindene	ND	2,3-Dihydroindene	ND	0.0	
Fluoranthene	ND	Fluoranthene	ND	0.0	
Fluorene	ND	Fluorene	ND	0.0	
Indene	ND	Indene	ND	0.0	
Indeno(1,2,3-cd)pyrene	ND	Indeno(1,2,3-cd)pyrene	ND	0.0	
Indole	ND	Indole	ND	0.0	
2-Methylnaphthalene	ND	2-Methylnaphthalene	ND	0.0	
1-Methylnaphthalene	ND	1-Methylnaphthalene	ND	0.0	
Naphthalene	ND	Naphthalene	ND	0.0	
Perylene	ND	Perylene	ND	0.0	
Phenanthrene	ND	Phenanthrene	ND	0.0	
Pyrene	ND	Pyrene	ND	0.0	
Quinoline	ND	Quinoline	ND	0.0	

RPD = Relative Percent Difference
ND = Compound not detected in the sample
OK = RPD acceptable
p = RPD is outside of control limits
*NC = RPD not calculated, one positive result and one ND. Considered acceptable if the positive result is less than 4x the RL.

EXECUTIVE SUMMARY - Detection Highlights

D2I100204

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
SLP12-090902 09/09/02 005				
Benzo(b)fluoranthene	1.5 J	4.7	ng/L	SW846 8270C SIM
Benzo(ghi)perylene	1.0 J	6.2	ng/L	SW846 8270C SIM
Benzo(e)pyrene	1.0 J	4.3	ng/L	SW846 8270C SIM
Fluoranthene	3.6 J	4.6	ng/L	SW846 8270C SIM
Pyrene	2.7 J	4.2	ng/L	SW846 8270C SIM

METHODS SUMMARY

D2I100204

PARAMETER	ANALYTICAL METHOD	PREPARATION METHOD
Base/Neutrals and Acids	SW846 8270C SIM	SW846 3520C

References:

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

METHOD / ANALYST SUMMARY

D2I100204

ANALYTICAL METHOD	ANALYST	ANALYST ID
SW846 8270C SIM	Tim O'Donnell	000443

References:

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

SAMPLE SUMMARY

D2I100204

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
E7086	001	SLP13-090902	09/09/02	
E709T	002	SLP13D-090902	09/09/02	
E709W	003	SLP13FB-090902	09/09/02	
E7091	004	SLP13FBD-090902	09/09/02	
E7092	005	SLP12-090902	09/09/02	

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: SLP13-090902

GC/MS Semivolatiles

Lot-Sample #...: D2I100204-001 Work Order #...: E70861AA Matrix.....: WG
Date Sampled...: 09/09/02 Date Received..: 09/10/02
Prep Date.....: 09/11/02 Analysis Date..: 09/26/02
Prep Batch #...: 2254422 Analysis Time..: 18:34
Dilution Factor: 1

Method.....: SW846 8270C SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	5.7	ng/L
Acenaphthylene	ND	4.8	ng/L
Acridine	ND	6.2	ng/L
Anthracene	ND	4.2	ng/L
Benzo(a)anthracene	ND	4.3	ng/L
Benzo(b)fluoranthene	ND	4.7	ng/L
Benzo(k)fluoranthene	ND	4.1	ng/L
2,3-Benzofuran	ND	5.4	ng/L
Benzo(ghi)perylene	ND	6.2	ng/L
Benzo(a)pyrene	ND	2.5	ng/L
Benzo(e)pyrene	ND	4.3	ng/L
Benzo(b)thiophene	ND	5.2	ng/L
Biphenyl	ND	5.6	ng/L
Carbazole	ND	3.8	ng/L
Chrysene	ND	5.6	ng/L
Dibenzo(a,h)anthracene	ND	5.9	ng/L
Dibenzofuran	ND	5.7	ng/L
Dibenzothiophene	ND	4.1	ng/L
2,3-Dihydroindene	ND	5.0	ng/L
Fluoranthene	ND	4.6	ng/L
Fluorene	ND	4.1	ng/L
Indene	ND	4.7	ng/L
Indeno(1,2,3-cd)pyrene	ND	5.4	ng/L
Indole	ND	4.7	ng/L
2-Methylnaphthalene	ND	5.9	ng/L
1-Methylnaphthalene	ND	5.6	ng/L
Naphthalene	ND	8.6	ng/L
Perylene	ND	3.3	ng/L
Phenanthrene	ND	6.3	ng/L
Pyrene	ND	4.2	ng/L
Quinoline	ND	9.0	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	29 *	(30 - 118)
Fluorene d-10	44	(41 - 162)
Naphthalene-d8	59	(30 - 108)

NOTE(S):

* Surrogate recovery is outside stated control limits.

CITY OF ST. LOUIS PARK

Client Sample ID: SLP13D-090902

GC/MS Semivolatiles

Lot-Sample #...: D2I100204-002 **Work Order #...:** E709T1AA **Matrix.....:** WG
Date Sampled...: 09/09/02 **Date Received..:** 09/10/02
Prep Date.....: 09/11/02 **Analysis Date..:** 09/26/02
Prep Batch #...: 2254422 **Analysis Time..:** 20:28
Dilution Factor: 1

Method.....: SW846 8270C SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	5.7	ng/L
Acenaphthylene	ND	4.8	ng/L
Acridine	ND	6.2	ng/L
Anthracene	ND	4.2	ng/L
Benzo(a)anthracene	ND	4.3	ng/L
Benzo(b)fluoranthene	ND	4.7	ng/L
Benzo(k)fluoranthene	ND	4.1	ng/L
2,3-Benzofuran	ND	5.4	ng/L
Benzo(ghi)perylene	ND	6.2	ng/L
Benzo(a)pyrene	ND	2.5	ng/L
Benzo(e)pyrene	ND	4.3	ng/L
Benzo(b)thiophene	ND	5.2	ng/L
Biphenyl	ND	5.6	ng/L
Carbazole	ND	3.8	ng/L
Chrysene	ND	5.6	ng/L
Dibenzo(a,h)anthracene	ND	5.9	ng/L
Dibenzofuran	ND	5.7	ng/L
Dibenzothiophene	ND	4.1	ng/L
2,3-Dihydroindene	ND	5.0	ng/L
Fluoranthene	ND	4.6	ng/L
Fluorene	ND	4.1	ng/L
Indene	ND	4.7	ng/L
Indeno(1,2,3-cd)pyrene	ND	5.4	ng/L
Indole	ND	4.7	ng/L
2-Methylnaphthalene	ND	5.9	ng/L
1-Methylnaphthalene	ND	5.6	ng/L
Naphthalene	ND	8.6	ng/L
Perylene	ND	3.3	ng/L
Phenanthrene	ND	6.3	ng/L
Pyrene	ND	4.2	ng/L
Quinoline	ND	9.0	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	22 *	(30 - 118)
Fluorene d-10	51	(41 - 162)
Naphthalene-d8	68	(30 - 108)

NOTE(S):

* Surrogate recovery is outside stated control limits.

CITY OF ST. LOUIS PARK

Client Sample ID: SLP13FB-090902

GC/MS Semivolatiles

Lot-Sample #...: D2I100204-003 **Work Order #...:** E709W1AA **Matrix.....:** WG
Date Sampled...: 09/09/02 **Date Received..:** 09/10/02
Prep Date.....: 09/11/02 **Analysis Date..:** 09/26/02
Prep Batch #...: 2254422 **Analysis Time..:** 21:06
Dilution Factor: 1

Method.....: SW846 8270C SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	5.7	ng/L
Acenaphthylene	ND	4.8	ng/L
Acridine	ND	6.2	ng/L
Anthracene	ND	4.2	ng/L
Benzo(a)anthracene	ND	4.3	ng/L
Benzo(b)fluoranthene	ND	4.7	ng/L
Benzo(k)fluoranthene	ND	4.1	ng/L
2,3-Benzofuran	ND	5.4	ng/L
Benzo(ghi)perylene	ND	6.2	ng/L
Benzo(a)pyrene	ND	2.5	ng/L
Benzo(e)pyrene	ND	4.3	ng/L
Benzo(b)thiophene	ND	5.2	ng/L
Biphenyl	ND	5.6	ng/L
Carbazole	ND	3.8	ng/L
Chrysene	ND	5.6	ng/L
Dibenzo(a,h)anthracene	ND	5.9	ng/L
Dibenzofuran	ND	5.7	ng/L
Dibenzothiophene	ND	4.1	ng/L
2,3-Dihydroindene	ND	5.0	ng/L
Fluoranthene	ND	4.6	ng/L
Fluorene	ND	4.1	ng/L
Indene	ND	4.7	ng/L
Indeno(1,2,3-cd)pyrene	ND	5.4	ng/L
Indole	ND	4.7	ng/L
2-Methylnaphthalene	ND	5.9	ng/L
1-Methylnaphthalene	ND	5.6	ng/L
Naphthalene	ND	8.6	ng/L
Perylene	ND	3.3	ng/L
Phenanthrene	ND	6.3	ng/L
Pyrene	ND	4.2	ng/L
Quinoline	ND	9.0	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	87	(30 - 118)
Fluorene d-10	61	(41 - 162)
Naphthalene-d8	86	(30 - 108)

CITY OF ST. LOUIS PARK

Client Sample ID: SLP13FBD-090902

GC/MS Semivolatiles

Lot-Sample #...: D2I100204-004 **Work Order #...:** E70911AA **Matrix.....:** WG
Date Sampled...: 09/09/02 **Date Received..:** 09/10/02
Prep Date.....: 09/11/02 **Analysis Date..:** 09/26/02
Prep Batch #...: 2254422 **Analysis Time..:** 21:43
Dilution Factor: 1

Method.....: SW846 8270C SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	5.7	ng/L
Acenaphthylene	ND	4.8	ng/L
Acridine	ND	6.2	ng/L
Anthracene	ND	4.2	ng/L
Benzo(a)anthracene	ND	4.3	ng/L
Benzo(b)fluoranthene	ND	4.7	ng/L
Benzo(k)fluoranthene	ND	4.1	ng/L
2,3-Benzofuran	ND	5.4	ng/L
Benzo(ghi)perylene	ND	6.2	ng/L
Benzo(a)pyrene	ND	2.5	ng/L
Benzo(e)pyrene	ND	4.3	ng/L
Benzo(b)thiophene	ND	5.2	ng/L
[illegible]phenyl	ND	5.6	ng/L
Carbazole	ND	3.8	ng/L
Chrysene	ND	5.6	ng/L
Dibenzo(a,h)anthracene	ND	5.9	ng/L
Dibenzofuran	ND	5.7	ng/L
Dibenzothiophene	ND	4.1	ng/L
2,3-Dihydroindene	ND	5.0	ng/L
Fluoranthene	ND	4.6	ng/L
Fluorene	ND	4.1	ng/L
Indene	ND	4.7	ng/L
Indeno(1,2,3-cd)pyrene	ND	5.4	ng/L
Indole	ND	4.7	ng/L
2-Methylnaphthalene	ND	5.9	ng/L
1-Methylnaphthalene	ND	5.6	ng/L
Naphthalene	ND	8.6	ng/L
Perylene	ND	3.3	ng/L
Phenanthrene	ND	6.3	ng/L
Pyrene	ND	4.2	ng/L
Quinoline	ND	9.0	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	107	(30 - 118)
Fluorene d-10	69	(41 - 162)
Naphthalene-d8	98	(30 - 108)

CITY OF ST. LOUIS PARK

Client Sample ID: SLP12-090902

GC/MS Semivolatiles

Lot-Sample #...: D2I100204-005 **Work Order #...:** E70921AA **Matrix.....:** WG
Date Sampled...: 09/09/02 **Date Received..:** 09/10/02
Prep Date.....: 09/11/02 **Analysis Date..:** 09/26/02
Prep Batch #...: 2254422 **Analysis Time..:** 22:21
Dilution Factor: 1

Method.....: SW846 8270C SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	5.7	ng/L
Acenaphthylene	ND	4.8	ng/L
Acridine	ND	6.2	ng/L
Anthracene	ND	4.2	ng/L
Benzo(a)anthracene	ND	4.3	ng/L
Benzo(b)fluoranthene	**1.5 J**	**4.7**	**ng/L**
Benzo(k)fluoranthene	ND	4.1	ng/L
2,3-Benzofuran	ND	5.4	ng/L
Benzo(ghi)perylene	**1.0 J**	**6.2**	**ng/L**
Benzo(a)pyrene	ND	2.5	ng/L
Benzo(e)pyrene	**1.0 J**	**4.3**	**ng/L**
Benzo(b)thiophene	ND	5.2	ng/L
Biphenyl	ND	5.6	ng/L
Carbazole	ND	3.8	ng/L
Chrysene	ND	5.6	ng/L
Dibenzo(a,h)anthracene	ND	5.9	ng/L
Dibenzofuran	ND	5.7	ng/L
Dibenzothiophene	ND	4.1	ng/L
2,3-Dihydroindene	ND	5.0	ng/L
Fluoranthene	**3.6 J**	**4.6**	**ng/L**
Fluorene	ND	4.1	ng/L
Indene	ND	4.7	ng/L
Indeno(1,2,3-cd)pyrene	ND	5.4	ng/L
Indole	ND	4.7	ng/L
2-Methylnaphthalene	ND	5.9	ng/L
1-Methylnaphthalene	ND	5.6	ng/L
Naphthalene	ND	8.6	ng/L
Perylene	ND	3.3	ng/L
Phenanthrene	ND	6.3	ng/L
Pyrene	**2.7 J**	**4.2**	**ng/L**
Quinoline	ND	9.0	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	42	(30 - 118)
Fluorene d-10	61	(41 - 162)
Naphthalene-d8	87	(30 - 108)

NOTE(S):

J Estimated result. Result is less than RL.

QC DATA ASSOCIATION SUMMARY

D2I100204

Sample Preparation and Analysis Control Numbers

SAMPLE#	MATRIX	ANALYTICAL METHOD	LEACH BATCH #	PREP BATCH #	MS RUN#
001	WG	SW846 8270C SIM		2254422	2254199
002	WG	SW846 8270C SIM		2254422	2254199
003	WG	SW846 8270C SIM		2254422	2254199
004	WG	SW846 8270C SIM		2254422	2254199
005	WG	SW846 8270C SIM		2254422	2254199

METHOD BLANK REPORT

GC/MS Semivolatiles

Client Lot #...: D2I100204 **Work Order #...:** E73W91AA **Matrix.....:** WATER
MB Lot-Sample #: D2I110000-422

Prep Date.....: 09/11/02 **Analysis Time..:** 17:20
Analysis Date..: 09/26/02 **Prep Batch #...:** 2254422
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Acenaphthene	ND	5.7	ng/L	SW846 8270C SIM
Acenaphthylene	ND	4.8	ng/L	SW846 8270C SIM
Acridine	ND	6.2	ng/L	SW846 8270C SIM
Anthracene	ND	4.2	ng/L	SW846 8270C SIM
Benzo(a)anthracene	ND	4.3	ng/L	SW846 8270C SIM
Benzo(b)fluoranthene	ND	4.7	ng/L	SW846 8270C SIM
Benzo(k)fluoranthene	ND	4.1	ng/L	SW846 8270C SIM
2,3-Benzofuran	ND	5.4	ng/L	SW846 8270C SIM
Benzo(ghi)perylene	ND	6.2	ng/L	SW846 8270C SIM
Benzo(a)pyrene	ND	2.5	ng/L	SW846 8270C SIM
Benzo(e)pyrene	ND	4.3	ng/L	SW846 8270C SIM
Benzo(b)thiophene	ND	5.2	ng/L	SW846 8270C SIM
Biphenyl	ND	5.6	ng/L	SW846 8270C SIM
Carbazole	ND	3.8	ng/L	SW846 8270C SIM
Chrysene	ND	5.6	ng/L	SW846 8270C SIM
Dibenzo(a,h)anthracene	ND	5.9	ng/L	SW846 8270C SIM
Dibenzofuran	ND	5.7	ng/L	SW846 8270C SIM
Dibenzothiophene	ND	4.1	ng/L	SW846 8270C SIM
2,3-Dihydroindene	ND	5.0	ng/L	SW846 8270C SIM
Fluoranthene	ND	4.6	ng/L	SW846 8270C SIM
Fluorene	ND	4.1	ng/L	SW846 8270C SIM
Indene	ND	4.7	ng/L	SW846 8270C SIM
Indeno(1,2,3-cd)pyrene	ND	5.4	ng/L	SW846 8270C SIM
Indole	ND	4.7	ng/L	SW846 8270C SIM
2-Methylnaphthalene	ND	5.9	ng/L	SW846 8270C SIM
1-Methylnaphthalene	ND	5.6	ng/L	SW846 8270C SIM
Naphthalene	ND	8.6	ng/L	SW846 8270C SIM
Perylene	ND	3.3	ng/L	SW846 8270C SIM
Phenanthrene	ND	6.3	ng/L	SW846 8270C SIM
Pyrene	ND	4.2	ng/L	SW846 8270C SIM
Quinoline	ND	9.0	ng/L	SW846 8270C SIM

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	45	(30 - 118)
Fluorene d-10	33 *	(41 - 162)
Naphthalene-d8	43	(30 - 108)

NOTE(S):

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

* Surrogate recovery is outside stated control limits.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: D2I100204 Work Order #...: E73W91AC Matrix.....: WATER
LCS Lot-Sample#: D2I110000-422
Prep Date.....: 09/11/02 Analysis Date..: 09/26/02
Prep Batch #...: 2254422 Analysis Time..: 17:57
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD
Benzo(e)pyrene	**44**	**(30 - 150)**	**SW846 8270C SIM**
Chrysene	**43**	**(30 - 132)**	**SW846 8270C SIM**
Fluorene	**37**	**(30 - 132)**	**SW846 8270C SIM**
Indene	**42**	**(30 - 150)**	**SW846 8270C SIM**
2-Methylnaphthalene	**43**	**(30 - 150)**	**SW846 8270C SIM**
Naphthalene	**50**	**(30 - 150)**	**SW846 8270C SIM**
Quinoline	**26 a**	**(30 - 150)**	**SW846 8270C SIM**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	56	(30 - 118)
Fluorene d-10	42	(41 - 162)
Naphthalene-d8	58	(30 - 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.

LABORATORY CONTROL SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #...: D2I100204 Work Order #...: E73W91AC Matrix.....: WATER
LCS Lot-Sample#: D2I110000-422
Prep Date.....: 09/11/02 Analysis Date..: 09/26/02
Prep Batch #...: 2254422 Analysis Time..: 17:57
Dilution Factor: 1

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD
Benzo(e)pyrene	**10.0**	**4.37**	**ng/L**	**44**	**SW846 8270C S**
Chrysene	**10.0**	**4.29**	**ng/L**	**43**	**SW846 8270C S**
Fluorene	**10.0**	**3.75**	**ng/L**	**37**	**SW846 8270C S**
Indene	**10.0**	**4.16**	**ng/L**	**42**	**SW846 8270C S**
2-Methylnaphthalene	**10.0**	**4.27**	**ng/L**	**43**	**SW846 8270C S**
Naphthalene	**10.0**		**ng/L**	**50**	**SW846 8270C S**
Quinoline	**10.0**	**a**	**ng/L**	**26**	**SW846 8270C S**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	56	(30 - 118)
Fluorene d-10	42	(41 - 162)
Naphthalene-d8	58	(30 - 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.

MATRIX SPIKE SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: D2I100204 Work Order #...: E70861AC-MS Matrix.....: WG
MS Lot-Sample #: D2I100204-001 E70861AD-MSD
Date Sampled...: 09/09/02 Date Received..: 09/10/02
Prep Date.....: 09/11/02 Analysis Date..: 09/26/02
Prep Batch #...: 2254422 Analysis Time..: 19:12
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Benzo(e)pyrene	**0.0 a**	**(30 - 150)**			**SW846 8270C SIM**
	0.0 a	**(30 - 150)**	**0.0**	**(0-50)**	**SW846 8270C SIM**
Chrysene	**17 a**	**(30 - 132)**			**SW846 8270C SIM**
	27 a	**(30 - 132)**	**48**	**(0-50)**	**SW846 8270C SIM**
Fluorene	**57**	**(30 - 132)**			**SW846 8270C SIM**
	49	**(30 - 132)**	**12**	**(0-50)**	**SW846 8270C SIM**
Indene	**59**	**(30 - 150)**			**SW846 8270C SIM**
	46	**(30 - 150)**	**23**	**(0-50)**	**SW846 8270C SIM**
2-Methylnaphthalene	**61**	**(30 - 150)**			**SW846 8270C SIM**
	50	**(30 - 150)**	**18**	**(0-50)**	**SW846 8270C SIM**
Naphthalene	**73**	**(30 - 150)**			**SW846 8270C SIM**
	59	**(30 - 150)**	**19**	**(0-50)**	**SW846 8270C SIM**
[illegible]noline	**54**	**(30 - 150)**			**SW846 8270C SIM**
	42	**(30 - 150)**	**23**	**(0-50)**	**SW846 8270C SIM**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	17 *	(30 - 118)
	28 *	(30 - 118)
Fluorene d-10	47	(41 - 162)
	41	(41 - 162)
Naphthalene-d8	65	(30 - 108)
	51	(30 - 108)

NOTE(S):

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

Bold print denotes control parameters

* Surrogate recovery is outside stated control limits.

a Spiked analyte recovery is outside stated control limits.

MATRIX SPIKE SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #...: D2I100204 Work Order #...: E70861AC-MS Matrix.....: WG
MS Lot-Sample #: D2I100204-001 E70861AD-MSD
Date Sampled...: 09/09/02 Date Received..: 09/10/02
Prep Date.....: 09/11/02 Analysis Date..: 09/26/02
Prep Batch #...: 2254422 Analysis Time..: 19:12
Dilution Factor: 1

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD
Benzo(e)pyrene	ND	10.0	0.0	ng/L	0.0 a		SW846 8270C SIM
	ND	10.2	0.0	ng/L	0.0 a	0.0	SW846 8270C SIM
Chrysene	ND	10.0		ng/L	17 a		SW846 8270C SIM
	ND	10.2	2.75	ng/L	27 a	48	SW846 8270C SIM
Fluorene	ND	10.0	5.66	ng/L	57		SW846 8270C SIM
	ND	10.2	5.02	ng/L	49	12	SW846 8270C SIM
Indene	ND	10.0	5.94	ng/L	59		SW846 8270C SIM
	ND	10.2	4.70	ng/L	46	23	SW846 8270C SIM
2-Methylnaphthalene	ND	10.0	6.06	ng/L	61		SW846 8270C SIM
	ND	10.2	5.08	ng/L	50	18	SW846 8270C SIM
Naphthalene	ND	10.0	7.29	ng/L	73		SW846 8270C SIM
	ND	10.2	6.00	ng/L	59	19	SW846 8270C SIM
Quinoline	ND	10.0	5.37	ng/L	54		SW846 8270C SIM
	ND	10.2	4.28	ng/L	42	23	SW846 8270C SIM

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	17 *	(30 - 118)
	28 *	(30 - 118)
Fluorene d-10	47	(41 - 162)
	41	(41 - 162)
Naphthalene-d8	65	(30 - 108)
	51	(30 - 108)

NOTE(S):

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

Bold print denotes control parameters

* Surrogate recovery is outside stated control limits.

a Spiked analyte recovery is outside stated control limits.

5.9° 7.5°C
5.9° QB 9/10
7.1°

Chain of Custody Record

SEVERN TRENT SERVICES

Severn Trent Laboratories, Inc.

STL-4124 (0901)

Client	CITY OF ST. LOUIS PARK
Address	UTILITY DIVISION
City	3752 WOODDALE AVENUE ST. LOUIS PARK, MN 55416
Project Name and Location (State)	SAME
Contract/Purchase Order/Quote No.	
Project Manager	SCOTT ANDERSON
Telephone Number (Area Code)/Fax Number	924-2557 (952) 924-2570
Site Contact	SAME
Lab Contact	
Carrier/Waybill Number	FED EX 8068241145
Date	9-9-02
Chain of Custody Number	150719
Lab Number	
Page ____ of ____	

Analysis (Attach list if more space is needed): PPL PAHS

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Air	Aqueous	Sed.	Soil		Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH		PPL PAHS	Special Instructions/ Conditions of Receipt
SLP13-090902 C# 0005	9-9-02			X				X						6	X	PPL 5
SLP13D-090902																
SLP13MS-090902 C# 0009																
SLP13MSD-090902																
SLP13FB-090902 C# 0011																
SLP13FBD-090902																
SLP12-090902 C# 0015	9-9-02			X				X						6	X	PPL 5

Possible Hazard Identification: [X] Non-Hazard [ ] Flammable [ ] Skin Irritant [ ] Poison B [ ] Unknown

Sample Disposal: [ ] Return To Client [X] Disposal By Lab [ ] Archive For ____ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required: [ ] 24 Hours [ ] 48 Hours [ ] 7 Days [ ] 14 Days [ ] 21 Days [ ] Other ____

QC Requirements (Specify)

1. Relinquished By: MAR	Date: 9-9-02	Time: 1400	1. Received By: Aaron Bindl	Date: 9/10/02	Time: 0800
2. Relinquished By	Date	Time	2. Received By	Date	Time
3. Relinquished By	Date	Time	3. Received By	Date	Time

Comments

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

20

W

SEVERN TRENT SERVICES

STL Denver
4955 Yarrow Street
Arvada, CO 80002-4517

Tel: 303 736 0100
Fax: 303 431 7171
www.stl-inc.com

ANALYTICAL REPORT

City of St. Louis Park

Project: Reilly Tar & Chemical Corporation

Lot #: D2I110285

Mr. Scott Anderson

City of St. Louis Park
Utility Division
3752 Wooddale Avenue
St. Louis Park, MN 55416

STL DENVER

Brian Stringer
Project Manager

October 16, 2002

W

Table Of Contents

Standard Deliverable

Report Contents

- Table of Contents
- Case Narrative
- Executive Summary – Detection Highlights
- Analytical Method Summary
- Method/ Analyst Summary
- Sample Summary
- Analytical Results by Sample
- QC Data Association Summary
- Chain-of-Custody

Total Number of Pages 20

CASE NARRATIVE

STL Lot Number D2I110285

Introduction

STL Denver received five aqueous samples and a MS/MSD on September 11, 2002 for PAH SIM (ppt-5) analysis.

The cooler temperatures were 1.5°C, 5.8°C, 3.0°C, and 5.5°C. All containers were received in acceptable condition.

Data Quality Assessment

The results included in this report have been reviewed for compliance with STL Denver's Laboratory Quality Manual. The test results shown in this report meet all requirements of NELAC and any exceptions are noted below.

Dilution factors and footnotes have been provided to assist in the interpretation of the results. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at concentrations above the linear calibration curve, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

STL utilizes USEPA approved methods in all analytical work. The samples presented in this report were analyzed for the parameters listed on the analytical methods summary page in accordance with the methods indicated.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Polynuclear Aromatic Hydrocarbons – Method 8270C SIM

A project-specific lower acceptable recovery limit of 30% for all QC samples and surrogates has been designated for analytical work performed under the 2002 Quality Assurance Project Plan (QAPP) for the Reilly Industries, Inc. NPL Site. This lower limit is used for this project, rather than historically generated lower recovery limits. All recoveries in this report are above the 30% minimum threshold with the exceptions noted below.

The recovery of the surrogate Chrysene-d12 was below the lower control limit for sample "SLP3D-091002". This is an indication of a possible low bias. Re-analysis confirmed the results. Since the extraction requires four liters of sample and only six 1-liter amber glass bottles were received per sample, re-extraction was not possible.

The LCS demonstrated a recovery of the analyte Quinoline below control limits. Historically, this compound is a poor performer for this method. Since the extraction requires four liters of sample and only six 1-liter amber glass bottles were received per sample, re-extraction was not possible.

The MS/MSD was performed on the client-specified sample "SLP3-091002" for prep batch 2259399. The MS/MSD percent recoveries were below control limits for benzo(e)pyrene. The MS demonstrated an additional recovery below control limits for chrysene. The RPD value for benzo(e)pyrene was above control limits.

Data Completeness for Polynuclear Aromatic Hydrocarbons – Method 8270C SIM

The results contained in the report were reviewed relative to data acceptance criteria as specified in the 2002 QAPP. Based on the exceptions noted we achieved 96.6% completeness.

DATA COMPLETENESS CALCULATION
LOT D2I110285
ANALYSIS PAHs by SW846-8270Sim

QC Parameter	Data Planned	Valid Data Obtained
Method Blank	31	31
MB Surrogates	3	3
LCS	7	6
LCS Surrogates	3	3
FB/FBD	62	61
MS	7	5
MS Surrogates	3	3
MSD	7	6
MSD Surrogates	3	3
MS/MSD RPD	7	6
Sample/Dup. RPD	31	31
Sample Surrogates	15	14
Internal STD Area	27	27
TOTAL	**206**	**199**
% Completeness	**96.60%**	

*The MS/MSD data provided for this table was performed on client sample "SLP3-091002"

Case Narrative for D2I110285 (continued)

Sample Duplicate RPD					
LOT D2I110285					
Sample: SLP3-091002		DUP: SLP3D-091002			
Compound	Result	Compound	Result	RPD	RPD>50%
Acenaphthene	ND	Acenaphthene	ND	0.0	
Acenaphthylene	ND	Acenaphthylene	ND	0.0	
Acridine	ND	Acridine	ND	0.0	
Anthracene	ND	Anthracene	ND	0.0	
Benzo(a)anthracene	ND	Benzo(a)anthracene	ND	0.0	
Benzo(b)fluoranthene	ND	Benzo(b)fluoranthene	ND	0.0	
Benzo(k)fluoranthene	ND	Benzo(k)fluoranthene	ND	0.0	
2,3-Benzofuran	ND	2,3-Benzofuran	ND	0.0	
Benzo(ghi)perylene	ND	Benzo(ghi)perylene	ND	0.0	
Benzo(a)pyrene	ND	Benzo(a)pyrene	ND	0.0	
Benzo(e)pyrene	ND	Benzo(e)pyrene	ND	0.0	
Benzo(b)thiophene	ND	Benzo(b)thiophene	ND	0.0	
Biphenyl	ND	Biphenyl	ND	0.0	
Carbazole	ND	Carbazole	ND	0.0	
Chrysene	ND	Chrysene	ND	0.0	
Dibenz(a,h)anthracene	ND	Dibenz(a,h)anthracene	ND	0.0	
Dibenzofuran	ND	Dibenzofuran	ND	0.0	
Dibenzothiophene	ND	Dibenzothiophene	ND	0.0	
2,3-Dihydroindene	ND	2,3-Dihydroindene	ND	0.0	
Fluoranthene	ND	Fluoranthene	ND	0.0	
Fluorene	ND	Fluorene	ND	0.0	
Indene	ND	Indene	ND	0.0	
Indeno(1,2,3-cd)pyrene	ND	Indeno(1,2,3-cd)pyrene	ND	0.0	
Indole	ND	Indole	ND	0.0	
2-Methylnaphthalene	ND	2-Methylnaphthalene	ND	0.0	
1-Methylnaphthalene	ND	1-Methylnaphthalene	ND	0.0	
Naphthalene	ND	Naphthalene	ND	0.0	
Perylene	ND	Perylene	ND	0.0	
Phenanthrene	ND	Phenanthrene	ND	0.0	
Pyrene	ND	Pyrene	ND	0.0	
Quinoline	ND	Quinoline	ND	0.0	

RPD = Relative Percent Difference
ND = Compound not detected in the sample
OK = RPD acceptable
p = RPD is outside of control limits
*NC = RPD not calculated, one positive result and one ND. Considered acceptable if the positive result is less than 4x the RL.

EXECUTIVE SUMMARY - Detection Highlights

D2I110285

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
SLP3FBD-091002 09/10/02 004				
Indole	7.4	4.7	ng/L	SW846 8270C SIM
SLP6-091002 09/10/02 005				
Acenaphthene	97	5.7	ng/L	SW846 8270C SIM
Acenaphthylene	22	4.8	ng/L	SW846 8270C SIM
Acridine	4.3 J	6.2	ng/L	SW846 8270C SIM
Benzo(b)thiophene	3.2 J	5.2	ng/L	SW846 8270C SIM
Dibenzothiophene	2.2 J	4.1	ng/L	SW846 8270C SIM
2,3-Dihydroindene	76	5.0	ng/L	SW846 8270C SIM
Fluorene	11	4.1	ng/L	SW846 8270C SIM
Indene	3.4 J	4.7	ng/L	SW846 8270C SIM
Indole	12	4.7	ng/L	SW846 8270C SIM

METHODS SUMMARY

D2I110285

PARAMETER	ANALYTICAL METHOD	PREPARATION METHOD
Base/Neutrals and Acids	SW846 8270C SIM	SW846 3520C

References:

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

METHOD / ANALYST SUMMARY

D2I110285

ANALYTICAL METHOD	ANALYST	ANALYST ID
SW846 8270C SIM	Tim O'Donnell	000443

References:

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

SAMPLE SUMMARY

D2I110285

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
E73RR	001	SLP3-091002	09/10/02	
E73R4	002	SLP3D-091002	09/10/02	
E73R9	003	SLP3FB-091002	09/10/02	
E73TA	004	SLP3FBD-091002	09/10/02	
E73TD	005	SLP6-091002	09/10/02	

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: SLP3-091002

GC/MS Semivolatiles

Lot-Sample #...: D2I110285-001 **Work Order #...:** E73RR1AA **Matrix.....:** WG
Date Sampled...: 09/10/02 **Date Received..:** 09/11/02
Prep Date.....: 09/16/02 **Analysis Date..:** 10/03/02
Prep Batch #...: 2259399 **Analysis Time..:** 17:17
Dilution Factor: 1

Method.....: SW846 8270C SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	5.7	ng/L
Acenaphthylene	ND	4.8	ng/L
Acridine	ND	6.2	ng/L
Anthracene	ND	4.2	ng/L
Benzo(a)anthracene	ND	4.3	ng/L
Benzo(b)fluoranthene	ND	4.7	ng/L
Benzo(k)fluoranthene	ND	4.1	ng/L
2,3-Benzofuran	ND	5.4	ng/L
Benzo(ghi)perylene	ND	6.2	ng/L
Benzo(a)pyrene	ND	2.5	ng/L
Benzo(e)pyrene	ND	4.3	ng/L
Benzo(b)thiophene	ND	5.2	ng/L
Biphenyl	ND	5.6	ng/L
Carbazole	ND	3.8	ng/L
Chrysene	ND	5.6	ng/L
Dibenzo(a,h)anthracene	ND	5.9	ng/L
Dibenzofuran	ND	5.7	ng/L
Dibenzothiophene	ND	4.1	ng/L
2,3-Dihydroindene	ND	5.0	ng/L
Fluoranthene	ND	4.6	ng/L
Fluorene	ND	4.1	ng/L
Indene	ND	4.7	ng/L
Indeno(1,2,3-cd)pyrene	ND	5.4	ng/L
Indole	ND	4.7	ng/L
2-Methylnaphthalene	ND	5.9	ng/L
1-Methylnaphthalene	ND	5.6	ng/L
Naphthalene	ND	8.6	ng/L
Perylene	ND	3.3	ng/L
Phenanthrene	ND	6.3	ng/L
Pyrene	ND	4.2	ng/L
Quinoline	ND	9.0	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	55	(30 - 118)
Fluorene d-10	58	(41 - 162)
Naphthalene-d8	57	(30 - 108)

CITY OF ST. LOUIS PARK

Client Sample ID: SLP3D-091002

GC/MS Semivolatiles

Lot-Sample #...: D2I110285-002 **Work Order #...:** E73R41AA **Matrix.....:** WG
Date Sampled...: 09/10/02 **Date Received..:** 09/11/02
Prep Date.....: 09/16/02 **Analysis Date..:** 10/03/02
Prep Batch #...: 2259399 **Analysis Time..:** 19:11
Dilution Factor: 1

Method.....: SW846 8270C SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	5.7	ng/L
Acenaphthylene	ND	4.8	ng/L
Acridine	ND	6.2	ng/L
Anthracene	ND	4.2	ng/L
Benzo(a)anthracene	ND	4.3	ng/L
Benzo(b)fluoranthene	ND	4.7	ng/L
Benzo(k)fluoranthene	ND	4.1	ng/L
2,3-Benzofuran	ND	5.4	ng/L
Benzo(ghi)perylene	ND	6.2	ng/L
Benzo(a)pyrene	ND	2.5	ng/L
Benzo(e)pyrene	ND	4.3	ng/L
Benzo(b)thiophene	ND	5.2	ng/L
Biphenyl	ND	5.6	ng/L
Carbazole	ND	3.8	ng/L
Chrysene	ND	5.6	ng/L
Dibenzo(a,h)anthracene	ND	5.9	ng/L
Dibenzofuran	ND	5.7	ng/L
Dibenzothiophene	ND	4.1	ng/L
2,3-Dihydroindene	ND	5.0	ng/L
Fluoranthene	ND	4.6	ng/L
Fluorene	ND	4.1	ng/L
Indene	ND	4.7	ng/L
Indeno(1,2,3-cd)pyrene	ND	5.4	ng/L
Indole	ND	4.7	ng/L
2-Methylnaphthalene	ND	5.9	ng/L
1-Methylnaphthalene	ND	5.6	ng/L
Naphthalene	ND	8.6	ng/L
Perylene	ND	3.3	ng/L
Phenanthrene	ND	6.3	ng/L
Pyrene	ND	4.2	ng/L
Quinoline	ND	9.0	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	28 *	(30 - 118)
Fluorene d-10	53	(41 - 162)
Naphthalene-d8	61	(30 - 108)

NOTE(S):

* Surrogate recovery is outside stated control limits.

CITY OF ST. LOUIS PARK

Client Sample ID: SLP3FB-091002

GC/MS Semivolatiles

Lot-Sample #...: D2I110285-003 **Work Order #...:** E73R91AA **Matrix.....:** WG
Date Sampled...: 09/10/02 **Date Received..:** 09/11/02
Prep Date.....: 09/16/02 **Analysis Date..:** 10/03/02
Prep Batch #...: 2259399 **Analysis Time..:** 19:48
Dilution Factor: 1

Method.....: SW846 8270C SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	5.7	ng/L
Acenaphthylene	ND	4.8	ng/L
Acridine	ND	6.2	ng/L
Anthracene	ND	4.2	ng/L
Benzo(a)anthracene	ND	4.3	ng/L
Benzo(b)fluoranthene	ND	4.7	ng/L
Benzo(k)fluoranthene	ND	4.1	ng/L
2,3-Benzofuran	ND	5.4	ng/L
Benzo(ghi)perylene	ND	6.2	ng/L
Benzo(a)pyrene	ND	2.5	ng/L
Benzo(e)pyrene	ND	4.3	ng/L
Benzo(b)thiophene	ND	5.2	ng/L
Biphenyl	ND	5.6	ng/L
Carbazole	ND	3.8	ng/L
Chrysene	ND	5.6	ng/L
Dibenzo(a,h)anthracene	ND	5.9	ng/L
Dibenzofuran	ND	5.7	ng/L
Dibenzothiophene	ND	4.1	ng/L
2,3-Dihydroindene	ND	5.0	ng/L
Fluoranthene	ND	4.6	ng/L
Fluorene	ND	4.1	ng/L
Indene	ND	4.7	ng/L
Indeno(1,2,3-cd)pyrene	ND	5.4	ng/L
Indole	ND	4.7	ng/L
2-Methylnaphthalene	ND	5.9	ng/L
1-Methylnaphthalene	ND	5.6	ng/L
Naphthalene	ND	8.6	ng/L
Perylene	ND	3.3	ng/L
Phenanthrene	ND	6.3	ng/L
Pyrene	ND	4.2	ng/L
Quinoline	ND	9.0	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	73	(30 - 118)
Fluorene d-10	62	(41 - 162)
Naphthalene-d8	66	(30 - 108)

CITY OF ST. LOUIS PARK

Client Sample ID: SLP3FBD-091002

GC/MS Semivolatiles

Lot-Sample #...: D2I110285-004 **Work Order #...:** E73TA1AA **Matrix.....:** WG
Date Sampled...: 09/10/02 **Date Received..:** 09/11/02
Prep Date.....: 09/16/02 **Analysis Date..:** 10/03/02
Prep Batch #...: 2259399 **Analysis Time..:** 20:26
Dilution Factor: 1

Method.....: SW846 8270C SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	5.7	ng/L
Acenaphthylene	ND	4.8	ng/L
Acridine	ND	6.2	ng/L
Anthracene	ND	4.2	ng/L
Benzo(a)anthracene	ND	4.3	ng/L
Benzo(b)fluoranthene	ND	4.7	ng/L
Benzo(k)fluoranthene	ND	4.1	ng/L
2,3-Benzofuran	ND	5.4	ng/L
Benzo(ghi)perylene	ND	6.2	ng/L
Benzo(a)pyrene	ND	2.5	ng/L
Benzo(e)pyrene	ND	4.3	ng/L
Benzo(b)thiophene	ND	5.2	ng/L
Biphenyl	ND	5.6	ng/L
Carbazole	ND	3.8	ng/L
Chrysene	ND	5.6	ng/L
Dibenzo(a,h)anthracene	ND	5.9	ng/L
Dibenzofuran	ND	5.7	ng/L
Dibenzothiophene	ND	4.1	ng/L
2,3-Dihydroindene	ND	5.0	ng/L
Fluoranthene	ND	4.6	ng/L
Fluorene	ND	4.1	ng/L
Indene	ND	4.7	ng/L
Indeno(1,2,3-cd)pyrene	ND	5.4	ng/L
Indole	**7.4**	**4.7**	**ng/L**
2-Methylnaphthalene	ND	5.9	ng/L
1-Methylnaphthalene	ND	5.6	ng/L
Naphthalene	ND	8.6	ng/L
Perylene	ND	3.3	ng/L
Phenanthrene	ND	6.3	ng/L
Pyrene	ND	4.2	ng/L
Quinoline	ND	9.0	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	77	(30 - 118)
Fluorene d-10	75	(41 - 162)
Naphthalene-d8	86	(30 - 108)

CITY OF ST. LOUIS PARK

Client Sample ID: SLP6-091002

GC/MS Semivolatiles

Lot-Sample #...: D2I110285-005 **Work Order #...:** E73TD1AA **Matrix.....:** WG
Date Sampled...: 09/10/02 **Date Received..:** 09/11/02
Prep Date.....: 09/16/02 **Analysis Date..:** 10/03/02
Prep Batch #...: 2259399 **Analysis Time..:** 21:04
Dilution Factor: 1

Method.....: SW846 8270C SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	**97**	**5.7**	**ng/L**
Acenaphthylene	**22**	**4.8**	**ng/L**
Acridine	**4.3 J**	**6.2**	**ng/L**
Anthracene	ND	4.2	ng/L
Benzo(a)anthracene	ND	4.3	ng/L
Benzo(b)fluoranthene	ND	4.7	ng/L
Benzo(k)fluoranthene	ND	4.1	ng/L
2,3-Benzofuran	ND	5.4	ng/L
Benzo(ghi)perylene	ND	6.2	ng/L
Benzo(a)pyrene	ND	2.5	ng/L
Benzo(e)pyrene	ND	4.3	ng/L
Benzo(b)thiophene	**3.2 J**	**5.2**	**ng/L**
Biphenyl	ND	5.6	ng/L
Carbazole	ND	3.8	ng/L
Chrysene	ND	5.6	ng/L
Dibenzo(a,h)anthracene	ND	5.9	ng/L
Dibenzofuran	ND	5.7	ng/L
Dibenzothiophene	**2.2 J**	**4.1**	**ng/L**
2,3-Dihydroindene	**76**	**5.0**	**ng/L**
Fluoranthene	ND	4.6	ng/L
Fluorene	**11**	**4.1**	**ng/L**
Indene	**3.4 J**	**4.7**	**ng/L**
Indeno(1,2,3-cd)pyrene	ND	5.4	ng/L
Indole	**12**	**4.7**	**ng/L**
2-Methylnaphthalene	ND	5.9	ng/L
1-Methylnaphthalene	ND	5.6	ng/L
Naphthalene	ND	8.6	ng/L
Perylene	ND	3.3	ng/L
Phenanthrene	ND	6.3	ng/L
Pyrene	ND	4.2	ng/L
Quinoline	ND	9.0	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	39	(30 - 118)
Fluorene d-10	70	(41 - 162)
Naphthalene-d8	75	(30 - 108)

NOTE(S):

J Estimated result. Result is less than RL.

QC DATA ASSOCIATION SUMMARY

D2I110285

Sample Preparation and Analysis Control Numbers

SAMPLE#	MATRIX	ANALYTICAL METHOD	LEACH BATCH #	PREP BATCH #	MS RUN#
001	WG	SW846 8270C SIM		2259399	2259213
002	WG	SW846 8270C SIM		2259399	2259213
003	WG	SW846 8270C SIM		2259399	2259213
004	WG	SW846 8270C SIM		2259399	2259213
005	WG	SW846 8270C SIM		2259399	2259213

METHOD BLANK REPORT

GC/MS Semivolatiles

Client Lot #...: D2I110285 Work Order #...: E8AKC1AA Matrix.....: WATER
MB Lot-Sample #: D2I160000-399

Prep Date.....: 09/16/02 Analysis Time..: 11:34
Analysis Date..: 10/03/02 Prep Batch #...: 2259399
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Acenaphthene	ND	5.7	ng/L	SW846 8270C SIM
Acenaphthylene	ND	4.8	ng/L	SW846 8270C SIM
Acridine	ND	6.2	ng/L	SW846 8270C SIM
Anthracene	ND	4.2	ng/L	SW846 8270C SIM
Benzo(a)anthracene	ND	4.3	ng/L	SW846 8270C SIM
Benzo(b)fluoranthene	ND	4.7	ng/L	SW846 8270C SIM
Benzo(k)fluoranthene	ND	4.1	ng/L	SW846 8270C SIM
2,3-Benzofuran	ND	5.4	ng/L	SW846 8270C SIM
Benzo(ghi)perylene	ND	6.2	ng/L	SW846 8270C SIM
Benzo(a)pyrene	ND	2.5	ng/L	SW846 8270C SIM
Benzo(e)pyrene	ND	4.3	ng/L	SW846 8270C SIM
Benzo(b)thiophene	ND	5.2	ng/L	SW846 8270C SIM
Biphenyl	ND	5.6	ng/L	SW846 8270C SIM
Carbazole	ND	3.8	ng/L	SW846 8270C SIM
Chrysene	ND	5.6	ng/L	SW846 8270C SIM
Dibenzo(a,h)anthracene	ND	5.9	ng/L	SW846 8270C SIM
Dibenzofuran	ND	5.7	ng/L	SW846 8270C SIM
Dibenzothiophene	ND	4.1	ng/L	SW846 8270C SIM
2,3-Dihydroindene	ND	5.0	ng/L	SW846 8270C SIM
Fluoranthene	ND	4.6	ng/L	SW846 8270C SIM
Fluorene	ND	4.1	ng/L	SW846 8270C SIM
Indene	ND	4.7	ng/L	SW846 8270C SIM
Indeno(1,2,3-cd)pyrene	ND	5.4	ng/L	SW846 8270C SIM
Indole	ND	4.7	ng/L	SW846 8270C SIM
2-Methylnaphthalene	ND	5.9	ng/L	SW846 8270C SIM
1-Methylnaphthalene	ND	5.6	ng/L	SW846 8270C SIM
Naphthalene	ND	8.6	ng/L	SW846 8270C SIM
Perylene	ND	3.3	ng/L	SW846 8270C SIM
Phenanthrene	ND	6.3	ng/L	SW846 8270C SIM
Pyrene	ND	4.2	ng/L	SW846 8270C SIM
Quinoline	ND	9.0	ng/L	SW846 8270C SIM

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	95	(30 - 118)
Fluorene d-10	74	(41 - 162)
Naphthalene-d8	86	(30 - 108)

NOTE(S):

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

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: D2I110285 Work Order #...: E8AKC1AC Matrix.....: WATER
LCS Lot-Sample#: D2I160000-399
Prep Date.....: 09/16/02 Analysis Date..: 10/03/02
Prep Batch #...: 2259399 Analysis Time..: 12:12
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD
Benzo(e)pyrene	**45**	**(30 - 150)**	**SW846 8270C SIM**
Chrysene	**36**	**(30 - 132)**	**SW846 8270C SIM**
Fluorene	**46**	**(30 - 132)**	**SW846 8270C SIM**
Indene	**47**	**(30 - 150)**	**SW846 8270C SIM**
2-Methylnaphthalene	**48**	**(30 - 150)**	**SW846 8270C SIM**
Naphthalene	**56**	**(30 - 150)**	**SW846 8270C SIM**
Quinoline	**5.4 a**	**(30 - 150)**	**SW846 8270C SIM**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	58	(30 - 118)
Fluorene d-10	53	(41 - 162)
Naphthalene-d8	68	(30 - 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.

LABORATORY CONTROL SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #...: D2I110285 Work Order #...: E8AKC1AC Matrix.....: WATER
LCS Lot-Sample#: D2I160000-399
Prep Date.....: 09/16/02 Analysis Date..: 10/03/02
Prep Batch #...: 2259399 Analysis Time..: 12:12
Dilution Factor: 1

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD
Benzo(e)pyrene	**10.0**	**4.50**	**ng/L**	**45**	**SW846 8270C S**
Chrysene	**10.0**	**3.63**	**ng/L**	**36**	**SW846 8270C S**
Fluorene	**10.0**	**4.62**	**ng/L**	**46**	**SW846 8270C S**
Indene	**10.0**	**4.69**	**ng/L**	**47**	**SW846 8270C S**
2-Methylnaphthalene	**10.0**	**4.83**	**ng/L**	**48**	**SW846 8270C S**
Naphthalene	**10.0**	**5.60**	**ng/L**	**56**	**SW846 8270C S**
Quinoline	**10.0**	**a**	**ng/L**	**5.4**	**SW846 8270C S**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	58	(30 - 118)
Fluorene d-10	53	(41 - 162)
Naphthalene-d8	68	(30 - 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.

MATRIX SPIKE SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: D2I110285 Work Order #...: E73RR1AC-MS Matrix.....: WG
MS Lot-Sample #: D2I110285-001 E73RR1AD-MSD
Date Sampled...: 09/10/02 Date Received..: 09/11/02
Prep Date.....: 09/16/02 Analysis Date..: 10/03/02
Prep Batch #...: 2259399 Analysis Time..: 17:55
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Benzo(e)pyrene	**15 a**	**(30 - 150)**			**SW846 8270C SIM**
	0.0 a,p	**(30 - 150)**	**200**	**(0-50)**	**SW846 8270C SIM**
Chrysene	**28 a**	**(30 - 132)**			**SW846 8270C SIM**
	31	**(30 - 132)**	**14**	**(0-50)**	**SW846 8270C SIM**
Fluorene	**71**	**(30 - 132)**			**SW846 8270C SIM**
	79	**(30 - 132)**	**16**	**(0-50)**	**SW846 8270C SIM**
Indene	**63**	**(30 - 150)**			**SW846 8270C SIM**
	73	**(30 - 150)**	**20**	**(0-50)**	**SW846 8270C SIM**
2-Methylnaphthalene	**68**	**(30 - 150)**			**SW846 8270C SIM**
	78	**(30 - 150)**	**20**	**(0-50)**	**SW846 8270C SIM**
Naphthalene	**79**	**(30 - 150)**			**SW846 8270C SIM**
	87	**(30 - 150)**	**15**	**(0-50)**	**SW846 8270C SIM**
inoline	**75**	**(30 - 150)**			**SW846 8270C SIM**
	86	**(30 - 150)**	**19**	**(0-50)**	**SW846 8270C SIM**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	36	(30 - 118)
	41	(30 - 118)
Fluorene d-10	62	(41 - 162)
	67	(41 - 162)
Naphthalene-d8	68	(30 - 108)
	77	(30 - 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 #...: D2I110285 Work Order #...: E73RR1AC-MS Matrix.....: WG
MS Lot-Sample #: D2I110285-001 E73RR1AD-MSD
Date Sampled...: 09/10/02 Date Received..: 09/11/02
Prep Date.....: 09/16/02 Analysis Date..: 10/03/02
Prep Batch #...: 2259399 Analysis Time..: 17:55
Dilution Factor: 1

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD
Benzo(e)pyrene	**ND**	**9.82**	**1.51**	**ng/L**	**15 a**		**SW846 8270C SIM**
	ND	**10.4**	**0.0**	**ng/L**	**0.0**	**200**	**SW846 8270C SIM**
	Qualifiers:	a,p					
Chrysene	**ND**	**9.82**	**2.76**	**ng/L**	**28 a**		**SW846 8270C SIM**
	ND	**10.4**	**3.18**	**ng/L**	**31**	**14**	**SW846 8270C SIM**
Fluorene	**ND**	**9.82**	**7.00**	**ng/L**	**71**		**SW846 8270C SIM**
	ND	**10.4**	**8.23**	**ng/L**	**79**	**16**	**SW846 8270C SIM**
Indene	**ND**	**9.82**	**6.18**	**ng/L**	**63**		**SW846 8270C SIM**
	ND	**10.4**	**7.56**	**ng/L**	**73**	**20**	**SW846 8270C SIM**
2-Methylnaphthalene	**ND**	**9.82**	**6.68**	**ng/L**	**68**		**SW846 8270C SIM**
	ND	**10.4**	**8.13**	**ng/L**	**78**	**20**	**SW846 8270C SIM**
Naphthalene	**ND**	**9.82**	**7.78**	**ng/L**	**79**		**SW846 8270C SIM**
	ND	**10.4**	**9.06**	**ng/L**	**87**	**15**	**SW846 8270C SIM**
Quinoline	**ND**	**9.82**	**7.39**	**ng/L**	**75**		**SW846 8270C SIM**
	ND	**10.4**	**8.98**	**ng/L**	**86**	**19**	**SW846 8270C SIM**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	36	(30 - 118)
	41	(30 - 118)
Fluorene d-10	62	(41 - 162)
	67	(41 - 162)
Naphthalene-d8	68	(30 - 108)
	77	(30 - 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.

Chain of Custody Record

SEVERN TRENT SERVICES

Severn Trent Laboratories, Inc.

1.5C
5-8°C
3.0°C

STL-4124 (0901)

Client	CITY OF ST. LOUIS PARK
Address	UTILITY DIVISION
City	3752 WOODDALE AVENUE ST. LOUIS PARK, MN 55416
Project Manager	SCOTT ANDERSON
Telephone Number (Area Code)/Fax Number	924-2557 (952) 924-2570
Site Contact	SAME
Lab Contact	
Project Name and Location (State)	SAME
Carrier/Waybill Number	FED EX 806824 1134
Contract/Purchase Order/Quote No.	
Date	9-10-02
Chain of Custody Number	150704
Lab Number	
Page ____ of ____	

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH		Analysis (Attach list if more space is needed): PPL PAHS	Special Instructions/ Conditions of Receipt
SLP3-091002 CT# 0007	9-10-02			X			X						6	X	PPL 5
SLP3D-091002															
SLP3MS-091002 CT# 0004															
SLP3MSD-091002															
SLP3FB-091002 CT# 0006															
SLP3FBD-091002															
SLPG-091002 CT# 0003	9-10-02			X			X						6	X	PPL 5

Possible Hazard Identification: [X] Non-Hazard [ ] Flammable [ ] Skin Irritant [ ] Poison B [ ] Unknown

Sample Disposal: [ ] Return To Client [X] Disposal By Lab [ ] Archive For ____ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required: [ ] 24 Hours [ ] 48 Hours [ ] 7 Days [ ] 14 Days [ ] 21 Days [ ] Other ____

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished By: MJ [illegible]	9-10-02	1400	1. Received By: [illegible]	9-11-02	09:00
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

X

SEVERN TRENT SERVICES

STL Denver
4955 Yarrow Street
Arvada, CO 80002-4517

Tel: 303 736 0100
Fax: 303 431 7171
www.stl-inc.com

ANALYTICAL REPORT

City of St. Louis Park

Project: Reilly Tar & Chemical Corporation

Lot #: D2I110283

Mr. Scott Anderson

City of St. Louis Park
Utility Division
3752 Wooddale Avenue
St. Louis Park, MN 55416

STL DENVER

Brian Stringer
Project Manager

October 17, 2002

Table Of Contents

Standard Deliverable

Report Contents

- Table of Contents
- Case Narrative
- Executive Summary – Detection Highlights
- Analytical Method Summary
- Method/ Analyst Summary
- Sample Summary
- Analytical Results by Sample
- QC Data Association Summary
- Chain-of-Custody

Total Number of Pages 23

CASE NARRATIVE

STL Lot Number D2I110283

Introduction

STL Denver received five aqueous samples and a MS/MSD on September 11, 2002 for PAH SIM (ppt-5) analysis.

The cooler temperatures were 1.7°C, 0.8°C, and 1.1°C. All containers were received in acceptable condition.

Data Quality Assessment

The results included in this report have been reviewed for compliance with STL Denver's Laboratory Quality Manual. The test results shown in this report meet all requirements of NELAC and any exceptions are noted below.

Dilution factors and footnotes have been provided to assist in the interpretation of the results. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at concentrations above the linear calibration curve, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

STL utilizes USEPA approved methods in all analytical work. The samples presented in this report were analyzed for the parameters listed on the analytical methods summary page in accordance with the methods indicated.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Polynuclear Aromatic Hydrocarbons – Method 8270C SIM

A project-specific lower acceptable recovery limit of 30% for all QC samples and surrogates has been designated for analytical work performed under the 2002 Quality Assurance Project Plan (QAPP) for the Reilly Industries, Inc. NPL Site. This lower limit is used for this project, rather than historically generated lower recovery limits. All recoveries in this report are above the 30% minimum threshold with the exceptions noted below.

Sample "W133091002" was analyzed at a dilution due to a high concentration of naphthalene in the sample. Naphthalene is reported from the 4X dilution while all other analytes are reported from the undiluted analysis.

The recoveries of the surrogate Chrysene-d12 were below the lower control limit for samples "W133091002", "W412091002", and "W411091002". This is an indication of a possible low bias. Re-analysis confirmed the results. Since the extraction requires four liters of sample and only six 1-liter amber glass bottles were received per sample, re-extraction was not possible.

The LCS demonstrated a recovery of the analyte Quinoline below control limits. Historically, this compound is a poor performer for this method. Since the extraction requires four liters of sample and only six 1-liter amber glass bottles were received per sample, re-extraction was not possible.

The MS/MSD associated with batch 2259399, but performed on a sample from another client and/or lot, demonstrated recoveries below cntrol limits for benzo(e)pyrene. The MS demonstrated an additional recovery below control limits for chrysene.

Data Completeness for Polynuclear Aromatic Hydrocarbons – Method 8270C SIM

The results contained in the report were reviewed relative to data acceptance criteria as specified in the 2002 QAPP. Based on the exceptions noted we achieved 95.35% completeness.

DATA COMPLETENESS CALCULATION		
LOT	D2I110283	
ANALYSIS	PAHs by SW846-8270Sim	
QC Parameter	**Data Planned**	**Valid Data Obtained**
Method Blank	31	31
MB Surrogates	3	3
LCS	7	6
LCS Surrogates	3	3
FB/FBD	NA	NA
MS	NA	NA
MS Surrogates	NA	NA
MSD	NA	NA
MSD Surrogates	NA	NA
MS/MSD RPD	NA	NA
Sample/Dup. RPD	NA	NA
Sample Surrogates	15	12
Internal STD Area	27	27
TOTAL	**86**	**82**
% Completeness	**95.35%**	

*The MS/MSD was performed on a sample from another lot

EXECUTIVE SUMMARY - Detection Highlights

D2I110283

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
W48091002 09/10/02 10:05 001				
Acenaphthene	72	5.7	ng/L	SW846 8270C SIM
Acenaphthylene	2.5 J	4.8	ng/L	SW846 8270C SIM
Acridine	16	6.2	ng/L	SW846 8270C SIM
Anthracene	4.3	4.2	ng/L	SW846 8270C SIM
Benzo(b)thiophene	7.3	5.2	ng/L	SW846 8270C SIM
Carbazole	2.4 J	3.8	ng/L	SW846 8270C SIM
2,3-Dihydroindene	12	5.0	ng/L	SW846 8270C SIM
Indene	17	4.7	ng/L	SW846 8270C SIM
Indole	11	4.7	ng/L	SW846 8270C SIM
Pyrene	4.8	4.2	ng/L	SW846 8270C SIM
W133091002 09/10/02 16:00 002				
Acenaphthene	10	5.7	ng/L	SW846 8270C SIM
Acridine	7.0	6.2	ng/L	SW846 8270C SIM
Benzo(b)thiophene	18	5.2	ng/L	SW846 8270C SIM
Carbazole	13	3.8	ng/L	SW846 8270C SIM
Dibenzofuran	2.6 J	5.7	ng/L	SW846 8270C SIM
2,3-Dihydroindene	29	5.0	ng/L	SW846 8270C SIM
Fluorene	2.5 J	4.1	ng/L	SW846 8270C SIM
Indene	15	4.7	ng/L	SW846 8270C SIM
Indole	4.8	4.7	ng/L	SW846 8270C SIM
2-Methylnaphthalene	7.2	5.9	ng/L	SW846 8270C SIM
1-Methylnaphthalene	14	5.6	ng/L	SW846 8270C SIM
Naphthalene	220	8.6	ng/L	SW846 8270C SIM
W412091002 09/10/02 11:40 003				
Acridine	7.7	6.2	ng/L	SW846 8270C SIM
Benzo(ghi)perylene	2.5 J	6.2	ng/L	SW846 8270C SIM
Benzo(e)pyrene	2.9 J	4.3	ng/L	SW846 8270C SIM
Benzo(b)thiophene	12	5.2	ng/L	SW846 8270C SIM
Carbazole	11	3.8	ng/L	SW846 8270C SIM
Dibenzothiophene	2.9 J	4.1	ng/L	SW846 8270C SIM
2,3-Dihydroindene	9.0	5.0	ng/L	SW846 8270C SIM
Fluoranthene	5.5	4.6	ng/L	SW846 8270C SIM
Fluorene	3.7 J	4.1	ng/L	SW846 8270C SIM
Indene	13	4.7	ng/L	SW846 8270C SIM
1-Methylnaphthalene	4.2 J	5.6	ng/L	SW846 8270C SIM
Naphthalene	35	8.6	ng/L	SW846 8270C SIM
Phenanthrene	13	6.3	ng/L	SW846 8270C SIM
Pyrene	15	4.2	ng/L	SW846 8270C SIM

(Continued on next page)

EXECUTIVE SUMMARY - Detection Highlights

D2I110283

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
W122091002 09/10/02 13:15 004				
Acridine	34	6.2	ng/L	SW846 8270C SIM
Anthracene	10	4.2	ng/L	SW846 8270C SIM
Benzo(ghi)perylene	1.7 J	6.2	ng/L	SW846 8270C SIM
Benzo(a)pyrene	2.1 J	2.5	ng/L	SW846 8270C SIM
Carbazole	9.8	3.8	ng/L	SW846 8270C SIM
Fluoranthene	4.8	4.6	ng/L	SW846 8270C SIM
Fluorene	3.3 J	4.1	ng/L	SW846 8270C SIM
Indeno(1,2,3-cd)pyrene	1.2 J	5.4	ng/L	SW846 8270C SIM
Pyrene	11	4.2	ng/L	SW846 8270C SIM
W411091002 09/10/02 14:30 005				
Acridine	9.5	6.2	ng/L	SW846 8270C SIM
Carbazole	2.3 J	3.8	ng/L	SW846 8270C SIM
Pyrene	4.2	4.2	ng/L	SW846 8270C SIM

METHODS SUMMARY

D2I110283

PARAMETER	ANALYTICAL METHOD	PREPARATION METHOD
Base/Neutrals and Acids	SW846 8270C SIM	SW846 3520C

References:

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

METHOD / ANALYST SUMMARY

D2I110283

ANALYTICAL METHOD	ANALYST	ANALYST ID
SW846 8270C SIM	Tim O'Donnell	000443

References:

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

SAMPLE SUMMARY

D2I110283

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
E73QC	001	W48091002	09/10/02	10:05
E73QK	002	W133091002	09/10/02	16:00
E73QM	003	W412091002	09/10/02	11:40
E73QN	004	W122091002	09/10/02	13:15
E73QP	005	W411091002	09/10/02	14:30

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: W48091002

GC/MS Semivolatiles

Lot-Sample #...: D2I110283-001 **Work Order #...:** E73QC1AA **Matrix.....:** WATER
Date Sampled...: 09/10/02 **Date Received..:** 09/11/02
Prep Date.....: 09/16/02 **Analysis Date..:** 10/03/02
Prep Batch #...: 2259399 **Analysis Time..:** 14:07
Dilution Factor: 1

Method.....: SW846 8270C SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	**72**	**5.7**	**ng/L**
Acenaphthylene	**2.5 J**	**4.8**	**ng/L**
Acridine	**16**	**6.2**	**ng/L**
Anthracene	**4.3**	**4.2**	**ng/L**
Benzo(a)anthracene	ND	4.3	ng/L
Benzo(b)fluoranthene	ND	4.7	ng/L
Benzo(k)fluoranthene	ND	4.1	ng/L
2,3-Benzofuran	ND	5.4	ng/L
Benzo(ghi)perylene	ND	6.2	ng/L
Benzo(a)pyrene	ND	2.5	ng/L
Benzo(e)pyrene	ND	4.3	ng/L
Benzo(b)thiophene	**7.3**	**5.2**	**ng/L**
Biphenyl	ND	5.6	ng/L
Carbazole	**2.4 J**	**3.8**	**ng/L**
Chrysene	ND	5.6	ng/L
Dibenzo(a,h)anthracene	ND	5.9	ng/L
Dibenzofuran	ND	5.7	ng/L
Dibenzothiophene	ND	4.1	ng/L
2,3-Dihydroindene	**12**	**5.0**	**ng/L**
Fluoranthene	ND	4.6	ng/L
Fluorene	ND	4.1	ng/L
Indene	**17**	**4.7**	**ng/L**
Indeno(1,2,3-cd)pyrene	ND	5.4	ng/L
Indole	**11**	**4.7**	**ng/L**
2-Methylnaphthalene	ND	5.9	ng/L
1-Methylnaphthalene	ND	5.6	ng/L
Naphthalene	ND	8.6	ng/L
Perylene	ND	3.3	ng/L
Phenanthrene	ND	6.3	ng/L
Pyrene	**4.8**	**4.2**	**ng/L**
Quinoline	ND	9.0	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	45	(30 - 118)
Fluorene d-10	84	(41 - 162)
Naphthalene-d8	57	(30 - 108)

NOTE(S):

J Estimated result. Result is less than RL.

CITY OF ST. LOUIS PARK

Client Sample ID: W133091002

GC/MS Semivolatiles

Lot-Sample #...: D2I110283-002 Work Order #...: E73QK1AA Matrix.....: WATER
Date Sampled...: 09/10/02 Date Received..: 09/11/02
Prep Date.....: 09/16/02 Analysis Date..: 10/03/02
Prep Batch #...: 2259399 Analysis Time..: 14:45
Dilution Factor: 1

Method.....: SW846 8270C SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	**10**	**5.7**	**ng/L**
Acenaphthylene	ND	4.8	ng/L
Acridine	**7.0**	**6.2**	**ng/L**
Anthracene	ND	4.2	ng/L
Benzo(a)anthracene	ND	4.3	ng/L
Benzo(b)fluoranthene	ND	4.7	ng/L
Benzo(k)fluoranthene	ND	4.1	ng/L
2,3-Benzofuran	ND	5.4	ng/L
Benzo(ghi)perylene	ND	6.2	ng/L
Benzo(a)pyrene	ND	2.5	ng/L
Benzo(e)pyrene	ND	4.3	ng/L
Benzo(b)thiophene	**18**	**5.2**	**ng/L**
Biphenyl	ND	5.6	ng/L
Carbazole	**13**	**3.8**	**ng/L**
Chrysene	ND	5.6	ng/L
Dibenzo(a,h)anthracene	ND	5.9	ng/L
Dibenzofuran	**2.6 J**	**5.7**	**ng/L**
Dibenzothiophene	ND	4.1	ng/L
2,3-Dihydroindene	**29**	**5.0**	**ng/L**
Fluoranthene	ND	4.6	ng/L
Fluorene	**2.5 J**	**4.1**	**ng/L**
Indene	**15**	**4.7**	**ng/L**
Indeno(1,2,3-cd)pyrene	ND	5.4	ng/L
Indole	**4.8**	**4.7**	**ng/L**
2-Methylnaphthalene	**7.2**	**5.9**	**ng/L**
1-Methylnaphthalene	**14**	**5.6**	**ng/L**
Perylene	ND	3.3	ng/L
Phenanthrene	ND	6.3	ng/L
Pyrene	ND	4.2	ng/L
Quinoline	ND	9.0	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	14 *	(30 - 118)
Fluorene d-10	55	(41 - 162)
Naphthalene-d8	68	(30 - 108)

NOTE(S):

* Surrogate recovery is outside stated control limits.

J Estimated result. Result is less than RL.

CITY OF ST. LOUIS PARK

Client Sample ID: W133091002

GC/MS Semivolatiles

Lot-Sample #...:	D2I110283-002	**Work Order #...:**	E73QK2AA	**Matrix.....:**	WATER
Date Sampled...:	09/10/02	**Date Received..:**	09/11/02		
Prep Date.....:	09/16/02	**Analysis Date..:**	10/04/02		
Prep Batch #...:	2259399	**Analysis Time..:**	12:53		
Dilution Factor:	4				
		Method.....:	SW846 8270C SIM		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Naphthalene	**220**	**34**	**ng/L**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	DIL,NC	(30 - 118)
Fluorene d-10	DIL,NC	(41 - 162)
Naphthalene-d8	DIL,NC	(30 - 108)

NOTE(S):

DIL The concentration is estimated or not reported due to dilution or the presence of interfering analytes.

NC The recovery and/or RPD were not calculated.

CITY OF ST. LOUIS PARK

Client Sample ID: W412091002

GC/MS Semivolatiles

Lot-Sample #...: D2I110283-003 **Work Order #...:** E73QM1AA **Matrix.....:** WATER
Date Sampled...: 09/10/02 **Date Received..:** 09/11/02
Prep Date.....: 09/16/02 **Analysis Date..:** 10/04/02
Prep Batch #...: 2259399 **Analysis Time..:** 13:39
Dilution Factor: 1

Method.....: SW846 8270C SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	5.7	ng/L
Acenaphthylene	ND	4.8	ng/L
Acridine	**7.7**	**6.2**	**ng/L**
Anthracene	ND	4.2	ng/L
Benzo(a)anthracene	ND	4.3	ng/L
Benzo(b)fluoranthene	ND	4.7	ng/L
Benzo(k)fluoranthene	ND	4.1	ng/L
2,3-Benzofuran	ND	5.4	ng/L
Benzo(ghi)perylene	**2.5 J**	**6.2**	**ng/L**
Benzo(a)pyrene	ND	2.5	ng/L
Benzo(e)pyrene	**2.9 J**	**4.3**	**ng/L**
Benzo(b)thiophene	**12**	**5.2**	**ng/L**
[illegible]phenyl	ND	5.6	ng/L
Carbazole	**11**	**3.8**	**ng/L**
Chrysene	ND	5.6	ng/L
Dibenzo(a,h)anthracene	ND	5.9	ng/L
Dibenzofuran	ND	5.7	ng/L
Dibenzothiophene	**2.9 J**	**4.1**	**ng/L**
2,3-Dihydroindene	**9.0**	**5.0**	**ng/L**
Fluoranthene	**5.5**	**4.6**	**ng/L**
Fluorene	**3.7 J**	**4.1**	**ng/L**
Indene	**13**	**4.7**	**ng/L**
Indeno(1,2,3-cd)pyrene	ND	5.4	ng/L
Indole	ND	4.7	ng/L
2-Methylnaphthalene	ND	5.9	ng/L
1-Methylnaphthalene	**4.2 J**	**5.6**	**ng/L**
Naphthalene	**35**	**8.6**	**ng/L**
Perylene	ND	3.3	ng/L
Phenanthrene	**13**	**6.3**	**ng/L**
Pyrene	**15**	**4.2**	**ng/L**
Quinoline	ND	9.0	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	15 *	(30 - 118)
Fluorene d-10	92	(41 - 162)
Naphthalene-d8	67	(30 - 108)

NOTE(S):

* Surrogate recovery is outside stated control limits.

J Estimated result. Result is less than RL.

CITY OF ST. LOUIS PARK

Client Sample ID: W122091002

GC/MS Semivolatiles

Lot-Sample #...: D2I110283-004 **Work Order #...:** E73QN1AA **Matrix.....:** WATER
Date Sampled...: 09/10/02 **Date Received..:** 09/11/02
Prep Date.....: 09/16/02 **Analysis Date..:** 10/04/02
Prep Batch #...: 2259399 **Analysis Time..:** 14:16
Dilution Factor: 1

Method.....: SW846 8270C SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	5.7	ng/L
Acenaphthylene	ND	4.8	ng/L
Acridine	**34**	**6.2**	**ng/L**
Anthracene	**10**	**4.2**	**ng/L**
Benzo(a)anthracene	ND	4.3	ng/L
Benzo(b)fluoranthene	ND	4.7	ng/L
Benzo(k)fluoranthene	ND	4.1	ng/L
2,3-Benzofuran	ND	5.4	ng/L
Benzo(ghi)perylene	**1.7 J**	**6.2**	**ng/L**
Benzo(a)pyrene	**2.1 J**	**2.5**	**ng/L**
Benzo(e)pyrene	ND	4.3	ng/L
Benzo(b)thiophene	ND	5.2	ng/L
Biphenyl	ND	5.6	ng/L
Carbazole	**9.8**	**3.8**	**ng/L**
Chrysene	ND	5.6	ng/L
Dibenzo(a,h)anthracene	ND	5.9	ng/L
Dibenzofuran	ND	5.7	ng/L
Dibenzothiophene	ND	4.1	ng/L
2,3-Dihydroindene	ND	5.0	ng/L
Fluoranthene	**4.8**	**4.6**	**ng/L**
Fluorene	**3.3 J**	**4.1**	**ng/L**
Indene	ND	4.7	ng/L
Indeno(1,2,3-cd)pyrene	**1.2 J**	**5.4**	**ng/L**
Indole	ND	4.7	ng/L
2-Methylnaphthalene	ND	5.9	ng/L
1-Methylnaphthalene	ND	5.6	ng/L
Naphthalene	ND	8.6	ng/L
Perylene	ND	3.3	ng/L
Phenanthrene	ND	6.3	ng/L
Pyrene	**11**	**4.2**	**ng/L**
Quinoline	ND	9.0	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	32	(30 - 118)
Fluorene d-10	82	(41 - 162)
Naphthalene-d8	67	(30 - 108)

NOTE(S):

J Estimated result. Result is less than RL.

CITY OF ST. LOUIS PARK

Client Sample ID: W411091002

GC/MS Semivolatiles

Lot-Sample #...: D2I110283-005 **Work Order #...:** E73QP1AA **Matrix.....:** WATER
Date Sampled...: 09/10/02 **Date Received..:** 09/11/02
Prep Date.....: 09/16/02 **Analysis Date..:** 10/03/02
Prep Batch #...: 2259399 **Analysis Time..:** 16:39
Dilution Factor: 1

Method.....: SW846 8270C SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	5.7	ng/L
Acenaphthylene	ND	4.8	ng/L
Acridine	**9.5**	**6.2**	**ng/L**
Anthracene	ND	4.2	ng/L
Benzo(a)anthracene	ND	4.3	ng/L
Benzo(b)fluoranthene	ND	4.7	ng/L
Benzo(k)fluoranthene	ND	4.1	ng/L
2,3-Benzofuran	ND	5.4	ng/L
Benzo(ghi)perylene	ND	6.2	ng/L
Benzo(a)pyrene	ND	2.5	ng/L
Benzo(e)pyrene	ND	4.3	ng/L
Benzo(b)thiophene	ND	5.2	ng/L
Biphenyl	ND	5.6	ng/L
Carbazole	**2.3 J**	**3.8**	**ng/L**
Chrysene	ND	5.6	ng/L
Dibenzo(a,h)anthracene	ND	5.9	ng/L
Dibenzofuran	ND	5.7	ng/L
Dibenzothiophene	ND	4.1	ng/L
2,3-Dihydroindene	ND	5.0	ng/L
Fluoranthene	ND	4.6	ng/L
Fluorene	ND	4.1	ng/L
Indene	ND	4.7	ng/L
Indeno(1,2,3-cd)pyrene	ND	5.4	ng/L
Indole	ND	4.7	ng/L
2-Methylnaphthalene	ND	5.9	ng/L
1-Methylnaphthalene	ND	5.6	ng/L
Naphthalene	ND	8.6	ng/L
Perylene	ND	3.3	ng/L
Phenanthrene	ND	6.3	ng/L
Pyrene	**4.2**	**4.2**	**ng/L**
Quinoline	ND	9.0	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	13 *	(30 - 118)
Fluorene d-10	42	(41 - 162)
Naphthalene-d8	36	(30 - 108)

NOTE(S):

* Surrogate recovery is outside stated control limits.

J Estimated result. Result is less than RL.

QC DATA ASSOCIATION SUMMARY

D2I110283

Sample Preparation and Analysis Control Numbers

SAMPLE#	MATRIX	ANALYTICAL METHOD	LEACH BATCH #	PREP BATCH #	MS RUN#
001	WATER	SW846 8270C SIM		2259399	2259213
002	WATER	SW846 8270C SIM		2259399	2259213
003	WATER	SW846 8270C SIM		2259399	2259213
004	WATER	SW846 8270C SIM		2259399	2259213
005	WATER	SW846 8270C SIM		2259399	2259213

METHOD BLANK REPORT

GC/MS Semivolatiles

Client Lot #...: D2I110283 **Work Order #...:** E8AKC1AA **Matrix.....:** WATER
MB Lot-Sample #: D2I160000-399

Prep Date.....: 09/16/02 **Analysis Time..:** 11:34

Analysis Date..: 10/03/02 **Prep Batch #...:** 2259399
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Acenaphthene	ND	5.7	ng/L	SW846 8270C SIM
Acenaphthylene	ND	4.8	ng/L	SW846 8270C SIM
Acridine	ND	6.2	ng/L	SW846 8270C SIM
Anthracene	ND	4.2	ng/L	SW846 8270C SIM
Benzo(a)anthracene	ND	4.3	ng/L	SW846 8270C SIM
Benzo(b)fluoranthene	ND	4.7	ng/L	SW846 8270C SIM
Benzo(k)fluoranthene	ND	4.1	ng/L	SW846 8270C SIM
2,3-Benzofuran	ND	5.4	ng/L	SW846 8270C SIM
Benzo(ghi)perylene	ND	6.2	ng/L	SW846 8270C SIM
Benzo(a)pyrene	ND	2.5	ng/L	SW846 8270C SIM
Benzo(e)pyrene	ND	4.3	ng/L	SW846 8270C SIM
Benzo(b)thiophene	ND	5.2	ng/L	SW846 8270C SIM
Biphenyl	ND	5.6	ng/L	SW846 8270C SIM
Carbazole	ND	3.8	ng/L	SW846 8270C SIM
Chrysene	ND	5.6	ng/L	SW846 8270C SIM
Dibenzo(a,h)anthracene	ND	5.9	ng/L	SW846 8270C SIM
Dibenzofuran	ND	5.7	ng/L	SW846 8270C SIM
Dibenzothiophene	ND	4.1	ng/L	SW846 8270C SIM
2,3-Dihydroindene	ND	5.0	ng/L	SW846 8270C SIM
Fluoranthene	ND	4.6	ng/L	SW846 8270C SIM
Fluorene	ND	4.1	ng/L	SW846 8270C SIM
Indene	ND	4.7	ng/L	SW846 8270C SIM
Indeno(1,2,3-cd)pyrene	ND	5.4	ng/L	SW846 8270C SIM
Indole	ND	4.7	ng/L	SW846 8270C SIM
2-Methylnaphthalene	ND	5.9	ng/L	SW846 8270C SIM
1-Methylnaphthalene	ND	5.6	ng/L	SW846 8270C SIM
Naphthalene	ND	8.6	ng/L	SW846 8270C SIM
Perylene	ND	3.3	ng/L	SW846 8270C SIM
Phenanthrene	ND	6.3	ng/L	SW846 8270C SIM
Pyrene	ND	4.2	ng/L	SW846 8270C SIM
Quinoline	ND	9.0	ng/L	SW846 8270C SIM

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	95	(30 - 118)
Fluorene d-10	74	(41 - 162)
Naphthalene-d8	86	(30 - 108)

NOTE(S):

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

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: D2I110283 Work Order #...: E8AKC1AC Matrix.....: WATER
LCS Lot-Sample#: D2I160000-399
Prep Date.....: 09/16/02 Analysis Date..: 10/03/02
Prep Batch #...: 2259399 Analysis Time..: 12:12
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD
Benzo(e)pyrene	**45**	**(30 - 150)**	**SW846 8270C SIM**
Chrysene	**36**	**(30 - 132)**	**SW846 8270C SIM**
Fluorene	**46**	**(30 - 132)**	**SW846 8270C SIM**
Indene	**47**	**(30 - 150)**	**SW846 8270C SIM**
2-Methylnaphthalene	**48**	**(30 - 150)**	**SW846 8270C SIM**
Naphthalene	**56**	**(30 - 150)**	**SW846 8270C SIM**
Quinoline	**5.4 a**	**(30 - 150)**	**SW846 8270C SIM**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	58	(30 - 118)
Fluorene d-10	53	(41 - 162)
Naphthalene-d8	68	(30 - 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.

LABORATORY CONTROL SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #...: D2I110283 Work Order #...: E8AKC1AC Matrix.....: WATER
LCS Lot-Sample#: D2I160000-399
Prep Date.....: 09/16/02 Analysis Date..: 10/03/02
Prep Batch #...: 2259399 Analysis Time..: 12:12
Dilution Factor: 1

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD
Benzo(e)pyrene	**10.0**	**4.50**	**ng/L**	**45**	**SW846 8270C S**
Chrysene	**10.0**	**3.63**	**ng/L**	**36**	**SW846 8270C S**
Fluorene	**10.0**	**4.62**	**ng/L**	**46**	**SW846 8270C S**
Indene	**10.0**	**4.69**	**ng/L**	**47**	**SW846 8270C S**
2-Methylnaphthalene	**10.0**	**4.83**	**ng/L**	**48**	**SW846 8270C S**
Naphthalene	**10.0**	**5.60**	**ng/L**	**56**	**SW846 8270C S**
Quinoline	**10.0**	**a**	**ng/L**	**5.4**	**SW846 8270C S**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	58	(30 - 118)
Fluorene d-10	53	(41 - 162)
Naphthalene-d8	68	(30 - 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.

MATRIX SPIKE SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: D2I110283 Work Order #...: E73RR1AC-MS Matrix.....: WATER
MS Lot-Sample #: D2I110285-001 E73RR1AD-MSD
Date Sampled...: 09/10/02 Date Received..: 09/11/02
Prep Date.....: 09/16/02 Analysis Date..: 10/03/02
Prep Batch #...: 2259399 Analysis Time..: 17:55
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Benzo(e)pyrene	**15 a**	**(30 - 150)**			**SW846 8270C SIM**
	0.0 a,p	**(30 - 150)**	**200**	**(0-50)**	**SW846 8270C SIM**
Chrysene	**28 a**	**(30 - 132)**			**SW846 8270C SIM**
	31	**(30 - 132)**	**14**	**(0-50)**	**SW846 8270C SIM**
Fluorene	**71**	**(30 - 132)**			**SW846 8270C SIM**
	79	**(30 - 132)**	**16**	**(0-50)**	**SW846 8270C SIM**
Indene	**63**	**(30 - 150)**			**SW846 8270C SIM**
	73	**(30 - 150)**	**20**	**(0-50)**	**SW846 8270C SIM**
2-Methylnaphthalene	**68**	**(30 - 150)**			**SW846 8270C SIM**
	78	**(30 - 150)**	**20**	**(0-50)**	**SW846 8270C SIM**
Naphthalene	**79**	**(30 - 150)**			**SW846 8270C SIM**
	87	**(30 - 150)**	**15**	**(0-50)**	**SW846 8270C SIM**
Quinoline	**75**	**(30 - 150)**			**SW846 8270C SIM**
	86	**(30 - 150)**	**19**	**(0-50)**	**SW846 8270C SIM**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	36	(30 - 118)
	41	(30 - 118)
Fluorene d-10	62	(41 - 162)
	67	(41 - 162)
Naphthalene-d8	68	(30 - 108)
	77	(30 - 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 #...: D2I110283 Work Order #...: E73RR1AC-MS Matrix.....: WATER
MS Lot-Sample #: D2I110285-001 E73RR1AD-MSD
Date Sampled...: 09/10/02 Date Received..: 09/11/02
Prep Date.....: 09/16/02 Analysis Date..: 10/03/02
Prep Batch #...: 2259399 Analysis Time..: 17:55
Dilution Factor: 1

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD
Benzo(e)pyrene	**ND**	**9.82**	**1.51**	**ng/L**	**15 a**		**SW846 8270C SIM**
	ND	**10.4**	**0.0**	**ng/L**	**0.0**	**200**	**SW846 8270C SIM**
	Qualifiers:	a,p					
Chrysene	**ND**	**9.82**	**2.76**	**ng/L**	**28 a**		**SW846 8270C SIM**
	ND	**10.4**	**3.18**	**ng/L**	**31**	**14**	**SW846 8270C SIM**
Fluorene	**ND**	**9.82**	**7.00**	**ng/L**	**71**		**SW846 8270C SIM**
	ND	**10.4**	**8.23**	**ng/L**	**79**	**16**	**SW846 8270C SIM**
Indene	**ND**	**9.82**	**6.18**	**ng/L**	**63**		**SW846 8270C SIM**
	ND	**10.4**	**7.56**	**ng/L**	**73**	**20**	**SW846 8270C SIM**
2-Methylnaphthalene	**ND**	**9.82**	**6.68**	**ng/L**	**68**		**SW846 8270C SIM**
	ND	**10.4**	**8.13**	**ng/L**	**78**	**20**	**SW846 8270C SIM**
Naphthalene	**ND**	**9.82**	**7.78**	**ng/L**	**79**		**SW846 8270C SIM**
	ND	**10.4**	**9.06**	**ng/L**	**87**	**15**	**SW846 8270C SIM**
Quinoline	**ND**	**9.82**	**7.39**	**ng/L**	**75**		**SW846 8270C SIM**
	ND	**10.4**	**8.98**	**ng/L**	**86**	**19**	**SW846 8270C SIM**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	36	(30 - 118)
	41	(30 - 118)
Fluorene d-10	62	(41 - 162)
	67	(41 - 162)
Naphthalene-d8	68	(30 - 108)
	77	(30 - 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.

[redacted]

Chain of Custody Record

SEVERN TRENT SERVICES

Severn Trent Laboratories, Inc.

0.02
DE
9/11

STL-4124 (0901)

Client: City of St. Louis Park	Project Manager: Scott Anderson	Date: 9/10/02	Chain of Custody Number: 150712
Address: 3752 Wooddale Ave	Telephone Number (Area Code)/Fax Number: 952-924-2557	Lab Number:	Page 1 of 1
City: St. Louis Park; State: MN; Zip Code: 55416	Site Contact:	Lab Contact: Brian Stringer	
Project Name and Location (State): Reilly	Carrier/Waybill Number:		
Contract/Purchase Order/Quote No.: 01620-013-			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Matrix: Aqueous	Matrix: Sed.	Matrix: Soil	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Analysis (Attach list if more space is needed): PAH PPTS	Special Instructions/ Conditions of Receipt
W412091002	9/10/02	1140		X			6						X	
W122091002	↓	1315		↓			6						X	

Possible Hazard Identification: ☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required: ☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other_____

QC Requirements (Specify):

	Date	Time		Date	Time
1. Relinquished By: [signature]	9/10/02	1700	1. Received By: [signature]	9/11/02	0900
2. Relinquished By:			2. Received By:		
3. Relinquished By:			3. Received By:		

Comments

21

DISTRIBUTION: [illegible]E - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

Chain of Custody Record

SEVERN TRENT SERVICES

1.1 G
DS 9/11

Severn Trent Laboratories, Inc.

STL-4124 (0901)

Client: City of St. Louis Park	Project Manager: Scott Anderson	Date: 9/10/02	Chain of Custody Number: 150714
Address: 3752 Wooddale Ave	Telephone Number (Area Code)/Fax Number: 952 924 2557	Lab Number	Page 1 of 1
City: St. Louis Park; State: MN; Zip Code: 55416	Site Contact	Lab Contact: Brian Stringer	
Project Name and Location (State): Reilly	Carrier/Waybill Number		
Contract/Purchase Order/Quote No.: 01620-013			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Analysis (Attach list if more space is needed): PAH PPTS	Special Instructions/ Conditions of Receipt
W411091002	9/10/02	1430		X			6						X	

Possible Hazard Identification: ☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required: ☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other _____

QC Requirements (Specify)

1. Relinquished By: [signature]	Date: 9/10/02	Time: 1700	1. Received By: [signature]	Date: 9/11/02	Time: 0900
2. Relinquished By	Date	Time	2. Received By	Date	Time
3. Relinquished By	Date	Time	3. Received By	Date	Time

...ed to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

Chain of Custody Record

SEVERN TRENT SERVICES

Severn Trent Laboratories, Inc.

STL-4124 (0901)

Client: City of St. Louis Park	Project Manager: Scott Anderson	Date: 9/10/02	Chain of Custody Number: 150713
Address: 3752 Wooddale Ave	Telephone Number (Area Code)/Fax Number: 952 924 2557	Lab Number	Page ____ of ____
City: St. Louis Park; State: MN; Zip Code: 55416	Site Contact	Lab Contact: Brian Stringer	
Project Name and Location (State): Reilly	Carrier/Waybill Number		
Contract/Purchase Order/Quote No.: 01620-03			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil		Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH		Analysis (Attach list if more space is needed): PAH PPTS	Special Instructions/ Conditions of Receipt
W4809 1002	9/10/02	1005		X				6							X	
W133091002	↓	1600		↓				6							X	

Possible Hazard Identification: ☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For ____ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required: ☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other ____

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished By: [signature]	9/10/02	1700	1. Received By: [signature]	9/11/02	0900
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

Y

SEVERN TRENT SERVICES

STL Denver
4955 Yarrow Street
Arvada, CO 80002-4517

Tel: 303 736 0100
Fax: 303 431 7171
www.stl-inc.com

ANALYTICAL REPORT

City of St. Louis Park

Project: Reilly Tar & Chemical Corporation

Lot #: D2I100211

Mr. Scott Anderson

City of St. Louis Park
Utility Division
3752 Wooddale Avenue
St. Louis Park, MN 55416

STL DENVER

Brian Stringer
Project Manager

October 17, 2002

Table Of Contents

Standard Deliverable

Report Contents

- Table of Contents
- Case Narrative
- Executive Summary – Detection Highlights
- Analytical Method Summary
- Method/ Analyst Summary
- Sample Summary
- Analytical Results by Sample
- QC Data Association Summary
- Chain-of-Custody

Total Number of Pages 16

CASE NARRATIVE

STL Lot Number D2I100211

Introduction

STL Denver received two aqueous samples and a MS/MSD on September 10, 2002 for PAH SIM (ppt-5) analysis.

The cooler temperature was 3.6°C. All containers were received in acceptable condition.

Data Quality Assessment

The results included in this report have been reviewed for compliance with STL Denver's Laboratory Quality Manual. The test results shown in this report meet all requirements of NELAC and any exceptions are noted below.

Dilution factors and footnotes have been provided to assist in the interpretation of the results. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at concentrations above the linear calibration curve, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

STL utilizes USEPA approved methods in all analytical work. The samples presented in this report were analyzed for the parameters listed on the analytical methods summary page in accordance with the methods indicated.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Polynuclear Aromatic Hydrocarbons – Method 8270C SIM

A project-specific lower acceptable recovery limit of 30% for all QC samples and surrogates has been designated for analytical work performed under the 2002 Quality Assurance Project Plan (QAPP) for the Reilly Industries, Inc. NPL Site. This lower limit is used for this project, rather than historically generated lower recovery limits. All recoveries in this report are above the 30% minimum threshold with the exceptions noted below.

The recoveries of the surrogate chrysene-d12 was below the lower control limit for sample "E2090902" and the MS/MSD performed on this sample. This is an indication of a possible low bias. Re-analysis confirmed the results. Since the extraction requires four liters of sample and only six 1-liter amber glass bottles were received per sample, re-extraction was not possible.

The LCS demonstrated a recovery of the analyte Quinoline below control limits. Historically, this compound is a poor performer for this method. Since the extraction requires four liters of sample and only six 1-liter amber glass bottles were received per sample, re-extraction was not possible.

The method blank demonstrated a recovery of the surrogate fluorene d-10 below control limits. Since the extraction requires four liters of sample and only six 1-liter amber glass bottles were received per sample, re-extraction was not possible.

The MS/MSD performed on a sample from another lot demonstrated percent recoveries below control limits for benzo(e)pyrene, chrysene, and the surrogate chrysene-d12.

Data Completeness for Polynuclear Aromatic Hydrocarbons – Method 8270C SIM

The results contained in the report were reviewed relative to data acceptance criteria as specified in the 2002 QAPP. Based on the exceptions noted we achieved 95.6% completeness.

DATA COMPLETENESS CALCULATION		
LOT D2I100211		
ANALYSIS	PAHs by SW846-8270SIM	
QC Parameter	**Data Planned**	**Valid Data Obtained**
Method Blank	31	31
MB Surrogates	3	2
LCS	7	6
LCS Surrogates	3	3
FB/FBD	NA	NA
MS	NA	NA
MS Surrogates	NA	NA
MSD	NA	NA
MSD Surrogates	NA	NA
MS/MSD RPD	NA	NA
Sample/Dup. RPD	NA	NA
Sample Surrogates	6	5
Internal STD Area	18	18
TOTAL	**68**	**65**
% Completeness	**95.6%**	

** There are no sample duplicate, MS/MSD, or field blank samples on this lot.

EXECUTIVE SUMMARY - Detection Highlights

D2I100211

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
E15090902 09/09/02 10:30 002				
Acenaphthene	5.2 J	5.7	ng/L	SW846 8270C SIM

METHODS SUMMARY

D2I100211

PARAMETER	ANALYTICAL METHOD	PREPARATION METHOD
Base/Neutrals and Acids	SW846 8270C SIM	SW846 3520C

References:

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

METHOD / ANALYST SUMMARY

D2I100211

ANALYTICAL METHOD	ANALYST	ANALYST ID
SW846 8270C SIM	Tim O'Donnell	000443

References:

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

SAMPLE SUMMARY

D2I100211

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
E71CG	001	E2090902	09/09/02	10:15
E71CP	002	E15090902	09/09/02	10:30

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: E2090902

GC/MS Semivolatiles

Lot-Sample #...: D2I100211-001 **Work Order #...:** E71CG1AA **Matrix.....:** WG
Date Sampled...: 09/09/02 **Date Received..:** 09/10/02
Prep Date.....: 09/11/02 **Analysis Date..:** 09/26/02
Prep Batch #...: 2254422 **Analysis Time..:** 22:59
Dilution Factor: 1

Method.....: SW846 8270C SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	5.7	ng/L
Acenaphthylene	ND	4.8	ng/L
Acridine	ND	6.2	ng/L
Anthracene	ND	4.2	ng/L
Benzo(a)anthracene	ND	4.3	ng/L
Benzo(b)fluoranthene	ND	4.7	ng/L
Benzo(k)fluoranthene	ND	4.1	ng/L
2,3-Benzofuran	ND	5.4	ng/L
Benzo(ghi)perylene	ND	6.2	ng/L
Benzo(a)pyrene	ND	2.5	ng/L
Benzo(e)pyrene	ND	4.3	ng/L
Benzo(b)thiophene	ND	5.2	ng/L
Biphenyl	ND	5.6	ng/L
Carbazole	ND	3.8	ng/L
Chrysene	ND	5.6	ng/L
Dibenzo(a,h)anthracene	ND	5.9	ng/L
Dibenzofuran	ND	5.7	ng/L
Dibenzothiophene	ND	4.1	ng/L
2,3-Dihydroindene	ND	5.0	ng/L
Fluoranthene	ND	4.6	ng/L
Fluorene	ND	4.1	ng/L
Indene	ND	4.7	ng/L
Indeno(1,2,3-cd)pyrene	ND	5.4	ng/L
Indole	ND	4.7	ng/L
2-Methylnaphthalene	ND	5.9	ng/L
1-Methylnaphthalene	ND	5.6	ng/L
Naphthalene	ND	8.6	ng/L
Perylene	ND	3.3	ng/L
Phenanthrene	ND	6.3	ng/L
Pyrene	ND	4.2	ng/L
Quinoline	ND	9.0	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	23 *	(30 - 118)
Fluorene d-10	44	(41 - 162)
Naphthalene-d8	45	(30 - 108)

NOTE(S):

* Surrogate recovery is outside stated control limits.

CITY OF ST. LOUIS PARK

Client Sample ID: E15090902

GC/MS Semivolatiles

Lot-Sample #...: D2I100211-002 Work Order #...: E71CP1AA Matrix.....: WG
Date Sampled...: 09/09/02 Date Received..: 09/10/02
Prep Date.....: 09/11/02 Analysis Date..: 09/26/02
Prep Batch #...: 2254422 Analysis Time..: 23:36
Dilution Factor: 1

Method.....: SW846 8270C SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	**5.2 J**	**5.7**	**ng/L**
Acenaphthylene	ND	4.8	ng/L
Acridine	ND	6.2	ng/L
Anthracene	ND	4.2	ng/L
Benzo(a)anthracene	ND	4.3	ng/L
Benzo(b)fluoranthene	ND	4.7	ng/L
Benzo(k)fluoranthene	ND	4.1	ng/L
2,3-Benzofuran	ND	5.4	ng/L
Benzo(ghi)perylene	ND	6.2	ng/L
Benzo(a)pyrene	ND	2.5	ng/L
Benzo(e)pyrene	ND	4.3	ng/L
Benzo(b)thiophene	ND	5.2	ng/L
Biphenyl	ND	5.6	ng/L
Carbazole	ND	3.8	ng/L
Chrysene	ND	5.6	ng/L
Dibenzo(a,h)anthracene	ND	5.9	ng/L
Dibenzofuran	ND	5.7	ng/L
Dibenzothiophene	ND	4.1	ng/L
2,3-Dihydroindene	ND	5.0	ng/L
Fluoranthene	ND	4.6	ng/L
Fluorene	ND	4.1	ng/L
Indene	ND	4.7	ng/L
Indeno(1,2,3-cd)pyrene	ND	5.4	ng/L
Indole	ND	4.7	ng/L
2-Methylnaphthalene	ND	5.9	ng/L
1-Methylnaphthalene	ND	5.6	ng/L
Naphthalene	ND	8.6	ng/L
Perylene	ND	3.3	ng/L
Phenanthrene	ND	6.3	ng/L
Pyrene	ND	4.2	ng/L
Quinoline	ND	9.0	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	33	(30 - 118)
Fluorene d-10	60	(41 - 162)
Naphthalene-d8	85	(30 - 108)

NOTE(S):

J Estimated result. Result is less than RL.

QC DATA ASSOCIATION SUMMARY

D2I100211

Sample Preparation and Analysis Control Numbers

SAMPLE#	MATRIX	ANALYTICAL METHOD	LEACH BATCH #	PREP BATCH #	MS RUN#
001	WG	SW846 8270C SIM		2254422	2254199
002	WG	SW846 8270C SIM		2254422	2254199

METHOD BLANK REPORT

GC/MS Semivolatiles

Client Lot #...: D2I100211 **Work Order #...:** E73W91AA **Matrix.....:** WATER
MB Lot-Sample #: D2I110000-422

Prep Date.....: 09/11/02 **Analysis Time..:** 17:20
Analysis Date..: 09/26/02 **Prep Batch #...:** 2254422
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Acenaphthene	ND	5.7	ng/L	SW846 8270C SIM
Acenaphthylene	ND	4.8	ng/L	SW846 8270C SIM
Acridine	ND	6.2	ng/L	SW846 8270C SIM
Anthracene	ND	4.2	ng/L	SW846 8270C SIM
Benzo(a)anthracene	ND	4.3	ng/L	SW846 8270C SIM
Benzo(b)fluoranthene	ND	4.7	ng/L	SW846 8270C SIM
Benzo(k)fluoranthene	ND	4.1	ng/L	SW846 8270C SIM
2,3-Benzofuran	ND	5.4	ng/L	SW846 8270C SIM
Benzo(ghi)perylene	ND	6.2	ng/L	SW846 8270C SIM
Benzo(a)pyrene	ND	2.5	ng/L	SW846 8270C SIM
Benzo(e)pyrene	ND	4.3	ng/L	SW846 8270C SIM
Benzo(b)thiophene	ND	5.2	ng/L	SW846 8270C SIM
Biphenyl	ND	5.6	ng/L	SW846 8270C SIM
Carbazole	ND	3.8	ng/L	SW846 8270C SIM
Chrysene	ND	5.6	ng/L	SW846 8270C SIM
Dibenzo(a,h)anthracene	ND	5.9	ng/L	SW846 8270C SIM
Dibenzofuran	ND	5.7	ng/L	SW846 8270C SIM
Dibenzothiophene	ND	4.1	ng/L	SW846 8270C SIM
2,3-Dihydroindene	ND	5.0	ng/L	SW846 8270C SIM
Fluoranthene	ND	4.6	ng/L	SW846 8270C SIM
Fluorene	ND	4.1	ng/L	SW846 8270C SIM
Indene	ND	4.7	ng/L	SW846 8270C SIM
Indeno(1,2,3-cd)pyrene	ND	5.4	ng/L	SW846 8270C SIM
Indole	ND	4.7	ng/L	SW846 8270C SIM
2-Methylnaphthalene	ND	5.9	ng/L	SW846 8270C SIM
1-Methylnaphthalene	ND	5.6	ng/L	SW846 8270C SIM
Naphthalene	ND	8.6	ng/L	SW846 8270C SIM
Perylene	ND	3.3	ng/L	SW846 8270C SIM
Phenanthrene	ND	6.3	ng/L	SW846 8270C SIM
Pyrene	ND	4.2	ng/L	SW846 8270C SIM
Quinoline	ND	9.0	ng/L	SW846 8270C SIM

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	45	(30 - 118)
Fluorene d-10	33 *	(41 - 162)
Naphthalene-d8	43	(30 - 108)

NOTE(S):

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

* Surrogate recovery is outside stated control limits.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: D2I100211 **Work Order #...:** E73W91AC **Matrix.....:** WATER
LCS Lot-Sample#: D2I110000-422
Prep Date.....: 09/11/02 **Analysis Date..:** 09/26/02
Prep Batch #...: 2254422 **Analysis Time..:** 17:57
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD
Benzo(e)pyrene	**44**	**(30 - 150)**	**SW846 8270C SIM**
Chrysene	**43**	**(30 - 132)**	**SW846 8270C SIM**
Fluorene	**37**	**(30 - 132)**	**SW846 8270C SIM**
Indene	**42**	**(30 - 150)**	**SW846 8270C SIM**
2-Methylnaphthalene	**43**	**(30 - 150)**	**SW846 8270C SIM**
Naphthalene	**50**	**(30 - 150)**	**SW846 8270C SIM**
Quinoline	**26 a**	**(30 - 150)**	**SW846 8270C SIM**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	56	(30 - 118)
Fluorene d-10	42	(41 - 162)
Naphthalene-d8	58	(30 - 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.

LABORATORY CONTROL SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #...: D2I100211 Work Order #...: E73W91AC Matrix.....: WATER
LCS Lot-Sample#: D2I110000-422
Prep Date.....: 09/11/02 Analysis Date..: 09/26/02
Prep Batch #...: 2254422 Analysis Time..: 17:57
Dilution Factor: 1

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD
Benzo(e)pyrene	**10.0**	**4.37**	**ng/L**	**44**	**SW846 8270C S**
Chrysene	**10.0**	**4.29**	**ng/L**	**43**	**SW846 8270C S**
Fluorene	**10.0**	**3.75**	**ng/L**	**37**	**SW846 8270C S**
Indene	**10.0**	**4.16**	**ng/L**	**42**	**SW846 8270C S**
2-Methylnaphthalene	**10.0**	**4.27**	**ng/L**	**43**	**SW846 8270C S**
Naphthalene	**10.0**		**ng/L**	**50**	**SW846 8270C S**
Quinoline	**10.0**	a	**ng/L**	**26**	**SW846 8270C S**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	56	(30 - 118)
Fluorene d-10	42	(41 - 162)
Naphthalene-d8	58	(30 - 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.

MATRIX SPIKE SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: D2I100211 Work Order #...: E70861AC-MS Matrix.....: WATER
MS Lot-Sample #: D2I100204-001 E70861AD-MSD
Date Sampled...: 09/09/02 Date Received..: 09/10/02
Prep Date.....: 09/11/02 Analysis Date..: 09/26/02
Prep Batch #...: 2254422 Analysis Time..: 19:12
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Benzo(e)pyrene	0.0 a	(30 - 150)			SW846 8270C SIM
	0.0 a	(30 - 150)	0.0	(0-50)	SW846 8270C SIM
Chrysene	17 a	(30 - 132)			SW846 8270C SIM
	27 a	(30 - 132)	48	(0-50)	SW846 8270C SIM
Fluorene	57	(30 - 132)			SW846 8270C SIM
	49	(30 - 132)	12	(0-50)	SW846 8270C SIM
Indene	59	(30 - 150)			SW846 8270C SIM
	46	(30 - 150)	23	(0-50)	SW846 8270C SIM
2-Methylnaphthalene	61	(30 - 150)			SW846 8270C SIM
	50	(30 - 150)	18	(0-50)	SW846 8270C SIM
Naphthalene	73	(30 - 150)			SW846 8270C SIM
	59	(30 - 150)	19	(0-50)	SW846 8270C SIM
Quinoline	54	(30 - 150)			SW846 8270C SIM
	42	(30 - 150)	23	(0-50)	SW846 8270C SIM

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	17 *	(30 - 118)
	28 *	(30 - 118)
Fluorene d-10	47	(41 - 162)
	41	(41 - 162)
Naphthalene-d8	65	(30 - 108)
	51	(30 - 108)

NOTE(S):

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

Bold print denotes control parameters

* Surrogate recovery is outside stated control limits.

a Spiked analyte recovery is outside stated control limits.

MATRIX SPIKE SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #...: D2I100211 Work Order #...: E70861AC-MS Matrix.....: WATER
MS Lot-Sample #: D2I100204-001 E70861AD-MSD
Date Sampled...: 09/09/02 Date Received..: 09/10/02
Prep Date.....: 09/11/02 Analysis Date..: 09/26/02
Prep Batch #...: 2254422 Analysis Time..: 19:12
Dilution Factor: 1

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD
Benzo(e)pyrene	ND	10.0	0.0	ng/L	0.0 a		SW846 8270C SIM
	ND	10.2	0.0	ng/L	0.0 a	0.0	SW846 8270C SIM
Chrysene	ND	10.0		ng/L	17 a		SW846 8270C SIM
	ND	10.2	2.75	ng/L	27 a	48	SW846 8270C SIM
Fluorene	ND	10.0	5.66	ng/L	57		SW846 8270C SIM
	ND	10.2	5.02	ng/L	49	12	SW846 8270C SIM
Indene	ND	10.0	5.94	ng/L	59		SW846 8270C SIM
	ND	10.2	4.70	ng/L	46	23	SW846 8270C SIM
2-Methylnaphthalene	ND	10.0	6.06	ng/L	61		SW846 8270C SIM
	ND	10.2	5.08	ng/L	50	18	SW846 8270C SIM
Naphthalene	ND	10.0	7.29	ng/L	73		SW846 8270C SIM
	ND	10.2	6.00	ng/L	59	19	SW846 8270C SIM
Quinoline	ND	10.0	5.37	ng/L	54		SW846 8270C SIM
	ND	10.2	4.28	ng/L	42	23	SW846 8270C SIM

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	17 *	(30 - 118)
	28 *	(30 - 118)
Fluorene d-10	47	(41 - 162)
	41	(41 - 162)
Naphthalene-d8	65	(30 - 108)
	51	(30 - 108)

NOTE(S):

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

Bold print denotes control parameters

* Surrogate recovery is outside stated control limits.

a Spiked analyte recovery is outside stated control limits.

[redacted]

Chain of Custody Record

3.6°C
9/10

SEVERN TRENT SERVICES

Severn Trent Laboratories, Inc.

STL-4124 (0901)

Client: City of St. Louis Park	Project Manager: Scott Anderson	Date: 9/9/02	Chain of Custody Number: 150711
Address: 3752 Wooddale Ave.	Telephone Number (Area Code)/Fax Number: 952-924-2557	Lab Number	Page 1 of 1
City: St. Louis Park; State: MN; Zip Code: 55416	Site Contact	Lab Contact: Brian Stringer	
Project Name and Location (State): Reilly	Carrier/Waybill Number		
Contract/Purchase Order/Quote No.: 01620-013			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil		Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Analysis (Attach list if more space is needed): PAH PPT 5	Special Instructions/ Conditions of Receipt
E2090902	9/9/02	1015		X				6						X	
E15090902	↓	1030		↓				6						X	

Possible Hazard Identification: ☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required: ☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other_____

QC Requirements (Specify)

1. Relinquished By: [signature]	Date: 9/9/02	Time: 1130	1. Received By: [signature]	Date: 9/10/02	Time: 0800
2. Relinquished By	Date	Time	2. Received By	Date	Time
3. Relinquished By	Date	Time	3. Received By	Date	Time

Comments

9

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

Z

SEVERN
TRENT
SERVICES

STL Denver
4955 Yarrow Street
Arvada, CO 80002-4517

Tel: 303 736 0100
Fax: 303 431 7171
www.stl-inc.com

ANALYTICAL REPORT

City of St. Louis Park

Project: Reilly Tar & Chemical Corporation

Lot #: D2I180279

Mr. Scott Anderson

City of St. Louis Park
Utility Division
3752 Wooddale Avenue
St. Louis Park, MN 55416

STL DENVER

Brian Stringer
Project Manager

October 17, 2002

Table Of Contents

Standard Deliverable

Report Contents

- Table of Contents
- Case Narrative
- Executive Summary – Detection Highlights
- Analytical Method Summary
- Method/ Analyst Summary
- Sample Summary
- Analytical Results by Sample
- QC Data Association Summary
- Chain-of-Custody

Total Number of Pages 32

CASE NARRATIVE

STL Lot Number D2I170275

Introduction

On September 18, 2002 STL Denver received twelve aqueous samples for ppb level, full scan PAH analysis.

The cooler temperatures upon receipt were 5.7°C, 0.1°C, and 0.9°C. The chain of custody 15707 was not relinquished by the client. The chain of custody did not list sample collection time for samples W420-091702, W420D-091702, W420FB-091702, and W420FBD-091702. This information was taken from the sample container labels. All containers were received in acceptable condition.

Data Quality Assessment

The results included in this report have been reviewed for compliance with STL Denver's Laboratory Quality Manual. The test results shown in this report meet all requirements of NELAC and any exceptions are noted below.

Dilution factors and footnotes have been provided to assist in the interpretation of the results. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at concentrations above the linear calibration curve, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

STL utilizes USEPA approved methods in all analytical work. The samples presented in this report were analyzed for the parameters listed on the analytical methods summary page in accordance with the methods indicated.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Polynuclear Aromatic Hydrocarbons – Method 8270C

A project-specific lower acceptable recovery limit of 30% for all QC samples and surrogates has been designated for analytical work performed under the 2002 Quality Assurance Project Plan (QAPP) for the Reilly Industries, Inc. NPL Site. All recoveries in this report are above the 30% minimum threshold.

Samples P307-091702 and W420-091702 demonstrated recoveries of the surrogate chrysene-d12 below control limits. Re-analysis confirmed the results. The samples were not re-extracted due to expired holding times.

Samples W420-091702 and W420D-091702 were analyzed at a dilution due to high concentrations of 2,3-dihydroindene and naphthalene in the samples. All other analytes are reported from the undiluted analysis to provide data with the lowest possible dilution factors. Naphthalene is reported in both the undiluted and diluted analysis of sample W420-091702 to provide parent sample data for the MS/MSD performed on this sample.

The MS/MSD performed on sample W420-091702 demonstrated recoveries below control limits for naphthalene.

Case Narrative for D2I180279 (continued)

Data Completeness for Polynuclear Aromatic Hydrocarbons – Method SW846 8270C

The results contained in the report were reviewed relative to data acceptance criteria as specified in the 2002 QAPP. Based on the exceptions noted we achieved 97.98% completeness.

DATA COMPLETENESS CALCULATION		
LOT D2I180279		
ANALYSIS	PAHs by SW846-8270	
QC Parameter	**Data Planned**	**Valid Data Obtained**
Method Blank	31	31
MB Surrogates	3	3
LCS	7	7
LCS Surrogates	3	3
FB/FBD	62	62
MS	7	6
MS Surrogates	3	3
MSD	7	6
MSD Surrogates	3	3
MS/MSD RPD	7	7
Sample/Dup. RPD	31	30
Sample Surrogates	36	34
Internal STD Area	48	48
TOTAL	**248**	**243**
% Completeness	**97.98%**	

* The MS/MSD was performed on W420-091702

Case Narrative for D2I180279 (continued)

Data Completeness for Polynuclear Aromatic Hydrocarbons – Method SW846 8270C

Sample Duplicate RPD					
LOT D2I180279					
Sample: W420-091702		DUP: W420D-091702			
Compound	Result	Compound	Result	RPD	RPD>50%
Acenaphthene	130	Acenaphthene	140	7.4	
Acenaphthylene	ND	Acenaphthylene	ND	0.0	
Acridine	1.7	Acridine	2.2	25.6	
Anthracene	2.0	Anthracene	2.4	18.2	
Benzo(a)anthracene	ND	Benzo(a)anthracene	ND	0.0	
Benzo(b)fluoranthene	ND	Benzo(b)fluoranthene	ND	0.0	
Benzo(k)fluoranthene	ND	Benzo(k)fluoranthene	ND	0.0	
2,3-Benzofuran	47	2,3-Benzofuran	50	6.2	
Benzo(ghi)perylene	ND	Benzo(ghi)perylene	ND	0.0	
Benzo(a)pyrene	ND	Benzo(a)pyrene	ND	0.0	
Benzo(e)pyrene	ND	Benzo(e)pyrene	ND	0.0	
Benzo(b)thiophene	130	Benzo(b)thiophene	130	0.0	
Biphenyl	25	Biphenyl	27	7.7	
Carbazole	75	Carbazole	85	12.5	
Chrysene	ND	Chrysene	ND	0.0	
Dibenz(a,h)anthracene	ND	Dibenz(a,h)anthracene	ND	0.0	
Dibenzofuran	47	Dibenzofuran	52	10.1	
Dibenzothiophene	6.4	Dibenzothiophene	11	52.9	p
2,3-Dihydroindene	340	2,3-Dihydroindene	370	8.5	
Fluoranthene	ND	Fluoranthene	ND	0.0	
Fluorene	50	Fluorene	57	13.1	
Indene	40	Indene	45	11.8	
Indeno(1,2,3-cd)pyrene	ND	Indeno(1,2,3-cd)pyrene	ND	0.0	
Indole	ND	Indole	ND	0.0	
2-Methylnaphthalene	110	2-Methylnaphthalene	120	8.7	
1-Methylnaphthalene	140	1-Methylnaphthalene	150	6.9	
Naphthalene	2500	Naphthalene	2700	7.7	
Perylene	ND	Perylene	ND	0.0	
Phenanthrene	34	Phenanthrene	39	13.7	
Pyrene	ND	Pyrene	ND	0.0	
Quinoline	ND	Quinoline	ND	0.0	

RPD = Relative Percent Difference
ND = Compound not detected in the sample
OK = RPD acceptable
p = RPD is outside of control limits
*NC = RPD not calculated, one positive result and one ND. Considered acceptable if the positive result is less than 4x the RL.

EXECUTIVE SUMMARY - Detection Highlights

D2I180279

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
P307-091702 09/17/02 09:15 002				
Acenaphthene	19	10	ug/L	SW846 8270C
Acenaphthylene	1.6 J	10	ug/L	SW846 8270C
Benzo(b)thiophene	5.4 J	10	ug/L	SW846 8270C
Carbazole	7.4 J	10	ug/L	SW846 8270C
2,3-Dihydroindene	30	10	ug/L	SW846 8270C
Fluorene	4.4 J	10	ug/L	SW846 8270C
1-Methylnaphthalene	14	10	ug/L	SW846 8270C
Naphthalene	7.3 J	10	ug/L	SW846 8270C
W101-091702 09/17/02 10:00 003				
2,3-Dihydroindene	6.2 J	10	ug/L	SW846 8270C
W421-091702 09/17/02 12:00 005				
Acenaphthene	59	10	ug/L	SW846 8270C
Acridine	2.4 J	10	ug/L	SW846 8270C
Anthracene	2.0 J	10	ug/L	SW846 8270C
Benzo(b)thiophene	33	10	ug/L	SW846 8270C
Biphenyl	6.4 J	10	ug/L	SW846 8270C
Carbazole	36	10	ug/L	SW846 8270C
Dibenzofuran	16	10	ug/L	SW846 8270C
Dibenzothiophene	2.6 J	10	ug/L	SW846 8270C
2,3-Dihydroindene	120	10	ug/L	SW846 8270C
Fluoranthene	4.8 J	10	ug/L	SW846 8270C
Fluorene	26	10	ug/L	SW846 8270C
Indene	32	10	ug/L	SW846 8270C
2-Methylnaphthalene	13	10	ug/L	SW846 8270C
1-Methylnaphthalene	56	10	ug/L	SW846 8270C
Naphthalene	120	10	ug/L	SW846 8270C
Phenanthrene	19	10	ug/L	SW846 8270C
Pyrene	3.1 J	10	ug/L	SW846 8270C
W433-091702 09/17/02 12:50 007				
2,3-Dihydroindene	2.9 J	10	ug/L	SW846 8270C
W420-091702 09/17/02 12:30 009				
Acenaphthene	130	10	ug/L	SW846 8270C
Acridine	1.7 J	10	ug/L	SW846 8270C
Anthracene	2.0 J	10	ug/L	SW846 8270C
2,3-Benzofuran	47	10	ug/L	SW846 8270C

(Continued on next page)

EXECUTIVE SUMMARY - Detection Highlights

D2I180279

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
W420-091702 09/17/02 12:30 009				
Benzo(b)thiophene	130	10	ug/L	SW846 8270C
Biphenyl	25	10	ug/L	SW846 8270C
Carbazole	75	10	ug/L	SW846 8270C
Dibenzofuran	47	10	ug/L	SW846 8270C
Dibenzothiophene	6.4 J	10	ug/L	SW846 8270C
2,3-Dihydroindene	340	200	ug/L	SW846 8270C
Fluorene	50	10	ug/L	SW846 8270C
Indene	40	10	ug/L	SW846 8270C
2-Methylnaphthalene	110	10	ug/L	SW846 8270C
1-Methylnaphthalene	140	10	ug/L	SW846 8270C
Naphthalene	1100 E	10	ug/L	SW846 8270C
Naphthalene	2500	200	ug/L	SW846 8270C
Phenanthrene	34	10	ug/L	SW846 8270C
W420D-091702 09/17/02 12:30 010				
Acenaphthene	140	10	ug/L	SW846 8270C
Acridine	2.2 J	10	ug/L	SW846 8270C
Anthracene	2.4 J	10	ug/L	SW846 8270C
2,3-Benzofuran	50	10	ug/L	SW846 8270C
Benzo(b)thiophene	130	10	ug/L	SW846 8270C
Biphenyl	27	10	ug/L	SW846 8270C
Carbazole	85	10	ug/L	SW846 8270C
Dibenzofuran	52	10	ug/L	SW846 8270C
Dibenzothiophene	11	10	ug/L	SW846 8270C
2,3-Dihydroindene	370	200	ug/L	SW846 8270C
Fluorene	57	10	ug/L	SW846 8270C
Indene	45	10	ug/L	SW846 8270C
2-Methylnaphthalene	120	10	ug/L	SW846 8270C
1-Methylnaphthalene	150	10	ug/L	SW846 8270C
Naphthalene	2700	200	ug/L	SW846 8270C
Phenanthrene	39	10	ug/L	SW846 8270C

METHODS SUMMARY

D2I180279

PARAMETER	ANALYTICAL METHOD	PREPARATION METHOD
Semivolatile Organic Compounds by GC/MS	SW846 8270C	SW846 3520C

References:

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

METHOD / ANALYST SUMMARY

D2I180279

ANALYTICAL METHOD	ANALYST	ANALYST ID
SW846 8270C	Tim O'Donnell	000443

References:

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

SAMPLE SUMMARY

D2I180279

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
E8FR9	001	P112-091702	09/17/02	08:40
E8FTJ	002	P307-091702	09/17/02	09:15
E8FTL	003	W101-091702	09/17/02	10:00
E8FTM	004	P308-091702	09/17/02	15:00
E8FTN	005	W421-091702	09/17/02	12:00
E8FTR	006	W136-091702	09/17/02	11:15
E8FTT	007	W433-091702	09/17/02	12:50
E8FTW	008	W427-091702	09/17/02	14:20
E8FTX	009	W420-091702	09/17/02	12:30
E8FT0	010	W420D-091702	09/17/02	12:30
E8FT1	011	W420FB-091702	09/17/02	12:30
E8FT2	012	W420FBD-091702	09/17/02	12:30

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: P112-091702

GC/MS Semivolatiles

Lot-Sample #...: D2I180279-001 **Work Order #...:** E8FR91AA **Matrix.....:** WG
Date Sampled...: 09/17/02 **Date Received..:** 09/18/02
Prep Date.....: 09/24/02 **Analysis Date..:** 10/11/02
Prep Batch #...: 2267195 **Analysis Time..:** 15:58
Dilution Factor: 1

Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	10	ug/L
Acenaphthylene	ND	10	ug/L
Acridine	ND	10	ug/L
Anthracene	ND	10	ug/L
Benzo(a)anthracene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
2,3-Benzofuran	ND	10	ug/L
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Benzo(e)pyrene	ND	10	ug/L
Benzo(b)thiophene	ND	10	ug/L
Biphenyl	ND	10	ug/L
Carbazole	ND	10	ug/L
Chrysene	ND	10	ug/L
Dibenzo(a,h)anthracene	ND	10	ug/L
Dibenzofuran	ND	10	ug/L
Dibenzothiophene	ND	10	ug/L
2,3-Dihydroindene	ND	10	ug/L
Fluoranthene	ND	10	ug/L
Fluorene	ND	10	ug/L
Indene	ND	10	ug/L
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Indole	ND	10	ug/L
2-Methylnaphthalene	ND	10	ug/L
1-Methylnaphthalene	ND	10	ug/L
Naphthalene	ND	10	ug/L
Perylene	ND	10	ug/L
Phenanthrene	ND	10	ug/L
Pyrene	ND	10	ug/L
Quinoline	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	48	(30 - 160)
Fluorene d-10	72	(36 - 127)
Naphthalene-d8	85	(37 - 107)

CITY OF ST. LOUIS PARK

Client Sample ID: P307-091702

GC/MS Semivolatiles

Lot-Sample #...:	D2I180279-002	**Work Order #...:**	E8FTJ1AA	**Matrix.....:**	WG
Date Sampled...:	09/17/02	**Date Received..:**	09/18/02		
Prep Date.....:	09/24/02	**Analysis Date..:**	10/10/02		
Prep Batch #...:	2267195	**Analysis Time..:**	18:05		
Dilution Factor:	1				
		Method.....:	SW846 8270C		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	**19**	**10**	**ug/L**
Acenaphthylene	**1.6 J**	**10**	**ug/L**
Acridine	ND	10	ug/L
Anthracene	ND	10	ug/L
Benzo(a)anthracene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
2,3-Benzofuran	ND	10	ug/L
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Benzo(e)pyrene	ND	10	ug/L
Benzo(b)thiophene	**5.4 J**	**10**	**ug/L**
Biphenyl	ND	10	ug/L
Carbazole	**7.4 J**	**10**	**ug/L**
Chrysene	ND	10	ug/L
Dibenzo(a,h)anthracene	ND	10	ug/L
Dibenzofuran	ND	10	ug/L
Dibenzothiophene	ND	10	ug/L
2,3-Dihydroindene	**30**	**10**	**ug/L**
Fluoranthene	ND	10	ug/L
Fluorene	**4.4 J**	**10**	**ug/L**
Indene	ND	10	ug/L
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Indole	ND	10	ug/L
2-Methylnaphthalene	ND	10	ug/L
1-Methylnaphthalene	**14**	**10**	**ug/L**
Naphthalene	**7.3 J**	**10**	**ug/L**
Perylene	ND	10	ug/L
Phenanthrene	ND	10	ug/L
Pyrene	ND	10	ug/L
Quinoline	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	26 *	(30 - 160)
Fluorene d-10	72	(36 - 127)
Naphthalene-d8	78	(37 - 107)

NOTE(S):

* Surrogate recovery is outside stated control limits.

J Estimated result. Result is less than RL.

CITY OF ST. LOUIS PARK

Client Sample ID: W101-091702

GC/MS Semivolatiles

Lot-Sample #...:	D2I180279-003	**Work Order #...:**	E8FTL1AA	**Matrix.....:**	WG
Date Sampled...:	09/17/02	**Date Received..:**	09/18/02		
Prep Date.....:	09/24/02	**Analysis Date..:**	10/10/02		
Prep Batch #...:	2267195	**Analysis Time..:**	18:43		
Dilution Factor:	1				
		Method.....:	SW846 8270C		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	10	ug/L
Acenaphthylene	ND	10	ug/L
Acridine	ND	10	ug/L
Anthracene	ND	10	ug/L
Benzo(a)anthracene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
2,3-Benzofuran	ND	10	ug/L
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Benzo(e)pyrene	ND	10	ug/L
Benzo(b)thiophene	ND	10	ug/L
Biphenyl	ND	10	ug/L
Carbazole	ND	10	ug/L
Chrysene	ND	10	ug/L
Dibenzo(a,h)anthracene	ND	10	ug/L
Dibenzofuran	ND	10	ug/L
Dibenzothiophene	ND	10	ug/L
2,3-Dihydroindene	**6.2 J**	**10**	**ug/L**
Fluoranthene	ND	10	ug/L
Fluorene	ND	10	ug/L
Indene	ND	10	ug/L
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Indole	ND	10	ug/L
2-Methylnaphthalene	ND	10	ug/L
1-Methylnaphthalene	ND	10	ug/L
Naphthalene	ND	10	ug/L
Perylene	ND	10	ug/L
Phenanthrene	ND	10	ug/L
Pyrene	ND	10	ug/L
Quinoline	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	55	(30 - 160)
Fluorene d-10	78	(36 - 127)
Naphthalene-d8	88	(37 - 107)

NOTE(S):

J Estimated result. Result is less than RL.

CITY OF ST. LOUIS PARK

Client Sample ID: P308-091702

GC/MS Semivolatiles

Lot-Sample #...: D2I180279-004 **Work Order #...:** E8FTM1AA **Matrix.....:** WG
Date Sampled...: 09/17/02 **Date Received..:** 09/18/02
Prep Date.....: 09/24/02 **Analysis Date..:** 10/10/02
Prep Batch #...: 2267195 **Analysis Time..:** 19:20
Dilution Factor: 1

Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	10	ug/L
Acenaphthylene	ND	10	ug/L
Acridine	ND	10	ug/L
Anthracene	ND	10	ug/L
Benzo(a)anthracene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
2,3-Benzofuran	ND	10	ug/L
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Benzo(e)pyrene	ND	10	ug/L
Benzo(b)thiophene	ND	10	ug/L
Biphenyl	ND	10	ug/L
Carbazole	ND	10	ug/L
Chrysene	ND	10	ug/L
Dibenzo(a,h)anthracene	ND	10	ug/L
Dibenzofuran	ND	10	ug/L
Dibenzothiophene	ND	10	ug/L
2,3-Dihydroindene	ND	10	ug/L
Fluoranthene	ND	10	ug/L
Fluorene	ND	10	ug/L
Indene	ND	10	ug/L
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Indole	ND	10	ug/L
2-Methylnaphthalene	ND	10	ug/L
1-Methylnaphthalene	ND	10	ug/L
Naphthalene	ND	10	ug/L
Perylene	ND	10	ug/L
Phenanthrene	ND	10	ug/L
Pyrene	ND	10	ug/L
Quinoline	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	46	(30 - 160)
Fluorene d-10	76	(36 - 127)
Naphthalene-d8	86	(37 - 107)

CITY OF ST. LOUIS PARK

Client Sample ID: W421-091702

GC/MS Semivolatiles

Lot-Sample #...:	D2I180279-005	**Work Order #...:**	E8FTN1AA	**Matrix.....:**	WG
Date Sampled...:	09/17/02	**Date Received..:**	09/18/02		
Prep Date.....:	09/24/02	**Analysis Date..:**	10/10/02		
Prep Batch #...:	2267195	**Analysis Time..:**	19:57		
Dilution Factor:	1				
		Method.....:	SW846 8270C		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	**59**	**10**	**ug/L**
Acenaphthylene	ND	10	ug/L
Acridine	**2.4 J**	**10**	**ug/L**
Anthracene	**2.0 J**	**10**	**ug/L**
Benzo(a)anthracene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
2,3-Benzofuran	ND	10	ug/L
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Benzo(e)pyrene	ND	10	ug/L
Benzo(b)thiophene	**33**	**10**	**ug/L**
Biphenyl	**6.4 J**	**10**	**ug/L**
Carbazole	**36**	**10**	**ug/L**
Chrysene	ND	10	ug/L
Dibenzo(a,h)anthracene	ND	10	ug/L
Dibenzofuran	**16**	**10**	**ug/L**
Dibenzothiophene	**2.6 J**	**10**	**ug/L**
2,3-Dihydroindene	**120**	**10**	**ug/L**
Fluoranthene	**4.8 J**	**10**	**ug/L**
Fluorene	**26**	**10**	**ug/L**
Indene	**32**	**10**	**ug/L**
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Indole	ND	10	ug/L
2-Methylnaphthalene	**13**	**10**	**ug/L**
1-Methylnaphthalene	**56**	**10**	**ug/L**
Naphthalene	**120**	**10**	**ug/L**
Perylene	ND	10	ug/L
Phenanthrene	**19**	**10**	**ug/L**
Pyrene	**3.1 J**	**10**	**ug/L**
Quinoline	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	50	(30 - 160)
Fluorene d-10	77	(36 - 127)
Naphthalene-d8	85	(37 - 107)

NOTE(S):

J Estimated result. Result is less than RL.

CITY OF ST. LOUIS PARK

Client Sample ID: W136-091702

GC/MS Semivolatiles

Lot-Sample #...: D2I180279-006 **Work Order #...:** E8FTR1AA **Matrix.....:** WG
Date Sampled...: 09/17/02 **Date Received..:** 09/18/02
Prep Date.....: 09/24/02 **Analysis Date..:** 10/10/02
Prep Batch #...: 2267195 **Analysis Time..:** 20:35
Dilution Factor: 1

Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	10	ug/L
Acenaphthylene	ND	10	ug/L
Acridine	ND	10	ug/L
Anthracene	ND	10	ug/L
Benzo(a)anthracene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
2,3-Benzofuran	ND	10	ug/L
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Benzo(e)pyrene	ND	10	ug/L
Benzo(b)thiophene	ND	10	ug/L
Biphenyl	ND	10	ug/L
Carbazole	ND	10	ug/L
Chrysene	ND	10	ug/L
Dibenzo(a,h)anthracene	ND	10	ug/L
Dibenzofuran	ND	10	ug/L
Dibenzothiophene	ND	10	ug/L
2,3-Dihydroindene	ND	10	ug/L
Fluoranthene	ND	10	ug/L
Fluorene	ND	10	ug/L
Indene	ND	10	ug/L
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Indole	ND	10	ug/L
2-Methylnaphthalene	ND	10	ug/L
1-Methylnaphthalene	ND	10	ug/L
Naphthalene	ND	10	ug/L
Perylene	ND	10	ug/L
Phenanthrene	ND	10	ug/L
Pyrene	ND	10	ug/L
Quinoline	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	38	(30 - 160)
Fluorene d-10	73	(36 - 127)
Naphthalene-d8	84	(37 - 107)

CITY OF ST. LOUIS PARK

Client Sample ID: W433-091702

GC/MS Semivolatiles

Lot-Sample #...: D2I180279-007 Work Order #...: E8FTT1AA Matrix.....: WG
Date Sampled...: 09/17/02 Date Received..: 09/18/02
Prep Date.....: 09/24/02 Analysis Date..: 10/10/02
Prep Batch #...: 2267195 Analysis Time..: 21:13
Dilution Factor: 1

Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	10	ug/L
Acenaphthylene	ND	10	ug/L
Acridine	ND	10	ug/L
Anthracene	ND	10	ug/L
Benzo(a)anthracene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
2,3-Benzofuran	ND	10	ug/L
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Benzo(e)pyrene	ND	10	ug/L
Benzo(b)thiophene	ND	10	ug/L
Biphenyl	ND	10	ug/L
Carbazole	ND	10	ug/L
Chrysene	ND	10	ug/L
Dibenzo(a,h)anthracene	ND	10	ug/L
Dibenzofuran	ND	10	ug/L
Dibenzothiophene	ND	10	ug/L
2,3-Dihydroindene	**2.9 J**	**10**	**ug/L**
Fluoranthene	ND	10	ug/L
Fluorene	ND	10	ug/L
Indene	ND	10	ug/L
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Indole	ND	10	ug/L
2-Methylnaphthalene	ND	10	ug/L
1-Methylnaphthalene	ND	10	ug/L
Naphthalene	ND	10	ug/L
Perylene	ND	10	ug/L
Phenanthrene	ND	10	ug/L
Pyrene	ND	10	ug/L
Quinoline	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	57	(30 - 160)
Fluorene d-10	74	(36 - 127)
Naphthalene-d8	84	(37 - 107)

NOTE(S):

J Estimated result. Result is less than RL.

CITY OF ST. LOUIS PARK

Client Sample ID: W427-091702

GC/MS Semivolatiles

Lot-Sample #...: D2I180279-008 **Work Order #...:** E8FTW1AA **Matrix.....:** WG
Date Sampled...: 09/17/02 **Date Received..:** 09/18/02
Prep Date.....: 09/24/02 **Analysis Date..:** 10/10/02
Prep Batch #...: 2267195 **Analysis Time..:** 21:51
Dilution Factor: 1

Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	10	ug/L
Acenaphthylene	ND	10	ug/L
Acridine	ND	10	ug/L
Anthracene	ND	10	ug/L
Benzo(a)anthracene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
2,3-Benzofuran	ND	10	ug/L
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Benzo(e)pyrene	ND	10	ug/L
Benzo(b)thiophene	ND	10	ug/L
Biphenyl	ND	10	ug/L
Carbazole	ND	10	ug/L
Chrysene	ND	10	ug/L
Dibenzo(a,h)anthracene	ND	10	ug/L
Dibenzofuran	ND	10	ug/L
Dibenzothiophene	ND	10	ug/L
2,3-Dihydroindene	ND	10	ug/L
Fluoranthene	ND	10	ug/L
Fluorene	ND	10	ug/L
Indene	ND	10	ug/L
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Indole	ND	10	ug/L
2-Methylnaphthalene	ND	10	ug/L
1-Methylnaphthalene	ND	10	ug/L
Naphthalene	ND	10	ug/L
Perylene	ND	10	ug/L
Phenanthrene	ND	10	ug/L
Pyrene	ND	10	ug/L
Quinoline	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	53	(30 - 160)
Fluorene d-10	74	(36 - 127)
Naphthalene-d8	91	(37 - 107)

CITY OF ST. LOUIS PARK

Client Sample ID: W420-091702

GC/MS Semivolatiles

Lot-Sample #...:	D2I180279-009	**Work Order #...:**	E8FTX1AA	**Matrix.....:**	WG
Date Sampled...:	09/17/02	**Date Received..:**	09/18/02		
Prep Date.....:	09/24/02	**Analysis Date..:**	10/10/02		
Prep Batch #...:	2267195	**Analysis Time..:**	22:30		
Dilution Factor:	1				
		Method.....:	SW846 8270C		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	**130**	**10**	**ug/L**
Acenaphthylene	ND	10	ug/L
Acridine	**1.7 J**	**10**	**ug/L**
Anthracene	**2.0 J**	**10**	**ug/L**
Benzo(a)anthracene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
2,3-Benzofuran	**47**	**10**	**ug/L**
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Benzo(e)pyrene	ND	10	ug/L
Benzo(b)thiophene	**130**	**10**	**ug/L**
Biphenyl	**25**	**10**	**ug/L**
Carbazole	**75**	**10**	**ug/L**
Chrysene	ND	10	ug/L
Dibenzo(a,h)anthracene	ND	10	ug/L
Dibenzofuran	**47**	**10**	**ug/L**
Dibenzothiophene	**6.4 J**	**10**	**ug/L**
Fluoranthene	ND	10	ug/L
Fluorene	**50**	**10**	**ug/L**
Indene	**40**	**10**	**ug/L**
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Indole	ND	10	ug/L
2-Methylnaphthalene	**110**	**10**	**ug/L**
1-Methylnaphthalene	**140**	**10**	**ug/L**
Naphthalene	**1100 E**	**10**	**ug/L**
Perylene	ND	10	ug/L
Phenanthrene	**34**	**10**	**ug/L**
Pyrene	ND	10	ug/L
Quinoline	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	20 *	(30 - 160)
Fluorene d-10	66	(36 - 127)
Naphthalene-d8	79	(37 - 107)

NOTE(S):

* Surrogate recovery is outside stated control limits.

J Estimated result. Result is less than RL.

E Estimated result. Result concentration exceeds the calibration range.

CITY OF ST. LOUIS PARK

Client Sample ID: W420-091702

GC/MS Semivolatiles

Lot-Sample #...:	D2I180279-009	**Work Order #...:**	E8FTX2AA	**Matrix.....:**	WG
Date Sampled...:	09/17/02	**Date Received..:**	09/18/02		
Prep Date.....:	09/24/02	**Analysis Date..:**	10/11/02		
Prep Batch #...:	2267195	**Analysis Time..:**	17:14		
Dilution Factor:	20				
		Method.....:	SW846 8270C		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
2,3-Dihydroindene	**340**	**200**	**ug/L**
Naphthalene	**2500**	**200**	**ug/L**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	DIL,NC	(30 - 160)
Fluorene d-10	DIL,NC	(36 - 127)
Naphthalene-d8	DIL,NC	(37 - 107)

NOTE(S):

DIL The concentration is estimated or not reported due to dilution or the presence of interfering analytes.

NC The recovery and/or RPD were not calculated.

CITY OF ST. LOUIS PARK

Client Sample ID: W420D-091702

GC/MS Semivolatiles

Lot-Sample #...: D2I180279-010 **Work Order #...:** E8FT01AA **Matrix.....:** WG
Date Sampled...: 09/17/02 **Date Received..:** 09/18/02
Prep Date.....: 09/24/02 **Analysis Date..:** 10/11/02
Prep Batch #...: 2267195 **Analysis Time..:** 19:06
Dilution Factor: 1

Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	**140**	**10**	**ug/L**
Acenaphthylene	ND	10	ug/L
Acridine	**2.2 J**	**10**	**ug/L**
Anthracene	**2.4 J**	**10**	**ug/L**
Benzo(a)anthracene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
2,3-Benzofuran	**50**	**10**	**ug/L**
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Benzo(e)pyrene	ND	10	ug/L
Benzo(b)thiophene	**130**	**10**	**ug/L**
Biphenyl	**27**	**10**	**ug/L**
Carbazole	**85**	**10**	**ug/L**
Chrysene	ND	10	ug/L
Dibenzo(a,h)anthracene	ND	10	ug/L
Dibenzofuran	**52**	**10**	**ug/L**
Dibenzothiophene	**11**	**10**	**ug/L**
Fluoranthene	ND	10	ug/L
Fluorene	**57**	**10**	**ug/L**
Indene	**45**	**10**	**ug/L**
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Indole	ND	10	ug/L
2-Methylnaphthalene	**120**	**10**	**ug/L**
1-Methylnaphthalene	**150**	**10**	**ug/L**
Perylene	ND	10	ug/L
Phenanthrene	**39**	**10**	**ug/L**
Pyrene	ND	10	ug/L
Quinoline	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	49	(30 - 160)
Fluorene d-10	79	(36 - 127)
Naphthalene-d8	85	(37 - 107)

NOTE(S):

J Estimated result. Result is less than RL.

CITY OF ST. LOUIS PARK

Client Sample ID: W420D-091702

GC/MS Semivolatiles

Lot-Sample #...:	D2I180279-010	**Work Order #...:**	E8FT02AA	**Matrix.....:**	WG
Date Sampled...:	09/17/02	**Date Received..:**	09/18/02		
Prep Date.....:	09/24/02	**Analysis Date..:**	10/11/02		
Prep Batch #...:	2267195	**Analysis Time..:**	18:29		
Dilution Factor:	20				
		Method.....:	SW846 8270C		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
2,3-Dihydroindene	**370**	**200**	**ug/L**
Naphthalene	**2700**	**200**	**ug/L**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	DIL,NC	(30 - 160)
Fluorene d-10	DIL,NC	(36 - 127)
Naphthalene-d8	DIL,NC	(37 - 107)

NOTE(S):

DIL The concentration is estimated or not reported due to dilution or the presence of interfering analytes.

NC The recovery and/or RPD were not calculated.

CITY OF ST. LOUIS PARK

Client Sample ID: W420FB-091702

GC/MS Semivolatiles

Lot-Sample #...: D2I180279-011 **Work Order #...:** E8FT11AA **Matrix.....:** WG
Date Sampled...: 09/17/02 **Date Received..:** 09/18/02
Prep Date.....: 09/24/02 **Analysis Date..:** 10/11/02
Prep Batch #...: 2267195 **Analysis Time..:** 19:44
Dilution Factor: 1

Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	10	ug/L
Acenaphthylene	ND	10	ug/L
Acridine	ND	10	ug/L
Anthracene	ND	10	ug/L
Benzo(a)anthracene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
2,3-Benzofuran	ND	10	ug/L
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Benzo(e)pyrene	ND	10	ug/L
Benzo(b)thiophene	ND	10	ug/L
Biphenyl	ND	10	ug/L
Carbazole	ND	10	ug/L
Chrysene	ND	10	ug/L
Dibenzo(a,h)anthracene	ND	10	ug/L
Dibenzofuran	ND	10	ug/L
Dibenzothiophene	ND	10	ug/L
2,3-Dihydroindene	ND	10	ug/L
Fluoranthene	ND	10	ug/L
Fluorene	ND	10	ug/L
Indene	ND	10	ug/L
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Indole	ND	10	ug/L
2-Methylnaphthalene	ND	10	ug/L
1-Methylnaphthalene	ND	10	ug/L
Naphthalene	ND	10	ug/L
Perylene	ND	10	ug/L
Phenanthrene	ND	10	ug/L
Pyrene	ND	10	ug/L
Quinoline	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	108	(30 - 160)
Fluorene d-10	68	(36 - 127)
Naphthalene-d8	79	(37 - 107)

CITY OF ST. LOUIS PARK

Client Sample ID: W420FBD-091702

GC/MS Semivolatiles

Lot-Sample #...: D2I180279-012 Work Order #...: E8FT21AA Matrix.....: WG
Date Sampled...: 09/17/02 Date Received..: 09/18/02
Prep Date.....: 09/24/02 Analysis Date..: 10/11/02
Prep Batch #...: 2267195 Analysis Time..: 20:21
Dilution Factor: 1

Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	10	ug/L
Acenaphthylene	ND	10	ug/L
Acridine	ND	10	ug/L
Anthracene	ND	10	ug/L
Benzo(a)anthracene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
2,3-Benzofuran	ND	10	ug/L
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Benzo(e)pyrene	ND	10	ug/L
Benzo(b)thiophene	ND	10	ug/L
Biphenyl	ND	10	ug/L
Carbazole	ND	10	ug/L
Chrysene	ND	10	ug/L
Dibenzo(a,h)anthracene	ND	10	ug/L
Dibenzofuran	ND	10	ug/L
Dibenzothiophene	ND	10	ug/L
2,3-Dihydroindene	ND	10	ug/L
Fluoranthene	ND	10	ug/L
Fluorene	ND	10	ug/L
Indene	ND	10	ug/L
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Indole	ND	10	ug/L
2-Methylnaphthalene	ND	10	ug/L
1-Methylnaphthalene	ND	10	ug/L
Naphthalene	ND	10	ug/L
Perylene	ND	10	ug/L
Phenanthrene	ND	10	ug/L
Pyrene	ND	10	ug/L
Quinoline	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	112	(30 - 160)
Fluorene d-10	74	(36 - 127)
Naphthalene-d8	86	(37 - 107)

QC DATA ASSOCIATION SUMMARY

D2I180279

Sample Preparation and Analysis Control Numbers

SAMPLE#	MATRIX	ANALYTICAL METHOD	LEACH BATCH #	PREP BATCH #	MS RUN#
001	WG	SW846 8270C		2267195	2267077
002	WG	SW846 8270C		2267195	2267077
003	WG	SW846 8270C		2267195	2267077
004	WG	SW846 8270C		2267195	2267077
005	WG	SW846 8270C		2267195	2267077
006	WG	SW846 8270C		2267195	2267077
007	WG	SW846 8270C		2267195	2267077
008	WG	SW846 8270C		2267195	2267077
009	WG	SW846 8270C		2267195	2267077
010	WG	SW846 8270C		2267195	2267077
011	WG	SW846 8270C		2267195	2267077
012	WG	SW846 8270C		2267195	2267077

METHOD BLANK REPORT

GC/MS Semivolatiles

Client Lot #...: D2I180279 **Work Order #...:** E8P241AA **Matrix.....:** WATER
MB Lot-Sample #: D2I240000-195

Prep Date.....: 09/24/02 **Analysis Time..:** 16:12
Analysis Date..: 10/10/02 **Prep Batch #...:** 2267195
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Acenaphthene	ND	10	ug/L	SW846 8270C
Acenaphthylene	ND	10	ug/L	SW846 8270C
Acridine	ND	10	ug/L	SW846 8270C
Anthracene	ND	10	ug/L	SW846 8270C
Benzo(a)anthracene	ND	10	ug/L	SW846 8270C
Benzo(b)fluoranthene	ND	10	ug/L	SW846 8270C
Benzo(k)fluoranthene	ND	10	ug/L	SW846 8270C
2,3-Benzofuran	ND	10	ug/L	SW846 8270C
Benzo(ghi)perylene	ND	10	ug/L	SW846 8270C
Benzo(a)pyrene	ND	10	ug/L	SW846 8270C
Benzo(e)pyrene	ND	10	ug/L	SW846 8270C
Benzo(b)thiophene	ND	10	ug/L	SW846 8270C
Biphenyl	ND	10	ug/L	SW846 8270C
Carbazole	ND	10	ug/L	SW846 8270C
Chrysene	ND	10	ug/L	SW846 8270C
Dibenzo(a,h)anthracene	ND	10	ug/L	SW846 8270C
Dibenzofuran	ND	10	ug/L	SW846 8270C
Dibenzothiophene	ND	10	ug/L	SW846 8270C
2,3-Dihydroindene	ND	10	ug/L	SW846 8270C
Fluoranthene	ND	10	ug/L	SW846 8270C
Fluorene	ND	10	ug/L	SW846 8270C
Indene	ND	10	ug/L	SW846 8270C
Indeno(1,2,3-cd)pyrene	ND	10	ug/L	SW846 8270C
Indole	ND	10	ug/L	SW846 8270C
2-Methylnaphthalene	ND	10	ug/L	SW846 8270C
1-Methylnaphthalene	ND	10	ug/L	SW846 8270C
Naphthalene	ND	10	ug/L	SW846 8270C
Perylene	ND	10	ug/L	SW846 8270C
Phenanthrene	ND	10	ug/L	SW846 8270C
Pyrene	ND	10	ug/L	SW846 8270C
Quinoline	ND	10	ug/L	SW846 8270C

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	109	(30 - 160)
Fluorene d-10	73	(36 - 127)
Naphthalene-d8	80	(37 - 107)

NOTE(S):

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

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: D2I180279 **Work Order #...:** E8P241AC **Matrix.....:** WATER
LCS Lot-Sample#: D2I240000-195
Prep Date.....: 09/24/02 **Analysis Date..:** 10/10/02
Prep Batch #...: 2267195 **Analysis Time..:** 16:50
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD
Benzo(e)pyrene	**112**	**(30 - 150)**	**SW846 8270C**
Chrysene	**115**	**(43 - 124)**	**SW846 8270C**
Fluorene	**99**	**(51 - 120)**	**SW846 8270C**
Indene	**84**	**(49 - 108)**	**SW846 8270C**
2-Methylnaphthalene	**84**	**(47 - 138)**	**SW846 8270C**
Naphthalene	**89**	**(43 - 128)**	**SW846 8270C**
Quinoline	**78**	**(40 - 126)**	**SW846 8270C**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	124	(30 - 160)
Fluorene d-10	81	(36 - 127)
Naphthalene-d8	91	(37 - 107)

NOTE(S):

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

Bold print denotes control parameters

LABORATORY CONTROL SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #...: D2I180279 Work Order #...: E8P241AC Matrix.....: WATER
LCS Lot-Sample#: D2I240000-195
Prep Date.....: 09/24/02 Analysis Date..: 10/10/02
Prep Batch #...: 2267195 Analysis Time..: 16:50
Dilution Factor: 1

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD
Benzo(e)pyrene	**50.0**	**55.8**	**ug/L**	**112**	**SW846 8270C**
Chrysene	**50.0**	**57.4**	**ug/L**	**115**	**SW846 8270C**
Fluorene	**50.0**	**49.4**	**ug/L**	**99**	**SW846 8270C**
Indene	**50.0**	**41.9**	**ug/L**	**84**	**SW846 8270C**
2-Methylnaphthalene	**50.0**	**41.9**	**ug/L**	**84**	**SW846 8270C**
Naphthalene	**50.0**	**44.3**	**ug/L**	**89**	**SW846 8270C**
Quinoline	**50.0**	**38.8**	**ug/L**	**78**	**SW846 8270C**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	124	(30 - 160)
Fluorene d-10	81	(36 - 127)
Naphthalene-d8	91	(37 - 107)

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 #...: D2I180279 **Work Order #...:** E8FTX1AC-MS **Matrix.....:** WG
MS Lot-Sample #: D2I180279-009 E8FTX1AD-MSD
Date Sampled...: 09/17/02 **Date Received..:** 09/18/02
Prep Date.....: 09/24/02 **Analysis Date..:** 10/10/02
Prep Batch #...: 2267195 **Analysis Time..:** 23:08
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Benzo(e)pyrene	**53**	**(30 - 150)**			**SW846 8270C**
	50	**(30 - 150)**	**8.6**	**(0-30)**	**SW846 8270C**
Chrysene	**63**	**(43 - 124)**			**SW846 8270C**
	57	**(43 - 124)**	**14**	**(0-30)**	**SW846 8270C**
Fluorene	**89**	**(51 - 120)**			**SW846 8270C**
	88	**(51 - 120)**	**2.1**	**(0-30)**	**SW846 8270C**
Indene	**99**	**(49 - 108)**			**SW846 8270C**
	78	**(49 - 108)**	**14**	**(0-30)**	**SW846 8270C**
2-Methylnaphthalene	**88**	**(47 - 138)**			**SW846 8270C**
	79	**(47 - 138)**	**3.6**	**(0-30)**	**SW846 8270C**
Naphthalene	**0.0 a**	**(43 - 128)**			**SW846 8270C**
	16 a	**(43 - 128)**	**0.0**	**(0-30)**	**SW846 8270C**
Quinoline	**87**	**(40 - 126)**			**SW846 8270C**
	86	**(40 - 126)**	**3.8**	**(0-30)**	**SW846 8270C**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	55	(30 - 160)
	48	(30 - 160)
Fluorene d-10	75	(36 - 127)
	72	(36 - 127)
Naphthalene-d8	89	(37 - 107)
	82	(37 - 107)

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 #...: D2I180279 Work Order #...: E8FTX1AC-MS Matrix.....: WG
MS Lot-Sample #: D2I180279-009 E8FTX1AD-MSD
Date Sampled...: 09/17/02 Date Received..: 09/18/02
Prep Date.....: 09/24/02 Analysis Date..: 10/10/02
Prep Batch #...: 2267195 Analysis Time..: 23:08
Dilution Factor: 1

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD
Benzo(e)pyrene	**ND**	**50.3**	**26.8**	**ug/L**	**53**		**SW846 8270C**
	ND	**48.9**	**24.6**	**ug/L**	**50**	**8.6**	**SW846 8270C**
Chrysene	**ND**	**50.3**	**31.9**	**ug/L**	**63**		**SW846 8270C**
	ND	**48.9**	**27.6**	**ug/L**	**57**	**14**	**SW846 8270C**
Fluorene	**50**	**50.3**	**94.5**	**ug/L**	**89**		**SW846 8270C**
	50	**48.9**	**92.5**	**ug/L**	**88**	**2.1**	**SW846 8270C**
Indene	**40**	**50.3**	**89.6**	**ug/L**	**99**		**SW846 8270C**
	40	**48.9**	**78.1**	**ug/L**	**78**	**14**	**SW846 8270C**
2-Methylnaphthalene	**110**	**50.3**	**158**	**ug/L**	**88**		**SW846 8270C**
	110	**48.9**	**152**	**ug/L**	**79**	**3.6**	**SW846 8270C**
Naphthalene	**1100**	**50.3**	**1030**	**ug/L**	**0.0 a**		**SW846 8270C**
	1100	**48.9**	**1110**	**ug/L**	**16 a**	**0.0**	**SW846 8270C**
Quinoline	**ND**	**50.3**	**43.7**	**ug/L**	**87**		**SW846 8270C**
	ND	**48.9**	**42.1**	**ug/L**	**86**	**3.8**	**SW846 8270C**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	55	(30 - 160)
	48	(30 - 160)
Fluorene d-10	75	(36 - 127)
	72	(36 - 127)
Naphthalene-d8	89	(37 - 107)
	82	(37 - 107)

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.

Chain of Custody Record

SEVERN TRENT SERVICES

Severn Trent Laboratories, Inc.

0.1°C DL 9/18

STL-4124 (0901)

Client: City of St. Louis Park	Project Manager: Scott Anderson	Date: 9/17/02	Chain of Custody Number: 150715
Address: 3752 Woodlale Ave	Telephone Number (Area Code)/Fax Number: 952-924-2557 / 924-2570	Lab Number:	Page 1 of 1
City: St. Louis Park; State: MN; Zip Code: 55416	Site Contact: Bill Gregg	Lab Contact:	
Project Name and Location (State): Reilly	Carrier/Waybill Number:		
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil		Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH		Analysis (Attach list if more space is needed): PAH-PPB	Special Instructions/ Conditions of Receipt
P112-091702	9/17/02	840		X				2								
P307-091702	9/17/02	915		↓				↓								
W101-091702	9/17/02	1000														
P308-091702	9/17/02	~~300~~														
		1500														
		CMB														

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required: ☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other_____

QC Requirements (Specify):

	Date	Time		Date	Time
1. Relinquished By: Chris Boehm	9/17/02	1500	1. Received By: David A. Stott	9/18/02	0845
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

Chain of Custody Record

SEVERN TRENT SERVICES

Severn Trent Laboratories, Inc.

0.9°C
DS 9/18

STL-4124 (0901)

Client: CITY OF ST. LOUIS PARK	Project Manager: SCOTT ANDERSON	Date: 9-17-02	Chain of Custody Number: 150706
Address: UTILITY DIVISION, 3752 WOODDALE AVENUE	Telephone Number (Area Code)/Fax Number: 924-2557 (952) 924-2570	Lab Number	Page 1 of 1
City: ST. LOUIS PARK, MN 55416	Site Contact: SAME	Lab Contact	
Project Name and Location (State): SAME	Carrier/Waybill Number: FED EX 806824116 0		
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH		Analysis (Attach list if more space is needed): PPB PAH	Special Instructions/ Conditions of Receipt
W421 - 091702	9-17-02	12:00		X			X						2	X	
W136 - 091702	"	1115		↓			↓						↓	↓	
W433 - 091702	"	1250		↓			↓						↓	↓	
W427 - 091702	"	1420													

Possible Hazard Identification: [X] Non-Hazard [ ] Flammable [ ] Skin Irritant [ ] Poison B [ ] Unknown

Sample Disposal: [ ] Return To Client [X] Disposal By Lab [ ] Archive For _____ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required: [ ] 24 Hours [ ] 48 Hours [ ] 7 Days [ ] 14 Days [ ] 21 Days [ ] Other _____

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished By: Mike Wiggins	9-17-02	12:14	1. Received By: [signature]	9/18/02	0845
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

Chain of Custody Record

SEVERN TRENT SERVICES

Severn Trent Laboratories, Inc.

STL-4124 (0901)

Client	CITY OF ST. LOUIS PARK UTILITY DIVISION 3752 WOODDALE AVENUE ST. LOUIS PARK, MN 55416
Address	
City	
Project Name and Location (State)	SAME
Contract/Purchase Order/Quote No.	
Project Manager	SCOTT ANDERSON
Telephone Number (Area Code)/Fax Number	924-2557 (952) 924-2570
Site Contact	SAME
Lab Contact	
Carrier/Waybill Number	FED EX 806824 1160
Date	9-17-02
Lab Number	
Chain of Custody Number	150707
Page ____ of ____	

Analysis (Attach list if more space is needed): PPB PAH

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Air	Aqueous	Sed.	Soil		Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH		PPB PAH	Special Instructions/ Conditions of Receipt
W420-091702 CR 0006	9-17-02			X				X						2	X	
W420D-091702																
W420MS-091702																
W420MSD-091702																
W420FB-091702																
W420FBD-091702	9-17-02			X				X						2	X	

Possible Hazard Identification: [X] Non-Hazard [ ] Flammable [ ] Skin Irritant [ ] Poison B [ ] Unknown

Sample Disposal: [ ] Return To Client [X] Disposal By Lab [ ] Archive For ____ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required: [ ] 24 Hours [ ] 48 Hours [ ] 7 Days [ ] 14 Days [ ] 21 Days [ ] Other ____

QC Requirements (Specify):

	Date	Time		Date	Time
1. Relinquished By	9-17-02	1400	1. Received By [signature]	9/18/02	0845
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

32

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

AA

SEVERN TRENT SERVICES

STL Denver
4955 Yarrow Street
Arvada, CO 80002-4517

Tel: 303 736 0100
Fax: 303 431 7171
www.stl-inc.com

ANALYTICAL REPORT

City of St. Louis Park

Project: Reilly Tar & Chemical Corporation

Lot #: D2I170270

Mr. Scott Anderson

City of St. Louis Park
Utility Division
3752 Wooddale Avenue
St. Louis Park, MN 55416

STL DENVER

Brian Stringer
Project Manager

October 17, 2002

AA

Table Of Contents

Standard Deliverable

Report Contents

- Table of Contents
- Case Narrative
- Executive Summary – Detection Highlights
- Analytical Method Summary
- Method/ Analyst Summary
- Sample Summary
- Analytical Results by Sample
- QC Data Association Summary
- Chain-of-Custody

Total Number of Pages 28

CASE NARRATIVE

STL Lot Number D2I170270

Introduction

STL Denver received six aqueous samples on September 17, 2002 for PAH SIM (ppt-75) analysis.

The cooler temperatures upon receipt were 4.9 °C, 2.3°C, 2.7°C, 4.3°C, 5.9°C, 4.3°C, 1.5°C, 4.8°C, and 5.2°C. All containers were received in acceptable condition.

Data Quality Assessment

The results included in this report have been reviewed for compliance with STL Denver's Laboratory Quality Manual. The test results shown in this report meet all requirements of NELAC and any exceptions are noted below.

Dilution factors and footnotes have been provided to assist in the interpretation of the results. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at concentrations above the linear calibration curve, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

STL utilizes USEPA approved methods in all analytical work. The samples presented in this report were analyzed for the parameters listed on the analytical methods summary page in accordance with the methods indicated.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Polynuclear Aromatic Hydrocarbons – Method 8270C SIM

A project-specific lower acceptable recovery limit of 30% for all QC samples and surrogates has been designated for analytical work performed under the 2002 Quality Assurance Project Plan (QAPP) for the Reilly Industries, Inc. NPL Site. This lower limit is used for this project, rather than historically generated lower recovery limits. All recoveries in this report are above the 30% minimum threshold with the exceptions noted below.

The recovery of the surrogate Chrysene-d12 was below the lower control limit for sample W33-091602. This is an indication of a possible low bias. All other surrogate recoveries are in control for the associated method blank, LCS, and MS/MSD samples, indicating that the system was operating normally and that this anomaly is isolated to this sample. Since the extraction required four liters and only six 1-liter amber glass bottles were received, the sample could not be re-extracted.

Samples "W24-091602", "W410091602", and "W410D091602" were analyzed at a dilution due to a high concentrations of target analytes in the samples. Analytes whose concentrations did not exceed the calibration range are reported from the undiluted analyses, while those compounds which required dilution are only reported from the diluted analyses. Indene is reported in both the diluted and undiluted analyses of sample "W410091602" to provide parent sample data for the MS/MSD performed on this sample.

The LCS demonstrated a recovery of the analyte Quinoline below control limits. Historically, this compound is a poor performer for this method. Since the extraction requires four liters of sample and only six 1-liter amber glass bottles were received per sample, re-extraction was not possible.

The MS/MSD performed on sample "W410091602" demonstrated recoveries below control limits for benzo(e)pyrene. The MS demonstrated an additional recovery below control limits for indene.

Data Completeness for Polynuclear Aromatic Hydrocarbons – Method 8270C SIM

The results contained in the report were reviewed relative to data acceptance criteria as specified in the 2002 QAPP. Based on the exceptions noted we achieved 97.16% completeness.

DATA COMPLETENESS CALCULATION		
LOT	D2I170270	
ANALYSIS	PAHs by SW846-8270Sim	
QC Parameter	**Data Planned**	**Valid Data Obtained**
Method Blank	31	31
MB Surrogates	3	3
LCS	7	6
LCS Surrogates	3	3
FB/FBD	61	61
MS	7	5
MS Surrogates	3	3
MSD	7	6
MSD Surrogates	3	3
MS/MSD RPD	7	7
Sample/Dup. RPD	31	30
Sample Surrogates	18	17
Internal STD Area	30	30
TOTAL	**211**	**205**
% Completeness	**97.16%**	

The MS/MSD was performed on sample W410091602

Sample Duplicate RPD					
LOT D2I170270					
Sample: W410091602		DUP: W410D091602			
Compound	Result	Compound	Result	RPD	RPD>50%
Acenaphthene	220	Acenaphthene	260	16.7	
Acenaphthylene	55	Acenaphthylene	61	10.3	
Acridine	ND	Acridine	13	NC	
Anthracene	9.9	Anthracene	12	19.2	
Benzo(a)anthracene	ND	Benzo(a)anthracene	ND	0.0	
Benzo(b)fluoranthene	ND	Benzo(b)fluoranthene	ND	0.0	
Benzo(k)fluoranthene	ND	Benzo(k)fluoranthene	ND	0.0	
2,3-Benzofuran	7.5	2,3-Benzofuran	7.8	3.9	
Benzo(ghi)perylene	ND	Benzo(ghi)perylene	ND	0.0	
Benzo(a)pyrene	ND	Benzo(a)pyrene	ND	0.0	
Benzo(e)pyrene	ND	Benzo(e)pyrene	ND	0.0	
Benzo(b)thiophene	350	Benzo(b)thiophene	390	10.8	
Biphenyl	60	Biphenyl	65	8.0	
Carbazole	140	Carbazole	180	25.0	
Chrysene	ND	Chrysene	ND	0.0	
Dibenz(a,h)anthracene	ND	Dibenz(a,h)anthracene	ND	0.0	
Dibenzofuran	85	Dibenzofuran	96	12.2	
Dibenzothiophene	9	Dibenzothiophene	12	28.6	
2,3-Dihydroindene	920	2,3-Dihydroindene	1000	8.3	
Fluoranthene	4	Fluoranthene	5.0	22.2	
Fluorene	84	Fluorene	100	17.4	
Indene	570	Indene	630	10.0	
Indeno(1,2,3-cd)pyrene	ND	Indeno(1,2,3-cd)pyrene	ND	0.0	
Indole	5.5	Indole	13	81.1	p
2-Methylnaphthalene	ND	2-Methylnaphthalene	ND	0.0	
1-Methylnaphthalene	310	1-Methylnaphthalene	360	14.9	
Naphthalene	28	Naphthalene	30	6.9	
Perylene	ND	Perylene	ND	0.0	
Phenanthrene	81	Phenanthrene	96	16.9	
Pyrene	ND	Pyrene	3.0	NC	
Quinoline	5.7	Quinoline	6.2	8.4	

RPD = Relative Percent Difference
ND = Compound not detected in the sample
OK = RPD acceptable
p = RPD is outside of control limits
*NC = RPD not calculated, one positive result and one ND. Considered acceptable if the positive result is less than 4x the RL.

EXECUTIVE SUMMARY - Detection Highlights

D2I170270

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
W24-091602 09/16/02 13:45 001				
Acenaphthene	19	5.7	ng/L	SW846 8270C SIM
Acridine	5.8 J	6.2	ng/L	SW846 8270C SIM
Anthracene	5.1	4.2	ng/L	SW846 8270C SIM
Benzo(b)thiophene	3.0 J	5.2	ng/L	SW846 8270C SIM
Carbazole	2.6 J	3.8	ng/L	SW846 8270C SIM
2,3-Dihydroindene	260	20	ng/L	SW846 8270C SIM
Indene	6.5	4.7	ng/L	SW846 8270C SIM
Indole	22	4.7	ng/L	SW846 8270C SIM
Pyrene	5.3	4.2	ng/L	SW846 8270C SIM
W33-091602 09/16/02 15:30 002				
Acridine	2.3 J	6.2	ng/L	SW846 8270C SIM
Benzo(ghi)perylene	1.3 J	6.2	ng/L	SW846 8270C SIM
Benzo(b)thiophene	2.4 J	5.2	ng/L	SW846 8270C SIM
Carbazole	12	3.8	ng/L	SW846 8270C SIM
Dibenzothiophene	1.2 J	4.1	ng/L	SW846 8270C SIM
2,3-Dihydroindene	9.9	5.0	ng/L	SW846 8270C SIM
Fluoranthene	6.9	4.6	ng/L	SW846 8270C SIM
Phenanthrene	9.6	6.3	ng/L	SW846 8270C SIM
Pyrene	10	4.2	ng/L	SW846 8270C SIM
W410091602 09/16/02 16:20 003				
Acenaphthene	220	57	ng/L	SW846 8270C SIM
Acenaphthylene	55	4.8	ng/L	SW846 8270C SIM
Anthracene	9.9	4.2	ng/L	SW846 8270C SIM
2,3-Benzofuran	7.5	5.4	ng/L	SW846 8270C SIM
Benzo(b)thiophene	350	52	ng/L	SW846 8270C SIM
Biphenyl	60	5.6	ng/L	SW846 8270C SIM
Carbazole	140	38	ng/L	SW846 8270C SIM
Dibenzofuran	85	5.7	ng/L	SW846 8270C SIM
Dibenzothiophene	9.0	4.1	ng/L	SW846 8270C SIM
2,3-Dihydroindene	920	50	ng/L	SW846 8270C SIM
Fluoranthene	4.0 J	4.6	ng/L	SW846 8270C SIM
Fluorene	84	4.1	ng/L	SW846 8270C SIM
Indene	490 E	4.7	ng/L	SW846 8270C SIM
Indene	570	47	ng/L	SW846 8270C SIM
Indole	5.5	4.7	ng/L	SW846 8270C SIM
1-Methylnaphthalene	310	56	ng/L	SW846 8270C SIM
Naphthalene	28	8.6	ng/L	SW846 8270C SIM
Phenanthrene	81	6.3	ng/L	SW846 8270C SIM
Quinoline	5.7 J	9.0	ng/L	SW846 8270C SIM

(Continued on next page)

EXECUTIVE SUMMARY - Detection Highlights

D2I170270

W410D091602 09/16/02 16:25 004

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
Acenaphthene	260	57	ng/L	SW846 8270C SIM
Acenaphthylene	61	4.8	ng/L	SW846 8270C SIM
Acridine	13	6.2	ng/L	SW846 8270C SIM
Anthracene	12	4.2	ng/L	SW846 8270C SIM
2,3-Benzofuran	7.8	5.4	ng/L	SW846 8270C SIM
Benzo(b)thiophene	390	52	ng/L	SW846 8270C SIM
Biphenyl	65	5.6	ng/L	SW846 8270C SIM
Carbazole	180	38	ng/L	SW846 8270C SIM
Dibenzofuran	96	5.7	ng/L	SW846 8270C SIM
Dibenzothiophene	12	4.1	ng/L	SW846 8270C SIM
2,3-Dihydroindene	1000	50	ng/L	SW846 8270C SIM
Fluoranthene	5.0	4.6	ng/L	SW846 8270C SIM
Fluorene	100	4.1	ng/L	SW846 8270C SIM
Indene	630	47	ng/L	SW846 8270C SIM
Indole	13	4.7	ng/L	SW846 8270C SIM
1-Methylnaphthalene	360	56	ng/L	SW846 8270C SIM
Naphthalene	30	8.6	ng/L	SW846 8270C SIM
Phenanthrene	96	6.3	ng/L	SW846 8270C SIM
Pyrene	3.0 J	4.2	ng/L	SW846 8270C SIM
Quinoline	6.2 J	9.0	ng/L	SW846 8270C SIM

METHODS SUMMARY

D2I170270

PARAMETER	ANALYTICAL METHOD	PREPARATION METHOD
Base/Neutrals and Acids	SW846 8270C SIM	SW846 3520C

References:

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

METHOD / ANALYST SUMMARY

D2I170270

ANALYTICAL METHOD	ANALYST	ANALYST ID
SW846 8270C SIM	Tim O'Donnell	000443

References:

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

SAMPLE SUMMARY

D2I170270

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
E8DML	001	W24-091602	09/16/02	13:45
E8DMQ	002	W33-091602	09/16/02	15:30
E8DMR	003	W410091602	09/16/02	16:20
E8DMV	004	W410D091602	09/16/02	16:25
E8DMX	005	W410FB091602	09/16/02	16:40
E8DM0	006	W410FBD091602	09/16/02	16:45

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: W24-091602

GC/MS Semivolatiles

Lot-Sample #...: D2I170270-001 Work Order #...: E8DML1AA Matrix.....: WG
Date Sampled...: 09/16/02 Date Received..: 09/17/02
Prep Date.....: 09/18/02 Analysis Date..: 10/03/02
Prep Batch #...: 2261226 Analysis Time..: 21:42
Dilution Factor: 1

Method.....: SW846 8270C SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	**19**	**5.7**	**ng/L**
Acenaphthylene	ND	4.8	ng/L
Acridine	**5.8 J**	**6.2**	**ng/L**
Anthracene	**5.1**	**4.2**	**ng/L**
Benzo(a)anthracene	ND	4.3	ng/L
Benzo(b)fluoranthene	ND	4.7	ng/L
Benzo(k)fluoranthene	ND	4.1	ng/L
2,3-Benzofuran	ND	5.4	ng/L
Benzo(ghi)perylene	ND	6.2	ng/L
Benzo(a)pyrene	ND	2.5	ng/L
Benzo(e)pyrene	ND	4.3	ng/L
Benzo(b)thiophene	**3.0 J**	**5.2**	**ng/L**
Biphenyl	ND	5.6	ng/L
Carbazole	**2.6 J**	**3.8**	**ng/L**
Chrysene	ND	5.6	ng/L
Dibenzo(a,h)anthracene	ND	5.9	ng/L
Dibenzofuran	ND	5.7	ng/L
Dibenzothiophene	ND	4.1	ng/L
Fluoranthene	ND	4.6	ng/L
Fluorene	ND	4.1	ng/L
Indene	**6.5**	**4.7**	**ng/L**
Indeno(1,2,3-cd)pyrene	ND	5.4	ng/L
Indole	**22**	**4.7**	**ng/L**
2-Methylnaphthalene	ND	5.9	ng/L
1-Methylnaphthalene	ND	5.6	ng/L
Naphthalene	ND	8.6	ng/L
Perylene	ND	3.3	ng/L
Phenanthrene	ND	6.3	ng/L
Pyrene	**5.3**	**4.2**	**ng/L**
Quinoline	ND	9.0	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	50	(30 - 118)
Fluorene d-10	49	(41 - 162)
Naphthalene-d8	46	(30 - 108)

NOTE(S):

J Estimated result. Result is less than RL.

CITY OF ST. LOUIS PARK

Client Sample ID: W24-091602

GC/MS Semivolatiles

Lot-Sample #...:	D2I170270-001	**Work Order #...:**	E8DML2AA	**Matrix.....:**	WG
Date Sampled...:	09/16/02	**Date Received..:**	09/17/02		
Prep Date.....:	09/18/02	**Analysis Date..:**	10/04/02		
Prep Batch #...:	2261226	**Analysis Time..:**	16:44		
Dilution Factor:	4				
		Method.....:	SW846 8270C SIM		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
2,3-Dihydroindene	**260**	**20**	**ng/L**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	DIL,NC	(30 - 118)
Fluorene d-10	DIL,NC	(41 - 162)
Naphthalene-d8	DIL,NC	(30 - 108)

NOTE(S):

DIL The concentration is estimated or not reported due to dilution or the presence of interfering analytes.

NC The recovery and/or RPD were not calculated.

CITY OF ST. LOUIS PARK

Client Sample ID: W33-091602

GC/MS Semivolatiles

Lot-Sample #...: D2I170270-002 Work Order #...: E8DMQ1AA Matrix.....: WG
Date Sampled...: 09/16/02 Date Received..: 09/17/02
Prep Date.....: 09/18/02 Analysis Date..: 10/03/02
Prep Batch #...: 2261226 Analysis Time..: 22:19
Dilution Factor: 1

Method.....: SW846 8270C SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	5.7	ng/L
Acenaphthylene	ND	4.8	ng/L
Acridine	**2.3 J**	**6.2**	**ng/L**
Anthracene	ND	4.2	ng/L
Benzo(a)anthracene	ND	4.3	ng/L
Benzo(b)fluoranthene	ND	4.7	ng/L
Benzo(k)fluoranthene	ND	4.1	ng/L
2,3-Benzofuran	ND	5.4	ng/L
Benzo(ghi)perylene	**1.3 J**	**6.2**	**ng/L**
Benzo(a)pyrene	ND	2.5	ng/L
Benzo(e)pyrene	ND	4.3	ng/L
Benzo(b)thiophene	**2.4 J**	**5.2**	**ng/L**
Biphenyl	ND	5.6	ng/L
Carbazole	**12**	**3.8**	**ng/L**
Chrysene	ND	5.6	ng/L
Dibenzo(a,h)anthracene	ND	5.9	ng/L
Dibenzofuran	ND	5.7	ng/L
Dibenzothiophene	**1.2 J**	**4.1**	**ng/L**
2,3-Dihydroindene	**9.9**	**5.0**	**ng/L**
Fluoranthene	**6.9**	**4.6**	**ng/L**
Fluorene	ND	4.1	ng/L
Indene	ND	4.7	ng/L
Indeno(1,2,3-cd)pyrene	ND	5.4	ng/L
Indole	ND	4.7	ng/L
2-Methylnaphthalene	ND	5.9	ng/L
1-Methylnaphthalene	ND	5.6	ng/L
Naphthalene	ND	8.6	ng/L
Perylene	ND	3.3	ng/L
Phenanthrene	**9.6**	**6.3**	**ng/L**
Pyrene	**10**	**4.2**	**ng/L**
Quinoline	ND	9.0	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	16 *	(30 - 118)
Fluorene d-10	42	(41 - 162)
Naphthalene-d8	34	(30 - 108)

NOTE(S):

* Surrogate recovery is outside stated control limits.

J Estimated result. Result is less than RL.

CITY OF ST. LOUIS PARK

Client Sample ID: W410091602

GC/MS Semivolatiles

Lot-Sample #...:	D2I170270-003	**Work Order #...:**	E8DMR1AA	**Matrix.....:**	WG
Date Sampled...:	09/16/02	**Date Received..:**	09/17/02		
Prep Date.....:	09/18/02	**Analysis Date..:**	10/04/02		
Prep Batch #...:	2261226	**Analysis Time..:**	17:58		
Dilution Factor:	1				
		Method.....:	SW846 8270C SIM		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	**55**	**4.8**	**ng/L**
Acridine	ND	6.2	ng/L
Anthracene	**9.9**	**4.2**	**ng/L**
Benzo(a)anthracene	ND	4.3	ng/L
Benzo(b)fluoranthene	ND	4.7	ng/L
Benzo(k)fluoranthene	ND	4.1	ng/L
2,3-Benzofuran	**7.5**	**5.4**	**ng/L**
Benzo(ghi)perylene	ND	6.2	ng/L
Benzo(a)pyrene	ND	2.5	ng/L
Benzo(e)pyrene	ND	4.3	ng/L
Biphenyl	**60**	**5.6**	**ng/L**
Chrysene	ND	5.6	ng/L
Dibenzo(a,h)anthracene	ND	5.9	ng/L
Dibenzofuran	**85**	**5.7**	**ng/L**
Dibenzothiophene	**9.0**	**4.1**	**ng/L**
Fluoranthene	**4.0 J**	**4.6**	**ng/L**
Fluorene	**84**	**4.1**	**ng/L**
Indene	**490 E**	**4.7**	**ng/L**
Indeno(1,2,3-cd)pyrene	ND	5.4	ng/L
Indole	**5.5**	**4.7**	**ng/L**
2-Methylnaphthalene	ND	5.9	ng/L
Naphthalene	**28**	**8.6**	**ng/L**
Perylene	ND	3.3	ng/L
Phenanthrene	**81**	**6.3**	**ng/L**
Pyrene	ND	4.2	ng/L
Quinoline	**5.7 J**	**9.0**	**ng/L**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	36	(30 - 118)
Fluorene d-10	47	(41 - 162)
Naphthalene-d8	54	(30 - 108)

NOTE(S):

J Estimated result. Result is less than RL.

E Estimated result. Result concentration exceeds the calibration range.

CITY OF ST. LOUIS PARK

Client Sample ID: W410091602

GC/MS Semivolatiles

Lot-Sample #...: D2I170270-003 Work Order #...: E8DMR2AA Matrix.....: WG
Date Sampled...: 09/16/02 Date Received..: 09/17/02
Prep Date.....: 09/18/02 Analysis Date..: 10/07/02
Prep Batch #...: 2261226 Analysis Time..: 13:08
Dilution Factor: 10

Method.....: SW846 8270C SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	220	57	ng/L
Benzo(b)thiophene	350	52	ng/L
Carbazole	140	38	ng/L
2,3-Dihydroindene	920	50	ng/L
Indene	570	47	ng/L
1-Methylnaphthalene	310	56	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	DIL,NC	(30 - 118)
Fluorene d-10	DIL,NC	(41 - 162)
Naphthalene-d8	DIL,NC	(30 - 108)

NOTE(S):

DIL The concentration is estimated or not reported due to dilution or the presence of interfering analytes.

NC The recovery and/or RPD were not calculated.

CITY OF ST. LOUIS PARK

Client Sample ID: W410D091602

GC/MS Semivolatiles

Lot-Sample #...:	D2I170270-004	**Work Order #...:**	E8DMV1AA	**Matrix.....:**	WG
Date Sampled...:	09/16/02	**Date Received..:**	09/17/02		
Prep Date.....:	09/18/02	**Analysis Date..:**	10/04/02		
Prep Batch #...:	2261226	**Analysis Time..:**	19:51		
Dilution Factor:	1				
		Method.....:	SW846 8270C SIM		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	**61**	**4.8**	**ng/L**
Acridine	**13**	**6.2**	**ng/L**
Anthracene	**12**	**4.2**	**ng/L**
Benzo(a)anthracene	ND	4.3	ng/L
Benzo(b)fluoranthene	ND	4.7	ng/L
Benzo(k)fluoranthene	ND	4.1	ng/L
2,3-Benzofuran	**7.8**	**5.4**	**ng/L**
Benzo(ghi)perylene	ND	6.2	ng/L
Benzo(a)pyrene	ND	2.5	ng/L
Benzo(e)pyrene	ND	4.3	ng/L
Biphenyl	**65**	**5.6**	**ng/L**
Chrysene	ND	5.6	ng/L
Dibenzo(a,h)anthracene	ND	5.9	ng/L
Dibenzofuran	**96**	**5.7**	**ng/L**
Dibenzothiophene	**12**	**4.1**	**ng/L**
Fluoranthene	**5.0**	**4.6**	**ng/L**
Fluorene	**100**	**4.1**	**ng/L**
Indeno(1,2,3-cd)pyrene	ND	5.4	ng/L
Indole	**13**	**4.7**	**ng/L**
2-Methylnaphthalene	ND	5.9	ng/L
Naphthalene	**30**	**8.6**	**ng/L**
Perylene	ND	3.3	ng/L
Phenanthrene	**96**	**6.3**	**ng/L**
Pyrene	**3.0 J**	**4.2**	**ng/L**
Quinoline	**6.2 J**	**9.0**	**ng/L**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	52	(30 - 118)
Fluorene d-10	58	(41 - 162)
Naphthalene-d8	58	(30 - 108)

NOTE(S):

J Estimated result. Result is less than RL.

CITY OF ST. LOUIS PARK

Client Sample ID: W410D091602

GC/MS Semivolatiles

Lot-Sample #...: D2I170270-004 Work Order #...: E8DMV2AA Matrix.....: WG
Date Sampled...: 09/16/02 Date Received..: 09/17/02
Prep Date.....: 09/18/02 Analysis Date..: 10/07/02
Prep Batch #...: 2261226 Analysis Time..: 13:45
Dilution Factor: 10

Method.....: SW846 8270C SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	260	57	ng/L
Benzo(b)thiophene	390	52	ng/L
Carbazole	180	38	ng/L
2,3-Dihydroindene	1000	50	ng/L
Indene	630	47	ng/L
1-Methylnaphthalene	360	56	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	DIL,NC	(30 - 118)
Fluorene d-10	DIL,NC	(41 - 162)
Naphthalene-d8	DIL,NC	(30 - 108)

NOTE(S):

DIL The concentration is estimated or not reported due to dilution or the presence of interfering analytes.

NC The recovery and/or RPD were not calculated.

CITY OF ST. LOUIS PARK

Client Sample ID: W410FB091602

GC/MS Semivolatiles

Lot-Sample #...: D2I170270-005 Work Order #...: E8DMX1AA Matrix.....: WG
Date Sampled...: 09/16/02 Date Received..: 09/17/02
Prep Date.....: 09/18/02 Analysis Date..: 10/04/02
Prep Batch #...: 2261226 Analysis Time..: 20:29
Dilution Factor: 1

Method.....: SW846 8270C SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	5.7	ng/L
Acenaphthylene	ND	4.8	ng/L
Acridine	ND	6.2	ng/L
Anthracene	ND	4.2	ng/L
Benzo(a)anthracene	ND	4.3	ng/L
Benzo(b)fluoranthene	ND	4.7	ng/L
Benzo(k)fluoranthene	ND	4.1	ng/L
2,3-Benzofuran	ND	5.4	ng/L
Benzo(ghi)perylene	ND	6.2	ng/L
Benzo(a)pyrene	ND	2.5	ng/L
Benzo(e)pyrene	ND	4.3	ng/L
Benzo(b)thiophene	ND	5.2	ng/L
Biphenyl	ND	5.6	ng/L
Carbazole	ND	3.8	ng/L
Chrysene	ND	5.6	ng/L
Dibenzo(a,h)anthracene	ND	5.9	ng/L
Dibenzofuran	ND	5.7	ng/L
Dibenzothiophene	ND	4.1	ng/L
2,3-Dihydroindene	ND	5.0	ng/L
Fluoranthene	ND	4.6	ng/L
Fluorene	ND	4.1	ng/L
Indene	ND	4.7	ng/L
Indeno(1,2,3-cd)pyrene	ND	5.4	ng/L
Indole	ND	4.7	ng/L
2-Methylnaphthalene	ND	5.9	ng/L
1-Methylnaphthalene	ND	5.6	ng/L
Naphthalene	ND	8.6	ng/L
Perylene	ND	3.3	ng/L
Phenanthrene	ND	6.3	ng/L
Pyrene	ND	4.2	ng/L
Quinoline	ND	9.0	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	75	(30 - 118)
Fluorene d-10	56	(41 - 162)
Naphthalene-d8	57	(30 - 108)

CITY OF ST. LOUIS PARK

Client Sample ID: W410FBD091602

GC/MS Semivolatiles

Lot-Sample #...: D2I170270-006 **Work Order #...:** E8DM01AA **Matrix.....:** WG
Date Sampled...: 09/16/02 **Date Received..:** 09/17/02
Prep Date.....: 09/18/02 **Analysis Date..:** 10/04/02
Prep Batch #...: 2261226 **Analysis Time..:** 21:07
Dilution Factor: 1

Method.....: SW846 8270C SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	5.7	ng/L
Acenaphthylene	ND	4.8	ng/L
Acridine	ND	6.2	ng/L
Anthracene	ND	4.2	ng/L
Benzo(a)anthracene	ND	4.3	ng/L
Benzo(b)fluoranthene	ND	4.7	ng/L
Benzo(k)fluoranthene	ND	4.1	ng/L
2,3-Benzofuran	ND	5.4	ng/L
Benzo(ghi)perylene	ND	6.2	ng/L
Benzo(a)pyrene	ND	2.5	ng/L
Benzo(e)pyrene	ND	4.3	ng/L
Benzo(b)thiophene	ND	5.2	ng/L
Biphenyl	ND	5.6	ng/L
Carbazole	ND	3.8	ng/L
Chrysene	ND	5.6	ng/L
Dibenzo(a,h)anthracene	ND	5.9	ng/L
Dibenzofuran	ND	5.7	ng/L
Dibenzothiophene	ND	4.1	ng/L
2,3-Dihydroindene	ND	5.0	ng/L
Fluoranthene	ND	4.6	ng/L
Fluorene	ND	4.1	ng/L
Indene	ND	4.7	ng/L
Indeno(1,2,3-cd)pyrene	ND	5.4	ng/L
Indole	ND	4.7	ng/L
2-Methylnaphthalene	ND	5.9	ng/L
1-Methylnaphthalene	ND	5.6	ng/L
Naphthalene	ND	8.6	ng/L
Perylene	ND	3.3	ng/L
Phenanthrene	ND	6.3	ng/L
Pyrene	ND	4.2	ng/L
Quinoline	ND	9.0	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	75	(30 - 118)
Fluorene d-10	44	(41 - 162)
Naphthalene-d8	53	(30 - 108)

QC DATA ASSOCIATION SUMMARY

D2I170270

Sample Preparation and Analysis Control Numbers

SAMPLE#	MATRIX	ANALYTICAL METHOD	LEACH BATCH #	PREP BATCH #	MS RUN#
001	WG	SW846 8270C SIM		2261226	2261089
002	WG	SW846 8270C SIM		2261226	2261089
003	WG	SW846 8270C SIM		2261226	2261089
004	WG	SW846 8270C SIM		2261226	2261089
005	WG	SW846 8270C SIM		2261226	2261089
006	WG	SW846 8270C SIM		2261226	2261089

METHOD BLANK REPORT

GC/MS Semivolatiles

Client Lot #...: D2I170270 Work Order #...: E8EG01AA Matrix.....: WATER
MB Lot-Sample #: D2I180000-226

Prep Date.....: 09/18/02 Analysis Time..: 12:50

Analysis Date..: 10/03/02 Prep Batch #...: 2261226
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Acenaphthene	ND	5.7	ng/L	SW846 8270C SIM
Acenaphthylene	ND	4.8	ng/L	SW846 8270C SIM
Acridine	ND	6.2	ng/L	SW846 8270C SIM
Anthracene	ND	4.2	ng/L	SW846 8270C SIM
Benzo(a)anthracene	ND	4.3	ng/L	SW846 8270C SIM
Benzo(b)fluoranthene	ND	4.7	ng/L	SW846 8270C SIM
Benzo(k)fluoranthene	ND	4.1	ng/L	SW846 8270C SIM
2,3-Benzofuran	ND	5.4	ng/L	SW846 8270C SIM
Benzo(ghi)perylene	ND	6.2	ng/L	SW846 8270C SIM
Benzo(a)pyrene	ND	2.5	ng/L	SW846 8270C SIM
Benzo(e)pyrene	ND	4.3	ng/L	SW846 8270C SIM
Benzo(b)thiophene	ND	5.2	ng/L	SW846 8270C SIM
Biphenyl	ND	5.6	ng/L	SW846 8270C SIM
Carbazole	ND	3.8	ng/L	SW846 8270C SIM
Chrysene	ND	5.6	ng/L	SW846 8270C SIM
Dibenzo(a,h)anthracene	ND	5.9	ng/L	SW846 8270C SIM
Dibenzofuran	ND	5.7	ng/L	SW846 8270C SIM
Dibenzothiophene	ND	4.1	ng/L	SW846 8270C SIM
2,3-Dihydroindene	ND	5.0	ng/L	SW846 8270C SIM
Fluoranthene	ND	4.6	ng/L	SW846 8270C SIM
Fluorene	ND	4.1	ng/L	SW846 8270C SIM
Indene	ND	4.7	ng/L	SW846 8270C SIM
Indeno(1,2,3-cd)pyrene	ND	5.4	ng/L	SW846 8270C SIM
Indole	ND	4.7	ng/L	SW846 8270C SIM
2-Methylnaphthalene	ND	5.9	ng/L	SW846 8270C SIM
1-Methylnaphthalene	ND	5.6	ng/L	SW846 8270C SIM
Naphthalene	ND	8.6	ng/L	SW846 8270C SIM
Perylene	ND	3.3	ng/L	SW846 8270C SIM
Phenanthrene	ND	6.3	ng/L	SW846 8270C SIM
Pyrene	ND	4.2	ng/L	SW846 8270C SIM
Quinoline	ND	9.0	ng/L	SW846 8270C SIM

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	51	(30 - 118)
Fluorene d-10	41	(41 - 162)
Naphthalene-d8	47	(30 - 108)

NOTE(S):

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

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: D2I170270 **Work Order #...:** E8EG01AC **Matrix.....:** WATER
LCS Lot-Sample#: D2I180000-226
Prep Date.....: 09/18/02 **Analysis Date..:** 10/03/02
Prep Batch #...: 2261226 **Analysis Time..:** 13:28
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD
Benzo(e)pyrene	**65**	**(30 - 150)**	**SW846 8270C SIM**
Chrysene	**50**	**(30 - 132)**	**SW846 8270C SIM**
Fluorene	**56**	**(30 - 132)**	**SW846 8270C SIM**
Indene	**46**	**(30 - 150)**	**SW846 8270C SIM**
2-Methylnaphthalene	**49**	**(30 - 150)**	**SW846 8270C SIM**
Naphthalene	**52**	**(30 - 150)**	**SW846 8270C SIM**
Quinoline	**13 a**	**(30 - 150)**	**SW846 8270C SIM**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	60	(30 - 118)
Fluorene d-10	46	(41 - 162)
Naphthalene-d8	53	(30 - 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.

LABORATORY CONTROL SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #...: D2I170270 Work Order #...: E8EG01AC Matrix.....: WATER
LCS Lot-Sample#: D2I180000-226
Prep Date.....: 09/18/02 Analysis Date..: 10/03/02
Prep Batch #...: 2261226 Analysis Time..: 13:28
Dilution Factor: 1

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD
Benzo(e)pyrene	**75.0**	**48.7**	**ng/L**	**65**	**SW846 8270C S**
Chrysene	**75.0**	**37.8**	**ng/L**	**50**	**SW846 8270C S**
Fluorene	**75.0**	**41.8**	**ng/L**	**56**	**SW846 8270C S**
Indene	**75.0**	**34.2**	**ng/L**	**46**	**SW846 8270C S**
2-Methylnaphthalene	**75.0**	**36.5**	**ng/L**	**49**	**SW846 8270C S**
Naphthalene	**75.0**	**38.6**	**ng/L**	**52**	**SW846 8270C S**
Quinoline	**75.0**	**10.1 a**	**ng/L**	**13**	**SW846 8270C S**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	60	(30 - 118)
Fluorene d-10	46	(41 - 162)
Naphthalene-d8	53	(30 - 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.

MATRIX SPIKE SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: D2I170270 Work Order #...: E8DMR1AC-MS Matrix.....: WG
MS Lot-Sample #: D2I170270-003 E8DMR1AD-MSD
Date Sampled...: 09/16/02 Date Received..: 09/17/02
Prep Date.....: 09/18/02 Analysis Date..: 10/04/02
Prep Batch #...: 2261226 Analysis Time..: 18:36
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Benzo(e)pyrene	**17 a**	**(30 - 150)**			**SW846 8270C SIM**
	18 a	**(30 - 150)**	**17**	**(0-50)**	**SW846 8270C SIM**
Chrysene	**36**	**(30 - 132)**			**SW846 8270C SIM**
	33	**(30 - 132)**	**6.5**	**(0-50)**	**SW846 8270C SIM**
Fluorene	**35**	**(30 - 132)**			**SW846 8270C SIM**
	60	**(30 - 132)**	**20**	**(0-50)**	**SW846 8270C SIM**
Indene	**0.0 a**	**(30 - 150)**			**SW846 8270C SIM**
	31	**(30 - 150)**	**0.0**	**(0-50)**	**SW846 8270C SIM**
2-Methylnaphthalene	**46**	**(30 - 150)**			**SW846 8270C SIM**
	51	**(30 - 150)**	**24**	**(0-50)**	**SW846 8270C SIM**
Naphthalene	**37**	**(30 - 150)**			**SW846 8270C SIM**
	47	**(30 - 150)**	**22**	**(0-50)**	**SW846 8270C SIM**
Quinoline	**63**	**(30 - 150)**			**SW846 8270C SIM**
	67	**(30 - 150)**	**18**	**(0-50)**	**SW846 8270C SIM**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	46	(30 - 118)
	45	(30 - 118)
Fluorene d-10	43	(41 - 162)
	51	(41 - 162)
Naphthalene-d8	47	(30 - 108)
	53	(30 - 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.

MATRIX SPIKE SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #....: D2I170270 Work Order #...: E8DMR1AC-MS Matrix.....: WG
MS Lot-Sample #: D2I170270-003 E8DMR1AD-MSD
Date Sampled...: 09/16/02 Date Received..: 09/17/02
Prep Date.....: 09/18/02 Analysis Date..: 10/04/02
Prep Batch #...: 2261226 Analysis Time..: 18:36
Dilution Factor: 1

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD
Benzo(e)pyrene	ND	72.5	12.5	ng/L	17 a		SW846 8270C SIM
	ND	83.6	14.9	ng/L	18 a	17	SW846 8270C SIM
Chrysene	ND	72.5	26.2	ng/L	36		SW846 8270C SIM
	ND	83.6	27.9	ng/L	33	6.5	SW846 8270C SIM
Fluorene	84	72.5	110	ng/L	35		SW846 8270C SIM
	84	83.6	134	ng/L	60	20	SW846 8270C SIM
Indene	490	72.5	445	ng/L	0.0 a		SW846 8270C SIM
	490	83.6	519	ng/L	31	0.0	SW846 8270C SIM
2-Methylnaphthalene	ND	72.5	33.6	ng/L	46		SW846 8270C SIM
	ND	83.6	43.0	ng/L	51	24	SW846 8270C SIM
Naphthalene	28	72.5	54.6	ng/L	37		SW846 8270C SIM
	28	83.6	67.8	ng/L	47	22	SW846 8270C SIM
uinoline	5.7	72.5	51.0	ng/L	63		SW846 8270C SIM
	5.7	83.6	61.3	ng/L	67	18	SW846 8270C SIM

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	46	(30 - 118)
	45	(30 - 118)
Fluorene d-10	43	(41 - 162)
	51	(41 - 162)
Naphthalene-d8	47	(30 - 108)
	53	(30 - 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.

[redacted]

Chain of Custody Record

1.52
4.8 9/17

SEVERN TRENT SERVICES

Severn Trent Laboratories, Inc.

STL-4124 (0901)

Client: City of St. Louis Park	Project Manager: Scott Anderson	Date: 9/16/02	Chain of Custody Number: 150710
Address: 3752 Wooddale Ave	Telephone Number (Area Code)/Fax Number: 952 924 2557	Lab Number	Page 1 of 1
City: St. Louis Park; State: MN; Zip Code: 55416	Site Contact	Lab Contact: Brian Stringer	
Project Name and Location (State): Reilly	Carrier/Waybill Number		
Contract/Purchase Order/Quote No.: 01620-013			

Analysis (Attach list if more space is needed): PAH PPT-75

Special Instructions/ Conditions of Receipt

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Air	Aqueous	Sed.	Soil	Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	PAH PPT-75
W24-091602	9/16/02	1345		X			6						X
W33-091602	↓	1530		X			6						X

Possible Hazard Identification: ☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required: ☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other_____

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished By: [signature]	9/16/02	1700	1. Received By: [signature]	9/17/02	0830
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

[redacted]

Chain of Custody Record

5.4°C
4.3°C

SEVERN TRENT SERVICES

Severn Trent Laboratories, Inc.

STL-4124 (0901)

Client: City of St. Louis Park	Project Manager: Scott Anderson	Date: 9/16/02	Chain of Custody Number: 150709
Address: 3752 Wooddale Ave	Telephone Number (Area Code)/Fax Number: 952 924 2557	Lab Number:	Page 1 of 1
City: St. Louis Park; State: MN; Zip Code: 55416	Site Contact:	Lab Contact: Brian Stringer	
Project Name and Location (State): Reilly	Carrier/Waybill Number:		
Contract/Purchase Order/Quote No.: 01620-013			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil		Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH		Analysis (Attach list if more space is needed): PAH PPT 75	Special Instructions/ Conditions of Receipt
W410 091602	9/16/02	1620		X				6							X	
W410D 091602	↓	1625		X				6							X	

Possible Hazard Identification: ☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required: ☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other_____

QC Requirements (Specify):

	Date	Time		Date	Time
1. Relinquished By: A. J. Tavara	9/16/02	1700	1. Received By: O Brown	9/17/02	0830
2. Relinquished By:			2. Received By:		
3. Relinquished By:			3. Received By:		

Comments

26

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

2.7°C
4.3°C

Chain of Custody Record

SEVERN TRENT SERVICES

Severn Trent Laboratories, Inc.

STL-4124 (0901)

Client: City of St. Louis Park	Project Manager: Scott Anderson	Date: 9/16/02	Chain of Custody Number: 150718
Address: 3752 Wooddale Ave	Telephone Number (Area Code)/Fax Number: 952 924 2557	Lab Number:	Page 1 of 1
City: St. Louis Park; State: MN; Zip Code: 55416	Site Contact:	Lab Contact: Brian Stringer	
Project Name and Location (State): Reilly	Carrier/Waybill Number:		
Contract/Purchase Order/Quote No.: 01620-013			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil		Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH		Analysis (Attach list if more space is needed): PAH PPT 75	Special Instructions/ Conditions of Receipt
W410MS091602	9/16/02	1630		X				6							X	
W410MSD091602	↓	1635		X				6							X	

Possible Hazard Identification: ☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required: ☐ 24 Hours ☐ ~~48 Hours~~ ☐ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other _____

QC Requirements (Specify):

	Date	Time		Date	Time
1. Relinquished By: [signature]	9/16/02	1700	1. Received By: [signature]	9/17/02	0830
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

[redacted]

Chain of Custody Record

4.6°C
2.3°C 9/17

SEVERN TRENT SERVICES

Severn Trent Laboratories, Inc.

STL-4124 (0901)

Client: City of St. Louis Park	Project Manager: Scott Anderson	Date: 9/16/02	Chain of Custody Number: 150717
Address: 3752 Wooddale Ave	Telephone Number (Area Code)/Fax Number: 952 924 2557	Lab Number	Page 1 of 1
City: St. Louis Park; State: MN; Zip Code: 55416	Site Contact	Lab Contact: Brian Stringer	
Project Name and Location (State): Reilly	Carrier/Waybill Number		
Contract/Purchase Order/Quote No.: 01620-013			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Air	Aqueous	Sed.	Soil		Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	PAH PPT 25	Special Instructions/ Conditions of Receipt
W410 FB091602	9/16/02	1640		X				6						X	
W410 FBD091602	↓	1645		X				6						X	

Possible Hazard Identification: ☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required: ☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other _____

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished By: [signature]	9/16/02	1700	1. Received By: [signature]	9/17/02	0830
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

8

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

BB

SEVERN
TRENT
SERVICES

STL Denver
4955 Yarrow Street
Arvada, CO 80002-4517

Tel: 303 736 0100
Fax: 303 431 7171
www.stl-inc.com

ANALYTICAL REPORT

City of St. Louis Park

Project: Reilly Tar & Chemical Corporation

Lot #: D2I240287

Mr. Scott Anderson

City of St. Louis Park
Utility Division
3752 Wooddale Avenue
St. Louis Park, MN 55416

STL DENVER

Brian Stringer
Project Manager

October 25, 2002

BB

Table Of Contents

Standard Deliverable

Report Contents

- Table of Contents
- Case Narrative
- Executive Summary – Detection Highlights
- Analytical Method Summary
- Method/ Analyst Summary
- Sample Summary
- Analytical Results by Sample
- QC Data Association Summary
- Chain-of-Custody

Total Number of Pages 23

CASE NARRATIVE

STL Lot Number D2I240287

Introduction

On September 24, 2002 STL Denver received four aqueous samples for ppb level, full scan PAH analysis.

The cooler temperature upon receipt was 4.7°C. All containers were received in acceptable condition.

Data Quality Assessment

With exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. All laboratory quality control samples analyzed in conjunction with the samples in this project were within established control limits, with any exceptions noted.

The test results presented in this report meet all requirements of NELAC, and any exceptions are noted. This report shall not be reproduced, except in full, without written permission from the laboratory.

Polynuclear Aromatic Hydrocarbons – Method 8270C

A project-specific lower acceptable recovery limit of 30% for all QC samples and surrogates has been designated for analytical work performed under the 2002 Quality Assurance Project Plan (QAPP) for the Reilly Industries, Inc. NPL Site. All recoveries in this report are above the 30% minimum threshold.

Samples W439-092302 was analyzed at a dilution due to a high concentration of naphthalene and sample W439D-092302 was analyzed at a dilution due to high concentrations of naphthalene and 2,3-dihydroindene. All other analytes are reported from the undiluted analyses to provide data with the lowest possible dilution factors. Naphthalene is reported in both the undiluted and diluted analysis of sample W439-092302 to provide parent sample data for the MS/MSD performed on this sample.

The MS/MSD performed on sample W439-092302 demonstrated recoveries below control limits for benzo(e)pyrene and chrysene. The MS demonstrated a recovery of the surrogate chrysene-d12 below control limits.

Case Narrative for D2I240287 (continued)

Data Completeness for Polynuclear Aromatic Hydrocarbons – Method SW846 8270C

The results contained in the report were reviewed relative to data acceptance criteria as specified in the 2002 QAPP. Based on the exceptions noted we achieved 97.50% completeness.

DATA COMPLETENESS CALCULATION		
LOT D2I240287		
ANALYSIS	PAHs by SW846-8270	
QC Parameter	**Data Planned**	**Valid Data Obtained**
Method Blank	31	31
MB Surrogates	3	3
LCS	7	7
LCS Surrogates	3	3
FB/FBD	62	62
MS	7	5
MS Surrogates	3	2
MSD	7	5
MSD Surrogates	3	3
MS/MSD RPD	7	7
Sample/Dup. RPD	31	31
Sample Surrogates	12	12
Internal STD Area	24	24
TOTAL	**200**	**195**
% Completeness	**97.50%**	

* The MS/MSD was performed on W439-092302

Case Narrative for D2I240287 (continued)

Data Completeness for Polynuclear Aromatic Hydrocarbons – Method SW846 8270C

Sample Duplicate RPD					
LOT D2I240287					
Sample: W439-092302		DUP: W439D-092302			
Compound	Result	Compound	Result	RPD	RPD>50%
Acenaphthene	54	Acenaphthene	62	13.8	
Acenaphthylene	ND	Acenaphthylene	ND	0.0	
Acridine	ND	Acridine	ND	0.0	
Anthracene	ND	Anthracene	ND	0.0	
Benzo(a)anthracene	ND	Benzo(a)anthracene	ND	0.0	
Benzo(b)fluoranthene	ND	Benzo(b)fluoranthene	ND	0.0	
Benzo(k)fluoranthene	ND	Benzo(k)fluoranthene	ND	0.0	
2,3-Benzofuran	3.1	2,3-Benzofuran	4.0	25.4	
Benzo(ghi)perylene	ND	Benzo(ghi)perylene	ND	0.0	
Benzo(a)pyrene	ND	Benzo(a)pyrene	ND	0.0	
Benzo(e)pyrene	ND	Benzo(e)pyrene	ND	0.0	
Benzo(b)thiophene	37	Benzo(b)thiophene	46	21.7	
Biphenyl	6.0	Biphenyl	7.0	15.4	
Carbazole	13	Carbazole	15	14.3	
Chrysene	ND	Chrysene	ND	0.0	
Dibenz(a,h)anthracene	ND	Dibenz(a,h)anthracene	ND	0.0	
Dibenzofuran	11	Dibenzofuran	12	8.7	
Dibenzothiophene	1.1	Dibenzothiophene	1.3	16.7	
2,3-Dihydroindene	150	2,3-Dihydroindene	180	18.2	
Fluoranthene	ND	Fluoranthene	ND	0.0	
Fluorene	9.2	Fluorene	10	8.3	
Indene	52	Indene	65	22.2	
Indeno(1,2,3-cd)pyrene	ND	Indeno(1,2,3-cd)pyrene	ND	0.0	
Indole	ND	Indole	ND	0.0	
2-Methylnaphthalene	13	2-Methylnaphthalene	16	20.7	
1-Methylnaphthalene	59	1-Methylnaphthalene	70	17.1	
Naphthalene	430	Naphthalene	530	20.8	
Perylene	ND	Perylene	ND	0.0	
Phenanthrene	8.0	Phenanthrene	8.7	8.4	
Pyrene	ND	Pyrene	ND	0.0	
Quinoline	ND	Quinoline	ND	0.0	

RPD = Relative Percent Difference
ND = Compound not detected in the sample
OK = RPD acceptable
p = RPD is outside of control limits
*NC = RPD not calculated, one positive result and one ND. Considered acceptable if the positive result is less than 4x the RL.

EXECUTIVE SUMMARY - Detection Highlights

D2I240287

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
W439-092302 09/23/02 11:30 001				
Acenaphthene	54	10	ug/L	SW846 8270C
2,3-Benzofuran	3.1 J	10	ug/L	SW846 8270C
Benzo(b)thiophene	37	10	ug/L	SW846 8270C
Biphenyl	6.0 J	10	ug/L	SW846 8270C
Carbazole	13	10	ug/L	SW846 8270C
Dibenzofuran	11	10	ug/L	SW846 8270C
Dibenzothiophene	1.1 J	10	ug/L	SW846 8270C
2,3-Dihydroindene	150	10	ug/L	SW846 8270C
Fluorene	9.2 J	10	ug/L	SW846 8270C
Indene	52	10	ug/L	SW846 8270C
2-Methylnaphthalene	13	10	ug/L	SW846 8270C
1-Methylnaphthalene	59	10	ug/L	SW846 8270C
Naphthalene	360 E	10	ug/L	SW846 8270C
Naphthalene	430	40	ug/L	SW846 8270C
Phenanthrene	8.0 J	10	ug/L	SW846 8270C
W439D-092302 09/23/02 11:30 002				
Acenaphthene	62	10	ug/L	SW846 8270C
2,3-Benzofuran	4.0 J	10	ug/L	SW846 8270C
Benzo(b)thiophene	46	10	ug/L	SW846 8270C
Biphenyl	7.0 J	10	ug/L	SW846 8270C
Carbazole	15	10	ug/L	SW846 8270C
Dibenzofuran	12	10	ug/L	SW846 8270C
Dibenzothiophene	1.3 J	10	ug/L	SW846 8270C
2,3-Dihydroindene	180	50	ug/L	SW846 8270C
Fluorene	10	10	ug/L	SW846 8270C
Indene	65	10	ug/L	SW846 8270C
2-Methylnaphthalene	16	10	ug/L	SW846 8270C
1-Methylnaphthalene	70	10	ug/L	SW846 8270C
Naphthalene	530	50	ug/L	SW846 8270C
Phenanthrene	8.7 J	10	ug/L	SW846 8270C

METHODS SUMMARY

D2I240287

PARAMETER	ANALYTICAL METHOD	PREPARATION METHOD
Semivolatile Organic Compounds by GC/MS	SW846 8270C	SW846 3520C

References:

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

METHOD / ANALYST SUMMARY

D2I240287

ANALYTICAL METHOD	ANALYST	ANALYST ID
SW846 8270C	Tim O'Donnell	000443

References:

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

SAMPLE SUMMARY

D2I240287

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
E8RGN	001	W439-092302	09/23/02	11:30
E8RG0	002	W439D-092302	09/23/02	11:30
E8RG2	003	W439FB-092302	09/23/02	11:30
E8RG4	004	W439FBD-092302	09/23/02	11:30

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: W439-092302

GC/MS Semivolatiles

Lot-Sample #...: D2I240287-001 Work Order #...: E8RGN1AA Matrix.....: WG
Date Sampled...: 09/23/02 Date Received..: 09/24/02
Prep Date.....: 09/27/02 Analysis Date..: 10/14/02
Prep Batch #...: 2270181 Analysis Time..: 17:05
Dilution Factor: 1

Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	**54**	**10**	**ug/L**
Acenaphthylene	ND	10	ug/L
Acridine	ND	10	ug/L
Anthracene	ND	10	ug/L
Benzo(a)anthracene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
2,3-Benzofuran	**3.1 J**	**10**	**ug/L**
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Benzo(e)pyrene	ND	10	ug/L
Benzo(b)thiophene	**37**	**10**	**ug/L**
Biphenyl	**6.0 J**	**10**	**ug/L**
Carbazole	**13**	**10**	**ug/L**
Chrysene	ND	10	ug/L
Dibenzo(a,h)anthracene	ND	10	ug/L
Dibenzofuran	**11**	**10**	**ug/L**
Dibenzothiophene	**1.1 J**	**10**	**ug/L**
2,3-Dihydroindene	**150**	**10**	**ug/L**
Fluoranthene	ND	10	ug/L
Fluorene	**9.2 J**	**10**	**ug/L**
Indene	**52**	**10**	**ug/L**
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Indole	ND	10	ug/L
2-Methylnaphthalene	**13**	**10**	**ug/L**
1-Methylnaphthalene	**59**	**10**	**ug/L**
Naphthalene	**360 E**	**10**	**ug/L**
Perylene	ND	10	ug/L
Phenanthrene	**8.0 J**	**10**	**ug/L**
Pyrene	ND	10	ug/L
Quinoline	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	30	(30 - 160)
Fluorene d-10	58	(36 - 127)
Naphthalene-d8	63	(37 - 107)

NOTE(S):

J Estimated result. Result is less than RL.

E Estimated result. Result concentration exceeds the calibration range.

CITY OF ST. LOUIS PARK

Client Sample ID: W439-092302

GC/MS Semivolatiles

Lot-Sample #...:	D2I240287-001	Work Order #...:	E8RGN2AA	Matrix.....:	WG
Date Sampled...:	09/23/02	Date Received..:	09/24/02		
Prep Date.....:	09/27/02	Analysis Date..:	10/15/02		
Prep Batch #...:	2270181	Analysis Time..:	16:44		
Dilution Factor:	4				
		Method.....:	SW846 8270C		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Naphthalene	**430**	**40**	**ug/L**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	DIL,NC	(30 - 160)
Fluorene d-10	DIL,NC	(36 - 127)
Naphthalene-d8	DIL,NC	(37 - 107)

NOTE(S):

DIL The concentration is estimated or not reported due to dilution or the presence of interfering analytes.

NC The recovery and/or RPD were not calculated.

CITY OF ST. LOUIS PARK

Client Sample ID: W439D-092302

GC/MS Semivolatiles

Lot-Sample #...:	D2I240287-002	**Work Order #...:**	E8RG01AA	**Matrix.....:**	WG
Date Sampled...:	09/23/02	**Date Received..:**	09/24/02		
Prep Date.....:	09/27/02	**Analysis Date..:**	10/14/02		
Prep Batch #...:	2270181	**Analysis Time..:**	18:59		
Dilution Factor:	1				
		Method.....:	SW846 8270C		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	**62**	**10**	**ug/L**
Acenaphthylene	ND	10	ug/L
Acridine	ND	10	ug/L
Anthracene	ND	10	ug/L
Benzo(a)anthracene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
2,3-Benzofuran	**4.0 J**	**10**	**ug/L**
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Benzo(e)pyrene	ND	10	ug/L
Benzo(b)thiophene	**46**	**10**	**ug/L**
Biphenyl	**7.0 J**	**10**	**ug/L**
Carbazole	**15**	**10**	**ug/L**
Chrysene	ND	10	ug/L
Dibenzo(a,h)anthracene	ND	10	ug/L
Dibenzofuran	**12**	**10**	**ug/L**
Dibenzothiophene	**1.3 J**	**10**	**ug/L**
Fluoranthene	ND	10	ug/L
Fluorene	**10**	**10**	**ug/L**
Indene	**65**	**10**	**ug/L**
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Indole	ND	10	ug/L
2-Methylnaphthalene	**16**	**10**	**ug/L**
1-Methylnaphthalene	**70**	**10**	**ug/L**
Perylene	ND	10	ug/L
Phenanthrene	**8.7 J**	**10**	**ug/L**
Pyrene	ND	10	ug/L
Quinoline	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	36	(30 - 160)
Fluorene d-10	67	(36 - 127)
Naphthalene-d8	79	(37 - 107)

NOTE(S):

J Estimated result. Result is less than RL.

CITY OF ST. LOUIS PARK

Client Sample ID: W439D-092302

GC/MS Semivolatiles

Lot-Sample #...:	D2I240287-002	Work Order #...:	E8RG02AA	Matrix.....:	WG
Date Sampled...:	09/23/02	Date Received..:	09/24/02		
Prep Date.....:	09/27/02	Analysis Date..:	10/15/02		
Prep Batch #...:	2270181	Analysis Time..:	17:22		
Dilution Factor:	5				
		Method.....:	SW846 8270C		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
2,3-Dihydroindene	**180**	**50**	**ug/L**
Naphthalene	**530**	**50**	**ug/L**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	DIL,NC	(30 - 160)
Fluorene d-10	DIL,NC	(36 - 127)
Naphthalene-d8	DIL,NC	(37 - 107)

NOTE(S):

DIL The concentration is estimated or not reported due to dilution or the presence of interfering analytes.

NC The recovery and/or RPD were not calculated.

CITY OF ST. LOUIS PARK

Client Sample ID: W439FB-092302

GC/MS Semivolatiles

Lot-Sample #...: D2I240287-003 Work Order #...: E8RG21AA Matrix.....: WG
Date Sampled...: 09/23/02 Date Received..: 09/24/02
Prep Date.....: 09/27/02 Analysis Date..: 10/15/02
Prep Batch #...: 2270181 Analysis Time..: 18:00
Dilution Factor: 1

Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	10	ug/L
Acenaphthylene	ND	10	ug/L
Acridine	ND	10	ug/L
Anthracene	ND	10	ug/L
Benzo(a)anthracene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
2,3-Benzofuran	ND	10	ug/L
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Benzo(e)pyrene	ND	10	ug/L
Benzo(b)thiophene	ND	10	ug/L
Biphenyl	ND	10	ug/L
Carbazole	ND	10	ug/L
Chrysene	ND	10	ug/L
Dibenzo(a,h)anthracene	ND	10	ug/L
Dibenzofuran	ND	10	ug/L
Dibenzothiophene	ND	10	ug/L
2,3-Dihydroindene	ND	10	ug/L
Fluoranthene	ND	10	ug/L
Fluorene	ND	10	ug/L
Indene	ND	10	ug/L
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Indole	ND	10	ug/L
2-Methylnaphthalene	ND	10	ug/L
1-Methylnaphthalene	ND	10	ug/L
Naphthalene	ND	10	ug/L
Perylene	ND	10	ug/L
Phenanthrene	ND	10	ug/L
Pyrene	ND	10	ug/L
Quinoline	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	70	(30 - 160)
Fluorene d-10	67	(36 - 127)
Naphthalene-d8	78	(37 - 107)

CITY OF ST. LOUIS PARK

Client Sample ID: W439FBD-092302

GC/MS Semivolatiles

Lot-Sample #...: D2I240287-004 **Work Order #...:** E8RG41AA **Matrix.....:** WG
Date Sampled...: 09/23/02 **Date Received..:** 09/24/02
Prep Date.....: 09/27/02 **Analysis Date..:** 10/14/02
Prep Batch #...: 2270181 **Analysis Time..:** 20:14
Dilution Factor: 1

Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	10	ug/L
Acenaphthylene	ND	10	ug/L
Acridine	ND	10	ug/L
Anthracene	ND	10	ug/L
Benzo(a)anthracene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
2,3-Benzofuran	ND	10	ug/L
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Benzo(e)pyrene	ND	10	ug/L
Benzo(b)thiophene	ND	10	ug/L
Biphenyl	ND	10	ug/L
Carbazole	ND	10	ug/L
Chrysene	ND	10	ug/L
Dibenzo(a,h)anthracene	ND	10	ug/L
Dibenzofuran	ND	10	ug/L
Dibenzothiophene	ND	10	ug/L
2,3-Dihydroindene	ND	10	ug/L
Fluoranthene	ND	10	ug/L
Fluorene	ND	10	ug/L
Indene	ND	10	ug/L
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Indole	ND	10	ug/L
2-Methylnaphthalene	ND	10	ug/L
1-Methylnaphthalene	ND	10	ug/L
Naphthalene	ND	10	ug/L
Perylene	ND	10	ug/L
Phenanthrene	ND	10	ug/L
Pyrene	ND	10	ug/L
Quinoline	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	99	(30 - 160)
Fluorene d-10	71	(36 - 127)
Naphthalene-d8	82	(37 - 107)

QC DATA ASSOCIATION SUMMARY

D2I240287

Sample Preparation and Analysis Control Numbers

SAMPLE#	MATRIX	ANALYTICAL METHOD	LEACH BATCH #	PREP BATCH #	MS RUN#
001	WG	SW846 8270C		2270181	2270057
002	WG	SW846 8270C		2270181	2270057
003	WG	SW846 8270C		2270181	2270057
004	WG	SW846 8270C		2270181	2270057

METHOD BLANK REPORT

GC/MS Semivolatiles

Client Lot #...: D2I240287 Work Order #...: E81A91AA Matrix.....: WATER
MB Lot-Sample #: D2I270000-181

Prep Date.....: 09/27/02 Analysis Time..: 14:34

Analysis Date..: 10/14/02 Prep Batch #...: 2270181
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Acenaphthene	ND	10	ug/L	SW846 8270C
Acenaphthylene	ND	10	ug/L	SW846 8270C
Acridine	ND	10	ug/L	SW846 8270C
Anthracene	ND	10	ug/L	SW846 8270C
Benzo(a)anthracene	ND	10	ug/L	SW846 8270C
Benzo(b)fluoranthene	ND	10	ug/L	SW846 8270C
Benzo(k)fluoranthene	ND	10	ug/L	SW846 8270C
2,3-Benzofuran	ND	10	ug/L	SW846 8270C
Benzo(ghi)perylene	ND	10	ug/L	SW846 8270C
Benzo(a)pyrene	ND	10	ug/L	SW846 8270C
Benzo(e)pyrene	ND	10	ug/L	SW846 8270C
Benzo(b)thiophene	ND	10	ug/L	SW846 8270C
Biphenyl	ND	10	ug/L	SW846 8270C
Carbazole	ND	10	ug/L	SW846 8270C
Chrysene	ND	10	ug/L	SW846 8270C
Dibenzo(a,h)anthracene	ND	10	ug/L	SW846 8270C
Dibenzofuran	ND	10	ug/L	SW846 8270C
Dibenzothiophene	ND	10	ug/L	SW846 8270C
2,3-Dihydroindene	ND	10	ug/L	SW846 8270C
Fluoranthene	ND	10	ug/L	SW846 8270C
Fluorene	ND	10	ug/L	SW846 8270C
Indene	ND	10	ug/L	SW846 8270C
Indeno(1,2,3-cd)pyrene	ND	10	ug/L	SW846 8270C
Indole	ND	10	ug/L	SW846 8270C
2-Methylnaphthalene	ND	10	ug/L	SW846 8270C
1-Methylnaphthalene	ND	10	ug/L	SW846 8270C
Naphthalene	ND	10	ug/L	SW846 8270C
Perylene	ND	10	ug/L	SW846 8270C
Phenanthrene	ND	10	ug/L	SW846 8270C
Pyrene	ND	10	ug/L	SW846 8270C
Quinoline	ND	10	ug/L	SW846 8270C

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	99	(30 - 160)
Fluorene d-10	66	(36 - 127)
Naphthalene-d8	79	(37 - 107)

NOTE(S):
Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: D2I240287 Work Order #...: E81A91AC Matrix.....: WATER
LCS Lot-Sample#: D2I270000-181
Prep Date.....: 09/27/02 Analysis Date..: 10/14/02
Prep Batch #...: 2270181 Analysis Time..: 15:12
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD
Benzo(e)pyrene	**92**	**(30 - 150)**	**SW846 8270C**
Chrysene	**99**	**(43 - 124)**	**SW846 8270C**
Fluorene	**83**	**(51 - 120)**	**SW846 8270C**
Indene	**74**	**(49 - 108)**	**SW846 8270C**
2-Methylnaphthalene	**70**	**(47 - 138)**	**SW846 8270C**
Naphthalene	**78**	**(43 - 128)**	**SW846 8270C**
Quinoline	**69**	**(40 - 126)**	**SW846 8270C**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	105	(30 - 160)
Fluorene d-10	68	(36 - 127)
Naphthalene-d8	79	(37 - 107)

NOTE(S):

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

Bold print denotes control parameters

LABORATORY CONTROL SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #...: D2I240287 Work Order #...: E81A91AC Matrix.....: WATER
LCS Lot-Sample#: D2I270000-181
Prep Date.....: 09/27/02 Analysis Date..: 10/14/02
Prep Batch #...: 2270181 Analysis Time..: 15:12
Dilution Factor: 1

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD
Benzo(e)pyrene	**50.0**	**45.8**	**ug/L**	**92**	**SW846 8270C**
Chrysene	**50.0**	**49.7**	**ug/L**	**99**	**SW846 8270C**
Fluorene	**50.0**	**41.5**	**ug/L**	**83**	**SW846 8270C**
Indene	**50.0**	**36.8**	**ug/L**	**74**	**SW846 8270C**
2-Methylnaphthalene	**50.0**	**34.8**	**ug/L**	**70**	**SW846 8270C**
Naphthalene	**50.0**	**39.2**	**ug/L**	**78**	**SW846 8270C**
Quinoline	**50.0**	**34.6**	**ug/L**	**69**	**SW846 8270C**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	105	(30 - 160)
Fluorene d-10	68	(36 - 127)
Naphthalene-d8	79	(37 - 107)

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 #...: D2I240287 Work Order #...: E8RGN1AC-MS Matrix.....: WG
MS Lot-Sample #: D2I240287-001 E8RGN1AD-MSD
Date Sampled...: 09/23/02 Date Received..: 09/24/02
Prep Date.....: 09/27/02 Analysis Date..: 10/14/02
Prep Batch #...: 2270181 Analysis Time..: 17:43
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Benzo(e)pyrene	**23 a**	**(30 - 150)**			**SW846 8270C**
	29 a	**(30 - 150)**	**23**	**(0-30)**	**SW846 8270C**
Chrysene	**26 a**	**(43 - 124)**			**SW846 8270C**
	34 a	**(43 - 124)**	**26**	**(0-30)**	**SW846 8270C**
Fluorene	**86**	**(51 - 120)**			**SW846 8270C**
	82	**(51 - 120)**	**4.0**	**(0-30)**	**SW846 8270C**
Indene	**81**	**(49 - 108)**			**SW846 8270C**
	78	**(49 - 108)**	**1.9**	**(0-30)**	**SW846 8270C**
2-Methylnaphthalene	**76**	**(47 - 138)**			**SW846 8270C**
	73	**(47 - 138)**	**2.8**	**(0-30)**	**SW846 8270C**
Naphthalene	**54**	**(43 - 128)**			**SW846 8270C**
	87	**(43 - 128)**	**3.9**	**(0-30)**	**SW846 8270C**
Quinoline	**75**	**(40 - 126)**			**SW846 8270C**
	73	**(40 - 126)**	**3.8**	**(0-30)**	**SW846 8270C**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	27 *	(30 - 160)
	34	(30 - 160)
Fluorene d-10	68	(36 - 127)
	67	(36 - 127)
Naphthalene-d8	72	(37 - 107)
	73	(37 - 107)

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.

* Surrogate recovery is outside stated control limits.

MATRIX SPIKE SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #...: D2I240287 Work Order #...: E8RGN1AC-MS Matrix.....: WG
MS Lot-Sample #: D2I240287-001 E8RGN1AD-MSD
Date Sampled...: 09/23/02 Date Received..: 09/24/02
Prep Date.....: 09/27/02 Analysis Date..: 10/14/02
Prep Batch #...: 2270181 Analysis Time..: 17:43
Dilution Factor: 1

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD
Benzo(e)pyrene	ND	47.9	10.8	ug/L	23 a		SW846 8270C
	ND	47.7	13.6	ug/L	29 a	23	SW846 8270C
Chrysene	ND	47.9	12.5	ug/L	26 a		SW846 8270C
	ND	47.7	16.3	ug/L	34 a	26	SW846 8270C
Fluorene	9.2	47.9	50.3	ug/L	86		SW846 8270C
	9.2	47.7	48.3	ug/L	82	4.0	SW846 8270C
Indene	52	47.9	90.4	ug/L	81		SW846 8270C
	52	47.7	88.8	ug/L	78	1.9	SW846 8270C
2-Methylnaphthalene	13	47.9	49.3	ug/L	76		SW846 8270C
	13	47.7	47.9	ug/L	73	2.8	SW846 8270C
Naphthalene	360	47.9	388	ug/L	54		SW846 8270C
	360	47.7	404	ug/L	87	3.9	SW846 8270C
Quinoline	ND	47.9	36.1	ug/L	75		SW846 8270C
	ND	47.7	34.8	ug/L	73	3.8	SW846 8270C

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	27 *	(30 - 160)
	34	(30 - 160)
Fluorene d-10	68	(36 - 127)
	67	(36 - 127)
Naphthalene-d8	72	(37 - 107)
	73	(37 - 107)

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.

* Surrogate recovery is outside stated control limits.

MATRIX SPIKE SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: D2I240287 Work Order #...: E8VH21AC-MS Matrix.....: WATER
MS Lot-Sample #: D2I250261-001 E8VH21AD-MSD
Date Sampled...: 09/24/02 Date Received..: 09/25/02
Prep Date.....: 09/27/02 Analysis Date..: 10/15/02
Prep Batch #...: 2270181 Analysis Time..: 12:18
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Benzo(e)pyrene	**75**	**(30 - 150)**			**SW846 8270C**
	46 p	**(30 - 150)**	**62**	**(0-30)**	**SW846 8270C**
Chrysene	**84**	**(43 - 124)**			**SW846 8270C**
	55 p	**(43 - 124)**	**55**	**(0-30)**	**SW846 8270C**
Fluorene	**84**	**(51 - 120)**			**SW846 8270C**
	78	**(51 - 120)**	**23**	**(0-30)**	**SW846 8270C**
Indene	**75**	**(49 - 108)**			**SW846 8270C**
	67	**(49 - 108)**	**26**	**(0-30)**	**SW846 8270C**
2-Methylnaphthalene	**71**	**(47 - 138)**			**SW846 8270C**
	69	**(47 - 138)**	**18**	**(0-30)**	**SW846 8270C**
Naphthalene	**78**	**(43 - 128)**			**SW846 8270C**
	70	**(43 - 128)**	**25**	**(0-30)**	**SW846 8270C**
Quinoline	**72**	**(40 - 126)**			**SW846 8270C**
	65	**(40 - 126)**	**25**	**(0-30)**	**SW846 8270C**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	77	(30 - 160)
	43	(30 - 160)
Fluorene d-10	68	(36 - 127)
	62	(36 - 127)
Naphthalene-d8	80	(37 - 107)
	71	(37 - 107)

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 #...: D2I240287 Work Order #...: E8VH21AC-MS Matrix.....: WATER
MS Lot-Sample #: D2I250261-001 E8VH21AD-MSD
Date Sampled...: 09/24/02 Date Received..: 09/25/02
Prep Date.....: 09/27/02 Analysis Date..: 10/15/02
Prep Batch #...: 2270181 Analysis Time..: 12:18
Dilution Factor: 1

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD
Benzo(e)pyrene	ND	55.6	41.8	ug/L	75		SW846 8270C
	ND	47.9	21.9	ug/L	46 p	62	SW846 8270C
Chrysene	ND	55.6	46.5	ug/L	84		SW846 8270C
	ND	47.9	26.3	ug/L	55 p	55	SW846 8270C
Fluorene	ND	55.6	46.9	ug/L	84		SW846 8270C
	ND	47.9	37.2	ug/L	78	23	SW846 8270C
Indene	ND	55.6	41.7	ug/L	75		SW846 8270C
	ND	47.9	32.3	ug/L	67	26	SW846 8270C
2-Methylnaphthalene	ND	55.6	39.6	ug/L	71		SW846 8270C
	ND	47.9	33.0	ug/L	69	18	SW846 8270C
Naphthalene	ND	55.6	43.2	ug/L	78		SW846 8270C
	ND	47.9	33.7	ug/L	70	25	SW846 8270C
[illegible]noline	ND	55.6	40.1	ug/L	72		SW846 8270C
	ND	47.9	31.2	ug/L	65	25	SW846 8270C

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	77	(30 - 160)
	43	(30 - 160)
Fluorene d-10	68	(36 - 127)
	62	(36 - 127)
Naphthalene-d8	80	(37 - 107)
	71	(37 - 107)

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.*

[redacted]

Chain of Custody Record

4.70 or 4/24

SEVERN TRENT SERVICES

Severn Trent Laboratories, Inc.

STL-4124 (0901)

Client: CITY OF ST. LOUIS PARK UTILITY DIVISION 3752 WOODDALE AVENUE ST. LOUIS PARK, MN 55416	Project Manager: SCOTT ANDERSON	Date: 9-23-02	Chain of Custody Number: 150705
Address	Telephone Number (Area Code)/Fax Number: 924-2557 (952) 924-2570	Lab Number	Page ____ of ____
City	Site Contact: SAME	Lab Contact	
Project Name and Location (State): SAME	Carrier/Waybill Number: FEDEX 806824 1171		
Contract/Purchase Order/Quote No.			

Analysis (Attach list if more space is needed)

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Matrix: Aqueous	Matrix: Sed.	Matrix: Soil	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH		PPB PAH	Special Instructions/ Conditions of Receipt
W439-092302 ~~0007~~	9-23-02	11:30		X			X						2	X	
W439D-092302															
W439MS-092302															
W439MSD-092302															
W439FB-092302															
W439FBD-092302	9-23-02	11:30		X			X						2	X	

Possible Hazard Identification: ☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return To Client ☒ Disposal By Lab ☐ Archive For ____ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required: ☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other____

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished By: MZH	9-23-02	1400	1. Received By: [signature]	9/24/02	0950
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

23

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

CC

SEVERN TRENT SERVICES

STL Denver
4955 Yarrow Street
Arvada, CO 80002-4517

Tel: 303 736 0100
Fax: 303 431 7171
www.stl-inc.com

ANALYTICAL REPORT

City of St. Louis Park

Project: Reilly Tar & Chemical Corporation

Lot #: D2I240290

Mr. Scott Anderson

City of St. Louis Park
Utility Division
3752 Wooddale Avenue
St. Louis Park, MN 55416

STL DENVER

Brian Stringer
Project Manager

October 25, 2002

cc

Table Of Contents

Standard Deliverable

Report Contents

- Table of Contents
- Case Narrative
- Executive Summary – Detection Highlights
- Analytical Method Summary
- Method/ Analyst Summary
- Sample Summary
- Analytical Results by Sample
- QC Data Association Summary
- Chain-of-Custody

Total Number of Pages 25

CASE NARRATIVE

STL Lot Number D2I240290

Introduction

On September 24, 2002 STL Denver received seven aqueous samples for ppb level, full scan PAH analysis.

The cooler temperatures upon receipt were 3.7°C and 2.1°C. All containers were received in acceptable condition.

Data Quality Assessment

With exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. All laboratory quality control samples analyzed in conjunction with the samples in this project were within established control limits, with any exceptions noted.

The test results presented in this report meet all requirements of NELAC, and any exceptions are noted. This report shall not be reproduced, except in full, without written permission from the laboratory.

Polynuclear Aromatic Hydrocarbons – Method 8270C

A project-specific lower acceptable recovery limit of 30% for all QC samples and surrogates has been designated for analytical work performed under the 2002 Quality Assurance Project Plan (QAPP) for the Reilly Industries, Inc. NPL Site. All recoveries in this report are above the 30% minimum threshold except where noted.

Samples W426-092302, P310-092302, P109-092302, W117-092302, W143-092302, and P309-092302 demonstrated recoveries of the surrogate chrysene-d12 below control limits. The LCS and method blank were in control; therefore no further corrective action was taken.

The MS/MSDs were performed on samples from another lot.

Case Narrative for D2I240290 (continued)

Data Completeness for Polynuclear Aromatic Hydrocarbons – Method SW846 8270C

The results contained in the report were reviewed relative to data acceptance criteria as specified in the 2002 QAPP. Based on the exceptions noted we achieved 93.48% completeness.

DATA COMPLETENESS CALCULATION		
LOT D2I240290		
ANALYSIS	PAHs by SW846-8270	
QC Parameter	**Data Planned**	**Valid Data Obtained**
Method Blank	31	31
MB Surrogates	3	3
LCS	7	7
LCS Surrogates	3	3
FB/FBD	0	0
MS	0	0
MS Surrogates	0	0
MSD	0	0
MSD Surrogates	0	0
MS/MSD RPD	0	0
Sample/Dup. RPD	0	0
Sample Surrogates	21	15
Internal STD Area	27	27
TOTAL	**92**	**86**
% Completeness	**93.48%**	

* MS/MSD, field blanks, and field duplicate samples were not included in this lot.

EXECUTIVE SUMMARY - Detection Highlights

D2I240290

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
W426-092302 09/23/02 11:00 001				
Acenaphthene	66	10	ug/L	SW846 8270C
Acenaphthylene	5.4 J	10	ug/L	SW846 8270C
Acridine	0.68 J	10	ug/L	SW846 8270C
Anthracene	2.5 J	10	ug/L	SW846 8270C
Benzo(b)thiophene	5.1 J	10	ug/L	SW846 8270C
Biphenyl	5.0 J	10	ug/L	SW846 8270C
Carbazole	13	10	ug/L	SW846 8270C
Dibenzofuran	19	10	ug/L	SW846 8270C
Dibenzothiophene	2.1 J	10	ug/L	SW846 8270C
2,3-Dihydroindene	24	10	ug/L	SW846 8270C
Fluoranthene	1.9 J	10	ug/L	SW846 8270C
Fluorene	33	10	ug/L	SW846 8270C
Indene	5.2 J	10	ug/L	SW846 8270C
1-Methylnaphthalene	56	10	ug/L	SW846 8270C
Naphthalene	4.7 J	10	ug/L	SW846 8270C
Phenanthrene	27	10	ug/L	SW846 8270C
W409-092302 09/23/02 11:45 002				
Acenaphthene	27	10	ug/L	SW846 8270C
Acenaphthylene	1.6 J	10	ug/L	SW846 8270C
Benzo(b)thiophene	12	10	ug/L	SW846 8270C
Biphenyl	1.4 J	10	ug/L	SW846 8270C
Carbazole	5.2 J	10	ug/L	SW846 8270C
Dibenzofuran	6.8 J	10	ug/L	SW846 8270C
2,3-Dihydroindene	7.3 J	10	ug/L	SW846 8270C
Fluorene	9.7 J	10	ug/L	SW846 8270C
Indene	28	10	ug/L	SW846 8270C
1-Methylnaphthalene	16	10	ug/L	SW846 8270C
Naphthalene	15	10	ug/L	SW846 8270C
Phenanthrene	5.2 J	10	ug/L	SW846 8270C
P310-092302 09/23/02 13:10 003				
Acenaphthene	5.8 J	10	ug/L	SW846 8270C
Carbazole	1.8 J	10	ug/L	SW846 8270C
Naphthalene	2.2 J	10	ug/L	SW846 8270C
P309-092302 09/23/02 16:15 007				
Acenaphthene	10	10	ug/L	SW846 8270C
Carbazole	3.6 J	10	ug/L	SW846 8270C
2,3-Dihydroindene	6.8 J	10	ug/L	SW846 8270C

(Continued on next page)

EXECUTIVE SUMMARY - Detection Highlights

D2I240290

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
P309-092302 09/23/02 16:15 007				
1-Methylnaphthalene	1.8 J	10	ug/L	SW846 8270C
Naphthalene	1.5 J	10	ug/L	SW846 8270C

METHODS SUMMARY

D2I240290

PARAMETER	ANALYTICAL METHOD	PREPARATION METHOD
Semivolatile Organic Compounds by GC/MS	SW846 8270C	SW846 3520C

References:

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

METHOD / ANALYST SUMMARY

D2I240290

ANALYTICAL METHOD	ANALYST	ANALYST ID
SW846 8270C	Tim O'Donnell	000443

References:

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

SAMPLE SUMMARY

D2I240290

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
E8RHF	001	W426-092302	09/23/02	11:00
E8RHJ	002	W409-092302	09/23/02	11:45
E8RHK	003	P310-092302	09/23/02	13:10
E8RHL	004	P109-092302	09/23/02	14:30
E8RHM	005	W117-092302	09/23/02	15:00
E8RHP	006	W143-092302	09/23/02	15:30
E8RHQ	007	P309-092302	09/23/02	16:15

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: W426-092302

GC/MS Semivolatiles

Lot-Sample #...: D2I240290-001 Work Order #...: E8RHF1AA Matrix.....: WG
Date Sampled...: 09/23/02 Date Received..: 09/24/02
Prep Date.....: 09/27/02 Analysis Date..: 10/14/02
Prep Batch #...: 2270181 Analysis Time..: 20:52
Dilution Factor: 1

Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	**66**	**10**	**ug/L**
Acenaphthylene	**5.4 J**	**10**	**ug/L**
Acridine	**0.68 J**	**10**	**ug/L**
Anthracene	**2.5 J**	**10**	**ug/L**
Benzo(a)anthracene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
2,3-Benzofuran	ND	10	ug/L
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Benzo(e)pyrene	ND	10	ug/L
Benzo(b)thiophene	**5.1 J**	**10**	**ug/L**
Biphenyl	**5.0 J**	**10**	**ug/L**
Carbazole	**13**	**10**	**ug/L**
Chrysene	ND	10	ug/L
Dibenzo(a,h)anthracene	ND	10	ug/L
Dibenzofuran	**19**	**10**	**ug/L**
Dibenzothiophene	**2.1 J**	**10**	**ug/L**
2,3-Dihydroindene	**24**	**10**	**ug/L**
Fluoranthene	**1.9 J**	**10**	**ug/L**
Fluorene	**33**	**10**	**ug/L**
Indene	**5.2 J**	**10**	**ug/L**
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Indole	ND	10	ug/L
2-Methylnaphthalene	ND	10	ug/L
1-Methylnaphthalene	**56**	**10**	**ug/L**
Naphthalene	**4.7 J**	**10**	**ug/L**
Perylene	ND	10	ug/L
Phenanthrene	**27**	**10**	**ug/L**
Pyrene	ND	10	ug/L
Quinoline	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	25 *	(30 - 160)
Fluorene d-10	63	(36 - 127)
Naphthalene-d8	73	(37 - 107)

NOTE(S):

* Surrogate recovery is outside stated control limits.

J Estimated result. Result is less than RL.

CITY OF ST. LOUIS PARK

Client Sample ID: W409-092302

GC/MS Semivolatiles

Lot-Sample #...: D2I240290-002 Work Order #...: E8RHJ1AA Matrix.....: WG
Date Sampled...: 09/23/02 Date Received..: 09/24/02
Prep Date.....: 09/27/02 Analysis Date..: 10/14/02
Prep Batch #...: 2270181 Analysis Time..: 21:29
Dilution Factor: 1

Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	**27**	**10**	**ug/L**
Acenaphthylene	**1.6 J**	**10**	**ug/L**
Acridine	ND	10	ug/L
Anthracene	ND	10	ug/L
Benzo(a)anthracene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
2,3-Benzofuran	ND	10	ug/L
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Benzo(e)pyrene	ND	10	ug/L
Benzo(b)thiophene	**12**	**10**	**ug/L**
[illegible]phenyl	**1.4 J**	**10**	**ug/L**
Carbazole	**5.2 J**	**10**	**ug/L**
Chrysene	ND	10	ug/L
Dibenzo(a,h)anthracene	ND	10	ug/L
Dibenzofuran	**6.8 J**	**10**	**ug/L**
Dibenzothiophene	ND	10	ug/L
2,3-Dihydroindene	**7.3 J**	**10**	**ug/L**
Fluoranthene	ND	10	ug/L
Fluorene	**9.7 J**	**10**	**ug/L**
Indene	**28**	**10**	**ug/L**
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Indole	ND	10	ug/L
2-Methylnaphthalene	ND	10	ug/L
1-Methylnaphthalene	**16**	**10**	**ug/L**
Naphthalene	**15**	**10**	**ug/L**
Perylene	ND	10	ug/L
Phenanthrene	**5.2 J**	**10**	**ug/L**
Pyrene	ND	10	ug/L
Quinoline	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	36	(30 - 160)
Fluorene d-10	64	(36 - 127)
Naphthalene-d8	70	(37 - 107)

NOTE(S):

J Estimated result. Result is less than RL.

CITY OF ST. LOUIS PARK

Client Sample ID: P310-092302

GC/MS Semivolatiles

Lot-Sample #...:	D2I240290-003	Work Order #...:	E8RHK1AA	Matrix.....:	WG
Date Sampled...:	09/23/02	Date Received..:	09/24/02		
Prep Date.....:	09/27/02	Analysis Date..:	10/14/02		
Prep Batch #...:	2270181	Analysis Time..:	22:06		
Dilution Factor:	1				
		Method.....:	SW846 8270C		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	**5.8 J**	**10**	**ug/L**
Acenaphthylene	ND	10	ug/L
Acridine	ND	10	ug/L
Anthracene	ND	10	ug/L
Benzo(a)anthracene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
2,3-Benzofuran	ND	10	ug/L
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Benzo(e)pyrene	ND	10	ug/L
Benzo(b)thiophene	ND	10	ug/L
Biphenyl	ND	10	ug/L
Carbazole	**1.8 J**	**10**	**ug/L**
Chrysene	ND	10	ug/L
Dibenzo(a,h)anthracene	ND	10	ug/L
Dibenzofuran	ND	10	ug/L
Dibenzothiophene	ND	10	ug/L
2,3-Dihydroindene	ND	10	ug/L
Fluoranthene	ND	10	ug/L
Fluorene	ND	10	ug/L
Indene	ND	10	ug/L
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Indole	ND	10	ug/L
2-Methylnaphthalene	ND	10	ug/L
1-Methylnaphthalene	ND	10	ug/L
Naphthalene	**2.2 J**	**10**	**ug/L**
Perylene	ND	10	ug/L
Phenanthrene	ND	10	ug/L
Pyrene	ND	10	ug/L
Quinoline	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	19 *	(30 - 160)
Fluorene d-10	68	(36 - 127)
Naphthalene-d8	76	(37 - 107)

NOTE(S):

* Surrogate recovery is outside stated control limits.

J Estimated result. Result is less than RL.

CITY OF ST. LOUIS PARK

Client Sample ID: P109-092302

GC/MS Semivolatiles

Lot-Sample #...: D2I240290-004 Work Order #...: E8RHL1AA Matrix.....: WG
Date Sampled...: 09/23/02 Date Received..: 09/24/02
Prep Date.....: 09/27/02 Analysis Date..: 10/14/02
Prep Batch #...: 2270181 Analysis Time..: 22:43
Dilution Factor: 1

Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	10	ug/L
Acenaphthylene	ND	10	ug/L
Acridine	ND	10	ug/L
Anthracene	ND	10	ug/L
Benzo(a)anthracene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
2,3-Benzofuran	ND	10	ug/L
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Benzo(e)pyrene	ND	10	ug/L
Benzo(b)thiophene	ND	10	ug/L
[illegible]phenyl	ND	10	ug/L
Carbazole	ND	10	ug/L
Chrysene	ND	10	ug/L
Dibenzo(a,h)anthracene	ND	10	ug/L
Dibenzofuran	ND	10	ug/L
Dibenzothiophene	ND	10	ug/L
2,3-Dihydroindene	ND	10	ug/L
Fluoranthene	ND	10	ug/L
Fluorene	ND	10	ug/L
Indene	ND	10	ug/L
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Indole	ND	10	ug/L
2-Methylnaphthalene	ND	10	ug/L
1-Methylnaphthalene	ND	10	ug/L
Naphthalene	ND	10	ug/L
Perylene	ND	10	ug/L
Phenanthrene	ND	10	ug/L
Pyrene	ND	10	ug/L
Quinoline	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	23 *	(30 - 160)
Fluorene d-10	60	(36 - 127)
Naphthalene-d8	74	(37 - 107)

NOTE(S):

* Surrogate recovery is outside stated control limits.

CITY OF ST. LOUIS PARK

Client Sample ID: W117-092302

GC/MS Semivolatiles

Lot-Sample #...: D2I240290-005 **Work Order #...:** E8RHM1AA **Matrix.....:** WG
Date Sampled...: 09/23/02 **Date Received..:** 09/24/02
Prep Date.....: 09/27/02 **Analysis Date..:** 10/14/02
Prep Batch #...: 2270181 **Analysis Time..:** 23:20
Dilution Factor: 1

Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	10	ug/L
Acenaphthylene	ND	10	ug/L
Acridine	ND	10	ug/L
Anthracene	ND	10	ug/L
Benzo(a)anthracene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
2,3-Benzofuran	ND	10	ug/L
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Benzo(e)pyrene	ND	10	ug/L
Benzo(b)thiophene	ND	10	ug/L
Biphenyl	ND	10	ug/L
Carbazole	ND	10	ug/L
Chrysene	ND	10	ug/L
Dibenzo(a,h)anthracene	ND	10	ug/L
Dibenzofuran	ND	10	ug/L
Dibenzothiophene	ND	10	ug/L
2,3-Dihydroindene	ND	10	ug/L
Fluoranthene	ND	10	ug/L
Fluorene	ND	10	ug/L
Indene	ND	10	ug/L
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Indole	ND	10	ug/L
2-Methylnaphthalene	ND	10	ug/L
1-Methylnaphthalene	ND	10	ug/L
Naphthalene	ND	10	ug/L
Perylene	ND	10	ug/L
Phenanthrene	ND	10	ug/L
Pyrene	ND	10	ug/L
Quinoline	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	27 *	(30 - 160)
Fluorene d-10	63	(36 - 127)
Naphthalene-d8	73	(37 - 107)

NOTE(S):

* Surrogate recovery is outside stated control limits.

CITY OF ST. LOUIS PARK

Client Sample ID: W143-092302

GC/MS Semivolatiles

Lot-Sample #...: D2I240290-006 Work Order #...: E8RHP1AA Matrix.....: WG
Date Sampled...: 09/23/02 Date Received..: 09/24/02
Prep Date.....: 09/27/02 Analysis Date..: 10/14/02
Prep Batch #...: 2270181 Analysis Time..: 23:57
Dilution Factor: 1

Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	10	ug/L
Acenaphthylene	ND	10	ug/L
Acridine	ND	10	ug/L
Anthracene	ND	10	ug/L
Benzo(a)anthracene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
2,3-Benzofuran	ND	10	ug/L
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Benzo(e)pyrene	ND	10	ug/L
Benzo(b)thiophene	ND	10	ug/L
Biphenyl	ND	10	ug/L
Carbazole	ND	10	ug/L
Chrysene	ND	10	ug/L
Dibenzo(a,h)anthracene	ND	10	ug/L
Dibenzofuran	ND	10	ug/L
Dibenzothiophene	ND	10	ug/L
2,3-Dihydroindene	ND	10	ug/L
Fluoranthene	ND	10	ug/L
Fluorene	ND	10	ug/L
Indene	ND	10	ug/L
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Indole	ND	10	ug/L
2-Methylnaphthalene	ND	10	ug/L
1-Methylnaphthalene	ND	10	ug/L
Naphthalene	ND	10	ug/L
Perylene	ND	10	ug/L
Phenanthrene	ND	10	ug/L
Pyrene	ND	10	ug/L
Quinoline	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	20 *	(30 - 160)
Fluorene d-10	64	(36 - 127)
Naphthalene-d8	80	(37 - 107)

NOTE(S):

* Surrogate recovery is outside stated control limits.

CITY OF ST. LOUIS PARK

Client Sample ID: P309-092302

GC/MS Semivolatiles

Lot-Sample #...: D2I240290-007 **Work Order #...:** E8RHQ1AA **Matrix.....:** WG
Date Sampled...: 09/23/02 **Date Received..:** 09/24/02
Prep Date.....: 09/27/02 **Analysis Date..:** 10/15/02
Prep Batch #...: 2270181 **Analysis Time..:** 00:34
Dilution Factor: 1

Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	**10**	**10**	**ug/L**
Acenaphthylene	ND	10	ug/L
Acridine	ND	10	ug/L
Anthracene	ND	10	ug/L
Benzo(a)anthracene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
2,3-Benzofuran	ND	10	ug/L
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Benzo(e)pyrene	ND	10	ug/L
Benzo(b)thiophene	ND	10	ug/L
Biphenyl	ND	10	ug/L
Carbazole	**3.6 J**	**10**	**ug/L**
Chrysene	ND	10	ug/L
Dibenzo(a,h)anthracene	ND	10	ug/L
Dibenzofuran	ND	10	ug/L
Dibenzothiophene	ND	10	ug/L
2,3-Dihydroindene	**6.8 J**	**10**	**ug/L**
Fluoranthene	ND	10	ug/L
Fluorene	ND	10	ug/L
Indene	ND	10	ug/L
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Indole	ND	10	ug/L
2-Methylnaphthalene	ND	10	ug/L
1-Methylnaphthalene	**1.8 J**	**10**	**ug/L**
Naphthalene	**1.5 J**	**10**	**ug/L**
Perylene	ND	10	ug/L
Phenanthrene	ND	10	ug/L
Pyrene	ND	10	ug/L
Quinoline	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	24 *	(30 - 160)
Fluorene d-10	54	(36 - 127)
Naphthalene-d8	59	(37 - 107)

NOTE(S):

* Surrogate recovery is outside stated control limits.

J Estimated result. Result is less than RL.

QC DATA ASSOCIATION SUMMARY

D2I240290

Sample Preparation and Analysis Control Numbers

SAMPLE#	MATRIX	ANALYTICAL METHOD	LEACH BATCH #	PREP BATCH #	MS RUN#
001	WG	SW846 8270C		2270181	2270057
002	WG	SW846 8270C		2270181	2270057
003	WG	SW846 8270C		2270181	2270057
004	WG	SW846 8270C		2270181	2270057
005	WG	SW846 8270C		2270181	2270057
006	WG	SW846 8270C		2270181	2270057
007	WG	SW846 8270C		2270181	2270057

METHOD BLANK REPORT

GC/MS Semivolatiles

Client Lot #...: D2I240290
MB Lot-Sample #: D2I270000-181
Work Order #...: E81A91AA
Matrix.....: WATER
Prep Date.....: 09/27/02
Analysis Time..: 14:34
Analysis Date..: 10/14/02
Prep Batch #...: 2270181
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Acenaphthene	ND	10	ug/L	SW846 8270C
Acenaphthylene	ND	10	ug/L	SW846 8270C
Acridine	ND	10	ug/L	SW846 8270C
Anthracene	ND	10	ug/L	SW846 8270C
Benzo(a)anthracene	ND	10	ug/L	SW846 8270C
Benzo(b)fluoranthene	ND	10	ug/L	SW846 8270C
Benzo(k)fluoranthene	ND	10	ug/L	SW846 8270C
2,3-Benzofuran	ND	10	ug/L	SW846 8270C
Benzo(ghi)perylene	ND	10	ug/L	SW846 8270C
Benzo(a)pyrene	ND	10	ug/L	SW846 8270C
Benzo(e)pyrene	ND	10	ug/L	SW846 8270C
Benzo(b)thiophene	ND	10	ug/L	SW846 8270C
Biphenyl	ND	10	ug/L	SW846 8270C
Carbazole	ND	10	ug/L	SW846 8270C
Chrysene	ND	10	ug/L	SW846 8270C
Dibenzo(a,h)anthracene	ND	10	ug/L	SW846 8270C
Dibenzofuran	ND	10	ug/L	SW846 8270C
Dibenzothiophene	ND	10	ug/L	SW846 8270C
2,3-Dihydroindene	ND	10	ug/L	SW846 8270C
Fluoranthene	ND	10	ug/L	SW846 8270C
Fluorene	ND	10	ug/L	SW846 8270C
Indene	ND	10	ug/L	SW846 8270C
Indeno(1,2,3-cd)pyrene	ND	10	ug/L	SW846 8270C
Indole	ND	10	ug/L	SW846 8270C
2-Methylnaphthalene	ND	10	ug/L	SW846 8270C
1-Methylnaphthalene	ND	10	ug/L	SW846 8270C
Naphthalene	ND	10	ug/L	SW846 8270C
Perylene	ND	10	ug/L	SW846 8270C
Phenanthrene	ND	10	ug/L	SW846 8270C
Pyrene	ND	10	ug/L	SW846 8270C
Quinoline	ND	10	ug/L	SW846 8270C

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	99	(30 - 160)
Fluorene d-10	66	(36 - 127)
Naphthalene-d8	79	(37 - 107)

NOTE(S):

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

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: D2I240290 Work Order #...: E81A91AC Matrix.....: WATER
LCS Lot-Sample#: D2I270000-181
Prep Date.....: 09/27/02 Analysis Date..: 10/14/02
Prep Batch #...: 2270181 Analysis Time..: 15:12
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD
Benzo(e)pyrene	**92**	**(30 - 150)**	**SW846 8270C**
Chrysene	**99**	**(43 - 124)**	**SW846 8270C**
Fluorene	**83**	**(51 - 120)**	**SW846 8270C**
Indene	**74**	**(49 - 108)**	**SW846 8270C**
2-Methylnaphthalene	**70**	**(47 - 138)**	**SW846 8270C**
Naphthalene	**78**	**(43 - 128)**	**SW846 8270C**
Quinoline	**69**	**(40 - 126)**	**SW846 8270C**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	105	(30 - 160)
Fluorene d-10	68	(36 - 127)
Naphthalene-d8	79	(37 - 107)

NOTE(S):

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

Bold print denotes control parameters

LABORATORY CONTROL SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #...: D2I240290 Work Order #...: E81A91AC Matrix.....: WATER
LCS Lot-Sample#: D2I270000-181
Prep Date.....: 09/27/02 Analysis Date..: 10/14/02
Prep Batch #...: 2270181 Analysis Time..: 15:12
Dilution Factor: 1

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD
Benzo(e)pyrene	**50.0**	**45.8**	**ug/L**	**92**	**SW846 8270C**
Chrysene	**50.0**	**49.7**	**ug/L**	**99**	**SW846 8270C**
Fluorene	**50.0**	**41.5**	**ug/L**	**83**	**SW846 8270C**
Indene	**50.0**	**36.8**	**ug/L**	**74**	**SW846 8270C**
2-Methylnaphthalene	**50.0**	**34.8**	**ug/L**	**70**	**SW846 8270C**
Naphthalene	**50.0**	**39.2**	**ug/L**	**78**	**SW846 8270C**
Quinoline	**50.0**	**34.6**	**ug/L**	**69**	**SW846 8270C**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	105	(30 - 160)
Fluorene d-10	68	(36 - 127)
Naphthalene-d8	79	(37 - 107)

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 #...: D2I240290 Work Order #...: E8RGN1AC-MS Matrix.....: WATER
MS Lot-Sample #: D2I240287-001 E8RGN1AD-MSD
Date Sampled...: 09/23/02 Date Received..: 09/24/02
Prep Date.....: 09/27/02 Analysis Date..: 10/14/02
Prep Batch #...: 2270181 Analysis Time..: 17:43
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Benzo(e)pyrene	**23 a**	**(30 - 150)**			**SW846 8270C**
	29 a	**(30 - 150)**	**23**	**(0-30)**	**SW846 8270C**
Chrysene	**26 a**	**(43 - 124)**			**SW846 8270C**
	34 a	**(43 - 124)**	**26**	**(0-30)**	**SW846 8270C**
Fluorene	**86**	**(51 - 120)**			**SW846 8270C**
	82	**(51 - 120)**	**4.0**	**(0-30)**	**SW846 8270C**
Indene	**81**	**(49 - 108)**			**SW846 8270C**
	78	**(49 - 108)**	**1.9**	**(0-30)**	**SW846 8270C**
2-Methylnaphthalene	**76**	**(47 - 138)**			**SW846 8270C**
	73	**(47 - 138)**	**2.8**	**(0-30)**	**SW846 8270C**
Naphthalene	**54**	**(43 - 128)**			**SW846 8270C**
	87	**(43 - 128)**	**3.9**	**(0-30)**	**SW846 8270C**
inoline	**75**	**(40 - 126)**			**SW846 8270C**
	73	**(40 - 126)**	**3.8**	**(0-30)**	**SW846 8270C**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	27 *	(30 - 160)
	34	(30 - 160)
Fluorene d-10	68	(36 - 127)
	67	(36 - 127)
Naphthalene-d8	72	(37 - 107)
	73	(37 - 107)

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.

* Surrogate recovery is outside stated control limits.

MATRIX SPIKE SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #...: D2I240290 Work Order #...: E8RGN1AC-MS Matrix.....: WATER
MS Lot-Sample #: D2I240287-001 E8RGN1AD-MSD
Date Sampled...: 09/23/02 Date Received..: 09/24/02
Prep Date.....: 09/27/02 Analysis Date..: 10/14/02
Prep Batch #...: 2270181 Analysis Time..: 17:43
Dilution Factor: 1

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD
Benzo(e)pyrene	**ND**	**47.9**	**10.8**	**ug/L**	**23 a**		**SW846 8270C**
	ND	**47.7**	**13.6**	**ug/L**	**29 a**	**23**	**SW846 8270C**
Chrysene	**ND**	**47.9**	**12.5**	**ug/L**	**26 a**		**SW846 8270C**
	ND	**47.7**	**16.3**	**ug/L**	**34 a**	**26**	**SW846 8270C**
Fluorene	**9.2**	**47.9**	**50.3**	**ug/L**	**86**		**SW846 8270C**
	9.2	**47.7**	**48.3**	**ug/L**	**82**	**4.0**	**SW846 8270C**
Indene	**52**	**47.9**	**90.4**	**ug/L**	**81**		**SW846 8270C**
	52	**47.7**	**88.8**	**ug/L**	**78**	**1.9**	**SW846 8270C**
2-Methylnaphthalene	**13**	**47.9**	**49.3**	**ug/L**	**76**		**SW846 8270C**
	13	**47.7**	**47.9**	**ug/L**	**73**	**2.8**	**SW846 8270C**
Naphthalene	**360**	**47.9**	**388**	**ug/L**	**54**		**SW846 8270C**
	360	**47.7**	**404**	**ug/L**	**87**	**3.9**	**SW846 8270C**
Quinoline	**ND**	**47.9**	**36.1**	**ug/L**	**75**		**SW846 8270C**
	ND	**47.7**	**34.8**	**ug/L**	**73**	**3.8**	**SW846 8270C**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	27 *	(30 - 160)
	34	(30 - 160)
Fluorene d-10	68	(36 - 127)
	67	(36 - 127)
Naphthalene-d8	72	(37 - 107)
	73	(37 - 107)

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.

* Surrogate recovery is outside stated control limits.

MATRIX SPIKE SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: D2I240290 Work Order #...: E8VH21AC-MS Matrix.....: WATER
MS Lot-Sample #: D2I250261-001 E8VH21AD-MSD
Date Sampled...: 09/24/02 Date Received..: 09/25/02
Prep Date.....: 09/27/02 Analysis Date..: 10/15/02
Prep Batch #...: 2270181 Analysis Time..: 12:18
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Benzo(e)pyrene	**75**	**(30 - 150)**			**SW846 8270C**
	46 p	**(30 - 150)**	**62**	**(0-30)**	**SW846 8270C**
Chrysene	**84**	**(43 - 124)**			**SW846 8270C**
	55 p	**(43 - 124)**	**55**	**(0-30)**	**SW846 8270C**
Fluorene	**84**	**(51 - 120)**			**SW846 8270C**
	78	**(51 - 120)**	**23**	**(0-30)**	**SW846 8270C**
Indene	**75**	**(49 - 108)**			**SW846 8270C**
	67	**(49 - 108)**	**26**	**(0-30)**	**SW846 8270C**
2-Methylnaphthalene	**71**	**(47 - 138)**			**SW846 8270C**
	69	**(47 - 138)**	**18**	**(0-30)**	**SW846 8270C**
Naphthalene	**78**	**(43 - 128)**			**SW846 8270C**
	70	**(43 - 128)**	**25**	**(0-30)**	**SW846 8270C**
Quinoline	**72**	**(40 - 126)**			**SW846 8270C**
	65	**(40 - 126)**	**25**	**(0-30)**	**SW846 8270C**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	77	(30 - 160)
	43	(30 - 160)
Fluorene d-10	68	(36 - 127)
	62	(36 - 127)
Naphthalene-d8	80	(37 - 107)
	71	(37 - 107)

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 #...: D2I240290 Work Order #...: E8VH21AC-MS Matrix.....: WATER
MS Lot-Sample #: D2I250261-001 E8VH21AD-MSD
Date Sampled...: 09/24/02 Date Received..: 09/25/02
Prep Date.....: 09/27/02 Analysis Date..: 10/15/02
Prep Batch #...: 2270181 Analysis Time..: 12:18
Dilution Factor: 1

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD
Benzo(e)pyrene	**ND**	**55.6**	**41.8**	**ug/L**	**75**		**SW846 8270C**
	ND	**47.9**	**21.9**	**ug/L**	**46 p**	**62**	**SW846 8270C**
Chrysene	**ND**	**55.6**	**46.5**	**ug/L**	**84**		**SW846 8270C**
	ND	**47.9**	**26.3**	**ug/L**	**55 p**	**55**	**SW846 8270C**
Fluorene	**ND**	**55.6**	**46.9**	**ug/L**	**84**		**SW846 8270C**
	ND	**47.9**	**37.2**	**ug/L**	**78**	**23**	**SW846 8270C**
Indene	**ND**	**55.6**	**41.7**	**ug/L**	**75**		**SW846 8270C**
	ND	**47.9**	**32.3**	**ug/L**	**67**	**26**	**SW846 8270C**
2-Methylnaphthalene	**ND**	**55.6**	**39.6**	**ug/L**	**71**		**SW846 8270C**
	ND	**47.9**	**33.0**	**ug/L**	**69**	**18**	**SW846 8270C**
Naphthalene	**ND**	**55.6**	**43.2**	**ug/L**	**78**		**SW846 8270C**
	ND	**47.9**	**33.7**	**ug/L**	**70**	**25**	**SW846 8270C**
Quinoline	**ND**	**55.6**	**40.1**	**ug/L**	**72**		**SW846 8270C**
	ND	**47.9**	**31.2**	**ug/L**	**65**	**25**	**SW846 8270C**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	77	(30 - 160)
	43	(30 - 160)
Fluorene d-10	68	(36 - 127)
	62	(36 - 127)
Naphthalene-d8	80	(37 - 107)
	71	(37 - 107)

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.

[redacted]

Chain of Custody Record

2.1° on 9/24/02

SEVERN TRENT SERVICES

Severn Trent Laboratories, Inc.

STL-4124 (0901)

Client: City of St Louis Park	Project Manager: Scott Anderson	Date: 9/23/02	Chain of Custody Number: 150724
Address: 3752 Wooddale Ave	Telephone Number (Area Code)/Fax Number: 952-924-2557	Lab Number:	Page 1 of 1
City: St Louis Park; State: MN; Zip Code: 55416	Site Contact: Bill Gregg	Lab Contact:	
Project Name and Location (State): Reilly	Carrier/Waybill Number:		
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil		Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH		Analysis (Attach list if more space is needed): DAH-PPB	Special Instructions/ Conditions of Receipt
W117-092302	09/23/02	1500		X				2							X	
W143-092302	↓	1530		↓				↓							↓	
P309-092302	↓	1615		↓				↓							↓	

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required: ☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other _____

QC Requirements (Specify):

1. Relinquished By: Chris Bohm	Date: 9/23/02	Time: 1700	1. Received By: [signature]	Date: 9/24/02	Time: 0950
2. Relinquished By	Date	Time	2. Received By	Date	Time
3. Relinquished By	Date	Time	3. Received By	Date	Time

Comments: 2

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

[redacted]

Chain of Custody Record

3:T

SEVERN TRENT SERVICES

Severn Trent Laboratories, Inc.

STL-4124 (0901)

Client: City of St. Louis Park	Project Manager: Scott Anderson	Date: 9/23/02	Chain of Custody Number: 150723
Address: 3752 Wooddale Ave	Telephone Number (Area Code)/Fax Number: 952-924-2557	Lab Number:	Page 1 of 1
City: St. Louis Park; State: MN; Zip Code: 55416	Site Contact: Bill Gregg	Lab Contact:	
Project Name and Location (State): Reilly	Carrier/Waybill Number:		
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Analysis (Attach list if more space is needed): PAH-PPB	Special Instructions/ Conditions of Receipt
W426-092302	9/23/02	1100		X			2						X	
W409-092302	↓	1145		↓			↓						↓	
P310-092302		1310												
P109-092302		1430												

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required: ☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other_____

QC Requirements (Specify):

	Date	Time		Date	Time
1. Relinquished By: Chris Boehm	9/23/02	1700	1. Received By: [signature]	9/24/02	0950
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

2

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

DD

SEVERN TRENT SERVICES

STL Denver
4955 Yarrow Street
Arvada, CO 80002-4517

Tel: 303 736 0100
Fax: 303 431 7171
www.stl-inc.com

ANALYTICAL REPORT

City of St. Louis Park

Project: Reilly Tar & Chemical Corporation

Lot #: D2I250261

Mr. Scott Anderson

City of St. Louis Park
Utility Division
3752 Wooddale Avenue
St. Louis Park, MN 55416

STL DENVER

Brian Stringer
Project Manager

October 25, 2002

DD

Table Of Contents

Standard Deliverable

Report Contents

- Table of Contents
- Case Narrative
- Executive Summary – Detection Highlights
- Analytical Method Summary
- Method/ Analyst Summary
- Sample Summary
- Analytical Results by Sample
- QC Data Association Summary
- Chain-of-Custody

Total Number of Pages 22

CASE NARRATIVE

STL Lot Number D2I250261

Introduction

On September 25, 2002 STL Denver received five aqueous samples for ppb level, full scan PAH analysis.

The cooler temperatures upon receipt were 3.3°C and 4.8°C. All containers were received in acceptable condition.

Data Quality Assessment

With exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. All laboratory quality control samples analyzed in conjunction with the samples in this project were within established control limits, with any exceptions noted.

The test results presented in this report meet all requirements of NELAC, and any exceptions are noted. *This report shall not be reproduced, except in full, without written permission from the laboratory.*

Polynuclear Aromatic Hydrocarbons – Method 8270C

A project-specific lower acceptable recovery limit of 30% for all QC samples and surrogates has been designated for analytical work performed under the 2002 Quality Assurance Project Plan (QAPP) for the Reilly Industries, Inc. NPL Site. All recoveries in this report are above the 30% minimum threshold, except where noted below.

The MS/MSD performed on sample W434-092402 demonstrated RPD values above control limits for benzo(e)pyrene and chrysene. All recoveries were in control.

Case Narrative for D2I250261 (continued)

Data Completeness for Polynuclear Aromatic Hydrocarbons – Method SW846 8270C

The results contained in the report were reviewed relative to data acceptance criteria as specified in the 2002 QAPP. Based on the exceptions noted we achieved 99.00% completeness.

DATA COMPLETENESS CALCULATION		
LOT D2I250261		
ANALYSIS	PAHs by SW846-8270	
QC Parameter	**Data Planned**	**Valid Data Obtained**
Method Blank	31	31
MB Surrogates	3	3
LCS	7	7
LCS Surrogates	3	3
FB/FBD	61	61
MS	7	7
MS Surrogates	3	3
MSD	3	3
MSD Surrogates	3	3
MS/MSD RPD	7	5
Sample/Dup. RPD	31	31
Sample Surrogates	15	15
Internal STD Area	27	27
TOTAL	**201**	**199**
% Completeness	**99.00%**	

* The MS/MSD was performed on W434-092402

Case Narrative for D2I250261 (continued)

Data Completeness for Polynuclear Aromatic Hydrocarbons – Method SW846 8270C

Sample Duplicate RPD					
LOT D2I250261					
Sample: W434-092402		DUP: W434D-092402			
Compound	Result	Compound	Result	RPD	RPD>50%
Acenaphthene	1.6	Acenaphthene	1.7	6.1	
Acenaphthylene	ND	Acenaphthylene	ND	0.0	
Acridine	ND	Acridine	ND	0.0	
Anthracene	ND	Anthracene	ND	0.0	
Benzo(a)anthracene	ND	Benzo(a)anthracene	ND	0.0	
Benzo(b)fluoranthene	ND	Benzo(b)fluoranthene	ND	0.0	
Benzo(k)fluoranthene	ND	Benzo(k)fluoranthene	ND	0.0	
2,3-Benzofuran	ND	2,3-Benzofuran	ND	0.0	
Benzo(ghi)perylene	ND	Benzo(ghi)perylene	ND	0.0	
Benzo(a)pyrene	ND	Benzo(a)pyrene	ND	0.0	
Benzo(e)pyrene	ND	Benzo(e)pyrene	ND	0.0	
Benzo(b)thiophene	ND	Benzo(b)thiophene	ND	0.0	
Biphenyl	ND	Biphenyl	ND	0.0	
Carbazole	ND	Carbazole	ND	0.0	
Chrysene	ND	Chrysene	ND	0.0	
Dibenz(a,h)anthracene	ND	Dibenz(a,h)anthracene	ND	0.0	
Dibenzofuran	ND	Dibenzofuran	ND	0.0	
Dibenzothiophene	ND	Dibenzothiophene	ND	0.0	
2,3-Dihydroindene	2.6	2,3-Dihydroindene	2.8	7.4	
Fluoranthene	ND	Fluoranthene	ND	0.0	
Fluorene	ND	Fluorene	ND	0.0	
Indene	ND	Indene	ND	0.0	
Indeno(1,2,3-cd)pyrene	ND	Indeno(1,2,3-cd)pyrene	ND	0.0	
Indole	ND	Indole	ND	0.0	
2-Methylnaphthalene	ND	2-Methylnaphthalene	ND	0.0	
1-Methylnaphthalene	ND	1-Methylnaphthalene	ND	0.0	
Naphthalene	ND	Naphthalene	ND	0.0	
Perylene	ND	Perylene	ND	0.0	
Phenanthrene	ND	Phenanthrene	ND	0.0	
Pyrene	ND	Pyrene	ND	0.0	
Quinoline	ND	Quinoline	ND	0.0	

RPD = Relative Percent Difference
ND = Compound not detected in the sample
OK = RPD acceptable
p = RPD is outside of control limits
*NC = RPD not calculated, one positive result and one ND. Considered acceptable if the positive result is less than 4x the RL.

EXECUTIVE SUMMARY - Detection Highlights

D2I250261

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
W434-092402 09/24/02 11:30 001				
Acenaphthene	1.6 J	10	ug/L	SW846 8270C
2,3-Dihydroindene	2.6 J	10	ug/L	SW846 8270C
W434D-092402 09/24/02 11:30 002				
Acenaphthene	1.7 J	10	ug/L	SW846 8270C
2,3-Dihydroindene	2.8 J	10	ug/L	SW846 8270C
W422-092402 09/24/02 11:45 005				
Acenaphthene	9.3 J	10	ug/L	SW846 8270C

METHODS SUMMARY

D2I250261

PARAMETER	ANALYTICAL METHOD	PREPARATION METHOD
Semivolatile Organic Compounds by GC/MS	SW846 8270C	SW846 3520C

References:

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

METHOD / ANALYST SUMMARY

D2I250261

ANALYTICAL METHOD	ANALYST	ANALYST ID
SW846 8270C	Tim O'Donnell	000443

References:

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

SAMPLE SUMMARY

D2I250261

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
E8VH2	001	W434-092402	09/24/02	11:30
E8VH9	002	W434D-092402	09/24/02	11:30
E8VJK	003	W434FB-092402	09/24/02	11:30
E8VJQ	004	W434FBD-092402	09/24/02	11:30
E8VJW	005	W422-092402	09/24/02	11:45

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: W434-092402

GC/MS Semivolatiles

Lot-Sample #...: D2I250261-001 Work Order #...: E8VH21AA Matrix.....: WATER
Date Sampled...: 09/24/02 Date Received..: 09/25/02
Prep Date.....: 09/27/02 Analysis Date..: 10/15/02
Prep Batch #...: 2270181 Analysis Time..: 11:40
Dilution Factor: 1

Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	**1.6 J**	**10**	**ug/L**
Acenaphthylene	ND	10	ug/L
Acridine	ND	10	ug/L
Anthracene	ND	10	ug/L
Benzo(a)anthracene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
2,3-Benzofuran	ND	10	ug/L
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Benzo(e)pyrene	ND	10	ug/L
Benzo(b)thiophene	ND	10	ug/L
Biphenyl	ND	10	ug/L
Carbazole	ND	10	ug/L
Chrysene	ND	10	ug/L
Dibenzo(a,h)anthracene	ND	10	ug/L
Dibenzofuran	ND	10	ug/L
Dibenzothiophene	ND	10	ug/L
2,3-Dihydroindene	**2.6 J**	**10**	**ug/L**
Fluoranthene	ND	10	ug/L
Fluorene	ND	10	ug/L
Indene	ND	10	ug/L
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Indole	ND	10	ug/L
2-Methylnaphthalene	ND	10	ug/L
1-Methylnaphthalene	ND	10	ug/L
Naphthalene	ND	10	ug/L
Perylene	ND	10	ug/L
Phenanthrene	ND	10	ug/L
Pyrene	ND	10	ug/L
Quinoline	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	58	(30 - 160)
Fluorene d-10	66	(36 - 127)
Naphthalene-d8	80	(37 - 107)

NOTE(S):

J Estimated result. Result is less than RL.

CITY OF ST. LOUIS PARK

Client Sample ID: W434D-092402

GC/MS Semivolatiles

Lot-Sample #...:	D2I250261-002	**Work Order #...:**	E8VH91AA	**Matrix.....:**	WATER
Date Sampled...:	09/24/02	**Date Received..:**	09/25/02		
Prep Date.....:	09/27/02	**Analysis Date..:**	10/15/02		
Prep Batch #...:	2270181	**Analysis Time..:**	01:11		
Dilution Factor:	1				
		Method.....:	SW846 8270C		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	**1.7 J**	**10**	**ug/L**
Acenaphthylene	ND	10	ug/L
Acridine	ND	10	ug/L
Anthracene	ND	10	ug/L
Benzo(a)anthracene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
2,3-Benzofuran	ND	10	ug/L
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Benzo(e)pyrene	ND	10	ug/L
Benzo(b)thiophene	ND	10	ug/L
'phenyl	ND	10	ug/L
,rbazole	ND	10	ug/L
Chrysene	ND	10	ug/L
Dibenzo(a,h)anthracene	ND	10	ug/L
Dibenzofuran	ND	10	ug/L
Dibenzothiophene	ND	10	ug/L
2,3-Dihydroindene	**2.8 J**	**10**	**ug/L**
Fluoranthene	ND	10	ug/L
Fluorene	ND	10	ug/L
Indene	ND	10	ug/L
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Indole	ND	10	ug/L
2-Methylnaphthalene	ND	10	ug/L
1-Methylnaphthalene	ND	10	ug/L
Naphthalene	ND	10	ug/L
Perylene	ND	10	ug/L
Phenanthrene	ND	10	ug/L
Pyrene	ND	10	ug/L
Quinoline	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	74	(30 - 160)
Fluorene d-10	67	(36 - 127)
Naphthalene-d8	82	(37 - 107)

OTE(S):

J Estimated result. Result is less than RL.

CITY OF ST. LOUIS PARK

Client Sample ID: W434FB-092402

GC/MS Semivolatiles

Lot-Sample #...: D2I250261-003 Work Order #...: E8VJK1AA Matrix.....: WATER
Date Sampled...: 09/24/02 Date Received..: 09/25/02
Prep Date.....: 09/27/02 Analysis Date..: 10/15/02
Prep Batch #...: 2270181 Analysis Time..: 13:33
Dilution Factor: 1

Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	10	ug/L
Acenaphthylene	ND	10	ug/L
Acridine	ND	10	ug/L
Anthracene	ND	10	ug/L
Benzo(a)anthracene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
2,3-Benzofuran	ND	10	ug/L
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Benzo(e)pyrene	ND	10	ug/L
Benzo(b)thiophene	ND	10	ug/L
Biphenyl	ND	10	ug/L
Carbazole	ND	10	ug/L
Chrysene	ND	10	ug/L
Dibenzo(a,h)anthracene	ND	10	ug/L
Dibenzofuran	ND	10	ug/L
Dibenzothiophene	ND	10	ug/L
2,3-Dihydroindene	ND	10	ug/L
Fluoranthene	ND	10	ug/L
Fluorene	ND	10	ug/L
Indene	ND	10	ug/L
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Indole	ND	10	ug/L
2-Methylnaphthalene	ND	10	ug/L
1-Methylnaphthalene	ND	10	ug/L
Naphthalene	ND	10	ug/L
Perylene	ND	10	ug/L
Phenanthrene	ND	10	ug/L
Pyrene	ND	10	ug/L
Quinoline	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	85	(30 - 160)
Fluorene d-10	60	(36 - 127)
Naphthalene-d8	71	(37 - 107)

CITY OF ST. LOUIS PARK

Client Sample ID: W434FBD-092402

GC/MS Semivolatiles

Lot-Sample #...:	D2I250261-004	**Work Order #...:**	E8VJQ1AA	**Matrix.....:**	WATER
Date Sampled...:	09/24/02	**Date Received..:**	09/25/02		
Prep Date.....:	09/27/02	**Analysis Date..:**	10/15/02		
Prep Batch #...:	2270181	**Analysis Time..:**	14:12		
Dilution Factor:	1				
		Method.....:	SW846 8270C		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	10	ug/L
Acenaphthylene	ND	10	ug/L
Acridine	ND	10	ug/L
Anthracene	ND	10	ug/L
Benzo(a)anthracene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
2,3-Benzofuran	ND	10	ug/L
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Benzo(e)pyrene	ND	10	ug/L
Benzo(b)thiophene	ND	10	ug/L
phenyl	ND	10	ug/L
arbazole	ND	10	ug/L
Chrysene	ND	10	ug/L
Dibenzo(a,h)anthracene	ND	10	ug/L
Dibenzofuran	ND	10	ug/L
Dibenzothiophene	ND	10	ug/L
2,3-Dihydroindene	ND	10	ug/L
Fluoranthene	ND	10	ug/L
Fluorene	ND	10	ug/L
Indene	ND	10	ug/L
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Indole	ND	10	ug/L
2-Methylnaphthalene	ND	10	ug/L
1-Methylnaphthalene	ND	10	ug/L
Naphthalene	ND	10	ug/L
Perylene	ND	10	ug/L
Phenanthrene	ND	10	ug/L
Pyrene	ND	10	ug/L
Quinoline	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	106	(30 - 160)
Fluorene d-10	70	(36 - 127)
Naphthalene-d8	83	(37 - 107)

CITY OF ST. LOUIS PARK

Client Sample ID: W422-092402

GC/MS Semivolatiles

Lot-Sample #...:	D2I250261-005	**Work Order #...:**	E8VJW1AA	**Matrix.....:**	WATER
Date Sampled...:	09/24/02	**Date Received..:**	09/25/02		
Prep Date.....:	09/27/02	**Analysis Date..:**	10/15/02		
Prep Batch #...:	2270181	**Analysis Time..:**	14:50		
Dilution Factor:	1				
		Method.....:	SW846 8270C		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	**9.3 J**	**10**	**ug/L**
Acenaphthylene	ND	10	ug/L
Acridine	ND	10	ug/L
Anthracene	ND	10	ug/L
Benzo(a)anthracene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
2,3-Benzofuran	ND	10	ug/L
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Benzo(e)pyrene	ND	10	ug/L
Benzo(b)thiophene	ND	10	ug/L
Biphenyl	ND	10	ug/L
Carbazole	ND	10	ug/L
Chrysene	ND	10	ug/L
Dibenzo(a,h)anthracene	ND	10	ug/L
Dibenzofuran	ND	10	ug/L
Dibenzothiophene	ND	10	ug/L
2,3-Dihydroindene	ND	10	ug/L
Fluoranthene	ND	10	ug/L
Fluorene	ND	10	ug/L
Indene	ND	10	ug/L
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Indole	ND	10	ug/L
2-Methylnaphthalene	ND	10	ug/L
1-Methylnaphthalene	ND	10	ug/L
Naphthalene	ND	10	ug/L
Perylene	ND	10	ug/L
Phenanthrene	ND	10	ug/L
Pyrene	ND	10	ug/L
Quinoline	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	51	(30 - 160)
Fluorene d-10	62	(36 - 127)
Naphthalene-d8	72	(37 - 107)

NOTE(S):

j Estimated result. Result is less than RL.

QC DATA ASSOCIATION SUMMARY

D2I250261

Sample Preparation and Analysis Control Numbers

SAMPLE#	MATRIX	ANALYTICAL METHOD	LEACH BATCH #	PREP BATCH #	MS RUN#
001	WATER	SW846 8270C		2270181	2270057
002	WATER	SW846 8270C		2270181	2270057
003	WATER	SW846 8270C		2270181	2270057
004	WATER	SW846 8270C		2270181	2270057
005	WATER	SW846 8270C		2270181	2270057

METHOD BLANK REPORT

GC/MS Semivolatiles

Client Lot #...: D2I250261
MB Lot-Sample #: D2I270000-181

Work Order #...: E81A91AA
Prep Date.....: 09/27/02
Prep Batch #...: 2270181

Matrix.....: WATER
Analysis Time..: 14:34

Analysis Date..: 10/14/02
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Acenaphthene	ND	10	ug/L	SW846 8270C
Acenaphthylene	ND	10	ug/L	SW846 8270C
Acridine	ND	10	ug/L	SW846 8270C
Anthracene	ND	10	ug/L	SW846 8270C
Benzo(a)anthracene	ND	10	ug/L	SW846 8270C
Benzo(b)fluoranthene	ND	10	ug/L	SW846 8270C
Benzo(k)fluoranthene	ND	10	ug/L	SW846 8270C
2,3-Benzofuran	ND	10	ug/L	SW846 8270C
Benzo(ghi)perylene	ND	10	ug/L	SW846 8270C
Benzo(a)pyrene	ND	10	ug/L	SW846 8270C
Benzo(e)pyrene	ND	10	ug/L	SW846 8270C
Benzo(b)thiophene	ND	10	ug/L	SW846 8270C
Biphenyl	ND	10	ug/L	SW846 8270C
Carbazole	ND	10	ug/L	SW846 8270C
Chrysene	ND	10	ug/L	SW846 8270C
Dibenzo(a,h)anthracene	ND	10	ug/L	SW846 8270C
Dibenzofuran	ND	10	ug/L	SW846 8270C
Dibenzothiophene	ND	10	ug/L	SW846 8270C
2,3-Dihydroindene	ND	10	ug/L	SW846 8270C
Fluoranthene	ND	10	ug/L	SW846 8270C
Fluorene	ND	10	ug/L	SW846 8270C
Indene	ND	10	ug/L	SW846 8270C
Indeno(1,2,3-cd)pyrene	ND	10	ug/L	SW846 8270C
Indole	ND	10	ug/L	SW846 8270C
2-Methylnaphthalene	ND	10	ug/L	SW846 8270C
1-Methylnaphthalene	ND	10	ug/L	SW846 8270C
Naphthalene	ND	10	ug/L	SW846 8270C
Perylene	ND	10	ug/L	SW846 8270C
Phenanthrene	ND	10	ug/L	SW846 8270C
Pyrene	ND	10	ug/L	SW846 8270C
Quinoline	ND	10	ug/L	SW846 8270C

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	99	(30 - 160)
Fluorene d-10	66	(36 - 127)
Naphthalene-d8	79	(37 - 107)

NOTE(S):

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

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: D2I250261 **Work Order #...:** E81A91AC **Matrix.....:** WATER
LCS Lot-Sample#: D2I270000-181
Prep Date.....: 09/27/02 **Analysis Date..:** 10/14/02
Prep Batch #...: 2270181 **Analysis Time..:** 15:12
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD
Benzo(e)pyrene	**92**	**(30 - 150)**	**SW846 8270C**
Chrysene	**99**	**(43 - 124)**	**SW846 8270C**
Fluorene	**83**	**(51 - 120)**	**SW846 8270C**
Indene	**74**	**(49 - 108)**	**SW846 8270C**
2-Methylnaphthalene	**70**	**(47 - 138)**	**SW846 8270C**
Naphthalene	**78**	**(43 - 128)**	**SW846 8270C**
Quinoline	**69**	**(40 - 126)**	**SW846 8270C**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	105	(30 - 160)
Fluorene d-10	68	(36 - 127)
Naphthalene-d8	79	(37 - 107)

NOTE(S):

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

Bold print denotes control parameters

LABORATORY CONTROL SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #...: D2I250261 **Work Order #...:** E81A91AC **Matrix.....:** WATER
LCS Lot-Sample#: D2I270000-181
Prep Date.....: 09/27/02 **Analysis Date..:** 10/14/02
Prep Batch #...: 2270181 **Analysis Time..:** 15:12
Dilution Factor: 1

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD
Benzo(e)pyrene	**50.0**	**45.8**	**ug/L**	**92**	**SW846 8270C**
Chrysene	**50.0**	**49.7**	**ug/L**	**99**	**SW846 8270C**
Fluorene	**50.0**	**41.5**	**ug/L**	**83**	**SW846 8270C**
Indene	**50.0**	**36.8**	**ug/L**	**74**	**SW846 8270C**
2-Methylnaphthalene	**50.0**	**34.8**	**ug/L**	**70**	**SW846 8270C**
Naphthalene	**50.0**	**39.2**	**ug/L**	**78**	**SW846 8270C**
Quinoline	**50.0**	**34.6**	**ug/L**	**69**	**SW846 8270C**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	105	(30 - 160)
Fluorene d-10	68	(36 - 127)
Naphthalene-d8	79	(37 - 107)

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 #...: D2I250261 Work Order #...: E8RGN1AC-MS Matrix.....: WATER
MS Lot-Sample #: D2I240287-001 E8RGN1AD-MSD
Date Sampled...: 09/23/02 Date Received..: 09/24/02
Prep Date.....: 09/27/02 Analysis Date..: 10/14/02
Prep Batch #...: 2270181 Analysis Time..: 17:43
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Benzo(e)pyrene	**23 a**	**(30 - 150)**			**SW846 8270C**
	29 a	**(30 - 150)**	**23**	**(0-30)**	**SW846 8270C**
Chrysene	**26 a**	**(43 - 124)**			**SW846 8270C**
	34 a	**(43 - 124)**	**26**	**(0-30)**	**SW846 8270C**
Fluorene	**86**	**(51 - 120)**			**SW846 8270C**
	82	**(51 - 120)**	**4.0**	**(0-30)**	**SW846 8270C**
Indene	**81**	**(49 - 108)**			**SW846 8270C**
	78	**(49 - 108)**	**1.9**	**(0-30)**	**SW846 8270C**
2-Methylnaphthalene	**76**	**(47 - 138)**			**SW846 8270C**
	73	**(47 - 138)**	**2.8**	**(0-30)**	**SW846 8270C**
Naphthalene	**54**	**(43 - 128)**			**SW846 8270C**
	87	**(43 - 128)**	**3.9**	**(0-30)**	**SW846 8270C**
inoline	**75**	**(40 - 126)**			**SW846 8270C**
	73	**(40 - 126)**	**3.8**	**(0-30)**	**SW846 8270C**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	27 *	(30 - 160)
	34	(30 - 160)
Fluorene d-10	68	(36 - 127)
	67	(36 - 127)
Naphthalene-d8	72	(37 - 107)
	73	(37 - 107)

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.

* Surrogate recovery is outside stated control limits.

MATRIX SPIKE SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #...: D2I250261 Work Order #...: E8RGN1AC-MS Matrix.....: WATER
MS Lot-Sample #: D2I240287-001 E8RGN1AD-MSD
Date Sampled...: 09/23/02 Date Received..: 09/24/02
Prep Date.....: 09/27/02 Analysis Date..: 10/14/02
Prep Batch #...: 2270181 Analysis Time..: 17:43
Dilution Factor: 1

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD
Benzo(e)pyrene	**ND**	**47.9**	**10.8**	**ug/L**	**23 a**		**SW846 8270C**
	ND	**47.7**	**13.6**	**ug/L**	**29 a**	**23**	**SW846 8270C**
Chrysene	**ND**	**47.9**	**12.5**	**ug/L**	**26 a**		**SW846 8270C**
	ND	**47.7**	**16.3**	**ug/L**	**34 a**	**26**	**SW846 8270C**
Fluorene	**9.2**	**47.9**	**50.3**	**ug/L**	**86**		**SW846 8270C**
	9.2	**47.7**	**48.3**	**ug/L**	**82**	**4.0**	**SW846 8270C**
Indene	**52**	**47.9**	**90.4**	**ug/L**	**81**		**SW846 8270C**
	52	**47.7**	**88.8**	**ug/L**	**78**	**1.9**	**SW846 8270C**
2-Methylnaphthalene	**13**	**47.9**	**49.3**	**ug/L**	**76**		**SW846 8270C**
	13	**47.7**	**47.9**	**ug/L**	**73**	**2.8**	**SW846 8270C**
Naphthalene	**360**	**47.9**	**388**	**ug/L**	**54**		**SW846 8270C**
	360	**47.7**	**404**	**ug/L**	**87**	**3.9**	**SW846 8270C**
Quinoline	**ND**	**47.9**	**36.1**	**ug/L**	**75**		**SW846 8270C**
	ND	**47.7**	**34.8**	**ug/L**	**73**	**3.8**	**SW846 8270C**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	27 *	(30 - 160)
	34	(30 - 160)
Fluorene d-10	68	(36 - 127)
	67	(36 - 127)
Naphthalene-d8	72	(37 - 107)
	73	(37 - 107)

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.

* Surrogate recovery is outside stated control limits.

MATRIX SPIKE SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: D2I250261 **Work Order #...:** E8VH21AC-MS **Matrix.....:** WATER
MS Lot-Sample #: D2I250261-001 E8VH21AD-MSD
Date Sampled...: 09/24/02 **Date Received..:** 09/25/02
Prep Date.....: 09/27/02 **Analysis Date..:** 10/15/02
Prep Batch #...: 2270181 **Analysis Time..:** 12:18
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Benzo(e)pyrene	**75**	**(30 - 150)**			**SW846 8270C**
	46 p	**(30 - 150)**	**62**	**(0-30)**	**SW846 8270C**
Chrysene	**84**	**(43 - 124)**			**SW846 8270C**
	55 p	**(43 - 124)**	**55**	**(0-30)**	**SW846 8270C**
Fluorene	**84**	**(51 - 120)**			**SW846 8270C**
	78	**(51 - 120)**	**23**	**(0-30)**	**SW846 8270C**
Indene	**75**	**(49 - 108)**			**SW846 8270C**
	67	**(49 - 108)**	**26**	**(0-30)**	**SW846 8270C**
2-Methylnaphthalene	**71**	**(47 - 138)**			**SW846 8270C**
	69	**(47 - 138)**	**18**	**(0-30)**	**SW846 8270C**
Naphthalene	**78**	**(43 - 128)**			**SW846 8270C**
	70	**(43 - 128)**	**25**	**(0-30)**	**SW846 8270C**
inoline	**72**	**(40 - 126)**			**SW846 8270C**
	65	**(40 - 126)**	**25**	**(0-30)**	**SW846 8270C**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	77	(30 - 160)
	43	(30 - 160)
Fluorene d-10	68	(36 - 127)
	62	(36 - 127)
Naphthalene-d8	80	(37 - 107)
	71	(37 - 107)

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 #...: D2I250261 **Work Order #...:** E8VH21AC-MS **Matrix.....:** WATER
MS Lot-Sample #: D2I250261-001 E8VH21AD-MSD
Date Sampled...: 09/24/02 **Date Received..:** 09/25/02
Prep Date.....: 09/27/02 **Analysis Date..:** 10/15/02
Prep Batch #...: 2270181 **Analysis Time..:** 12:18
Dilution Factor: 1

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD
Benzo(e)pyrene	**ND**	**55.6**	**41.8**	**ug/L**	**75**		**SW846 8270C**
	ND	**47.9**	**21.9**	**ug/L**	**46 p**	**62**	**SW846 8270C**
Chrysene	**ND**	**55.6**	**46.5**	**ug/L**	**84**		**SW846 8270C**
	ND	**47.9**	**26.3**	**ug/L**	**55 p**	**55**	**SW846 8270C**
Fluorene	**ND**	**55.6**	**46.9**	**ug/L**	**84**		**SW846 8270C**
	ND	**47.9**	**37.2**	**ug/L**	**78**	**23**	**SW846 8270C**
Indene	**ND**	**55.6**	**41.7**	**ug/L**	**75**		**SW846 8270C**
	ND	**47.9**	**32.3**	**ug/L**	**67**	**26**	**SW846 8270C**
2-Methylnaphthalene	**ND**	**55.6**	**39.6**	**ug/L**	**71**		**SW846 8270C**
	ND	**47.9**	**33.0**	**ug/L**	**69**	**18**	**SW846 8270C**
Naphthalene	**ND**	**55.6**	**43.2**	**ug/L**	**78**		**SW846 8270C**
	ND	**47.9**	**33.7**	**ug/L**	**70**	**25**	**SW846 8270C**
Quinoline	**ND**	**55.6**	**40.1**	**ug/L**	**72**		**SW846 8270C**
	ND	**47.9**	**31.2**	**ug/L**	**65**	**25**	**SW846 8270C**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	77	(30 - 160)
	43	(30 - 160)
Fluorene d-10	68	(36 - 127)
	62	(36 - 127)
Naphthalene-d8	80	(37 - 107)
	71	(37 - 107)

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.

Custody Record

SEVERN TRENT SERVICES

Severn Trent Laboratories, Inc.

9/25

STL-4124 (06)

Client	CITY OF ST. LOUIS PARK UTILITY DIVISION
Address	3752 WOODDALE AVENUE
City	ST. LOUIS PARK, MN 55416
Project Manager	SCOTT ANDERSON
Telephone Number (Area Code)/Fax Number	924-2558 (952) 924-2570
Site Contact	SAME
Lab Contact	
Carrier/Waybill Number	FED EX 806824118 2
Project Name and Location (State)	SAME
Contract/Purchase Order/Quote No.	
Date	9-24-02
Chain of Custody Number	150702
Lab Number	
Page ____ of ____	

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Air	Aqueous	Sed.	Soil		Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH		PPB PAH	Special Instructions/ Conditions of Receipt
W434-092402 CS#0004	9-24-02	11:30		X				X						2	X	
W434D092402																
W434MS-092402																
W434MSD-092402																
W434FB-092402																
W434FBD-092402	9-24-02	11:30		X				X						2	X	
W422-092402 CS#0012	9-24-02	11:45		X				X						2	X	

Possible Hazard Identification: [X] Non-Hazard [ ] Flammable [ ] Skin Irritant [ ] Poison B [ ] Unknown

Sample Disposal: [ ] Return To Client [X] Disposal By Lab [ ] Archive For ____ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required: [ ] 24 Hours [ ] 48 Hours [ ] 7 Days [ ] 14 Days [ ] 21 Days [ ] Other ____

QC Requirements (Specify)

Relinquished By	Date	Time	Received By	Date	Time
MZ [illegible]	9-24-02	1400	1. [illegible]	9/25/02	0900
			2.		
			3.		

Comments

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

EE

SEVERN TRENT SERVICES

STL Denver
4955 Yarrow Street
Arvada, CO 80002-4517

Tel: 303 736 0100
Fax: 303 431 7171
www.stl-inc.com

ANALYTICAL REPORT

City of St. Louis Park

Project: Reilly Tar & Chemical Corporation

Lot #: D2I250267

Mr. Scott Anderson

City of St. Louis Park
Utility Division
3752 Wooddale Avenue
St. Louis Park, MN 55416

STL DENVER

Brian Stringer
Project Manager

October 25, 2002

EE

Table Of Contents

Standard Deliverable

Report Contents

- Table of Contents
- Case Narrative
- Executive Summary – Detection Highlights
- Analytical Method Summary
- Method/ Analyst Summary
- Sample Summary
- Analytical Results by Sample
- QC Data Association Summary
- Chain-of-Custody

Total Number of Pages 23

CASE NARRATIVE

STL Lot Number D2I250267

Introduction

On September 25, 2002 STL Denver received eight aqueous samples for ppb level, full scan PAH analysis.

The cooler temperatures upon receipt were 2.1°C, 2.3°C, and 4.8°C. All containers were received in acceptable condition.

Data Quality Assessment

With exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. All laboratory quality control samples analyzed in conjunction with the samples in this project were within established control limits, with any exceptions noted.

The test results presented in this report meet all requirements of NELAC, and any exceptions are noted. This report shall not be reproduced, except in full, without written permission from the laboratory.

Polynuclear Aromatic Hydrocarbons – Method 8270C

A project-specific lower acceptable recovery limit of 30% for all QC samples and surrogates has been designated for analytical work performed under the 2002 Quality Assurance Project Plan (QAPP) for the Reilly Industries, Inc. NPL Site. All recoveries in this report are above the 30% minimum threshold except where noted.

Sample W437-092402 was analyzed at a 2X dilution for 1-methylnaphthalene and a 40X dilution for naphthalene. All other compounds are reported from the undiluted analysis.

A MS/MSD associated with batch 2273415 was not requested and the laboratory was unable to designate one due to limited sample volume.

Data Completeness for Polynuclear Aromatic Hydrocarbons – Method SW846 8270C

The results contained in the report were reviewed relative to data acceptance criteria as specified in the 2002 QAPP. Based on the exceptions noted we achieved 100.00% completeness.

DATA COMPLETENESS CALCULATION		
LOT D2I250267		
ANALYSIS	PAHs by SW846-8270	
QC Parameter	**Data Planned**	**Valid Data Obtained**
Method Blank	31	31
MB Surrogates	3	3
LCS	7	7
LCS Surrogates	3	3
FB/FBD	0	0
MS	0	0
MS Surrogates	0	0
MSD	0	0
MSD Surrogates	0	0
MS/MSD RPD	0	0
Sample/Dup. RPD	0	0
Sample Surrogates	24	24
Internal STD Area	30	30
TOTAL	**98**	**98**
% Completeness	**100.00%**	

* MS/MSD, field blanks, and field duplicate samples were not included in this lot.

EXECUTIVE SUMMARY - Detection Highlights

D2I250267

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
W27-092402 09/24/02 10:00 002				
Acenaphthene	34	10	ug/L	SW846 8270C
Acridine	0.80 J	10	ug/L	SW846 8270C
Benzo(b)thiophene	7.6 J	10	ug/L	SW846 8270C
Biphenyl	5.6 J	10	ug/L	SW846 8270C
Carbazole	3.3 J	10	ug/L	SW846 8270C
Dibenzofuran	12	10	ug/L	SW846 8270C
2,3-Dihydroindene	65	10	ug/L	SW846 8270C
Fluorene	16	10	ug/L	SW846 8270C
Indene	20	10	ug/L	SW846 8270C
1-Methylnaphthalene	24	10	ug/L	SW846 8270C
Naphthalene	4.2 J	10	ug/L	SW846 8270C
P312-092402 09/24/02 10:40 003				
Acenaphthene	5.3 J	10	ug/L	SW846 8270C
W437-092402 09/24/02 15:30 007				
Acenaphthene	180	10	ug/L	SW846 8270C
Acridine	3.4 J	10	ug/L	SW846 8270C
2,3-Benzofuran	4.4 J	10	ug/L	SW846 8270C
Benzo(b)thiophene	160	10	ug/L	SW846 8270C
Biphenyl	43	10	ug/L	SW846 8270C
Carbazole	95	10	ug/L	SW846 8270C
Dibenzofuran	58	10	ug/L	SW846 8270C
2,3-Dihydroindene	160	10	ug/L	SW846 8270C
Fluorene	58	10	ug/L	SW846 8270C
Indene	110	10	ug/L	SW846 8270C
2-Methylnaphthalene	110	10	ug/L	SW846 8270C
1-Methylnaphthalene	210	20	ug/L	SW846 8270C
Naphthalene	4100	400	ug/L	SW846 8270C
W431-092402 09/24/02 17:00 008				
Naphthalene	6.1 J	10	ug/L	SW846 8270C

METHODS SUMMARY

D2I250267

PARAMETER	ANALYTICAL METHOD	PREPARATION METHOD
Semivolatile Organic Compounds by GC/MS	SW846 8270C	SW846 3520C

References:

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

METHOD / ANALYST SUMMARY

D2I250267

ANALYTICAL METHOD	ANALYST	ANALYST ID
SW846 8270C	Tim O'Donnell	000443

References:

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

SAMPLE SUMMARY

D2I250267

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
E8VLG	001	W20-092402	09/24/02	09:00
E8VLK	002	W27-092402	09/24/02	10:00
E8VLL	003	P312-092402	09/24/02	10:40
E8VLP	004	W131-092402	09/24/02	13:15
E8VLV	005	W428-092402	09/24/02	13:45
E8VLX	006	W438-092402	09/24/02	14:30
E8VL2	007	W437-092402	09/24/02	15:30
E8VL4	008	W431-092402	09/24/02	17:00

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: W20-092402

GC/MS Semivolatiles

Lot-Sample #...: D2I250267-001 **Work Order #...:** E8VLG1AA **Matrix.....:** WATER
Date Sampled...: 09/24/02 **Date Received..:** 09/25/02
Prep Date.....: 09/30/02 **Analysis Date..:** 10/11/02
Prep Batch #...: 2273415 **Analysis Time..:** 20:59
Dilution Factor: 1

Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	10	ug/L
Acenaphthylene	ND	10	ug/L
Acridine	ND	10	ug/L
Anthracene	ND	10	ug/L
Benzo(a)anthracene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
2,3-Benzofuran	ND	10	ug/L
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Benzo(e)pyrene	ND	10	ug/L
Benzo(b)thiophene	ND	10	ug/L
Biphenyl	ND	10	ug/L
Carbazole	ND	10	ug/L
Chrysene	ND	10	ug/L
Dibenzo(a,h)anthracene	ND	10	ug/L
Dibenzofuran	ND	10	ug/L
Dibenzothiophene	ND	10	ug/L
2,3-Dihydroindene	ND	10	ug/L
Fluoranthene	ND	10	ug/L
Fluorene	ND	10	ug/L
Indene	ND	10	ug/L
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Indole	ND	10	ug/L
2-Methylnaphthalene	ND	10	ug/L
1-Methylnaphthalene	ND	10	ug/L
Naphthalene	ND	10	ug/L
Perylene	ND	10	ug/L
Phenanthrene	ND	10	ug/L
Pyrene	ND	10	ug/L
Quinoline	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	51	(30 - 160)
Fluorene d-10	70	(36 - 127)
Naphthalene-d8	78	(37 - 107)

CITY OF ST. LOUIS PARK

Client Sample ID: W27-092402

GC/MS Semivolatiles

Lot-Sample #...: D2I250267-002 **Work Order #...:** E8VLK1AA **Matrix.....:** WATER
Date Sampled...: 09/24/02 **Date Received..:** 09/25/02
Prep Date.....: 09/30/02 **Analysis Date..:** 10/11/02
Prep Batch #...: 2273415 **Analysis Time..:** 21:37
Dilution Factor: 1

Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	**34**	**10**	**ug/L**
Acenaphthylene	ND	10	ug/L
Acridine	**0.80 J**	**10**	**ug/L**
Anthracene	ND	10	ug/L
Benzo(a)anthracene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
2,3-Benzofuran	ND	10	ug/L
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Benzo(e)pyrene	ND	10	ug/L
Benzo(b)thiophene	**7.6 J**	**10**	**ug/L**
Biphenyl	**5.6 J**	**10**	**ug/L**
Carbazole	**3.3 J**	**10**	**ug/L**
Chrysene	ND	10	ug/L
Dibenzo(a,h)anthracene	ND	10	ug/L
Dibenzofuran	**12**	**10**	**ug/L**
Dibenzothiophene	ND	10	ug/L
2,3-Dihydroindene	**65**	**10**	**ug/L**
Fluoranthene	ND	10	ug/L
Fluorene	**16**	**10**	**ug/L**
Indene	**20**	**10**	**ug/L**
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Indole	ND	10	ug/L
2-Methylnaphthalene	ND	10	ug/L
1-Methylnaphthalene	**24**	**10**	**ug/L**
Naphthalene	**4.2 J**	**10**	**ug/L**
Perylene	ND	10	ug/L
Phenanthrene	ND	10	ug/L
Pyrene	ND	10	ug/L
Quinoline	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	43	(30 - 160)
Fluorene d-10	70	(36 - 127)
Naphthalene-d8	81	(37 - 107)

NOTE(S):

J Estimated result. Result is less than RL.

CITY OF ST. LOUIS PARK

Client Sample ID: P312-092402

GC/MS Semivolatiles

Lot-Sample #...: D2I250267-003 **Work Order #...:** E8VLL1AA **Matrix.....:** WATER
Date Sampled...: 09/24/02 **Date Received..:** 09/25/02
Prep Date.....: 09/30/02 **Analysis Date..:** 10/11/02
Prep Batch #...: 2273415 **Analysis Time..:** 22:14
Dilution Factor: 1

Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	**5.3 J**	**10**	**ug/L**
Acenaphthylene	ND	10	ug/L
Acridine	ND	10	ug/L
Anthracene	ND	10	ug/L
Benzo(a)anthracene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
2,3-Benzofuran	ND	10	ug/L
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Benzo(e)pyrene	ND	10	ug/L
Benzo(b)thiophene	ND	10	ug/L
Biphenyl	ND	10	ug/L
Carbazole	ND	10	ug/L
Chrysene	ND	10	ug/L
Dibenzo(a,h)anthracene	ND	10	ug/L
Dibenzofuran	ND	10	ug/L
Dibenzothiophene	ND	10	ug/L
2,3-Dihydroindene	ND	10	ug/L
Fluoranthene	ND	10	ug/L
Fluorene	ND	10	ug/L
Indene	ND	10	ug/L
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Indole	ND	10	ug/L
2-Methylnaphthalene	ND	10	ug/L
1-Methylnaphthalene	ND	10	ug/L
Naphthalene	ND	10	ug/L
Perylene	ND	10	ug/L
Phenanthrene	ND	10	ug/L
Pyrene	ND	10	ug/L
Quinoline	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	53	(30 - 160)
Fluorene d-10	72	(36 - 127)
Naphthalene-d8	78	(37 - 107)

NOTE(S):

J Estimated result. Result is less than RL.

CITY OF ST. LOUIS PARK

Client Sample ID: W131-092402

GC/MS Semivolatiles

Lot-Sample #...: D2I250267-004 **Work Order #...:** E8VLP1AA **Matrix.....:** WATER
Date Sampled...: 09/24/02 **Date Received..:** 09/25/02
Prep Date.....: 09/30/02 **Analysis Date..:** 10/11/02
Prep Batch #...: 2273415 **Analysis Time..:** 22:52
Dilution Factor: 1

Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	10	ug/L
Acenaphthylene	ND	10	ug/L
Acridine	ND	10	ug/L
Anthracene	ND	10	ug/L
Benzo(a)anthracene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
2,3-Benzofuran	ND	10	ug/L
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Benzo(e)pyrene	ND	10	ug/L
Benzo(b)thiophene	ND	10	ug/L
Biphenyl	ND	10	ug/L
Carbazole	ND	10	ug/L
Chrysene	ND	10	ug/L
Dibenzo(a,h)anthracene	ND	10	ug/L
Dibenzofuran	ND	10	ug/L
Dibenzothiophene	ND	10	ug/L
2,3-Dihydroindene	ND	10	ug/L
Fluoranthene	ND	10	ug/L
Fluorene	ND	10	ug/L
Indene	ND	10	ug/L
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Indole	ND	10	ug/L
2-Methylnaphthalene	ND	10	ug/L
1-Methylnaphthalene	ND	10	ug/L
Naphthalene	ND	10	ug/L
Perylene	ND	10	ug/L
Phenanthrene	ND	10	ug/L
Pyrene	ND	10	ug/L
Quinoline	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	59	(30 - 160)
Fluorene d-10	78	(36 - 127)
Naphthalene-d8	88	(37 - 107)

CITY OF ST. LOUIS PARK

Client Sample ID: W428-092402

GC/MS Semivolatiles

Lot-Sample #...: D2I250267-005 **Work Order #...:** E8VLV1AA **Matrix.....:** WATER
Date Sampled...: 09/24/02 **Date Received..:** 09/25/02
Prep Date.....: 09/30/02 **Analysis Date..:** 10/11/02
Prep Batch #...: 2273415 **Analysis Time..:** 23:29
Dilution Factor: 1

Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	10	ug/L
Acenaphthylene	ND	10	ug/L
Acridine	ND	10	ug/L
Anthracene	ND	10	ug/L
Benzo(a)anthracene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
2,3-Benzofuran	ND	10	ug/L
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Benzo(e)pyrene	ND	10	ug/L
Benzo(b)thiophene	ND	10	ug/L
Biphenyl	ND	10	ug/L
Carbazole	ND	10	ug/L
Chrysene	ND	10	ug/L
Dibenzo(a,h)anthracene	ND	10	ug/L
Dibenzofuran	ND	10	ug/L
Dibenzothiophene	ND	10	ug/L
2,3-Dihydroindene	ND	10	ug/L
Fluoranthene	ND	10	ug/L
Fluorene	ND	10	ug/L
Indene	ND	10	ug/L
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Indole	ND	10	ug/L
2-Methylnaphthalene	ND	10	ug/L
1-Methylnaphthalene	ND	10	ug/L
Naphthalene	ND	10	ug/L
Perylene	ND	10	ug/L
Phenanthrene	ND	10	ug/L
Pyrene	ND	10	ug/L
Quinoline	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	68	(30 - 160)
Fluorene d-10	79	(36 - 127)
Naphthalene-d8	90	(37 - 107)

CITY OF ST. LOUIS PARK

Client Sample ID: W438-092402

GC/MS Semivolatiles

Lot-Sample #...: D2I250267-006 **Work Order #...:** E8VLX1AA **Matrix.....:** WATER
Date Sampled...: 09/24/02 **Date Received..:** 09/25/02
Prep Date.....: 09/30/02 **Analysis Date..:** 10/12/02
Prep Batch #...: 2273415 **Analysis Time..:** 00:07
Dilution Factor: 1

Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	10	ug/L
Acenaphthylene	ND	10	ug/L
Acridine	ND	10	ug/L
Anthracene	ND	10	ug/L
Benzo(a)anthracene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
2,3-Benzofuran	ND	10	ug/L
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Benzo(e)pyrene	ND	10	ug/L
Benzo(b)thiophene	ND	10	ug/L
Biphenyl	ND	10	ug/L
Carbazole	ND	10	ug/L
Chrysene	ND	10	ug/L
Dibenzo(a,h)anthracene	ND	10	ug/L
Dibenzofuran	ND	10	ug/L
Dibenzothiophene	ND	10	ug/L
2,3-Dihydroindene	ND	10	ug/L
Fluoranthene	ND	10	ug/L
Fluorene	ND	10	ug/L
Indene	ND	10	ug/L
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Indole	ND	10	ug/L
2-Methylnaphthalene	ND	10	ug/L
1-Methylnaphthalene	ND	10	ug/L
Naphthalene	ND	10	ug/L
Perylene	ND	10	ug/L
Phenanthrene	ND	10	ug/L
Pyrene	ND	10	ug/L
Quinoline	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	78	(30 - 160)
Fluorene d-10	67	(36 - 127)
Naphthalene-d8	77	(37 - 107)

CITY OF ST. LOUIS PARK

Client Sample ID: W437-092402

GC/MS Semivolatiles

Lot-Sample #...: D2I250267-007 Work Order #...: E8VL21AA Matrix.....: WATER
Date Sampled...: 09/24/02 Date Received..: 09/25/02
Prep Date.....: 09/30/02 Analysis Date..: 10/12/02
Prep Batch #...: 2273415 Analysis Time..: 00:44
Dilution Factor: 1

Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	**180**	**10**	**ug/L**
Acenaphthylene	ND	10	ug/L
Acridine	**3.4 J**	**10**	**ug/L**
Anthracene	ND	10	ug/L
Benzo(a)anthracene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
2,3-Benzofuran	**4.4 J**	**10**	**ug/L**
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Benzo(e)pyrene	ND	10	ug/L
Benzo(b)thiophene	**160**	**10**	**ug/L**
Biphenyl	**43**	**10**	**ug/L**
Carbazole	**95**	**10**	**ug/L**
Chrysene	ND	10	ug/L
Dibenzo(a,h)anthracene	ND	10	ug/L
Dibenzofuran	**58**	**10**	**ug/L**
Dibenzothiophene	ND	10	ug/L
2,3-Dihydroindene	**160**	**10**	**ug/L**
Fluoranthene	ND	10	ug/L
Fluorene	**58**	**10**	**ug/L**
Indene	**110**	**10**	**ug/L**
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Indole	ND	10	ug/L
2-Methylnaphthalene	**110**	**10**	**ug/L**
Perylene	ND	10	ug/L
Phenanthrene	ND	10	ug/L
Pyrene	ND	10	ug/L
Quinoline	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	68	(30 - 160)
Fluorene d-10	77	(36 - 127)
Naphthalene-d8	89	(37 - 107)

NOTE(S):

J Estimated result. Result is less than RL.

CITY OF ST. LOUIS PARK

Client Sample ID: W437-092402

GC/MS Semivolatiles

Lot-Sample #...: D2I250267-007 **Work Order #...:** E8VL22AA **Matrix.....:** WATER
Date Sampled...: 09/24/02 **Date Received..:** 09/25/02
Prep Date.....: 09/30/02 **Analysis Date..:** 10/15/02
Prep Batch #...: 2273415 **Analysis Time..:** 16:06
Dilution Factor: 2

Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
1-Methylnaphthalene	**210**	**20**	**ug/L**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	65	(30 - 160)
Fluorene d-10	80	(36 - 127)
Naphthalene-d8	92	(37 - 107)

CITY OF ST. LOUIS PARK

Client Sample ID: W437-092402

GC/MS Semivolatiles

Lot-Sample #...:	D2I250267-007	**Work Order #...:**	E8VL23AA	**Matrix.....:**	WATER
Date Sampled...:	09/24/02	**Date Received..:**	09/25/02		
Prep Date.....:	09/30/02	**Analysis Date..:**	10/15/02		
Prep Batch #...:	2273415	**Analysis Time..:**	15:28		
Dilution Factor:	40				
		Method.....:	SW846 8270C		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Naphthalene	**4100**	**400**	**ug/L**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	DIL,NC	(30 - 160)
Fluorene d-10	DIL,NC	(36 - 127)
Naphthalene-d8	DIL,NC	(37 - 107)

NOTE(S):

DIL The concentration is estimated or not reported due to dilution or the presence of interfering analytes.

NC The recovery and/or RPD were not calculated.

CITY OF ST. LOUIS PARK

Client Sample ID: W431-092402

GC/MS Semivolatiles

Lot-Sample #...: D2I250267-008 **Work Order #...:** E8VL41AA **Matrix.....:** WATER
Date Sampled...: 09/24/02 **Date Received..:** 09/25/02
Prep Date.....: 09/30/02 **Analysis Date..:** 10/12/02
Prep Batch #...: 2273415 **Analysis Time..:** 01:21
Dilution Factor: 1

Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	10	ug/L
Acenaphthylene	ND	10	ug/L
Acridine	ND	10	ug/L
Anthracene	ND	10	ug/L
Benzo(a)anthracene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
2,3-Benzofuran	ND	10	ug/L
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Benzo(e)pyrene	ND	10	ug/L
Benzo(b)thiophene	ND	10	ug/L
Biphenyl	ND	10	ug/L
Carbazole	ND	10	ug/L
Chrysene	ND	10	ug/L
Dibenzo(a,h)anthracene	ND	10	ug/L
Dibenzofuran	ND	10	ug/L
Dibenzothiophene	ND	10	ug/L
2,3-Dihydroindene	ND	10	ug/L
Fluoranthene	ND	10	ug/L
Fluorene	ND	10	ug/L
Indene	ND	10	ug/L
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Indole	ND	10	ug/L
2-Methylnaphthalene	ND	10	ug/L
1-Methylnaphthalene	ND	10	ug/L
Naphthalene	**6.1 J**	**10**	**ug/L**
Perylene	ND	10	ug/L
Phenanthrene	ND	10	ug/L
Pyrene	ND	10	ug/L
Quinoline	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	71	(30 - 160)
Fluorene d-10	73	(36 - 127)
Naphthalene-d8	86	(37 - 107)

NOTE(S):

J Estimated result. Result is less than RL.

QC DATA ASSOCIATION SUMMARY

D2I250267

Sample Preparation and Analysis Control Numbers

SAMPLE#	MATRIX	ANALYTICAL METHOD	LEACH BATCH #	PREP BATCH #	MS RUN#
001	WATER	SW846 8270C		2273415	
002	WATER	SW846 8270C		2273415	
003	WATER	SW846 8270C		2273415	
004	WATER	SW846 8270C		2273415	
005	WATER	SW846 8270C		2273415	
006	WATER	SW846 8270C		2273415	
007	WATER	SW846 8270C		2273415	
008	WATER	SW846 8270C		2273415	

METHOD BLANK REPORT

GC/MS Semivolatiles

Client Lot #...: D2I250267 Work Order #...: E85DH1AA Matrix.....: WATER
MB Lot-Sample #: D2I300000-415

Prep Date.....: 09/30/02 Analysis Time..: 14:42
Analysis Date..: 10/11/02 Prep Batch #...: 2273415
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Acenaphthene	ND	10	ug/L	SW846 8270C
Acenaphthylene	ND	10	ug/L	SW846 8270C
Acridine	ND	10	ug/L	SW846 8270C
Anthracene	ND	10	ug/L	SW846 8270C
Benzo(a)anthracene	ND	10	ug/L	SW846 8270C
Benzo(b)fluoranthene	ND	10	ug/L	SW846 8270C
Benzo(k)fluoranthene	ND	10	ug/L	SW846 8270C
2,3-Benzofuran	ND	10	ug/L	SW846 8270C
Benzo(ghi)perylene	ND	10	ug/L	SW846 8270C
Benzo(a)pyrene	ND	10	ug/L	SW846 8270C
Benzo(e)pyrene	ND	10	ug/L	SW846 8270C
Benzo(b)thiophene	ND	10	ug/L	SW846 8270C
Biphenyl	ND	10	ug/L	SW846 8270C
Carbazole	ND	10	ug/L	SW846 8270C
Chrysene	ND	10	ug/L	SW846 8270C
Dibenzo(a,h)anthracene	ND	10	ug/L	SW846 8270C
Dibenzofuran	ND	10	ug/L	SW846 8270C
Dibenzothiophene	ND	10	ug/L	SW846 8270C
2,3-Dihydroindene	ND	10	ug/L	SW846 8270C
Fluoranthene	ND	10	ug/L	SW846 8270C
Fluorene	ND	10	ug/L	SW846 8270C
Indene	ND	10	ug/L	SW846 8270C
Indeno(1,2,3-cd)pyrene	ND	10	ug/L	SW846 8270C
Indole	ND	10	ug/L	SW846 8270C
2-Methylnaphthalene	ND	10	ug/L	SW846 8270C
1-Methylnaphthalene	ND	10	ug/L	SW846 8270C
Naphthalene	ND	10	ug/L	SW846 8270C
Perylene	ND	10	ug/L	SW846 8270C
Phenanthrene	ND	10	ug/L	SW846 8270C
Pyrene	ND	10	ug/L	SW846 8270C
Quinoline	ND	10	ug/L	SW846 8270C

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	102	(30 - 160)
Fluorene d-10	75	(36 - 127)
Naphthalene-d8	82	(37 - 107)

NOTE(S):

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

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: D2I250267 Work Order #...: E85DH1AC Matrix.....: WATER
LCS Lot-Sample#: D2I300000-415
Prep Date.....: 09/30/02 Analysis Date..: 10/11/02
Prep Batch #...: 2273415 Analysis Time..: 15:20
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD
Benzo(e)pyrene	**87**	**(30 - 150)**	**SW846 8270C**
Chrysene	**82**	**(43 - 124)**	**SW846 8270C**
Fluorene	**92**	**(51 - 120)**	**SW846 8270C**
Indene	**88**	**(49 - 108)**	**SW846 8270C**
2-Methylnaphthalene	**85**	**(47 - 138)**	**SW846 8270C**
Naphthalene	**89**	**(43 - 128)**	**SW846 8270C**
Quinoline	**79**	**(40 - 126)**	**SW846 8270C**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	79	(30 - 160)
Fluorene d-10	74	(36 - 127)
Naphthalene-d8	88	(37 - 107)

NOTE(S):

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

Bold print denotes control parameters

LABORATORY CONTROL SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #...: D2I250267 **Work Order #...:** E85DH1AC **Matrix.....:** WATER
LCS Lot-Sample#: D2I300000-415
Prep Date.....: 09/30/02 **Analysis Date..:** 10/11/02
Prep Batch #...: 2273415 **Analysis Time..:** 15:20
Dilution Factor: 1

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD
Benzo(e)pyrene	**50.0**	**43.3**	**ug/L**	**87**	**SW846 8270C**
Chrysene	**50.0**	**40.9**	**ug/L**	**82**	**SW846 8270C**
Fluorene	**50.0**	**46.0**	**ug/L**	**92**	**SW846 8270C**
Indene	**50.0**	**43.8**	**ug/L**	**88**	**SW846 8270C**
2-Methylnaphthalene	**50.0**	**42.6**	**ug/L**	**85**	**SW846 8270C**
Naphthalene	**50.0**	**44.3**	**ug/L**	**89**	**SW846 8270C**
Quinoline	**50.0**	**39.3**	**ug/L**	**79**	**SW846 8270C**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	79	(30 - 160)
Fluorene d-10	74	(36 - 127)
Naphthalene-d8	88	(37 - 107)

NOTE(S):

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

Bold print denotes control parameters

[redacted]

Chain of Custody Record

SEVERN TRENT SERVICES

Severn Trent Laboratories, Inc.

DS 9/[redacted] DS 9/25

STL-4124 (0901)

Client: City of St. Louis Park	Project Manager: Scott Anderson	Date: 9/24/02	Chain of Custody Number: 150725
Address: 3752 Wooddale Ave	Telephone Number (Area Code)/Fax Number: 952-924-2557	Lab Number:	Page 1 of 1
City: ~~City~~ St Louis Park; State: MN; Zip Code: 55416	Site Contact: Bill Gregg	Lab Contact:	
Project Name and Location (State): Reilly	Carrier/Waybill Number:		
Contract/Purchase Order/Quote No.:			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Matrix: Aqueous	Matrix: Sed.	Matrix: Soil	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Analysis (Attach list if more space is needed): PAH - PPB	Special Instructions/ Conditions of Receipt
W428-092402	9/24/02	1345		X			2						X	
W438-092402	↓	1430		↓			↓						↓	
W437-092402	↓	1530		↓			↓						↓	
W431-092402	↓	1700		↓			↓						↓	

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required: ☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other_____

QC Requirements (Specify):

	Date	Time		Date	Time
1. Relinquished By: Chris Boehm	9/24/02	1730	1. Received By: J Brown	9/25/02	0900
2. Relinquished By:			2. Received By:		
3. Relinquished By:			3. Received By:		

Comments

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

[redacted]

Chain of Custody Record

SEVERN TRENT SERVICES

Severn Trent Laboratories, Inc.

DS 9/25

STL-4124 (0901)

Client: City of St. Louis Park	Project Manager: Scott Anderson	Date: 09/24/02	Chain of Custody Number: 150727
Address: 3752 Wooddale Ave	Telephone Number (Area Code)/Fax Number: 952-924-2557	Lab Number:	Page 1 of 1
City: St. Louis Park; State: MN; Zip Code: 55416	Site Contact: Bill Gregg	Lab Contact:	
Project Name and Location (State): Reilly	Carrier/Waybill Number:		
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Air	Aqueous	Sed.	Soil	Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	PAH-PPB	Special Instructions/ Conditions of Receipt
W20-092402	9/24/02	0900		X			2						X	
W27-092402	↓	1000		↓			↓						↓	
P312-092402	↓	1040		↓			↓						↓	
W131-092402	↓	1315		↓			↓						↓	

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required: ☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other _____

QC Requirements (Specify):

1. Relinquished By: Chris Boehm	Date: 9/24/02	Time: 1730	1. Received By: Brown	Date: 9/25/02	Time: 0900
2. Relinquished By	Date	Time	2. Received By	Date	Time
3. Relinquished By	Date	Time	3. Received By	Date	Time

Comments

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

FF

SEVERN TRENT SERVICES

Severn Trent Laboratories, Inc.

ANALYTICAL REPORT

City of St. Louis Park

Project: Reilly Tar & Chemical Corporation

Lot #: D2J150288

Mr. Scott Anderson

City of St. Louis Park
Utility Division
3752 Wooddale Avenue
St. Louis Park, MN 55416

STL DENVER

Brian Stringer
Project Manager

November 12, 2002

FF

Table Of Contents

Standard Deliverable

Report Contents

- Table of Contents
- Case Narrative
- Executive Summary – Detection Highlights
- Analytical Method Summary
- Method/ Analyst Summary
- Sample Summary
- Analytical Results by Sample
- QC Data Association Summary
- Chain-of-Custody

Total Number of Pages 23

CASE NARRATIVE

STL Lot Number D2J150288

Introduction

STL Denver received three aqueous samples, a field blank, a field blank duplicate, and a MS/MSD on October 15, 2002 for PAH ppb full scan analysis.

The cooler temperatures were 1.2°C, and 2.8°C. All containers were received in acceptable condition.

Data Quality Assessment

The results included in this report have been reviewed for compliance with STL Denver's Laboratory Quality Manual. The test results shown in this report meet all requirements of NELAC and any exceptions are noted below.

Dilution factors and footnotes have been provided to assist in the interpretation of the results. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at concentrations above the linear calibration curve, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

STL utilizes USEPA approved methods in all analytical work. The samples presented in this report were analyzed for the parameters listed on the analytical methods summary page in accordance with the methods indicated.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Polynuclear Aromatic Hydrocarbons – Method 8270C

A project-specific lower acceptable recovery limit of 30% for all QC samples and surrogates has been designated for analytical work performed under the 2002 Quality Assurance Project Plan (QAPP) for the Reilly Industries, Inc. NPL Site. This lower limit is used for this project, rather than historically generated lower recovery limits. All recoveries in this report are above the 30% minimum threshold with the exceptions noted below.

Due to an error in the laboratory, samples D2J150288-004 (field blank duplicate DPV-W420FBD-101402) and 005 (sample DPV-W421-101402) were not extracted properly and there was not sufficient sample volume remaining to re-extract the samples. As per client request the analyses were cancelled. Sample DPV-W421-101402 was re-collected by the client at a later date and those results are in a separate analytical report.

Sample D2J150288-001 demonstrated recoveries of the surrogate chrysene-d12 below control limits. The raw data indicates matrix interference; therefore the sample was not re-extracted.

Samples D2J150288-001 and 002 were analyzed undiluted, and also at a 10X dilution and a 20X dilution, due to high concentrations of target compounds in the samples. Analytes are reported from the appropriate run.

Benzo(ghi)perylene, indeno(1,2,3-cd)pyrene, and perylene were detected in the method blank at concentrations below the reporting limits, but above the method detection limits. These compounds were not detected in the samples.

The MSD performed on sample D2J150288-001 demonstrated a recovery of 0% for naphthalene. The MS was in control. The concentration of naphthalene in the un-spiked parent sample is more than ten times the spike amount. Therefore, although the concentration measured in the MSD is less than the expected concentration, the measured concentrations in the MS and MSD agree with an RPD of 0%.

Case Narrative for D2J150288 (continued)

Data Completeness for Polynuclear Aromatic Hydrocarbons – Method 8270C

The results contained in the report were reviewed relative to data acceptance criteria as specified in the 2002 QAPP. Based on the exceptions noted we achieved 98.87% completeness.

DATA COMPLETENESS CALCULATION		
LOT D2J150288		
ANALYSIS	PAHs by SW846-8270C	
QC Parameter	Data Planned	Valid Data Obtained
Method Blank	31	31
MB Surrogates	3	3
LCS	7	7
LCS Surrogates	3	3
FB	31	31
MS	7	7
MS Surrogates	3	3
MSD	7	6
MSD Surrogates	3	3
MS/MSD RPD	31	31
Sample/Dup. RPD	33	33
Sample Surrogates	9	8
Internal STD Area	9	9
TOTAL	**177**	**175**
% Completeness	**98.87%**	

*The MS/MSD data provided for this table was performed on client sample "DPV-W420-101402"
The field blank duplicate was canceled as discussed above; therefore the is no completeness calculation for field blank duplicate.

Case Narrative for D2J150288 (continued)

Sample Duplicate RPD					
LOT D2J150288					
Sample: DPV-W420-101402		DUP: DPV-W420D-101402			
Compound	Result	Compound	Result	RPD	RPD>50%
Acenaphthene	130	Acenaphthene	130	0.0	
Acenaphthylene	ND	Acenaphthylene	ND	0.0	
Acridine	1.9	Acridine	2.3	19.0	
Anthracene	1.9	Anthracene	2.2	14.6	
Benzo(a)anthracene	ND	Benzo(a)anthracene	ND	0.0	
Benzo(b)fluoranthene	ND	Benzo(b)fluoranthene	ND	0.0	
Benzo(k)fluoranthene	ND	Benzo(k)fluoranthene	ND	0.0	
2,3-Benzofuran	44	2,3-Benzofuran	46	4.4	
Benzo(ghi)perylene	ND	Benzo(ghi)perylene	ND	0.0	
Benzo(a)pyrene	ND	Benzo(a)pyrene	ND	0.0	
Benzo(e)pyrene	ND	Benzo(e)pyrene	ND	0.0	
Benzo(b)thiophene	120	Benzo(b)thiophene	120	0.0	
Biphenyl	25	Biphenyl	25	0.0	
Carbazole	78	Carbazole	79	1.3	
Chrysene	ND	Chrysene	ND	0.0	
Dibenz(a,h)anthracene	ND	Dibenz(a,h)anthracene	ND	0.0	
Dibenzofuran	48	Dibenzofuran	48	0.0	
Dibenzothiophene	3.9	Dibenzothiophene	5.1	26.7	
2,3-Dihydroindene	310	2,3-Dihydroindene	310	0.0	
Fluoranthene	ND	Fluoranthene	ND	0.0	
Fluorene	51	Fluorene	52	1.9	
Indene	38	Indene	40	5.1	
Indeno(1,2,3-cd)pyrene	ND	Indeno(1,2,3-cd)pyrene	ND	0.0	
Indole	ND	Indole	ND	0.0	
2-Methylnaphthalene	120	2-Methylnaphthalene	120	0.0	
1-Methylnaphthalene	140	1-Methylnaphthalene	140	0.0	
Naphthalene	2300	Naphthalene	2300	0.0	
Perylene	ND	Perylene	ND	0.0	
Phenanthrene	36	Phenanthrene	36	0.0	
Pyrene	ND	Pyrene	ND	0.0	
Quinoline	ND	Quinoline	ND	0.0	

RPD = Relative Percent Difference
ND = Compound not detected in the sample
OK = RPD acceptable
p = RPD is outside of control limits
*NC = RPD not calculated, one positive result and one ND. Considered acceptable if the positive result is less than 4x the RL.

EXECUTIVE SUMMARY - Detection Highlights

D2J150288

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
DPV-W420-101402 10/14/02 11:30 001				
Acenaphthene	130	10	ug/L	SW846 8270C
Acridine	1.9 J	10	ug/L	SW846 8270C
Anthracene	1.9 J	10	ug/L	SW846 8270C
2,3-Benzofuran	44	10	ug/L	SW846 8270C
Benzo(b)thiophene	120	10	ug/L	SW846 8270C
Biphenyl	25	10	ug/L	SW846 8270C
Carbazole	78	10	ug/L	SW846 8270C
Dibenzofuran	48	10	ug/L	SW846 8270C
Dibenzothiophene	3.9 J	10	ug/L	SW846 8270C
2,3-Dihydroindene	310	100	ug/L	SW846 8270C
Fluorene	51	10	ug/L	SW846 8270C
Indene	38	10	ug/L	SW846 8270C
2-Methylnaphthalene	120	10	ug/L	SW846 8270C
1-Methylnaphthalene	140	10	ug/L	SW846 8270C
Naphthalene	2300	200	ug/L	SW846 8270C
Phenanthrene	36	10	ug/L	SW846 8270C
DPV-W420D-101402 10/14/02 11:30 002				
Acenaphthene	130	10	ug/L	SW846 8270C
Acridine	2.3 J	10	ug/L	SW846 8270C
Anthracene	2.2 J	10	ug/L	SW846 8270C
2,3-Benzofuran	46	10	ug/L	SW846 8270C
Benzo(b)thiophene	120	10	ug/L	SW846 8270C
Biphenyl	25	10	ug/L	SW846 8270C
Carbazole	79	10	ug/L	SW846 8270C
Dibenzofuran	48	10	ug/L	SW846 8270C
Dibenzothiophene	5.1 J	10	ug/L	SW846 8270C
2,3-Dihydroindene	310	100	ug/L	SW846 8270C
Fluorene	52	10	ug/L	SW846 8270C
Indene	40	10	ug/L	SW846 8270C
2-Methylnaphthalene	120	10	ug/L	SW846 8270C
1-Methylnaphthalene	140	10	ug/L	SW846 8270C
Naphthalene	2300	200	ug/L	SW846 8270C
Phenanthrene	36	10	ug/L	SW846 8270C

METHODS SUMMARY

D2J150288

PARAMETER	ANALYTICAL METHOD	PREPARATION METHOD
Semivolatile Organic Compounds by GC/MS	SW846 8270C	SW846 3520C

References:

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

METHOD / ANALYST SUMMARY

D2J150288

ANALYTICAL METHOD	ANALYST	ANALYST ID
SW846 8270C	Mark McDaniel	000998

References:

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

SAMPLE SUMMARY

D2J150288

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
E93VJ	001	DPV-W420-101402	10/14/02	11:30
E93VK	002	DPV-W420D-101402	10/14/02	11:30
E93VL	003	DPV-W420FB-101402	10/14/02	11:30

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: DPV-W420-101402

GC/MS Semivolatiles

Lot-Sample #...: D2J150288-001 Work Order #...: E93VJ1AA Matrix.....: WG
Date Sampled...: 10/14/02 Date Received..: 10/15/02
Prep Date.....: 10/21/02 Analysis Date..: 10/30/02
Prep Batch #...: 2294355 Analysis Time..: 12:14
Dilution Factor: 1

Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	**130**	**10**	**ug/L**
Acenaphthylene	ND	10	ug/L
Acridine	**1.9 J**	**10**	**ug/L**
Anthracene	**1.9 J**	**10**	**ug/L**
Benzo(a)anthracene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
2,3-Benzofuran	**44**	**10**	**ug/L**
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Benzo(e)pyrene	ND	10	ug/L
Benzo(b)thiophene	**120**	**10**	**ug/L**
Biphenyl	**25**	**10**	**ug/L**
Carbazole	**78**	**10**	**ug/L**
Chrysene	ND	10	ug/L
Dibenzo(a,h)anthracene	ND	10	ug/L
Dibenzofuran	**48**	**10**	**ug/L**
Dibenzothiophene	**3.9 J**	**10**	**ug/L**
Fluoranthene	ND	10	ug/L
Fluorene	**51**	**10**	**ug/L**
Indene	**38**	**10**	**ug/L**
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Indole	ND	10	ug/L
2-Methylnaphthalene	**120**	**10**	**ug/L**
1-Methylnaphthalene	**140**	**10**	**ug/L**
Perylene	ND	10	ug/L
Phenanthrene	**36**	**10**	**ug/L**
Pyrene	ND	10	ug/L
Quinoline	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	21 *	(30 - 160)
Fluorene d-10	67	(36 - 127)
Naphthalene-d8	75	(37 - 107)

NOTE(S):

* Surrogate recovery is outside stated control limits.

J Estimated result. Result is less than RL.

CITY OF ST. LOUIS PARK

Client Sample ID: DPV-W420-101402

GC/MS Semivolatiles

Lot-Sample #...:	D2J150288-001	Work Order #...:	E93VJ2AA	Matrix.....:	WG
Date Sampled...:	10/14/02	Date Received..:	10/15/02		
Prep Date.....:	10/21/02	Analysis Date..:	10/31/02		
Prep Batch #...:	2294355	Analysis Time..:	13:00		
Dilution Factor:	20				
		Method.....:	SW846 8270C		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Naphthalene	**2300**	**200**	**ug/L**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	DIL,NC	(30 - 160)
Fluorene d-10	DIL,NC	(36 - 127)
Naphthalene-d8	DIL,NC	(37 - 107)

NOTE(S):

DIL The concentration is estimated or not reported due to dilution or the presence of interfering analytes.

NC The recovery and/or RPD were not calculated.

CITY OF ST. LOUIS PARK

Client Sample ID: DPV-W420-101402

GC/MS Semivolatiles

Lot-Sample #...:	D2J150288-001	**Work Order #...:**	E93VJ3AA	**Matrix.....:**	WG
Date Sampled...:	10/14/02	**Date Received..:**	10/15/02		
Prep Date.....:	10/21/02	**Analysis Date..:**	10/30/02		
Prep Batch #...:	2294355	**Analysis Time..:**	15:51		
Dilution Factor:	10				
		Method.....:	SW846 8270C		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
2,3-Dihydroindene	**310**	**100**	**ug/L**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	DIL,NC	(30 - 160)
Fluorene d-10	DIL,NC	(36 - 127)
Naphthalene-d8	DIL,NC	(37 - 107)

NOTE(S):

DIL The concentration is estimated or not reported due to dilution or the presence of interfering analytes.

NC The recovery and/or RPD were not calculated.

CITY OF ST. LOUIS PARK

Client Sample ID: DPV-W420D-101402

GC/MS Semivolatiles

Lot-Sample #...:	D2J150288-002	**Work Order #...:**	E93VK1AA	**Matrix.....:**	WG
Date Sampled...:	10/14/02	**Date Received..:**	10/15/02		
Prep Date.....:	10/21/02	**Analysis Date..:**	10/30/02		
Prep Batch #...:	2294355	**Analysis Time..:**	14:06		
Dilution Factor:	1				
		Method.....:	SW846 8270C		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	**130**	**10**	**ug/L**
Acenaphthylene	ND	10	ug/L
Acridine	**2.3 J**	**10**	**ug/L**
Anthracene	**2.2 J**	**10**	**ug/L**
Benzo(a)anthracene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
2,3-Benzofuran	**46**	**10**	**ug/L**
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Benzo(e)pyrene	ND	10	ug/L
Benzo(b)thiophene	**120**	**10**	**ug/L**
Biphenyl	**25**	**10**	**ug/L**
Carbazole	**79**	**10**	**ug/L**
Chrysene	ND	10	ug/L
Dibenzo(a,h)anthracene	ND	10	ug/L
Dibenzofuran	**48**	**10**	**ug/L**
Dibenzothiophene	**5.1 J**	**10**	**ug/L**
Fluoranthene	ND	10	ug/L
Fluorene	**52**	**10**	**ug/L**
Indene	**40**	**10**	**ug/L**
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Indole	ND	10	ug/L
2-Methylnaphthalene	**120**	**10**	**ug/L**
1-Methylnaphthalene	**140**	**10**	**ug/L**
Perylene	ND	10	ug/L
Phenanthrene	**36**	**10**	**ug/L**
Pyrene	ND	10	ug/L
Quinoline	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	38	(30 - 160)
Fluorene d-10	70	(36 - 127)
Naphthalene-d8	77	(37 - 107)

NOTE(S):

Estimated result. Result is less than RL.

CITY OF ST. LOUIS PARK

Client Sample ID: DPV-W420D-101402

GC/MS Semivolatiles

Lot-Sample #...:	D2J150288-002	**Work Order #...:**	E93VK2AA	**Matrix.....:**	WG
Date Sampled...:	10/14/02	**Date Received..:**	10/15/02		
Prep Date.....:	10/21/02	**Analysis Date..:**	10/31/02		
Prep Batch #...:	2294355	**Analysis Time..:**	13:37		
Dilution Factor:	20				
		Method.....:	SW846 8270C		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Naphthalene	**2300**	**200**	**ug/L**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	DIL,NC	(30 - 160)
Fluorene d-10	DIL,NC	(36 - 127)
Naphthalene-d8	DIL,NC	(37 - 107)

NOTE(S):

DIL The concentration is estimated or not reported due to dilution or the presence of interfering analytes.

NC The recovery and/or RPD were not calculated.

CITY OF ST. LOUIS PARK

Client Sample ID: DPV-W420D-101402

GC/MS Semivolatiles

Lot-Sample #...:	D2J150288-002	**Work Order #...:**	E93VK3AA	**Matrix.....:**	WG
Date Sampled...:	10/14/02	**Date Received..:**	10/15/02		
Prep Date.....:	10/21/02	**Analysis Date..:**	10/30/02		
Prep Batch #...:	2294355	**Analysis Time..:**	16:28		
Dilution Factor:	10				
		Method.....:	SW846 8270C		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
2,3-Dihydroindene	**310**	**100**	**ug/L**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	DIL,NC	(30 - 160)
Fluorene d-10	DIL,NC	(36 - 127)
Naphthalene-d8	DIL,NC	(37 - 107)

NOTE(S):

DIL The concentration is estimated or not reported due to dilution or the presence of interfering analytes.

NC The recovery and/or RPD were not calculated.

CITY OF ST. LOUIS PARK

Client Sample ID: DPV-W420FB-101402

GC/MS Semivolatiles

Lot-Sample #...: D2J150288-003 Work Order #...: E93VL1AA Matrix.....: WG
Date Sampled...: 10/14/02 Date Received..: 10/15/02
Prep Date.....: 10/21/02 Analysis Date..: 10/30/02
Prep Batch #...: 2294355 Analysis Time..: 14:44
Dilution Factor: 1

Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	ND	10	ug/L
Acenaphthylene	ND	10	ug/L
Acridine	ND	10	ug/L
Anthracene	ND	10	ug/L
Benzo(a)anthracene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
2,3-Benzofuran	ND	10	ug/L
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Benzo(e)pyrene	ND	10	ug/L
Benzo(b)thiophene	ND	10	ug/L
Biphenyl	ND	10	ug/L
Carbazole	ND	10	ug/L
Chrysene	ND	10	ug/L
Dibenzo(a,h)anthracene	ND	10	ug/L
Dibenzofuran	ND	10	ug/L
Dibenzothiophene	ND	10	ug/L
2,3-Dihydroindene	ND	10	ug/L
Fluoranthene	ND	10	ug/L
Fluorene	ND	10	ug/L
Indene	ND	10	ug/L
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Indole	ND	10	ug/L
2-Methylnaphthalene	ND	10	ug/L
1-Methylnaphthalene	ND	10	ug/L
Naphthalene	ND	10	ug/L
Perylene	ND	10	ug/L
Phenanthrene	ND	10	ug/L
Pyrene	ND	10	ug/L
Quinoline	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	103	(30 - 160)
Fluorene d-10	68	(36 - 127)
Naphthalene-d8	78	(37 - 107)

QC DATA ASSOCIATION SUMMARY

D2J150288

Sample Preparation and Analysis Control Numbers

SAMPLE#	MATRIX	ANALYTICAL METHOD	LEACH BATCH #	PREP BATCH #	MS RUN#
001	WG	SW846 8270C		2294355	2294187
002	WG	SW846 8270C		2294355	2294187
003	WG	SW846 8270C		2294355	2294187

METHOD BLANK REPORT

GC/MS Semivolatiles

Client Lot #...: D2J150288 **Work Order #...:** FAF2N1AA **Matrix.....:** WATER
MB Lot-Sample #: D2J210000-355

Prep Date.....: 10/21/02 **Analysis Time..:** 11:00

Analysis Date..: 10/30/02 **Prep Batch #...:** 2294355
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Acenaphthene	ND	10	ug/L	SW846 8270C
Acenaphthylene	ND	10	ug/L	SW846 8270C
Acridine	ND	10	ug/L	SW846 8270C
Anthracene	ND	10	ug/L	SW846 8270C
Benzo(a)anthracene	ND	10	ug/L	SW846 8270C
Benzo(b)fluoranthene	ND	10	ug/L	SW846 8270C
Benzo(k)fluoranthene	ND	10	ug/L	SW846 8270C
2,3-Benzofuran	ND	10	ug/L	SW846 8270C
Benzo(ghi)perylene	**1.8 J**	**10**	**ug/L**	**SW846 8270C**
Benzo(a)pyrene	ND	10	ug/L	SW846 8270C
Benzo(e)pyrene	ND	10	ug/L	SW846 8270C
Benzo(b)thiophene	ND	10	ug/L	SW846 8270C
Biphenyl	ND	10	ug/L	SW846 8270C
Carbazole	ND	10	ug/L	SW846 8270C
Chrysene	ND	10	ug/L	SW846 8270C
Dibenzo(a,h)anthracene	ND	10	ug/L	SW846 8270C
Dibenzofuran	ND	10	ug/L	SW846 8270C
Dibenzothiophene	ND	10	ug/L	SW846 8270C
2,3-Dihydroindene	ND	10	ug/L	SW846 8270C
Fluoranthene	ND	10	ug/L	SW846 8270C
Fluorene	ND	10	ug/L	SW846 8270C
Indene	ND	10	ug/L	SW846 8270C
Indeno(1,2,3-cd)pyrene	**1.5 J**	**10**	**ug/L**	**SW846 8270C**
Indole	ND	10	ug/L	SW846 8270C
2-Methylnaphthalene	ND	10	ug/L	SW846 8270C
1-Methylnaphthalene	ND	10	ug/L	SW846 8270C
Naphthalene	ND	10	ug/L	SW846 8270C
Perylene	**1.2 J**	**10**	**ug/L**	**SW846 8270C**
Phenanthrene	ND	10	ug/L	SW846 8270C
Pyrene	ND	10	ug/L	SW846 8270C
Quinoline	ND	10	ug/L	SW846 8270C

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	94	(30 - 160)
Fluorene d-10	66	(36 - 127)
Naphthalene-d8	76	(37 - 107)

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 EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: D2J150288 Work Order #...: FAF2N1AC Matrix.....: WATER
LCS Lot-Sample#: D2J210000-355
Prep Date.....: 10/21/02 Analysis Date..: 10/30/02
Prep Batch #...: 2294355 Analysis Time..: 11:37
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD
Benzo(e)pyrene	**100**	**(30 - 150)**	**SW846 8270C**
Chrysene	**101**	**(43 - 124)**	**SW846 8270C**
Fluorene	**86**	**(51 - 120)**	**SW846 8270C**
Indene	**68**	**(49 - 108)**	**SW846 8270C**
2-Methylnaphthalene	**67**	**(47 - 138)**	**SW846 8270C**
Naphthalene	**73**	**(43 - 128)**	**SW846 8270C**
Quinoline	**70**	**(40 - 126)**	**SW846 8270C**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	111	(30 - 160)
Fluorene d-10	70	(36 - 127)
Naphthalene-d8	82	(37 - 107)

NOTE(S):

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

Bold print denotes control parameters

LABORATORY CONTROL SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #...: D2J150288 **Work Order #...:** FAF2N1AC **Matrix.....:** WATER
LCS Lot-Sample#: D2J210000-355
Prep Date.....: 10/21/02 **Analysis Date..:** 10/30/02
Prep Batch #...: 2294355 **Analysis Time..:** 11:37
Dilution Factor: 1

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD
Benzo(e)pyrene	**50.0**	**50.0**	**ug/L**	**100**	**SW846 8270C**
Chrysene	**50.0**	**50.7**	**ug/L**	**101**	**SW846 8270C**
Fluorene	**50.0**	**43.0**	**ug/L**	**86**	**SW846 8270C**
Indene	**50.0**	**34.0**	**ug/L**	**68**	**SW846 8270C**
2-Methylnaphthalene	**50.0**	**33.7**	**ug/L**	**67**	**SW846 8270C**
Naphthalene	**50.0**	**36.3**	**ug/L**	**73**	**SW846 8270C**
Quinoline	**50.0**	**35.1**	**ug/L**	**70**	**SW846 8270C**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	111	(30 - 160)
Fluorene d-10	70	(36 - 127)
Naphthalene-d8	82	(37 - 107)

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 #...: D2J150288 Work Order #...: E93VJ1AC-MS Matrix.....: WG
MS Lot-Sample #: D2J150288-001 E93VJ1AD-MSD
Date Sampled...: 10/14/02 Date Received..: 10/15/02
Prep Date.....: 10/21/02 Analysis Date..: 10/30/02
Prep Batch #...: 2294355 Analysis Time..: 12:51
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Benzo(e)pyrene	**58**	**(30 - 150)**			**SW846 8270C**
	64	**(30 - 150)**	**7.4**	**(0-30)**	**SW846 8270C**
Chrysene	**62**	**(43 - 124)**			**SW846 8270C**
	73	**(43 - 124)**	**13**	**(0-30)**	**SW846 8270C**
Fluorene	**80**	**(51 - 120)**			**SW846 8270C**
	75	**(51 - 120)**	**3.8**	**(0-30)**	**SW846 8270C**
Indene	**78**	**(49 - 108)**			**SW846 8270C**
	69	**(49 - 108)**	**7.7**	**(0-30)**	**SW846 8270C**
2-Methylnaphthalene	**71**	**(47 - 138)**			**SW846 8270C**
	65	**(47 - 138)**	**2.7**	**(0-30)**	**SW846 8270C**
Naphthalene	**87**	**(43 - 128)**			**SW846 8270C**
	0.0 a	**(43 - 128)**	**0.0**	**(0-30)**	**SW846 8270C**
Quinoline	**81**	**(40 - 126)**			**SW846 8270C**
	82	**(40 - 126)**	**2.8**	**(0-30)**	**SW846 8270C**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	45	(30 - 160)
	48	(30 - 160)
Fluorene d-10	69	(36 - 127)
	68	(36 - 127)
Naphthalene-d8	80	(37 - 107)
	78	(37 - 107)

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 #...: D2J150288 **Work Order #...:** E93VJ1AC-MS **Matrix.....:** WG
MS Lot-Sample #: D2J150288-001 E93VJ1AD-MSD
Date Sampled...: 10/14/02 **Date Received..:** 10/15/02
Prep Date.....: 10/21/02 **Analysis Date..:** 10/30/02
Prep Batch #...: 2294355 **Analysis Time..:** 12:51
Dilution Factor: 1

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD
Benzo(e)pyrene	**ND**	**50.4**	**29.0**	**ug/L**	**58**		**SW846 8270C**
	ND	**48.8**	**31.3**	**ug/L**	**64**	**7.4**	**SW846 8270C**
Chrysene	**ND**	**50.4**	**31.3**	**ug/L**	**62**		**SW846 8270C**
	ND	**48.8**	**35.4**	**ug/L**	**73**	**13**	**SW846 8270C**
Fluorene	**51**	**50.4**	**91.5**	**ug/L**	**80**		**SW846 8270C**
	51	**48.8**	**88.1**	**ug/L**	**75**	**3.8**	**SW846 8270C**
Indene	**38**	**50.4**	**77.7**	**ug/L**	**78**		**SW846 8270C**
	38	**48.8**	**72.0**	**ug/L**	**69**	**7.7**	**SW846 8270C**
2-Methylnaphthalene	**120**	**50.4**	**152**	**ug/L**	**71**		**SW846 8270C**
	120	**48.8**	**148**	**ug/L**	**65**	**2.7**	**SW846 8270C**
Naphthalene	**1100**	**50.4**	**1120**	**ug/L**	**87**		**SW846 8270C**
	1100	**48.8**	**1020**	**ug/L**	**0.0 a**	**0.0**	**SW846 8270C**
Quinoline	**ND**	**50.4**	**40.9**	**ug/L**	**81**		**SW846 8270C**
	ND	**48.8**	**39.8**	**ug/L**	**82**	**2.8**	**SW846 8270C**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	45	(30 - 160)
	48	(30 - 160)
Fluorene d-10	69	(36 - 127)
	68	(36 - 127)
Naphthalene-d8	80	(37 - 107)
	78	(37 - 107)

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.

[redacted]

Chain of [redacted] Custody Record

2.8°C
10/15

SEVERN TRENT SERVICES

Severn Trent Laboratories, Inc.

STL-4124 (0901)

Client: CITY OF ST. LOUIS PARK UTILITY DIVISION 3752 WOODDALE AVENUE ST. LOUIS PARK, MN 55416	Project Manager: SCOTT ANDERSON	Date: 10-14-02	Chain of Custody Number: 150730
Address	Telephone Number (Area Code)/Fax Number: 924-2557 (952) 924-2570	Lab Number	Page ____ of ____
City	Site Contact: SAME	Lab Contact	
Project Name and Location (State): SAME	Carrier/Waybill Number: FED EX 806824120 4		
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH		Analysis (Attach list if more space is needed): PPB PAH	Special Instructions/ Conditions of Receipt
DPV-W420-101402 C# 0004	10-14-02	11:30		X			X						2	X	8270 C
DPV-W420D-101402															
DPV-W420MS-101402															
DPV-W420MSD-101402															
DPV-W420FB-101402															
DPV-W420FBD-101402	10-14-02	11:30		X			X						2	X	8270 C

Possible Hazard Identification: ☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return To Client ☒ Disposal By Lab ☐ Archive For ____ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required: ☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other ____

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished By: [signature]	10-14-02	1400	1. Received By: [signature]	10/15/02	0830
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

22

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

[redacted]

Chain of Custody Record

1.2°C
OB
10/15

SEVERN TRENT SERVICES

Severn Trent Laboratories, Inc.

STL-4124 (0901)

Client: CITY OF ST. LOUIS PARK UTILITY DIVISION 3752 WOODDALE AVENUE ST. LOUIS PARK, MN 55416	Project Manager: Scott Anderson	Date: 10-14-02	Chain of Custody Number: 150731
Address:	Telephone Number (Area Code)/Fax Number: 924-2557 (952) 924-2570	Lab Number:	Page ____ of ____
City:	Site Contact: SAME	Lab Contact:	
Project Name and Location (State): SAME	Carrier/Waybill Number: FED EX 8068241204		
Contract/Purchase Order/Quote No.:			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Matrix: Aqueous	Matrix: Sed.	Matrix: Soil	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH		Analysis (Attach list if more space is needed): PPB PAH	Special Instructions/ Conditions of Receipt
~~W~~-DPV-W424-101402 C#0010	10-14-02	11:30		X									2	X	8270C

Possible Hazard Identification: ☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return To Client ☒ Disposal By Lab ☐ Archive For ____ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required: ☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other ____

QC Requirements (Specify):

	Date	Time		Date	Time
1. Relinquished By: MJK	10-14-02	1400	1. Received By: [signature]	10/15/02	0830
2. Relinquished By:			2. Received By:		
3. Relinquished By:			3. Received By:		

Comments

23

DISTRIBUTION: [illegible]TE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

GG

SEVERN TRENT SERVICES

Severn Trent Laboratories, Inc.

ANALYTICAL REPORT

City of St. Louis Park

Project: Reilly Tar & Chemical Corporation

Lot #: D2J150283

Mr. Scott Anderson

City of St. Louis Park
Utility Division
3752 Wooddale Avenue
St. Louis Park, MN 55416

STL DENVER

Brian Stringer
Project Manager

November 12, 2002

GG

Table Of Contents

Standard Deliverable

Report Contents

- Table of Contents
- Case Narrative
- Executive Summary – Detection Highlights
- Analytical Method Summary
- Method/ Analyst Summary
- Sample Summary
- Analytical Results by Sample
- QC Data Association Summary
- Chain-of-Custody

Total Number of Pages 30

CASE NARRATIVE

STL Lot Number D2J150283

Introduction

STL Denver received five aqueous samples, a field blank, a field blank duplicate, and a MS/MSD on October 15, 2002 for PAH SIM (ppt-5) analysis.

The cooler temperatures were 1.7°C, 5.1°C, 4.6°C, 4.1°C, and 1.2°C. All containers were received in acceptable condition.

The chain of custody did not list the field blank duplicate GAS-SLP4TFBD-101402. As per client request this sample was logged.

Chain of custody #150733 was not relinquished by the client.

Data Quality Assessment

The results included in this report have been reviewed for compliance with STL Denver's Laboratory Quality Manual. The test results shown in this report meet all requirements of NELAC and any exceptions are noted below.

Dilution factors and footnotes have been provided to assist in the interpretation of the results. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at concentrations above the linear calibration curve, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

STL utilizes USEPA approved methods in all analytical work. The samples presented in this report were analyzed for the parameters listed on the analytical methods summary page in accordance with the methods indicated.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Polynuclear Aromatic Hydrocarbons – Method 8270C SIM

A project-specific lower acceptable recovery limit of 30% for all QC samples and surrogates has been designated for analytical work performed under the 2002 Quality Assurance Project Plan (QAPP) for the Reilly Industries, Inc. NPL Site. This lower limit is used for this project, rather than historically generated lower recovery limits. All recoveries in this report are above the 30% minimum threshold with the exceptions noted below.

Due to an error in the laboratory, sample D2J150283-004 (field duplicate sample GAC-SLP4TD-101402) and D2J150283-005 (field blank duplicate sample GAC-SLP4TFBD-101402) were not extracted within the recommended hold time. Sample D2J150283-004 was extracted outside the recommended hold time and the client canceled sample D2J150283-005.

Sample D2J150283-003 demonstrated recoveries of the surrogates chrysene-d12 and fluorene-d10 below control limits. Since the extraction requires four liters of sample and only six liters were received for this sample, re-extraction was not possible.

Sample D2J150283-006 demonstrated a recovery of the internal standard perylene-d12 above control limits. Re-aliquoting and re-analyzing the sample confirmed the results.

The method blank associated with batch 2290155 and samples D2J150283-001, 002, 003, 006, and 007 demonstrated a recovery of the surrogate fluorene-d10 below control limits. Re-analysis confirmed the results. Since the extraction requires four liters per sample and only six liters were received per sample, re-extraction was not possible.

Case Narrative for D2J150283 (continued)
Carbazole was detected in the method blank associated with batch 2302566 and sample D2J150283-004 at a concentration of 7.7 ng/L. The reporting limit if 3.8 ng/L. This may indicate a high bias in the sample data. Carbazole was not detected in the sample; therefore no further corrective action was taken.

The LCS associated with batch 2290155 and samples D2J150283-001, 002, 003, 006, and 007 demonstrated a recovery of the surrogate fluorene-d10 below control limits. Re-analysis confirmed the results. Since the extraction requires four liters per sample and only six liters were received per sample, re-extraction was not possible.

The MS/MSD performed on sample D2J150283-003 demonstrated recoveries below control limits for benezo(e)pyrene and chrysene. The MSD demonstrated an additional recovery below control limits for Quinoline. The MS/MSD also demonstrated surrogate recoveries below control limits for chrysene-d12 and fluorene-d10. The RPD values for benoz(e)pyrene and chrysene are also above control limits.

A MS/MSD associated with batch 2302566 was not requested.

Data Completeness for Polynuclear Aromatic Hydrocarbons – Method 8270C SIM

The results contained in the report were reviewed relative to data acceptance criteria as specified in the 2002 QAPP. Based on the exceptions noted we achieved 91.86% completeness.

DATA COMPLETENESS CALCULATION		
LOT D2J150283		
ANALYSIS	PAHs by SW846-8270 SIM	
QC Parameter	Data Planned	Valid Data Obtained
Method Blank	66	65
MB Surrogates	6	5
LCS	14	14
LCS Surrogates	6	5
FB	33	32
MS	7	5
MS Surrogates	3	1
MSD	7	4
MSD Surrogates	3	1
MS/MSD RPD	7	5
Sample/Dup. RPD	33	33
Sample Surrogates	18	16
Internal STD Area	18	17
TOTAL	221	203
% Completeness	91.86%	

*The MS/MSD data provided for this table was performed on client sample "GAC-SLP4T-101402"
The field blank duplicate was canceled as discussed above; therefore the is no completeness calculation for field blank duplicate.

Case Narrative for D2J150283 (continued)

Sample Duplicate RPD					
LOT D2J150283					
Sample: GAC-SLP4T-101402		DUP: GAC-SLP4TD-101402			
Compound	**Result**	**Compound**	**Result**	**RPD**	**RPD>50%**
Acenaphthene	ND	Acenaphthene	ND	0.0	
Acenaphthylene	ND	Acenaphthylene	ND	0.0	
Acridine	ND	Acridine	ND	0.0	
Anthracene	ND	Anthracene	ND	0.0	
Benzo(a)anthracene	ND	Benzo(a)anthracene	ND	0.0	
Benzo(b)fluoranthene	ND	Benzo(b)fluoranthene	ND	0.0	
Benzo(k)fluoranthene	ND	Benzo(k)fluoranthene	ND	0.0	
2,3-Benzofuran	ND	2,3-Benzofuran	ND	0.0	
Benzo(ghi)perylene	ND	Benzo(ghi)perylene	ND	0.0	
Benzo(a)pyrene	ND	Benzo(a)pyrene	ND	0.0	
Benzo(e)pyrene	ND	Benzo(e)pyrene	ND	0.0	
Benzo(b)thiophene	ND	Benzo(b)thiophene	ND	0.0	
Biphenyl	ND	Biphenyl	ND	0.0	
Carbazole	ND	Carbazole	ND	0.0	
Chrysene	ND	Chrysene	ND	0.0	
Dibenz(a,h)anthracene	ND	Dibenz(a,h)anthracene	ND	0.0	
Dibenzofuran	ND	Dibenzofuran	ND	0.0	
Dibenzothiophene	ND	Dibenzothiophene	ND	0.0	
2,3-Dihydroindene	ND	2,3-Dihydroindene	ND	0.0	
Fluoranthene	ND	Fluoranthene	ND	0.0	
Fluorene	ND	Fluorene	ND	0.0	
Indene	ND	Indene	ND	0.0	
Indeno(1,2,3-cd)pyrene	ND	Indeno(1,2,3-cd)pyrene	ND	0.0	
Indole	ND	Indole	ND	0.0	
2-Methylnaphthalene	ND	2-Methylnaphthalene	ND	0.0	
1-Methylnaphthalene	ND	1-Methylnaphthalene	ND	0.0	
Naphthalene	ND	Naphthalene	ND	0.0	
Perylene	ND	Perylene	ND	0.0	
Phenanthrene	ND	Phenanthrene	ND	0.0	
Pyrene	ND	Pyrene	ND	0.0	
Quinoline	ND	Quinoline	ND	0.0	
3-Methylchloanthrene	ND	3-Methylcholanthrene	ND	0.0	
7,12-Dimethylbenz(a)-anthracene	ND	7,12-Dimethylbenz(a)-anthracene	ND	0.0	

RPD = Relative Percent Difference
ND = Compound not detected in the sample
OK = RPD acceptable
p = RPD is outside of control limits
*NC = RPD not calculated, one positive result and one ND. Considered acceptable if the positive result is less than 4x the RL.

EXECUTIVE SUMMARY - Detection Highlights

D2J150283

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
PCJ-SLP6-101402 10/14/02 12:30 001				
Acenaphthene	80	5.7	ng/L	SW846 8270C SIM
Acenaphthylene	16	4.8	ng/L	SW846 8270C SIM
Benzo(b)thiophene	2.7 J	5.2	ng/L	SW846 8270C SIM
Carbazole	8.9	3.8	ng/L	SW846 8270C SIM
2,3-Dihydroindene	59	5.0	ng/L	SW846 8270C SIM
Fluorene	11	4.1	ng/L	SW846 8270C SIM
W48101402 10/14/02 10:30 006				
Acenaphthene	79	5.7	ng/L	SW846 8270C SIM
Acridine	26	6.2	ng/L	SW846 8270C SIM
Anthracene	6.8	4.2	ng/L	SW846 8270C SIM
Benzo(b)thiophene	8.0	5.2	ng/L	SW846 8270C SIM
Carbazole	15	3.8	ng/L	SW846 8270C SIM
2,3-Dihydroindene	12	5.0	ng/L	SW846 8270C SIM
Fluoranthene	4.4 J	4.6	ng/L	SW846 8270C SIM
Indene	18	4.7	ng/L	SW846 8270C SIM
1-Methylnaphthalene	3.6 J	5.6	ng/L	SW846 8270C SIM
Naphthalene	6.4 J	8.6	ng/L	SW846 8270C SIM
Pyrene	7.3	4.2	ng/L	SW846 8270C SIM
GAC-SLP4TFB-101402 10/14/02 10:30 007				
Carbazole	7.2	3.8	ng/L	SW846 8270C SIM

METHODS SUMMARY

D2J150283

PARAMETER	ANALYTICAL METHOD	PREPARATION METHOD
Base/Neutrals and Acids	SW846 8270C SIM	SW846 3520C

References:

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

METHOD / ANALYST SUMMARY

D2J150283

ANALYTICAL METHOD	ANALYST	ANALYST ID
SW846 8270C SIM	Mark McDaniel	000998

References:

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

SAMPLE SUMMARY

D2J150283

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
E93QH	001	PCJ-SLP6-101402	10/14/02	12:30
E93QT	002	GAC-SLP10T-101402	10/14/02	12:00
E93Q2	003	GAC-SLP4T-101402	10/14/02	10:30
E93Q9	004	GAC-SLP4TD-101402	10/14/02	10:30
E93R5	006	W48101402	10/14/02	10:30
E93TA	007	GAC-SLP4TFB-101402	10/14/02	10:30

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: PCJ-SLP6-101402

GC/MS Semivolatiles

Lot-Sample #...:	D2J150283-001	**Work Order #...:**	E93QH1AA	**Matrix.....:**	WG
Date Sampled...:	10/14/02	**Date Received..:**	10/15/02		
Prep Date.....:	10/17/02	**Analysis Date..:**	11/06/02		
Prep Batch #...:	2290155	**Analysis Time..:**	18:29		
Dilution Factor:	1				
		Method.....:	SW846 8270C SIM		

PARAMETER	RESULT	REPORTING LIMIT		UNITS
Acenaphthene	**80**	**5.7**		**ng/L**
Acenaphthylene	**16**	**4.8**		**ng/L**
Acridine	ND	6.2		ng/L
Anthracene	ND	4.2	3.4	ng/L
Benzo(a)anthracene	ND	4.3		ng/L
Benzo(b)fluoranthene	ND	4.7		ng/L
Benzo(k)fluoranthene	ND	4.1	3.9	ng/L
2,3-Benzofuran	ND	5.4		ng/L
Benzo(ghi)perylene	ND	6.2		ng/L
Benzo(a)pyrene	ND	2.5		ng/L
Benzo(e)pyrene	ND	4.3		ng/L
Benzo(b)thiophene	**2.7 J**	**5.2**		**ng/L**
Biphenyl	ND	6.6		ng/L
Carbazole	**8.9**	**3.8**		**ng/L**
Chrysene	ND	5.6		ng/L
Dibenzo(a,h)anthracene	ND	5.9		ng/L
Dibenzofuran	ND	5.7		ng/L
Dibenzothiophene	ND	4.1		ng/L
2,3-Dihydroindene	**59**	**5.0**		**ng/L**
Fluoranthene	ND	4.6		ng/L
Fluorene	**11**	**4.1**		**ng/L**
Indene	ND	4.7		ng/L
Indeno(1,2,3-cd)pyrene	ND	5.4		ng/L
Indole	ND	4.7		ng/L
2-Methylnaphthalene	ND	5.9		ng/L
1-Methylnaphthalene	ND	5.6		ng/L
Naphthalene	ND	8.6		ng/L
Perylene	ND	3.3		ng/L
Phenanthrene	ND	6.3	4.7	ng/L
Pyrene	ND	4.2		ng/L
Quinoline	ND	9.0		ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	30	(30 - 118)
Fluorene d-10	77	(41 - 162)
Naphthalene-d8	63	(30 - 108)

NOTE(S):

J Estimated result. Result is less than RL.

CITY OF ST. LOUIS PARK

Client Sample ID: GAC-SLP10T-101402

GC/MS Semivolatiles

Lot-Sample #...: D2J150283-002 **Work Order #...:** E93QT1AA **Matrix.....:** WG
Date Sampled...: 10/14/02 **Date Received..:** 10/15/02
Prep Date.....: 10/17/02 **Analysis Date..:** 11/06/02
Prep Batch #...: 2290155 **Analysis Time..:** 19:07
Dilution Factor: 1

Method.....: SW846 8270C SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
7,12-Dimethylbenz(a)-anthracene	ND	2.8	ng/L
3-Methylcholanthrene	ND	4.4 3.9	ng/L
Acenaphthene	ND	5.7	ng/L
Acenaphthylene	ND	4.8	ng/L
Acridine	ND	6.2	ng/L
Anthracene	ND	4.2	ng/L
Benzo(a)anthracene	ND	4.3	ng/L
Benzo(b)fluoranthene	ND	4.7	ng/L
Benzo(k)fluoranthene	ND	4.1	ng/L
2,3-Benzofuran	ND	5.4	ng/L
Benzo(ghi)perylene	ND	6.2	ng/L
Benzo(a)pyrene	ND	2.5	ng/L
Benzo(e)pyrene	ND	4.3	ng/L
Benzo(b)thiophene	ND	5.2	ng/L
Biphenyl	ND	5.6	ng/L
Carbazole	ND	3.8	ng/L
Chrysene	ND	5.6	ng/L
Dibenzo(a,h)anthracene	ND	5.9	ng/L
Dibenzofuran	ND	5.7	ng/L
Dibenzothiophene	ND	4.1	ng/L
2,3-Dihydroindene	ND	5.0	ng/L
Fluoranthene	ND	4.6	ng/L
Fluorene	ND	4.1	ng/L
Indene	ND	4.7	ng/L
Indeno(1,2,3-cd)pyrene	ND	5.4	ng/L
Indole	ND	4.7	ng/L
2-Methylnaphthalene	ND	5.9	ng/L
1-Methylnaphthalene	ND	5.6	ng/L
Naphthalene	ND	8.6	ng/L
Perylene	ND	3.3	ng/L
Phenanthrene	ND	6.3	ng/L
Pyrene	ND	4.2	ng/L
Quinoline	ND	9.0	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	36	(30 - 118)
Fluorene d-10	66	(41 - 162)
Naphthalene-d8	68	(30 - 108)

CITY OF ST. LOUIS PARK

Client Sample ID: GAC-SLP4T-101402

GC/MS Semivolatiles

Lot-Sample #...: D2J150283-003 **Work Order #...:** E93Q21AA **Matrix.....:** WG
Date Sampled...: 10/14/02 **Date Received..:** 10/15/02
Prep Date.....: 10/17/02 **Analysis Date..:** 11/06/02
Prep Batch #...: 2290155 **Analysis Time..:** 19:44
Dilution Factor: 1

Method.....: SW846 8270C SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
7,12-Dimethylbenz(a)-anthracene	ND	2.8	ng/L
3-Methylcholanthrene	ND	4.4	ng/L
Acenaphthene	ND	5.7	ng/L
Acenaphthylene	ND	4.8	ng/L
Acridine	ND	6.2	ng/L
Anthracene	ND	4.2	ng/L
Benzo(a)anthracene	ND	4.3	ng/L
Benzo(b)fluoranthene	ND	4.7	ng/L
Benzo(k)fluoranthene	ND	4.1	ng/L
2,3-Benzofuran	ND	5.4	ng/L
Benzo(ghi)perylene	ND	6.2	ng/L
Benzo(a)pyrene	ND	2.5	ng/L
Benzo(e)pyrene	ND	4.3	ng/L
Benzo(b)thiophene	ND	5.2	ng/L
Biphenyl	ND	5.6	ng/L
Carbazole	ND	3.8	ng/L
Chrysene	ND	5.6	ng/L
Dibenzo(a,h)anthracene	ND	5.9	ng/L
Dibenzofuran	ND	5.7	ng/L
Dibenzothiophene	ND	4.1	ng/L
2,3-Dihydroindene	ND	5.0	ng/L
Fluoranthene	ND	4.6	ng/L
Fluorene	ND	4.1	ng/L
Indene	ND	4.7	ng/L
Indeno(1,2,3-cd)pyrene	ND	5.4	ng/L
Indole	ND	4.7	ng/L
2-Methylnaphthalene	ND	5.9	ng/L
1-Methylnaphthalene	ND	5.6	ng/L
Naphthalene	ND	8.6	ng/L
Perylene	ND	3.3	ng/L
Phenanthrene	ND	6.3	ng/L
Pyrene	ND	4.2	ng/L
Quinoline	ND	9.0	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	15 *	(30 - 118)
Fluorene d-10	29 *	(41 - 162)
Naphthalene-d8	34	(30 - 108)

(Continued on next page)

CITY OF ST. LOUIS PARK

Client Sample ID: GAC-SLP4T-101402

GC/MS Semivolatiles

Lot-Sample #...: D2J150283-003 Work Order #...: E93Q21AA Matrix.....: WG

NOTE(S):

* Surrogate recovery is outside stated control limits.

CITY OF ST. LOUIS PARK

Client Sample ID: GAC-SLP4TD-101402

GC/MS Semivolatiles

Lot-Sample #...: D2J150283-004 **Work Order #...:** E93Q91AA **Matrix.....:** WG
Date Sampled...: 10/14/02 **Date Received..:** 10/15/02
Prep Date.....: 10/29/02 **Analysis Date..:** 11/07/02
Prep Batch #...: 2302566 **Analysis Time..:** 10:03
Dilution Factor: 1

Method.....: SW846 8270C SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
7,12-Dimethylbenz(a)-anthracene	ND	2.8	ng/L
3-Methylcholanthrene	ND	4.4	ng/L
Acenaphthene	ND	5.7	ng/L
Acenaphthylene	ND	4.8	ng/L
Acridine	ND	6.2	ng/L
Anthracene	ND	4.2	ng/L
Benzo(a)anthracene	ND	4.3	ng/L
Benzo(b)fluoranthene	ND	4.7	ng/L
Benzo(k)fluoranthene	ND	4.1	ng/L
2,3-Benzofuran	ND	5.4	ng/L
Benzo(ghi)perylene	ND	6.2	ng/L
Benzo(a)pyrene	ND	2.5	ng/L
Benzo(e)pyrene	ND	4.3	ng/L
Benzo(b)thiophene	ND	5.2	ng/L
Biphenyl	ND	5.6	ng/L
Carbazole	ND	3.8	ng/L
Chrysene	ND	5.6	ng/L
Dibenzo(a,h)anthracene	ND	5.9	ng/L
Dibenzofuran	ND	5.7	ng/L
Dibenzothiophene	ND	4.1	ng/L
2,3-Dihydroindene	ND	5.0	ng/L
Fluoranthene	ND	4.6	ng/L
Fluorene	ND	4.1	ng/L
Indene	ND	4.7	ng/L
Indeno(1,2,3-cd)pyrene	ND	5.4	ng/L
Indole	ND	4.7	ng/L
2-Methylnaphthalene	ND	5.9	ng/L
1-Methylnaphthalene	ND	5.6	ng/L
Naphthalene	ND	8.6	ng/L
Perylene	ND	3.3	ng/L
Phenanthrene	ND	6.3	ng/L
Pyrene	ND	4.2	ng/L
Quinoline	ND	9.0	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	47	(30 - 118)
Fluorene d-10	61	(41 - 162)
Naphthalene-d8	57	(30 - 108)

CITY OF ST. LOUIS PARK

Client Sample ID: W48101402

GC/MS Semivolatiles

Lot-Sample #...:	D2J150283-006	**Work Order #...:**	E93R51AA	**Matrix.....:**	WG
Date Sampled...:	10/14/02	**Date Received..:**	10/15/02		
Prep Date.....:	10/17/02	**Analysis Date..:**	11/06/02		
Prep Batch #...:	2290155	**Analysis Time..:**	21:36		
Dilution Factor:	1				
		Method.....:	SW846 8270C SIM		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	**79**	**5.7**	**ng/L**
Acenaphthylene	ND	4.8	ng/L
Acridine	**26**	**6.2**	**ng/L**
Anthracene	**6.8**	**4.2**	**ng/L**
Benzo(a)anthracene	ND	4.3	ng/L
Benzo(b)fluoranthene	ND	4.7	ng/L
Benzo(k)fluoranthene	ND	4.1	ng/L
2,3-Benzofuran	ND	5.4	ng/L
Benzo(ghi)perylene	ND	6.2	ng/L
Benzo(a)pyrene	ND	2.5	ng/L
Benzo(e)pyrene	ND	4.3	ng/L
Benzo(b)thiophene	**8.0**	**5.2**	**ng/L**
Biphenyl	ND	5.6	ng/L
Carbazole	**15**	**3.8**	**ng/L**
Chrysene	ND	5.6	ng/L
Dibenzo(a,h)anthracene	ND	5.9	ng/L
Dibenzofuran	ND	5.7	ng/L
Dibenzothiophene	ND	4.1	ng/L
2,3-Dihydroindene	**12**	**5.0**	**ng/L**
Fluoranthene	**4.4 J**	**4.6**	**ng/L**
Fluorene	ND	4.1	ng/L
Indene	**18**	**4.7**	**ng/L**
Indeno(1,2,3-cd)pyrene	ND	5.4	ng/L
Indole	ND	4.7	ng/L
2-Methylnaphthalene	ND	5.9	ng/L
1-Methylnaphthalene	**3.6 J**	**5.6**	**ng/L**
Naphthalene	**6.4 J**	**8.6**	**ng/L**
Perylene	ND	3.3	ng/L
Phenanthrene	ND	6.3	ng/L
Pyrene	**7.3**	**4.2**	**ng/L**
Quinoline	ND	9.0	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	43	(30 - 118)
Fluorene d-10	88	(41 - 162)
Naphthalene-d8	60	(30 - 108)

NOTE(S):

J Estimated result. Result is less than RL.

CITY OF ST. LOUIS PARK

Client Sample ID: GAC-SLP4TFB-101402

GC/MS Semivolatiles

Lot-Sample #...: D2J150283-007 **Work Order #...:** E93TA1AA **Matrix.....:** WG
Date Sampled...: 10/14/02 **Date Received..:** 10/15/02
Prep Date.....: 10/17/02 **Analysis Date..:** 11/06/02
Prep Batch #...: 2290155 **Analysis Time..:** 22:13
Dilution Factor: 1

Method.....: SW846 8270C SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
7,12-Dimethylbenz(a)-anthracene	ND	2.8	ng/L
3-Methylcholanthrene	ND	4.4	ng/L
Acenaphthene	ND	5.7	ng/L
Acenaphthylene	ND	4.8	ng/L
Acridine	ND	6.2	ng/L
Anthracene	ND	4.2	ng/L
Benzo(a)anthracene	ND	4.3	ng/L
Benzo(b)fluoranthene	ND	4.7	ng/L
Benzo(k)fluoranthene	ND	4.1	ng/L
2,3-Benzofuran	ND	5.4	ng/L
Benzo(ghi)perylene	ND	6.2	ng/L
Benzo(a)pyrene	ND	2.5	ng/L
Benzo(e)pyrene	ND	4.3	ng/L
Benzo(b)thiophene	ND	5.2	ng/L
Biphenyl	ND	5.6	ng/L
Carbazole	**7.2**	**3.8**	**ng/L**
Chrysene	ND	5.6	ng/L
Dibenzo(a,h)anthracene	ND	5.9	ng/L
Dibenzofuran	ND	5.7	ng/L
Dibenzothiophene	ND	4.1	ng/L
2,3-Dihydroindene	ND	5.0	ng/L
Fluoranthene	ND	4.6	ng/L
Fluorene	ND	4.1	ng/L
Indene	ND	4.7	ng/L
Indeno(1,2,3-cd)pyrene	ND	5.4	ng/L
Indole	ND	4.7	ng/L
2-Methylnaphthalene	ND	5.9	ng/L
1-Methylnaphthalene	ND	5.6	ng/L
Naphthalene	ND	8.6	ng/L
Perylene	ND	3.3	ng/L
Phenanthrene	ND	6.3	ng/L
Pyrene	ND	4.2	ng/L
Quinoline	ND	9.0	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	66	(30 - 118)
Fluorene d-10	56	(41 - 162)
Naphthalene-d8	62	(30 - 108)

QC DATA ASSOCIATION SUMMARY

D2J150283

Sample Preparation and Analysis Control Numbers

SAMPLE#	MATRIX	ANALYTICAL METHOD	LEACH BATCH #	PREP BATCH #	MS RUN#
001	WG	SW846 8270C SIM		2290155	2290060
002	WG	SW846 8270C SIM		2290155	2290060
003	WG	SW846 8270C SIM		2290155	2290060
004	WG	SW846 8270C SIM		2302566	
006	WG	SW846 8270C SIM		2290155	2290060
007	WG	SW846 8270C SIM		2290155	2290060

METHOD BLANK REPORT

GC/MS Semivolatiles

Client Lot #...: D2J150283 **Work Order #...:** E962N1AA **Matrix.....:** WATER
MB Lot-Sample #: D2J170000-155

Prep Date.....: 10/17/02 **Analysis Time..:** 15:21
Analysis Date..: 11/06/02 **Prep Batch #...:** 2290155
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
7,12-Dimethylbenz(a)-anthracene	ND	2.8	ng/L	SW846 8270C SIM
3-Methylcholanthrene	ND	4.4	ng/L	SW846 8270C SIM
Acenaphthene	ND	5.7	ng/L	SW846 8270C SIM
Acenaphthylene	ND	4.8	ng/L	SW846 8270C SIM
Acridine	ND	6.2	ng/L	SW846 8270C SIM
Anthracene	ND	4.2	ng/L	SW846 8270C SIM
Benzo(a)anthracene	ND	4.3	ng/L	SW846 8270C SIM
Benzo(b)fluoranthene	ND	4.7	ng/L	SW846 8270C SIM
Benzo(k)fluoranthene	ND	4.1	ng/L	SW846 8270C SIM
2,3-Benzofuran	ND	5.4	ng/L	SW846 8270C SIM
Benzo(ghi)perylene	ND	6.2	ng/L	SW846 8270C SIM
Benzo(a)pyrene	ND	2.5	ng/L	SW846 8270C SIM
Benzo(e)pyrene	ND	4.3	ng/L	SW846 8270C SIM
Benzo(b)thiophene	ND	5.2	ng/L	SW846 8270C SIM
Biphenyl	ND	5.6	ng/L	SW846 8270C SIM
Carbazole	ND	3.8	ng/L	SW846 8270C SIM
Chrysene	ND	5.6	ng/L	SW846 8270C SIM
Dibenzo(a,h)anthracene	ND	5.9	ng/L	SW846 8270C SIM
Dibenzofuran	ND	5.7	ng/L	SW846 8270C SIM
Dibenzothiophene	ND	4.1	ng/L	SW846 8270C SIM
2,3-Dihydroindene	ND	5.0	ng/L	SW846 8270C SIM
Fluoranthene	ND	4.6	ng/L	SW846 8270C SIM
Fluorene	ND	4.1	ng/L	SW846 8270C SIM
Indene	ND	4.7	ng/L	SW846 8270C SIM
Indeno(1,2,3-cd)pyrene	ND	5.4	ng/L	SW846 8270C SIM
Indole	ND	4.7	ng/L	SW846 8270C SIM
2-Methylnaphthalene	ND	5.9	ng/L	SW846 8270C SIM
1-Methylnaphthalene	ND	5.6	ng/L	SW846 8270C SIM
Naphthalene	ND	8.6	ng/L	SW846 8270C SIM
Perylene	ND	3.3	ng/L	SW846 8270C SIM
Phenanthrene	ND	6.3	ng/L	SW846 8270C SIM
Pyrene	ND	4.2	ng/L	SW846 8270C SIM
Quinoline	ND	9.0	ng/L	SW846 8270C SIM

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	46	(30 - 118)
Fluorene d-10	30 *	(41 - 162)
Naphthalene-d8	39	(30 - 108)

(Continued on next page)

METHOD BLANK REPORT

GC/MS Semivolatiles

Client Lot #...: D2J150283 Work Order #...: E962N1AA Matrix.....: WATER

NOTE(S):

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

* Surrogate recovery is outside stated control limits.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: D2J150283 Work Order #...: E962N1AC Matrix.....: WATER
LCS Lot-Sample#: D2J170000-155
Prep Date.....: 10/17/02 Analysis Date..: 11/06/02
Prep Batch #...: 2290155 Analysis Time..: 15:58
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD
Benzo(e)pyrene	**48**	**(30 - 150)**	**SW846 8270C SIM**
Chrysene	**40**	**(30 - 132)**	**SW846 8270C SIM**
Fluorene	**43**	**(30 - 132)**	**SW846 8270C SIM**
Indene	**49**	**(30 - 150)**	**SW846 8270C SIM**
2-Methylnaphthalene	**45**	**(30 - 150)**	**SW846 8270C SIM**
Naphthalene	**50**	**(30 - 150)**	**SW846 8270C SIM**
Quinoline	**33**	**(30 - 150)**	**SW846 8270C SIM**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	55	(30 - 118)
Fluorene d-10	37 *	(41 - 162)
Naphthalene-d8	49	(30 - 108)

NOTE(S):

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

Bold print denotes control parameters

* Surrogate recovery is outside stated control limits.

LABORATORY CONTROL SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #...: D2J150283 Work Order #...: E962N1AC Matrix.....: WATER
LCS Lot-Sample#: D2J170000-155
Prep Date.....: 10/17/02 Analysis Date..: 11/06/02
Prep Batch #...: 2290155 Analysis Time..: 15:58
Dilution Factor: 1

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD
Benzo(e)pyrene	**10.0**	**4.77**	**ng/L**	**48**	**SW846 8270C S**
Chrysene	**10.0**	**4.05**	**ng/L**	**40**	**SW846 8270C S**
Fluorene	**10.0**	**4.31**	**ng/L**	**43**	**SW846 8270C S**
Indene	**10.0**	**4.88**	**ng/L**	**49**	**SW846 8270C S**
2-Methylnaphthalene	**10.0**	**4.50**	**ng/L**	**45**	**SW846 8270C S**
Naphthalene	**10.0**		**ng/L**	**50**	**SW846 8270C S**
Quinoline	**10.0**	**3.26**	**ng/L**	**33**	**SW846 8270C S**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	55	(30 - 118)
Fluorene d-10	37 *	(41 - 162)
Naphthalene-d8	49	(30 - 108)

NOTE(S):

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

Bold print denotes control parameters

* Surrogate recovery is outside stated control limits.

MATRIX SPIKE SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: D2J150283 **Work Order #...:** E93Q21AC-MS **Matrix.....:** WG
MS Lot-Sample #: D2J150283-003 E93Q21AD-MSD
Date Sampled...: 10/14/02 **Date Received..:** 10/15/02
Prep Date.....: 10/17/02 **Analysis Date..:** 11/06/02
Prep Batch #...: 2290155 **Analysis Time..:** 20:21
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Benzo(e)pyrene	**14 a**	**(30 - 150)**			**SW846 8270C SIM**
	0.0 a,p	**(30 - 150)**	**200**	**(0-50)**	**SW846 8270C SIM**
Chrysene	**26 a**	**(30 - 132)**			**SW846 8270C SIM**
	13 a,p	**(30 - 132)**	**60**	**(0-50)**	**SW846 8270C SIM**
Fluorene	**43**	**(30 - 132)**			**SW846 8270C SIM**
	42	**(30 - 132)**	**4.2**	**(0-50)**	**SW846 8270C SIM**
Indene	**40**	**(30 - 150)**			**SW846 8270C SIM**
	35	**(30 - 150)**	**6.9**	**(0-50)**	**SW846 8270C SIM**
2-Methylnaphthalene	**43**	**(30 - 150)**			**SW846 8270C SIM**
	40	**(30 - 150)**	**1.2**	**(0-50)**	**SW846 8270C SIM**
Naphthalene	**51**	**(30 - 150)**			**SW846 8270C SIM**
	44	**(30 - 150)**	**8.5**	**(0-50)**	**SW846 8270C SIM**
Quinoline	**30**	**(30 - 150)**			**SW846 8270C SIM**
	28 a	**(30 - 150)**	**0.65**	**(0-50)**	**SW846 8270C SIM**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	24 *	(30 - 118)
	13 *	(30 - 118)
Fluorene d-10	34 *	(41 - 162)
	32 *	(41 - 162)
Naphthalene-d8	41	(30 - 108)
	37	(30 - 108)

NOTE(S):

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

Bold print denotes control parameters

* Surrogate recovery is outside stated control limits.

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 #...: D2J150283 Work Order #...: E93Q21AC-MS Matrix.....: WG
MS Lot-Sample #: D2J150283-003 E93Q21AD-MSD
Date Sampled...: 10/14/02 Date Received..: 10/15/02
Prep Date.....: 10/17/02 Analysis Date..: 11/06/02
Prep Batch #...: 2290155 Analysis Time..: 20:21
Dilution Factor: 1

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD
Benzo(e)pyrene	**ND**	**10.0**	**1.39**	**ng/L**	**14 a**		**SW846 8270C SIM**
	ND	**10.8U**	**0.0**	**ng/L**	**0.0**	**200**	**SW846 8270C SIM**
	Qualifiers:		a,p				
Chrysene	**ND**	**10.0**	**2.56**	**ng/L**	**26 a**		**SW846 8270C SIM**
	ND	**10.8**		**ng/L**	**13 a,p**	**60**	**SW846 8270C SIM**
Fluorene	**ND**	**10.0**	**4.30**	**ng/L**	**43**		**SW846 8270C SIM**
	ND	**10.8**	**4.49**	**ng/L**	**42**	**4.2**	**SW846 8270C SIM**
Indene	**ND**	**10.0**	**4.00**	**ng/L**	**40**		**SW846 8270C SIM**
	ND	**10.8**	**3.74**	**ng/L**	**35**	**6.9**	**SW846 8270C SIM**
2-Methylnaphthalene	**ND**	**10.0**	**4.32**	**ng/L**	**43**		**SW846 8270C SIM**
	ND	**10.8**	**4.27**	**ng/L**	**40**	**1.2**	**SW846 8270C SIM**
Naphthalene	**ND**	**10.0**		**ng/L**	**51**		**SW846 8270C SIM**
	ND	**10.8**		**ng/L**	**44**	**8.5**	**SW846 8270C SIM**
Quinoline	**ND**	**10.0**	**3.03**	**ng/L**	**30**		**SW846 8270C SIM**
	ND	**10.8**	**3.05**	**ng/L**	**28 a**	**0.65**	**SW846 8270C SIM**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	24 *	(30 - 118)
	13 *	(30 - 118)
Fluorene d-10	34 *	(41 - 162)
	32 *	(41 - 162)
Naphthalene-d8	41	(30 - 108)
	37	(30 - 108)

NOTE(S):

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

Bold print denotes control parameters

* Surrogate recovery is outside stated control limits.

a Spiked analyte recovery is outside stated control limits.

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

METHOD BLANK REPORT

GC/MS Semivolatiles

Client Lot #...: D2J150283 **Work Order #...:** FA2QG1AA **Matrix.....:** WATER
MB Lot-Sample #: D2J290000-566

Prep Date.....: 10/29/02 **Analysis Time..:** 01:18
Analysis Date..: 11/07/02 **Prep Batch #...:** 2302566
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
7,12-Dimethylbenz(a)-anthracene	ND	2.8	ng/L	SW846 8270C SIM
3-Methylcholanthrene	ND	4.4	ng/L	SW846 8270C SIM
Acenaphthene	ND	5.7	ng/L	SW846 8270C SIM
Acenaphthylene	ND	4.8	ng/L	SW846 8270C SIM
Acridine	ND	6.2	ng/L	SW846 8270C SIM
Anthracene	ND	4.2	ng/L	SW846 8270C SIM
Benzo(a)anthracene	ND	4.3	ng/L	SW846 8270C SIM
Benzo(b)fluoranthene	ND	4.7	ng/L	SW846 8270C SIM
Benzo(k)fluoranthene	ND	4.1	ng/L	SW846 8270C SIM
2,3-Benzofuran	ND	5.4	ng/L	SW846 8270C SIM
Benzo(ghi)perylene	ND	6.2	ng/L	SW846 8270C SIM
Benzo(a)pyrene	ND	2.5	ng/L	SW846 8270C SIM
Benzo(e)pyrene	ND	4.3	ng/L	SW846 8270C SIM
Benzo(b)thiophene	ND	5.2	ng/L	SW846 8270C SIM
Biphenyl	ND	5.6	ng/L	SW846 8270C SIM
Carbazole	**7.7**	**3.8**	**ng/L**	**SW846 8270C SIM**
Chrysene	ND	5.6	ng/L	SW846 8270C SIM
Dibenzo(a,h)anthracene	ND	5.9	ng/L	SW846 8270C SIM
Dibenzofuran	ND	5.7	ng/L	SW846 8270C SIM
Dibenzothiophene	ND	4.1	ng/L	SW846 8270C SIM
2,3-Dihydroindene	ND	5.0	ng/L	SW846 8270C SIM
Fluoranthene	ND	4.6	ng/L	SW846 8270C SIM
Fluorene	ND	4.1	ng/L	SW846 8270C SIM
Indene	ND	4.7	ng/L	SW846 8270C SIM
Indeno(1,2,3-cd)pyrene	ND	5.4	ng/L	SW846 8270C SIM
Indole	ND	4.7	ng/L	SW846 8270C SIM
2-Methylnaphthalene	ND	5.9	ng/L	SW846 8270C SIM
1-Methylnaphthalene	ND	5.6	ng/L	SW846 8270C SIM
Naphthalene	ND	8.6	ng/L	SW846 8270C SIM
Perylene	ND	3.3	ng/L	SW846 8270C SIM
Phenanthrene	ND	6.3	ng/L	SW846 8270C SIM
Pyrene	ND	4.2	ng/L	SW846 8270C SIM
Quinoline	ND	9.0	ng/L	SW846 8270C SIM

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	88	(30 - 118)
Fluorene d-10	56	(41 - 162)
Naphthalene-d8	66	(30 - 108)

(Continued on next page)

METHOD BLANK REPORT

GC/MS Semivolatiles

Client Lot #...: D2J150283 Work Order #...: FA2QG1AA Matrix.....: WATER

NOTE(S):

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

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: D2J150283 **Work Order #...:** FA2QG1AC **Matrix.....:** WATER
LCS Lot-Sample#: D2J290000-566
Prep Date.....: 10/29/02 **Analysis Date..:** 11/07/02
Prep Batch #...: 2302566 **Analysis Time..:** 01:55
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD
Benzo(e)pyrene	**65**	**(30 - 150)**	**SW846 8270C SIM**
Chrysene	**66**	**(30 - 132)**	**SW846 8270C SIM**
Fluorene	**74**	**(30 - 132)**	**SW846 8270C SIM**
Indene	**66**	**(30 - 150)**	**SW846 8270C SIM**
2-Methylnaphthalene	**71**	**(30 - 150)**	**SW846 8270C SIM**
Naphthalene	**77**	**(30 - 150)**	**SW846 8270C SIM**
Quinoline	**72**	**(30 - 150)**	**SW846 8270C SIM**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	85	(30 - 118)
Fluorene d-10	61	(41 - 162)
Naphthalene-d8	74	(30 - 108)

NOTE(S):

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

Bold print denotes control parameters

LABORATORY CONTROL SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #...: D2J150283 Work Order #...: FA2QG1AC Matrix.....: WATER
LCS Lot-Sample#: D2J290000-566
Prep Date.....: 10/29/02 Analysis Date..: 11/07/02
Prep Batch #...: 2302566 Analysis Time..: 01:55
Dilution Factor: 1

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD
Benzo(e)pyrene	**10.0**	**6.48**	**ng/L**	**65**	**SW846 8270C S**
Chrysene	**10.0**	**6.55**	**ng/L**	**66**	**SW846 8270C S**
Fluorene	**10.0**	**7.37**	**ng/L**	**74**	**SW846 8270C S**
Indene	**10.0**	**6.60**	**ng/L**	**66**	**SW846 8270C S**
2-Methylnaphthalene	**10.0**	**7.08**	**ng/L**	**71**	**SW846 8270C S**
Naphthalene	**10.0**	**7.70**	**ng/L**	**77**	**SW846 8270C S**
Quinoline	**10.0**	**7.16**	**ng/L**	**72**	**SW846 8270C S**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	85	(30 - 118)
Fluorene d-10	61	(41 - 162)
Naphthalene-d8	74	(30 - 108)

NOTE(S):

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

Bold print denotes control parameters

Chain of Custody Record

[redacted]

1.1C

ϕ 10/15

SEVERN TRENT SERVICES

Severn Trent Laboratories, Inc.

STL-4124 (0901)

Client: CITY OF ST. LOUIS PARK UTILITY DIVISION 3752 WOODDALE AVENUE ST. LOUIS PARK, MN 55416	Project Manager: SCOTT ANDERSON	Date: 10-14-02	Chain of Custody Number: 150733
Address	Telephone Number (Area Code)/Fax Number: 924-2557 (952)	Lab Number	Page ____ of ____
City	Site Contact: SAME / Lab Contact		
Project Name and Location (State): SAME	Carrier/Waybill Number: FED EX 8068241204		
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Matrix: Aqueous	Matrix: Sed.	Matrix: Soil		Containers & Preservatives: Unpres	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH		Analysis (Attach list if more space is needed): PPT PAH 5											Special Instructions/ Conditions of Receipt
PCJ-SLPG-101402	10-14-02	12:30		X				X						6	X											PPT 5

Possible Hazard Identification: [X] Non-Hazard [ ] Flammable [ ] Skin Irritant [ ] Poison B [ ] Unknown

Sample Disposal: [ ] Return To Client [X] Disposal By Lab [ ] Archive For ____ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required: [ ] 24 Hours [ ] 48 Hours [ ] 7 Days [ ] 14 Days [ ] 21 Days [ ] Other____

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished By	10-14-02	1400	1. Received By [signature]	10/15/02	0830
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

27

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

[redacted]

Chain of Custody Record

SEVERN TRENT SERVICES

Severn Trent Laboratories, Inc.

STL-4124 (0901)

Client: CITY OF ST. LOUIS PARK UTILITY DIVISION 3752 WOODDALE AVENUE ST. LOUIS PARK, MN 55416	Project Manager: SCOTT ANDERSON	Date: 10-14-02	Chain of Custody Number: 150732
Address	Telephone Number (Area Code)/Fax Number: 924-2557 (952) 924-2570	Lab Number	Page ____ of ____
City	Site Contact: SAME / Lab Contact		
Project Name and Location (State): SAME	Carrier/Waybill Number: FED EX 8068241204		
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil		Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH		Analysis (Attach list if more space is needed): PPG PAH 5	Special Instructions/ Conditions of Receipt
BAC-SLP10T-101402 e#0014	10-14-02	12:00		X				X						6	X	EXTENDED LIST OF PAH 5

Possible Hazard Identification: ☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return To Client ☒ Disposal By Lab ☐ Archive For ____ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required: ☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other____

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished By: MJH	10-14-02	1400	1. Received By: [signature]	10/15/02	0830
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

28

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

Chain of Custody Record

STL-4124 (0901)

SEVERN TRENT SERVICES

Severn Trent Laboratories, Inc.

Client: CITY OF ST. LOUIS PARK UTILITY DIVISION 3752 WOODDALE AVENUE ST. LOUIS PARK, MN 55416	Project Manager: SCOTT ANDERSON	Date: 10-14-02	Chain of Custody Number: 150729
Address:	Telephone Number (Area Code)/Fax Number: 924-2557 (952) 924-2570	Lab Number:	Page ____ of ____
City:	Site Contact: SAME / Lab Contact:		
Project Name and Location (State): SAME	Carrier/Waybill Number: FED EX 8068241204		
Contract/Purchase Order/Quote No.:			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Matrix: Aqueous	Matrix: Sed.	Matrix: Soil	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH		Analysis (Attach list if more space is needed): PPT PAH 5	Special Instructions/ Conditions of Receipt
GAC-SLP4T-101402 C# 0007	10-14-02	10:30		X			X						6	X	EXTENDED
GAC-SLP4TD-101402															LIST OF PAH 5
GAC-SLP4TMS-101402 C# 0015															
GAC-SLP4TMSD-101402															
GAC-SLP4TFB-101402 C# 0005	10-14-02	10:30		X			X						6	X	EXTENDED PAH 5

Possible Hazard Identification: ☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return To Client ☒ Disposal By Lab ☐ Archive For ____ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required: ☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other ____

QC Requirements (Specify):

	Date	Time		Date	Time
1. Relinquished By: [signature]	10-14-02	1400	1. Received By: [signature]	10/14/02	0830
2. Relinquished By:			2. Received By:		
3. Relinquished By:			3. Received By:		

Comments:

29

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

Chain of Custody Record

1.27
93
10/15

SEVERN TRENT SERVICES

Severn Trent Laboratories, Inc.

STL-4124 (0901)

Client: City of St. Louis Park	Project Manager: Scott Anderson	Date: 10/14/02	Chain of Custody Number: 150726
Address: 3752 Wooddale Ave	Telephone Number (Area Code)/Fax Number: 952-924-2557	Lab Number	Page 1 of 1
City: St. Louis Park; State: MN; Zip Code: 55416	Site Contact	Lab Contact: Brian Stringer	
Project Name and Location (State): Reilly	Carrier/Waybill Number		
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil		Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH		Analysis (Attach list if more space is needed): PAH PPT-5											Special Instructions/ Conditions of Receipt
W48 101402	10/14/02	1030		X				6							X											

Possible Hazard Identification: ☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required: ☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other_____

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished By: [signature]	10/14/02	1100	1. Received By: [signature]	10/15/02	0830
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

HH

SEVERN TRENT SERVICES

Severn Trent Laboratories, Inc.

ANALYTICAL REPORT

City of St. Louis Park

Project: Reilly Tar & Chemical Corporation

Lot #: D2J290291

Mr. Scott Anderson

City of St. Louis Park
Utility Division
3752 Wooddale Avenue
St. Louis Park, MN 55416

STL DENVER

Brian Stringer
Project Manager

November 14, 2002

HH

Table Of Contents

Standard Deliverable

Report Contents

- Table of Contents
- Case Narrative
- Executive Summary – Detection Highlights
- Analytical Method Summary
- Method/ Analyst Summary
- Sample Summary
- Analytical Results by Sample
- QC Data Association Summary
- Chain-of-Custody

Total Number of Pages 13

CASE NARRATIVE

STL Lot Number D2J290291

Introduction

STL Denver received one aqueous sample on October 25, 2002 for PAH ppb full scan analysis.

The cooler temperature was 8.3°C. The client was contacted and instructed the lab to proceed. All containers were received in acceptable condition.

Data Quality Assessment

The results included in this report have been reviewed for compliance with STL Denver's Laboratory Quality Manual. The test results shown in this report meet all requirements of NELAC and any exceptions are noted below.

Dilution factors and footnotes have been provided to assist in the interpretation of the results. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at concentrations above the linear calibration curve, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

STL utilizes USEPA approved methods in all analytical work. The samples presented in this report were analyzed for the parameters listed on the analytical methods summary page in accordance with the methods indicated.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Polynuclear Aromatic Hydrocarbons – Method 8270C

A project-specific lower acceptable recovery limit of 30% for all QC samples and surrogates has been designated for analytical work performed under the 2002 Quality Assurance Project Plan (QAPP) for the Reilly Industries, Inc. NPL Site. This lower limit is used for this project, rather than historically generated lower recovery limits. All recoveries in this report are above the 30% minimum threshold with the exceptions noted below.

A MS/MSD associated with batch 2304162 was not requested and the laboratory was unable to designate one due to limited sample volume.

Case Narrative for D2J290291 (continued)

Data Completeness for Polynuclear Aromatic Hydrocarbons – Method 8270C

The results contained in the report were reviewed relative to data acceptance criteria as specified in the 2002 QAPP. Based on the exceptions noted we achieved 100.00% completeness.

DATA COMPLETENESS CALCULATION		
LOT D2J290291		
ANALYSIS	PAHs by SW846-8270C	
QC Parameter	**Data Planned**	**Valid Data Obtained**
Method Blank	31	31
MB Surrogates	3	3
LCS	7	7
LCS Surrogates	3	3
FB	NA	NA
MS	NA	NA
MS Surrogates	NA	NA
MSD	NA	NA
MSD Surrogates	NA	NA
MS/MSD RPD	NA	NA
Sample/Dup. RPD	NA	NA
Sample Surrogates	3	3
Internal STD Area	3	3
TOTAL	**50**	**50**
% Completeness	**100.00%**	

*A MS/MSD, Field Blank, and Sample Duplicate were not received.

EXECUTIVE SUMMARY - Detection Highlights

D2J290291

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
DPV-W421-102402 10/24/02 15:30 001				
Acenaphthene	54	10	ug/L	SW846 8270C
Acridine	1.6 J	10	ug/L	SW846 8270C
Anthracene	3.4 J	10	ug/L	SW846 8270C
Benzo(a)anthracene	3.0 J	10	ug/L	SW846 8270C
Benzo(k)fluoranthene	2.1 J	10	ug/L	SW846 8270C
Benzo(e)pyrene	1.3 J	10	ug/L	SW846 8270C
Benzo(b)thiophene	29	10	ug/L	SW846 8270C
Biphenyl	5.6 J	10	ug/L	SW846 8270C
Carbazole	30	10	ug/L	SW846 8270C
Chrysene	2.7 J	10	ug/L	SW846 8270C
Dibenzofuran	14	10	ug/L	SW846 8270C
Dibenzothiophene	2.8 J	10	ug/L	SW846 8270C
2,3-Dihydroindene	110	10	ug/L	SW846 8270C
Fluoranthene	14	10	ug/L	SW846 8270C
Fluorene	24	10	ug/L	SW846 8270C
Indene	29	10	ug/L	SW846 8270C
2-Methylnaphthalene	12	10	ug/L	SW846 8270C
1-Methylnaphthalene	50	10	ug/L	SW846 8270C
Naphthalene	110	10	ug/L	SW846 8270C
Phenanthrene	30	10	ug/L	SW846 8270C
Pyrene	9.5 J	10	ug/L	SW846 8270C

METHODS SUMMARY

D2J290291

PARAMETER	ANALYTICAL METHOD	PREPARATION METHOD
Semivolatile Organic Compounds by GC/MS	SW846 8270C	SW846 3520C

References:

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

METHOD / ANALYST SUMMARY

D2J290291

ANALYTICAL METHOD	ANALYST	ANALYST ID
SW846 8270C	Tim O'Donnell	000443

References:

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

SAMPLE SUMMARY

D2J290291

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
FA2P3	001	DPV-W421-102402	10/24/02	15:30

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: DPV-W421-102402

GC/MS Semivolatiles

Lot-Sample #...: D2J290291-001 Work Order #...: FA2P31AA Matrix.....: WG
Date Sampled...: 10/24/02 Date Received..: 10/25/02
Prep Date.....: 10/31/02 Analysis Date..: 11/11/02
Prep Batch #...: 2304162 Analysis Time..: 20:03
Dilution Factor: 1

Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthene	**54**	**10**	**ug/L**
Acenaphthylene	ND	10	ug/L
Acridine	**1.6 J**	**10**	**ug/L**
Anthracene	**3.4 J**	**10**	**ug/L**
Benzo(a)anthracene	**3.0 J**	**10**	**ug/L**
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	**2.1 J**	**10**	**ug/L**
2,3-Benzofuran	ND	10	ug/L
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Benzo(e)pyrene	**1.3 J**	**10**	**ug/L**
Benzo(b)thiophene	**29**	**10**	**ug/L**
Biphenyl	**5.6 J**	**10**	**ug/L**
Carbazole	**30**	**10**	**ug/L**
Chrysene	**2.7 J**	**10**	**ug/L**
Dibenzo(a,h)anthracene	ND	10	ug/L
Dibenzofuran	**14**	**10**	**ug/L**
Dibenzothiophene	**2.8 J**	**10**	**ug/L**
2,3-Dihydroindene	**110**	**10**	**ug/L**
Fluoranthene	**14**	**10**	**ug/L**
Fluorene	**24**	**10**	**ug/L**
Indene	**29**	**10**	**ug/L**
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Indole	ND	10	ug/L
2-Methylnaphthalene	**12**	**10**	**ug/L**
1-Methylnaphthalene	**50**	**10**	**ug/L**
Naphthalene	**110**	**10**	**ug/L**
Perylene	ND	10	ug/L
Phenanthrene	**30**	**10**	**ug/L**
Pyrene	**9.5 J**	**10**	**ug/L**
Quinoline	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	60	(30 - 160)
Fluorene d-10	64	(36 - 127)
Naphthalene-d8	76	(37 - 107)

NOTE(S):

J Estimated result. Result is less than RL.

QC DATA ASSOCIATION SUMMARY

D2J290291

Sample Preparation and Analysis Control Numbers

SAMPLE#	MATRIX	ANALYTICAL METHOD	LEACH BATCH #	PREP BATCH #	MS RUN#
001	WG	SW846 8270C		2304162	

METHOD BLANK REPORT

GC/MS Semivolatiles

Client Lot #...: D2J290291 Work Order #...: FA45A1AA Matrix.....: WATER
MB Lot-Sample #: D2J310000-162

Prep Date.....: 10/31/02 Analysis Time..: 17:32
Analysis Date..: 11/11/02 Prep Batch #...: 2304162
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Acenaphthene	ND	10	ug/L	SW846 8270C
Acenaphthylene	ND	10	ug/L	SW846 8270C
Acridine	ND	10	ug/L	SW846 8270C
Anthracene	ND	10	ug/L	SW846 8270C
Benzo(a)anthracene	ND	10	ug/L	SW846 8270C
Benzo(b)fluoranthene	ND	10	ug/L	SW846 8270C
Benzo(k)fluoranthene	ND	10	ug/L	SW846 8270C
2,3-Benzofuran	ND	10	ug/L	SW846 8270C
Benzo(ghi)perylene	ND	10	ug/L	SW846 8270C
Benzo(a)pyrene	ND	10	ug/L	SW846 8270C
Benzo(e)pyrene	ND	10	ug/L	SW846 8270C
Benzo(b)thiophene	ND	10	ug/L	SW846 8270C
Biphenyl	ND	10	ug/L	SW846 8270C
rbazole	ND	10	ug/L	SW846 8270C
ysene	ND	10	ug/L	SW846 8270C
Dibenzo(a,h)anthracene	ND	10	ug/L	SW846 8270C
Dibenzofuran	ND	10	ug/L	SW846 8270C
Dibenzothiophene	ND	10	ug/L	SW846 8270C
2,3-Dihydroindene	ND	10	ug/L	SW846 8270C
Fluoranthene	ND	10	ug/L	SW846 8270C
Fluorene	ND	10	ug/L	SW846 8270C
Indene	ND	10	ug/L	SW846 8270C
Indeno(1,2,3-cd)pyrene	ND	10	ug/L	SW846 8270C
Indole	ND	10	ug/L	SW846 8270C
2-Methylnaphthalene	ND	10	ug/L	SW846 8270C
1-Methylnaphthalene	ND	10	ug/L	SW846 8270C
Naphthalene	ND	10	ug/L	SW846 8270C
Perylene	ND	10	ug/L	SW846 8270C
Phenanthrene	ND	10	ug/L	SW846 8270C
Pyrene	ND	10	ug/L	SW846 8270C
Quinoline	ND	10	ug/L	SW846 8270C

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	92	(30 - 160)
Fluorene d-10	57	(36 - 127)
Naphthalene-d8	71	(37 - 107)

NOTE(S):

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

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: D2J290291 **Work Order #...:** FA45A1AC **Matrix.....:** WATER
LCS Lot-Sample#: D2J310000-162
Prep Date.....: 10/31/02 **Analysis Date..:** 11/11/02
Prep Batch #...: 2304162 **Analysis Time..:** 18:10
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD
Benzo(e)pyrene	**74**	**(30 - 150)**	**SW846 8270C**
Chrysene	**78**	**(43 - 124)**	**SW846 8270C**
Fluorene	**66**	**(51 - 120)**	**SW846 8270C**
Indene	**58**	**(49 - 108)**	**SW846 8270C**
2-Methylnaphthalene	**55**	**(47 - 138)**	**SW846 8270C**
Naphthalene	**62**	**(43 - 128)**	**SW846 8270C**
Quinoline	**54**	**(40 - 126)**	**SW846 8270C**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	84	(30 - 160)
Fluorene d-10	53	(36 - 127)
Naphthalene-d8	62	(37 - 107)

NOTE(S):

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

Bold print denotes control parameters

LABORATORY CONTROL SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #...: D2J290291 **Work Order #...:** FA45A1AC **Matrix.....:** WATER
LCS Lot-Sample#: D2J310000-162
Prep Date.....: 10/31/02 **Analysis Date..:** 11/11/02
Prep Batch #...: 2304162 **Analysis Time..:** 18:10
Dilution Factor: 1

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD
Benzo(e)pyrene	**50.0**	**37.2**	**ug/L**	**74**	**SW846 8270C**
Chrysene	**50.0**	**39.1**	**ug/L**	**78**	**SW846 8270C**
Fluorene	**50.0**	**32.8**	**ug/L**	**66**	**SW846 8270C**
Indene	**50.0**	**29.0**	**ug/L**	**58**	**SW846 8270C**
2-Methylnaphthalene	**50.0**	**27.4**	**ug/L**	**55**	**SW846 8270C**
Naphthalene	**50.0**	**30.9**	**ug/L**	**62**	**SW846 8270C**
Quinoline	**50.0**	**27.2**	**ug/L**	**54**	**SW846 8270C**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	84	(30 - 160)
Fluorene d-10	53	(36 - 127)
Naphthalene-d8	62	(37 - 107)

NOTE(S):

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

Bold print denotes control parameters

Chain of Custody Record

SEVERN TRENT SERVICES

Severn Trent Laboratories, Inc.

STL-4124 (0901)

Client: City of St. Louis Park - Utility	Project Manager: Scott Anderson	Date: 10-24-02	Chain of Custody Number: 150734
Address: 3752 Woodbale Ave	Telephone Number (Area Code)/Fax Number: 952-924-2557	Lab Number:	Page ____ of ____
City: St. Louis Park; State: MN; Zip Code: 55416	Site Contact:	Lab Contact:	
Project Name and Location (State):	Carrier/Waybill Number: FedEx 8068241215		
Contract/Purchase Order/Quote No.:			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil		Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH		Analysis (Attach list if more space is needed): PPB - PAH											Special Instructions/ Conditions of Receipt
DPV-W421-102402	10-24-02	1530		X										X	2											8270C

Analysis (Attach list if more space is needed): PPB - PAH

Possible Hazard Identification: ☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return To Client ☒ Disposal By Lab ☐ Archive For ____ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required: ☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other ____

QC Requirements (Specify):

1. Relinquished By: [signature]	Date: 10/24/02	Time: 1600	1. Received By: [signature]	Date: 10/25/02	Time: 0930
2. Relinquished By	Date	Time	2. Received By	Date	Time
3. Relinquished By	Date	Time	3. Received By	Date	Time

Comments: 3

DISTRIBUTION: E - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy