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March 15, 1999

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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 1998 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: Scott Anderson
Mike Rardin (w/o enclosures)
Reilly File

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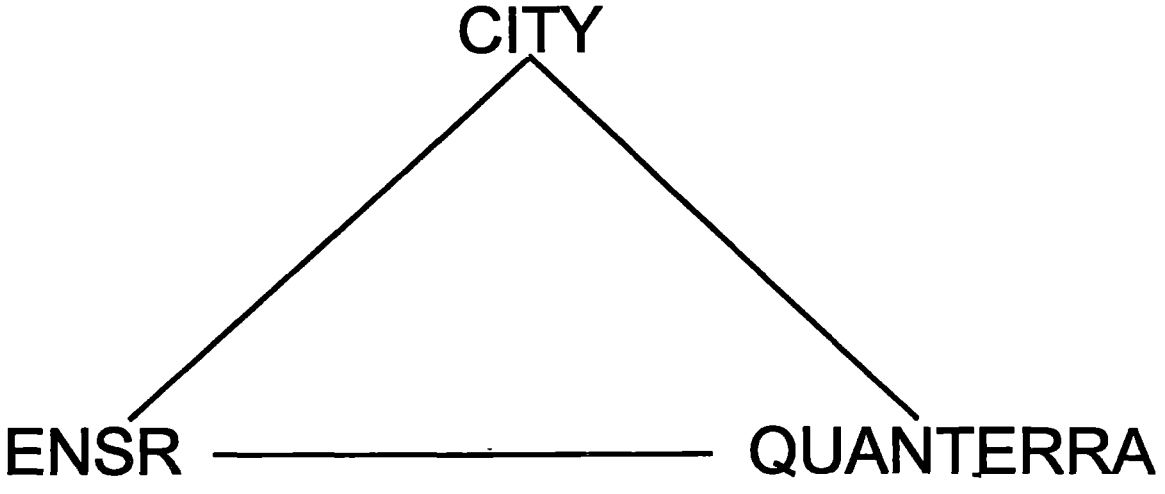
ANNUAL MONITORING REPORT
FOR 1998

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

SUBMITTED MARCH 15, 1999



ANNUAL MONITORING REPORT
FOR 1998

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 AND CHEMICAL CORPORATION, ET AL.

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

MARCH 15, 1999

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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 1998 that are not presented in previous reports.

The groundwater monitoring conducted in 1998 was performed in accordance with the Sampling Plan submitted in October 1997. 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 1998 by ENSR who collected groundwater samples from monitor wells and by Quanterra Environmental Services (Quanterra) who performed the analyses for PAH and phenolics.

The 1998 monitoring data are presented separately for each aquifer that was monitored, starting with the Mt. Simon-Hinckley Aquifer, which is the deepest 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, and Platteville Aquifers are contained in the pockets of this report.

2.0 MT. SIMON-HINCKLEY AQUIFER

In accordance with RAP Section 5.1, four wells in the Mt. Simon-Hinckley Aquifer were sampled once in 1998. A summary of the analytical data and the water level elevations at the four wells are shown on Figure 2-1. The laboratory reports of the analytical data are included as Appendix A, Section 5.1.

The sums of the concentrations of benzo(a)pyrene and dibenz(a,h)anthracene PAH, carcinogenic PAH, and other PAH in each well are below the advisory levels for these compounds. The results for all four wells 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. No carcinogenic PAH were detected in the four wells in 1998. It appears that the Mt. Simon-Hinckley Aquifer has not been significantly affected by contaminants originating from the former Reilly Tar & Chemical (Reilly) site.

CITY OF ST. LOUIS PARK

REILLY SITE

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

Concentration in nanograms per liter equivalent to parts per trillion

ENSR
CONSULTING-ENGINEERING-REMEDIATION

FIGURE 2-1

SUMMARY OF GROUND WATER MONITORING RESULTS FOR MOUNT SIMON HINKLEY AQUIFER AUGUST 1998

DRAWN: MSCAD	DATE: 2/12/99	PROJECT No.: 1620-013	REV:
FILE No.: FIG2-1.DWG	CHECKED: PJM		

Table 2-1
Historical Summary of Other PAH and CPAH Analytical Results
1988 through 1998
SLP11,12,13,17

All concentrations reported in nanograms per liter

SLP11		
Sampling Date	Total CPAH[1]	Total Other PAH[2]
6-88	0	42
6-89	0	34
90	NA	NA
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

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

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

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

[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

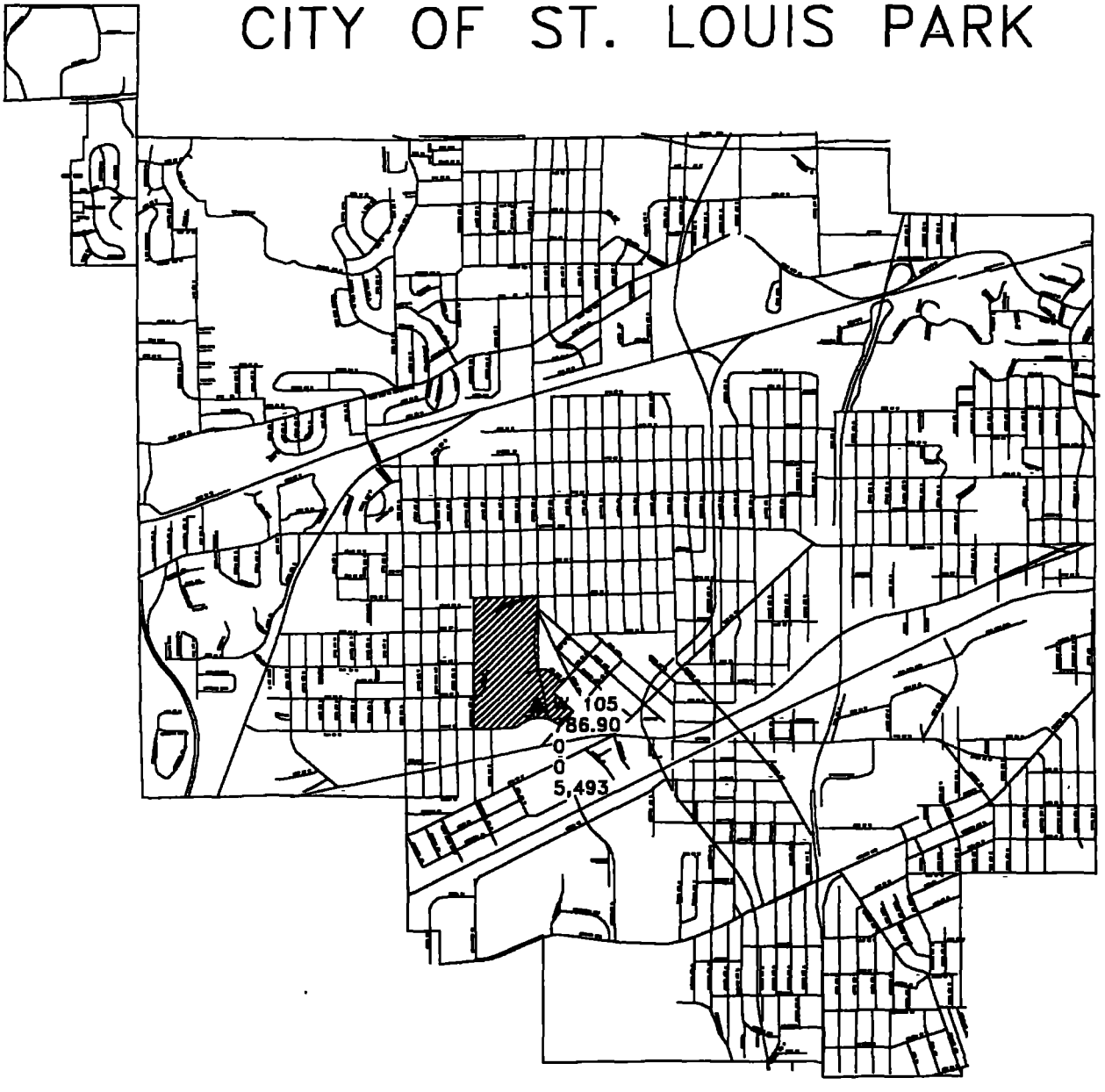
3.0 IRONTON-GALESVILLE AQUIFER

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 collected once in 1998, as required by the CD-RAP. Well W105 is sampled once per year on the even-numbered years (i.e. 1998, 2000, 2002).

Analytical results from the 1998 sampling event (5,493 ppt total PAH) is provided in Appendix B, Section 6.2.1. The results from the 1998-sampling event are presented on Figure 3-1, and the historical analytical results from 1988 through 1998 are presented on Table 3-1.

CITY OF ST. LOUIS PARK



REILLY SITE

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

Concentration in nanograms per liter equivalent to parts per trillion

ENSR
CONSULTING-ENGINEERING-REMEDIATION

FIGURE 3-1

SUMMARY OF GROUND WATER MONITORING RESULTS FOR IRONTON-GALESVILLE AQUIFER AUGUST 1998

DRAWN:	MSCAD	DATE:	2/12/99	PROJECT No.: 1620-013	REV:
FILE No.:	FIG3-1.DWG	CHECKED:	PJM		

Table 3-1

Historical Summary of Other PAH and CPAH in Well W105 1988 through 1998

All concentrations repoprted in nanograms per liter.

W105		
Sampling Date	Total CPAH[1]	Total Other PAH[2]
2-88	0	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

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)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

4.0 PRAIRIE DU CHIEN-JORDAN AQUIFER

In accordance with RAP Section 7.3, Prairie du Chien-Jordan Aquifer wells were monitored per the frequency outlined in the 1998 Sampling Plan. In addition to water quality monitoring, groundwater elevations were measured at the Prairie du Chien-Jordan Aquifer wells during sampling. Wells SLP5, W119, and H3 were omitted from sampling during 1998 because owners have taken these wells out of service. A total of 22 wells were used to collect groundwater samples during 1998.

Summaries of analytical data and groundwater elevations for the sampling rounds are shown in Figures 4-1 and 4-2 (in pocket). 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 effected 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. A groundwater flow model has been developed and is being used by Hennepin County Conservation District. This groundwater model may give a better estimation on groundwater flow in the Prairie du Chien-Jordan Aquifer.

Table 4-1 presents a historical summary of analytical results from 1988 through 1998 for Prairie du Chien-Jordan Aquifer wells. Laboratory reports of the monitoring are presented in Appendix C, Section 7.3. The amount and distribution of PAH in the aquifer in 1998 was consistent with historical patterns and continues to show a decreasing trend of PAH concentrations in several wells including W23, W48, SLP16, and SLP10, while remaining fairly steady in the other wells. In 1998, other PAH were detected in concentrations ranging from 0 ppt (i.e. below laboratory detection limits) in MTKA6 to 42,000 ppt in well W23. A total of five wells, out of 22 wells sampled in 1998, exceed the drinking water criterion for other PAH (280 ppt) (W23, SLP10, W70, SLP4, and W402). Groundwater results from E2 (196ppt) exceeded the advisory level (175ppt) for other PAH during the sampling event in August 1998. An additional groundwater sample was collected from well E2 (34ppt) in October 1998. Well E2 was taken out or service for routine maintenance shortly after the October groundwater sample was collected and is no longer an active municipal well. The repairs to well E2 should be completed in early 1999 and the sampling frequency in accordance with the CD-RAP will resume.

Table 4-1
Historical Summary of Other PAH and CPAH Analytical Results
1988 through 1998
Prairie du Chien-Jordan Aquifer Wells

All concentrations reported in nanograms per liter

SLP4		
Sampling Date	Total CPAH[1]	Total Other PAH[2]
8-88	0	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

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

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

SLP7		
Sampling Date	Total CPAH[1]	Total Other PAH[2]
8-88	0	76
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

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

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

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 1998
Prairie du Chien-Jordan Aquifer Wells

All concentrations reported in nanograms per liter

SLP16		
Sampling Date	Total CPAH[1]	Total Other PAH[2]
8-88	0	48
6-89	0	28
9-89	0	24
6-90	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

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

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

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

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

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

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

Table 4-1
Historical Summary of Other PAH and CPAH Analytical Results
1988 through 1998
Prairie du Chien-Jordan Aquifer Wells

All concentrations reported in nanograms per liter

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

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

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

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	389
6-96	0	498
4-97	0	624
5-98	0	220

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

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

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

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

Table 4-1
Historical Summary of Other PAH and CPAH Analytical Results
1988 through 1998
Prairie du Chien-Jordan Aquifer Wells

All concentrations reported in nanograms per liter

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

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

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

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

The levels of total carcinogenic PAH were below detectable levels in all wells except for SLP4. Well SLP4 had a total carcinogenic PAH concentration of 5 ppt. All wells were below the drinking water criteria of 28 ppt for total carcinogenic PAH.

Table 2
Historical Summary of Other PAH, CPAH, and Phenolic Analytical Results 1988 Through 1998

Platteville Aquifer Wells

PAH concentrations in nanograms per liter
Phenolic concentrations in micrograms per liter

W101

Sampling Date	Total CPAH[1]	Total Other PAH[2]	Total Phenolics
8-88	0	4,000	7
10-88	0	23,300	0
6-89	0	47,800	20
5-90	0	21,800	0
2-92	0	18,300	6
5-94	0	10,839	0
5-96	0	5,320	NA
10-96	0	32,380	NA
4-97	0	31,220	NA
9-97	0	14,590	NA
4-98	0	17,340	NA
9-98	0	124,910	NA

W121

Sampling Date	Total CPAH[1]	Total Other PAH[2]	Total Phenolics
8-88	0	0	73
10-88	5	392	35
6-89	5	378	35
5-90	12	282	0
5-94	40	166	0
5-96	0	141	NA
10-96	4	141	NA
4-97	0	63	NA
10-97	0	184	NA
5-98	0	242	NA
9-98	6	94	NA

W124

Sampling Date	Total CPAH[1]	Total Other PAH[2]	Total Phenolics
8-88	0	0	0
10-88	0	166	0
6-89	0	149	0
5-90	11	92	0
5-94	21	137	0
6-96	0	10	NA
9-96	0	0	NA
4-97	10	131	NA
10-97	0	112	NA
5-98	0	142	NA
9-98	58	69	NA

W128

Sampling Date	Total CPAH[1]	Total Other PAH[2]	Total Phenolics
8-88	0	0	12
10-88	0	273	0
6-89	0	212	0

W130

Sampling Date	Total CPAH[1]	Total Other PAH[2]	Total Phenolics
8-88	0	0	0
10-88	0	397	0
6-89	2	170	0
5-90	14	239	0
5-96	5	164	NA
10-96	0	52	NA
4-97	0	198	NA
10-97	0	238	NA
5-98	0	47	NA
9-98	2	91	NA

W131

Sampling Date	Total CPAH[1]	Total Other PAH[2]	Total Phenolics
8-88	0	0	0
10-88	0	305	13
6-89	0	172	0
2-92	0	13,080	0
5-94	31	224	0
5-96	28	149	NA
10-96	0	16	NA
4-97	0	170	NA
10-97	0	179	NA
5-98	0	224	NA
9-98	8	69	NA

Table 2
Historical Summary of Other PAH, CPAH, and Phenolic Analytical Results 1988 Through 1998

Platteville Aquifer Wells

PAH concentrations in nanograms per liter
Phenolic concentrations in micrograms per liter

W18			
Sampling Date	Total CPAH[1]	Total Other PAH[2]	Total Phenolics
8-88	0	0	20
10-88	0	360,800	20
6-89	0	38,800	44
2-92	0	10,400	8
5-96	0	1,532	NA
9-96	0	2,403	NA
4-97	0	1,115	NA
9-97	0	1,176	NA
5-98	0	627	NA
9-98	7	305	NA

W19			
Sampling Date	Total CPAH[1]	Total Other PAH[2]	Total Phenolics
8-88	0	0	0
10-88	14	431	35
6-89	4	52	26
2-92	27	479	0
5-94	17	125	0
5-96	3	83	NA
9-96	0	97	NA
4-97	0	80	NA
9-97	0	173	NA
5-98	0	101	NA
9-98	7	57	NA

W20			
Sampling Date	Total CPAH[1]	Total Other PAH[2]	Total Phenolics
8-88	0	0	28
10-88	0	3,419	16
6-89	0	6,456	34
5-90	0	6,822	9
5-94	12	1,017	0
5-96	0	675	NA
9-96	0	962	NA
4-97	0	1,945	NA
10-97	0	1,833	NA
5-98	0	1,094	NA
9-98	15	368	NA

W22			
Sampling Date	Total CPAH[1]	Total Other PAH[2]	Total Phenolics
5-90	0	0	0
2-92	62	624	0
3-92	0	4,636	NA
5-96	0	82	NA
9-96	0	0	NA
4-97	0	1,635	NA
9-97	0	1,990	NA
4-98	0	1,065	NA
9-98	0	7,520	NA

W27			
Sampling Date	Total CPAH[1]	Total Other PAH[2]	Total Phenolics
10-88	0	1,882,000	NA
6-89	0	1,345,000	NA
5-96	0	1,476	NA
10-96	0	9,460	NA
4-97	0	281,200	NA
9-97	0	415,800	NA
4-98	0	184,290	NA
9-98	0	421,900	NA

W100			
Sampling Date	Total CPAH[1]	Total Other PAH[2]	Total Phenolics
5-94	18	234	1

Table
Historical Summary of Other PAH, CPAH, and Phenolic Analytical Results 1988 Through 1998

Platteville Aquifer Wells

PAH concentrations in nanograms per liter
Phenolic concentrations in micrograms per liter

P306			
Sampling Date	Total CPAH[1]	Total Other PAH[2]	Total Phenolics
5-90	0	0	0

P310			
Sampling Date	Total CPAH[1]	Total Other PAH[2]	Total Phenolics
4-91	0	33,000	8

P311			
Sampling Date	Total CPAH[1]	Total Other PAH[2]	Total Phenolics
4-91	0	46,000	10

P312			
Sampling Date	Total CPAH[1]	Total Other PAH[2]	Total Phenolics
4-91	0	14,000	13
2-92	0	23,440	15

P313			
Sampling Date	Total CPAH[1]	Total Other PAH[2]	Total Phenolics
4-91	0	0	0
2-92	0	5,000	6

W1			
Sampling Date	Total CPAH[1]	Total Other PAH[2]	Total Phenolics
8-88	0	0	0
10-88	28	564	96
6-89	43	164	34
5-94	130	554	0
5-96	174	632	NA
9-96	81	337	NA
4-97	66	382	NA
9-97	162	776	NA
5-98	13	275	NA
9-98	63	171	NA

Table 6-1

Historical Summary of Other PAH and CPAH and Phenolics
Wells W420, W421, W422, W434 and W439
1988 through 1997

All concentrations in micrograms per liter

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

W434

Sampling Date	Total CPAH[1]	Total Other PAH[2]	Total Phenolics
2-92	0	4	9
10-96	0	4	-
4-97	0	7	-
9-97[3]	0	5	8
10-97	0	3	-
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

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

[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] Pump was activated in W434 in June of 1997

Table 6-1

Historical Summary of Other PAH and CPAH and Phenolics
Wells W420, W421, W422, W434 and W439
1988 through 1997

All concentrations in micrograms per liter

W420			
Sampling Date	Total CPAH[1]	Total Other PAH[2]	Total Phenolics
1st Quarter	0	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

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

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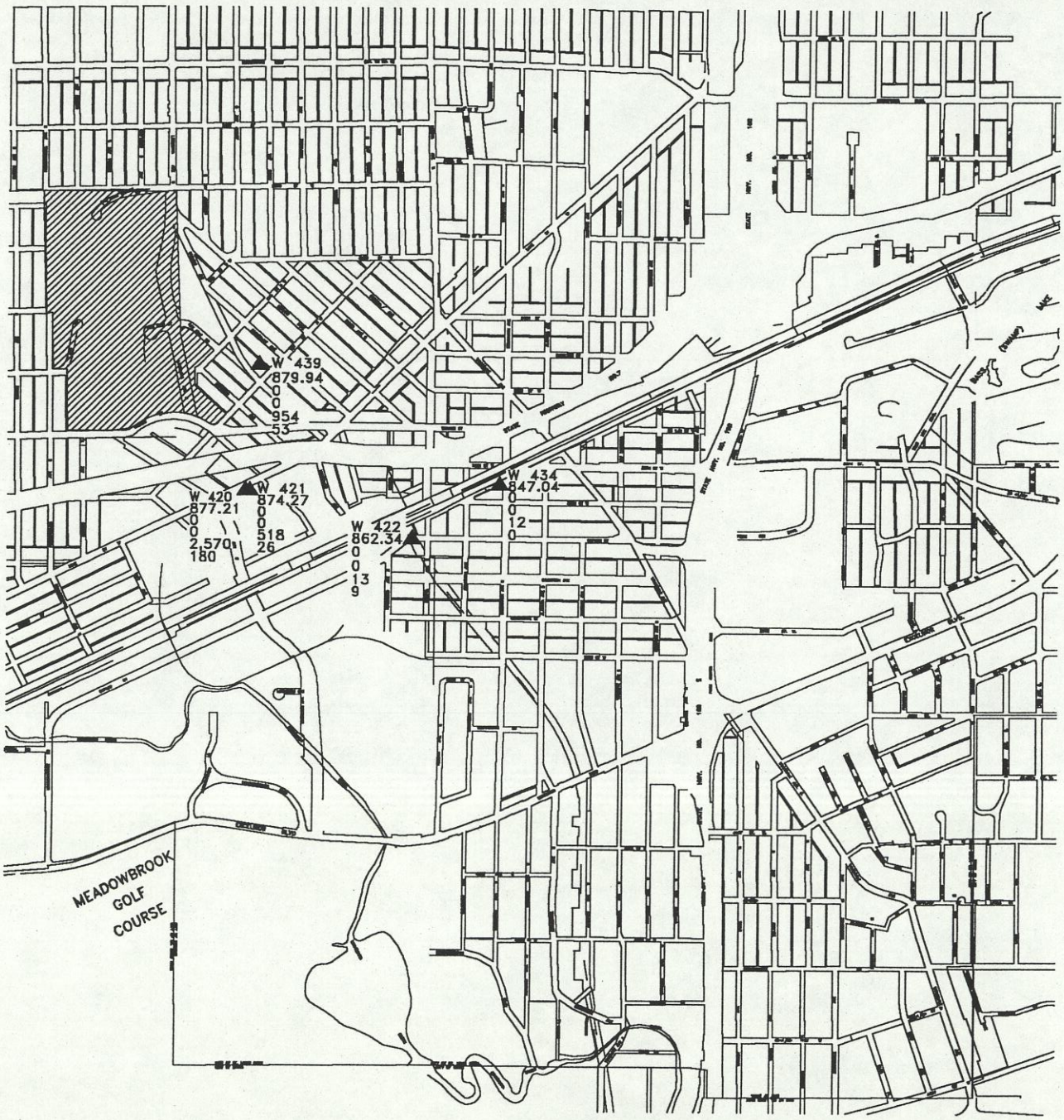

REILLY SITE

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

Concentration in micrograms per liter equivalent to parts per billion

ENSR
CONSULTING-ENGINEERING-REMEDIATION

FIGURE 6-4

SUMMARY OF GROUND WATER MONITORING RESULTS FOR DRIFT-PLATTVILLE AQUIFER AUGUST 1998 4th QUARTER

DRAWN:	MSCAD	DATE:	2/12/99	PROJECT No.: 1620-013	REV:
FILE No.:	FIG6-1.DWG	CHECKED:	PJM		

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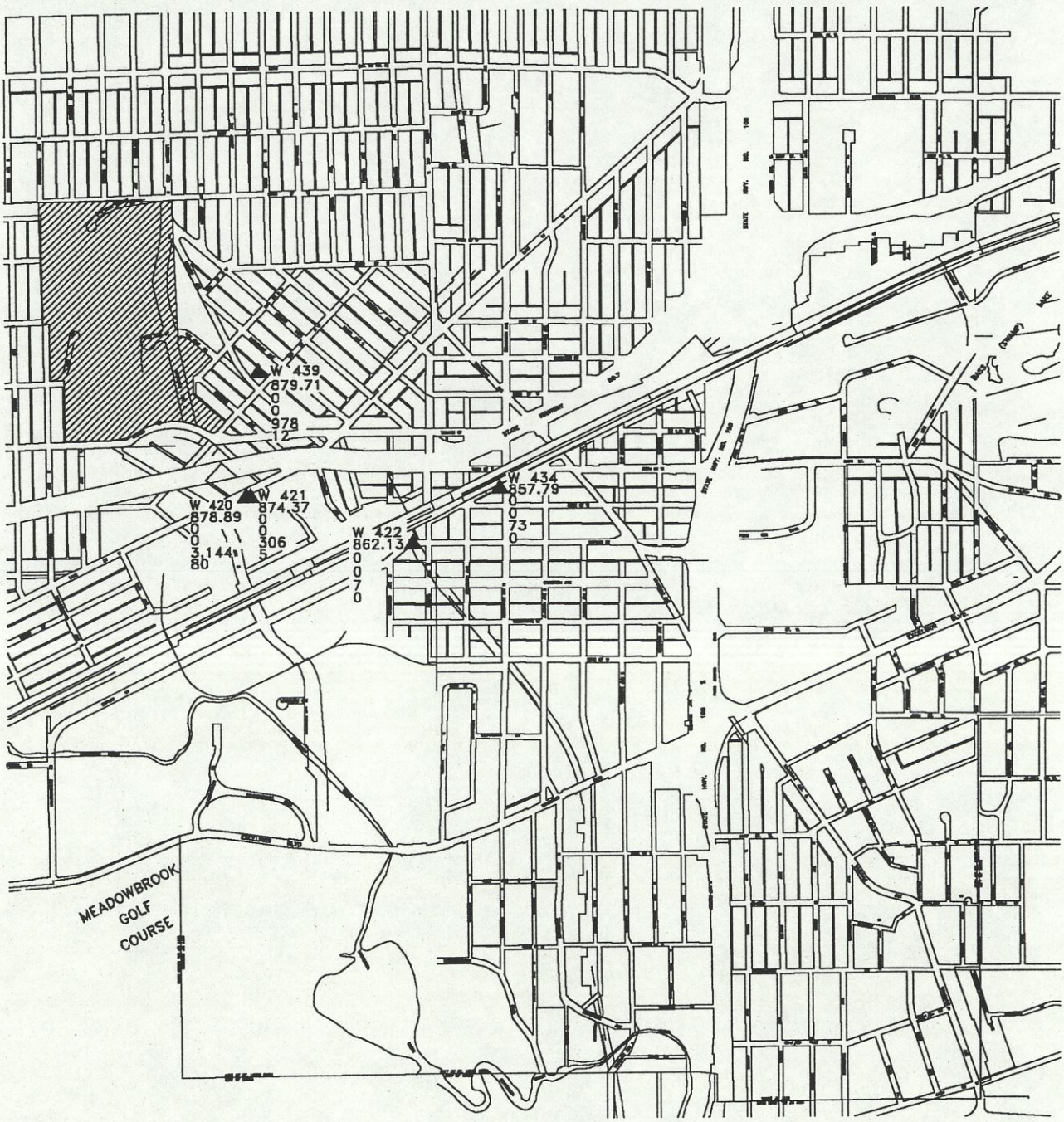

REILLY SITE

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

Concentration in micrograms per liter equivalent to parts per billion

ENSR
CONSULTING-ENGINEERING-REMEDIATION

FIGURE 6-3

SUMMARY OF GROUND WATER MONITORING RESULTS FOR DRIFT-PLATTVILLE AQUIFER AUGUST 1998 3rd QUARTER

DRAWN:	MSCAD	DATE:	2/12/99	PROJECT No.: 1620-013	REV:
FILE No.:	FIG6-3.DWG	CHECKED:	PJM		

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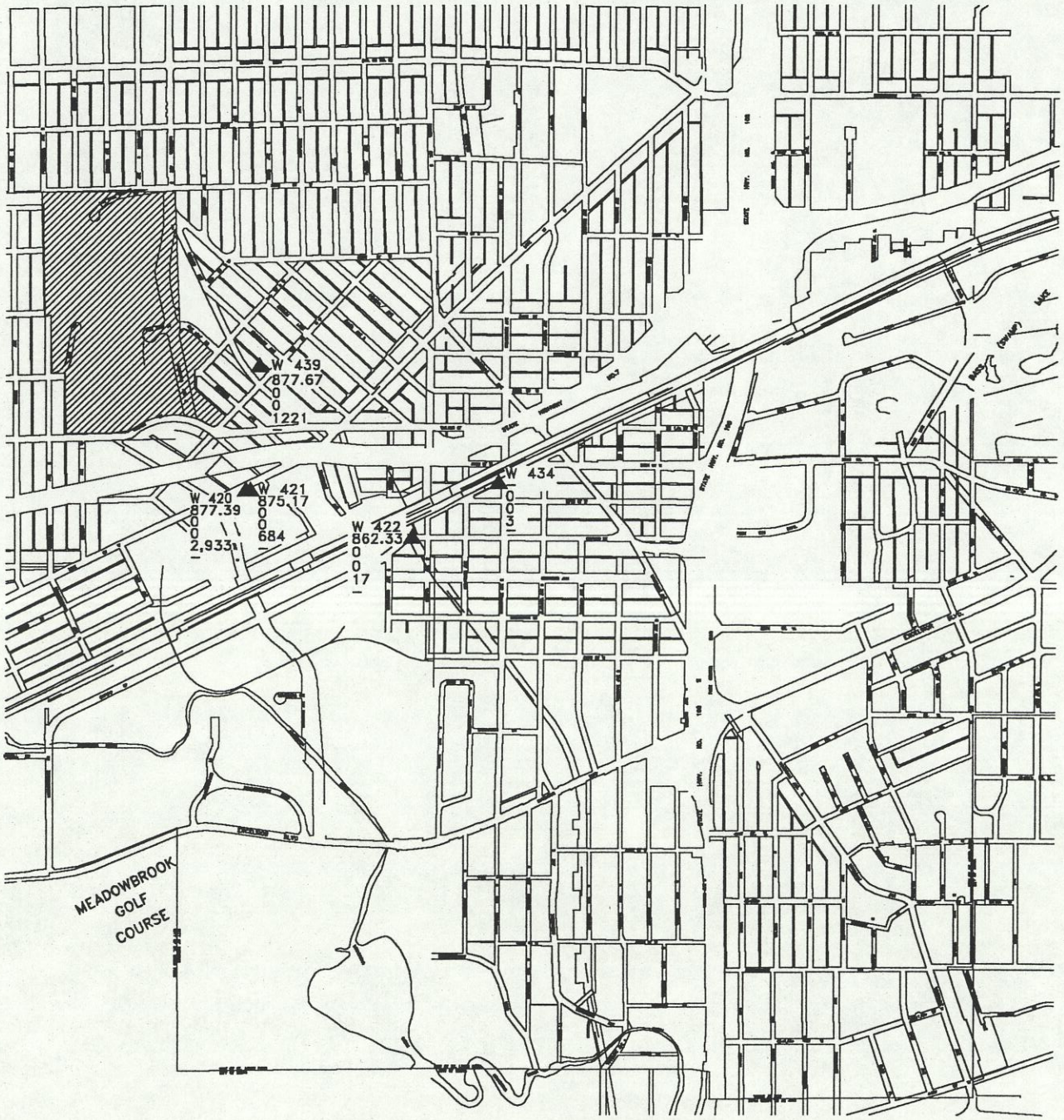


REILLY SITE

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

Concentration in micrograms per liter equivalent to parts per billion

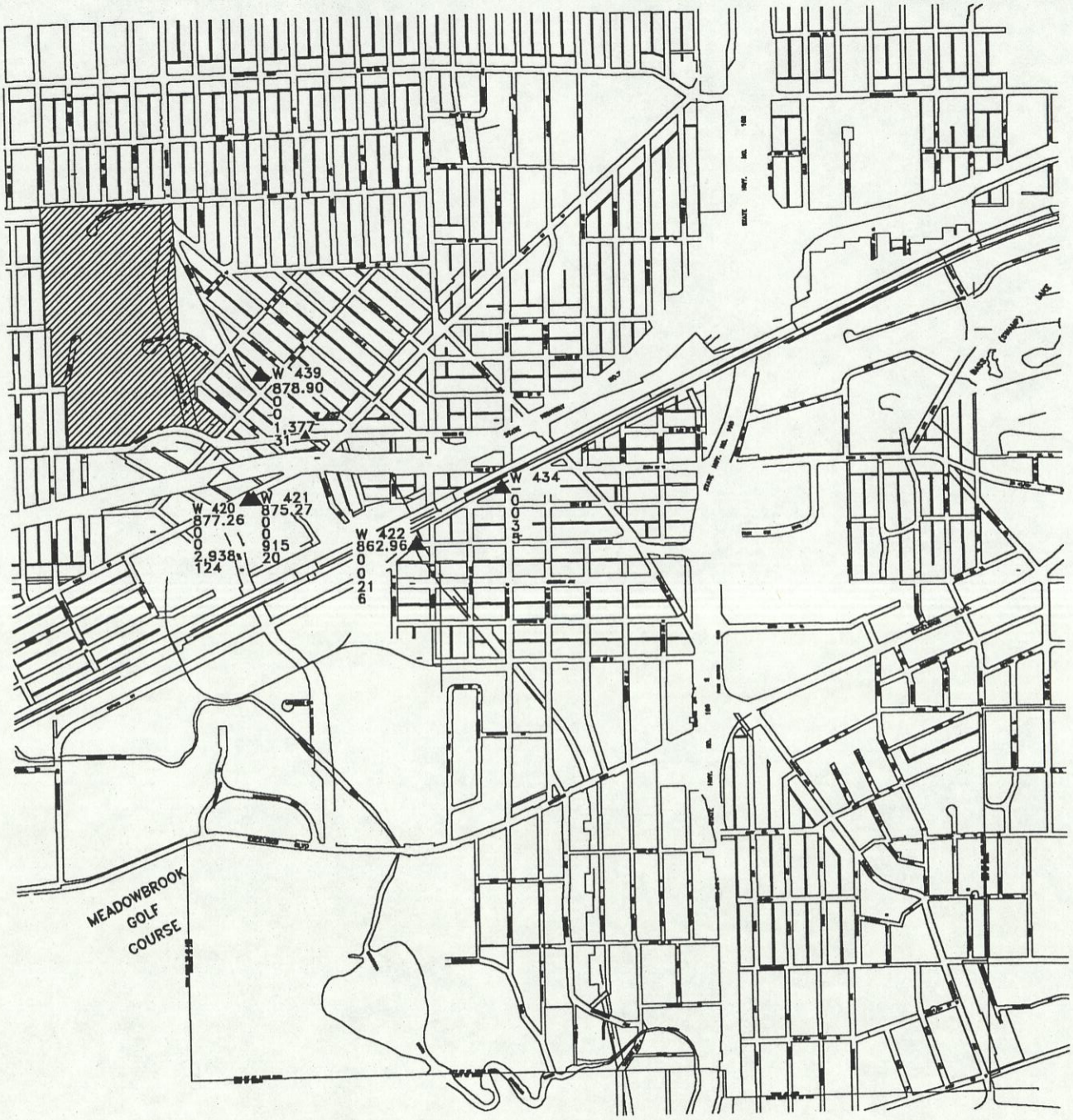
ENSR
CONSULTING-ENGINEERING-REMEDIATION

FIGURE 6-2

SUMMARY OF GROUND WATER MONITORING RESULTS FOR DRIFT-PLATTVILLE AQUIFER AUGUST 1998 2nd QUARTER

DRAWN:	MSCAD	DATE:	2/12/99	PROJECT No.: 1620-013	REV:
FILE No.:	FIG6-2.DWG	CHECKED:	PJM		

CITY OF ST. LOUIS PARK



REILLY SITE

▲ WELL LOCATION
SLP 7 WELL IDENTIFICATION
809.79 WATER LEVEL
0 SUM-BENZO(a)PYRENE & DIBENZ(a,h)ANTHRACENE(PPB)
0 SUM-CARCINOGENIC PAH(PPB)
78 SUM-OTHER PAH'S
X Phenols DO 10/18/99
Concentration in micrograms per liter equivalent to parts per billion

ENSR
CONSULTING-ENGINEERING-REMEDIATION

FIGURE 6-1

SUMMARY OF GROUND WATER MONITORING RESULTS FOR DRIFT-PLATTVILLE AQUIFER AUGUST 1998 1st QUARTER

DRAWN:	MSCAD	DATE:	2/12/99	PROJECT No.: 1620-013	REV:
FILE No.:	FIG6-1.DWG	CHECKED:	PJM		

6.0 DRIFT-PLATTEVILLE AQUIFER

6.1 Drift-Platteville Aquifer Source and Gradient Control Wells

Groundwater monitoring for the Drift-Platteville Aquifer in 1998 included quarterly PAH and phenolics monitoring of wells W420, W422, and W439, the Drift Aquifer source and gradient control wells, and W421 and W434, the Platteville Aquifer source and gradient control wells. Wells W420, W421, and W422 have been monitored quarterly since they began pumping in 1987. This is the fourth year of quarterly monitoring for well W439 since pumping began in early 1995 and the second year of quarterly monitoring for well W434 since the pump was activated in June 1997. Average pumping rates for 1998 for wells W420, W421, W422, W434, and W439 were 30.2, 27.8, 58.4, 30.2 and 55.6 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 Appendix E, Sections 9.1.3 and 9.2.3.

Other PAH, carcinogenic PAH and phenolic data for wells W420, W421, W422, W434, and W439 are summarized in Table 6-1. Table 6-1 shows that near the source of contamination, PAH concentrations in groundwater are consistently in the range of several hundred micrograms per liter to low milligrams per liter. The trends of these data suggest a gradual decreasing trend in total PAH concentrations in wells W420, W421 and W422 and a more dramatic decreasing trend in well W439. Total PAH concentrations in well W434 have remained fairly stable at a concentration of approximately 10 micrograms per liter since pumping began in June 1997.

6.2 Platteville Aquifer Monitoring

Groundwater monitoring for 20 Platteville Aquifer monitoring wells in 1998 consisted of two rounds of sample collection and analysis for PAH, and water level measurements. These 20 monitor wells are required to be sampled in accordance with the ROD for the northern area of the Platteville Aquifer.

Figure 6-5 and Figure 6-6 (in pockets) shows the results from the two monitoring rounds for the Platteville Aquifer. Laboratory reports of the monitoring are presented in Appendix E, Section 9.5. Table 6-2 is a historical summary since 1988 of other PAH, carcinogenic PAH and phenolic data for Platteville wells. This table also includes data from Platteville wells not sampled this year.

The water level contours in Figures 6-5 and 6-6 shows 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 28 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

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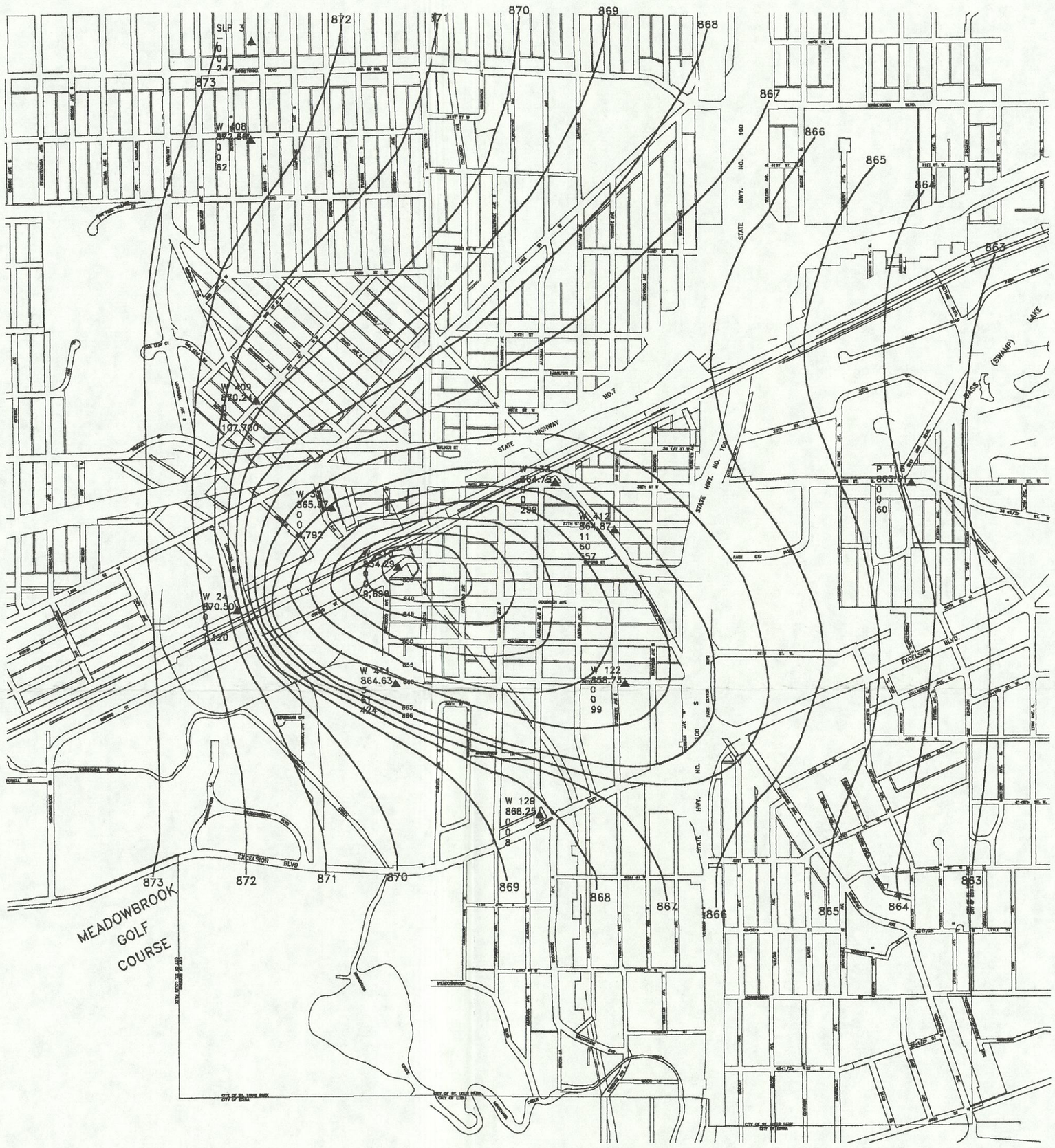


SCALE: 1:1000' approx.

REILLY SITE

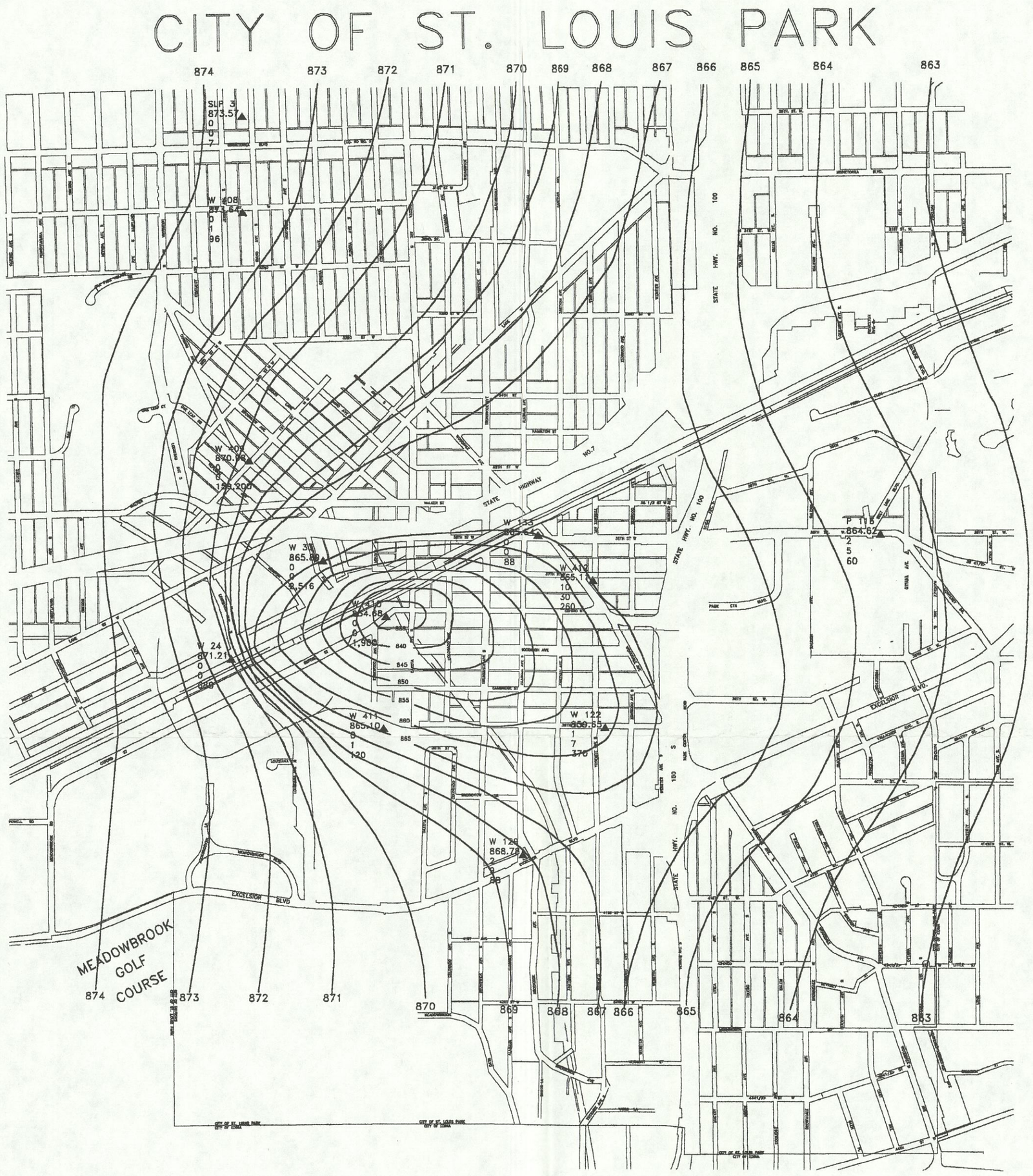
▲ WELL LOCATION
SLP 7 WELL IDENTIFICATION
809.79 WATER LEVEL
0 SUM-BENZO(a)PYRENE & DIBENZ(a,h)ANTHRACENE(PPT)
0 SUM-CARCINOGENIC PAH(PPT)
78 SUM-OTHER (PPT)

ENSR
CONSULTING-ENGINEERING-REMEDIATION

FIGURE 5-2

SUMMARY OF GROUND WATER MONITORING RESULTS FOR ST.PETER AQUIFER: 2nd HALF, 1998

DRAWN: MSCAD	DATE: 2/16/99	PROJECT No.: 1620-013	REV:
FILE No.: FIG5-2.DWG	CHECKED: PJM		



SCALE: 1:1000' approx.

REILLY SITE

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

ENSR
CONSULTING-ENGINEERING-REMEDIATION

FIGURE 5-1

SUMMARY OF GROUND WATER MONITORING RESULTS FOR ST.PETER AQUIFER: 1st HALF, 1998

DRAWN: MSCAD	DATE: 2/16/99	PROJECT No.: 1620-013	REV:
FILE No.: FIG5-1.DWG	CHECKED: PJM		

Ta[illegible]
Historical Summary of Other PAH and CPAH Analytical Results 1988 Through 1998

St. Peter Aquifer Wells

All concentrations reported in nanograms per liter.

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

NOTES:

[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

Ta[illegible]1
Historical Summary of Other PAH and CPAH Analytical Results 1988 Through 1998

St. Peter Aquifer Wells

All concentrations reported in nanograms per liter.

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

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

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

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

Ta[illegible]
Historical Summary of Other PAH and CPAH Analytical Results 1988 Through 1998

St. Peter Aquifer Wells

All concentrations reported in nanograms per liter.

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

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

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

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

Table 1
Historical Summary of Other PAH and CPAH Analytical Results 1988 Through 1998

St. Peter Aquifer Wells

All concentrations reported in nanograms per liter.

SLP3		
Sampling Date	Total CPAH[1]	Total Other PAH[2]
7-88	0	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

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

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

5.0 ST. PETER AQUIFER

In accordance with the 1998 Sampling Plan, 12 St. Peter Aquifer wells were monitored twice (first half/second half) in 1998. In addition to water quality monitoring, groundwater elevations were measured in the St. Peter Aquifer wells during each monitoring round. Summaries of analytical data and groundwater elevations for the first half and second half of 1998 are shown in Figures 5-1 and 5-2 (in pocket). Laboratory results of the monitoring are provided in Appendix D.

A historical summary of total PAH and carcinogenic PAH results from 1988 through 1998 is presented in Table 5-1. The data in Table 5-1 show several trends. Total PAH concentrations have remained relatively stable for wells W412, W122, W129, W411, W408, and P116, while total PAH concentrations show a downward trend in groundwater samples collected from W133 and W24. Total PAH concentrations for SLP3 during the September sampling event was 247 nanograms per liter. SLP3 is not an active municipal well. The rise in total PAH concentrations during the September sampling event probably is not indicative of an upward trend but rather a one time blip in the trend. Based upon the historical trend in SLP3, the expected total PAH concentration is approximately 10 nanograms per liter. Future monitoring will confirm the trend in total PAH concentrations in SLP3. PAH concentrations in groundwater samples collected from W33 have shown a downward trend in past years, however PAH concentrations from well W33 have increased this year. Well W33 is located between the Reilly site and the pumping well W410. The increase in PAH concentrations in well W33 may be the result from the pumping of well W410.

Groundwater samples collected from well W409 have shown increasing total PAH concentrations since 1991 to a maximum of approximately 805 micrograms per liter in 1996. This increase in concentration is apparently in response to pumping well W410. Since 1996, total PAH concentrations in well W409 have dropped considerably.

The total PAH concentration at well W410 appears to have reached a high in 1994/1995 and since then, the concentrations of total PAH is showing a downward trend.

In conclusion, the 1998 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 1998 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.

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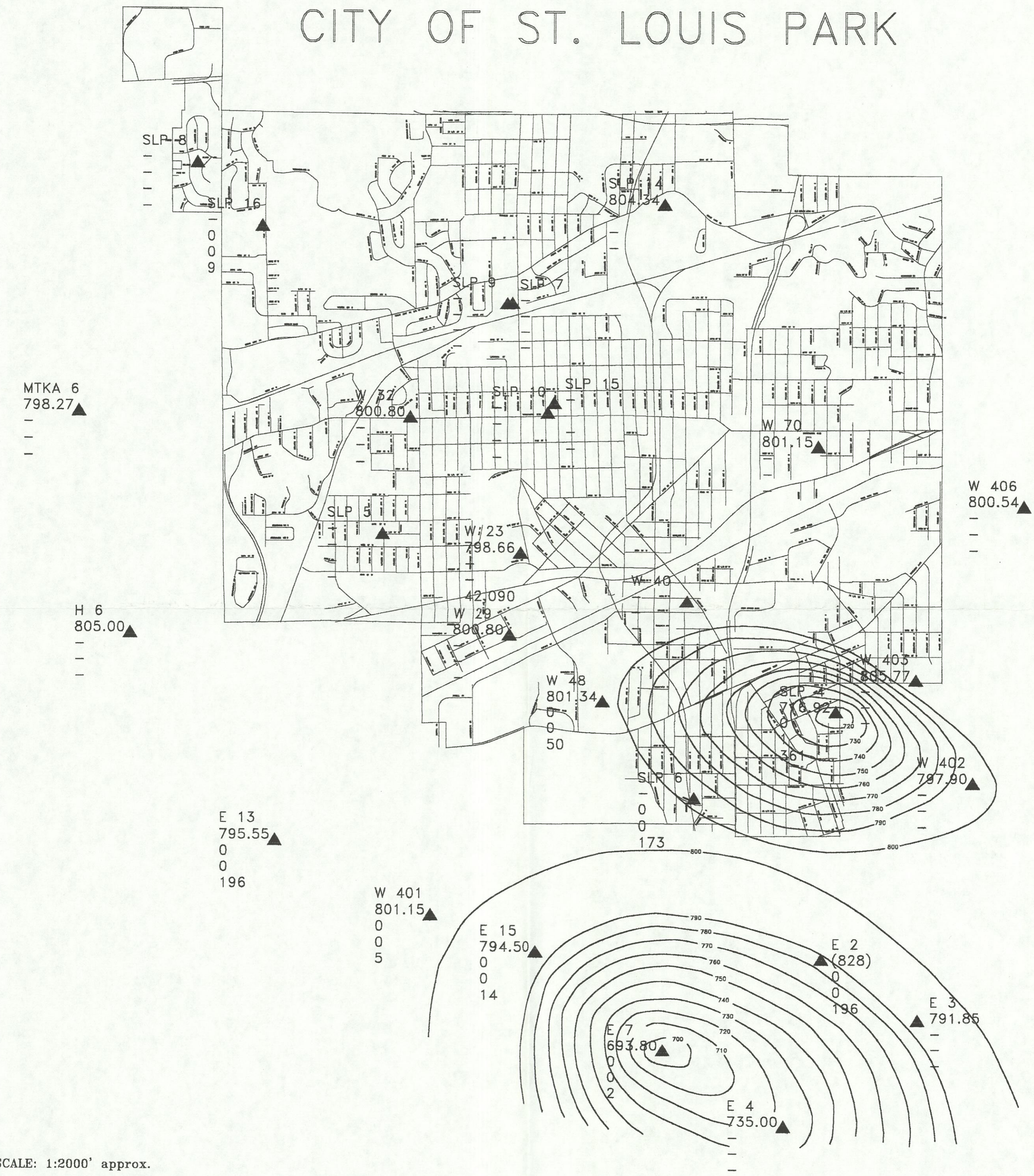

SCALE: 1:2000' approx.

REILLY SITE

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

ENSR
CONSULTING-ENGINEERING-REMEDIATION

FIGURE 4-2

SUMMARY OF GROUND WATER MONITORING RESULTS FOR PRAIRIE DU CHEIN-JORDAN AQUIFER: 2nd HALF, 1998

DRAWN: MSCAD	DATE: 2/16/99	PROJECT No.: 1620-013	REV:
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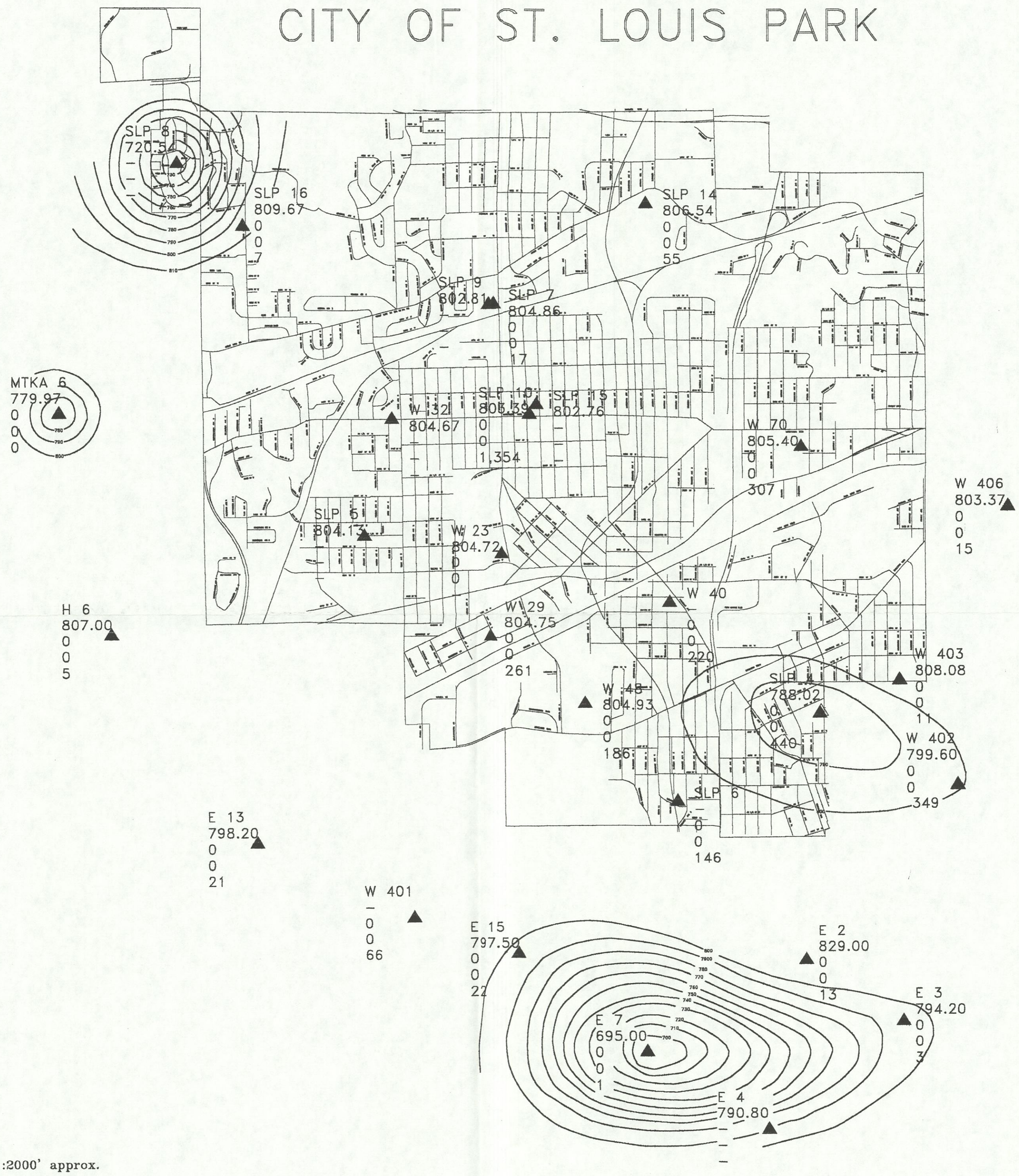


SCALE: 1:2000' approx.

REILLY SITE

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

ENSR
CONSULTING-ENGINEERING-REMEDIATION

FIGURE 4-1

SUMMARY OF GROUND WATER MONITORING RESULTS FOR PRAIRIE DU CHEIN-JORDAN AQUIFER: 1st HALF, 1998

DRAWN: MSCAD	DATE: 2/16/99	PROJECT No.: 1620-013	REV:
FILE No.: FIG4-1.DWG	CHECKED: PJM		

Walker and Lake Streets.

The Platteville Aquifer water level contours shown in Figures 6-5 and 6-6 supports the interpretation that well W421 is an effective source control well.

Figures 6-5 and 6-6 also shows a significant degree of control exerted on the Platteville groundwater in the vicinity of the Drift-Platteville Aquifer gradient control well (W422). Well W422 currently is being pumped at a rate of approximately 58 gpm and appears to be effective in controlling groundwater over a large portion of the Drift-Platteville Aquifer.

Figure 6-6 also shows the effect pumping in well W434 has on the Platteville Aquifer. Well W434 has been pumping since June 1997. It appears that the well has a pronounced local effect in controlling groundwater in the Platteville Aquifer.

The historical water quality data shown in Table 6-2 indicate a decreasing trend in PAH concentrations in most of the Platteville wells while several other Platteville wells have been consistent with historical observations. Four Platteville monitoring wells appear to be showing an increasing trend in PAH concentration. Wells W432, W143 and W433 show an upward trend while well W426 initially had a downward trend until this year when total PAH concentrations increased. These four wells are in the vicinity of the pumping influence of W434, and the increase in PAH concentrations may be the result of pumping of well W434.

During 1998, it appears that the Platteville Aquifer source well (W421) remained effective in controlling the spread of contamination in the vicinity of the Reilly site.

Tab[illegible]2
Historical Summary of Other PAH, CPAH, and Phenolic Analytical Results 1988 Through 1998

Platteville Aquifer Wells

PAH concentrations in nanograms per liter
Phenolic concentrations in micrograms per liter

W120			
Sampling Date	Total CPAH[1]	Total Other PAH[2]	Total Phenolics
8-88	0	35,200	44
10-88	0	41,300	57
6-89	0	75,900	48
5-96	0	1,716	NA
10-96	0	10,690	NA
4-97	0	12,390	NA
9-97	0	5,832	NA
4-98	0	2,317	NA
9-98	0	3,597	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

NA = Not analyzed for identified compound class.

Tab[illegible]2
Historical Summary of Other PAH, CPAH, and Phenolic Analytical Results 1988 Through 1998

Platteville Aquifer Wells

PAH concentrations in nanograms per liter
Phenolic concentrations in micrograms per liter

W431			
Sampling Date	Total CPAH[1]	Total Other PAH[2]	Total Phenolics
2-92	0	3,840	0
3-92	0	2,250	0
5-96	0	1,023	NA
10-96	0	1,583	NA
4-97	0	857	NA
9-97	0	610	NA
5-98	0	627	NA
9-98	0	374	NA

W432			
Sampling Date	Total CPAH[1]	Total Other PAH[2]	Total Phenolics
2-92	0	7,782	6
3-92	0	3,750	NA
5-96	14	793	NA
10-96	0	2,920	NA
4-97	0	10,040	NA
9-97	0	8,600	NA
4-98	0	9,300	NA
9-98	0	19,029	NA

W433			
Sampling Date	Total CPAH[1]	Total Other PAH[2]	Total Phenolics
5-96	0	426	NA
10-96	0	625	NA
4-97	0	451	NA
10-97	0	1,585	NA
5-98	0	1,000	NA
9-98	5	1,654	NA

W435			
Sampling Date	Total CPAH[1]	Total Other PAH[2]	Total Phenolics
2-92	0	0	0
3-92	0	813	0

W437			
Sampling Date	Total CPAH[1]	Total Other PAH[2]	Total Phenolics
2-92	0	3,096,000	20
3-92	0	488,800	NA

W438			
Sampling Date	Total CPAH[1]	Total Other PAH[2]	Total Phenolics
2-92	0	20,400	5
3-92	0	0	NA

Table 2
Historical Summary of Other PAH, CPAH, and Phenolic Analytical Results
1988 Through 1998

Platteville Aquifer Wells

PAH concentrations in nanograms per liter
Phenolic concentrations in micrograms per liter

W132

Sampling Date	Total CPAH[1]	Total Other PAH[2]	Total Phenolics
5-90	0	1,168	0

W143

Sampling Date	Total CPAH[1]	Total Other PAH[2]	Total Phenolics
8-88	0	0	0
10-88	0	240	0
6-89	0	1,262	33
5-96	0	1,212	NA
10-96	0	1,288	NA
4-97	0	9,290	NA
9-97	0	1,383	NA
4-98	0	4,440	NA
9-98	0	10,494	NA

W424

Sampling Date	Total CPAH[1]	Total Other PAH[2]	Total Phenolics
8-88	0	0	10
10-88	0	50.5	0
6-89	4	517	17
5-90	8	147	0
2-92	0	5,200	0
3-92	0	11,180	0
5-94	1	157	0
5-96	0	153	NA
10-96	0	120	NA
4-97	0	109	NA
9-97	0	106	NA
5-98	0	89	NA
9-98	1	15	NA

W426

Sampling Date	Total CPAH[1]	Total Other PAH[2]	Total Phenolics
8-88	1,300	905,300	25
10-88	0	638,800	35
6-89	0	497,800	80
2-92	0	82,100	15
3-92	0	46,900	NA
5-96	0	55,470	NA
4-97	0	75,750	NA
9-97	0	64,290	NA
4-98	0	107,820	NA
9-98	0	1,507,900	NA

W428

Sampling Date	Total CPAH[1]	Total Other PAH[2]	Total Phenolics
8-88	0	0	0
10-88	0	1,040	8
6-89	0	904	16
5-90	0	490	0
2-92	0	2460	6
3-92	0	8,816	NA
5-94	11	436	0
5-96	6	192	NA
10-96	0	240	NA
4-97	0	336	NA
5-98	0	346	NA
9-98	5	513	NA

W430

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

r:\ensr\1620-013\histconc.xls

CITY OF ST. LOUIS PARK

SCALE: 1:1000' approx.

REILLY SITE

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

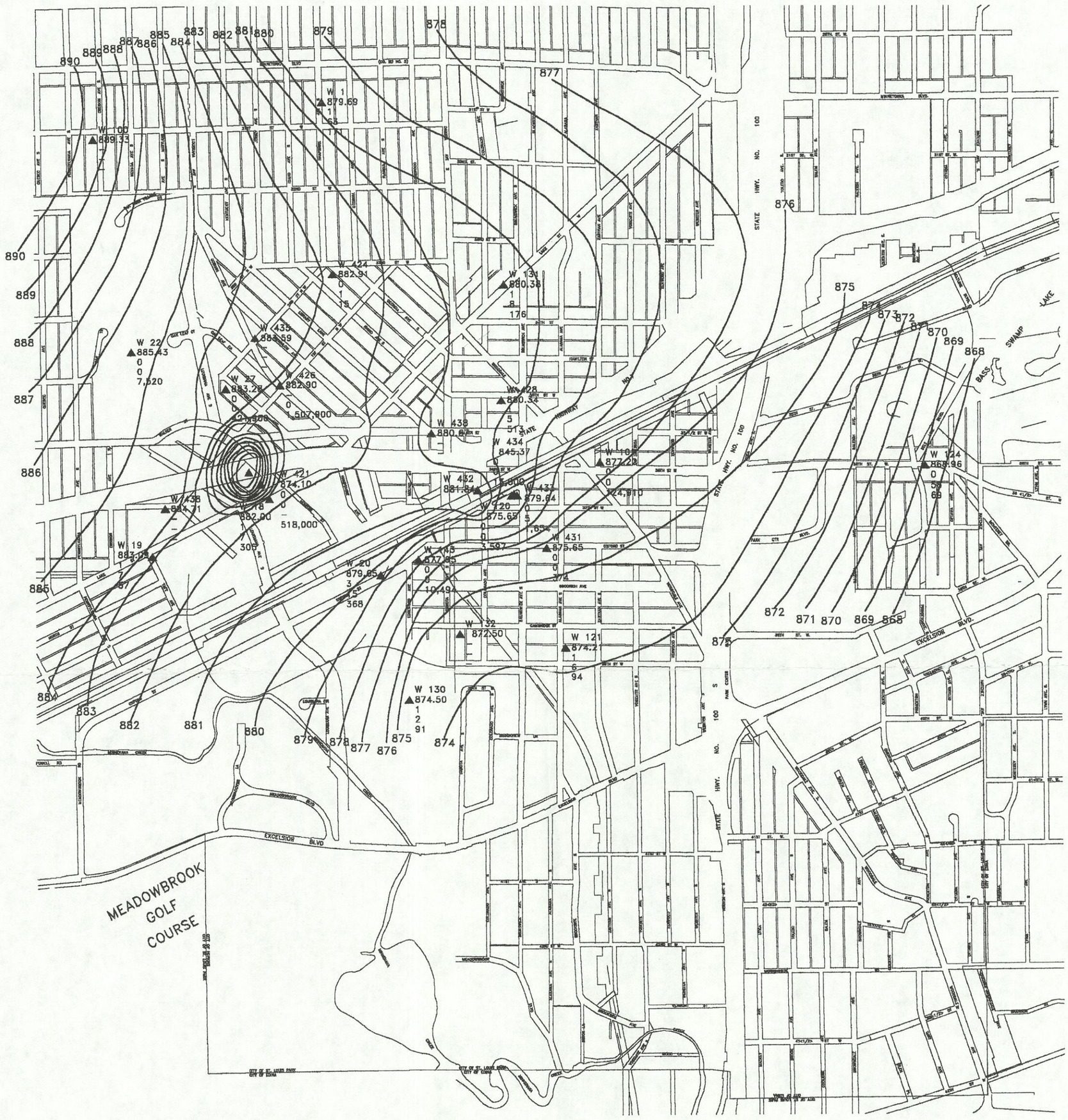
ENSR
CONSULTING-ENGINEERING-REMEDIATION

FIGURE 6-5

SUMMARY OF GROUND WATER MONITORING RESULTS
FOR PLATTVILLE AQUIFER:
1st HALF, 1998

DRAWN: MSCAD	DATE: 2/16/99	PROJECT No.: 1620-013	REV:
FILE No.: FIG6-5.DWG	CHECKED: PJM		

CITY OF ST. LOUIS PARK



SCALE: 1:1000' approx.

REILLY SITE

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

ENSR
CONSULTING-ENGINEERING-REMEDIATION

FIGURE 6-6

SUMMARY OF GROUND WATER MONITORING RESULTS FOR PLATTVILLE AQUIFER: 2nd HALF, 1998

DRAWN: MSCAD	DATE: 2/16/99	PROJECT No.: 1620-013	REV:
FILE No.: FIG6-5.DWG	CHECKED: PJM		

APPENDIX A
LABORATORY DATA SUMMARY PACKAGE:
MT. SIMON – HINCKLEY AQUIFER

WELLS

SLP11
SLP12
SLP13
SLP17

SECTION 5.1

Quanterra
Environmental Services

Quanterra Incorporated
4955 Yarrow Street
Arvada, Colorado 80002

303 421-6611 Telephone
303 431-7171 Fax

July 17, 1998

Mr. Scott Anderson
City of St. Louis Park
3752 Wooddale Ave.
St. Louis Park, MN 55416-2216

Dear Mr. Anderson:

Enclosed is the report for sixteen water samples received at Quanterra Incorporated, Denver Laboratory on May 20, 1998. Included in the report is a quality control summary.

Please call if you have any questions.

Sincerely,

Christina Mott
Program Manager

bal
Enclosures

Quanterra # D8E200134

Quanterra

ANALYTICAL REPORT

Reilly Tar & Chemical NPL Site

Lot #: D8E200134

Scott Anderson

City of St. Louis Park

QUANTERRA INCORPORATED

Lindsay Breyer
Project Manager

July 15, 1998

Case Narrative

With noted exceptions, 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.

Quanterra

Table Of Contents

Standard Deliverable

Report Contents

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- 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 39

Quanterra

EXECUTIVE SUMMARY - Detection Highlights

D8E200134

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
PJC-SLP16-051898 05/18/98 001				
Acenaphthene	1.4	1.4	ng/L	SW846 8270A SIM
Phenanthrene	1.8	1.4	ng/L	SW846 8270A SIM
PJC-SLP16D-051898 05/18/98 002				
Acenaphthene	1.6	1.2	ng/L	SW846 8270A SIM
Pyrene	5.3	1.3	ng/L	SW846 8270A SIM
PJC-E15-051898 05/18/98 09:30 003				
Acenaphthene	10	1.3	ng/L	SW846 8270A SIM
Fluorene	2.2	0.98	ng/L	SW846 8270A SIM
Phenanthrene	1.7	1.3	ng/L	SW846 8270A SIM
Indene	1.4	0.88	ng/L	SW846 8270A SIM
2,3-Dihydroindene	6.9	4.9	ng/L	SW846 8270A SIM
PJC-E13-051898 05/18/98 10:50 004				
Acenaphthylene	1.9	1.3	ng/L	SW846 8270A SIM
Acenaphthene	8.4	1.2	ng/L	SW846 8270A SIM
Fluorene	2.7	0.96	ng/L	SW846 8270A SIM
Phenanthrene	1.5	1.2	ng/L	SW846 8270A SIM
2,3-Dihydroindene	6.8	4.8	ng/L	SW846 8270A SIM
MSH-SLP17-051998 05/19/98 005				
Phenanthrene	2.5	1.2	ng/L	SW846 8270A SIM
MSH-SLP11FB-051998 05/19/98 006				
Phenanthrene	1.5	1.2	ng/L	SW846 8270A SIM
PCJ-E2-051898 05/18/98 08:50 008				
Acenaphthene	1.7	1.2	ng/L	SW846 8270A SIM
Phenanthrene	1.8	1.2	ng/L	SW846 8270A SIM
Pyrene	1.7	1.3	ng/L	SW846 8270A SIM
Indene	1.0	0.86	ng/L	SW846 8270A SIM
2,3-Dihydroindene	5.3	4.8	ng/L	SW846 8270A SIM
Benzo(b)thiophene	1.0	0.86	ng/L	SW846 8270A SIM

(Continued on next page)

Quanterra

EXECUTIVE SUMMARY - Detection Highlights

D8E200134

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
PCJ-E7-051898 05/18/98 09:05 009				
Phenanthrene	1.2	1.2	ng/L	SW846 8270A SIM
PCJ-E3-051898 05/18/98 10:10 010				
Phenanthrene	1.4	1.3	ng/L	SW846 8270A SIM
Indene	1.1	0.87	ng/L	SW846 8270A SIM
MSH-SLP12-051998 05/19/98 011				
Phenanthrene	3.1	1.2	ng/L	SW846 8270A SIM
MSH-SLP13-051998 05/19/98 012				
Acenaphthene	1.6	1.2	ng/L	SW846 8270A SIM
Phenanthrene	2.6	1.2	ng/L	SW846 8270A SIM
MSH-SLP11-051998 05/19/98 013				
Naphthalene	17	6.2	ng/L	SW846 8270A SIM
Acenaphthene	6.7	1.2	ng/L	SW846 8270A SIM
Dibenzofuran	1.2	0.95	ng/L	SW846 8270A SIM
Fluorene	1.9	0.95	ng/L	SW846 8270A SIM
Phenanthrene	3.2	1.2	ng/L	SW846 8270A SIM
Carbazole	2.0	1.8	ng/L	SW846 8270A SIM
Indene	16	0.86	ng/L	SW846 8270A SIM
1-Methylnaphthalene	3.2	2.7	ng/L	SW846 8270A SIM
2,3-Dihydroindene	12	4.8	ng/L	SW846 8270A SIM
Benzo(b)thiophene	7.0	0.86	ng/L	SW846 8270A SIM
MSH-SLP11D-051998 05/19/98 014				
Naphthalene	17	6.2	ng/L	SW846 8270A SIM
Acenaphthene	6.6	1.2	ng/L	SW846 8270A SIM
Dibenzofuran	1.2	0.95	ng/L	SW846 8270A SIM
Fluorene	1.9	0.95	ng/L	SW846 8270A SIM
Phenanthrene	3.3	1.2	ng/L	SW846 8270A SIM
Carbazole	2.2	1.8	ng/L	SW846 8270A SIM
Indene	16	0.86	ng/L	SW846 8270A SIM
1-Methylnaphthalene	3.3	2.7	ng/L	SW846 8270A SIM
2,3-Dihydroindene	12	4.8	ng/L	SW846 8270A SIM
Benzo(b)thiophene	6.8	0.86	ng/L	SW846 8270A SIM

(Continued on next page)

Quanterra

EXECUTIVE SUMMARY - Detection Highlights

D8E200134

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
PCJ-SLP16FB-051898 05/18/98 015				
Phenanthrene	2.0	1.2	ng/L	SW846 8270A SIM
PCJ-SLP16FBD-051898 05/18/98 016				
Phenanthrene	1.6	1.2	ng/L	SW846 8270A SIM

Quanterra

SAMPLE SUMMARY

D8E200134

WO #	SAMPLE#	CLIENT SAMPLE ID	DATE	TIME
CHA90	001	PCJ-SLP16-051898	05/18/98	
CHA92	002	PCJ-SLP16D-051898	05/18/98	
CHA93	003	PCJ-E15-051898	05/18/98	09:30
CHA95	004	PCJ-E13-051898	05/18/98	10:50
CHA96	005	MSH-SLP17-051998	05/19/98	
CHA97	006	MSH-SLP11FB-051998	05/19/98	
CHA99	007	MSH-SLP11FBD-051998	05/19/98	
CHA9A	008	PCJ-E2-051898	05/18/98	08:50
CHA9C	009	PCJ-E7-051898	05/18/98	09:05
CHA9D	010	PCJ-E3-051898	05/18/98	10:10
CHA9F	011	MSH-SLP12-051998	05/19/98	
CHA9G	012	MSH-SLP13-051998	05/19/98	
CHA9J	013	MSH-SLP11-051998	05/19/98	
CHA9L	014	MSH-SLP11D-051998	05/19/98	
CHA9N	015	PCJ-SLP16FB-051898	05/18/98	
CHA9P	016	PCJ-SLP16FBD-051898	05/18/98	

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

Quanterra

CITY OF ST. LOUIS PARK

Client Sample ID: MSH-SLP17-051998

GC/MS Semivolatiles

Lot-Sample #...: D8E200134-005 Work Order #...: CHA96101 Matrix.....: WATER
Date Sampled...: 05/19/98 Date Received..: 05/20/98
Prep Date.....: 05/25/98 Analysis Date..: 06/09/98
Prep Batch #...: 8145126 Analysis Time..: 00:17
Dilution Factor: 0.94 Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	ND	1.3	ng/L
Naphthalene	ND	6.2	ng/L
2-Methylnaphthalene	ND	3.7	ng/L
Acenaphthene	ND	1.2	ng/L
Dibenzofuran	ND	0.95	ng/L
Fluorene	ND	0.95	ng/L
Phenanthrene	2.5	1.2	ng/L
Anthracene	ND	2.6	ng/L
Carbazole	ND	1.8	ng/L
Fluoranthene	ND	2.9	ng/L
Pyrene	ND	1.3	ng/L
Benzo(a)anthracene	ND	2.4	ng/L
Chrysene	ND	2.7	ng/L
Benzo(b)fluoranthene	ND	2.4	ng/L
Benzo(k)fluoranthene	ND	2.2	ng/L
Benzo(a)pyrene	ND	2.2	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.0	ng/L
Benzo(ghi)perylene	ND	2.7	ng/L
Indene	ND	0.85	ng/L
1-Methylnaphthalene	ND	2.7	ng/L
2,3-Benzofuran	ND	4.8	ng/L
2,3-Dihydroindene	ND	4.7	ng/L
Benzo(b)thiophene	ND	0.85	ng/L
Indole	ND	2.4	ng/L
Biphenyl	ND	4.1	ng/L
Dibenzothiophene	ND	1.0	ng/L
Acridine	ND	5.8	ng/L
Benzo(e)pyrene	ND	1.8	ng/L
Perylene	ND	2.4	ng/L
Quinoline	ND	6.5	ng/L
Dibenz(a,h)anthracene	ND	1.5	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	57	(10 - 118)
Fluorene d-10	69	(41 - 162)
Naphthalene-d8	72	(21 - 108)

Quanterra

CITY OF ST. LOUIS PARK

Client Sample ID: MSH-SLP12-051998

GC/MS Semivolatiles

Lot-Sample #...: D8E200134-011 Work Order #...: CHA9F101 Matrix.....: WATER
Date Sampled...: 05/19/98 Date Received..: 05/20/98
Prep Date.....: 05/25/98 Analysis Date..: 06/09/98
Prep Batch #...: 8145126 Analysis Time..: 09:57
Dilution Factor: 0.94 Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	ND	1.3	ng/L
Naphthalene	ND	6.2	ng/L
2-Methylnaphthalene	ND	3.7	ng/L
Acenaphthene	ND	1.2	ng/L
Dibenzofuran	ND	0.95	ng/L
Fluorene	ND	0.95	ng/L
Phenanthrene	3.1	1.2	ng/L
Anthracene	ND	2.6	ng/L
Carbazole	ND	1.8	ng/L
Fluoranthene	ND	2.9	ng/L
Pyrene	ND	1.3	ng/L
Benzo(a)anthracene	ND	2.4	ng/L
Chrysene	ND	2.7	ng/L
Benzo(b)fluoranthene	ND	2.4	ng/L
Benzo(k)fluoranthene	ND	2.2	ng/L
Benzo(a)pyrene	ND	2.2	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.0	ng/L
Benzo(ghi)perylene	ND	2.7	ng/L
Indene	ND	0.85	ng/L
1-Methylnaphthalene	ND	2.7	ng/L
2,3-Benzofuran	ND	4.8	ng/L
2,3-Dihydroindene	ND	4.7	ng/L
Benzo(b)thiophene	ND	0.85	ng/L
Indole	ND	2.4	ng/L
Biphenyl	ND	4.1	ng/L
Dibenzothiophene	ND	1.0	ng/L
Acridine	ND	5.8	ng/L
Benzo(e)pyrene	ND	1.8	ng/L
Perylene	ND	2.4	ng/L
Quinoline	ND	6.5	ng/L
Dibenz(a,h)anthracene	ND	1.5	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	72	(10 - 118)
Fluorene d-10	74	(41 - 162)
Naphthalene-d8	81	(21 - 108)

Quanterra

CITY OF ST. LOUIS PARK

Client Sample ID: MSH-SLP13-051998

GC/MS Semivolatiles

Lot-Sample #...:	D8E200134-012	Work Order #...:	CHA9G101	Matrix.....:	WATER
Date Sampled...:	05/19/98	Date Received..:	05/20/98		
Prep Date.....:	05/25/98	Analysis Date..:	06/09/98		
Prep Batch #...:	8145126	Analysis Time..:	10:33		
Dilution Factor:	0.95	Method.....:	SW846 8270A SIM		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	ND	1.3	ng/L
Naphthalene	ND	6.2	ng/L
2-Methylnaphthalene	ND	3.7	ng/L
Acenaphthene	1.6	1.2	ng/L
Dibenzofuran	ND	0.95	ng/L
Fluorene	ND	0.95	ng/L
Phenanthrene	2.6	1.2	ng/L
Anthracene	ND	2.6	ng/L
Carbazole	ND	1.8	ng/L
Fluoranthene	ND	3.0	ng/L
Pyrene	ND	1.3	ng/L
Benzo(a)anthracene	ND	2.4	ng/L
Chrysene	ND	2.7	ng/L
Benzo(b)fluoranthene	ND	2.4	ng/L
Benzo(k)fluoranthene	ND	2.2	ng/L
Benzo(a)pyrene	ND	2.2	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.0	ng/L
Benzo(ghi)perylene	ND	2.7	ng/L
Indene	ND	0.86	ng/L
1-Methylnaphthalene	ND	2.7	ng/L
2,3-Benzofuran	ND	4.9	ng/L
2,3-Dihydroindene	ND	4.8	ng/L
Benzo(b)thiophene	ND	0.86	ng/L
Indole	ND	2.4	ng/L
Biphenyl	ND	4.1	ng/L
Dibenzothiophene	ND	1.0	ng/L
Acridine	ND	5.8	ng/L
Benzo(e)pyrene	ND	1.8	ng/L
Perylene	ND	2.4	ng/L
Quinoline	ND	6.6	ng/L
Dibenz(a,h)anthracene	ND	1.5	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	57	(10 - 118)
Fluorene d-10	69	(41 - 162)
Naphthalene-d8	69	(21 - 108)

Quanterra

CITY OF ST. LOUIS PARK

Client Sample ID: MSH-SLP11-051998

GC/MS Semivolatiles

Lot-Sample #...: D8E200134-013 Work Order #...: CHA9J101 Matrix.....: WATER
Date Sampled...: 05/19/98 Date Received..: 05/20/98
Prep Date.....: 05/25/98 Analysis Date..: 06/09/98
Prep Batch #...: 8145126 Analysis Time..: 11:10
Dilution Factor: 0.95 Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	ND	1.3	ng/L
Naphthalene	17	6.2	ng/L
2-Methylnaphthalene	ND	3.7	ng/L
Acenaphthene	6.7	1.2	ng/L
Dibenzofuran	1.2	0.95	ng/L
Fluorene	1.9	0.95	ng/L
Phenanthrene	3.2	1.2	ng/L
Anthracene	ND	2.6	ng/L
Carbazole	2.0	1.8	ng/L
Fluoranthene	ND	2.9	ng/L
Pyrene	ND	1.3	ng/L
Benzo(a)anthracene	ND	2.4	ng/L
Chrysene	ND	2.7	ng/L
Benzo(b)fluoranthene	ND	2.4	ng/L
Benzo(k)fluoranthene	ND	2.2	ng/L
Benzo(a)pyrene	ND	2.2	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.0	ng/L
Benzo(ghi)perylene	ND	2.7	ng/L
Indene	16	0.86	ng/L
1-Methylnaphthalene	3.2	2.7	ng/L
2,3-Benzofuran	ND	4.8	ng/L
2,3-Dihydroindene	12	4.8	ng/L
Benzo(b)thiophene	7.0	0.86	ng/L
Indole	ND	2.4	ng/L
Biphenyl	ND	4.1	ng/L
Dibenzothiophene	ND	1.0	ng/L
Acridine	ND	5.8	ng/L
Benzo(e)pyrene	ND	1.8	ng/L
Perylene	ND	2.4	ng/L
Quinoline	ND	6.6	ng/L
Dibenz(a,h)anthracene	ND	1.5	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	61	(10 - 118)
Fluorene d-10	69	(41 - 162)
Naphthalene-d8	76	(21 - 108)

Quanterra

CITY OF ST. LOUIS PARK

Client Sample ID: MSH-SLP11D-051998

GC/MS Semivolatiles

Lot-Sample #...: D8E200134-014 Work Order #...: CHA9L101 Matrix.....: WATER
Date Sampled...: 05/19/98 Date Received..: 05/20/98
Prep Date.....: 05/25/98 Analysis Date..: 06/09/98
Prep Batch #...: 8145126 Analysis Time..: 11:45
Dilution Factor: 0.95 Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	ND	1.3	ng/L
Naphthalene	17	6.2	ng/L
2-Methylnaphthalene	ND	3.7	ng/L
Acenaphthene	6.6	1.2	ng/L
Dibenzofuran	1.2	0.95	ng/L
Fluorene	1.9	0.95	ng/L
Phenanthrene	3.3	1.2	ng/L
Anthracene	ND	2.6	ng/L
Carbazole	2.2	1.8	ng/L
Fluoranthene	ND	3.0	ng/L
Pyrene	ND	1.3	ng/L
Benzo(a)anthracene	ND	2.4	ng/L
Chrysene	ND	2.7	ng/L
Benzo(b)fluoranthene	ND	2.4	ng/L
Benzo(k)fluoranthene	ND	2.2	ng/L
Benzo(a)pyrene	ND	2.2	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.0	ng/L
Benzo(ghi)perylene	ND	2.7	ng/L
Indene	16	0.86	ng/L
1-Methylnaphthalene	3.3	2.7	ng/L
2,3-Benzofuran	ND	4.9	ng/L
2,3-Dihydroindene	12	4.8	ng/L
Benzo(b)thiophene	6.8	0.86	ng/L
Indole	ND	2.4	ng/L
Biphenyl	ND	4.1	ng/L
Dibenzothiophene	ND	1.0	ng/L
Acridine	ND	5.8	ng/L
Benzo(e)pyrene	ND	1.8	ng/L
Perylene	ND	2.4	ng/L
Quinoline	ND	6.6	ng/L
Dibenz(a,h)anthracene	ND	1.5	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	63	(10 - 118)
Fluorene d-10	68	(41 - 162)
Naphthalene-d8	72	(21 - 108)

Chain of Custody Record

Quanterra

DUA-4124

D8E200134

Client: CITY OF ST. LOUIS PARK UTILITY DIVISION	Project Manager: SCOTT ANDERSON	Date: 5-19-98	Chain Of Custody Number: 24371
Address: 3752 WOODDALE AVENUE	Telephone Number (Area Code)/Fax Number: 924-2557 (612) 924-2570	Lab Number:	Page ____ of ____
City: ST. LOUIS PARK, MN 55416	Site Contact: SAME		
Project Name: SAME	Carrier/Waybill Number: FED EX 8008463 16827		
Contract/Purchase Order/Quote No			

Sample I D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Analysis: PPL PAH 5
MSH-SLP12-051998	5-19-98		WATER	1 LITER	AMBER	6	N/A		X
						~~6~~	~~N/A~~		~~X~~

Special Instructions: 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

Turn Around Time Required: [ ] Normal [ ] Rush

QC Level: [ ] I. [ ] II. [ ] III

Project Specific (Specify):

1 Relinquished By: MZK	Date: 5-19-98	Time: 1400	1 Received By: Priscilla Delta	Date: 5-20-98	Time: 0845
2 Relinquished By:	Date:	Time:	2 Received By:	Date:	Time:
3 Relinquished By:	Date:	Time:	3 Received By:	Date:	Time:

Comments:

DISTRIBUTION: W[illegible] Stays with Sample, CANARY - Returned to Client with Report, PINK - Field Copy

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Chain of Custody Record

Quanterra

DUA-4124

D8E200134

Client: CITY OF ST. LOUIS PARK UTILITY DIVISION	Project Manager: SCOTT ANDERSON	Date: 5-19-98	Chain Of Custody Number: 24369
Address: 3752 WOODDALE AVENUE	Telephone Number (Area Code)/Fax Number: 924-2557 (612) 924-2570	Lab Number:	Page ____ of ____
City: ST. LOUIS PARK, MN 55416	Site Contact: SAME		
Project Name: SAME	Carrier/Waybill Number: FED EX 8002463168 27		
Contract/Purchase Order/Quote No			

Sample I D No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Analysis: PPT PAH 5
MSH-SLP16FD-051998	5-19-98		WATER	1 LITER	AMBER	6	N/A		X
MSH-SLP16FDD-051998	5-19-98		WATER	1 LITER	AMBER	6	N/A		X

Special Instructions: 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

Turn Around Time Required: [ ] Normal [ ] Rush

QC Level: [ ] I. [ ] II. [ ] III.

Project Specific (Specify):

1 Relinquished By: MSH	Date: 5-19-98	Time: 1400	1 Received By: Donald Dalton	Date: 5-20-98	Time: 0845
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 Sample CANARY - Returned to Client with Report, PINK - Field Copy

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Chain of Custody Record

Quanterra

D8E200134

Client: CITY OF ST. LOUIS PARK UTILITY DIVISION 3752 WOODDALE AVENUE ST. LOUIS PARK, MN 55416	Project Manager: SCOTT ANDERSON	Date: 5-19-98	Chain Of Custody Number: 24370
Address	Telephone Number (Area Code)/Fax Number: 924-2557 (612) 924-2570	Lab Number	Page ____ of ____
City	Site Contact: SAME		
Project Name: SAME	Carrier/Waybill Number: FED EX 800846316827		
Contract/Purchase Order/Quote No			

Sample I D No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No	Preservative	Condition on Receipt	Analysis: PPT PAH 5
MSH-SLP12-051998	5-19-98		WATER	1LITER	AMBER	6	N/A		X
MSH-SLP13-051998	5-19-98		WATER	1LITER	AMBER	6	N/A		X

Special Instructions: 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

Turn Around Time Required: [ ] Normal [ ] Rush

QC Level: [ ] I. [ ] II. [ ] III.

Project Specific (Specify)

	Date	Time		Date	Time
1 Relinquished By: MZH	5-19-98	1400	1 Received By: Pirelli Dalton	5-20-98	0845
2 Relinquished By			2 Received By		
3 Relinquished By			3 Received By		

Comments

DISTRIBUTION: WH[illegible] Stays with Sample, CANARY - Returned to Client with Report, PINK - Field Copy

Chain of Custody Record

Quanterra

D8E200134

DUA 4124

Client: CITY OF ST. LOUIS PARK UTILITY DIVISION	Project Manager: SCOTT ANDERSON	Date: 5-19-98	Chain Of Custody Number: 24368
Address: 3752 WOODDALE AVENUE	Telephone Number (Area Code)/Fax Number: 924-2557 (612) 924-2570	Lab Number:	Page ____ of ____
City: ST. LOUIS PARK, MN 55416	Site Contact: SAME		
Project Name: SAME	Carrier/Waybill Number: FED EX 8008463168 27		
Contract/Purchase Order/Quote No			

Sample I.D. No and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No	Preservative	Condition on Receipt	Analysis: PPE PAH 5
MSH-SLPH -051998	5-19-98		WATER	1LITER	AMBER	6	N/A		X
MSH-SLPHD-051998	5-19-98		WATER	1LITER	AMBER	6	N/A		X

Special Instructions: PPE 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

Turn Around Time Required: [ ] Normal [ ] Rush

QC Level: [ ] I. [ ] II. [ ] III.

Project Specific (Specify):

	Date	Time		Date	Time
1 Relinquished By: MAN	5-19-98	1400	1 Received By: Pursalle Dalton	5-20-98	0840
2 Relinquished By			2 Received By		
3 Relinquished By			3 Received By		

Comments

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

38

APPENDIX B
LABORATORY DATA SUMMARY PACKAGE:
IRONTON-GALESVILLE AQUIFER

WELL

W105

Quanterra
Environmental Services

Quanterra Incorporated
4955 Yarrow Street
Arvada, Colorado 80002

303 421-6611 Telephone
303 431-7171 Fax

June 1, 1998

Mr. Scott E. Anderson
Superintendent of Utilities
City of St. Louis Park
3752 Wooddale Ave.
St. Louis Park, MN 55416-2216

Dear Scott:

Enclosed is the report for 11 aqueous samples received at Quanterra Environmental Services, Denver on April 22, 1998. Included with the report is a quality control summary. Please call if you have any questions.

Sincerely,

Kurt C. Ill
Technology Manager

Enclosures

Quanterra #0060040

Quanterra
Environmental Services

NARRATIVE

On April 22, 1998, Quanterra Environmental Services, Denver received 11 aqueous samples from the City of St. Louis Park.

This report presents the analytical results as well as supporting information to aid in the evaluation and interpretation of the data.

General Comments

Dilution factors listed on the data sheets for the aqueous semivolatile organic parameters are based on the volume of sample actually extracted relative to the nominal volume of 1.0 liter. Any additional dilutions performed on the samples after extraction are also included in the dilution factor. All results and reporting limits are adjusted relative to the sample volume extracted and any subsequent dilutions performed. Dilution factors are rounded to two significant figures for reporting; all calculations are performed before rounding.

GC/MS Semivolatile Organics

Client samples with laboratory Ids 060040-0001SA, -0003SA through –0009SA were analyzed at a dilution due to target analytes exceeding the linear range of the instrument. The reporting limits were raised accordingly. As a result of dilution, the surrogate compounds associated with the above samples were not detected and are reported as "NC", not calculated.

The matrix spike and matrix spike duplicate samples were analyzed at a dilution due to target analytes exceeding the linear range of the instrument. As a result of this dilution, the matrix spike compounds were not detected and are reported as "NC", not calculated.

With the exceptions noted above, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. All laboratory QC samples analyzed in conjunction with the samples in this project were within established control limits.

Quanterra
Environmental Services

SAMPLE DESCRIPTION INFORMATION
for
City of St. Louis Park

Lab ID	Client ID	Matrix	Sampled Date	Sampled Time	Received Date
060040-0001-SA	DPV-W27-042198	AQUEOUS	21 APR 98	14:00	22 APR 98
060040-0002-FB	IGV-W105FB-042198	AQUEOUS	21 APR 98	00:00	22 APR 98
060040-0002-FD	IGV-W105FBD-042198	AQUEOUS	21 APR 98	00:00	22 APR 98
060040-0003-SA	DPV-W143-042198	AQUEOUS	21 APR 98	09:40	22 APR 98
060040-0004-SA	DPV-W432-042198	AQUEOUS	21 APR 98	10:35	22 APR 98
060040-0005-SA	DPV-W22-042198	AQUEOUS	21 APR 98	11:30	22 APR 98
060040-0006-SA	DPV-W426-042198	AQUEOUS	21 APR 98	11:40	22 APR 98
060040-0007-SA	IGV-W105-042198	AQUEOUS	21 APR 98	00:00	22 APR 98
060040-0007-FD	IGV-W105D-042198	AQUEOUS	21 APR 98	00:00	22 APR 98
060040-0008-SA	DPV-W101-042198	AQUEOUS	21 APR 98	08:30	22 APR 98
060040-0009-SA	DPV-W120-042198	AQUEOUS	21 APR 98	09:00	22 APR 98

Quanterra Environmental Services

Method 8270B SIM - Polynuclear Aromatic Hydrocarbons
Method 8270B

Client Name: City of St. Louis Park
Client ID: IGV-W105-042198
Lab ID: 060040-0007-SA
Matrix: AQUEOUS Sampled: 21 APR 98 Prepared: 24 APR 98
Authorized: 22 APR 98 Received: 22 APR 98 Analyzed: 14 MAY 98

Parameter	Result	Units	Reporting Limit	
2,3-Benzofuran	ND	ng/L	97	
2,3-Dihydroindene	170	ng/L	95	
Indene	88	ng/L	17	
Naphthalene	1100	ng/L	120	
Benzo(b)thiophene	84	ng/L	17	
Quinoline	ND	ng/L	130	
1H-Indole	ND	ng/L	48	
2-Methylnaphthalene	220	ng/L	74	
1-Methylnaphthalene	250	ng/L	53	
Biphenyl	180	ng/L	82	
Acenaphthylene	78	ng/L	27	
Acenaphthene	500	ng/L	25	
Dibenzofuran	150	ng/L	19	
Fluorene	460	ng/L	19	
Dibenzothiophene	59	ng/L	21	
Phenanthrene	550	ng/L	25	B
Anthracene	58	ng/L	51	
Acridine	ND	ng/L	120	
Carbazole	76	ng/L	36	
Fluoranthene	800	ng/L	59	
Pyrene	670	ng/L	27	
Benzo(a)anthracene	ND	ng/L	48	
Chrysene	ND	ng/L	53	
Benzo(b)fluoranthene	ND	ng/L	48	
Benzo(k)fluoranthene	ND	ng/L	44	
Benzo(e)pyrene	ND	ng/L	36	
Benzo(a)pyrene	ND	ng/L	44	
Perylene	ND	ng/L	48	
Indeno(1,2,3-cd)pyrene	ND	ng/L	40	
Dibenz(a,h)anthracene	ND	ng/L	30	
Benzo(g,h,i)perylene	ND	ng/L	53	

Surrogate	Recovery		Limits
Naphthalene-d8	NC	%	24-108
Fluorene-d10	NC	%	21-103
Chrysene-d12	NC	%	1-137

Dilution factor is 19. All results and limits are corrected for dilution.

B = Compound is also detected in the blank.
NC = Not Calculated, calculation not applicable.
ND = Not Detected

Reported By: Tom Claeys Approved By: Audrey Cornell

Quanterra Environmental Services

Method 8270B SIM - Polynuclear Aromatic Hydrocarbons
Method 8270B

Client Name: City of St. Louis Park
Client ID: IGV-W105D-042198
Lab ID: 060040-0007-FD
Matrix: AQUEOUS Sampled: 21 APR 98 Prepared: 24 APR 98
Authorized: 22 APR 98 Received: 22 APR 98 Analyzed: 14 MAY 98

Parameter	Result	Units	Reporting Limit	
2,3-Benzofuran	ND	ng/L	97	
2,3-Dihydroindene	130	ng/L	95	
Indene	73	ng/L	17	
Naphthalene	880	ng/L	120	
Benzo(b)thiophene	63	ng/L	17	
Quinoline	ND	ng/L	130	
1H-Indole	ND	ng/L	47	
2-Methylnaphthalene	180	ng/L	74	
1-Methylnaphthalene	190	ng/L	53	
Biphenyl	140	ng/L	82	
Acenaphthylene	59	ng/L	27	
Acenaphthene	370	ng/L	25	
Dibenzofuran	120	ng/L	19	
Fluorene	370	ng/L	19	
Dibenzothiophene	50	ng/L	21	
Phenanthrene	470	ng/L	25	B
Anthracene	51	ng/L	51	
Acridine	ND	ng/L	120	
Carbazole	64	ng/L	36	
Fluoranthene	700	ng/L	59	
Pyrene	590	ng/L	27	
Benzo(a)anthracene	ND	ng/L	47	
Chrysene	ND	ng/L	53	
Benzo(b)fluoranthene	ND	ng/L	47	
Benzo(k)fluoranthene	ND	ng/L	44	
Benzo(e)pyrene	ND	ng/L	36	
Benzo(a)pyrene	ND	ng/L	44	
Perylene	ND	ng/L	47	
Indeno(1,2,3-cd)pyrene	ND	ng/L	40	
Dibenz(a,h)anthracene	ND	ng/L	30	
Benzo(g,h,i)perylene	ND	ng/L	53	

Surrogate	Recovery		Limits
Naphthalene-d8	NC	%	24-108
Fluorene-d10	NC	%	21-103
Chrysene-d12	NC	%	1-137

Dilution factor is 19. All results and limits are corrected for dilution.

B = Compound is also detected in the blank.
NC = Not Calculated, calculation not applicable.
ND = Not Detected

Reported By: Tom Claeys Approved By: Audrey Cornell

Chain of Custody Record

Quanterra

QUA-4124

Client	Project Manager: SCOTT ANDERSON	Date: 4-21-98	Chain Of Custody Number: 25615
Address	Telephone Number (Area Code)/Fax Number: 924-2557 (612) 924-2570	Lab Number: 60040	Page ____ of ____
City	Site Contact: SAME		
Project Name	Carrier/Waybill Number: FED EX 800846316908		
Contract/Purchase Order/Quote No.			

CITY OF ST. LOUIS PARK
UTILITY DIVISION
3752 WOODDALE AVENUE
ST. LOUIS PARK, MN 55416

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Analysis: PPE PAH 25
7 IGV-W105-042198	4-21-98		WATER	1 LITER	AMBER	6	—		X
7 IGV-W105D-042198	4-21-98		WATER	1 LITER	AMBER	6	—		X

Special Instructions: PPE 25

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

Sample Disposal: [ ] Return To Client [X] Disposal By Lab [ ] Archive For ____ Months

Turn Around Time Required: [ ] Normal [ ] Rush

QC Level: [ ] I. [ ] II. [ ] III.

Project Specific (Specify):

	Date	Time		Date	Time
1 Relinquished By: [signature]	4-21-98	1400	1 Received By: [signature]	4-22-98	0830
2 Relinquished By			2 Received By		
3 Relinquished By			3 Received By		

Comments

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

A 31

Chain of Custody Record

Quanterra

QUA-4124

Client: CITY OF ST. LOUIS PARK UTILITY DIVISION	Project Manager: SCOTT ANDERSON	Date: 4-21-98	Chain Of Custody Number: 25614
Address: 3752 WOODDALE AVENUE	Telephone Number (Area Code)/Fax Number: 924-2557 (612) 924-2570	Lab Number: 60040	Page ____ of ____
City: ST. LOUIS PARK, MN 55416	Site Contact: SAME		
Project Name: SAME	Carrier/Waybill Number: FED EX 800846316908		
Contract/Purchase Order/Quote No.			

Sample I D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Analysis: PPT PAH 75
02F IGV-W105FB-042198	4-21-98		WATER		AMBER	6	—		X
02FD IGV-W105FBD-042198	4-21-98		WATER		AMBER	6	—		X

Special Instructions: PPT 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

Turn Around Time Required: [ ] Normal [ ] Rush

QC Level: [ ] I. [ ] II. [ ] III.

Project Specific (Specify):

	Date	Time		Date	Time
1. Relinquished By: [signature]	4-21-98	1400	1. Received By: Priella Dalton	4-22-98	0830
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

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

A 28

APPENDIX C
LABORATORY DATA SUMMARY PACKAGE:
PRAIRIE DU CHIEN – JORDAN AQUIFER

WELLS

SLP4 SLP6 SLP7 SLP8 SLP9
SLP10 SLP14 SLP15 SLP16
E2 E3 E4 E7 E13 E15 H6 MTK6
W23 W29 W32 W40 W48 W70
W401 W402 W403 W406

SECTION 7.3(A)

RAP SECTION 7.3(A) MONITORING

WELLS

SLP4

FIRST HALF
PAH MONITORING

Quanterra
Environmental
Services

Quanterra Incorporated
4955 Yarrow Street
Arvada, Colorado 80002

303 421-6611 Telephone
303 431-7171 Fax

June 2, 1998

Mr. Scott E. Anderson
Superintendent of Utilities
City of St. Louis Park
3752 Wooddale Ave.
St. Louis Park, MN 55416-2216

Dear Scott:

Enclosed is the report for 11 aqueous samples received at Quanterra Environmental Services, Denver on April 29, 1998. Included with the report is a quality control summary. Please call if you have any questions.

Sincerely,

Kurt C. Ill
Technology Manager

Enclosures

Quanterra #0060158

Quanterra
Environmental Services

NARRATIVE

On April 29, 1998, Quanterra Environmental Services, Denver received 11 aqueous samples from the City of St. Louis Park.

This report presents the analytical results as well as supporting information to aid in the evaluation and interpretation of the data.

General Comments

Dilution factors listed on the data sheets for the aqueous semivolatile organic parameters are based on the volume of sample actually extracted relative to the nominal volume of 1.0 liter. Any additional dilutions performed on the samples after extraction are also included in the dilution factor. All results and reporting limits are adjusted relative to the sample volume extracted and any subsequent dilutions performed. Dilution factors are rounded to two significant figures for reporting; all calculations are performed before rounding.

GC/MS Semivolatile Organics

Client samples with laboratory Ids 060158-0001SA, -0002SA and –0003SA were analyzed at a dilution due to target analytes exceeding the linear range of the instrument. The reporting limits were raised accordingly. As a result of dilution, the surrogate compounds associated with sample 060158-0002SA were not detected and are reported as "NC", not calculated.

The spike compound Fluorene is reported at 265% and 319% recovery in the matrix spike and matrix spike duplicate samples which is outside the 69% to 118 % historical limits. Fluorene was spiked a less than 3 to 5 times the concentration of the sample. A matrix effect is indicated. With the exceptions noted above, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. All laboratory QC samples analyzed in conjunction with the samples in this project were within established control limits.

Quanterra
Environmental Services

SAMPLE DESCRIPTION INFORMATION
for
City of St. Louis Park

Lab ID	Client ID	Matrix	Sampled Date	Sampled Time	Received Date
060158-0001-SA	PCJ-SLP4F-042898	AQUEOUS	28 APR 98		29 APR 98
060158-0002-SA	PCJ-SLP10F-042898	AQUEOUS	28 APR 98		29 APR 98
060158-0003-SA	PCJ-SLP4-042898	AQUEOUS	28 APR 98		29 APR 98
060158-0004-SA	PCJ-SLP4T-042898	AQUEOUS	28 APR 98		29 APR 98
060158-0005-SA	PCJ-SLP4LE-042898	AQUEOUS	28 APR 98		29 APR 98
060158-0006-SA	PCJ-SLP10T-042898	AQUEOUS	28 APR 98		29 APR 98
060158-0006-DU	PCJ-SLP10TD-042898	AQUEOUS	28 APR 98		29 APR 98
060158-0006-MS	PCJ-SLP10TMS-042898	AQUEOUS	28 APR 98		29 APR 98
060158-0006-SD	PCJ-SLP10TMSD-042898	AQUEOUS	28 APR 98		29 APR 98
060158-0006-FB	PCJ-SLP10TFB-042898	AQUEOUS	28 APR 98		29 APR 98
060158-0006-FD	PCJ-SLP10TFBD-042898	AQUEOUS	28 APR 98		29 APR 98

Quanterra Environmental Services

Polynuclear Aromatic Hydrocarbons
Method 8270B

Client Name: City of St. Louis Park
Client ID: PCJ-SLP4-042898
Lab ID: 060158-0003-SA
Matrix: AQUEOUS Sampled: 28 APR 98 Prepared: 03 MAY 98
Authorized: 29 APR 98 Received: 29 APR 98 Analyzed: 22 MAY 98

Parameter	Result	Units	Reporting Limit	
2,3-Benzofuran	ND	ng/L	20	
2,3-Dihydroindene	160	ng/L	19	
Indene	8.6	ng/L	3.5	
Naphthalene	ND	ng/L	25	
Benzo(b)thiophene	27	ng/L	3.5	
Quinoline	ND	ng/L	27	
1H-Indole	ND	ng/L	9.6	
2-Methylnaphthalene	ND	ng/L	15	
1-Methylnaphthalene	ND	ng/L	11	
Biphenyl	ND	ng/L	17	
Acenaphthylene	ND	ng/L	5.4	
Acenaphthene	190	ng/L	5.0	
Dibenzofuran	ND	ng/L	3.8	
Fluorene	ND	ng/L	3.8	
Dibenzothiophene	ND	ng/L	4.2	
Phenanthrene	ND	ng/L	5.0	
Anthracene	ND	ng/L	10	
Acridine	ND	ng/L	23	
Carbazole	26	ng/L	7.3	
Fluoranthene	15	ng/L	12	B
Pyrene	13	ng/L	5.4	B
Benzo(a)anthracene	ND	ng/L	9.6	
Chrysene	ND	ng/L	11	
Benzo(b)fluoranthene	ND	ng/L	9.6	
Benzo(k)fluoranthene	ND	ng/L	8.8	
Benzo(e)pyrene	ND	ng/L	7.3	
Benzo(a)pyrene	ND	ng/L	8.8	
Perylene	ND	ng/L	9.6	
Indeno(1,2,3-cd)pyrene	ND	ng/L	8.1	
Dibenz(a,h)anthracene	ND	ng/L	6.2	
Benzo(g,h,i)perylene	ND	ng/L	11	

Surrogate	Recovery		Limits
Naphthalene-d8	71	%	21-108
Fluorene-d10	78	%	41-162
Chrysene-d12	48	%	10-118

Dilution factor is 3.8. All results and limits are corrected for dilution.

B = Compound is also detected in the blank.
ND = Not Detected

Reported By: Tom Claeys Approved By: Mary Helen Kelan

60158

Chain of Custody Record

Quanterra

QUA-4124 0797

Client: CITY OF ST. LOUIS PARK	Project Manager: SCOTT ANDERSON	Date: 4-28-98	Chain of Custody Number: 0208
Address: UTILITY DIVISION, 3752 WOODDALE AVENUE	Telephone Number (Area Code)/Fax Number: 924-2557 (612) 924-2570	Lab Number:	Page ____ of ____
City: ST. LOUIS PARK, MN 55416	Site Contact: SAME	Lab Contact:	
Project Name: SAME	Carrier/Waybill Number: FED EX 8608463162 82		
Contract/Purchase Order/Quote No.			

Analysis (Attach list if more space is needed): PCT PAH 5

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Aqueous	Sed.	Soil		Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH		PCT PAH 5	Special Instructions/ Conditions of Receipt
13 PCT-SLP4-042898	4-28-98		X											X	PCT 5
	~~4-28-98~~		~~X~~											~~X~~	~~PCT 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):

1. Relinquished By: 7024	Date: 4-28-98	Time: 1400	1. Received By: Nancy R Higgins	Date: 4/29/98	Time: 08:30
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

A 25

[redacted]

Chain of Custody Record

60158

Quanterra

QUA-4124 0797

Client: CITY OF ST. LOUIS PARK UTILITY DIVISION 3752 WOODDALE AVENUE ST. LOUIS PARK, MN 55416	Project Manager: SCOTT ANDERSON	Date: 4-28-98	Chain of Custody Number: 0208
Address	Telephone Number (Area Code)/Fax Number: 924-2557 (612) 924-2570	Lab Number	Page ____ of ____
City	Site Contact: SAME	Lab Contact	
Project Name: SAME	Carrier/Waybill Number: FED EX 800846316882		
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Aqueous	Sed	Soil		Containers & Preservatives: Unpres	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH		Analysis (Attach list if more space is needed)	Special Instructions/ Conditions of Receipt
4 PCJ-SLP4T-042898			X											X	PPT 5
5 PCJ-SLP4LE-042898			X											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 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]	4-28-98	1400	1. Received By: Tony Higgins	4/29/98	08:30
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

A 26

SECOND HALF
PAH MONITORING

Quanterra Incorporated
4955 Yarrow Street
Arvada, Colorado 80002

303 421-6611 Telephone
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Quanterra
Environmental Services

ANALYTICAL REPORT

Reilly Tar & Chemical NPL Site

Lot #: D8I150121

Scott Anderson

City of St. Louis Park

QUANTERRA INCORPORATED

Kurt C. Ill
Project Manager

October 16, 1998

Advanced Analytical Services

Quanterra Incorporated
4955 Yarrow Street
Arvada, Colorado 80002

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CASE NARRATIVE

FOR

City of St. Louis Park

October 16, 1998

Quanterra Environmental Services

Project Lot Number D8I150121

Introduction

Eleven aqueous samples (including matrix QC) were received at Quanterra Environmental Services, Denver Laboratory on September 14, 1998. The samples were logged in under Quanterra Denver's project lot number D8I150121. A cross reference associating Quanterra Denver's laboratory sample numbers to the actual field sample number is included. The samples were analyzed for part per trillion (ppt) PAHs.

Data Quality Assessment

The results contained in this report were reviewed relative to data acceptance criteria as specified in the October 1997 QAPP for completeness, precision, accuracy, representativeness and defensibility of the data. Unless otherwise stated below, no quality control problems or technical difficulties were encountered which would impact the interpretation or use of data in this report.

Client samples with laboratory Id's D8i150121-005 and –009 have recoveries for the surrogate fluorene d-10 repor below the 41% to 162 acceptance limits but above the 30% lower limit. Fluorene d-10 in the method blank and LCS are within acceptance limits. A possible matrix effect is indicated.

The RPD for naphthalene, 2-methylnaphthalene, fluorene and quinoline are reported above the 20% acceptance limits. The LCS associated with these samples is within acceptance limits. A possible matrix effect is indicated.

Except for the above, this data package is in compliance with the terms and conditions of the October 1997 QAPP, both technically and for completeness

Reported By: Kurt C. Ill **Date:** October 16, 1998

Kurt C. Ill
Customer Service Manger

EXECUTIVE SUMMARY - Detection Highlights

D8I150121

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
PCJ-SLP4-091498 09/14/98 001				
Naphthalene	2.9 J	6.6	ng/L	SW846 8270A SIM
Acenaphthene	110	1.3	ng/L	SW846 8270A SIM
Phenanthrene	3.8 B	1.3	ng/L	SW846 8270A SIM
Anthracene	1.3 J	2.7	ng/L	SW846 8270A SIM
Carbazole	16 B	1.9	ng/L	SW846 8270A SIM
Fluoranthene	9.0	3.1	ng/L	SW846 8270A SIM
Pyrene	8.4	1.4	ng/L	SW846 8270A SIM
Chrysene	0.30 J	2.8	ng/L	SW846 8270A SIM
Benzo(b)fluoranthene	0.39 J	2.5	ng/L	SW846 8270A SIM
Benzo(a)pyrene	0.44 J	2.3	ng/L	SW846 8270A SIM
Benzo(ghi)perylene	0.33 J	2.8	ng/L	SW846 8270A SIM
Indene	13 B	0.91	ng/L	SW846 8270A SIM
2,3-Dihydroindene	94	5.0	ng/L	SW846 8270A SIM
Benzo(b)thiophene	19	0.91	ng/L	SW846 8270A SIM
Benzo(e)pyrene	0.22 J	1.9	ng/L	SW846 8270A SIM
PCJ-SLP4D-091498 09/14/98 002				
Acenaphthylene	2.1	1.4	ng/L	SW846 8270A SIM
Naphthalene	4.0 J	6.5	ng/L	SW846 8270A SIM
Acenaphthene	140	1.3	ng/L	SW846 8270A SIM
Phenanthrene	5.2 B	1.3	ng/L	SW846 8270A SIM
Anthracene	1.7 J	2.7	ng/L	SW846 8270A SIM
Carbazole	28 B	1.9	ng/L	SW846 8270A SIM
Fluoranthene	14	3.1	ng/L	SW846 8270A SIM
Pyrene	13	1.4	ng/L	SW846 8270A SIM
Benzo(a)pyrene	0.24 J	2.3	ng/L	SW846 8270A SIM
Benzo(ghi)perylene	0.24 J	2.8	ng/L	SW846 8270A SIM
Indene	7.5 B	0.91	ng/L	SW846 8270A SIM
2,3-Dihydroindene	120	5.0	ng/L	SW846 8270A SIM
Benzo(b)thiophene	25	0.91	ng/L	SW846 8270A SIM
Benzo(e)pyrene	0.16 J	1.9	ng/L	SW846 8270A SIM
PCJ-SLP4FB-091498 09/14/98 003				
Naphthalene	3.4 J	7.2	ng/L	SW846 8270A SIM
Fluorene	0.43 J	1.1	ng/L	SW846 8270A SIM
Phenanthrene	3.1 B	1.4	ng/L	SW846 8270A SIM
Anthracene	0.23 J	3.0	ng/L	SW846 8270A SIM
Fluoranthene	1.4 J	3.4	ng/L	SW846 8270A SIM
Pyrene	0.98 J	1.5	ng/L	SW846 8270A SIM
Chrysene	0.15 J	3.1	ng/L	SW846 8270A SIM
1-Methylnaphthalene	0.86 J	3.1	ng/L	SW846 8270A SIM

(Continued on next page)

EXECUTIVE SUMMARY - Detection Highlights

D8I150121

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
PCJ-SLP4FBD-091498 09/14/98 004				
Naphthalene	2.3 J	6.5	ng/L	SW846 8270A SIM
2-Methylnaphthalene	1.9 J	3.9	ng/L	SW846 8270A SIM
Fluorene	0.57 J	1.0	ng/L	SW846 8270A SIM
Phenanthrene	2.9 B	1.3	ng/L	SW846 8270A SIM
Anthracene	0.21 J	2.7	ng/L	SW846 8270A SIM
Fluoranthene	1.3 J	3.1	ng/L	SW846 8270A SIM
Pyrene	0.97 J	1.4	ng/L	SW846 8270A SIM
Benzo(a)anthracene	0.13 J	2.5	ng/L	SW846 8270A SIM
1-Methylnaphthalene	0.87 J	2.8	ng/L	SW846 8270A SIM
Biphenyl	0.28 J	4.3	ng/L	SW846 8270A SIM
DPV-W1-091498 09/14/98 07:50 005				
Naphthalene	28	6.7	ng/L	SW846 8270A SIM
2-Methylnaphthalene	18	4.0	ng/L	SW846 8270A SIM
Acenaphthene	5.9	1.3	ng/L	SW846 8270A SIM
Dibenzofuran	5.2	1.0	ng/L	SW846 8270A SIM
Fluorene	4.6	1.0	ng/L	SW846 8270A SIM
Phenanthrene	13 B	1.3	ng/L	SW846 8270A SIM
Anthracene	11	2.8	ng/L	SW846 8270A SIM
Carbazole	8.8 B	2.0	ng/L	SW846 8270A SIM
Fluoranthene	13	3.2	ng/L	SW846 8270A SIM
Pyrene	15	1.4	ng/L	SW846 8270A SIM
Benzo(a)anthracene	11	2.6	ng/L	SW846 8270A SIM
Chrysene	12	2.9	ng/L	SW846 8270A SIM
Benzo(b)fluoranthene	12	2.6	ng/L	SW846 8270A SIM
Benzo(k)fluoranthene	4.5	2.3	ng/L	SW846 8270A SIM
Benzo(a)pyrene	9.4	2.4	ng/L	SW846 8270A SIM
Indeno(1,2,3-cd)pyrene	6.6	2.2	ng/L	SW846 8270A SIM
Benzo(ghi)perylene	5.8	2.9	ng/L	SW846 8270A SIM
Indene	9.1 B	0.93	ng/L	SW846 8270A SIM
1-Methylnaphthalene	11	2.9	ng/L	SW846 8270A SIM
2,3-Dihydroindene	14	5.1	ng/L	SW846 8270A SIM
Biphenyl	4.4	4.4	ng/L	SW846 8270A SIM
Benzo(e)pyrene	7.3	2.0	ng/L	SW846 8270A SIM
Perylene	2.2 J	2.6	ng/L	SW846 8270A SIM
Dibenz(a,h)anthracene	1.7	1.6	ng/L	SW846 8270A SIM
DPV-W20-091498 09/14/98 08:30 006				
Naphthalene	7.5	7.1	ng/L	SW846 8270A SIM
Acenaphthene	7.1	1.4	ng/L	SW846 8270A SIM
Fluorene	2.6	1.1	ng/L	SW846 8270A SIM

(Continued on next page)

SAMPLE SUMMARY

D8I150121

WO #	SAMPLE#	CLIENT SAMPLE ID	DATE	TIME
CLG4C	001	PCJ-SLP4-091498	09/14/98	
CLG4W	002	PCJ-SLP4D-091498	09/14/98	
CLG50	003	PCJ-SLP4FB-091498	09/14/98	
CLG52	004	PCJ-SLP4FBD-091498	09/14/98	
CLG55	005	DPV-W1-091498	09/14/98	07:50
CLG5D	006	DPV-W20-091498	09/14/98	08:30
CLG5E	007	DPV-W121-091498	09/14/98	09:20
CLG5F	008	DPV-W18-091498	09/14/98	10:45
CLG5G	009	DPV-W19-091498	09/14/98	11:25

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-SLP4-091498

GC/MS Semivolatiles

Lot-Sample #...: D8I150121-001 Work Order #...: CLG4C101 Matrix.....: WATER
Date Sampled...: 09/14/98 Date Received..: 09/15/98
Prep Date.....: 09/16/98 Analysis Date..: 10/09/98
Prep Batch #...: 8264137 Analysis Time..: 16:52
Dilution Factor: 1

Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	ND	1.4	ng/L
Naphthalene	2.9 J	6.6	ng/L
2-Methylnaphthalene	ND	3.9	ng/L
Acenaphthene	110	1.3	ng/L
Dibenzofuran	ND	1.0	ng/L
Fluorene	ND	1.0	ng/L
Phenanthrene	3.8 B	1.3	ng/L
Anthracene	1.3 J	2.7	ng/L
Carbazole	16 B	1.9	ng/L
Fluoranthene	9.0	3.1	ng/L
Pyrene	8.4	1.4	ng/L
Benzo(a)anthracene	ND	2.5	ng/L
Chrysene	0.30 J	2.8	ng/L
Benzo(b)fluoranthene	0.39 J	2.5	ng/L
Benzo(k)fluoranthene	ND	2.3	ng/L
Benzo(a)pyrene	0.44 J	2.3	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Benzo(ghi)perylene	0.33 J	2.8	ng/L
Indene	13 B	0.91	ng/L
1-Methylnaphthalene	ND	2.8	ng/L
2,3-Benzofuran	ND	5.1	ng/L
2,3-Dihydroindene	94	5.0	ng/L
Benzo(b)thiophene	19	0.91	ng/L
Indole	ND	2.5	ng/L
Biphenyl	ND	4.3	ng/L
Dibenzothiophene	ND	1.1	ng/L
Acridine	ND	6.1	ng/L
Benzo(e)pyrene	0.22 J	1.9	ng/L
Perylene	ND	2.5	ng/L
Quinoline	ND	7.0	ng/L
Dibenz(a,h)anthracene	ND	1.6	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	62	(10 - 118)
Fluorene d-10	47	(41 - 162)
Naphthalene-d8	58	(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: PCJ-SLP4D-091498

GC/MS Semivolatiles

Lot-Sample #...: D8I150121-002 Work Order #...: CLG4W101 Matrix.....: WATER
Date Sampled...: 09/14/98 Date Received..: 09/15/98
Prep Date.....: 09/16/98 Analysis Date..: 10/13/98
Prep Batch #...: 8264137 Analysis Time..: 14:34
Dilution Factor: 1

Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	2.1	1.4	ng/L
Naphthalene	4.0 J	6.5	ng/L
2-Methylnaphthalene	ND	3.9	ng/L
Acenaphthene	140	1.3	ng/L
Dibenzofuran	ND	1.0	ng/L
Fluorene	ND	1.0	ng/L
Phenanthrene	5.2 B	1.3	ng/L
Anthracene	1.7 J	2.7	ng/L
Carbazole	28 B	1.9	ng/L
Fluoranthene	14	3.1	ng/L
Pyrene	13	1.4	ng/L
Benzo(a)anthracene	ND	2.5	ng/L
Chrysene	ND	2.8	ng/L
Benzo(b)fluoranthene	ND	2.5	ng/L
Benzo(k)fluoranthene	ND	2.3	ng/L
Benzo(a)pyrene	0.24 J	2.3	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Benzo(ghi)perylene	0.24 J	2.8	ng/L
Indene	7.5 B	0.91	ng/L
1-Methylnaphthalene	ND	2.8	ng/L
2,3-Benzofuran	ND	5.1	ng/L
2,3-Dihydroindene	120	5.0	ng/L
Benzo(b)thiophene	25	0.91	ng/L
Indole	ND	2.5	ng/L
Biphenyl	ND	4.3	ng/L
Dibenzothiophene	ND	1.1	ng/L
Acridine	ND	6.1	ng/L
Benzo(e)pyrene	0.16 J	1.9	ng/L
Perylene	ND	2.5	ng/L
Quinoline	ND	6.9	ng/L
Dibenz(a,h)anthracene	ND	1.6	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	38	(10 - 118)
Fluorene d-10	64	(41 - 162)
Naphthalene-d8	66	(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.

Chain of Custody Record

Quanterra

QUA-4124

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	924-2557 (612) 924-2570
Site Contact	SAME
Carrier/Waybill Number	FED EX 800846316757
Project Name	SAME
Contract/Purchase Order/Quote No	
Date	9-14-98
Lab Number	D8I150121
Chain Of Custody Number	24399
Page ____ of ____	

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No	Preservative	Condition on Receipt	Analysis: PPE PAH
PCJ-SLP4 -091498	9-14-98		WATER	1 LITER	AMBER	6	N/A		X
PCJ-SLP4D-091498	9-14-98		WATER	1 LITER	AMBER	6	N/A		X

Special Instructions: PPE 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

Turn Around Time Required: [ ] Normal [ ] Rush

QC Level: [ ] I. [ ] II. [ ] III.

Project Specific (Specify):

	Date	Time		Date	Time
1 Relinquished By: MZK	9-14-98	1400	1 Received By: D. BUCKHEISTER	9.15.98	900
2 Relinquished By			2. Received By		
3 Relinquished By			3 Received By		

Comments: 2

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

SECTION 7.3(B)

RAP SECTION 7.3(B) MONITORING

WELL
W23

FIRST HALF MONITORING

Quanterra
Environmental Services

Quanterra Incorporated
4955 Yarrow Street
Arvada, Colorado 80002

303 421-6611 Telephone
303 431-7171 Fax

CASE NARRATIVE

FOR

CITY OF ST. LOUIS PARK

MARCH 9, 1998

QUANTERRA ENVIRONMENTAL SERVICES

PROJECT NUMBER 059065

Introduction

Twelve aqueous samples (including matrix QC) were received at Quanterra Environmental Services, Denver Laboratory on February 11, 1998. The samples were logged in under Quanterra Denver's project number 059065. A cross reference associating Quanterra Denver's laboratory sample numbers to the actual field sample number is included. The samples were analyzed for part-per-billion (ppb) polynuclear aromatic hydrocarbons (PAH).

Data Quality Assessment

The results contained in this report were reviewed relative to data acceptance criteria as specified in the October 1997 QAPP for completeness, precision, accuracy, representativeness and defensibility of the data. Unless otherwise stated below, no quality control problems or technical difficulties were encountered which would impact the interpretation or use of data in this report.

Client samples with laboratory IDs 059065-0001-SA, -0001-FD, -0001-MS, -0001-SD, -0003-SA, -0005-SA, and -0007-SA were analyzed at dilutions due to target analytes exceeding the calibration range of the instrument. The reporting limits were raised accordingly. All the surrogate compounds associated with these samples were not detected as a result of the dilutions and are reported as "0D".

Quanterra
Environmental Services

The recovery of naphthalene was outside control limits for the matrix spike and matrix spike duplicate. The unspiked concentration in the sample was approximately 40 times the spike concentration. Since the LCS was recovered within control limits, the data were accepted.

Except for the above, this data package is in compliance with the terms and conditions of the October 1997 QAPP, both technically and for completeness

Reported By: Lindsay Breyer
Program Manager

Date: 3/9/98

Quanterra Environmental Services

SAMPLE DESCRIPTION INFORMATION
for
City of St. Louis Park

Lab ID	Client ID	Matrix	Sampled Date	Sampled Time	Received Date
059065-0001-SA	DPV-W420-021098	AQUEOUS	10 FEB 98		11 FEB 98
059065-0001-FD	DPV-W420D-021098	AQUEOUS	10 FEB 98		11 FEB 98
059065-0001-MS	DPV-W420MS-021098	AQUEOUS	10 FEB 98		11 FEB 98
059065-0001-SD	DPV-W420MSD-021098	AQUEOUS	10 FEB 98		11 FEB 98
059065-0002-FB	DPV-W420FB-021098	AQUEOUS	10 FEB 98		11 FEB 98
059065-0002-FD	DPV-W420FBD-021098	AQUEOUS	10 FEB 98		11 FEB 98
059065-0003-SA	DPV-W421-021098	AQUEOUS	10 FEB 98		11 FEB 98
059065-0004-SA	DPV-W422-021098	AQUEOUS	10 FEB 98		11 FEB 98
059065-0005-SA	DPV-W439-021098	AQUEOUS	10 FEB 98		11 FEB 98
059065-0006-SA	DPV-W434-021098	AQUEOUS	10 FEB 98		11 FEB 98
059065-0007-SA	GTF-SFR-021098	AQUEOUS	10 FEB 98		11 FEB 98
059065-0008-SA	GTF-ACFE-021098	AQUEOUS	10 FEB 98		11 FEB 98
059065-0009-SA	STP-W410-021098	AQUEOUS	10 FEB 98		11 FEB 98
059065-0010-SA	PCJ-W23-021098	AQUEOUS	10 FEB 98		11 FEB 98

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PCJW23

Lab Name: QUANTERRA DENVER Contract:

Lab Code: Case No.: 59065 SAS No.: SDG No.: 59065

Matrix: (soil/water) WATER Lab Sample ID: 59065-10

Sample wt/vol: 1060 (g/ml) ML Lab File ID: D3119

Level: (low/med) LOW Date Received: 02/11/98

% Moisture: _____ decanted: (Y/N)___ Date Extracted:02/12/98

Concentrated Extract Volume: 1.0(ml) Date Analyzed: 02/26/98

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
91-20-3	Naphthalene	9.4	U
91-57-6	2-Methylnaphthalene	9.4	U
208-96-8	Acenaphthylene	9.4	U
83-32-9	Acenaphthene	9.4	U
132-64-9	Dibenzofuran	9.4	U
86-73-7	Fluorene	9.4	U
85-01-8	Phenanthrene	9.4	U
120-12-7	Anthracene	9.4	U
206-44-0	Fluoranthene	9.4	U
129-00-0	Pyrene	9.4	U
56-55-3	Benzo(a)Anthracene	9.4	U
218-01-9	Chrysene	9.4	U
205-99-2	Benzo(b)fluoranthene	9.4	U
207-08-9	Benzo(k)fluoranthene	9.4	U
50-32-8	Benzo(a)pyrene	9.4	U
193-39-5	Indeno(1,2,3-cd)pyrene	9.4	U
53-70-3	Dibenz(a,h)anthracene	9.4	U
191-24-2	Benzo(g,h,i)perylene	9.4	U
86-74-8	Carbazole	9.4	U
95-13-6	1H-Indene	9.4	U
91-22-5	Quinoline	9.4	U
90-12-0	1-Methylnaphthalene	9.4	U
271-89-6	2,3-Benzofuran	9.4	U
496-11-7	2,3-Dihydroindene	9.4	U
95-15-8	Benzo(b)thiophene	9.4	U
120-72-9	1H-Indole	9.4	U
92-52-4	Biphenyl	9.4	U
132-65-0	Dibenzothiophene	9.4	U
260-94-6	Acridine	9.4	U
192-97-2	Benzo(e)pyrene	9.4	U
198-55-0	Perylene	9.4	U

Chain of Custody Record

Quanterra Environmental Services

QUA-4124

Client: CITY OF ST. LOUIS PARK UTILITY DIVISION	Project Manager: SCOTT ANDERSON	Date: 2-10-98	Chain Of Custody Number: 25649
Address: 3752 WOODDALE AVENUE	Telephone Number (Area Code)/Fax Number: 924-2557 (612) 924-2570	Lab Number: 59065	Page 1 of 6
City: ST. LOUIS PARK, MN 55416	Site Contact: SAME		
Project Name: SAME	Carrier/Waybill Number: FED EX 8008463 16930		
Contract/Purchase Order/Quote No			

	Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Analysis: PPB PAH
06	DPU-W434-021098	2-10-98		WATER	1 LITER	AMBER	2	NONE		X
07	GTF-SFR-021098	〃		〃	〃	〃	〃	〃		〃
08	GTF-ACFE-021098	〃		〃	〃	〃	〃	〃		〃
09	STP-W410-021098	〃		〃	〃	〃	〃	〃		〃
10	PCJ-W23-021098	2-10-98		WATER	1 LITER	AMBER	2	NONE		X

Special Instructions: PPB 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

Turn Around Time Required: [ ] Normal [ ] Rush

QC Level: [ ] I. [ ] II. [ ] III.

Project Specific (Specify):

	Date	Time		Date	Time
1. Relinquished By: [signature]	2-10-98	1400	1. Received By: Paulette Dalton	2-11-98	0835
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

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

SECOND HALF MONITORING

Advanced Analytical Services

Quanterra Incorporated
4955 Yarrow Street
Arvada, Colorado 80002

303 421-6611 Telephone
303 467-9136 Fax

CASE NARRATIVE

FOR

City of St. Louis Park

January 9, 1999

Quanterra Environmental Services

Project Lot Number D8K040122

Introduction

Fourteen aqueous samples (including matrix QC) were received at Quanterra Environmental Services, Denver Laboratory on November 4, 1998. The samples were logged in under Quanterra Denver's project lot number D8K040122. A cross reference associating Quanterra Denver's laboratory sample numbers to the actual field sample number is included. The samples were analyzed for part per billion (ppb) PAHs and total recoverable phenolics.

Data Quality Assessment

The results contained in this report were reviewed relative to data acceptance criteria as specified in the October 1997 QAPP for completeness, precision, accuracy, representativeness and defensibility of the data. Unless otherwise stated below, no quality control problems or technical difficulties were encountered which would impact the interpretation or use of data in this report.

All samples were extracted within holding times, however, due to laboratory error the 40 day analytical holding time was exceeded. The method blank, LCS, and samples –001 through –006 including the matrix spike and matrix spike duplicate samples were originally analyzed within holding times. The data for both sets of analyses correlate well. Both sets of data are included in the raw data.

Client sample with laboratory Id D8K040122-001, -002, -005 and -007 were analyzed at a dilution due to target analytes exceeding the linear range of the instrument. The reporting limits were raised accordingly.

The native concentration of naphthalene in the sample was greater than 5 times the concentration of the spiked amount in the matrix spike and matrix spike duplicate samples. As a result the percent recoveries are suspect and should not be used to demonstrate recoveries from the matrix.

Except for the above, this data package is in compliance with the terms and conditions of the October 1997 QAPP, both technically and for completeness.

Reported By: Phyllis Johnson for Kurt Ill **Date:** Jan. 14, 1999

Kurt C. Ill
Customer Service Manger

EXECUTIVE SUMMARY - Detection Highlights

D8K040122

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
GTF-SFR 11/03/98 009				
2-Methylnaphthalene	10	10	ug/L	SW846 8270B
1-Methylnaphthalene	10	10	ug/L	SW846 8270B
Biphenyl	4.8 J	10	ug/L	SW846 8270B
Acenaphthene	32	10	ug/L	SW846 8270B
Dibenzofuran	9.2 J	10	ug/L	SW846 8270B
Fluorene	15	10	ug/L	SW846 8270B
Dibenzothiophene	3.0 J	10	ug/L	SW846 8270B
Phenanthrene	8.1 J	10	ug/L	SW846 8270B
Acridine	2.9 J	10	ug/L	SW846 8270B
Carbazole	23	10	ug/L	SW846 8270B
Fluoranthene	1.7 J	10	ug/L	SW846 8270B
Total Phenols	0.053	0.0050	mg/L	MCAWW 420.1
GTF-ACFE 11/03/98 010				
2,3-Benzofuran	1.5 J	10	ug/L	SW846 8270B
2,3-Dihydroindene	56	10	ug/L	SW846 8270B
Benzo(b)thiophene	9.9 J	10	ug/L	SW846 8270B
Indole	0.075 J	10	ug/L	SW846 8270B
1-Methylnaphthalene	9.6 J	10	ug/L	SW846 8270B
Biphenyl	4.6 J	10	ug/L	SW846 8270B
Acenaphthene	27	10	ug/L	SW846 8270B
Dibenzofuran	8.6 J	10	ug/L	SW846 8270B
Fluorene	14	10	ug/L	SW846 8270B
Phenanthrene	5.6 J	10	ug/L	SW846 8270B
Acridine	1.7 J	10	ug/L	SW846 8270B
Carbazole	18	10	ug/L	SW846 8270B
Fluoranthene	1.6 J	10	ug/L	SW846 8270B
Total Phenols	0.047	0.0050	mg/L	MCAWW 420.1
STP-W410' 11/03/98 012				
2,3-Dihydroindene	4.7 J	10	ug/L	SW846 8270B
Benzo(b)thiophene	1.2 J	10	ug/L	SW846 8270B
Biphenyl	0.042 J	10	ug/L	SW846 8270B
PCJ-W23-110398 11/03/98 013				
2,3-Dihydroindene	2.5 J	10	ug/L	SW846 8270B
Naphthalene	12	10	ug/L	SW846 8270B
Benzo(b)thiophene	0.59 J	10	ug/L	SW846 8270B
1-Methylnaphthalene	3.4 J	10	ug/L	SW846 8270B
Biphenyl	1.2 J	10	ug/L	SW846 8270B

(Continued on next page)

EXECUTIVE SUMMARY - Detection Highlights

D8K040122

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
PCJ-W23-110398 11/03/98 013				
Acenaphthene	6.8 J	10	ug/L	SW846 8270B
Dibenzofuran	2.2 J	10	ug/L	SW846 8270B
Fluorene	4.7 J	10	ug/L	SW846 8270B
Dibenzothiophene	0.60 J	10	ug/L	SW846 8270B
Phenanthrene	2.8 J	10	ug/L	SW846 8270B
Acridine	0.50 J	10	ug/L	SW846 8270B
Fluoranthene	2.5 J	10	ug/L	SW846 8270B
Pyrene	2.3 J	10	ug/L	SW846 8270B

CITY OF ST. LOUIS PARK

Client Sample ID: PCJ-W23-110398

GC/MS Semivolatiles

Lot-Sample #...: D8K040122-013 Work Order #...: CN451101 Matrix.....: WATER
Date Sampled...: 11/03/98 Date Received..: 11/04/98
Prep Date.....: 11/07/98 Analysis Date..: 01/07/99
Prep Batch #...: 8313369 Analysis Time..: 21:52
Dilution Factor: 1

Method.....: SW846 8270B

PARAMETER	RESULT	REPORTING LIMIT	UNITS
2,3-Benzofuran	ND	10	ug/L
2,3-Dihydroindene	2.5 J	10	ug/L
Indene	ND	10	ug/L
Naphthalene	12	10	ug/L
Benzo(b)thiophene	0.59 J	10	ug/L
Quinoline	ND	10	ug/L
Indole	ND	10	ug/L
2-Methylnaphthalene	ND	10	ug/L
1-Methylnaphthalene	3.4 J	10	ug/L
Biphenyl	1.2 J	10	ug/L
Acenaphthylene	ND	10	ug/L
Acenaphthene	6.8 J	10	ug/L
Dibenzofuran	2.2 J	10	ug/L
Fluorene	4.7 J	10	ug/L
Dibenzothiophene	0.60 J	10	ug/L
Phenanthrene	2.8 J	10	ug/L
Anthracene	ND	10	ug/L
Acridine	0.50 J	10	ug/L
Carbazole	ND	10	ug/L
Fluoranthene	2.5 J	10	ug/L
Pyrene	2.3 J	10	ug/L
Benzo(a)anthracene	ND	10	ug/L
Chrysene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
Benzo(e)pyrene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Perylene	ND	10	ug/L
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Benzo(ghi)perylene	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	87	(25 - 160)
Fluorene d-10	36	(36 - 127)
Naphthalene-d8	72	(37 - 107)

NOTE(S):

J Estimated result Result is less than RL

Chain of Custody Record

Quanterra Environmental Services

QUA 4124

Client: CITY OF ST. LOUIS PARK UTILITY DIVISION	Project Manager: Scott Anderson	Date: 11-3-98	Chain Of Custody Number: 25658
Address: 3752 WOODDALE AVENUE	Telephone Number (Area Code)/Fax Number: 924-2557 (612) 924-2570	Lab Number:	Page ____ of ____
City: ST. LOUIS PARK, MN 55416	Site Contact: SAME		
Project Name: SAME	Carrier/Waybill Number: FED EX 800846316713		
Contract/Purchase Order/Quote No:			

Sample I D No and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No	Preservative	Condition on Receipt	Analysis: PPB PAH
STP-W410-110398	11-3-98		WATER	1 LITER	AMBER	2	N/A		X
PCJ-W23-110398	11-3-98		WATER	1 LITER	AMBER	2	N/A		X

Special Instructions

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

Sample Disposal: [ ] Return To Client [X] Disposal By Lab [ ] Archive For ____ Months

Turn Around Time Required: [ ] Normal [ ] Rush

QC Level: [ ] I. [ ] II. [ ] III.

Project Specific (Specify):

	Date	Time		Date	Time
1 Relinquished By: [signature]	11-3-98	1400	1 Received By: [signature]	11/4/98	0900
2 Relinquished By:			2. Received By:		
3 Relinquished By:			3 Received By:		

Comments: 5 x P [illegible] 7.2°C

DISTRIBUTION: W[illegible] Stays with Sample, CANARY - Returned to Client with Report, PINK - Field Copy

SECTION 7.3(C)

RAP SECTION 7.3(C) PAH MONITORING

WELLS

SLP6
SLP7

Quanterra
Environmental Services

Quanterra Incorporated
4955 Yarrow Street
Arvada, Colorado 80002

303 421-6611 Telephone
303 431-7171 Fax

July 17, 1998

Mr. Scott Anderson
City of St. Louis Park
3752 Wooddale Ave.
St. Louis Park, MN 55416-2216

Dear Mr. Anderson:

Enclosed is the report for eight water samples received at Quanterra Incorporated, Denver Laboratory on May 5, 1998. Included in the report is a quality control summary.

Please call if you have any questions.

Sincerely,

Christina Mott
Program Manager

bal
Enclosures

Quanterra # D8E050138

Quanterra

ANALYTICAL REPORT

Reilly Tar & Chemical NPL Site

Lot #: D8E050138

Scott Anderson

City of St. Louis Park

QUANTERRA INCORPORATED

Lindsay Breyer
Project Manager

July 15, 1998

Quanterra

Case Narrative

Method 8270A surrogate fluorene d-10 was out of control in sample D8E050138-008. The sample was reprepped outside of holding time and reanalyzed with confirming results. Both sets of data have been reported.

With noted exceptions, 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.

Quanterra

EXECUTIVE SUMMARY - Detection Highlights

D8E050138

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
PCJ-SLP6-050498 05/04/98 001				
Acenaphthylene	16	1.4	ng/L	SW846 8270A SIM
Acenaphthene	50	1.3	ng/L	SW846 8270A SIM
Dibenzofuran	4.6	1.0	ng/L	SW846 8270A SIM
Fluorene	20	1.0	ng/L	SW846 8270A SIM
Phenanthrene	3.4	1.3	ng/L	SW846 8270A SIM
Indene	2.8	0.90	ng/L	SW846 8270A SIM
2,3-Dihydroindene	44	5.0	ng/L	SW846 8270A SIM
Benzo(b)thiophene	4.7	0.90	ng/L	SW846 8270A SIM
DPV-W20-050498 05/04/98 11:00 002				
Acenaphthene	18	13	ng/L	SW846 8270A SIM
Indene	36	9.0	ng/L	SW846 8270A SIM
2,3-Dihydroindene	1000	50	ng/L	SW846 8270A SIM
Benzo(b)thiophene	40	9.0	ng/L	SW846 8270A SIM
DPV-W1-050498 05/04/98 11:45 003				
Naphthalene	34	32	ng/L	SW846 8270A SIM
2-Methylnaphthalene	33	20	ng/L	SW846 8270A SIM
Acenaphthene	19	6.5	ng/L	SW846 8270A SIM
Dibenzofuran	11	5.0	ng/L	SW846 8270A SIM
Phenanthrene	16	6.5	ng/L	SW846 8270A SIM
Carbazole	14	9.5	ng/L	SW846 8270A SIM
Fluoranthene	20	16	ng/L	SW846 8270A SIM
Pyrene	34	7.0	ng/L	SW846 8270A SIM
Benzo(b)fluoranthene	13	12	ng/L	SW846 8270A SIM
Indene	13	4.5	ng/L	SW846 8270A SIM
1-Methylnaphthalene	23	14	ng/L	SW846 8270A SIM
2,3-Dihydroindene	28	25	ng/L	SW846 8270A SIM
DPV-W19-050498 05/04/98 09:00 004				
Acenaphthylene	1.9	1.4	ng/L	SW846 8270A SIM
Naphthalene	18	6.5	ng/L	SW846 8270A SIM
2-Methylnaphthalene	17	3.9	ng/L	SW846 8270A SIM
Acenaphthene	4.8	1.3	ng/L	SW846 8270A SIM
Dibenzofuran	3.7	1.0	ng/L	SW846 8270A SIM
Fluorene	4.6	1.0	ng/L	SW846 8270A SIM
Phenanthrene	19	1.3	ng/L	SW846 8270A SIM
Pyrene	6.8	1.4	ng/L	SW846 8270A SIM
Indene	6.9	0.90	ng/L	SW846 8270A SIM
1-Methylnaphthalene	12	2.8	ng/L	SW846 8270A SIM

(Continued on next page)

Quanterra

EXECUTIVE SUMMARY - Detection Highlights

D8E050138

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
DPV-W19-050498 05/04/98 09:00 004				
2,3-Dihydroindene	4.8 J	5.0	ng/L	SW846 8270A SIM
Dibenzothiophene	1.4	1.1	ng/L	SW846 8270A SIM
DPV-W18-050498 05/04/98 09:40 005				
Acenaphthene	84	6.5	ng/L	SW846 8270A SIM
Carbazole	42	9.5	ng/L	SW846 8270A SIM
Indene	28	4.5	ng/L	SW846 8270A SIM
2,3-Dihydroindene	400	25	ng/L	SW846 8270A SIM
Benzo(b)thiophene	73	4.5	ng/L	SW846 8270A SIM
PCJ-SLP6D-050498 05/04/98 008				
Acenaphthylene	8.7	1.4	ng/L	SW846 8270A SIM
Acenaphthylene	14	1.3	ng/L	SW846 8270A SIM
Naphthalene	8.1	6.2	ng/L	SW846 8270A SIM
Acenaphthene	26	1.3	ng/L	SW846 8270A SIM
Acenaphthene	44	1.2	ng/L	SW846 8270A SIM
Dibenzofuran	2.5	1.0	ng/L	SW846 8270A SIM
Dibenzofuran	3.8	0.96	ng/L	SW846 8270A SIM
Fluorene	11	1.0	ng/L	SW846 8270A SIM
Fluorene	14	0.96	ng/L	SW846 8270A SIM
Phenanthrene	1.9	1.3	ng/L	SW846 8270A SIM
Phenanthrene	2.6	1.2	ng/L	SW846 8270A SIM
Indene	1.5	0.90	ng/L	SW846 8270A SIM
Indene	2.8	0.86	ng/L	SW846 8270A SIM
2,3-Dihydroindene	24	5.0	ng/L	SW846 8270A SIM
2,3-Dihydroindene	42	4.8	ng/L	SW846 8270A SIM
Benzo(b)thiophene	2.6	0.90	ng/L	SW846 8270A SIM
Benzo(b)thiophene	4.1	0.86	ng/L	SW846 8270A SIM

Quanterra

CITY OF ST. LOUIS PARK

Client Sample ID: PCJ-SLP6-050498

GC/MS Semivolatiles

Lot-Sample #...: D8E050138-001 Work Order #...: CGX34101 Matrix.....: WATER
Date Sampled...: 05/04/98 Date Received..: 05/05/98
Prep Date.....: 05/10/98 Analysis Date..: 05/28/98
Prep Batch #...: 8130121 Analysis Time..: 11:07
Dilution Factor: 1 Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	**16**	**1.4**	**ng/L**
Naphthalene	ND	6.5	ng/L
2-Methylnaphthalene	ND	3.9	ng/L
Acenaphthene	**50**	**1.3**	**ng/L**
Dibenzofuran	**4.6**	**1.0**	**ng/L**
Fluorene	**20**	**1.0**	**ng/L**
Phenanthrene	**3.4**	**1.3**	**ng/L**
Anthracene	ND	2.7	ng/L
Carbazole	ND	1.9	ng/L
Fluoranthene	ND	3.1	ng/L
Pyrene	ND	1.4	ng/L
Benzo(a)anthracene	ND	2.5	ng/L
Chrysene	ND	2.8	ng/L
Benzo(b)fluoranthene	ND	2.5	ng/L
Benzo(k)fluoranthene	ND	2.3	ng/L
Benzo(a)pyrene	ND	2.3	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Benzo(ghi)perylene	ND	2.8	ng/L
Indene	**2.8**	**0.90**	**ng/L**
1-Methylnaphthalene	ND	2.8	ng/L
2,3-Benzofuran	ND	5.1	ng/L
2,3-Dihydroindene	**44**	**5.0**	**ng/L**
Benzo(b)thiophene	**4.7**	**0.90**	**ng/L**
Indole	ND	2.5	ng/L
Biphenyl	ND	4.3	ng/L
Dibenzothiophene	ND	1.1	ng/L
Acridine	ND	6.1	ng/L
Benzo(e)pyrene	ND	1.9	ng/L
Perylene	ND	2.5	ng/L
Quinoline	ND	6.9	ng/L
Dibenz(a,h)anthracene	ND	1.6	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	49	(10 - 118)
Fluorene d-10	66	(41 - 162)
Naphthalene-d8	58	(21 - 108)

Quanterra

CITY OF ST. LOUIS PARK

Client Sample ID: PCJ-SLP6D-050498

GC/MS Semivolatiles

Lot-Sample #...: D8E050138-008 Work Order #...: CGX4D101 Matrix.....: WATER
Date Sampled...: 05/04/98 Date Received..: 05/05/98
Prep Date.....: 05/10/98 Analysis Date..: 05/28/98
Prep Batch #...: 8130121 Analysis Time..: 14:06
Dilution Factor: 1 Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	**8.7**	**1.4**	**ng/L**
Naphthalene	ND	6.5	ng/L
2-Methylnaphthalene	ND	3.9	ng/L
Acenaphthene	**26**	**1.3**	**ng/L**
Dibenzofuran	**2.5**	**1.0**	**ng/L**
Fluorene	**11**	**1.0**	**ng/L**
Phenanthrene	**1.9**	**1.3**	**ng/L**
Anthracene	ND	2.7	ng/L
Carbazole	ND	1.9	ng/L
Fluoranthene	ND	3.1	ng/L
Pyrene	ND	1.4	ng/L
Benzo(a)anthracene	ND	2.5	ng/L
Chrysene	ND	2.8	ng/L
Benzo(b)fluoranthene	ND	2.5	ng/L
Benzo(k)fluoranthene	ND	2.3	ng/L
Benzo(a)pyrene	ND	2.3	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Benzo(ghi)perylene	ND	2.8	ng/L
Indene	**1.5**	**0.90**	**ng/L**
1-Methylnaphthalene	ND	2.8	ng/L
2,3-Benzofuran	ND	5.1	ng/L
2,3-Dihydroindene	**24**	**5.0**	**ng/L**
Benzo(b)thiophene	**2.6**	**0.90**	**ng/L**
Indole	ND	2.5	ng/L
Biphenyl	ND	4.3	ng/L
Dibenzothiophene	ND	1.1	ng/L
Acridine	ND	6.1	ng/L
Benzo(e)pyrene	ND	1.9	ng/L
Perylene	ND	2.5	ng/L
Quinoline	ND	6.9	ng/L
Dibenz(a,h)anthracene	ND	1.6	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	28	(10 - 118)
Fluorene d-10	35 *	(41 - 162)
Naphthalene-d8	30	(21 - 108)

NOTE(S):

* Surrogate recovery is outside stated control limits

Quanterra

CITY OF ST. LOUIS PARK

Client Sample ID: PCJ-SLP6D-050498

GC/MS Semivolatiles

Lot-Sample #...:	D8E050138-008	Work Order #...:	CGX4D201	Matrix.....:	WATER
Date Sampled...:	05/04/98	Date Received..:	05/05/98		
Prep Date.....:	06/04/98	Analysis Date..:	06/08/98		
Prep Batch #...:	8155290	Analysis Time..:	20:05		
Dilution Factor:	0.95	Method.....:	SW846 8270A SIM		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	**14**	**1.3**	**ng/L**
Naphthalene	**8.1**	**6.2**	**ng/L**
2-Methylnaphthalene	ND	3.7	ng/L
Acenaphthene	**44**	**1.2**	**ng/L**
Dibenzofuran	**3.8**	**0.96**	**ng/L**
Fluorene	**14**	**0.96**	**ng/L**
Phenanthrene	**2.6**	**1.2**	**ng/L**
Anthracene	ND	2.6	ng/L
Carbazole	ND	1.8	ng/L
Fluoranthene	ND	3.0	ng/L
Pyrene	ND	1.3	ng/L
Benzo(a)anthracene	ND	2.4	ng/L
Chrysene	ND	2.7	ng/L
Benzo(b)fluoranthene	ND	2.5	ng/L
Benzo(k)fluoranthene	ND	2.2	ng/L
Benzo(a)pyrene	ND	2.2	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.0	ng/L
Benzo(ghi)perylene	ND	2.7	ng/L
Indene	**2.8**	**0.86**	**ng/L**
1-Methylnaphthalene	ND	2.7	ng/L
2,3-Benzofuran	ND	4.9	ng/L
2,3-Dihydroindene	**42**	**4.8**	**ng/L**
Benzo(b)thiophene	**4.1**	**0.86**	**ng/L**
Indole	ND	2.4	ng/L
Biphenyl	ND	4.1	ng/L
Dibenzothiophene	ND	1.1	ng/L
Acridine	ND	5.8	ng/L
Benzo(e)pyrene	ND	1.8	ng/L
Perylene	ND	2.4	ng/L
Quinoline	ND	6.6	ng/L
Dibenz(a,h)anthracene	ND	1.5	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	32	(10 - 118)
Fluorene d-10	65	(41 - 162)
Naphthalene-d8	68	(21 - 108)

Chain of Custody Record

D8E050138

Quanterra

QUA-4124 0797

Client: CITY OF ST. LOUIS PARK UTILITY DIVISION	Project Manager: SCOTT ANDERSON	Date: 5-4-98	Chain of Custody Number: 02088
Address: 3752 WOODDALE AVENUE	Telephone Number (Area Code)/Fax Number: 924-2557 (612) 924-2570	Lab Number	Page ____ of ____
City: ST. LOUIS PARK, MN 55416	Site Contact: SAME	Lab Contact	
Project Name: SAME	Carrier/Waybill Number: FED EX 8008246316860		
Contract/Purchase Order/Quote No			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: 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
PCJ-SLP6-050498	5-4-98		X										X	PPL 5
PCJ-SLP6D-050498	5-4-98		X										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 3 months)

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

QC Requirements (Specify)

1. Relinquished By: MJH	Date: 5-4-98	Time: 1400	1. Received By: [signature]	Date: 5-5-98	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

25

D8E050138

Chain of Custody Record

Quanterra

QUA 4124

Client: CITY OF ST. LOUIS PARK
UTILITY DIVISION

Address: 3752 WOODDALE AVENUE
ST. LOUIS PARK, MN 55416

City:

Project Name: SAME

Contract/Purchase Order/Quote No:

Project Manager: SCOTT ANDERSON

Telephone Number (Area Code)/Fax Number: 924-2557 (612) 924-2570

Site Contact: SAME

Carrier/Waybill Number: FED EX 800246316860

Date: 5-4-98

Lab Number:

Chain Of Custody Number: 25624

Page ____ of ____

Sample I D No and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No	Preservative	Condition on Receipt	Analysis: PPI PAH 5
SPCJ-SLPGFB-05-0498	5-4-98		WATER	1 LITER	AMBER	G	N/A		X
SPCJ-SLPGFBD-050498	5-4-98		WATER	1 LITER	AMBER	G	N/A		X

Special Instructions: PPI 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

Turn Around Time Required: [ ] Normal [ ] Rush

QC Level: [ ] I. [ ] II. [ ] III.

Project Specific (Specify):

	Date	Time		Date	Time
1 Relinquished By: MZ	5-4-98	1400	1 Received By: Pipalli Dalton	5-5-98	0830
2 Relinquished By:			2 Received By:		
3 Relinquished By:			3 Received By:		

Comments:

DISTRIBUTION: - Stays with Sample, CANARY - Returned to Client with Report, PINK - Field Copy

Quanterra
Environmental Services

Quanterra Incorporated
4955 Yarrow Street
Arvada, Colorado 80002

303 421-6611 Telephone
303 431-7171 Fax

July 17, 1998

Mr. Scott Anderson
City of St. Louis Park
3752 Wooddale Ave.
St. Louis Park, MN 55416-2216

Dear Mr. Anderson:

Enclosed is the report for eleven water samples received at Quanterra Incorporated, Denver Laboratory on May 13, 1998. Included in the report is a quality control summary.

Please call if you have any questions.

Sincerely,

Christina Mott
Program Manager

bal
Enclosures

Quanterra # D8E130200

Quanterra

ANALYTICAL REPORT

Reilly Tar & Chemical NPL Site

Lot #: D8E130200

Scott Anderson

City of St. Louis Park

QUANTERRA INCORPORATED

Lindsay Breyer
Project Manager

July 15, 1998

Quanterra

Case Narrative

With noted exceptions, 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.

Quanterra

EXECUTIVE SUMMARY - Detection Highlights

D8E130200

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
PCJ-W401-051298 05/12/98 05:45 007				
Fluoranthene	4.8	3.1	ng/L	SW846 8270A SIM
Pyrene	2.7	1.4	ng/L	SW846 8270A SIM
Indene	0.90	0.90	ng/L	SW846 8270A SIM
2,3-Dihydroindene	12	5.0	ng/L	SW846 8270A SIM
Dibenzothiophene	2.3	1.1	ng/L	SW846 8270A SIM
PCJ-H6-051298 05/12/98 08:45 008				
Phenanthrene	2.4	1.3	ng/L	SW846 8270A SIM
Carbazole	2.1	1.9	ng/L	SW846 8270A SIM
PCJ-W70-051298 05/12/98 12:45 009				
Acenaphthylene	8.3	2.8	ng/L	SW846 8270A SIM
Acenaphthene	220	2.6	ng/L	SW846 8270A SIM
Phenanthrene	3.8	2.6	ng/L	SW846 8270A SIM
Pyrene	60	2.8	ng/L	SW846 8270A SIM
Quinoline	15	14	ng/L	SW846 8270A SIM
PCJ-W48-051298 05/12/98 14:30 010				
Acenaphthylene	2.9	1.4	ng/L	SW846 8270A SIM
Acenaphthene	60	1.3	ng/L	SW846 8270A SIM
Phenanthrene	3.5	1.3	ng/L	SW846 8270A SIM
Anthracene	7.9	2.7	ng/L	SW846 8270A SIM
Carbazole	5.9	1.9	ng/L	SW846 8270A SIM
Fluoranthene	6.2	3.1	ng/L	SW846 8270A SIM
Pyrene	11	1.4	ng/L	SW846 8270A SIM
Indene	7.0	0.90	ng/L	SW846 8270A SIM
2,3-Dihydroindene	54	5.0	ng/L	SW846 8270A SIM
Benzo(b)thiophene	5.7	0.90	ng/L	SW846 8270A SIM
Dibenzothiophene	2.4	1.1	ng/L	SW846 8270A SIM
Acridine	19	6.1	ng/L	SW846 8270A SIM
PCJ-SLP7-051298 05/12/98 011				
Acenaphthene	4.9	1.3	ng/L	SW846 8270A SIM
Phenanthrene	2.5	1.3	ng/L	SW846 8270A SIM
Pyrene	2.4	1.4	ng/L	SW846 8270A SIM
Quinoline	7.5	6.9	ng/L	SW846 8270A SIM

Quanterra

CITY OF ST. LOUIS PARK

Client Sample ID: PCJ-SLP7-051298

GC/MS Semivolatiles

Lot-Sample #...: D8E130200-011 Work Order #...: CH5F7101 Matrix.....: WATER
Date Sampled...: 05/12/98 Date Received..: 05/13/98
Prep Date.....: 05/17/98 Analysis Date..: 06/04/98
Prep Batch #...: 8137142 Analysis Time..: 16:40
Dilution Factor: 1 Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	ND	1.4	ng/L
Naphthalene	ND	6.5	ng/L
2-Methylnaphthalene	ND	3.9	ng/L
Acenaphthene	**4.9**	**1.3**	**ng/L**
Dibenzofuran	ND	1.0	ng/L
Fluorene	ND	1.0	ng/L
Phenanthrene	**2.5**	**1.3**	**ng/L**
Anthracene	ND	2.7	ng/L
Carbazole	ND	1.9	ng/L
Fluoranthene	ND	3.1	ng/L
Pyrene	**2.4**	**1.4**	**ng/L**
Benzo(a)anthracene	ND	2.5	ng/L
Chrysene	ND	2.8	ng/L
Benzo(b)fluoranthene	ND	2.5	ng/L
Benzo(k)fluoranthene	ND	2.3	ng/L
Benzo(a)pyrene	ND	2.3	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Benzo(ghi)perylene	ND	2.8	ng/L
Indene	ND	0.90	ng/L
1-Methylnaphthalene	ND	2.8	ng/L
2,3-Benzofuran	ND	5.1	ng/L
2,3-Dihydroindene	ND	5.0	ng/L
Benzo(b)thiophene	ND	0.90	ng/L
Indole	ND	2.5	ng/L
Biphenyl	ND	4.3	ng/L
Dibenzothiophene	ND	1.1	ng/L
Acridine	ND	6.1	ng/L
Benzo(e)pyrene	ND	1.9	ng/L
Perylene	ND	2.5	ng/L
Quinoline	**7.5**	**6.9**	**ng/L**
Dibenz(a,h)anthracene	ND	1.6	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	52	(10 - 118)
Fluorene d-10	73	(41 - 162)
Naphthalene-d8	75	(21 - 108)

Chain of Custody Record

Quanterra

QUA 4124

Client: CITY OF ST. LOUIS PARK UTILITY DIVISION	Project Manager: SCOTT ANDERSON	Date: 5-12-98	Chain Of Custody Number: 24363
Address: 3752 WOODDALE AVENUE	Telephone Number (Area Code)/Fax Number: 924-2557 (612) 924-2570	Lab Number:	Page _____ of _____
City: ST. LOUIS PARK, MN 55416	Site Contact: SAME		
Project Name: SAME	Carrier/Waybill Number: FED EX 2C0846316850		
Contract/Purchase Order/Quote No:			

Sample I D No and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No	Preservative	Condition on Receipt	Analysis: PPT PAH 5
PCT-SLPT-051298	5-12-98		WATER	1 LITER	AMBER	6	N/A		X

Special Instructions: 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

Turn Around Time Required: [ ] Normal [ ] Rush

QC Level: [ ] I. [ ] II. [ ] III

Project Specific (Specify):

1 Relinquished By: MZP	Date: 5-12-98	Time: 1400	1 Received By: Paula Dalton	Date: 5-13-98	Time: 0830
2 Relinquished By:	Date:	Time:	2 Received By:	Date:	Time:
3 Relinquished By:	Date:	Time:	3 Received By:	Date:	Time:

Comments:

DISTRIBUTION: W[illegible] Stays with Sample, CANARY - Returned to Client with Report, PINK - Field Copy

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SECTION 7.3(D)

RAP SECTION 7.3(D) PAH MONITORING

WELLS

SLP10 SLP14 SLP16
W402 W403 W406

Quanterra
Environmental Services

Quanterra Incorporated
4955 Yarrow Street
Arvada, Colorado 80002

303 421-6611 Telephone
303 431-7171 Fax

July 17, 1998

Mr. Scott Anderson
City of St. Louis Park
3752 Wooddale Ave.
St. Louis Park, MN 55416-2216

Dear Mr. Anderson:

Enclosed is the report for sixteen water samples received at Quanterra Incorporated, Denver Laboratory on May 20, 1998. Included in the report is a quality control summary.

Please call if you have any questions.

Sincerely,

Christina Mott
Program Manager

bal
Enclosures

Quanterra # D8E200134

Quanterra

ANALYTICAL REPORT

Reilly Tar & Chemical NPL Site

Lot #: D8E200134

Scott Anderson

City of St. Louis Park

QUANTERRA INCORPORATED

Lindsay Breyer
Project Manager

July 15, 1998

Quanterra

Case Narrative

With noted exceptions, 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.

Quanterra

EXECUTIVE SUMMARY - Detection Highlights

D8E200134

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
PJC-SLP16-051898 05/18/98 001				
Acenaphthene	1.4	1.4	ng/L	SW846 8270A SIM
Phenanthrene	1.8	1.4	ng/L	SW846 8270A SIM
PJC-SLP16D-051898 05/18/98 002				
Acenaphthene	1.6	1.2	ng/L	SW846 8270A SIM
Pyrene	5.3	1.3	ng/L	SW846 8270A SIM
PJC-E15-051898 05/18/98 09:30 003				
Acenaphthene	10	1.3	ng/L	SW846 8270A SIM
Fluorene	2.2	0.98	ng/L	SW846 8270A SIM
Phenanthrene	1.7	1.3	ng/L	SW846 8270A SIM
Indene	1.4	0.88	ng/L	SW846 8270A SIM
2,3-Dihydroindene	6.9	4.9	ng/L	SW846 8270A SIM
PJC-E13-051898 05/18/98 10:50 004				
Acenaphthylene	1.9	1.3	ng/L	SW846 8270A SIM
Acenaphthene	8.4	1.2	ng/L	SW846 8270A SIM
Fluorene	2.7	0.96	ng/L	SW846 8270A SIM
Phenanthrene	1.5	1.2	ng/L	SW846 8270A SIM
2,3-Dihydroindene	6.8	4.8	ng/L	SW846 8270A SIM
MSH-SLP17-051998 05/19/98 005				
Phenanthrene	2.5	1.2	ng/L	SW846 8270A SIM
MSH-SLP11FB-051998 05/19/98 006				
Phenanthrene	1.5	1.2	ng/L	SW846 8270A SIM
PCJ-E2-051898 05/18/98 08:50 008				
Acenaphthene	1.7	1.2	ng/L	SW846 8270A SIM
Phenanthrene	1.8	1.2	ng/L	SW846 8270A SIM
Pyrene	1.7	1.3	ng/L	SW846 8270A SIM
Indene	1.0	0.86	ng/L	SW846 8270A SIM
2,3-Dihydroindene	5.3	4.8	ng/L	SW846 8270A SIM
Benzo(b)thiophene	1.0	0.86	ng/L	SW846 8270A SIM

(Continued on next page)

Quanterra

EXECUTIVE SUMMARY - Detection Highlights

D8E200134

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
PCJ-E7-051898 05/18/98 09:05 009				
Phenanthrene	1.2	1.2	ng/L	SW846 8270A SIM
PCJ-E3-051898 05/18/98 10:10 010				
Phenanthrene	1.4	1.3	ng/L	SW846 8270A SIM
Indene	1.1	0.87	ng/L	SW846 8270A SIM
MSH-SLP12-051998 05/19/98 011				
Phenanthrene	3.1	1.2	ng/L	SW846 8270A SIM
MSH-SLP13-051998 05/19/98 012				
Acenaphthene	1.6	1.2	ng/L	SW846 8270A SIM
Phenanthrene	2.6	1.2	ng/L	SW846 8270A SIM
MSH-SLP11-051998 05/19/98 013				
Naphthalene	17	6.2	ng/L	SW846 8270A SIM
Acenaphthene	6.7	1.2	ng/L	SW846 8270A SIM
Dibenzofuran	1.2	0.95	ng/L	SW846 8270A SIM
Fluorene	1.9	0.95	ng/L	SW846 8270A SIM
Phenanthrene	3.2	1.2	ng/L	SW846 8270A SIM
Carbazole	2.0	1.8	ng/L	SW846 8270A SIM
Indene	16	0.86	ng/L	SW846 8270A SIM
1-Methylnaphthalene	3.2	2.7	ng/L	SW846 8270A SIM
2,3-Dihydroindene	12	4.8	ng/L	SW846 8270A SIM
Benzo(b)thiophene	7.0	0.86	ng/L	SW846 8270A SIM
MSH-SLP11D-051998 05/19/98 014				
Naphthalene	17	6.2	ng/L	SW846 8270A SIM
Acenaphthene	6.6	1.2	ng/L	SW846 8270A SIM
Dibenzofuran	1.2	0.95	ng/L	SW846 8270A SIM
Fluorene	1.9	0.95	ng/L	SW846 8270A SIM
Phenanthrene	3.3	1.2	ng/L	SW846 8270A SIM
Carbazole	2.2	1.8	ng/L	SW846 8270A SIM
Indene	16	0.86	ng/L	SW846 8270A SIM
1-Methylnaphthalene	3.3	2.7	ng/L	SW846 8270A SIM
2,3-Dihydroindene	12	4.8	ng/L	SW846 8270A SIM
Benzo(b)thiophene	6.8	0.86	ng/L	SW846 8270A SIM

(Continued on next page)

Quanterra

EXECUTIVE SUMMARY - Detection Highlights

D8E200134

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
PCJ-SLP16FB-051898 05/18/98 015				
Phenanthrene	2.0	1.2	ng/L	SW846 8270A SIM
PCJ-SLP16FBD-051898 05/18/98 016				
Phenanthrene	1.6	1.2	ng/L	SW846 8270A SIM

Quanterra

CITY OF ST. LOUIS PARK

Client Sample ID: PCJ-SLP16-051898

GC/MS Semivolatiles

Lot-Sample #...:	D8E200134-001	Work Order #...:	CHA90101	Matrix.....:	WATER
Date Sampled...:	05/18/98	Date Received..:	05/20/98		
Prep Date.....:	05/25/98	Analysis Date..:	06/08/98		
Prep Batch #...:	8145126	Analysis Time..:	20:41		
Dilution Factor:	1.05	Method.....:	SW846 8270A SIM		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	ND	1.5	ng/L
Naphthalene	ND	6.9	ng/L
2-Methylnaphthalene	ND	4.1	ng/L
Acenaphthene	1.4	1.4	ng/L
Dibenzofuran	ND	1.1	ng/L
Fluorene	ND	1.1	ng/L
Phenanthrene	1.8	1.4	ng/L
Anthracene	ND	2.9	ng/L
Carbazole	ND	2.0	ng/L
Fluoranthene	ND	3.3	ng/L
Pyrene	ND	1.5	ng/L
Benzo(a)anthracene	ND	2.6	ng/L
Chrysene	ND	3.0	ng/L
Benzo(b)fluoranthene	ND	2.6	ng/L
Benzo(k)fluoranthene	ND	2.4	ng/L
Benzo(a)pyrene	ND	2.4	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.2	ng/L
Benzo(ghi)perylene	ND	3.0	ng/L
Indene	ND	0.95	ng/L
1-Methylnaphthalene	ND	3.0	ng/L
2,3-Benzofuran	ND	5.4	ng/L
2,3-Dihydroindene	ND	5.3	ng/L
Benzo(b)thiophene	ND	0.95	ng/L
Indole	ND	2.6	ng/L
Biphenyl	ND	4.5	ng/L
Dibenzothiophene	ND	1.2	ng/L
Acridine	ND	6.5	ng/L
Benzo(e)pyrene	ND	2.0	ng/L
Perylene	ND	2.6	ng/L
Quinoline	ND	7.3	ng/L
Dibenz(a,h)anthracene	ND	1.7	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	48	(10 - 118)
Fluorene d-10	65	(41 - 162)
Naphthalene-d8	67	(21 - 108)

Quanterra

CITY OF ST. LOUIS PARK

Client Sample ID: PCJ-SLP16D-051898

GC/MS Semivolatiles

Lot-Sample #...: D8E200134-002 Work Order #...: CHA92101 Matrix.....: WATER
Date Sampled...: 05/18/98 Date Received..: 05/20/98
Prep Date.....: 05/25/98 Analysis Date..: 06/08/98
Prep Batch #...: 8145126 Analysis Time..: 22:29
Dilution Factor: 0.95 Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	ND	1.3	ng/L
Naphthalene	ND	6.2	ng/L
2-Methylnaphthalene	ND	3.7	ng/L
Acenaphthene	1.6	1.2	ng/L
Dibenzofuran	ND	0.95	ng/L
Fluorene	ND	0.95	ng/L
Phenanthrene	ND	1.2	ng/L
Anthracene	ND	2.6	ng/L
Carbazole	ND	1.8	ng/L
Fluoranthene	ND	3.0	ng/L
Pyrene	5.3	1.3	ng/L
Benzo(a)anthracene	ND	2.4	ng/L
Chrysene	ND	2.7	ng/L
Benzo(b)fluoranthene	ND	2.4	ng/L
Benzo(k)fluoranthene	ND	2.2	ng/L
Benzo(a)pyrene	ND	2.2	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.0	ng/L
Benzo(ghi)perylene	ND	2.7	ng/L
Indene	ND	0.86	ng/L
1-Methylnaphthalene	ND	2.7	ng/L
2,3-Benzofuran	ND	4.9	ng/L
2,3-Dihydroindene	ND	4.8	ng/L
Benzo(b)thiophene	ND	0.86	ng/L
Indole	ND	2.4	ng/L
Biphenyl	ND	4.1	ng/L
Dibenzothiophene	ND	1.1	ng/L
Acridine	ND	5.8	ng/L
Benzo(e)pyrene	ND	1.8	ng/L
Perylene	ND	2.4	ng/L
Quinoline	ND	6.6	ng/L
Dibenz(a,h)anthracene	ND	1.5	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	52	(10 - 118)
Fluorene d-10	70	(41 - 162)
Naphthalene-d8	72	(21 - 108)

Chain of Custody Record

Quanterra

D8E200134

QUA-4124

Client: CITY OF ST. LOUIS PARK UTILITY DIVISION	Project Manager: SCOTT ANDERSON	Date: 5-18-98	Chain Of Custody Number: 24387
Address: 3752 WOODDALE AVENUE	Telephone Number (Area Code)/Fax Number: 924-2557 (612) 924-2520	Lab Number:	Page ____ of ____
City: ST. LOUIS PARK, MN 55416	Site Contact: SAME		
Project Name: SAME	Carrier/Waybill Number: FED EX 8006463168 38		
Contract/Purchase Order/Quote No			

Sample I D No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Analysis: PPT 5
PCJ-SLP16-051898	5-18-98		WATER	1 LITER	AMBER	6	N/A		X
PCJ-SLP16D-051898	5-18-98		WATER	1 LITER	AMBER	6	N/A		X

Special Instructions: 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

Turn Around Time Required: [ ] Normal [ ] Rush

QC Level: [ ] I. [ ] II. [ ] III

Project Specific (Specify):

1 Relinquished By: [signature]	Date: 5-18-98	Time: 1400	1 Received By: Priscilla Dalton	Date: 5/20/98	Time: 0845
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 Sample, CANARY - Returned to Client with Report, PINK - Field Copy

Chain of Custody Record

Quanterra

QUA 4124

Client: CITY OF ST. LOUIS PARK UTILITY DIVISION 3752 WOODDALE AVENUE ST. LOUIS PARK, MN 55416	Project Manager: SCOTT ANDERSON	Date: 5-18-98	Chain Of Custody Number: 24364
Address	Telephone Number (Area Code)/Fax Number: 924-2570 (612) 924-2570	Lab Number	Page ____ of ____
City	Site Contact: SAME		
Project Name: SAME	Carrier/Waybill Number: FED EX 800846316838		
Contract/Purchase Order/Quote No			

Sample I.D No and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No	Preservative	Condition on Receipt	Analysis: PPT PAH 5
PCJ-SLP16FB-051898	5-18-98		WATER	1 LITER	AMBER	6	N/A		X
PCJ-SLP16FBD-051898	5-18-98		WATER	1 LITER	AMBER	6	N/A		X

Special Instructions: 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

Turn Around Time Required: [ ] Normal [ ] Rush

QC Level: [ ] I. [ ] II. [ ] III.

Project Specific (Specify)

	Date	Time		Date	Time
1 Relinquished By: MZH	5-18-98	1400	1 Received By: Priscilla Dalton	5-20-98	0845
2 Relinquished By			2 Received By		
3 Relinquished By			3 Received By		

Comments

DISTRIBUTION: WH[illegible] stays with Sample CANARY - Returned to Client with Report, PINK - Field Copy

Quanterra
Environmental Services

Quanterra Incorporated
4955 Yarrow Street
Arvada, Colorado 80002

303 421-6611 Telephone
303 431-7171 Fax

July 17, 1998

Mr. Scott Anderson
City of St. Louis Park
3752 Wooddale Ave.
St. Louis Park, MN 55416-2216

Dear Mr. Anderson:

Enclosed is the report for eight water samples received at Quanterra Incorporated, Denver Laboratory on May 12, 1998. Included in the report is a quality control summary.

Please call if you have any questions.

Sincerely,

Christina Mott
Program Manager

bal
Enclosures

Quanterra # D8E120119

Quanterra

ANALYTICAL REPORT

Reilly Tar & Chemical NPL Site

Lot #: D8E120119

Scott Anderson

City of St. Louis Park

QUANTERRA INCORPORATED

Lindsay Breyer
Project Manager

July 15, 1998

Quanterra

Case Narrative

With noted exceptions, 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.

Quanterra

EXECUTIVE SUMMARY - Detection Highlights

D8E120119

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
PCJ-W402-051198 05/11/98 10:00 001				
Acenaphthylene	6.9	1.4	ng/L	SW846 8270A SIM
Naphthalene	59	6.5	ng/L	SW846 8270A SIM
2-Methylnaphthalene	37	3.9	ng/L	SW846 8270A SIM
Acenaphthene	19	1.3	ng/L	SW846 8270A SIM
Dibenzofuran	10	1.0	ng/L	SW846 8270A SIM
Fluorene	13	1.0	ng/L	SW846 8270A SIM
Phenanthrene	26	1.3	ng/L	SW846 8270A SIM
Carbazole	11	1.9	ng/L	SW846 8270A SIM
Fluoranthene	6.4	3.1	ng/L	SW846 8270A SIM
Pyrene	18	1.4	ng/L	SW846 8270A SIM
Indene	20	0.90	ng/L	SW846 8270A SIM
1-Methylnaphthalene	36	2.8	ng/L	SW846 8270A SIM
2,3-Dihydroindene	32	5.0	ng/L	SW846 8270A SIM
Benzo(b)thiophene	40	0.90	ng/L	SW846 8270A SIM
Biphenyl	5.7	4.3	ng/L	SW846 8270A SIM
Dibenzothiophene	2.7	1.1	ng/L	SW846 8270A SIM
Acridine	6.7	6.1	ng/L	SW846 8270A SIM
PCJ-W403-051198 05/11/98 11:30 002				
Benzo(b)thiophene	11	9.0	ng/L	SW846 8270A SIM
PCJ-SLP10FB-051198 05/11/98 003				
Phenanthrene	1.4	1.3	ng/L	SW846 8270A SIM
PCJ-SLP10-051198 05/11/98 005				
Acenaphthylene	110	7.0	ng/L	SW846 8270A SIM
Acenaphthene	490	6.5	ng/L	SW846 8270A SIM
Dibenzofuran	26	5.0	ng/L	SW846 8270A SIM
Fluorene	160	5.0	ng/L	SW846 8270A SIM
Fluoranthene	27	16	ng/L	SW846 8270A SIM
Pyrene	48	7.0	ng/L	SW846 8270A SIM
Indene	8.5	4.5	ng/L	SW846 8270A SIM
2,3-Dihydroindene	230	25	ng/L	SW846 8270A SIM
Dibenzothiophene	16	5.5	ng/L	SW846 8270A SIM
PCJ-SLP10DU-051198 05/11/98 006				
Acenaphthylene	120	7.0	ng/L	SW846 8270A SIM
Acenaphthene	530	6.5	ng/L	SW846 8270A SIM
Dibenzofuran	30	5.0	ng/L	SW846 8270A SIM

(Continued on next page)

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EXECUTIVE SUMMARY - Detection Highlights

D8E120119

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
PCJ-SLP10DU-051198 05/11/98 006				
Fluorene	180	5.0	ng/L	SW846 8270A SIM
Phenanthrene	7.0	6.5	ng/L	SW846 8270A SIM
Fluoranthene	38	16	ng/L	SW846 8270A SIM
Pyrene	68	7.0	ng/L	SW846 8270A SIM
Indene	12	4.5	ng/L	SW846 8270A SIM
2,3-Dihydroindene	300	25	ng/L	SW846 8270A SIM
Benzo(b)thiophene	43	4.5	ng/L	SW846 8270A SIM
Dibenzothiophene	26	5.5	ng/L	SW846 8270A SIM
PCJ-W406-051198 05/11/98 13:30 007				
Phenanthrene	1.5	1.3	ng/L	SW846 8270A SIM
Pyrene	13	1.4	ng/L	SW846 8270A SIM
PCJ-W29-051198 05/11/98 14:30 008				
Acenaphthylene	5.5	1.4	ng/L	SW846 8270A SIM
Acenaphthene	89	1.3	ng/L	SW846 8270A SIM
Fluorene	12	1.0	ng/L	SW846 8270A SIM
Phenanthrene	2.8	1.3	ng/L	SW846 8270A SIM
Fluoranthene	22	3.1	ng/L	SW846 8270A SIM
Pyrene	22	1.4	ng/L	SW846 8270A SIM
Indene	2.4	0.90	ng/L	SW846 8270A SIM
2,3-Dihydroindene	100	5.0	ng/L	SW846 8270A SIM
Benzo(b)thiophene	1.4	0.90	ng/L	SW846 8270A SIM
Dibenzothiophene	4.2	1.1	ng/L	SW846 8270A SIM

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SAMPLE SUMMARY

D8E120119

WO #	SAMPLE#	CLIENT SAMPLE ID	DATE	TIME
CH3XM	001	PCJ-W402-051198	05/11/98	10:00
CH3XN	002	PCJ-W403-051198	05/11/98	11:30
CH3XP	003	PCJ-SLP10FB-051198	05/11/98	
CH3XQ	004	PCJ-SLP10FBD-051198	05/11/98	
CH3XT	005	PCJ-SLP10-051198	05/11/98	
CH3XV	006	PCJ-SLP10DU-051198	05/11/98	
CH3XX	007	PCJ-W406-051198	05/11/98	13:30
CH400	008	PCJ-W29-051198	05/11/98	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

Quanterra

CITY OF ST. LOUIS PARK

Client Sample ID: PCJ-W402-051198

GC/MS Semivolatiles

Lot-Sample #...: D8E120119-001 Work Order #...: CH3XM101 Matrix.....: WATER
Date Sampled...: 05/11/98 10:00 Date Received..: 05/12/98
Prep Date.....: 05/17/98 Analysis Date..: 06/04/98
Prep Batch #...: 8137142 Analysis Time..: 17:34
Dilution Factor: 1 Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	6.9	1.4	ng/L
Naphthalene	59	6.5	ng/L
2-Methylnaphthalene	37	3.9	ng/L
Acenaphthene	19	1.3	ng/L
Dibenzofuran	10	1.0	ng/L
Fluorene	13	1.0	ng/L
Phenanthrene	26	1.3	ng/L
Anthracene	ND	2.7	ng/L
Carbazole	11	1.9	ng/L
Fluoranthene	6.4	3.1	ng/L
Pyrene	18	1.4	ng/L
Benzo(a)anthracene	ND	2.5	ng/L
Chrysene	ND	2.8	ng/L
Benzo(b)fluoranthene	ND	2.5	ng/L
Benzo(k)fluoranthene	ND	2.3	ng/L
Benzo(a)pyrene	ND	2.3	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Benzo(ghi)perylene	ND	2.8	ng/L
Indene	20	0.90	ng/L
1-Methylnaphthalene	36	2.8	ng/L
2,3-Benzofuran	ND	5.1	ng/L
2,3-Dihydroindene	32	5.0	ng/L
Benzo(b)thiophene	40	0.90	ng/L
Indole	ND	2.5	ng/L
Biphenyl	5.7	4.3	ng/L
Dibenzothiophene	2.7	1.1	ng/L
Acridine	6.7	6.1	ng/L
Benzo(e)pyrene	ND	1.9	ng/L
Perylene	ND	2.5	ng/L
Quinoline	ND	6.9	ng/L
Dibenz(a,h)anthracene	ND	1.6	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	16	(10 - 118)
Fluorene d-10	67	(41 - 162)
Naphthalene-d8	54	(21 - 108)

Quanterra

CITY OF ST. LOUIS PARK

Client Sample ID: PCJ-W403-051198

GC/MS Semivolatiles

Lot-Sample #...: D8E120119-002 **Work Order #...:** CH3XN101 **Matrix.....:** WATER
Date Sampled...: 05/11/98 11:30 **Date Received..:** 05/12/98
Prep Date.....: 05/17/98 **Analysis Date..:** 06/04/98
Prep Batch #...: 8137142 **Analysis Time..:** 10:43
Dilution Factor: 10 **Method.....:** SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	ND	14	ng/L
Naphthalene	ND	65	ng/L
2-Methylnaphthalene	ND	39	ng/L
Acenaphthene	ND	13	ng/L
Dibenzofuran	ND	10	ng/L
Fluorene	ND	10	ng/L
Phenanthrene	ND	13	ng/L
Anthracene	ND	27	ng/L
Carbazole	ND	19	ng/L
Fluoranthene	ND	31	ng/L
Pyrene	ND	14	ng/L
Benzo(a)anthracene	ND	25	ng/L
Chrysene	ND	28	ng/L
Benzo(b)fluoranthene	ND	25	ng/L
Benzo(k)fluoranthene	ND	23	ng/L
Benzo(a)pyrene	ND	23	ng/L
Indeno(1,2,3-cd)pyrene	ND	21	ng/L
Benzo(ghi)perylene	ND	28	ng/L
Indene	ND	9.0	ng/L
1-Methylnaphthalene	ND	28	ng/L
2,3-Benzofuran	ND	51	ng/L
2,3-Dihydroindene	ND	50	ng/L
Benzo(b)thiophene	**11**	**9.0**	**ng/L**
Indole	ND	25	ng/L
Biphenyl	ND	43	ng/L
Dibenzothiophene	ND	11	ng/L
Acridine	ND	61	ng/L
Benzo(e)pyrene	ND	19	ng/L
Perylene	ND	25	ng/L
Quinoline	ND	69	ng/L
Dibenz(a,h)anthracene	ND	16	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	NC,SRD	(10 - 118)
Fluorene d-10	NC,SRD	(41 - 162)
Naphthalene-d8	NC,SRD	(21 - 108)

NOTE(S):

NC The recovery and/or RPD were not calculated

SRD The surrogate recovery was not calculated because the extract was diluted beyond the ability to quantitate a recovery

Quanterra

CITY OF ST. LOUIS PARK

Client Sample ID: PCJ-SLP10-051198

GC/MS Semivolatiles

Lot-Sample #...: D8E120119-005 Work Order #...: CH3XT101 Matrix.....: WATER
Date Sampled...: 05/11/98 Date Received..: 05/12/98
Prep Date.....: 05/17/98 Analysis Date..: 06/01/98
Prep Batch #...: 8137142 Analysis Time..: 14:39
Dilution Factor: 5 Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	**110**	**7.0**	**ng/L**
Naphthalene	ND	32	ng/L
2-Methylnaphthalene	ND	20	ng/L
Acenaphthene	**490**	**6.5**	**ng/L**
Dibenzofuran	**26**	**5.0**	**ng/L**
Fluorene	**160**	**5.0**	**ng/L**
Phenanthrene	ND	6.5	ng/L
Anthracene	ND	14	ng/L
Carbazole	ND	9.5	ng/L
Fluoranthene	**27**	**16**	**ng/L**
Pyrene	**48**	**7.0**	**ng/L**
Benzo(a)anthracene	ND	12	ng/L
Chrysene	ND	14	ng/L
Benzo(b)fluoranthene	ND	12	ng/L
Benzo(k)fluoranthene	ND	12	ng/L
Benzo(a)pyrene	ND	12	ng/L
Indeno(1,2,3-cd)pyrene	ND	10	ng/L
Benzo(ghi)perylene	ND	14	ng/L
Indene	**8.5**	**4.5**	**ng/L**
1-Methylnaphthalene	ND	14	ng/L
2,3-Benzofuran	ND	26	ng/L
2,3-Dihydroindene	**230**	**25**	**ng/L**
Benzo(b)thiophene	ND	4.5	ng/L
Indole	ND	12	ng/L
Biphenyl	ND	22	ng/L
Dibenzothiophene	**16**	**5.5**	**ng/L**
Acridine	ND	30	ng/L
Benzo(e)pyrene	ND	9.5	ng/L
Perylene	ND	12	ng/L
Quinoline	ND	34	ng/L
Dibenz(a,h)anthracene	ND	8.0	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	NC,SRD	(10 - 118)
Fluorene d-10	NC,SRD	(41 - 162)
Naphthalene-d8	NC,SRD	(21 - 108)

NOTE(S):

NC The recovery and/or RPD were not calculated

SRD The surrogate recovery was not calculated because the extract was diluted beyond the ability to quantitate a recovery

Quanterra

CITY OF ST. LOUIS PARK

Client Sample ID: PCJ-SLP10DU-051198

GC/MS Semivolatiles

Lot-Sample #...: D8E120119-006 Work Order #...: CH3XV101 Matrix.....: WATER
Date Sampled...: 05/11/98 Date Received..: 05/12/98
Prep Date.....: 05/17/98 Analysis Date..: 06/04/98
Prep Batch #...: 8137142 Analysis Time..: 11:19
Dilution Factor: 5 Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	**120**	**7.0**	**ng/L**
Naphthalene	ND	32	ng/L
2-Methylnaphthalene	ND	20	ng/L
Acenaphthene	**530**	**6.5**	**ng/L**
Dibenzofuran	**30**	**5.0**	**ng/L**
Fluorene	**180**	**5.0**	**ng/L**
Phenanthrene	**7.0**	**6.5**	**ng/L**
Anthracene	ND	14	ng/L
Carbazole	ND	9.5	ng/L
Fluoranthene	**38**	**16**	**ng/L**
Pyrene	**68**	**7.0**	**ng/L**
Benzo(a)anthracene	ND	12	ng/L
Chrysene	ND	14	ng/L
Benzo(b)fluoranthene	ND	12	ng/L
Benzo(k)fluoranthene	ND	12	ng/L
Benzo(a)pyrene	ND	12	ng/L
Indeno(1,2,3-cd)pyrene	ND	10	ng/L
Benzo(ghi)perylene	ND	14	ng/L
Indene	**12**	**4.5**	**ng/L**
1-Methylnaphthalene	ND	14	ng/L
2,3-Benzofuran	ND	26	ng/L
2,3-Dihydroindene	**300**	**25**	**ng/L**
Benzo(b)thiophene	**43**	**4.5**	**ng/L**
Indole	ND	12	ng/L
Biphenyl	ND	22	ng/L
Dibenzothiophene	**26**	**5.5**	**ng/L**
Acridine	ND	30	ng/L
Benzo(e)pyrene	ND	9.5	ng/L
Perylene	ND	12	ng/L
Quinoline	ND	34	ng/L
Dibenz(a,h)anthracene	ND	8.0	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	NC,SRD	(10 - 118)
Fluorene d-10	NC,SRD	(41 - 162)
Naphthalene-d8	NC,SRD	(21 - 108)

NOTE(S):

NC The recovery and/or RPD were not calculated

SRD The surrogate recovery was not calculated because the extract was diluted beyond the ability to quantitate a recovery

Quanterra

CITY OF ST. LOUIS PARK

Client Sample ID: PCJ-W406-051198

GC/MS Semivolatiles

Lot-Sample #...: D8E120119-007 Work Order #...: CH3XX101 Matrix.....: WATER
Date Sampled...: 05/11/98 13:30 Date Received..: 05/12/98
Prep Date.....: 05/17/98 Analysis Date..: 06/01/98
Prep Batch #...: 8137142 Analysis Time..: 19:25
Dilution Factor: 1 Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	ND	1.4	ng/L
Naphthalene	ND	6.5	ng/L
2-Methylnaphthalene	ND	3.9	ng/L
Acenaphthene	ND	1.3	ng/L
Dibenzofuran	ND	1.0	ng/L
Fluorene	ND	1.0	ng/L
Phenanthrene	1.5	1.3	ng/L
Anthracene	ND	2.7	ng/L
Carbazole	ND	1.9	ng/L
Fluoranthene	ND	3.1	ng/L
Pyrene	13	1.4	ng/L
Benzo(a)anthracene	ND	2.5	ng/L
Chrysene	ND	2.8	ng/L
Benzo(b)fluoranthene	ND	2.5	ng/L
Benzo(k)fluoranthene	ND	2.3	ng/L
Benzo(a)pyrene	ND	2.3	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Benzo(ghi)perylene	ND	2.8	ng/L
Indene	ND	0.90	ng/L
1-Methylnaphthalene	ND	2.8	ng/L
2,3-Benzofuran	ND	5.1	ng/L
2,3-Dihydroindene	ND	5.0	ng/L
Benzo(b)thiophene	ND	0.90	ng/L
Indole	ND	2.5	ng/L
Biphenyl	ND	4.3	ng/L
Dibenzothiophene	ND	1.1	ng/L
Acridine	ND	6.1	ng/L
Benzo(e)pyrene	ND	1.9	ng/L
Perylene	ND	2.5	ng/L
Quinoline	ND	6.9	ng/L
Dibenz(a,h)anthracene	ND	1.6	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	31	(10 - 118)
Fluorene d-10	72	(41 - 162)
Naphthalene-d8	56	(21 - 108)

Chain of Custody Record

Date 12/1/98

Quanterra

QUA-4124

Client: City of St. Louis Park	Project Manager: Bill [illegible]	Date: 5-11-98	Chain Of Custody Number: 24355
Address: 3292 Wooddale Ave	Telephone Number (Area Code)/Fax Number: 612-924-2557	Lab Number	Page 1 of 1
City: St. Louis Park; State: MN; Zip Code: 55416	Site Contact: Scott A. [illegible]		
Project Name: SLP	Carrier/Waybill Number		
Contract/Purchase Order/Quote No			

Sample I D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Analysis: PPT-PAH
PCJ-W402-051198	5-11-98	10:00	H2O	6 Liters	G.A.	6	—		X
PCJ-W403-051198	5-11-98	11:30	H2O	6 Liters	G.A.	6	—		X

Special Instructions: PPT-5

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

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required: ☐ Normal ☐ Rush

QC Level: ☐ I. ☐ II. ☐ III.

Project Specific (Specify)

	Date	Time		Date	Time
1 Relinquished By: [signature]	5/11/98	16:[illegible]	1 Received By: [signature]	5-12-98	0930
2 Relinquished By			2 Received By		
3 Relinquished By			3 Received By		

Comments

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

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Chain of Custody Record

DXC120119

Quanterra

QUA-4124

Client: CITY OF ST. LOUIS PARK UTILITY DIVISION 3752 WOODDALE AVENUE ST. LOUIS PARK, MN 55416	Project Manager: SCOTT ANDERSON	Date: 5-11-98	Chain Of Custody Number: 24360
Address	Telephone Number (Area Code)/Fax Number: 924-2557 (612) 924-2570	Lab Number	Page ____ of ____
City	Site Contact: SAME		
Project Name: SAME	Carrier/Waybill Number: FED EX 800246316849		
Contract/Purchase Order/Quote No			

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Analysis: PPT PAH 5
PCJ-SLP10FB-051198	5-11-98		WATER	1 LITER	AMBER	6	N/A		X
PCJ-SLP10FBD-051198	5-11-98		WATER	1 LITER	AMBER	6	N/A		X

Special Instructions: 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

Turn Around Time Required: [ ] Normal [ ] Rush

QC Level: [ ] I. [ ] II. [ ] III.

Project Specific (Specify)

	Date	Time		Date	Time
1 Relinquished By: MZH	5-11-98	1400	1 Received By: Rosalia Dalton	5-12-98	0830
2 Relinquished By			2 Received By		
3 Relinquished By			3 Received By		

Comments

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

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Chain of Custody Record

D8C12C119

Quanterra

QUA-4124

Client: CITY OF ST. LOUIS PARK UTILITY DIVISION 3752 WOODDALE AVENUE ST. LOUIS PARK, MN 55416	Project Manager: Scott Anderson	Date: 5-11-98	Chain Of Custody Number: 24358
Address	Telephone Number (Area Code)/Fax Number: 924-2557	Lab Number	Page ____ of ____
City	Site Contact: SAME		
Project Name: SAME	Carrier/Waybill Number: FED EX 800846216849		
Contract/Purchase Order/Quote No			

Sample I.D No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No	Preservative	Condition on Receipt	Analysis: PPT PAH 5
PCJ-SLP10-051198	5-11-98		WATER	1 LITER	AMBER	6	N/A		X
PCJ-SLP10D-051198	5-11-98		WATER	1 LITER	AMBER	6	N/A		X

Special Instructions: PPT 5

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

Sample Disposal: ☐ Return To Client ☒ Disposal By Lab ☐ Archive For ____ Months

Turn Around Time Required: ☐ Normal ☐ Rush

QC Level: ☐ I. ☐ II. ☐ III.

Project Specific (Specify)

	Date	Time		Date	Time
1 Relinquished By: MJW	5-11-98	1400	1 Received By: Priscilla Dalton	5-12-98	0830
2 Relinquished By			2 Received By		
3 Relinquished By			3 Received By		

Comments

DISTRIBUTION: [illegible] - Stays with Sample, CANARY - Returned to Client with Report, PINK - Field Copy

Chain of Custody Record

D8C120119

Quanterra

QUA-4124

Client: CITY OF ST. LOUIS PARK UTILITY DIVISION	Project Manager: SCOTT ANDERSON	Date: 5-11-98	Chain Of Custody Number: 24359
Address: 3752 WOODDALE AVENUE	Telephone Number (Area Code)/Fax Number: 929-2557 (612) 9-41-2570	Lab Number	Page ____ of ____
City: ST. LOUIS PARK, MN 55416	Site Contact: SAME		
Project Name: SAME	Carrier/Waybill Number: FED EX 8004463169 99		
Contract/Purchase Order/Quote No			

Sample I D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No	Preservative	Condition on Receipt	Analysis: PPE PAH 5
DEJ-SLP10MS-051198	5-11-98		WATER	1 LITER	AMBER	6	N/A		X
DEJ-SLP10MSD-051198	5-11-98		WATER	1 LITER	AMBER	6	N/A		X

Special Instructions: PPE 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

Turn Around Time Required: [ ] Normal [ ] Rush

QC Level: [ ] I. [ ] II. [ ] III.

Project Specific (Specify)

	Date	Time		Date	Time
1 Relinquished By: [signature]	5-11-98	1400	1 Received By: [signature]	5-12-98	0830
2 Relinquished By			2 Received By		
3 Relinquished By			3 Received By		

Comments

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

Chain of Custody Record

DAE 120119

Quanterra

QUA-4124

Client: City of St Louis Park	Project Manager: [illegible]	Date: 5-11-98	Chain Of Custody Number: 24354
Address: 3752 Wooddale Ave	Telephone Number (Area Code)/Fax Number: 612 924-2557	Lab Number:	Page 1 of 1
City: St Louis Park; State: MN; Zip Code: 55416	Site Contact: Scott Anderson		
Project Name: SLP	Carrier/Waybill Number:		
Contract/Purchase Order/Quote No:			

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No	Preservative	Condition on Receipt	Analysis: PDT-PAH
PCJ-W406-051198	5-11-98	13:30	H-O	[illegible]	[illegible]	[illegible]	—		
PCJ-W29-051198	5-11-98	14:30	H-O	[illegible]	[illegible]	1	—		

Special Instructions: PDT-5

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

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required: ☐ Normal ☐ Rush

QC Level: ☐ I. ☐ II. ☐ III.

Project Specific (Specify):

	Date	Time		Date	Time
1. Relinquished By: [signature]	5-11-98	16:00	1. Received By: Donalia DeHart	5-12-98	0830
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments:

DISTRIBUTION: W[illegible] Stays with Sample, CANARY - Returned to Client with Report, PINK - Field Copy

Quanterra
Environmental Services

Quanterra Incorporated
4955 Yarrow Street
Arvada, Colorado 80002

303 421-6611 Telephone
303 431-7171 Fax

July 17, 1998

Mr. Scott Anderson
City of St. Louis Park
3752 Wooddale Ave.
St. Louis Park, MN 55416-2216

Dear Mr. Anderson:

Enclosed is the report for eleven water samples received at Quanterra Incorporated, Denver Laboratory on May 13, 1998. Included in the report is a quality control summary.

Please call if you have any questions.

Sincerely,

Christina Mott
Program Manager

bal
Enclosures

Quanterra # D8E130200

Quanterra

ANALYTICAL REPORT

Reilly Tar & Chemical NPL Site

Lot #: D8E130200

Scott Anderson

City of St. Louis Park

QUANTERRA INCORPORATED

Lindsay Breyer
Project Manager

July 15, 1998

Quanterra

Case Narrative

With noted exceptions, 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.

Quanterra

EXECUTIVE SUMMARY - Detection Highlights

D8E130200

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
PCJ-W40-051298 05/12/98 09:05 001				
Acenaphthylene	3.1	1.4	ng/L	SW846 8270A SIM
Acenaphthene	140	1.3	ng/L	SW846 8270A SIM
Phenanthrene	3.1	1.3	ng/L	SW846 8270A SIM
Anthracene	4.5	2.7	ng/L	SW846 8270A SIM
Pyrene	44	1.4	ng/L	SW846 8270A SIM
Indene	3.9	0.90	ng/L	SW846 8270A SIM
2,3-Dihydroindene	8.2	5.0	ng/L	SW846 8270A SIM
Acridine	13	6.1	ng/L	SW846 8270A SIM
PCJ-SLP14FBD-051298 05/12/98 004				
Phenanthrene	2.5	1.3	ng/L	SW846 8270A SIM
PCJ-SLP14-051298 05/12/98 005				
Acenaphthylene	7.7	1.4	ng/L	SW846 8270A SIM
Acenaphthene	17	1.3	ng/L	SW846 8270A SIM
Fluorene	1.1	1.0	ng/L	SW846 8270A SIM
Phenanthrene	3.3	1.3	ng/L	SW846 8270A SIM
Anthracene	3.7	2.7	ng/L	SW846 8270A SIM
Pyrene	2.7	1.4	ng/L	SW846 8270A SIM
Indene	1.3	0.90	ng/L	SW846 8270A SIM
2,3-Dihydroindene	15	5.0	ng/L	SW846 8270A SIM
Benzo(b)thiophene	1.4	0.90	ng/L	SW846 8270A SIM
PCJ-SLP14D-051298 05/12/98 006				
Acenaphthylene	7.9	1.4	ng/L	SW846 8270A SIM
Acenaphthene	18	1.3	ng/L	SW846 8270A SIM
Dibenzofuran	0.98 J	1.0	ng/L	SW846 8270A SIM
Fluorene	1.0	1.0	ng/L	SW846 8270A SIM
Phenanthrene	3.4	1.3	ng/L	SW846 8270A SIM
Carbazole	2.1	1.9	ng/L	SW846 8270A SIM
Pyrene	3.2	1.4	ng/L	SW846 8270A SIM
Indene	1.2	0.90	ng/L	SW846 8270A SIM
2,3-Dihydroindene	17	5.0	ng/L	SW846 8270A SIM
PCJ-W401-051298 05/12/98 05:45 007				
Acenaphthylene	2.8	1.4	ng/L	SW846 8270A SIM
Acenaphthene	27	1.3	ng/L	SW846 8270A SIM
Fluorene	11	1.0	ng/L	SW846 8270A SIM
Phenanthrene	2.5	1.3	ng/L	SW846 8270A SIM

(Continued on next page)

Quanterra

CITY OF ST. LOUIS PARK

Client Sample ID: PCJ-SLP14-051298

GC/MS Semivolatiles

Lot-Sample #...: D8E130200-005 Work Order #...: CH5EX101 Matrix.....: WATER
Date Sampled...: 05/12/98 Date Received..: 05/13/98
Prep Date.....: 05/17/98 Analysis Date..: 06/04/98
Prep Batch #...: 8137142 Analysis Time..: 13:05
Dilution Factor: 1 Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	**7.7**	**1.4**	**ng/L**
Naphthalene	ND	6.5	ng/L
2-Methylnaphthalene	ND	3.9	ng/L
Acenaphthene	**17**	**1.3**	**ng/L**
Dibenzofuran	ND	1.0	ng/L
Fluorene	**1.1**	**1.0**	**ng/L**
Phenanthrene	**3.3**	**1.3**	**ng/L**
Anthracene	**3.7**	**2.7**	**ng/L**
Carbazole	ND	1.9	ng/L
Fluoranthene	ND	3.1	ng/L
Pyrene	**2.7**	**1.4**	**ng/L**
Benzo(a)anthracene	ND	2.5	ng/L
Chrysene	ND	2.8	ng/L
Benzo(b)fluoranthene	ND	2.5	ng/L
Benzo(k)fluoranthene	ND	2.3	ng/L
Benzo(a)pyrene	ND	2.3	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Benzo(ghi)perylene	ND	2.8	ng/L
Indene	**1.3**	**0.90**	**ng/L**
1-Methylnaphthalene	ND	2.8	ng/L
2,3-Benzofuran	ND	5.1	ng/L
2,3-Dihydroindene	**15**	**5.0**	**ng/L**
Benzo(b)thiophene	**1.4**	**0.90**	**ng/L**
Indole	ND	2.5	ng/L
Biphenyl	ND	4.3	ng/L
Dibenzothiophene	ND	1.1	ng/L
Acridine	ND	6.1	ng/L
Benzo(e)pyrene	ND	1.9	ng/L
Perylene	ND	2.5	ng/L
Quinoline	ND	6.9	ng/L
Dibenz(a,h)anthracene	ND	1.6	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	53	(10 - 118)
Fluorene d-10	75	(41 - 162)
Naphthalene-d8	76	(21 - 108)

Quanterra

CITY OF ST. LOUIS PARK

Client Sample ID: PCJ-SLP14D-051298

GC/MS Semivolatiles

Lot-Sample #...: D8E130200-006 Work Order #...: CH5F2101 Matrix.....: WATER
Date Sampled...: 05/12/98 Date Received..: 05/13/98
Prep Date.....: 05/17/98 Analysis Date..: 06/04/98
Prep Batch #...: 8137142 Analysis Time..: 13:41
Dilution Factor: 1 Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	**7.9**	**1.4**	**ng/L**
Naphthalene	ND	6.5	ng/L
2-Methylnaphthalene	ND	3.9	ng/L
Acenaphthene	**18**	**1.3**	**ng/L**
Dibenzofuran	**0.98 J**	**1.0**	**ng/L**
Fluorene	**1.0**	**1.0**	**ng/L**
Phenanthrene	**3.4**	**1.3**	**ng/L**
Anthracene	ND	2.7	ng/L
Carbazole	**2.1**	**1.9**	**ng/L**
Fluoranthene	ND	3.1	ng/L
Pyrene	**3.2**	**1.4**	**ng/L**
Benzo(a)anthracene	ND	2.5	ng/L
Chrysene	ND	2.8	ng/L
Benzo(b)fluoranthene	ND	2.5	ng/L
Benzo(k)fluoranthene	ND	2.3	ng/L
Benzo(a)pyrene	ND	2.3	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Benzo(ghi)perylene	ND	2.8	ng/L
Indene	**1.2**	**0.90**	**ng/L**
1-Methylnaphthalene	ND	2.8	ng/L
2,3-Benzofuran	ND	5.1	ng/L
2,3-Dihydroindene	**17**	**5.0**	**ng/L**
Benzo(b)thiophene	ND	0.90	ng/L
Indole	ND	2.5	ng/L
Biphenyl	ND	4.3	ng/L
Dibenzothiophene	ND	1.1	ng/L
Acridine	ND	6.1	ng/L
Benzo(e)pyrene	ND	1.9	ng/L
Perylene	ND	2.5	ng/L
Quinoline	ND	6.9	ng/L
Dibenz(a,h)anthracene	ND	1.6	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	54	(10 - 118)
Fluorene d-10	73	(41 - 162)
Naphthalene-d8	79	(21 - 108)

NOTE(S):

J Estimated result Result is less than RL

Chain of Custody Record

Quanterra

QUA 4124

Client: CITY OF ST. LOUIS PARK UTILITY DIVISION 3752 WOODDALE AVENUE ST. LOUIS PARK, MN 55416	Project Manager: Scott Anderson	Date: 5-12-98	Chain Of Custody Number: 24362
Address:	Telephone Number (Area Code)/Fax Number: 924-2557 (612) 924-2570	Lab Number:	Page ____ of ____
City:	Site Contact: SAME		
Project Name: SAME	Carrier/Waybill Number: FED EX 800846316850		
Contract/Purchase Order/Quote No:			

Analysis

Sample I D No and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No	Preservative	Condition on Receipt	PPT PAH 5
PCJ-SLP14FB -051298	5-12-98		WATER	1 LITER	AMBER	6	N/A		X
PCJ-SLP14FBD-051298	5-12-98		WATER	1 LITER	AMBER	6	N/A		X

Special Instructions: 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

Turn Around Time Required: [ ] Normal [ ] Rush

QC Level: [ ] I. [ ] II. [ ] III.

Project Specific (Specify):

	Date	Time		Date	Time
1 Relinquished By: MZH	5-12-98	1400	1 Received By: Pisalla Dalton	5-13-98	0830
2 Relinquished By:			2 Received By:		
3 Relinquished By:			3 Received By:		

Comments:

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

Chain of Custody Record

Quanterra

QUA 4124

Client: CITY OF ST. LOUIS PARK UTILITY DIVISION 3752 WOODDALE AVENUE ST. LOUIS PARK, MN 55416	Project Manager: SCOTT ANDERSON	Date: 5-12-98	Chain Of Custody Number: 24301
Address	Telephone Number (Area Code)/Fax Number: 924-2557 (612) 924-2570	Lab Number	Page ____ of ____
City	Site Contact: SAME		
Project Name: SAME	Carrier/Waybill Number: FED EX 800846316850		
Contract/Purchase Order/Quote No			

Sample I D No and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No	Preservative	Condition on Receipt	Analysis: PPT PAH 5
OCJ-SLP14 -051298	5-12-98		WATER	1 LITER	AMBER	6	N/A		X
OCJ-SLP14D -051298	5-12-98		WATER	1 LITER	AMBER	6	N/A		X

Special Instructions: 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

Turn Around Time Required: [ ] Normal [ ] Rush

QC Level: [ ] I [ ] II. [ ] III.

Project Specific (Specify)

	Date	Time		Date	Time
1 Relinquished By: M 2 [illegible]	5-12-98	1400	1 Received By: Pisalla Dalton	5-13-98	0830
2 Relinquished By			2 Received By		
3 Relinquished By			3 Received By		

Comments

DISTRIBUTION: W[illegible] Stays with Sample, CANARY - Returned to Client with Report, PINK - Field Copy

SECTION 7.3(E)

RAP SECTION 7.3(E) PAH MONITORING

WELLS

W29 W40 W70
E3 H6 MTKA6

Quanterra
Environmental Services

Quanterra Incorporated
4955 Yarrow Street
Arvada, Colorado 80002

303 421-6611 Telephone
303 431-7171 Fax

July 17, 1998

Mr. Scott Anderson
City of St. Louis Park
3752 Wooddale Ave.
St. Louis Park, MN 55416-2216

Dear Mr. Anderson:

Enclosed is the report for eleven water samples received at Quanterra Incorporated, Denver Laboratory on May 13, 1998. Included in the report is a quality control summary.

Please call if you have any questions.

Sincerely,

Christina Mott
Program Manager

bal
Enclosures

Quanterra # D8E130200

Quanterra

ANALYTICAL REPORT

Reilly Tar & Chemical NPL Site

Lot #: D8E130200

Scott Anderson

City of St. Louis Park

QUANTERRA INCORPORATED

Lindsay Breyer
Project Manager

July 15, 1998

Quanterra

Case Narrative

With noted exceptions, 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.

Quanterra

EXECUTIVE SUMMARY - Detection Highlights

D8E130200

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
PCJ-W40-051298 05/12/98 09:05 001				
Acenaphthylene	3.1	1.4	ng/L	SW846 8270A SIM
Acenaphthene	140	1.3	ng/L	SW846 8270A SIM
Phenanthrene	3.1	1.3	ng/L	SW846 8270A SIM
Anthracene	4.5	2.7	ng/L	SW846 8270A SIM
Pyrene	44	1.4	ng/L	SW846 8270A SIM
Indene	3.9	0.90	ng/L	SW846 8270A SIM
2,3-Dihydroindene	8.2	5.0	ng/L	SW846 8270A SIM
Acridine	13	6.1	ng/L	SW846 8270A SIM
PCJ-SLP14FBD-051298 05/12/98 004				
Phenanthrene	2.5	1.3	ng/L	SW846 8270A SIM
PCJ-SLP14-051298 05/12/98 005				
Acenaphthylene	7.7	1.4	ng/L	SW846 8270A SIM
Acenaphthene	17	1.3	ng/L	SW846 8270A SIM
Fluorene	1.1	1.0	ng/L	SW846 8270A SIM
Phenanthrene	3.3	1.3	ng/L	SW846 8270A SIM
Anthracene	3.7	2.7	ng/L	SW846 8270A SIM
Pyrene	2.7	1.4	ng/L	SW846 8270A SIM
Indene	1.3	0.90	ng/L	SW846 8270A SIM
2,3-Dihydroindene	15	5.0	ng/L	SW846 8270A SIM
Benzo(b)thiophene	1.4	0.90	ng/L	SW846 8270A SIM
PCJ-SLP14D-051298 05/12/98 006				
Acenaphthylene	7.9	1.4	ng/L	SW846 8270A SIM
Acenaphthene	18	1.3	ng/L	SW846 8270A SIM
Dibenzofuran	0.98 J	1.0	ng/L	SW846 8270A SIM
Fluorene	1.0	1.0	ng/L	SW846 8270A SIM
Phenanthrene	3.4	1.3	ng/L	SW846 8270A SIM
Carbazole	2.1	1.9	ng/L	SW846 8270A SIM
Pyrene	3.2	1.4	ng/L	SW846 8270A SIM
Indene	1.2	0.90	ng/L	SW846 8270A SIM
2,3-Dihydroindene	17	5.0	ng/L	SW846 8270A SIM
PCJ-W401-051298 05/12/98 05:45 007				
Acenaphthylene	2.8	1.4	ng/L	SW846 8270A SIM
Acenaphthene	27	1.3	ng/L	SW846 8270A SIM
Fluorene	11	1.0	ng/L	SW846 8270A SIM
Phenanthrene	2.5	1.3	ng/L	SW846 8270A SIM

(Continued on next page)

Quanterra

EXECUTIVE SUMMARY - Detection Highlights

D8E130200

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
PCJ-W401-051298 05/12/98 05:45 007				
Fluoranthene	4.8	3.1	ng/L	SW846 8270A SIM
Pyrene	2.7	1.4	ng/L	SW846 8270A SIM
Indene	0.90	0.90	ng/L	SW846 8270A SIM
2,3-Dihydroindene	12	5.0	ng/L	SW846 8270A SIM
Dibenzothiophene	2.3	1.1	ng/L	SW846 8270A SIM
PCJ-H6-051298 05/12/98 08:45 008				
Phenanthrene	2.4	1.3	ng/L	SW846 8270A SIM
Carbazole	2.1	1.9	ng/L	SW846 8270A SIM
PCJ-W70-051298 05/12/98 12:45 009				
Acenaphthylene	8.3	2.8	ng/L	SW846 8270A SIM
Acenaphthene	220	2.6	ng/L	SW846 8270A SIM
Phenanthrene	3.8	2.6	ng/L	SW846 8270A SIM
Pyrene	60	2.8	ng/L	SW846 8270A SIM
Quinoline	15	14	ng/L	SW846 8270A SIM
PCJ-W48-051298 05/12/98 14:30 010				
Acenaphthylene	2.9	1.4	ng/L	SW846 8270A SIM
Acenaphthene	60	1.3	ng/L	SW846 8270A SIM
Phenanthrene	3.5	1.3	ng/L	SW846 8270A SIM
Anthracene	7.9	2.7	ng/L	SW846 8270A SIM
Carbazole	5.9	1.9	ng/L	SW846 8270A SIM
Fluoranthene	6.2	3.1	ng/L	SW846 8270A SIM
Pyrene	11	1.4	ng/L	SW846 8270A SIM
Indene	7.0	0.90	ng/L	SW846 8270A SIM
2,3-Dihydroindene	54	5.0	ng/L	SW846 8270A SIM
Benzo(b)thiophene	5.7	0.90	ng/L	SW846 8270A SIM
Dibenzothiophene	2.4	1.1	ng/L	SW846 8270A SIM
Acridine	19	6.1	ng/L	SW846 8270A SIM
PCJ-SLP7-051298 05/12/98 011				
Acenaphthene	4.9	1.3	ng/L	SW846 8270A SIM
Phenanthrene	2.5	1.3	ng/L	SW846 8270A SIM
Pyrene	2.4	1.4	ng/L	SW846 8270A SIM
Quinoline	7.5	6.9	ng/L	SW846 8270A SIM

Quanterra

CITY OF ST. LOUIS PARK

Client Sample ID: PCJ-W40-051298

GC/MS Semivolatiles

Lot-Sample #...: D8E130200-001 Work Order #...: CH5EL101 Matrix.....: WATER
Date Sampled...: 05/12/98 09:05 Date Received..: 05/13/98
Prep Date.....: 05/17/98 Analysis Date..: 06/01/98
Prep Batch #...: 8137142 Analysis Time..: 12:54
Dilution Factor: 1 Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	**3.1**	**1.4**	**ng/L**
Naphthalene	ND	6.5	ng/L
2-Methylnaphthalene	ND	3.9	ng/L
Acenaphthene	**140**	**1.3**	**ng/L**
Dibenzofuran	ND	1.0	ng/L
Fluorene	ND	1.0	ng/L
Phenanthrene	**3.1**	**1.3**	**ng/L**
Anthracene	**4.5**	**2.7**	**ng/L**
Carbazole	ND	1.9	ng/L
Fluoranthene	ND	3.1	ng/L
Pyrene	**44**	**1.4**	**ng/L**
Benzo(a)anthracene	ND	2.5	ng/L
Chrysene	ND	2.8	ng/L
Benzo(b)fluoranthene	ND	2.5	ng/L
Benzo(k)fluoranthene	ND	2.3	ng/L
Benzo(a)pyrene	ND	2.3	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Benzo(ghi)perylene	ND	2.8	ng/L
Indene	**3.9**	**0.90**	**ng/L**
1-Methylnaphthalene	ND	2.8	ng/L
2,3-Benzofuran	ND	5.1	ng/L
2,3-Dihydroindene	**8.2**	**5.0**	**ng/L**
Benzo(b)thiophene	ND	0.90	ng/L
Indole	ND	2.5	ng/L
Biphenyl	ND	4.3	ng/L
Dibenzothiophene	ND	1.1	ng/L
Acridine	**13**	**6.1**	**ng/L**
Benzo(e)pyrene	ND	1.9	ng/L
Perylene	ND	2.5	ng/L
Quinoline	ND	6.9	ng/L
Dibenz(a,h)anthracene	ND	1.6	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	29	(10 - 118)
Fluorene d-10	71	(41 - 162)
Naphthalene-d8	35	(21 - 108)

Quanterra

CITY OF ST. LOUIS PARK

Client Sample ID: PCJ-MTKA6A-051298

GC/MS Semivolatiles

Lot-Sample #...: D8E130200-002 Work Order #...: CH5EN101 Matrix.....: WATER
Date Sampled...: 05/12/98 12:45 Date Received..: 05/13/98
Prep Date.....: 05/17/98 Analysis Date..: 06/01/98
Prep Batch #...: 8137142 Analysis Time..: 13:29
Dilution Factor: 1 Method.....: SW846 8270A SIM

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

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	31	(10 - 118)
Fluorene d-10	81	(41 - 162)
Naphthalene-d8	61	(21 - 108)

Quanterra

CITY OF ST. LOUIS PARK

Client Sample ID: PCJ-H6-051298

GC/MS Semivolatiles

Lot-Sample #...: D8E130200-008 Work Order #...: CH5F4101 Matrix.....: WATER
Date Sampled...: 05/12/98 08:45 Date Received..: 05/13/98
Prep Date.....: 05/17/98 Analysis Date..: 06/04/98
Prep Batch #...: 8137142 Analysis Time..: 14:53
Dilution Factor: 1 Method.....: SW846 8270A SIM

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

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	52	(10 - 118)
Fluorene d-10	70	(41 - 162)
Naphthalene-d8	79	(21 - 108)

Quanterra

CITY OF ST. LOUIS PARK

Client Sample ID: PCJ-W70-051298

GC/MS Semivolatiles

Lot-Sample #...: D8E130200-009 Work Order #...: CH5F5101 Matrix.....: WATER
Date Sampled...: 05/12/98 12:45 Date Received..: 05/13/98
Prep Date.....: 05/17/98 Analysis Date..: 06/04/98
Prep Batch #...: 8137142 Analysis Time..: 19:21
Dilution Factor: 2 Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	**8.3**	**2.8**	**ng/L**
Naphthalene	ND	13	ng/L
2-Methylnaphthalene	ND	7.8	ng/L
Acenaphthene	**220**	**2.6**	**ng/L**
Dibenzofuran	ND	2.0	ng/L
Fluorene	ND	2.0	ng/L
Phenanthrene	**3.8**	**2.6**	**ng/L**
Anthracene	ND	5.4	ng/L
Carbazole	ND	3.8	ng/L
Fluoranthene	ND	6.2	ng/L
Pyrene	**60**	**2.8**	**ng/L**
Benzo(a)anthracene	ND	5.0	ng/L
Chrysene	ND	5.6	ng/L
Benzo(b)fluoranthene	ND	5.0	ng/L
Benzo(k)fluoranthene	ND	4.6	ng/L
Benzo(a)pyrene	ND	4.6	ng/L
Indeno(1,2,3-cd)pyrene	ND	4.2	ng/L
Benzo(ghi)perylene	ND	5.6	ng/L
Indene	ND	1.8	ng/L
1-Methylnaphthalene	ND	5.6	ng/L
2,3-Benzofuran	ND	10	ng/L
2,3-Dihydroindene	ND	10	ng/L
Benzo(b)thiophene	ND	1.8	ng/L
Indole	ND	5.0	ng/L
Biphenyl	ND	8.6	ng/L
Dibenzothiophene	ND	2.2	ng/L
Acridine	ND	12	ng/L
Benzo(e)pyrene	ND	3.8	ng/L
Perylene	ND	5.0	ng/L
Quinoline	**15**	**14**	**ng/L**
Dibenz(a,h)anthracene	ND	3.2	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	55	(10 - 118)
Fluorene d-10	74	(41 - 162)
Naphthalene-d8	80	(21 - 108)

Chain of Custody Record

Quanterra

JUA 4124

Client: City of St Louis Park	Project Manager: Bill Gregg	Date: 5-12-98	Chain Of Custody Number: 24375
Address: 3752 Woodale Ave S	Telephone Number (Area Code)/Fax Number: 612-924-2557	Lab Number	Page 1 of 1
City: St Louis Park; State: MN; Zip Code: 55416	Site Contact: Scott Anderson		
Project Name: SLP	Carrier/Waybill Number		
Contract/Purchase Order/Quote No			

Sample I D No and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Analysis: PPT-PAH
PCJ-W40-051298	5-12-98	9:05	H2O	6 Liters	1 Liter	6	—		X
PCJ-MTKA6A-051298	5-12-98	12:45	H2O	6 Liters	1 Liter	6	—		X

Special Instructions: PPT-5 (sample PCJ-MTKA6A-051298 ~~should be~~ labeled on bottles as PCJ-MTKA6A 05129 should be labeled

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

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required: ☐ Normal ☐ Rush

QC Level: ☐ I ☐ II. ☐ III

Project Specific (Specify)

	Date	Time		Date	Time
1 Relinquished By: [signature]	5/12/98	15:00	1 Received By: [signature]	5-13-98	0830
2 Relinquished By			2 Received By		
3 Relinquished By			3 Received By		

Comments

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

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Chain of Custody Record

Quanterra

QUA 4124

Client: City of St Louis Park	Project Manager: Bill Gregg	Date: 5-12-98	Chain Of Custody Number: 24378
Address: 3252 Wooddale Ave S	Telephone Number (Area Code)/Fax Number: 612-924-2557	Lab Number:	Page 1 of 1
City: St Louis Park; State: MN; Zip Code: 55416	Site Contact: Scott Anderson		
Project Name: SLP	Carrier/Waybill Number:		
Contract/Purchase Order/Quote No:			

Sample I D No and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No	Preservative	Condition on Receipt	Analysis: PPT-Metals
PCJ-W70-051298	5-12-98	12:45	H_2O	6 Liters	1 Liter	6	—		X
PCJ-W48-051298	5-12-98	14:30	H_2O	6 Liters	1 Liter	6	—		X

Special Instructions: PPT-5

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

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required: ☐ Normal ☒ Rush

QC Level: ☐ I. ☐ II. ☐ III.

Project Specific (Specify):

1 Relinquished By: Pat Moon	Date: 5/12/98	Time: 15:00	1 Received By: Priscilla Dalton	Date: 5-13-98	Time: 08:30
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 Sample, CANARY - Returned to Client with Report, PINK - Field Copy

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Chain of Custody Record

Quanterra

DUA 4124

Client: City of St Louis Park	Project Manager: Bill Gregg	Date: 5-12-98	Chain Of Custody Number: 24374
Address: 3752 Woodlake Ave S	Telephone Number (Area Code)/Fax Number: 612-924-2557	Lab Number:	Page 1 of 1
City: St Louis Park; State: MN; Zip Code: 55416	Site Contact: Scott Anderson		
Project Name: SLP	Carrier/Waybill Number:		
Contract/Purchase Order/Quote No:			

Sample I D No and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No	Preservative	Condition on Receipt	Analysis: PPT-PAH
PLJ-W401-051298	5-12-98	5:45	H_2O	6 Liters	1 Liter	6	—		X
PLJ-H6-051298	5-12-98	8:25	H_2O	6 Liters	1 Liter	6	—		X

Special Instructions: PPT-5

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

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required: ☐ Normal ☒ Rush

QC Level: ☐ I. ☐ II. ☐ III.

Project Specific (Specify):

	Date	Time		Date	Time
1 Relinquished By: [signature]	5-12-98	15:00	1 Received By: Donalla Dalton	5-13-98	0830
2 Relinquished By			2 Received By		
3 Relinquished By			3 Received By		

Comments:

DISTRIBUTION: W[illegible] Stays with Sample, CANARY - Returned to Client with Report, PINK - Field Copy

Quanterra
Environmental Services

Quanterra Incorporated
4955 Yarrow Street
Arvada, Colorado 80002

303 421-6611 Telephone
303 431-7171 Fax

July 17, 1998

Mr. Scott Anderson
City of St. Louis Park
3752 Wooddale Ave.
St. Louis Park, MN 55416-2216

Dear Mr. Anderson:

Enclosed is the report for sixteen water samples received at Quanterra Incorporated, Denver Laboratory on May 20, 1998. Included in the report is a quality control summary.

Please call if you have any questions.

Sincerely,

Christina Mott
Program Manager

bal
Enclosures

Quanterra # D8E200134

Quanterra

ANALYTICAL REPORT

Reilly Tar & Chemical NPL Site

Lot #: D8E200134

Scott Anderson

City of St. Louis Park

QUANTERRA INCORPORATED

Lindsay Breyer
Project Manager

July 15, 1998

Quanterra

Case Narrative

With noted exceptions, 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.

Quanterra

EXECUTIVE SUMMARY - Detection Highlights

D8E200134

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
PCJ-E7-051898 05/18/98 09:05 009				
Phenanthrene	1.2	1.2	ng/L	SW846 8270A SIM
PCJ-E3-051898 05/18/98 10:10 010				
Phenanthrene	1.4	1.3	ng/L	SW846 8270A SIM
Indene	1.1	0.87	ng/L	SW846 8270A SIM
MSH-SLP12-051998 05/19/98 011				
Phenanthrene	3.1	1.2	ng/L	SW846 8270A SIM
MSH-SLP13-051998 05/19/98 012				
Acenaphthene	1.6	1.2	ng/L	SW846 8270A SIM
Phenanthrene	2.6	1.2	ng/L	SW846 8270A SIM
MSH-SLP11-051998 05/19/98 013				
Naphthalene	17	6.2	ng/L	SW846 8270A SIM
Acenaphthene	6.7	1.2	ng/L	SW846 8270A SIM
Dibenzofuran	1.2	0.95	ng/L	SW846 8270A SIM
Fluorene	1.9	0.95	ng/L	SW846 8270A SIM
Phenanthrene	3.2	1.2	ng/L	SW846 8270A SIM
Carbazole	2.0	1.8	ng/L	SW846 8270A SIM
Indene	16	0.86	ng/L	SW846 8270A SIM
1-Methylnaphthalene	3.2	2.7	ng/L	SW846 8270A SIM
2,3-Dihydroindene	12	4.8	ng/L	SW846 8270A SIM
Benzo(b)thiophene	7.0	0.86	ng/L	SW846 8270A SIM
MSH-SLP11D-051998 05/19/98 014				
Naphthalene	17	6.2	ng/L	SW846 8270A SIM
Acenaphthene	6.6	1.2	ng/L	SW846 8270A SIM
Dibenzofuran	1.2	0.95	ng/L	SW846 8270A SIM
Fluorene	1.9	0.95	ng/L	SW846 8270A SIM
Phenanthrene	3.3	1.2	ng/L	SW846 8270A SIM
Carbazole	2.2	1.8	ng/L	SW846 8270A SIM
Indene	16	0.86	ng/L	SW846 8270A SIM
1-Methylnaphthalene	3.3	2.7	ng/L	SW846 8270A SIM
2,3-Dihydroindene	12	4.8	ng/L	SW846 8270A SIM
Benzo(b)thiophene	6.8	0.86	ng/L	SW846 8270A SIM

(Continued on next page)

Quanterra

CITY OF ST. LOUIS PARK

Client Sample ID: PCJ-E3-051898

GC/MS Semivolatiles

Lot-Sample #...: D8E200134-010 Work Order #...: CHA9D101 Matrix.....: WATER
Date Sampled...: 05/18/98 10:10 Date Received..: 05/20/98
Prep Date.....: 05/25/98 Analysis Date..: 06/09/98
Prep Batch #...: 8145126 Analysis Time..: 03:16
Dilution Factor: 0.96 Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	ND	1.4	ng/L
Naphthalene	ND	6.3	ng/L
2-Methylnaphthalene	ND	3.8	ng/L
Acenaphthene	ND	1.3	ng/L
Dibenzofuran	ND	0.97	ng/L
Fluorene	ND	0.97	ng/L
Phenanthrene	**1.4**	**1.3**	**ng/L**
Anthracene	ND	2.6	ng/L
Carbazole	ND	1.8	ng/L
Fluoranthene	ND	3.0	ng/L
Pyrene	ND	1.4	ng/L
Benzo(a)anthracene	ND	2.4	ng/L
Chrysene	ND	2.7	ng/L
Benzo(b)fluoranthene	ND	2.4	ng/L
Benzo(k)fluoranthene	ND	2.2	ng/L
Benzo(a)pyrene	ND	2.2	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.0	ng/L
Benzo(ghi)perylene	ND	2.7	ng/L
Indene	**1.1**	**0.87**	**ng/L**
1-Methylnaphthalene	ND	2.7	ng/L
2,3-Benzofuran	ND	4.9	ng/L
2,3-Dihydroindene	ND	4.8	ng/L
Benzo(b)thiophene	ND	0.87	ng/L
Indole	ND	2.4	ng/L
Biphenyl	ND	4.2	ng/L
Dibenzothiophene	ND	1.1	ng/L
Acridine	ND	5.9	ng/L
Benzo(e)pyrene	ND	1.8	ng/L
Perylene	ND	2.4	ng/L
Quinoline	ND	6.7	ng/L
Dibenz(a,h)anthracene	ND	1.5	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	46	(10 - 118)
Fluorene d-10	68	(41 - 162)
Naphthalene-d8	68	(21 - 108)

Chain of Custody Record

Quanterra

DJA-4124

D8E200134

Client: City of St Louis Park	Project Manager: Bill Gross	Date: 5-18-98	Chain Of Custody Number: 24377
Address: 3752 Woodale Ave	Telephone Number (Area Code)/Fax Number: 612-924-2557	Lab Number	Page 1 of 1
City: St Louis Park; State: MN; Zip Code: 55416	Site Contact: Scott Anderson		
Project Name: SLP	Carrier/Waybill Number		
Contract/Purchase Order/Quote No			

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Analysis: PCJ-PIM
PCJ-E3-051898	5-18-98	10:10	H_2O	6 Liters	1 Liter	6	—		X
~~PCJ-PIM~~									

Special Instructions

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

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required: ☐ Normal ☒ Rush

QC Level: ☐ I. ☐ II. ☐ III

Project Specific (Specify)

1 Relinquished By: Pat Moss	Date: 5-18-98	Time: 14:00	1 Received By: Priscilla Dalton	Date: 5-20-98	Time: 0845
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 Sample, CANARY - Returned to Client with Report, PINK - Field Copy

Quanterra
Environmental Services

Quanterra Incorporated
4955 Yarrow Street
Arvada, Colorado 80002

303 421-6611 Telephone
303 431-7171 Fax

July 17, 1998

Mr. Scott Anderson
City of St. Louis Park
3752 Wooddale Ave.
St. Louis Park, MN 55416-2216

Dear Mr. Anderson:

Enclosed is the report for eight water samples received at Quanterra Incorporated, Denver Laboratory on May 12, 1998. Included in the report is a quality control summary.

Please call if you have any questions.

Sincerely,

Christina Mott
Program Manager

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Enclosures

Quanterra # D8E120119

Quanterra

ANALYTICAL REPORT

Reilly Tar & Chemical NPL Site

Lot #: D8E120119

Scott Anderson

City of St. Louis Park

QUANTERRA INCORPORATED

Lindsay Breyer
Project Manager

July 15, 1998

Case Narrative

With noted exceptions, 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.

Quanterra

EXECUTIVE SUMMARY - Detection Highlights

D8E120119

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
PCJ-SLP10DU-051198 05/11/98 006				
Fluorene	180	5.0	ng/L	SW846 8270A SIM
Phenanthrene	7.0	6.5	ng/L	SW846 8270A SIM
Fluoranthene	38	16	ng/L	SW846 8270A SIM
Pyrene	68	7.0	ng/L	SW846 8270A SIM
Indene	12	4.5	ng/L	SW846 8270A SIM
2,3-Dihydroindene	300	25	ng/L	SW846 8270A SIM
Benzo(b)thiophene	43	4.5	ng/L	SW846 8270A SIM
Dibenzothiophene	26	5.5	ng/L	SW846 8270A SIM
PCJ-W406-051198 05/11/98 13:30 007				
Phenanthrene	1.5	1.3	ng/L	SW846 8270A SIM
Pyrene	13	1.4	ng/L	SW846 8270A SIM
PCJ-W29-051198 05/11/98 14:30 008				
Acenaphthylene	5.5	1.4	ng/L	SW846 8270A SIM
Acenaphthene	89	1.3	ng/L	SW846 8270A SIM
Fluorene	12	1.0	ng/L	SW846 8270A SIM
Phenanthrene	2.8	1.3	ng/L	SW846 8270A SIM
Fluoranthene	22	3.1	ng/L	SW846 8270A SIM
Pyrene	22	1.4	ng/L	SW846 8270A SIM
Indene	2.4	0.90	ng/L	SW846 8270A SIM
2,3-Dihydroindene	100	5.0	ng/L	SW846 8270A SIM
Benzo(b)thiophene	1.4	0.90	ng/L	SW846 8270A SIM
Dibenzothiophene	4.2	1.1	ng/L	SW846 8270A SIM

Quanterra

CITY OF ST. LOUIS PARK

Client Sample ID: PCJ-W29-051198

GC/MS Semivolatiles

Lot-Sample #...: D8E120119-008 Work Order #...: CH400101 Matrix.....: WATER
Date Sampled...: 05/11/98 14:30 Date Received..: 05/12/98
Prep Date.....: 05/17/98 Analysis Date..: 06/04/98
Prep Batch #...: 8137142 Analysis Time..: 09:32
Dilution Factor: 1 Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	**5.5**	**1.4**	**ng/L**
Naphthalene	ND	6.5	ng/L
2-Methylnaphthalene	ND	3.9	ng/L
Acenaphthene	**89**	**1.3**	**ng/L**
Dibenzofuran	ND	1.0	ng/L
Fluorene	**12**	**1.0**	**ng/L**
Phenanthrene	**2.8**	**1.3**	**ng/L**
Anthracene	ND	2.7	ng/L
Carbazole	ND	1.9	ng/L
Fluoranthene	**22**	**3.1**	**ng/L**
Pyrene	**22**	**1.4**	**ng/L**
Benzo(a)anthracene	ND	2.5	ng/L
Chrysene	ND	2.8	ng/L
Benzo(b)fluoranthene	ND	2.5	ng/L
Benzo(k)fluoranthene	ND	2.3	ng/L
Benzo(a)pyrene	ND	2.3	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Benzo(ghi)perylene	ND	2.8	ng/L
Indene	**2.4**	**0.90**	**ng/L**
1-Methylnaphthalene	ND	2.8	ng/L
2,3-Benzofuran	ND	5.1	ng/L
2,3-Dihydroindene	**100**	**5.0**	**ng/L**
Benzo(b)thiophene	**1.4**	**0.90**	**ng/L**
Indole	ND	2.5	ng/L
Biphenyl	ND	4.3	ng/L
Dibenzothiophene	**4.2**	**1.1**	**ng/L**
Acridine	ND	6.1	ng/L
Benzo(e)pyrene	ND	1.9	ng/L
Perylene	ND	2.5	ng/L
Quinoline	ND	6.9	ng/L
Dibenz(a,h)anthracene	ND	1.6	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	36	(10 - 118)
Fluorene d-10	83	(41 - 162)
Naphthalene-d8	68	(21 - 108)

Chain of Custody Record

DSE 120119

Quanterra

QUA-4124

Client: Cal of St Louis Park	Project Manager: [illegible]	Date: 5-11-98	Chain Of Custody Number: 24354
Address: 3752 Woodale Ave	Telephone Number (Area Code)/Fax Number: 612 924-2557	Lab Number:	Page 1 of 1
City: St Louis Park; State: MN; Zip Code: 55416	Site Contact: Scott Anderson		
Project Name: SLP	Carrier/Waybill Number:		
Contract/Purchase Order/Quote No:			

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Analysis: PPT-PAH
PCJ-W406-051198	5-11-98	13:30	H_2O	6 L bs	[illegible]	[illegible]	—		
PCJ-W29-051198	5-11-98	14:30	H_2O	6 L bs	[illegible]	6	—		

Special Instructions: PPT-5

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

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required: ☐ Normal ☒ Rush

QC Level: ☐ I. ☐ II. ☐ III.

Project Specific (Specify):

	Date	Time		Date	Time
1 Relinquished By: [signature]	5/11/98	16:00	1 Received By: Pamella Dalton	5-12-98	0830
2 Relinquished By:			2 Received By:		
3 Relinquished By:			3 Received By:		

Comments:

DISTRIBUTION: W[illegible] Stays with Sample, CANARY - Returned to Client with Report, PINK - Field Copy

SECTION 7.4.1

RAP SECTION 7.4.1 PAH MONITORING

WELLS

W48 W401 E2
E7 E13 E15

Quanterra
Environmental Services

Quanterra Incorporated
4955 Yarrow Street
Arvada, Colorado 80002

303 421-6611 Telephone
303 431-7171 Fax

July 17, 1998

Mr. Scott Anderson
City of St. Louis Park
3752 Wooddale Ave.
St. Louis Park, MN 55416-2216

Dear Mr. Anderson:

Enclosed is the report for sixteen water samples received at Quanterra Incorporated, Denver Laboratory on May 20, 1998. Included in the report is a quality control summary.

Please call if you have any questions.

Sincerely,

Christina Mott
Program Manager

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Enclosures

Quanterra # D8E200134

ANALYTICAL REPORT

Reilly Tar & Chemical NPL Site

Lot #: D8E200134

Scott Anderson

City of St. Louis Park

QUANTERRA INCORPORATED

Lindsay Breyer
Project Manager

July 15, 1998

Quanterra

Case Narrative

With noted exceptions, 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.

Quanterra

EXECUTIVE SUMMARY - Detection Highlights

D8E200134

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
PCJ-E7-051898 05/18/98 09:05 009				
Phenanthrene	1.2	1.2	ng/L	SW846 8270A SIM
PCJ-E3-051898 05/18/98 10:10 010				
Phenanthrene	1.4	1.3	ng/L	SW846 8270A SIM
Indene	1.1	0.87	ng/L	SW846 8270A SIM
MSH-SLP12-051998 05/19/98 011				
Phenanthrene	3.1	1.2	ng/L	SW846 8270A SIM
MSH-SLP13-051998 05/19/98 012				
Acenaphthene	1.6	1.2	ng/L	SW846 8270A SIM
Phenanthrene	2.6	1.2	ng/L	SW846 8270A SIM
MSH-SLP11-051998 05/19/98 013				
Naphthalene	17	6.2	ng/L	SW846 8270A SIM
Acenaphthene	6.7	1.2	ng/L	SW846 8270A SIM
Dibenzofuran	1.2	0.95	ng/L	SW846 8270A SIM
Fluorene	1.9	0.95	ng/L	SW846 8270A SIM
Phenanthrene	3.2	1.2	ng/L	SW846 8270A SIM
Carbazole	2.0	1.8	ng/L	SW846 8270A SIM
Indene	16	0.86	ng/L	SW846 8270A SIM
1-Methylnaphthalene	3.2	2.7	ng/L	SW846 8270A SIM
2,3-Dihydroindene	12	4.8	ng/L	SW846 8270A SIM
Benzo(b)thiophene	7.0	0.86	ng/L	SW846 8270A SIM
MSH-SLP11D-051998 05/19/98 014				
Naphthalene	17	6.2	ng/L	SW846 8270A SIM
Acenaphthene	6.6	1.2	ng/L	SW846 8270A SIM
Dibenzofuran	1.2	0.95	ng/L	SW846 8270A SIM
Fluorene	1.9	0.95	ng/L	SW846 8270A SIM
Phenanthrene	3.3	1.2	ng/L	SW846 8270A SIM
Carbazole	2.2	1.8	ng/L	SW846 8270A SIM
Indene	16	0.86	ng/L	SW846 8270A SIM
1-Methylnaphthalene	3.3	2.7	ng/L	SW846 8270A SIM
2,3-Dihydroindene	12	4.8	ng/L	SW846 8270A SIM
Benzo(b)thiophene	6.8	0.86	ng/L	SW846 8270A SIM

(Continued on next page)

Quanterra

EXECUTIVE SUMMARY - Detection Highlights

D8E200134

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
PJC-SLP16-051898 05/18/98 001				
Acenaphthene	1.4	1.4	ng/L	SW846 8270A SIM
Phenanthrene	1.8	1.4	ng/L	SW846 8270A SIM
PJC-SLP16D-051898 05/18/98 002				
Acenaphthene	1.6	1.2	ng/L	SW846 8270A SIM
Pyrene	5.3	1.3	ng/L	SW846 8270A SIM
PJC-E15-051898 05/18/98 09:30 003				
Acenaphthene	10	1.3	ng/L	SW846 8270A SIM
Fluorene	2.2	0.98	ng/L	SW846 8270A SIM
Phenanthrene	1.7	1.3	ng/L	SW846 8270A SIM
Indene	1.4	0.88	ng/L	SW846 8270A SIM
2,3-Dihydroindene	6.9	4.9	ng/L	SW846 8270A SIM
PJC-E13-051898 05/18/98 10:50 004				
Acenaphthylene	1.9	1.3	ng/L	SW846 8270A SIM
Acenaphthene	8.4	1.2	ng/L	SW846 8270A SIM
Fluorene	2.7	0.96	ng/L	SW846 8270A SIM
Phenanthrene	1.5	1.2	ng/L	SW846 8270A SIM
2,3-Dihydroindene	6.8	4.8	ng/L	SW846 8270A SIM
MSH-SLP17-051998 05/19/98 005				
Phenanthrene	2.5	1.2	ng/L	SW846 8270A SIM
MSH-SLP11FB-051998 05/19/98 006				
Phenanthrene	1.5	1.2	ng/L	SW846 8270A SIM
PCJ-E2-051898 05/18/98 08:50 008				
Acenaphthene	1.7	1.2	ng/L	SW846 8270A SIM
Phenanthrene	1.8	1.2	ng/L	SW846 8270A SIM
Pyrene	1.7	1.3	ng/L	SW846 8270A SIM
Indene	1.0	0.86	ng/L	SW846 8270A SIM
2,3-Dihydroindene	5.3	4.8	ng/L	SW846 8270A SIM
Benzo(b)thiophene	1.0	0.86	ng/L	SW846 8270A SIM

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Quanterra

CITY OF ST. LOUIS PARK

Client Sample ID: PCJ-E15-051898

GC/MS Semivolatiles

Lot-Sample #...: D8E200134-003 **Work Order #...:** CHA93101 **Matrix.....:** WATER
Date Sampled...: 05/18/98 09:30 **Date Received..:** 05/20/98
Prep Date.....: 05/25/98 **Analysis Date..:** 06/08/98
Prep Batch #...: 8145126 **Analysis Time..:** 23:05
Dilution Factor: 0.97 **Method.....:** SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	ND	1.4	ng/L
Naphthalene	ND	6.4	ng/L
2-Methylnaphthalene	ND	3.8	ng/L
Acenaphthene	**10**	**1.3**	**ng/L**
Dibenzofuran	ND	0.98	ng/L
Fluorene	**2.2**	**0.98**	**ng/L**
Phenanthrene	**1.7**	**1.3**	**ng/L**
Anthracene	ND	2.6	ng/L
Carbazole	ND	1.9	ng/L
Fluoranthene	ND	3.0	ng/L
Pyrene	ND	1.4	ng/L
Benzo(a)anthracene	ND	2.4	ng/L
Chrysene	ND	2.7	ng/L
Benzo(b)fluoranthene	ND	2.4	ng/L
Benzo(k)fluoranthene	ND	2.2	ng/L
Benzo(a)pyrene	ND	2.2	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Benzo(ghi)perylene	ND	2.7	ng/L
Indene	**1.4**	**0.88**	**ng/L**
1-Methylnaphthalene	ND	2.7	ng/L
2,3-Benzofuran	ND	5.0	ng/L
2,3-Dihydroindene	**6.9**	**4.9**	**ng/L**
Benzo(b)thiophene	ND	0.88	ng/L
Indole	ND	2.4	ng/L
Biphenyl	ND	4.2	ng/L
Dibenzothiophene	ND	1.1	ng/L
Acridine	ND	6.0	ng/L
Benzo(e)pyrene	ND	1.9	ng/L
Perylene	ND	2.4	ng/L
Quinoline	ND	6.7	ng/L
Dibenz(a,h)anthracene	ND	1.6	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	43	(10 - 118)
Fluorene d-10	70	(41 - 162)
Naphthalene-d8	70	(21 - 108)

Quanterra

CITY OF ST. LOUIS PARK

Client Sample ID: PCJ-E13-051898

GC/MS Semivolatiles

Lot-Sample #...: D8E200134-004 Work Order #...: CHA95101 Matrix.....: WATER
Date Sampled...: 05/18/98 10:50 Date Received..: 05/20/98
Prep Date.....: 05/25/98 Analysis Date..: 06/08/98
Prep Batch #...: 8145126 Analysis Time..: 23:41
Dilution Factor: 0.95 Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	**1.9**	**1.3**	**ng/L**
Naphthalene	ND	6.2	ng/L
2-Methylnaphthalene	ND	3.7	ng/L
Acenaphthene	**8.4**	**1.2**	**ng/L**
Dibenzofuran	ND	0.96	ng/L
Fluorene	**2.7**	**0.96**	**ng/L**
Phenanthrene	**1.5**	**1.2**	**ng/L**
Anthracene	ND	2.6	ng/L
Carbazole	ND	1.8	ng/L
Fluoranthene	ND	3.0	ng/L
Pyrene	ND	1.3	ng/L
Benzo(a)anthracene	ND	2.4	ng/L
Chrysene	ND	2.7	ng/L
Benzo(b)fluoranthene	ND	2.4	ng/L
Benzo(k)fluoranthene	ND	2.2	ng/L
Benzo(a)pyrene	ND	2.2	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.0	ng/L
Benzo(ghi)perylene	ND	2.7	ng/L
Indene	ND	0.86	ng/L
1-Methylnaphthalene	ND	2.7	ng/L
2,3-Benzofuran	ND	4.9	ng/L
2,3-Dihydroindene	**6.8**	**4.8**	**ng/L**
Benzo(b)thiophene	ND	0.86	ng/L
Indole	ND	2.4	ng/L
Biphenyl	ND	4.1	ng/L
Dibenzothiophene	ND	1.1	ng/L
Acridine	ND	5.9	ng/L
Benzo(e)pyrene	ND	1.8	ng/L
Perylene	ND	2.4	ng/L
Quinoline	ND	6.6	ng/L
Dibenz(a,h)anthracene	ND	1.5	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	51	(10 - 118)
Fluorene d-10	72	(41 - 162)
Naphthalene-d8	74	(21 - 108)

Quanterra

CITY OF ST. LOUIS PARK

Client Sample ID: PCJ-E2-051898

GC/MS Semivolatiles

Lot-Sample #...: D8E200134-008 Work Order #...: CHA9A101 Matrix.....: WATER
Date Sampled...: 05/18/98 08:50 Date Received..: 05/20/98
Prep Date.....: 05/25/98 Analysis Date..: 06/09/98
Prep Batch #...: 8145126 Analysis Time..: 02:05
Dilution Factor: 0.95 Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	ND	1.3	ng/L
Naphthalene	ND	6.2	ng/L
2-Methylnaphthalene	ND	3.7	ng/L
Acenaphthene	**1.7**	**1.2**	**ng/L**
Dibenzofuran	ND	0.95	ng/L
Fluorene	ND	0.95	ng/L
Phenanthrene	**1.8**	**1.2**	**ng/L**
Anthracene	ND	2.6	ng/L
Carbazole	ND	1.8	ng/L
Fluoranthene	ND	3.0	ng/L
Pyrene	**1.7**	**1.3**	**ng/L**
Benzo(a)anthracene	ND	2.4	ng/L
Chrysene	ND	2.7	ng/L
Benzo(b)fluoranthene	ND	2.4	ng/L
Benzo(k)fluoranthene	ND	2.2	ng/L
Benzo(a)pyrene	ND	2.2	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.0	ng/L
Benzo(ghi)perylene	ND	2.7	ng/L
Indene	**1.0**	**0.86**	**ng/L**
1-Methylnaphthalene	ND	2.7	ng/L
2,3-Benzofuran	ND	4.9	ng/L
2,3-Dihydroindene	**5.3**	**4.8**	**ng/L**
Benzo(b)thiophene	**1.0**	**0.86**	**ng/L**
Indole	ND	2.4	ng/L
Biphenyl	ND	4.1	ng/L
Dibenzothiophene	ND	1.0	ng/L
Acridine	ND	5.8	ng/L
Benzo(e)pyrene	ND	1.8	ng/L
Perylene	ND	2.4	ng/L
Quinoline	ND	6.6	ng/L
Dibenz(a,h)anthracene	ND	1.5	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	48	(10 - 118)
Fluorene d-10	70	(41 - 162)
Naphthalene-d8	68	(21 - 108)

Quanterra

CITY OF ST. LOUIS PARK

Client Sample ID: PCJ-E7-051898

GC/MS Semivolatiles

Lot-Sample #...: D8E200134-009 Work Order #...: CHA9C101 Matrix.....: WATER
Date Sampled...: 05/18/98 09:05 Date Received..: 05/20/98
Prep Date.....: 05/25/98 Analysis Date..: 06/09/98
Prep Batch #...: 8145126 Analysis Time..: 02:41
Dilution Factor: 0.95 Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	ND	1.3	ng/L
Naphthalene	ND	6.2	ng/L
2-Methylnaphthalene	ND	3.7	ng/L
Acenaphthene	ND	1.2	ng/L
Dibenzofuran	ND	0.95	ng/L
Fluorene	ND	0.95	ng/L
Phenanthrene	1.2	1.2	ng/L
Anthracene	ND	2.6	ng/L
Carbazole	ND	1.8	ng/L
Fluoranthene	ND	3.0	ng/L
Pyrene	ND	1.3	ng/L
Benzo(a)anthracene	ND	2.4	ng/L
Chrysene	ND	2.7	ng/L
Benzo(b)fluoranthene	ND	2.4	ng/L
Benzo(k)fluoranthene	ND	2.2	ng/L
Benzo(a)pyrene	ND	2.2	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.0	ng/L
Benzo(ghi)perylene	ND	2.7	ng/L
Indene	ND	0.86	ng/L
1-Methylnaphthalene	ND	2.7	ng/L
2,3-Benzofuran	ND	4.9	ng/L
2,3-Dihydroindene	ND	4.8	ng/L
Benzo(b)thiophene	ND	0.86	ng/L
Indole	ND	2.4	ng/L
Biphenyl	ND	4.1	ng/L
Dibenzothiophene	ND	1.0	ng/L
Acridine	ND	5.8	ng/L
Benzo(e)pyrene	ND	1.8	ng/L
Perylene	ND	2.4	ng/L
Quinoline	ND	6.6	ng/L
Dibenz(a,h)anthracene	ND	1.5	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	40	(10 - 118)
Fluorene d-10	70	(41 - 162)
Naphthalene-d8	70	(21 - 108)

Chain of Custody Record

D8E200134

Quanterra

QUA 4124

Client: City of St Louis Park	Project Manager: Bill Gregg	Date: 5-18-98	Chain Of Custody Number: 24376
Address: 3752 Woodale Ave	Telephone Number (Area Code)/Fax Number: 612-924-2552	Lab Number:	Page 1 of 1
City: St Louis Park; State: Mn; Zip Code: 55416	Site Contact: Scott Anderson		
Project Name: SLP	Carrier/Waybill Number:		
Contract/Purchase Order/Quote No:			

Sample I D No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No	Preservative	Condition on Receipt	Analysis: PPT-PAH
PCJ-E15-051898	5-18-98	9:30	H_2O	6 Liters	1 Liter	6	—		X
PCJ-E13-051898	5-18-98	10:50	H_2O	6 Liters	1 Liter	6	—		X

Special Instructions: PPT-5

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

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required: ☐ Normal ☐ Rush

QC Level: ☐ I. ☐ II. ☐ III.

Project Specific (Specify):

	Date	Time		Date	Time
1 Relinquished By: Pat Moore	5-18-98	14:00	1 Received By: Priscilla Dalton	5-20-98	0845
2 Relinquished By:			2 Received By:		
3 Relinquished By:			3 Received By:		

Comments:

DISTRIBUTION: W[illegible] Stays with Sample, CANARY - Returned to Client with Report, PINK - Field Copy

Chain of Custody Record

Quanterra

QUA 4124

D8E200134

Client: City of St Louis Park	Project Manager: Bill Gross	Date: 5-18-98	Chain Of Custody Number: 24379
Address: 3252 Wooddale Ave S	Telephone Number (Area Code)/Fax Number: 612-924-2559	Lab Number	Page 1 of 1
City: St Louis PARK, State: MN, Zip Code: 55416	Site Contact: Scott Anderson		
Project Name: SLP	Carrier/Waybill Number		
Contract/Purchase Order/Quote No			

Sample I.D No and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No	Preservative	Condition on Receipt	Analysis: PPT-PAL
PW-E2-051898	5-18-98	8:50	H2O	6 Liters	1 Liter	6	—		X
PW-E7-051898	5-18-98	9:05	" "	" "	" "	"	—		X

Special Instructions: PPT-5

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

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required: ☐ Normal ☐ Rush

QC Level: ☐ I. ☐ II. ☐ III

Project Specific (Specify)

1 Relinquished By: [signature]	Date: 5-18-98	Time: 14:00	1 Received By: Priscilla Dalton	Date: 5-20-98	Time: 0845
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 Sample, CANARY - Returned to Client with Report, PINK - Field Copy

Quanterra Incorporated
4955 Yarrow Street
Arvada, Colorado 80002

303 421-6611 Telephone
303 431-7171 Fax

Quanterra
Environmental Services

July 17, 1998

Mr. Scott Anderson
City of St. Louis Park
3752 Wooddale Ave.
St. Louis Park, MN 55416-2216

Dear Mr. Anderson:

Enclosed is the report for eleven water samples received at Quanterra Incorporated, Denver Laboratory on May 13, 1998. Included in the report is a quality control summary.

Please call if you have any questions.

Sincerely,

Christina Mott
Program Manager

bal
Enclosures

Quanterra # D8E130200

Quanterra

ANALYTICAL REPORT

Reilly Tar & Chemical NPL Site

Lot #: D8E130200

Scott Anderson

City of St. Louis Park

QUANTERRA INCORPORATED

Lindsay Breyer
Project Manager

July 15, 1998

Quanterra

Case Narrative

With noted exceptions, 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.

Quanterra

EXECUTIVE SUMMARY - Detection Highlights

D8E130200

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
PCJ-W40-051298 05/12/98 09:05 001				
Acenaphthylene	3.1	1.4	ng/L	SW846 8270A SIM
Acenaphthene	140	1.3	ng/L	SW846 8270A SIM
Phenanthrene	3.1	1.3	ng/L	SW846 8270A SIM
Anthracene	4.5	2.7	ng/L	SW846 8270A SIM
Pyrene	44	1.4	ng/L	SW846 8270A SIM
Indene	3.9	0.90	ng/L	SW846 8270A SIM
2,3-Dihydroindene	8.2	5.0	ng/L	SW846 8270A SIM
Acridine	13	6.1	ng/L	SW846 8270A SIM
PCJ-SLP14FBD-051298 05/12/98 004				
Phenanthrene	2.5	1.3	ng/L	SW846 8270A SIM
PCJ-SLP14-051298 05/12/98 005				
Acenaphthylene	7.7	1.4	ng/L	SW846 8270A SIM
Acenaphthene	17	1.3	ng/L	SW846 8270A SIM
Fluorene	1.1	1.0	ng/L	SW846 8270A SIM
Phenanthrene	3.3	1.3	ng/L	SW846 8270A SIM
Anthracene	3.7	2.7	ng/L	SW846 8270A SIM
Pyrene	2.7	1.4	ng/L	SW846 8270A SIM
Indene	1.3	0.90	ng/L	SW846 8270A SIM
2,3-Dihydroindene	15	5.0	ng/L	SW846 8270A SIM
Benzo(b)thiophene	1.4	0.90	ng/L	SW846 8270A SIM
PCJ-SLP14D-051298 05/12/98 006				
Acenaphthylene	7.9	1.4	ng/L	SW846 8270A SIM
Acenaphthene	18	1.3	ng/L	SW846 8270A SIM
Dibenzofuran	0.98 J	1.0	ng/L	SW846 8270A SIM
Fluorene	1.0	1.0	ng/L	SW846 8270A SIM
Phenanthrene	3.4	1.3	ng/L	SW846 8270A SIM
Carbazole	2.1	1.9	ng/L	SW846 8270A SIM
Pyrene	3.2	1.4	ng/L	SW846 8270A SIM
Indene	1.2	0.90	ng/L	SW846 8270A SIM
2,3-Dihydroindene	17	5.0	ng/L	SW846 8270A SIM
PCJ-W401-051298 05/12/98 05:45 007				
Acenaphthylene	2.8	1.4	ng/L	SW846 8270A SIM
Acenaphthene	27	1.3	ng/L	SW846 8270A SIM
Fluorene	11	1.0	ng/L	SW846 8270A SIM
Phenanthrene	2.5	1.3	ng/L	SW846 8270A SIM

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Quanterra

EXECUTIVE SUMMARY - Detection Highlights

D8E130200

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
PCJ-W401-051298 05/12/98 05:45 007				
Fluoranthene	4.8	3.1	ng/L	SW846 8270A SIM
Pyrene	2.7	1.4	ng/L	SW846 8270A SIM
Indene	0.90	0.90	ng/L	SW846 8270A SIM
2,3-Dihydroindene	12	5.0	ng/L	SW846 8270A SIM
Dibenzothiophene	2.3	1.1	ng/L	SW846 8270A SIM
PCJ-H6-051298 05/12/98 08:45 008				
Phenanthrene	2.4	1.3	ng/L	SW846 8270A SIM
Carbazole	2.1	1.9	ng/L	SW846 8270A SIM
PCJ-W70-051298 05/12/98 12:45 009				
Acenaphthylene	8.3	2.8	ng/L	SW846 8270A SIM
Acenaphthene	220	2.6	ng/L	SW846 8270A SIM
Phenanthrene	3.8	2.6	ng/L	SW846 8270A SIM
Pyrene	60	2.8	ng/L	SW846 8270A SIM
Quinoline	15	14	ng/L	SW846 8270A SIM
PCJ-W48-051298 05/12/98 14:30 010				
Acenaphthylene	2.9	1.4	ng/L	SW846 8270A SIM
Acenaphthene	60	1.3	ng/L	SW846 8270A SIM
Phenanthrene	3.5	1.3	ng/L	SW846 8270A SIM
Anthracene	7.9	2.7	ng/L	SW846 8270A SIM
Carbazole	5.9	1.9	ng/L	SW846 8270A SIM
Fluoranthene	6.2	3.1	ng/L	SW846 8270A SIM
Pyrene	11	1.4	ng/L	SW846 8270A SIM
Indene	7.0	0.90	ng/L	SW846 8270A SIM
2,3-Dihydroindene	54	5.0	ng/L	SW846 8270A SIM
Benzo(b)thiophene	5.7	0.90	ng/L	SW846 8270A SIM
Dibenzothiophene	2.4	1.1	ng/L	SW846 8270A SIM
Acridine	19	6.1	ng/L	SW846 8270A SIM
PCJ-SLP7-051298 05/12/98 011				
Acenaphthene	4.9	1.3	ng/L	SW846 8270A SIM
Phenanthrene	2.5	1.3	ng/L	SW846 8270A SIM
Pyrene	2.4	1.4	ng/L	SW846 8270A SIM
Quinoline	7.5	6.9	ng/L	SW846 8270A SIM

Quanterra

CITY OF ST. LOUIS PARK

Client Sample ID: PCJ-W401-051298

GC/MS Semivolatiles

Lot-Sample #...: D8E130200-007 Work Order #...: CH5F3101 Matrix.....: WATER
Date Sampled...: 05/12/98 05:45 Date Received..: 05/13/98
Prep Date.....: 05/17/98 Analysis Date..: 06/04/98
Prep Batch #...: 8137142 Analysis Time..: 14:17
Dilution Factor: 1 Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	**2.8**	**1.4**	**ng/L**
Naphthalene	ND	6.5	ng/L
2-Methylnaphthalene	ND	3.9	ng/L
Acenaphthene	**27**	**1.3**	**ng/L**
Dibenzofuran	ND	1.0	ng/L
Fluorene	**11**	**1.0**	**ng/L**
Phenanthrene	**2.5**	**1.3**	**ng/L**
Anthracene	ND	2.7	ng/L
Carbazole	ND	1.9	ng/L
Fluoranthene	**4.8**	**3.1**	**ng/L**
Pyrene	**2.7**	**1.4**	**ng/L**
Benzo(a)anthracene	ND	2.5	ng/L
Chrysene	ND	2.8	ng/L
Benzo(b)fluoranthene	ND	2.5	ng/L
Benzo(k)fluoranthene	ND	2.3	ng/L
Benzo(a)pyrene	ND	2.3	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Benzo(ghi)perylene	ND	2.8	ng/L
Indene	**0.90**	**0.90**	**ng/L**
1-Methylnaphthalene	ND	2.8	ng/L
2,3-Benzofuran	ND	5.1	ng/L
2,3-Dihydroindene	**12**	**5.0**	**ng/L**
Benzo(b)thiophene	ND	0.90	ng/L
Indole	ND	2.5	ng/L
Biphenyl	ND	4.3	ng/L
Dibenzothiophene	**2.3**	**1.1**	**ng/L**
Acridine	ND	6.1	ng/L
Benzo(e)pyrene	ND	1.9	ng/L
Perylene	ND	2.5	ng/L
Quinoline	ND	6.9	ng/L
Dibenz(a,h)anthracene	ND	1.6	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	51	(10 - 118)
Fluorene d-10	70	(41 - 162)
Naphthalene-d8	68	(21 - 108)

Quanterra

CITY OF ST. LOUIS PARK

Client Sample ID: PCJ-W48-051298

GC/MS Semivolatiles

Lot-Sample #...: D8E130200-010 Work Order #...: CH5F6101 Matrix.....: WATER
Date Sampled...: 05/12/98 14:30 Date Received..: 05/13/98
Prep Date.....: 05/17/98 Analysis Date..: 06/04/98
Prep Batch #...: 8137142 Analysis Time..: 18:45
Dilution Factor: 1 Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	**2.9**	**1.4**	**ng/L**
Naphthalene	ND	6.5	ng/L
2-Methylnaphthalene	ND	3.9	ng/L
Acenaphthene	**60**	**1.3**	**ng/L**
Dibenzofuran	ND	1.0	ng/L
Fluorene	ND	1.0	ng/L
Phenanthrene	**3.5**	**1.3**	**ng/L**
Anthracene	**7.9**	**2.7**	**ng/L**
Carbazole	**5.9**	**1.9**	**ng/L**
Fluoranthene	**6.2**	**3.1**	**ng/L**
Pyrene	**11**	**1.4**	**ng/L**
Benzo(a)anthracene	ND	2.5	ng/L
Chrysene	ND	2.8	ng/L
Benzo(b)fluoranthene	ND	2.5	ng/L
Benzo(k)fluoranthene	ND	2.3	ng/L
Benzo(a)pyrene	ND	2.3	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Benzo(ghi)perylene	ND	2.8	ng/L
Indene	**7.0**	**0.90**	**ng/L**
1-Methylnaphthalene	ND	2.8	ng/L
2,3-Benzofuran	ND	5.1	ng/L
2,3-Dihydroindene	**54**	**5.0**	**ng/L**
Benzo(b)thiophene	**5.7**	**0.90**	**ng/L**
Indole	ND	2.5	ng/L
Biphenyl	ND	4.3	ng/L
Dibenzothiophene	**2.4**	**1.1**	**ng/L**
Acridine	**19**	**6.1**	**ng/L**
Benzo(e)pyrene	ND	1.9	ng/L
Perylene	ND	2.5	ng/L
Quinoline	ND	6.9	ng/L
Dibenz(a,h)anthracene	ND	1.6	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	53	(10 - 118)
Fluorene d-10	65	(41 - 162)
Naphthalene-d8	49	(21 - 108)

Chain of Custody Record

Quanterra

DUA 4124

Client: City of St Louis Park	Project Manager: Bill Gregg	Date: 5-12-98	Chain Of Custody Number: 24374
Address: 3252 Woodale Ave S	Telephone Number (Area Code)/Fax Number: 612-924-2557	Lab Number	Page 1 of 1
City: St Louis Park; State: MN; Zip Code: 55416	Site Contact: Scott Anderson		
Project Name: SLP	Carrier/Waybill Number		
Contract/Purchase Order/Quote No			

Sample I D No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No	Preservative	Condition on Receipt	Analysis: PPT-PAH
PLJ-W401-051298	5-12-98	5:45	H_2O	6 Liters	1 Liter	6	—		X
PLJ-H6-051298	5-12-98	8:25	H_2O	6 Liters	1 Liter	6	—		X

Special Instructions: PPT-5

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

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required: ☐ Normal ☐ Rush

QC Level: ☐ I. ☐ II. ☐ III.

Project Specific (Specify)

1 Relinquished By: [signature]	Date: 5-12-98	Time: 15:00	1 Received By: Paula Dalton	Date: 5-13-98	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 Sample, CANARY - Returned to Client with Report, PINK - Field Copy

27

Chain of Custody Record

Quanterra

QUA 4124

Client: City of St Louis Park	Project Manager: Bill Gregg	Date: 5-12-98	Chain Of Custody Number: 24378
Address: 3252 Woodale Ave S	Telephone Number (Area Code)/Fax Number: 612-924-2557	Lab Number:	Page 1 of 1
City: St Louis Park; State: MN; Zip Code: 55416	Site Contact: Scott Anderson		
Project Name: SLP	Carrier/Waybill Number:		
Contract/Purchase Order/Quote No:			

Sample I D No and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No	Preservative	Condition on Receipt	Analysis: PPT-PAH
PCJ-W70-051298	5-12-98	12:45	H_2O	6 Liters	1 Liter	6	—		X
PCJ-W48-051298	5-12-98	14:30	H_2O	6 Liters	1 Liter	6	—		X

Special Instructions: PPT-5

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

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required: ☐ Normal ☐ Rush

QC Level: ☐ I. ☐ II. ☐ III.

Project Specific (Specify):

	Date	Time		Date	Time
1 Relinquished By: Pat Moon	5/12/98	15:00	1 Received By: Pisella Daltan	5-13-98	0830
2 Relinquished By:			2 Received By:		
3 Relinquished By:			3 Received By:		

Comments:

DISTRIBUTION. W[illegible] Stays with Sample, CANARY - Returned to Client with Report, PINK - Field Copy

SECTION 12.1.1

RAP SECTION 12.1.1
ADDITIONAL PAH MONITORING

NONE REQUIRED

SECTION 8.1.3

APPENDIX D
LABORATORY DATA SUMMARY PACKAGE:
ST. PETER AQUIFER

RAP SECTION 8.1.3
PAH MONITORING

WELLS

SLP3 W24 W33
W122 W129 W133
W408 W409 W410
W411 W412 P116

Quanterra
Environmental Services

Quanterra Incorporated
4955 Yarrow Street
Arvada, Colorado 80002

303 421-6611 Telephone
303 431-7171 Fax

June 1, 1998

Mr. Scott E. Anderson
Superintendent of Utilities
City of St. Louis Park
3752 Wooddale Ave.
St. Louis Park, MN 55416-2216

Dear Scott:

Enclosed is the report for 10 aqueous samples received at Quanterra Environmental Services, Denver on April 21, 1998. Included with the report is a quality control summary. Please call if you have any questions.

Sincerely,

Kurt C. Ill
Technology Manager

Enclosures

Quanterra #0060000

A 1

Quanterra
Environmental Services

ANALYTICAL RESULTS

FOR

CITY OF ST. LOUIS PARK

QUANTERRA NO. 06000

June 1, 1998

Prepared by: _____
Kurt C. Ill

Quanterra
Environmental Services

NARRATIVE

On April 21, 1998, Quanterra Environmental Services, Denver received 10 aqueous samples from the City of St. Louis Park.

This report presents the analytical results as well as supporting information to aid in the evaluation and interpretation of the data.

General Comments

Sample STP-W412, lot 6 had one of six bottles broken upon receipt. Coolers were received with the following temperatures: 11.2, 6.5, 4.2, 3.4 and 5.6 degrees celcius.

Dilution factors listed on the data sheets for the aqueous semivolatile organic parameters are based on the volume of sample actually extracted relative to the nominal volume of 1.0 liter. Any additional dilutions performed on the samples after extraction are also included in the dilution factor. All results and reporting limits are adjusted relative to the sample volume extracted and any subsequent dilutions performed. Dilution factors are rounded to two significant figures for reporting; all calculations are performed before rounding.

GC/MS Semivolatile Organics

Client samples with laboratory Ids 060000-0001SA, -0003SA, -0007SA, -0007FD -0007MS and -0007MSD were analyzed at a dilution due to target analytes exceeding the linear range of the instrument. The reporting limits were raised accordingly. As a result of dilution, the surrogate compounds associated with the above samples were not detected and are reported as "NC", not calculated.

The matrix spike and matrix spike duplicate samples were analyzed at a dilution due to target analytes exceeding the linear range of the instrument. As a result of this dilution, the matrix spike compounds were not detected and are reported as "NC", not calculated.

With the exceptions noted above, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. All laboratory QC samples analyzed in conjunction with the samples in this project were within established control limits.

Quanterra Environmental Services

SAMPLE DESCRIPTION INFORMATION
for
City of St. Louis Park

Lab ID	Client ID	Matrix	Sampled Date	Sampled Time	Received Date
060000-0001-SA	STP-W24-042098	AQUEOUS	20 APR 98	12:00	21 APR 98
060000-0002-SA	STP-W412-042098	AQUEOUS	20 APR 98	14:10	21 APR 98
060000-0003-SA	STP-W33-042098	AQUEOUS	20 APR 98	00:00	21 APR 98
060000-0004-SA	STP-W133-042098	AQUEOUS	20 APR 98	00:00	21 APR 98
060000-0005-FB	STP-W410FB-042098	AQUEOUS	20 APR 98	00:00	21 APR 98
060000-0006-FD	STP-W410FBD-042098	AQUEOUS	20 APR 98	00:00	21 APR 98
060000-0007-SA	STP-W410-042098	AQUEOUS	20 APR 98	00:00	21 APR 98
060000-0007-FD	STP-W410D-042098	AQUEOUS	20 APR 98	00:00	21 APR 98
060000-0007-MS	STP-W410MS-042098	AQUEOUS	20 APR 98	00:00	21 APR 98
060000-0007-SD	STP-W410MSD-042098	AQUEOUS	20 APR 98	00:00	21 APR 98

Quanterra Environmental Services

A 9

Method 8270B SIM - Polynuclear Aromatic Hydrocarbons
Method 8270B

Client Name: City of St. Louis Park
Client ID: STP-W24-042098
Lab ID: 060000-0001-SA
Matrix: AQUEOUS Sampled: 20 APR 98 Prepared: 24 APR 98
Authorized: 21 APR 98 Received: 21 APR 98 Analyzed: 15 MAY 98

Parameter	Result	Units	Reporting Limit
2,3-Benzofuran	ND	ng/L	48
2,3-Dihydroindene	570	ng/L	48
Indene	9.3	ng/L	8.6
Naphthalene	ND	ng/L	62
Benzo(b)thiophene	ND	ng/L	8.6
Quinoline	ND	ng/L	66
1H-Indole	ND	ng/L	24
2-Methylnaphthalene	ND	ng/L	37
1-Methylnaphthalene	ND	ng/L	27
Biphenyl	ND	ng/L	41
Acenaphthylene	ND	ng/L	13
Acenaphthene	110	ng/L	12
Dibenzofuran	ND	ng/L	9.5
Fluorene	ND	ng/L	9.5
Dibenzothiophene	ND	ng/L	10
Phenanthrene	ND	ng/L	12
Anthracene	ND	ng/L	26
Acridine	ND	ng/L	58
Carbazole	ND	ng/L	18
Fluoranthene	ND	ng/L	29
Pyrene	ND	ng/L	13
Benzo(a)anthracene	ND	ng/L	24
Chrysene	ND	ng/L	27
Benzo(b)fluoranthene	ND	ng/L	24
Benzo(k)fluoranthene	ND	ng/L	22
Benzo(e)pyrene	ND	ng/L	18
Benzo(a)pyrene	ND	ng/L	22
Perylene	ND	ng/L	24
Indeno(1,2,3-cd)pyrene	ND	ng/L	20
Dibenz(a,h)anthracene	ND	ng/L	15
Benzo(g,h,i)perylene	ND	ng/L	27

Surrogate	Recovery		Limits
Naphthalene-d8	NC	%	24-108
Fluorene-d10	NC	%	21-103
Chrysene-d12	NC	%	1-137

Dilution factor is 9.5. All results and limits are corrected for dilution.

NC = Not Calculated, calculation not applicable.
ND = Not Detected

Reported By: Tom Claeys Approved By: Audrey Cornell

Quanterra Environmental Services

Method 8270B SIM - Polynuclear Aromatic Hydrocarbons
Method 8270B

Client Name: City of St. Louis Park
Client ID: STP-W412-042098
Lab ID: 060000-0002-SA
Matrix: AQUEOUS Sampled: 20 APR 98 Prepared: 24 APR 98
Authorized: 21 APR 98 Received: 21 APR 98 Analyzed: 15 MAY 98

Parameter	Result	Units	Reporting Limit	
2,3-Benzofuran	ND	ng/L	5.3	
2,3-Dihydroindene	15	ng/L	5.2	
Indene	3.3	ng/L	0.93	
Naphthalene	ND	ng/L	6.7	
Benzo(b)thiophene	ND	ng/L	0.93	
Quinoline	ND	ng/L	7.1	
1H-Indole	ND	ng/L	2.6	
2-Methylnaphthalene	ND	ng/L	4.0	
1-Methylnaphthalene	ND	ng/L	2.9	
Biphenyl	8.7	ng/L	4.4	
Acenaphthylene	4.4	ng/L	1.4	
Acenaphthene	37	ng/L	1.3	
Dibenzofuran	17	ng/L	1.0	
Fluorene	ND	ng/L	1.0	
Dibenzothiophene	ND	ng/L	1.1	
Phenanthrene	41	ng/L	1.3	B
Anthracene	ND	ng/L	2.8	
Acridine	ND	ng/L	6.3	
Carbazole	7.3	ng/L	2.0	
Fluoranthene	32	ng/L	3.2	
Pyrene	85	ng/L	1.4	
Benzo(a)anthracene	ND	ng/L	2.6	
Chrysene	ND	ng/L	2.9	
Benzo(b)fluoranthene	ND	ng/L	2.6	
Benzo(k)fluoranthene	9.4	ng/L	2.4	
Benzo(e)pyrene	8.8	ng/L	2.0	
Benzo(a)pyrene	9.8	ng/L	2.4	
Perylene	ND	ng/L	2.6	
Indeno(1,2,3-cd)pyrene	5.5	ng/L	2.2	
Dibenz(a,h)anthracene	ND	ng/L	1.6	
Benzo(g,h,i)perylene	5.2	ng/L	2.9	

Surrogate	Recovery		Limits
Naphthalene-d8	46	%	24-108
Fluorene-d10	66	%	21-103
Chrysene-d12	17	%	1-137

Dilution factor is 1.0. All results and limits are corrected for dilution.

B = Compound is also detected in the blank.
ND = Not Detected

Reported By: Tom Claeys Approved By: Audrey Cornell

Quanterra Environmental Services

Method 8270B SIM - Polynuclear Aromatic Hydrocarbons
Method 8270B

Client Name: City of St. Louis Park
Client ID: STP-W33-042098
Lab ID: 060000-0003-SA
Matrix: AQUEOUS Sampled: 20 APR 98 Prepared: 24 APR 98
Authorized: 21 APR 98 Received: 21 APR 98 Analyzed: 12 MAY 98

Parameter	Result	Units	Reporting Limit
2,3-Benzofuran	ND	ng/L	110
2,3-Dihydroindene	1500	ng/L	100
Indene	260	ng/L	19
Naphthalene	ND	ng/L	140
Benzo(b)thiophene	550	ng/L	19
Quinoline	ND	ng/L	140
1H-Indole	ND	ng/L	52
2-Methylnaphthalene	ND	ng/L	81
1-Methylnaphthalene	66	ng/L	58
Biphenyl	ND	ng/L	90
Acenaphthylene	ND	ng/L	29
Acenaphthene	140	ng/L	27
Dibenzofuran	ND	ng/L	21
Fluorene	ND	ng/L	21
Dibenzothiophene	ND	ng/L	23
Phenanthrene	ND	ng/L	27
Anthracene	ND	ng/L	56
Acridine	ND	ng/L	130
Carbazole	ND	ng/L	40
Fluoranthene	ND	ng/L	65
Pyrene	ND	ng/L	29
Benzo(a)anthracene	ND	ng/L	52
Chrysene	ND	ng/L	58
Benzo(b)fluoranthene	ND	ng/L	52
Benzo(k)fluoranthene	ND	ng/L	48
Benzo(e)pyrene	ND	ng/L	40
Benzo(a)pyrene	ND	ng/L	48
Perylene	ND	ng/L	52
Indeno(1,2,3-cd)pyrene	ND	ng/L	44
Dibenz(a,h)anthracene	ND	ng/L	33
Benzo(g,h,i)perylene	ND	ng/L	58

Surrogate	Recovery		Limits
Naphthalene-d8	NC	%	24-108
Fluorene-d10	NC	%	21-103
Chrysene-d12	NC	%	1-137

Dilution factor is 21. All results and limits are corrected for dilution.

NC = Not Calculated, calculation not applicable.
ND = Not Detected

Reported By: Tom Claeys Approved By: Audrey Cornell

Quanterra Environmental Services

Method 8270B SIM - Polynuclear Aromatic Hydrocarbons
Method 8270B

Client Name: City of St. Louis Park
Client ID: STP-W133-042098
Lab ID: 060000-0004-SA
Matrix: AQUEOUS Sampled: 20 APR 98 Prepared: 24 APR 98
Authorized: 21 APR 98 Received: 21 APR 98 Analyzed: 13 MAY 98

Parameter	Result	Units	Reporting Limit	
2,3-Benzofuran	ND	ng/L	5.3	
2,3-Dihydroindene	12	ng/L	5.2	
Indene	3.8	ng/L	0.93	
Naphthalene	30	ng/L	6.7	
Benzo(b)thiophene	ND	ng/L	0.93	
Quinoline	ND	ng/L	7.1	
1H-Indole	ND	ng/L	2.6	
2-Methylnaphthalene	17	ng/L	4.0	
1-Methylnaphthalene	ND	ng/L	2.9	
Biphenyl	ND	ng/L	4.4	
Acenaphthylene	ND	ng/L	1.4	
Acenaphthene	2.8	ng/L	1.3	
Dibenzofuran	2.9	ng/L	1.0	
Fluorene	2.5	ng/L	1.0	
Dibenzothiophene	ND	ng/L	1.1	
Phenanthrene	6.8	ng/L	1.3	B
Anthracene	ND	ng/L	2.8	
Acridine	7.7	ng/L	6.3	
Carbazole	ND	ng/L	2.0	
Fluoranthene	ND	ng/L	3.2	
Pyrene	2.8	ng/L	1.4	
Benzo(a)anthracene	ND	ng/L	2.6	
Chrysene	ND	ng/L	2.9	
Benzo(b)fluoranthene	ND	ng/L	2.6	
Benzo(k)fluoranthene	ND	ng/L	2.4	
Benzo(e)pyrene	ND	ng/L	2.0	
Benzo(a)pyrene	ND	ng/L	2.4	
Perylene	ND	ng/L	2.6	
Indeno(1,2,3-cd)pyrene	ND	ng/L	2.2	
Dibenz(a,h)anthracene	ND	ng/L	1.6	
Benzo(g,h,i)perylene	ND	ng/L	2.9	

Surrogate	Recovery		Limits
Naphthalene-d8	58	%	24-108
Fluorene-d10	59	%	21-103
Chrysene-d12	12	%	1-137

Dilution factor is 1.0. All results and limits are corrected for dilution.

B = Compound is also detected in the blank.
ND = Not Detected

Reported By: Tom Claeys Approved By: Audrey Cornell

Quanterra Environmental Services

Method 8270B SIM - Polynuclear Aromatic Hydrocarbons
Method 8270B

Client Name: City of St. Louis Park
Client ID: STP-W410-042098
Lab ID: 060000-0007-SA
Matrix: AQUEOUS Sampled: 20 APR 98 Prepared: 24 APR 98
Authorized: 21 APR 98 Received: 21 APR 98 Analyzed: 12 MAY 98

Parameter	Result	Units	Reporting Limit
2,3-Benzofuran	ND	ng/L	240
2,3-Dihydroindene	4300	ng/L	240
Indene	1800	ng/L	43
Naphthalene	380	ng/L	310
Benzo(b)thiophene	1000	ng/L	43
Quinoline	ND	ng/L	330
1H-Indole	ND	ng/L	120
2-Methylnaphthalene	ND	ng/L	190
1-Methylnaphthalene	380	ng/L	130
Biphenyl	ND	ng/L	200
Acenaphthylene	ND	ng/L	67
Acenaphthene	520	ng/L	62
Dibenzofuran	ND	ng/L	48
Fluorene	ND	ng/L	48
Dibenzothiophene	ND	ng/L	52
Phenanthrene	ND	ng/L	62
Anthracene	ND	ng/L	130
Acridine	ND	ng/L	290
Carbazole	240	ng/L	90
Fluoranthene	ND	ng/L	150
Pyrene	ND	ng/L	67
Benzo(a)anthracene	ND	ng/L	120
Chrysene	ND	ng/L	130
Benzo(b)fluoranthene	ND	ng/L	120
Benzo(k)fluoranthene	ND	ng/L	110
Benzo(e)pyrene	ND	ng/L	90
Benzo(a)pyrene	ND	ng/L	110
Perylene	ND	ng/L	120
Indeno(1,2,3-cd)pyrene	ND	ng/L	100
Dibenz(a,h)anthracene	ND	ng/L	76
Benzo(g,h,i)perylene	ND	ng/L	130

Surrogate	Recovery		Limits
Naphthalene-d8	NC	%	24-108
Fluorene-d10	NC	%	21-103
Chrysene-d12	NC	%	1-137

Dilution factor is 48. All results and limits are corrected for dilution.

NC = Not Calculated, calculation not applicable.
ND = Not Detected

Reported By: Tom Claeys Approved By: Audrey Cornell

Quanterra Environmental Services

Method 8270B SIM - Polynuclear Aromatic Hydrocarbons
Method 8270B

Client Name: City of St. Louis Park
Client ID: STP-W410D-042098
Lab ID: 060000-0007-FD
Matrix: AQUEOUS Sampled: 20 APR 98 Prepared: 24 APR 98
Authorized: 21 APR 98 Received: 21 APR 98 Analyzed: 12 MAY 98

Parameter	Result	Units	Reporting Limit
2,3-Benzofuran	ND	ng/L	240
2,3-Dihydroindene	3700	ng/L	240
Indene	1500	ng/L	43
Naphthalene	310	ng/L	310
Benzo(b)thiophene	890	ng/L	43
Quinoline	ND	ng/L	330
1H-Indole	ND	ng/L	120
2-Methylnaphthalene	ND	ng/L	190
1-Methylnaphthalene	310	ng/L	130
Biphenyl	ND	ng/L	210
Acenaphthylene	ND	ng/L	67
Acenaphthene	440	ng/L	62
Dibenzofuran	ND	ng/L	48
Fluorene	ND	ng/L	48
Dibenzothiophene	ND	ng/L	53
Phenanthrene	ND	ng/L	62
Anthracene	ND	ng/L	130
Acridine	ND	ng/L	290
Carbazole	220	ng/L	91
Fluoranthene	ND	ng/L	150
Pyrene	ND	ng/L	67
Benzo(a)anthracene	ND	ng/L	120
Chrysene	ND	ng/L	130
Benzo(b)fluoranthene	ND	ng/L	120
Benzo(k)fluoranthene	ND	ng/L	110
Benzo(e)pyrene	ND	ng/L	91
Benzo(a)pyrene	ND	ng/L	110
Perylene	ND	ng/L	120
Indeno(1,2,3-cd)pyrene	ND	ng/L	100
Dibenz(a,h)anthracene	ND	ng/L	77
Benzo(g,h,i)perylene	ND	ng/L	130

Surrogate	Recovery		Limits
Naphthalene-d8	NC	%	24-108
Fluorene-d10	NC	%	21-103
Chrysene-d12	NC	%	1-137

Dilution factor is 48. All results and limits are corrected for dilution.

NC = Not Calculated, calculation not applicable.
ND = Not Detected

Reported By: Tom Claeys Approved By: Audrey Cornell

Chain of Custody Record

60000

Quanterra

QUA-4124

Client: City of St. Louis Park/Utilities	Project Manager: Scott Anderson	Date: 4/20/98	Chain Of Custody Number: 24332
Address: 3752 Wooddale Ave	Telephone Number (Area Code)/Fax Number: (612) 924-2557	Lab Number:	Page 1 of
City: St. Louis Park; State: MN; Zip Code: 55416	Site Contact: Bill Gregg/ENSR		
Project Name: Reilly Site	Carrier/Waybill Number:		
Contract/Purchase Order/Quote No.:			

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Analysis: PPT-PAH (PPT 7)
01 STP-W24-042098	4/20/98	1200	Water	1L	1L Amber	6	None		X
02 STP-W42-042098 1 Dicken	↓	1410	↓	↓	↓	↓	↓		X

Special Instructions

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

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required: ☐ Normal ☐ Rush

QC Level: ☐ I. ☐ II. ☐ III.

Project Specific (Specify):

	Date	Time		Date	Time
1. Relinquished By: W M Gregg			1. Received By: Lisalla Dalton	4-21-98	0850
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

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

A 24

60000

Chain of Custody Record

Quanterra

QUA-4124

Client	Project Manager	Date	Chain Of Custody Number
City of St. Louis Park	Scott Anderson	4-20-98	25620

Address	Telephone Number (Area Code)/Fax Number	Lab Number	Page 2 of ___
3752 Wooddale Ave	(612) 724 2557		

City	State	Zip Code	Site Contact
St. Louis Park	MN	55416	Bill Gregg

Project Name	Carrier/Waybill Number
Reilly Site	Fed X

Contract/Purchase Order/Quote No.

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Analysis: PAH qtz 75
13 STP-W35-042098	4/20/98		Ground Water	6L	1L Amber	6			
14 STP-W133-042098	4/20/98		" "	"	"	6			

Special Instructions

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

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For ___ Months

Turn Around Time Required: ☐ Normal ☐ Rush

QC Level: ☐ I. ☐ II. ☐ III.

Project Specific (Specify)

	Date	Time		Date	Time
1. Relinquished By: W.M. Gregg			1. Received By: Lynn Bierling	4-21-98	0830
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

DISTRIBUTION: [illegible]E - Stays with Sample, CANARY - Returned to Client with Report, PINK - Field Copy

A 25

Chain of Custody Record

60000

Quanterra

QUA-4124

Client: CITY OF ST. LOUIS PARK UTILITY DIVISION 3752 WOODDALE AVENUE ST. LOUIS PARK, MN 55416	Project Manager: Scott Anderson	Date: 4-20-98	Chain Of Custody Number: 25618
Address:	Telephone Number (Area Code)/Fax Number: 924-2557 (612) 924-2570	Lab Number:	Page 3 of
City:	Site Contact: SAME		
Project Name: SAME	Carrier/Waybill Number: Fed Ex 800846316919		
Contract/Purchase Order/Quote No:			

Sample I D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	PPG 75	PAH
STRW410FB-042098	4-20-98		WATER	1 LITER	AMBER	6	—		X	
STP-N410FBD-042098	4-20-98		WATER	1 LITER	AMBER	6	—		X	

Special Instructions: PPG 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

Turn Around Time Required: [ ] Normal [ ] Rush

QC Level: [ ] I. [ ] II. [ ] III.

Project Specific (Specify):

	Date	Time		Date	Time
1. Relinquished By: [signature]	4-20-98	1400	1. Received By: Lynn Barling	4-21-98	0830
2. Relinquished By:			2. Received By:		
3. Relinquished By:			3. Received By:		

Comments:

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

Chain of Custody Record

60000

Quanterra

QUA-4124

Client: CITY OF ST. LOUIS PARK UTILITY DIVISION	Project Manager: SCOTT ANDERSON	Date: 4-20-98	Chain Of Custody Number: 25613
Address: 3752 WOODDALE AVENUE	Telephone Number (Area Code)/Fax Number: 924-2557 (612) 924-2570	Lab Number:	Page 4 of
City: ST. LOUIS PARK, MN 55416	Site Contact: SAME		
Project Name: SAME	Carrier/Waybill Number: FEDEX 800846316919		
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Analysis: PPT PAH 75
STP-W410-042098	4-20-98		WATER	1 LITER	AMBER	6	—		X
STP-W410D-042098	4-20-98		WATER	1 LITER	AMBER	6	—		X

Special Instructions: PPT 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

Turn Around Time Required: [ ] Normal [ ] Rush

QC Level: [ ] I. [ ] II. [ ] III.

Project Specific (Specify):

	Date	Time		Date	Time
1. Relinquished By: M2 [illegible]	4-20-98	1400	1. Received By: Lynn Bierling	4-21-98	0830
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

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

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Chain of Custody Record

60000

Quanterra

QUA-4124

Client: CITY OF ST. LOUIS PARK UTILITY DIVISION	Project Manager: SCOTT ANDERSON	Date: 4-20-98	Chain Of Custody Number: 25619
Address: 3752 WOODDALE AVENUE	Telephone Number (Area Code)/Fax Number: 924-2557 (612) 924-2570	Lab Number:	Page ____ of ____
City: ST. LOUIS PARK, MN 55416	Site Contact: SAME		
Project Name: SAME	Carrier/Waybill Number: FED EX 8008463169 19		
Contract/Purchase Order/Quote No			

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Analysis: PPL 75	Analysis: PAH
1 MS STP-W410MS-042098	4-20-98		WATER	1 LITER	AMBER	6	—		X	
2 MSD STP-W410MSD-042098	4-20-98		WATER	1 LITER	AMBER	6	—		X	

Special Instructions: PPL 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

Turn Around Time Required: [ ] Normal [ ] Rush

QC Level: [ ] I. [ ] II. [ ] III.

Project Specific (Specify):

	Date	Time		Date	Time
1 Relinquished By: M 2 PC	4-20-98	1400	1. Received By: Lynn Berling	4-21-98	085
2 Relinquished By			2. Received By		
3 Relinquished By			3. Received By		

Comments

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

A 28

Quanterra Environmental Services

Quanterra Incorporated
4955 Yarrow Street
Arvada, Colorado 80002

303 421-6611 Telephone
303 431-7171 Fax

June 15, 1998

Mr. Scott E. Anderson
Superintendent of Utilities
City of St. Louis Park
3752 Wooddale Ave.
St. Louis Park, MN 55416-2216

Dear Scott:

Enclosed is the report for 11 aqueous samples received at Quanterra Environmental Services, Denver on April 28, 1998. Included with the report is a quality control summary. Please call if you have any questions.

Sincerely,

Kurt C. Ill
Technology Manager

Enclosures

Quanterra #0060129

ANALYTICAL RESULTS

FOR

CITY OF ST. LOUIS PARK

QUANTERRA NO. 060129

June 15, 1998

Prepared by: _____
Kurt C. Ill

Quanterra
Environmental Services

NARRATIVE

On April 28, 1998, Quanterra Environmental Services, Denver received 11 aqueous samples from the City of St. Louis Park.

This report presents the analytical results as well as supporting information to aid in the evaluation and interpretation of the data.

General Comments

Dilution factors listed on the data sheets for the aqueous semivolatile organic parameters are based on the volume of sample actually extracted relative to the nominal volume of 1.0 liter. Any additional dilutions performed on the samples after extraction are also included in the dilution factor. All results and reporting limits are adjusted relative to the sample volume extracted and any subsequent dilutions performed. Dilution factors are rounded to two significant figures for reporting; all calculations are performed before rounding.

GC/MS Semivolatile Organics

Client sample with laboratory Id 060129-0007-FD (Field Duplicate) was analyzed on 18 May 1998. The surrogate compound Naphthalene-d8 was not recovered. The sample was reextracted and analyzed, outside of holding time, under sample number 060129-0008-SA with all surrogates within control. Both sets of data are reported. The spike compound benzo (e) pyrene was recovererd below the acceptance limits in both the matrix spike and matrix spike duplicate samples. The blank and LCS associated with these samples are within control limits. A matrix effect is indicated. The spike compound Fluorene is reporte at 66% recovery in the matrix spike duplicate sample. The blank and LCS associated with this sample is within control. A matrix effect is indicated.

With the exceptions noted above, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. All laboratory QC samples analyzed in conjunction with the samples in this project were within established control limits.

Quanterra
Environmental Services

SAMPLE DESCRIPTION INFORMATION
for
City of St. Louis Park

Lab ID	Client ID	Matrix	Sampled Date	Sampled Time	Received Date
060129-0001-SA	STP-SLP3-042798	AQUEOUS	27 APR 98		28 APR 98
060129-0001-DU	STP-SLP3D-042798	AQUEOUS	27 APR 98		28 APR 98
060129-0001-MS	STP-SLP3MS-042798	AQUEOUS	27 APR 98		28 APR 98
060129-0001-SD	STP-SLP3MSD-042798	AQUEOUS	27 APR 98		28 APR 98
060129-0002-SA	STP-W411-042798	AQUEOUS	27 APR 98	08:45	28 APR 98
060129-0003-SA	STP-W408-042798	AQUEOUS	27 APR 98	09:40	28 APR 98
060129-0004-SA	STP-P116-042798	AQUEOUS	27 APR 98	15:30	28 APR 98
060129-0005-SA	STP-W129-042798	AQUEOUS	27 APR 98	11:20	28 APR 98
060129-0006-SA	STP-W122-042798	AQUEOUS	27 APR 98	14:15	28 APR 98
060129-0007-FB	STP-SLP3FB-042798	AQUEOUS	27 APR 98		28 APR 98
060129-0007-FD	STP-SLP3FBD-042798	AQUEOUS	27 APR 98		28 APR 98
060129-0008-SA	STP-SLP3FBD-042798	AQUEOUS	27 APR 98		28 APR 98

Quanterra Environmental Services

Polynuclear Aromatic Hydrocarbons
Method 8270B

Client Name: City of St. Louis Park
Client ID: STP-SLP3-042798
Lab ID: 060129-0001-SA
Matrix: AQUEOUS Sampled: 27 APR 98 Prepared: 02 MAY 98
Authorized: 28 APR 98 Received: 28 APR 98 Analyzed: 18 MAY 98

Parameter	Result	Units	Reporting Limit	
2,3-Benzofuran	ND	ng/L	4.8	
2,3-Dihydroindene	ND	ng/L	4.7	
Indene	0.29	ng/L	0.85	J
Naphthalene	1.9	ng/L	6.2	JB
Benzo(b)thiophene	ND	ng/L	0.85	
Quinoline	ND	ng/L	6.5	
1H-Indole	0.33	ng/L	2.4	J
2-Methylnaphthalene	1.1	ng/L	3.7	JB
1-Methylnaphthalene	0.58	ng/L	2.7	Jx
Biphenyl	ND	ng/L	4.1	
Acenaphthylene	ND	ng/L	1.3	
Acenaphthene	0.27	ng/L	1.2	J
Dibenzofuran	0.21	ng/L	0.95	J
Fluorene	0.25	ng/L	0.95	JB
Dibenzothiophene	ND	ng/L	1.0	
Phenanthrene	0.86	ng/L	1.2	JB
Anthracene	ND	ng/L	2.6	
Acridine	ND	ng/L	5.8	
Carbazole	ND	ng/L	1.8	
Fluoranthene	0.51	ng/L	2.9	J
Pyrene	0.41	ng/L	1.3	JB
Benzo(a)anthracene	ND	ng/L	2.4	
Chrysene	ND	ng/L	2.7	
Benzo(b)fluoranthene	ND	ng/L	2.4	
Benzo(k)fluoranthene	ND	ng/L	2.2	
Benzo(e)pyrene	ND	ng/L	1.8	
Benzo(a)pyrene	ND	ng/L	2.2	
Perylene	ND	ng/L	2.4	
Indeno(1,2,3-cd)pyrene	ND	ng/L	2.0	
Dibenz(a,h)anthracene	ND	ng/L	1.5	
Benzo(g,h,i)perylene	ND	ng/L	2.7	

Surrogate	Recovery		Limits
Naphthalene-d8	48	%	21-108
Fluorene-d10	61	%	41-162
Chrysene-d12	44	%	10-118

Dilution factor is 0.95. All results and limits are corrected for dilution.

B = Compound is also detected in the blank.
J = Result is detected below the reporting limit or is an estimated concentration.
x = Target compound's secondary ion confirmation criteria not met, but retention time and peak shape make identification possible.
ND = Not Detected

Reported By: Tom Claeys Approved By: Mary Helen Kelan

Quanterra
Environmental Services

Polynuclear Aromatic Hydrocarbons
Method 8270B

Client Name: City of St. Louis Park
Client ID: STP-SLP3D-042798
Lab ID: 060129-0001-DU
Matrix: AQUEOUS Sampled: 27 APR 98 Prepared: 02 MAY 98
Authorized: 28 APR 98 Received: 28 APR 98 Analyzed: 18 MAY 98

Parameter	Result	Units	Reporting Limit	
2,3-Benzofuran	ND	ng/L	4.9	
2,3-Dihydroindene	ND	ng/L	4.8	
Indene	0.21	ng/L	0.87	J
Naphthalene	1.6	ng/L	6.3	JB
Benzo(b)thiophene	ND	ng/L	0.87	
Quinoline	ND	ng/L	6.6	
1H-Indole	0.42	ng/L	2.4	J
2-Methylnaphthalene	0.98	ng/L	3.8	JB
1-Methylnaphthalene	0.51	ng/L	2.7	Jx
Biphenyl	ND	ng/L	4.1	
Acenaphthylene	ND	ng/L	1.3	
Acenaphthene	ND	ng/L	1.3	
Dibenzofuran	0.43	ng/L	0.96	J
Fluorene	0.30	ng/L	0.96	JB
Dibenzothiophene	ND	ng/L	1.1	
Phenanthrene	0.93	ng/L	1.3	JB
Anthracene	ND	ng/L	2.6	
Acridine	ND	ng/L	5.9	
Carbazole	ND	ng/L	1.8	
Fluoranthene	0.56	ng/L	3.0	J
Pyrene	0.50	ng/L	1.3	JB
Benzo(a)anthracene	ND	ng/L	2.4	
Chrysene	ND	ng/L	2.7	
Benzo(b)fluoranthene	ND	ng/L	2.4	
Benzo(k)fluoranthene	ND	ng/L	2.2	
Benzo(e)pyrene	ND	ng/L	1.8	
Benzo(a)pyrene	ND	ng/L	2.2	
Perylene	ND	ng/L	2.4	
Indeno(1,2,3-cd)pyrene	ND	ng/L	2.0	
Dibenz(a,h)anthracene	ND	ng/L	1.5	
Benzo(g,h,i)perylene	ND	ng/L	2.7	

Surrogate	Recovery		Limits
Naphthalene-d8	46	%	21-108
Fluorene-d10	62	%	41-162
Chrysene-d12	36	%	10-118

Dilution factor is 0.96. All results and limits are corrected for dilution.

B = Compound is also detected in the blank.
J = Result is detected below the reporting limit or is an estimated concentration.
x = Target compound's secondary ion confirmation criteria not met, but retention time and peak shape make identification possible.
ND = Not Detected

Reported By: Tom Claeys Approved By: Mary Helen Kelan

Quanterra Environmental Services

Polynuclear Aromatic Hydrocarbons
Method 8270B

Client Name: City of St. Louis Park
Client ID: STP-W411-042798
Lab ID: 060129-0002-SA
Matrix: AQUEOUS Sampled: 27 APR 98 Prepared: 02 MAY 98
Authorized: 28 APR 98 Received: 28 APR 98 Analyzed: 18 MAY 98

Parameter	Result	Units	Reporting Limit	
2,3-Benzofuran	ND	ng/L	4.9	
2,3-Dihydroindene	4.0	ng/L	4.8	J
Indene	5.7	ng/L	0.87	
Naphthalene	18	ng/L	6.3	B
Benzo(b)thiophene	ND	ng/L	0.87	
Quinoline	ND	ng/L	6.7	
1H-Indole	ND	ng/L	2.4	
2-Methylnaphthalene	18	ng/L	3.8	B
1-Methylnaphthalene	13	ng/L	2.7	
Biphenyl	ND	ng/L	4.1	
Acenaphthylene	2.4	ng/L	1.3	
Acenaphthene	7.8	ng/L	1.3	
Dibenzofuran	5.5	ng/L	0.96	
Fluorene	6.1	ng/L	0.96	B
Dibenzothiophene	ND	ng/L	1.1	
Phenanthrene	10	ng/L	1.3	B
Anthracene	ND	ng/L	2.6	
Acridine	11	ng/L	5.9	
Carbazole	5.4	ng/L	1.8	
Fluoranthene	3.7	ng/L	3.0	
Pyrene	9.0	ng/L	1.3	B
Benzo(a)anthracene	ND	ng/L	2.4	
Chrysene	ND	ng/L	2.7	
Benzo(b)fluoranthene	ND	ng/L	2.4	
Benzo(k)fluoranthene	ND	ng/L	2.2	
Benzo(e)pyrene	ND	ng/L	1.8	
Benzo(a)pyrene	ND	ng/L	2.2	
Perylene	ND	ng/L	2.4	
Indeno(1,2,3-cd)pyrene	ND	ng/L	2.0	
Dibenz(a,h)anthracene	ND	ng/L	1.5	
Benzo(g,h,i)perylene	0.52	ng/L	2.7	J

Surrogate	Recovery		Limits
Naphthalene-d8	44	%	21-108
Fluorene-d10	51	%	41-162
Chrysene-d12	31	%	10-118

Dilution factor is 0.96. All results and limits are corrected for dilution.

B = Compound is also detected in the blank.
J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

Reported By: Tom Claeys Approved By: Mary Helen Kelan

Quanterra Environmental Services

Polynuclear Aromatic Hydrocarbons
Method 8270B

Client Name: City of St. Louis Park
Client ID: STP-W408-042798
Lab ID: 060129-0003-SA
Matrix: AQUEOUS Sampled: 27 APR 98 Prepared: 02 MAY 98
Authorized: 28 APR 98 Received: 28 APR 98 Analyzed: 18 MAY 98

Parameter	Result	Units	Reporting Limit	
2,3-Benzofuran	ND	ng/L	5.0	
2,3-Dihydroindene	2.7	ng/L	4.9	J
Indene	3.5	ng/L	0.87	
Naphthalene	18	ng/L	6.3	B
Benzo(b)thiophene	ND	ng/L	0.87	
Quinoline	ND	ng/L	6.7	
1H-Indole	ND	ng/L	2.4	
2-Methylnaphthalene	17	ng/L	3.8	B
1-Methylnaphthalene	13	ng/L	2.7	
Biphenyl	2.6	ng/L	4.2	J
Acenaphthylene	ND	ng/L	1.4	
Acenaphthene	6.8	ng/L	1.3	
Dibenzofuran	4.0	ng/L	0.97	
Fluorene	4.4	ng/L	0.97	B
Dibenzothiophene	ND	ng/L	1.1	
Phenanthrene	6.4	ng/L	1.3	B
Anthracene	ND	ng/L	2.6	
Acridine	1.3	ng/L	5.9	J
Carbazole	4.3	ng/L	1.8	
Fluoranthene	2.2	ng/L	3.0	J
Pyrene	9.7	ng/L	1.4	B
Benzo(a)anthracene	ND	ng/L	2.4	
Chrysene	ND	ng/L	2.7	
Benzo(b)fluoranthene	ND	ng/L	2.4	
Benzo(k)fluoranthene	ND	ng/L	2.2	
Benzo(e)pyrene	ND	ng/L	1.8	
Benzo(a)pyrene	ND	ng/L	2.2	
Perylene	ND	ng/L	2.4	
Indeno(1,2,3-cd)pyrene	ND	ng/L	2.0	
Dibenz(a,h)anthracene	ND	ng/L	1.6	
Benzo(g,h,i)perylene	0.84	ng/L	2.7	J

Surrogate	Recovery		Limits
Naphthalene-d8	45	%	21-108
Fluorene-d10	72	%	41-162
Chrysene-d12	16	%	10-118

Dilution factor is 0.97. All results and limits are corrected for dilution.

B = Compound is also detected in the blank.
J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

Reported By: Tom Claeys Approved By: Mary Helen Kelan

Quanterra Environmental Services

Polynuclear Aromatic Hydrocarbons
Method 8270B

Client Name: City of St. Louis Park
Client ID: STP-P116-042798
Lab ID: 060129-0004-SA
Matrix: AQUEOUS Sampled: 27 APR 98 Prepared: 02 MAY 98
Authorized: 28 APR 98 Received: 28 APR 98 Analyzed: 20 MAY 98

Parameter	Result	Units	Reporting Limit	
2,3-Benzofuran	ND	ng/L	5.3	
2,3-Dihydroindene	1.8	ng/L	5.2	J
Indene	0.61	ng/L	0.94	J
Naphthalene	75	ng/L	6.8	B
Benzo(b)thiophene	1.3	ng/L	0.94	
Quinoline	2.7	ng/L	7.2	J
1H-Indole	4.3	ng/L	2.6	
2-Methylnaphthalene	20	ng/L	4.1	B
1-Methylnaphthalene	13	ng/L	2.9	
Biphenyl	4.4	ng/L	4.5	J
Acenaphthylene	ND	ng/L	1.5	
Acenaphthene	4.2	ng/L	1.4	
Dibenzofuran	4.6	ng/L	1.0	
Fluorene	4.4	ng/L	1.0	B
Dibenzothiophene	2.4	ng/L	1.1	
Phenanthrene	10	ng/L	1.4	B
Anthracene	0.74	ng/L	2.8	J
Acridine	ND	ng/L	6.4	
Carbazole	ND	ng/L	2.0	
Fluoranthene	ND	ng/L	3.2	
Pyrene	1.2	ng/L	1.5	JB
Benzo(a)anthracene	ND	ng/L	2.6	
Chrysene	0.41	ng/L	2.9	J
Benzo(b)fluoranthene	ND	ng/L	2.6	
Benzo(k)fluoranthene	ND	ng/L	2.4	
Benzo(e)pyrene	0.25	ng/L	2.0	J
Benzo(a)pyrene	2.0	ng/L	2.4	J
Perylene	ND	ng/L	2.6	
Indeno(1,2,3-cd)pyrene	ND	ng/L	2.2	
Dibenz(a,h)anthracene	ND	ng/L	1.7	
Benzo(g,h,i)perylene	ND	ng/L	2.9	

Surrogate	Recovery		Limits
Naphthalene-d8	63	%	21-108
Fluorene-d10	45	%	41-162
Chrysene-d12	40	%	10-118

Dilution factor is 1.0. All results and limits are corrected for dilution.

B = Compound is also detected in the blank.
J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

Reported By: Tom Claeys Approved By: Mary Helen Kelan

Quanterra Environmental Services

Polynuclear Aromatic Hydrocarbons
Method 8270B

Client Name: City of St. Louis Park
Client ID: STP-W129-042798
Lab ID: 060129-0005-SA
Matrix: AQUEOUS Sampled: 27 APR 98 Prepared: 02 MAY 98
Authorized: 28 APR 98 Received: 28 APR 98 Analyzed: 18 MAY 98

Parameter	Result	Units	Reporting Limit	
2,3-Benzofuran	ND	ng/L	4.8	
2,3-Dihydroindene	6.0	ng/L	4.7	
Indene	4.1	ng/L	0.85	
Naphthalene	23	ng/L	6.2	B
Benzo(b)thiophene	ND	ng/L	0.85	
Quinoline	ND	ng/L	6.5	
1H-Indole	ND	ng/L	2.4	
2-Methylnaphthalene	11	ng/L	3.7	B
1-Methylnaphthalene	12	ng/L	2.7	
Biphenyl	2.5	ng/L	4.1	J
Acenaphthylene	0.79	ng/L	1.3	J
Acenaphthene	6.8	ng/L	1.2	
Dibenzofuran	ND	ng/L	0.95	
Fluorene	3.5	ng/L	0.95	B
Dibenzothiophene	0.87	ng/L	1.0	J
Phenanthrene	6.1	ng/L	1.2	B
Anthracene	1.0	ng/L	2.6	J
Acridine	1.5	ng/L	5.8	J
Carbazole	3.1	ng/L	1.8	
Fluoranthene	ND	ng/L	2.9	
Pyrene	4.1	ng/L	1.3	B
Benzo(a)anthracene	1.3	ng/L	2.4	J
Chrysene	1.3	ng/L	2.7	J
Benzo(b)fluoranthene	1.8	ng/L	2.4	J
Benzo(k)fluoranthene	0.62	ng/L	2.2	J
Benzo(e)pyrene	0.92	ng/L	1.8	J
Benzo(a)pyrene	1.6	ng/L	2.2	J
Perylene	0.41	ng/L	2.4	J
Indeno(1,2,3-cd)pyrene	0.90	ng/L	2.0	J
Dibenz(a,h)anthracene	ND	ng/L	1.5	
Benzo(g,h,i)perylene	1.3	ng/L	2.7	J

Surrogate	Recovery		Limits
Naphthalene-d8	35	%	21-108
Fluorene-d10	52	%	41-162
Chrysene-d12	14	%	10-118

Dilution factor is 0.95. All results and limits are corrected for dilution.

B = Compound is also detected in the blank.
J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

Reported By: Tom Claeys Approved By: Mary Helen Kelan

Quanterra Environmental Services

Polynuclear Aromatic Hydrocarbons
Method 8270B

Client Name: City of St. Louis Park
Client ID: STP-W122-042798
Lab ID: 060129-0006-SA
Matrix: AQUEOUS Sampled: 27 APR 98 Prepared: 02 MAY 98
Authorized: 28 APR 98 Received: 28 APR 98 Analyzed: 20 MAY 98

Parameter	Result	Units	Reporting Limit	
2,3-Benzofuran	ND	ng/L	4.9	
2,3-Dihydroindene	20	ng/L	4.8	
Indene	7.4	ng/L	0.86	
Naphthalene	40	ng/L	6.2	B
Benzo(b)thiophene	22	ng/L	0.86	
Quinoline	ND	ng/L	6.6	
1H-Indole	ND	ng/L	2.4	
2-Methylnaphthalene	63	ng/L	3.7	B
1-Methylnaphthalene	52	ng/L	2.7	
Biphenyl	11	ng/L	4.1	
Acenaphthylene	5.9	ng/L	1.3	
Acenaphthene	38	ng/L	1.2	
Dibenzofuran	19	ng/L	0.95	
Fluorene	14	ng/L	0.95	
Dibenzothiophene	3.4	ng/L	1.0	
Phenanthrene	17	ng/L	1.2	B
Anthracene	ND	ng/L	2.6	
Acridine	5.2	ng/L	5.8	J
Carbazole	12	ng/L	1.8	
Fluoranthene	7.3	ng/L	3.0	
Pyrene	31	ng/L	1.3	B
Benzo(a)anthracene	ND	ng/L	2.4	
Chrysene	ND	ng/L	2.7	
Benzo(b)fluoranthene	1.7	ng/L	2.4	J
Benzo(k)fluoranthene	1.8	ng/L	2.2	J
Benzo(e)pyrene	1.3	ng/L	1.8	J
Benzo(a)pyrene	0.90	ng/L	2.2	J
Perylene	0.38	ng/L	2.4	J
Indeno(1,2,3-cd)pyrene	0.80	ng/L	2.0	J
Dibenz(a,h)anthracene	ND	ng/L	1.5	
Benzo(g,h,i)perylene	2.1	ng/L	2.7	J

Surrogate	Recovery		Limits
Naphthalene-d8	62	%	21-108
Fluorene-d10	69	%	41-162
Chrysene-d12	12	%	10-118

Dilution factor is 0.95. All results and limits are corrected for dilution.

B = Compound is also detected in the blank.
J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

Reported By: Tom Claeys Approved By: Mary Helen Kelan

Chain of Custody Record

Quanterra

QUA-4124 0797

Client: CITY OF ST. LOUIS PARK UTILITY DIVISION 3752 WOODDALE AVENUE ST. LOUIS PARK, MN 55416	Project Manager: Scott Anderson	Date: 4-27-98	Chain of Custody Number: 02079
Address	Telephone Number (Area Code)/Fax Number: 924-2557 (612) 924-2570	Lab Number: 60129	Page ____ of ____
City	Site Contact: SAME	Lab Contact	
Project Name: SAME	Carrier/Waybill Number: FED EX 800846316871		
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: Aqueous	Sed	Soil	Containers & Preservatives: Unpres	H2SO4	HNOS	HCl	NaOH	ZnAc/NaOH	PPT PAH 5	Special Instructions/ Conditions of Receipt
STP-SLP3-042798	4-27-98		X									X	PPT 5
DU STP-SLP3D-042798	4-27-98		X									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: MZH	4-27-98	1400	1. Received By: Nancy Higgins	04/28/98	08:30
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

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Chain of Custody Record

Quanterra

QUA-4124 0797

Client: CITY OF ST. LOUIS PARK	Project Manager: Scott Hadderson	Date: 4-27-98	Chain of Custody Number: 0208
Address: UTILITY DIVISION, 3752 WOODDALE AVENUE	Telephone Number (Area Code)/Fax Number: 924-2557 (612) 924-2570	Lab Number: 60129	Page ____ of ____
City: ST. LOUIS PARK, MN 55416	Site Contact: SAME	Lab Contact:	
Project Name: SAME	Carrier/Waybill Number: FD EX 800246316871		
Contract/Purchase Order/Quote No:			

Sample I D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Aqueous	Sed	Soil		Containers & Preservatives: Unpres	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH		Analysis (Attach list if more space is needed): PPL PAH 5	Special Instructions/ Conditions of Receipt
STP-SLP3145-042798	4-27-98		X											X	PPL 5
STP-SLP3145D-042798	4-27-98		X											X	PPL 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):

1 Relinquished By: [signature]	Date: 4-27-98	Time: 14:00	1 Received By: Nancy Higgins	Date: 04/28/98	Time: 09:30
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

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Chain of Custody Record

Quanterra

QUA 4124

Client: City of St. Louis Park	Project Manager: Scott Anderson	Date: 4/27/98	Chain Of Custody Number: 25621
Address: 3752 Wooddale Avenue	Telephone Number (Area Code)/Fax Number: 612/924-2557	Lab Number: 60129	Page 1 of 1
City: St. Louis Park; State: MN; Zip Code: 55416	Site Contact: Bill Gregg/EMSR		
Project Name: Reilly Site	Carrier/Waybill Number: FedEx		
Contract/Purchase Order/Quote No			

Sample I D No and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No	Preservative	Condition on Receipt	Analysis: PAH-PPT (5)
2 STP-W411-042798	4/27/98	0845	H2O	6L	6L	6	none		X
3 STP-W408-042798	4/27/98	0940	H2O	6L	Lamber	6	↓		X

Special Instructions

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

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required: ☐ Normal ☐ Rush

QC Level: ☐ I ☐ II ☐ III.

Project Specific (Specify)

	Date	Time		Date	Time
1 Relinquished By: [signature] /EMSR	4/27/97	1700	1 Received By: Nancy Higgins	04/28/98	08:30
2 Relinquished By			2 Received By		
3 Relinquished By			3 Received By		

Comments

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

Chain of Custody Record

Quanterra

QUA 4124

Client: City of St. Louis Park	Project Manager: Scott Anderson	Date: 4-27-98	Chain Of Custody Number: 25523
Address: 3752 Woodale Ave	Telephone Number (Area Code)/Fax Number: 612/924-2557	Lab Number: 60129	Page 1 of 1
City: St. Louis Park; State: MN; Zip Code: 55416	Site Contact: Bill Gray / ENSR		
Project Name: Reilly Site	Carrier/Waybill Number: Fed Ex		
Contract/Purchase Order/Quote No			

Sample I D No and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No	Preservative	Condition on Receipt	Analysis: PAH-PPTCS
STP-P116-042798	4-27-98	1530	H_2O	6L	1L Amb	6	none		X

Special Instructions

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

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required: ☐ Normal ☐ Rush

QC Level: ☐ I. ☐ II. ☐ III

Project Specific (Specify)

1 Relinquished By: [signature] / ENSR	Date: 4-27-98	Time: 1700	1 Received By: [signature]	Date: 04/28/98	Time: 09:30
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 Sample, CANARY - Returned to Client with Report, PINK - Field Copy

Chain of Custody Record

Quanterra

QUA 4124

Client: City of St Louis Park	Project Manager: Bill Gregg	Date: 4-27-98	Chain Of Custody Number: 25622
Address: 3152 Wooddale Ave.	Telephone Number (Area Code)/Fax Number: 612-924-2557	Lab Number: 60129	Page 1 of 1
City: St Louis Park; State: MN; Zip Code: 54416	Site Contact: Scott Anderson		
Project Name: SLP	Carrier/Waybill Number: FedEx		
Contract/Purchase Order/Quote No			

Sample I.D No and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No	Preservative	Condition on Receipt	Analysis: PAH-PPTS
5 STP-W129-042798	4-27-98	1120	H_2O	6L	1L Amber	6	None		X
6 STP-W122-042798	↓	1415	↓	↓	↓	6	↓		X

Special Instructions

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

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required: ☐ Normal ☐ Rush

QC Level: ☐ I. ☐ II. ☐ III.

Project Specific (Specify)

	Date	Time		Date	Time
1 Relinquished By: [illegible]/ENSR	4/27/98	1700	1 Received By: Lynn Berling	4-28-98	0830
2 Relinquished By			2 Received By		
3 Relinquished By			3 Received By		

Comments

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

Chain of Custody Record

Quanterra

QUA 4124

Client: CITY OF ST. LOUIS PARK UTILITY DIVISION 3752 WOODDALE AVENUE ST. LOUIS PARK, MN 55416	Project Manager: SCOTT ANDERSON	Date: 4-27-98	Chain Of Custody Number: 25617
Address	Telephone Number (Area Code)/Fax Number: 924-2557 (612) 924-2570	Lab Number: 60129	Page ____ of ____
City	Site Contact: SAME		
Project Name: SAME	Carrier/Waybill Number: FED EX 800846316871		
Contract/Purchase Order/Quote No			

Sample I D No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Analysis: PPE PAD S									
STP-SLP3FD-042798	4-27-98		WATER	1 LITER	AMBER	6	N/A		X								-07	FD
STP-SLP3FBD-042798	4-27-98		WATER	1 LITER	AMBER	6	N/A		X								-57	FD

Special Instructions: PPE S

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

Sample Disposal: [ ] Return To Client [X] Disposal By Lab [ ] Archive For ____ Months

Turn Around Time Required: [ ] Normal [ ] Rush

QC Level: [ ] I [ ] II. [ ] III

Project Specific (Specify):

	Date	Time		Date	Time
1 Relinquished By: MAP	4-27-98	14:00	1 Received By: Nancy Higgins	04/28/98	08:30
2 Relinquished By			2 Received By		
3 Relinquished By			3 Received By		

Comments

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

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SECOND HALF MONITORING

Quanterra Incorporated
4955 Yarrow Street
Arvada, Colorado 80002

303 421-6611 Telephone
303 431-7171 Fax

Quanterra
Environmental Services

ANALYTICAL REPORT

Reilly Tar & Chemical NPL Site

Lot #: D8I020145

Scott Anderson

City of St. Louis Park

QUANTERRA INCORPORATED

Kurt C. Ill
Project Manager

October 16, 1998

Advanced Analytical Services

Quanterra Incorporated
4955 Yarrow Street
Arvada, Colorado 80002

303 421-6611 Telephone
303 467-9136 Fax

CASE NARRATIVE

FOR

City of St. Louis Park

October 16, 1998

Quanterra Environmental Services

Project Lot Number D8I020145

Introduction

Ten aqueous samples (including matrix QC) were received at Quanterra Environmental Services, Denver Laboratory on September 2, 1998. The samples were logged in under Quanterra Denver's project lot number D8I020145. A cross reference associating Quanterra Denver's laboratory sample numbers to the actual field sample number is included. The samples were analyzed for part per trillion (ppt) PAHs.

Data Quality Assessment

The results contained in this report were reviewed relative to data acceptance criteria as specified in the October 1997 QAPP for completeness, precision, accuracy, representativeness and defensibility of the data. Unless otherwise stated below, no quality control problems or technical difficulties were encountered which would impact the interpretation or use of data in this report.

Client samples with laboratory Id's D8I020145-002, 003, 004, 005, 006, and 007 had recoveries of the surrogate fluorene d-10 below the 41% to 162% acceptance criteria but above the 30% lower limit. Fluorene d-10 was recovered in the method blank and DCSs within acceptable limits. A possible matrix effect is indicated.

The RPD for fluorene, chrysene, indene, benzo (e) pyrene and 2-methylnaphthalene for the LCS and LCSD samples are above the 20% acceptance criteria. All analytes are reported within acceptance limits.

Except for the above, this data package is in compliance with the terms and conditions of the October 1997 QAPP, both technically and for completeness

Reported By: Kurt C. Ill **Date:** October 16, 1998

Kurt C. Ill
Customer Service Manger

EXECUTIVE SUMMARY - Detection Highlights

D8I020145

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
PCJ-SLP6-083198 08/31/98 11:00 001				
Acenaphthylene	18	1.4	ng/L	SW846 8270A SIM
Naphthalene	2.5 J	6.5	ng/L	SW846 8270A SIM
Acenaphthene	51	1.3	ng/L	SW846 8270A SIM
Dibenzofuran	5.1	1.0	ng/L	SW846 8270A SIM
Fluorene	18	1.0	ng/L	SW846 8270A SIM
Phenanthrene	8.8 B	1.3	ng/L	SW846 8270A SIM
Anthracene	1.4 J	2.7	ng/L	SW846 8270A SIM
Fluoranthene	3.2 B	3.1	ng/L	SW846 8270A SIM
Pyrene	2.1 B	1.4	ng/L	SW846 8270A SIM
Indene	3.3	0.91	ng/L	SW846 8270A SIM
2,3-Dihydroindene	47	5.0	ng/L	SW846 8270A SIM
Benzo(b)thiophene	9.0	0.91	ng/L	SW846 8270A SIM
Biphenyl	1.9 J	4.3	ng/L	SW846 8270A SIM
Dibenzothiophene	1.7	1.1	ng/L	SW846 8270A SIM
STP-P116-090198 09/01/98 15:30 002				
2-Methylnaphthalene	5.4	4.0	ng/L	SW846 8270A SIM
Acenaphthene	2.0	1.3	ng/L	SW846 8270A SIM
Fluorene	1.5	1.0	ng/L	SW846 8270A SIM
Phenanthrene	7.6 B	1.3	ng/L	SW846 8270A SIM
Pyrene	2.4 B	1.4	ng/L	SW846 8270A SIM
Indene	2.0	0.92	ng/L	SW846 8270A SIM
1-Methylnaphthalene	2.9	2.9	ng/L	SW846 8270A SIM
Quinoline	36	7.0	ng/L	SW846 8270A SIM
STP-W129-090198 09/01/98 12:10 003				
Phenanthrene	6.4 B	1.4	ng/L	SW846 8270A SIM
Pyrene	1.7 B	1.5	ng/L	SW846 8270A SIM
STP-W122-090198 09/01/98 13:50 004				
2-Methylnaphthalene	15	4.4	ng/L	SW846 8270A SIM
Acenaphthene	6.1	1.5	ng/L	SW846 8270A SIM
Dibenzofuran	4.0	1.1	ng/L	SW846 8270A SIM
Fluorene	4.2	1.1	ng/L	SW846 8270A SIM
Phenanthrene	7.3 B	1.5	ng/L	SW846 8270A SIM
Anthracene	17	3.0	ng/L	SW846 8270A SIM
Carbazole	3.7	2.1	ng/L	SW846 8270A SIM
Fluoranthene	6.9 B	3.5	ng/L	SW846 8270A SIM
Pyrene	15 B	1.6	ng/L	SW846 8270A SIM
Indene	2.2	1.0	ng/L	SW846 8270A SIM

(Continued on next page)

EXECUTIVE SUMMARY - Detection Highlights

D8I020145

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
STP-W122-090198 09/01/98 13:50 004				
1-Methylnaphthalene	10	3.2	ng/L	SW846 8270A SIM
Benzo(b)thiophene	5.8	1.0	ng/L	SW846 8270A SIM
Dibenzothiophene	1.4	1.2	ng/L	SW846 8270A SIM
STP-W408-090198 09/01/98 10:15 005				
Naphthalene	7.8	7.2	ng/L	SW846 8270A SIM
2-Methylnaphthalene	7.8	4.3	ng/L	SW846 8270A SIM
Dibenzofuran	1.9	1.1	ng/L	SW846 8270A SIM
Fluorene	1.9	1.1	ng/L	SW846 8270A SIM
Phenanthrene	4.5 B	1.4	ng/L	SW846 8270A SIM
Anthracene	13	3.0	ng/L	SW846 8270A SIM
Carbazole	3.3	2.1	ng/L	SW846 8270A SIM
Fluoranthene	4.1 B	3.4	ng/L	SW846 8270A SIM
Pyrene	12 B	1.6	ng/L	SW846 8270A SIM
1-Methylnaphthalene	4.8	3.1	ng/L	SW846 8270A SIM
Dibenzothiophene	1.3	1.2	ng/L	SW846 8270A SIM
STP-W411-090198 09/01/98 11:00 006				
Acenaphthylene	4.2	1.4	ng/L	SW846 8270A SIM
Naphthalene	16	6.6	ng/L	SW846 8270A SIM
2-Methylnaphthalene	13	3.9	ng/L	SW846 8270A SIM
Acenaphthene	6.4	1.3	ng/L	SW846 8270A SIM
Dibenzofuran	4.2	1.0	ng/L	SW846 8270A SIM
Fluorene	8.1	1.0	ng/L	SW846 8270A SIM
Phenanthrene	42 B	1.3	ng/L	SW846 8270A SIM
Anthracene	2.8	2.7	ng/L	SW846 8270A SIM
Carbazole	34	1.9	ng/L	SW846 8270A SIM
Fluoranthene	33 B	3.1	ng/L	SW846 8270A SIM
Pyrene	150 B	1.4	ng/L	SW846 8270A SIM
Benzo(a)anthracene	26	2.5	ng/L	SW846 8270A SIM
Chrysene	14	2.8	ng/L	SW846 8270A SIM
Benzo(a)pyrene	2.7	2.3	ng/L	SW846 8270A SIM
Indene	54	0.91	ng/L	SW846 8270A SIM
1-Methylnaphthalene	11	2.8	ng/L	SW846 8270A SIM
2,3-Benzofuran	11	5.2	ng/L	SW846 8270A SIM
2,3-Dihydroindene	5.1	5.0	ng/L	SW846 8270A SIM
Benzo(b)thiophene	3.7	0.91	ng/L	SW846 8270A SIM
Indole	13	2.5	ng/L	SW846 8270A SIM
Dibenzothiophene	3.2	1.1	ng/L	SW846 8270A SIM
Acridine	6.8	6.2	ng/L	SW846 8270A SIM
Benzo(e)pyrene	2.7	1.9	ng/L	SW846 8270A SIM

(Continued on next page)

EXECUTIVE SUMMARY - Detection Highlights

D8I020145

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
STP-W411-090198 09/01/98 11:00 006				
Quinoline	18	7.0	ng/L	SW846 8270A SIM
STP-SLP3FB-090198 09/01/98 11:00 007				
Phenanthrene	4.2 B	1.3	ng/L	SW846 8270A SIM
Pyrene	1.5 B	1.4	ng/L	SW846 8270A SIM
STP-SLP3FBD-090198 09/01/98 11:00 008				
Phenanthrene	6.0 B	1.3	ng/L	SW846 8270A SIM
Pyrene	1.7 B	1.4	ng/L	SW846 8270A SIM
Indene	12	0.90	ng/L	SW846 8270A SIM
STP-SLP3-090198 09/01/98 009				
Naphthalene	8.6	6.5	ng/L	SW846 8270A SIM
2-Methylnaphthalene	9.8	3.9	ng/L	SW846 8270A SIM
Fluorene	4.0	1.0	ng/L	SW846 8270A SIM
Phenanthrene	35 B	1.3	ng/L	SW846 8270A SIM
Fluoranthene	14 B	3.1	ng/L	SW846 8270A SIM
Pyrene	9.4 B	1.4	ng/L	SW846 8270A SIM
Indene	7.9	0.90	ng/L	SW846 8270A SIM
1-Methylnaphthalene	3.7	2.8	ng/L	SW846 8270A SIM
Quinoline	7.7	6.9	ng/L	SW846 8270A SIM
STP-SLP3D-090198 09/01/98 010				
Naphthalene	21	6.5	ng/L	SW846 8270A SIM
2-Methylnaphthalene	29	3.9	ng/L	SW846 8270A SIM
Acenaphthene	4.5	1.3	ng/L	SW846 8270A SIM
Dibenzofuran	7.8	1.0	ng/L	SW846 8270A SIM
Fluorene	12	1.0	ng/L	SW846 8270A SIM
Phenanthrene	88 B	1.3	ng/L	SW846 8270A SIM
Anthracene	5.4	2.7	ng/L	SW846 8270A SIM
Fluoranthene	34 B	3.1	ng/L	SW846 8270A SIM
Pyrene	21 B	1.4	ng/L	SW846 8270A SIM
Indene	1.4	0.90	ng/L	SW846 8270A SIM
1-Methylnaphthalene	11	2.8	ng/L	SW846 8270A SIM
Biphenyl	3.6 J	4.3	ng/L	SW846 8270A SIM
Quinoline	8.0	6.9	ng/L	SW846 8270A SIM

SAMPLE SUMMARY

D8I020145

WO #	SAMPLE#	CLIENT SAMPLE ID	DATE	TIME
CL61C	001	PCJ-SLP6-083198	08/31/98	11:00
CL61H	002	STP-P116-090198	09/01/98	15:30
CL61J	003	STP-W129-090198	09/01/98	12:10
CL61L	004	STP-W122-090198	09/01/98	13:50
CL61M	005	STP-W408-090198	09/01/98	10:15
CL61N	006	STP-W411-090198	09/01/98	11:00
CL61Q	007	STP-SLP3FB-090198	09/01/98	11:00
CL61T	008	STP-SLP3FBD-090198	09/01/98	11:00
CL782	009	STP-SLP3-090198	09/01/98	
CL785	010	STP-SLP3D-090198	09/01/98	

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: STP-P116-090198

GC/MS Semivolatiles

Lot-Sample #...: D8I020145-002 Work Order #...: CL61H101 Matrix.....: WATER
Date Sampled...: 09/01/98 15:30 Date Received..: 09/02/98
Prep Date.....: 09/04/98 Analysis Date..: 10/08/98
Prep Batch #...: 8251153 Analysis Time..: 20:01
Dilution Factor: 1.01

Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	ND	1.4	ng/L
Naphthalene	ND	6.6	ng/L
2-Methylnaphthalene	5.4	4.0	ng/L
Acenaphthene	2.0	1.3	ng/L
Dibenzofuran	ND	1.0	ng/L
Fluorene	1.5	1.0	ng/L
Phenanthrene	7.6 B	1.3	ng/L
Anthracene	ND	2.8	ng/L
Carbazole	ND	1.9	ng/L
Fluoranthene	ND	3.2	ng/L
Pyrene	2.4 B	1.4	ng/L
Benzo(a)anthracene	ND	2.6	ng/L
Chrysene	ND	2.9	ng/L
Benzo(b)fluoranthene	ND	2.6	ng/L
Benzo(k)fluoranthene	ND	2.3	ng/L
Benzo(a)pyrene	ND	2.3	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Benzo(ghi)perylene	ND	2.9	ng/L
Indene	2.0	0.92	ng/L
1-Methylnaphthalene	2.9	2.9	ng/L
2,3-Benzofuran	ND	5.2	ng/L
2,3-Dihydroindene	ND	5.1	ng/L
Benzo(b)thiophene	ND	0.92	ng/L
Indole	ND	2.6	ng/L
Biphenyl	ND	4.4	ng/L
Dibenzothiophene	ND	1.1	ng/L
Acridine	ND	6.2	ng/L
Benzo(e)pyrene	ND	1.9	ng/L
Perylene	ND	2.6	ng/L
Quinoline	36	7.0	ng/L
Dibenz(a,h)anthracene	ND	1.6	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	40	(10 - 118)
Fluorene d-10	32 *	(41 - 162)
Naphthalene-d8	55	(21 - 108)

NOTE(S):

* Surrogate recovery is outside stated control limits

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

CITY OF ST. LOUIS PARK

Client Sample ID: STP-W129-090198

GC/MS Semivolatiles

Lot-Sample #...: D8I020145-003 Work Order #...: CL61J101 Matrix.....: WATER
Date Sampled...: 09/01/98 12:10 Date Received..: 09/02/98
Prep Date.....: 09/04/98 Analysis Date..: 10/08/98
Prep Batch #...: 8251153 Analysis Time..: 14:29
Dilution Factor: 1.02
Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	ND	1.5	ng/L
Naphthalene	ND	6.8	ng/L
2-Methylnaphthalene	ND	4.1	ng/L
Acenaphthene	ND	1.4	ng/L
Dibenzofuran	ND	1.0	ng/L
Fluorene	ND	1.0	ng/L
Phenanthrene	6.4 B	1.4	ng/L
Anthracene	ND	2.8	ng/L
Carbazole	ND	2.0	ng/L
Fluoranthene	ND	3.3	ng/L
Pyrene	1.7 B	1.5	ng/L
Benzo(a)anthracene	ND	2.6	ng/L
Chrysene	ND	2.9	ng/L
Benzo(b)fluoranthene	ND	2.6	ng/L
Benzo(k)fluoranthene	ND	2.3	ng/L
Benzo(a)pyrene	ND	2.4	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.2	ng/L
Benzo(ghi)perylene	ND	2.9	ng/L
Indene	ND	0.94	ng/L
1-Methylnaphthalene	ND	2.9	ng/L
2,3-Benzofuran	ND	5.4	ng/L
2,3-Dihydroindene	ND	5.2	ng/L
Benzo(b)thiophene	ND	0.94	ng/L
Indole	ND	2.6	ng/L
Biphenyl	ND	4.5	ng/L
Dibenzothiophene	ND	1.2	ng/L
Acridine	ND	6.4	ng/L
Benzo(e)pyrene	ND	2.0	ng/L
Perylene	ND	2.6	ng/L
Quinoline	ND	7.2	ng/L
Dibenz(a,h)anthracene	ND	1.7	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	44	(10 - 118)
Fluorene d-10	37 *	(41 - 162)
Naphthalene-d8	55	(21 - 108)

NOTE(S):

* Surrogate recovery is outside stated control limits.

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

CITY OF ST. LOUIS PARK

Client Sample ID: STP-W122-090198

GC/MS Semivolatiles

Lot-Sample #...: D8I020145-004 Work Order #...: CL61L101 Matrix.....: WATER
Date Sampled...: 09/01/98 13:50 Date Received..: 09/02/98
Prep Date.....: 09/04/98 Analysis Date..: 10/08/98
Prep Batch #...: 8251153 Analysis Time..: 15:05
Dilution Factor: 1.06

Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	ND	1.6	ng/L
Naphthalene	ND	7.3	ng/L
2-Methylnaphthalene	15	4.4	ng/L
Acenaphthene	6.1	1.5	ng/L
Dibenzofuran	4.0	1.1	ng/L
Fluorene	4.2	1.1	ng/L
Phenanthrene	7.3 B	1.5	ng/L
Anthracene	17	3.0	ng/L
Carbazole	3.7	2.1	ng/L
Fluoranthene	6.9 B	3.5	ng/L
Pyrene	15 B	1.6	ng/L
Benzo(a)anthracene	ND	2.8	ng/L
Chrysene	ND	3.2	ng/L
Benzo(b)fluoranthene	ND	2.8	ng/L
Benzo(k)fluoranthene	ND	2.4	ng/L
Benzo(a)pyrene	ND	2.6	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.4	ng/L
Benzo(ghi)perylene	ND	3.2	ng/L
Indene	2.2	1.0	ng/L
1-Methylnaphthalene	10	3.2	ng/L
2,3-Benzofuran	ND	5.8	ng/L
2,3-Dihydroindene	ND	5.6	ng/L
Benzo(b)thiophene	5.8	1.0	ng/L
Indole	ND	2.8	ng/L
Biphenyl	ND	4.8	ng/L
Dibenzothiophene	1.4	1.2	ng/L
Acridine	ND	6.9	ng/L
Benzo(e)pyrene	ND	2.1	ng/L
Perylene	ND	2.8	ng/L
Quinoline	ND	7.8	ng/L
Dibenz(a,h)anthracene	ND	1.8	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	48	(10 - 118)
Fluorene d-10	34 *	(41 - 162)
Naphthalene-d8	55	(21 - 108)

NOTE(S):

* Surrogate recovery is outside stated control limits.

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

CITY OF ST. LOUIS PARK

Client Sample ID: STP-W408-090198

GC/MS Semivolatiles

Lot-Sample #...: D8I020145-005 Work Order #...: CL61M101 Matrix.....: WATER
Date Sampled...: 09/01/98 10:15 Date Received..: 09/02/98
Prep Date.....: 09/04/98 Analysis Date..: 10/08/98
Prep Batch #...: 8251153 Analysis Time..: 15:43
Dilution Factor: 1.05
Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	ND	1.6	ng/L
Naphthalene	7.8	7.2	ng/L
2-Methylnaphthalene	7.8	4.3	ng/L
Acenaphthene	ND	1.4	ng/L
Dibenzofuran	1.9	1.1	ng/L
Fluorene	1.9	1.1	ng/L
Phenanthrene	4.5 B	1.4	ng/L
Anthracene	13	3.0	ng/L
Carbazole	3.3	2.1	ng/L
Fluoranthene	4.1 B	3.4	ng/L
Pyrene	12 B	1.6	ng/L
Benzo(a)anthracene	ND	2.8	ng/L
Chrysene	ND	3.1	ng/L
Benzo(b)fluoranthene	ND	2.8	ng/L
Benzo(k)fluoranthene	ND	2.4	ng/L
Benzo(a)pyrene	ND	2.6	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.3	ng/L
Benzo(ghi)perylene	ND	3.1	ng/L
Indene	ND	1.0	ng/L
1-Methylnaphthalene	4.8	3.1	ng/L
2,3-Benzofuran	ND	5.7	ng/L
2,3-Dihydroindene	ND	5.6	ng/L
Benzo(b)thiophene	ND	1.0	ng/L
Indole	ND	2.8	ng/L
Biphenyl	ND	4.8	ng/L
Dibenzothiophene	1.3	1.2	ng/L
Acridine	ND	6.8	ng/L
Benzo(e)pyrene	ND	2.1	ng/L
Perylene	ND	2.8	ng/L
Quinoline	ND	7.7	ng/L
Dibenz(a,h)anthracene	ND	1.8	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	49	(10 - 118)
Fluorene d-10	36 *	(41 - 162)
Naphthalene-d8	58	(21 - 108)

NOTE(S):

* Surrogate recovery is outside stated control limits.

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

CITY OF ST. LOUIS PARK

Client Sample ID: STP-W411-090198

GC/MS Semivolatiles

Lot-Sample #...: D8I020145-006 Work Order #...: CL61N101 Matrix.....: WATER
Date Sampled...: 09/01/98 11:00 Date Received..: 09/02/98
Prep Date.....: 09/04/98 Analysis Date..: 10/09/98
Prep Batch #...: 8251153 Analysis Time..: 15:01
Dilution Factor: 1.01

Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	4.2	1.4	ng/L
Naphthalene	16	6.6	ng/L
2-Methylnaphthalene	13	3.9	ng/L
Acenaphthene	6.4	1.3	ng/L
Dibenzofuran	4.2	1.0	ng/L
Fluorene	8.1	1.0	ng/L
Phenanthrene	42 B	1.3	ng/L
Anthracene	2.8	2.7	ng/L
Carbazole	34	1.9	ng/L
Fluoranthene	33 B	3.1	ng/L
Pyrene	150 B	1.4	ng/L
Benzo(a)anthracene	26	2.5	ng/L
Chrysene	14	2.8	ng/L
Benzo(b)fluoranthene	ND	2.6	ng/L
Benzo(k)fluoranthene	ND	2.3	ng/L
Benzo(a)pyrene	2.7	2.3	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Benzo(ghi)perylene	ND	2.8	ng/L
Indene	54	0.91	ng/L
1-Methylnaphthalene	11	2.8	ng/L
2,3-Benzofuran	11	5.2	ng/L
2,3-Dihydroindene	5.1	5.0	ng/L
Benzo(b)thiophene	3.7	0.91	ng/L
Indole	13	2.5	ng/L
Biphenyl	ND	4.3	ng/L
Dibenzothiophene	3.2	1.1	ng/L
Acridine	6.8	6.2	ng/L
Benzo(e)pyrene	2.7	1.9	ng/L
Perylene	ND	2.5	ng/L
Quinoline	18	7.0	ng/L
Dibenz(a,h)anthracene	ND	1.6	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	22	(10 - 118)
Fluorene d-10	35 *	(41 - 162)
Naphthalene-d8	35	(21 - 108)

NOTE(S):

* Surrogate recovery is outside stated control limits

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

CITY OF ST. LOUIS PARK

Client Sample ID: STP-SLP3-090198

GC/MS Semivolatiles

Lot-Sample #...: D8I020145-009 Work Order #...: CL782101 Matrix.....: WATER
Date Sampled...: 09/01/98 Date Received..: 09/03/98
Prep Date.....: 09/04/98 Analysis Date..: 10/08/98
Prep Batch #...: 8251153 Analysis Time..: 18:10
Dilution Factor: 1

Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	ND	1.4	ng/L
Naphthalene	8.6	6.5	ng/L
2-Methylnaphthalene	9.8	3.9	ng/L
Acenaphthene	ND	1.3	ng/L
Dibenzofuran	ND	1.0	ng/L
Fluorene	4.0	1.0	ng/L
Phenanthrene	35 B	1.3	ng/L
Anthracene	ND	2.7	ng/L
Carbazole	ND	1.9	ng/L
Fluoranthene	14 B	3.1	ng/L
Pyrene	9.4 B	1.4	ng/L
Benzo(a)anthracene	ND	2.5	ng/L
Chrysene	ND	2.8	ng/L
Benzo(b)fluoranthene	ND	2.5	ng/L
Benzo(k)fluoranthene	ND	2.3	ng/L
Benzo(a)pyrene	ND	2.3	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Benzo(ghi)perylene	ND	2.8	ng/L
Indene	7.9	0.90	ng/L
1-Methylnaphthalene	3.7	2.8	ng/L
2,3-Benzofuran	ND	5.1	ng/L
2,3-Dihydroindene	ND	5.0	ng/L
Benzo(b)thiophene	ND	0.90	ng/L
Indole	ND	2.5	ng/L
Biphenyl	ND	4.3	ng/L
Dibenzothiophene	ND	1.1	ng/L
Acridine	ND	6.1	ng/L
Benzo(e)pyrene	ND	1.9	ng/L
Perylene	ND	2.5	ng/L
Quinoline	7.7	6.9	ng/L
Dibenz(a,h)anthracene	ND	1.6	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	43	(10 - 118)
Fluorene d-10	64	(41 - 162)
Naphthalene-d8	67	(21 - 108)

NOTE(S):

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

CITY OF ST. LOUIS PARK

Client Sample ID: STP-SLP3D-090198

GC/MS Semivolatiles

Lot-Sample #...: D8I020145-010 Work Order #...: CL785101 Matrix.....: WATER
Date Sampled...: 09/01/98 Date Received..: 09/03/98
Prep Date.....: 09/04/98 Analysis Date..: 10/13/98
Prep Batch #...: 8251153 Analysis Time..: 17:01
Dilution Factor: 1

Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	ND	1.4	ng/L
Naphthalene	21	6.5	ng/L
2-Methylnaphthalene	29	3.9	ng/L
Acenaphthene	4.5	1.3	ng/L
Dibenzofuran	7.8	1.0	ng/L
Fluorene	12	1.0	ng/L
Phenanthrene	88 B	1.3	ng/L
Anthracene	5.4	2.7	ng/L
Carbazole	ND	1.9	ng/L
Fluoranthene	34 B	3.1	ng/L
Pyrene	21 B	1.4	ng/L
Benzo(a)anthracene	ND	2.5	ng/L
Chrysene	ND	2.8	ng/L
Benzo(b)fluoranthene	ND	2.5	ng/L
Benzo(k)fluoranthene	ND	2.3	ng/L
Benzo(a)pyrene	ND	2.3	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Benzo(ghi)perylene	ND	2.8	ng/L
Indene	1.4	0.90	ng/L
1-Methylnaphthalene	11	2.8	ng/L
2,3-Benzofuran	ND	5.1	ng/L
2,3-Dihydroindene	ND	5.0	ng/L
Benzo(b)thiophene	ND	0.90	ng/L
Indole	ND	2.5	ng/L
Biphenyl	3.6 J	4.3	ng/L
Dibenzothiophene	ND	1.1	ng/L
Acridine	ND	6.1	ng/L
Benzo(e)pyrene	ND	1.9	ng/L
Perylene	ND	2.5	ng/L
Quinoline	8.0	6.9	ng/L
Dibenz(a,h)anthracene	ND	1.6	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	52	(10 - 118)
Fluorene d-10	53	(41 - 162)
Naphthalene-d8	59	(21 - 108)

NOTE(S):

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

J Estimated result. Result is less than RL.

Chain of Custody Record

Quanterra

QUA-4124 0797

Client: City of St Louis Park	Project Manager: Bill Gray	Date: 9-1-98	Chain of Custody Number: 02151
Address: 3752 Woodale Ave	Telephone Number (Area Code)/Fax Number: 612-924-2557	Lab Number: D8I020145	Page 1 of 1
City: St Louis Park; State: MN; Zip Code: 55416	Site Contact: Scott Anderson	Lab Contact: Kurt Ill	
Project Name: SLP	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: Aqueous	Sed	Soil	Containers & Preservatives: Unpres	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Analysis (Attach list if more space is needed): PDT-PAH	Special Instructions/ Conditions of Receipt
STP-P116-090198	9-1-98	15:30	X			6						X	PDT-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: Pat Moore	9/1/98	16:30	1. Received By: Kurt C. Ill	9/2/98	8:50
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

Chain of Custody Record

Quanterra

QUA-4124 0797

Client: City of St Louis Park	Project Manager: Bill Gregg	Date: 9/1/98	Chain of Custody Number: 02153
Address: 3252 Woodale Ave	Telephone Number (Area Code)/Fax Number: 612-924-0117	Lab Number: D8I020145	Page 1 of 1
City: St Louis Park; State: MN; Zip Code: 55416	Site Contact: Scott Anderson	Lab Contact: Kurt Ell	
Project Name: SLP	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: Aqueous	Sed.	Soil		Containers & Preservatives: Unpres	H2SO4	HNO3	HCl	NaOH	Zn-Ac/NaOH		Analysis (Attach list if more space is needed): PPT-PAH											Special Instructions/ Conditions of Receipt
53 STP-W129-090198	9-1-98	12:10	X				6							X											PPT-5
54 STP-W122-090198	9-1-98	13:50	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]	9/1/98	16:30	1. Received By: Kurt C. Ell	9/2/98	08:50
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

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Chain of Custody Record

Quanterra

QUA-4124 0797

Client: City of St Louis Park	Project Manager: Bill Gregg	Date: 9/1/98	Chain of Custody Number: 02152
Address: 3252 Woodale Ave	Telephone Number (Area Code)/Fax Number: 612-924-2557	Lab Number: D8I020145	Page 1 of 1
City: St Louis Park; State: MN; Zip Code: 55416	Site Contact: Scott Anderson	Lab Contact: Kurt Ill	
Project Name: SLP	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: Aqueous	Sed.	Soil	Containers & Preservatives: Unpres	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Analysis (Attach list if more space is needed): PPT-PAH	Special Instructions/ Conditions of Receipt
5 STP-W408-090198	9-1-98	10:15	X			6						X	PPT-5
6 STP-W411-090198	9-1-98	11:00	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):

1. Relinquished By: [signature]	Date: 9/1/98	Time: 16:30	1. Received By: Kurt C. Ill	Date: 9/2/98	Time: 0850
2. Relinquished By:	Date:	Time:	2. Received By:	Date:	Time:
3. Relinquished By:	Date:	Time:	3. Received By:	Date:	Time:

Comments: 2 1 Lt. Amber bottles Broken in transit STP-W411-090198

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

Chain of Custody Record

Quanterra

QUA-4124 0797

Client: CITY OF ST. LOUIS PARK	Project Manager: SCOTT ANDERSON	Date: 9-1-98	Chain of Custody Number: 14665
Address: UTILITY DIVISION, 3752 WOODDALE AVENUE	Telephone Number (Area Code)/Fax Number: 924-2557 (612) 924-2570	Lab Number: D8I020145	Page ____ of ____
City: ST. LOUIS PARK, MN 55416	Site Contact: SAME	Lab Contact:	
Project Name: SAME	Carrier/Waybill Number: FEDEX 800846316780		
Contract/Purchase Order/Quote No:			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Aqueous	Sed	Soil		Containers & Preservatives: Unpres	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	N/A	PPT PAH											Special Instructions/ Conditions of Receipt
STP-SLP3FB-090198	9-1-98	1100	X										6	X											PPT 5
STP-SLP3FBD-090198	9-1-98	1100	X										6	X											PPT 5

Analysis (Attach list if more space is needed)

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):

1. Relinquished By: MZH	Date: 9-1-98	Time: 1400	1. Received By: Kurt C. Jell	Date: 9/2/98	Time: 08:50
2. Relinquished By	Date	Time	2. Received By	Date	Time
3. Relinquished By	Date	Time	3. Received By	Date	Time

Comments: 2

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

Chain of Custody Record

Quanterra

QUA-4124 0797

Client: CITY OF ST. LOUIS PARK UTILITY DIVISION	Project Manager: SCOTT ANDERSON	Date: 9-1-98	Chain of Custody Number: 14666
Address: 3752 WOODDALE AVENUE	Telephone Number (Area Code)/Fax Number: 924-2557 (612) 924-2570	Lab Number: D8I020145	Page ____ of ____
City: ST. LOUIS PARK, MN 55416	Site Contact: SAME	Lab Contact:	
Project Name: SAME	Carrier/Waybill Number: FED EX 800846316780		
Contract/Purchase Order/Quote No:			

Analysis (Attach list if more space is needed): PPL PAH

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Aqueous	Sed	Soil		Containers & Preservatives: Unpres	H2SO4	HNOS	HCl	NaOH	ZnAc/NaOH	N/A	PPL PAH	Special Instructions/ Conditions of Receipt
09 STP-SLP3 -090198	9-1-98		X										6	X	PPL 5
10 STP-SLP3D -090198	9-1-98		X										6	X	PPL 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			1. Received By: [illegible]	9/3/98	09:00
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments: No relinquished by signature/date/time Cooler temp 12.8°C

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

Advanced Analytical Services

Quanterra Incorporated
4955 Yarrow Street
Arvada, Colorado 80002

303 421-6611 Telephone
303 467-9136 Fax

CASE NARRATIVE

FOR

City of St. Louis Park

November, 17, 1998

Quanterra Environmental Services

Project Lot Number D8I220120

Introduction

Ten aqueous samples (including matrix QC) were received at Quanterra Environmental Services, Denver Laboratory on September 22, 1998. The samples were logged in under Quanterra Denver's project lot number D8I220120. A cross reference associating Quanterra Denver's laboratory sample numbers to the actual field sample number is included. The samples were analyzed for part per trillion (ppt-75) PAHs.

Data Quality Assessment

The results contained in this report were reviewed relative to data acceptance criteria as specified in the October 1997 QAPP for completeness, precision, accuracy, representativeness and defensibility of the data. Unless otherwise stated below, no quality control problems or technical difficulties were encountered which would impact the interpretation or use of data in this report.

Client samples with laboratory Ids D8I220120-001, -002, -007 (Dup, MS and MSD) and -008 were analyzed at a dilution due to target analytes exceeding the linear range of the instrument. The reporting limits were raised accordingly. As a result of the dilutions, the surrogate compounds were not detected and are reported as "NC".

As a result of dilution, none of the matrix spike or matrix spike duplicate compounds were recovered. All are reported as "NC".

Except for the above, this data package is in compliance with the terms and conditions of the October 1997 QAPP, both technically and for completeness

Reported By: Kurt C. Ill **Date:** November 17, 1998

Kurt C. Ill
Customer Service Manger

ANALYTICAL REPORT

Reilly Tar & Chemical NPL Site

Lot #: D8I220120

Scott Anderson

City of St. Louis Park

QUANTERRA INCORPORATED

Kurt C. Ill
Project Manager

November 17, 1998

EXECUTIVE SUMMARY - Detection Highlights

D8I220120

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
STP-W33-092198 09/21/98 15:00 001				
Naphthalene	120 J	140	ng/L	SW846 8270A SIM
2-Methylnaphthalene	42 J	81	ng/L	SW846 8270A SIM
Acenaphthene	240	27	ng/L	SW846 8270A SIM
Dibenzofuran	14 J	21	ng/L	SW846 8270A SIM
Fluorene	18 J	21	ng/L	SW846 8270A SIM
Carbazole	270	40	ng/L	SW846 8270A SIM
Fluoranthene	12 J	64	ng/L	SW846 8270A SIM
Pyrene	34	29	ng/L	SW846 8270A SIM
Indene	360	19	ng/L	SW846 8270A SIM
1-Methylnaphthalene	59	58	ng/L	SW846 8270A SIM
2,3-Benzofuran	7.2 J	110	ng/L	SW846 8270A SIM
2,3-Dihydroindene	2500	100	ng/L	SW846 8270A SIM
Benzo(b)thiophene	980	19	ng/L	SW846 8270A SIM
Indole	100	52	ng/L	SW846 8270A SIM
Biphenyl	36 J	89	ng/L	SW846 8270A SIM
STP-W24-092198 09/21/98 16:20 002				
Acenaphthene	120	13	ng/L	SW846 8270A SIM
2,3-Dihydroindene	1000	51	ng/L	SW846 8270A SIM
STP-w133-092198 09/21/98 23:00 003				
Naphthalene	84	6.5	ng/L	SW846 8270A SIM
2-Methylnaphthalene	23	3.9	ng/L	SW846 8270A SIM
Acenaphthene	15	1.3	ng/L	SW846 8270A SIM
Dibenzofuran	6.6	1.0	ng/L	SW846 8270A SIM
Fluorene	5.4	1.0	ng/L	SW846 8270A SIM
Phenanthrene	7.5	1.3	ng/L	SW846 8270A SIM
Carbazole	3.4	1.9	ng/L	SW846 8270A SIM
Fluoranthene	2.2 J	3.1	ng/L	SW846 8270A SIM
Pyrene	2.3	1.4	ng/L	SW846 8270A SIM
Indene	29	0.90	ng/L	SW846 8270A SIM
1-Methylnaphthalene	36	2.8	ng/L	SW846 8270A SIM
2,3-Dihydroindene	47	5.0	ng/L	SW846 8270A SIM
Benzo(b)thiophene	25	0.90	ng/L	SW846 8270A SIM
Biphenyl	5.4	4.3	ng/L	SW846 8270A SIM
Acridine	7.1	6.1	ng/L	SW846 8270A SIM

(Continued on next page)

EXECUTIVE SUMMARY - Detection Highlights

D8I220120

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
STP-W412-092198 09/21/98 22:50 004				
Naphthalene	71	6.5	ng/L	SW846 8270A SIM
2-Methylnaphthalene	47	3.9	ng/L	SW846 8270A SIM
Acenaphthene	19	1.3	ng/L	SW846 8270A SIM
Fluorene	18	1.0	ng/L	SW846 8270A SIM
Phenanthrene	140	1.3	ng/L	SW846 8270A SIM
Anthracene	6.9	2.7	ng/L	SW846 8270A SIM
Carbazole	12	1.9	ng/L	SW846 8270A SIM
Fluoranthene	38	3.1	ng/L	SW846 8270A SIM
Pyrene	36	1.4	ng/L	SW846 8270A SIM
Benzo(a)anthracene	10	2.5	ng/L	SW846 8270A SIM
Chrysene	10	2.8	ng/L	SW846 8270A SIM
Benzo(b)fluoranthene	11	2.5	ng/L	SW846 8270A SIM
Benzo(k)fluoranthene	4.7	2.3	ng/L	SW846 8270A SIM
Benzo(a)pyrene	11	2.3	ng/L	SW846 8270A SIM
Indeno(1,2,3-cd)pyrene	7.1	2.1	ng/L	SW846 8270A SIM
Benzo(ghi)perylene	5.7	2.8	ng/L	SW846 8270A SIM
Indene	8.7	0.90	ng/L	SW846 8270A SIM
1-Methylnaphthalene	29	2.8	ng/L	SW846 8270A SIM
2,3-Dihydroindene	11	5.0	ng/L	SW846 8270A SIM
Benzo(b)thiophene	96	0.90	ng/L	SW846 8270A SIM
Biphenyl	6.4	4.3	ng/L	SW846 8270A SIM
Dibenzothiophene	8.4	1.1	ng/L	SW846 8270A SIM
Benzo(e)pyrene	6.9	1.9	ng/L	SW846 8270A SIM
Perylene	3.1	2.5	ng/L	SW846 8270A SIM
STP-W410FB-092198 09/21/98 22:50 005				
Naphthalene	1.6 J	6.5	ng/L	SW846 8270A SIM
2-Methylnaphthalene	1.3 J	3.9	ng/L	SW846 8270A SIM
Acenaphthene	0.23 J	1.3	ng/L	SW846 8270A SIM
Dibenzofuran	0.34 J	1.0	ng/L	SW846 8270A SIM
Fluorene	0.67 J	1.0	ng/L	SW846 8270A SIM
Phenanthrene	3.0	1.3	ng/L	SW846 8270A SIM
Fluoranthene	1.1 J	3.1	ng/L	SW846 8270A SIM
Pyrene	0.74 J	1.4	ng/L	SW846 8270A SIM
Indene	0.26 J	0.90	ng/L	SW846 8270A SIM
2,3-Dihydroindene	0.44 J	5.0	ng/L	SW846 8270A SIM
STP-W410FBD-092198 09/21/98 22:50 006				
Naphthalene	1.1 J	6.5	ng/L	SW846 8270A SIM
2-Methylnaphthalene	0.87 J	3.9	ng/L	SW846 8270A SIM
Phenanthrene	1.6	1.3	ng/L	SW846 8270A SIM

(Continued on next page)

EXECUTIVE SUMMARY - Detection Highlights

D8I220120

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
STP-W410FBD-092198 09/21/98 22:50 006				
Fluoranthene	0.75 J	3.1	ng/L	SW846 8270A SIM
Pyrene	0.51 J	1.4	ng/L	SW846 8270A SIM
2,3-Dihydroindene	0.26 J	5.0	ng/L	SW846 8270A SIM
STP-W410-092198 09/21/98 22:50 007				
Naphthalene	410 J	660	ng/L	SW846 8270A SIM
Acenaphthene	380	130	ng/L	SW846 8270A SIM
Carbazole	180 J	190	ng/L	SW846 8270A SIM
Indene	1400	92	ng/L	SW846 8270A SIM
1-Methylnaphthalene	320	290	ng/L	SW846 8270A SIM
2,3-Dihydroindene	3100	510	ng/L	SW846 8270A SIM
Benzo(b)thiophene	1000	92	ng/L	SW846 8270A SIM
STP-W410D-092198 09/21/98 22:50 008				
Naphthalene	650 J	660	ng/L	SW846 8270A SIM
Acenaphthene	480	130	ng/L	SW846 8270A SIM
Carbazole	210	190	ng/L	SW846 8270A SIM
Indene	1900	91	ng/L	SW846 8270A SIM
1-Methylnaphthalene	450	280	ng/L	SW846 8270A SIM
2,3-Dihydroindene	4400	500	ng/L	SW846 8270A SIM
Benzo(b)thiophene	1600	91	ng/L	SW846 8270A SIM

SAMPLE SUMMARY

D8I220120

WO #	SAMPLE#	CLIENT SAMPLE ID	DATE	TIME
CLND1	001	STP-W33-092198	09/21/98	15:00
CLND5	002	STP-W24-092198	09/21/98	16:20
CLND7	003	STP-w133-092198	09/21/98	23:00
CLND9	004	STP-W412-092198	09/21/98	22:50
CLNDA	005	STP-W410FB-092198	09/21/98	22:50
CLNDC	006	STP-W410FBD-092198	09/21/98	22:50
CLNDE	007	STP-W410-092198	09/21/98	22:50
CLNDG	008	STP-W410D-092198	09/21/98	22:50

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: STP-W33-092198

GC/MS Semivolatiles

Lot-Sample #...: D8I220120-001 Work Order #...: CLND1101 Matrix.....: WATER
Date Sampled...: 09/21/98 15:00 Date Received..: 09/22/98
Prep Date.....: 09/22/98 Analysis Date..: 10/21/98
Prep Batch #...: 8273207 Analysis Time..: 16:34
Dilution Factor: 20.79
Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	ND	29	ng/L
Naphthalene	120 J	140	ng/L
2-Methylnaphthalene	42 J	81	ng/L
Acenaphthene	240	27	ng/L
Dibenzofuran	14 J	21	ng/L
Fluorene	18 J	21	ng/L
Phenanthrene	ND	27	ng/L
Anthracene	ND	56	ng/L
Carbazole	270	40	ng/L
Fluoranthene	12 J	64	ng/L
Pyrene	34	29	ng/L
Benzo(a)anthracene	ND	52	ng/L
Chrysene	ND	58	ng/L
Benzo(b)fluoranthene	ND	52	ng/L
Benzo(k)fluoranthene	ND	48	ng/L
Benzo(a)pyrene	ND	48	ng/L
Indeno(1,2,3-cd)pyrene	ND	44	ng/L
Benzo(ghi)perylene	ND	58	ng/L
Indene	360	19	ng/L
1-Methylnaphthalene	59	58	ng/L
2,3-Benzofuran	7.2 J	110	ng/L
2,3-Dihydroindene	2500	100	ng/L
Benzo(b)thiophene	980	19	ng/L
Indole	100	52	ng/L
Biphenyl	36 J	89	ng/L
Dibenzothiophene	ND	23	ng/L
Acridine	ND	130	ng/L
Benzo(e)pyrene	ND	40	ng/L
Perylene	ND	52	ng/L
Quinoline	ND	140	ng/L
Dibenz(a,h)anthracene	ND	33	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	0.0 DIL,NC	(10 - 118)
Fluorene d-10	0.0 DIL,NC	(41 - 162)
Naphthalene-d8	0.0 DIL,NC	(21 - 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: STP-W24-092198

GC/MS Semivolatiles

Lot-Sample #...: D8I220120-002 Work Order #...: CLND5101 Matrix.....: WATER
Date Sampled...: 09/21/98 16:20 Date Received..: 09/22/98
Prep Date.....: 09/22/98 Analysis Date..: 10/23/98
Prep Batch #...: 8273207 Analysis Time..: 16:08
Dilution Factor: 10.2

Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	ND	14	ng/L
Naphthalene	ND	66	ng/L
2-Methylnaphthalene	ND	40	ng/L
Acenaphthene	**120**	**13**	**ng/L**
Dibenzofuran	ND	10	ng/L
Fluorene	ND	10	ng/L
Phenanthrene	ND	13	ng/L
Anthracene	ND	28	ng/L
Carbazole	ND	19	ng/L
Fluoranthene	ND	32	ng/L
Pyrene	ND	14	ng/L
Benzo(a)anthracene	ND	26	ng/L
Chrysene	ND	29	ng/L
Benzo(b)fluoranthene	ND	26	ng/L
Benzo(k)fluoranthene	ND	23	ng/L
Benzo(a)pyrene	ND	23	ng/L
Indeno(1,2,3-cd)pyrene	ND	21	ng/L
Benzo(ghi)perylene	ND	29	ng/L
Indene	ND	9.2	ng/L
1-Methylnaphthalene	ND	29	ng/L
2,3-Benzofuran	ND	52	ng/L
2,3-Dihydroindene	**1000**	**51**	**ng/L**
Benzo(b)thiophene	ND	9.2	ng/L
Indole	ND	26	ng/L
Biphenyl	ND	44	ng/L
Dibenzothiophene	ND	11	ng/L
Acridine	ND	62	ng/L
Benzo(e)pyrene	ND	19	ng/L
Perylene	ND	26	ng/L
Quinoline	ND	70	ng/L
Dibenz(a,h)anthracene	ND	16	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	0.0 DIL,NC	(10 - 118)
Fluorene d-10	0.0 DIL,NC	(41 - 162)
Naphthalene-d8	0.0 DIL,NC	(21 - 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: STP-w133-092198

GC/MS Semivolatiles

Lot-Sample #...: D8I220120-003 Work Order #...: CLND7101 Matrix.....: WATER
Date Sampled...: 09/21/98 23:00 Date Received..: 09/22/98
Prep Date.....: 09/22/98 Analysis Date..: 10/20/98
Prep Batch #...: 8273207 Analysis Time..: 18:50
Dilution Factor: 1

Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	ND	1.4	ng/L
Naphthalene	84	6.5	ng/L
2-Methylnaphthalene	23	3.9	ng/L
Acenaphthene	15	1.3	ng/L
Dibenzofuran	6.6	1.0	ng/L
Fluorene	5.4	1.0	ng/L
Phenanthrene	7.5	1.3	ng/L
Anthracene	ND	2.7	ng/L
Carbazole	3.4	1.9	ng/L
Fluoranthene	2.2 J	3.1	ng/L
Pyrene	2.3	1.4	ng/L
Benzo(a)anthracene	ND	2.5	ng/L
Chrysene	ND	2.8	ng/L
Benzo(b)fluoranthene	ND	2.5	ng/L
Benzo(k)fluoranthene	ND	2.3	ng/L
Benzo(a)pyrene	ND	2.3	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Benzo(ghi)perylene	ND	2.8	ng/L
Indene	29	0.90	ng/L
1-Methylnaphthalene	36	2.8	ng/L
2,3-Benzofuran	ND	5.1	ng/L
2,3-Dihydroindene	47	5.0	ng/L
Benzo(b)thiophene	25	0.90	ng/L
Indole	ND	2.5	ng/L
Biphenyl	5.4	4.3	ng/L
Dibenzothiophene	ND	1.1	ng/L
Acridine	7.1	6.1	ng/L
Benzo(e)pyrene	ND	1.9	ng/L
Perylene	ND	2.5	ng/L
Quinoline	ND	6.9	ng/L
Dibenz(a,h)anthracene	ND	1.6	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	14	(10 - 118)
Fluorene d-10	63	(41 - 162)
Naphthalene-d8	61	(21 - 108)

NOTE(S):

J Estimated result Result is less than RL

CITY OF ST. LOUIS PARK

Client Sample ID: STP-W412-092198

GC/MS Semivolatiles

Lot-Sample #...: D8I220120-004 Work Order #...: CLND9101 Matrix.....: WATER
Date Sampled...: 09/21/98 22:50 Date Received..: 09/22/98
Prep Date.....: 09/22/98 Analysis Date..: 10/20/98
Prep Batch #...: 8273207 Analysis Time..: 23:35
Dilution Factor: 1

Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	ND	1.4	ng/L
Naphthalene	71	6.5	ng/L
2-Methylnaphthalene	47	3.9	ng/L
Acenaphthene	19	1.3	ng/L
Dibenzofuran	ND	1.0	ng/L
Fluorene	18	1.0	ng/L
Phenanthrene	140	1.3	ng/L
Anthracene	6.9	2.7	ng/L
Carbazole	12	1.9	ng/L
Fluoranthene	38	3.1	ng/L
Pyrene	36	1.4	ng/L
Benzo(a)anthracene	10	2.5	ng/L
Chrysene	10	2.8	ng/L
Benzo(b)fluoranthene	11	2.5	ng/L
Benzo(k)fluoranthene	4.7	2.3	ng/L
Benzo(a)pyrene	11	2.3	ng/L
Indeno(1,2,3-cd)pyrene	7.1	2.1	ng/L
Benzo(ghi)perylene	5.7	2.8	ng/L
Indene	8.7	0.90	ng/L
1-Methylnaphthalene	29	2.8	ng/L
2,3-Benzofuran	ND	5.1	ng/L
2,3-Dihydroindene	11	5.0	ng/L
Benzo(b)thiophene	96	0.90	ng/L
Indole	ND	2.5	ng/L
Biphenyl	6.4	4.3	ng/L
Dibenzothiophene	8.4	1.1	ng/L
Acridine	ND	6.1	ng/L
Benzo(e)pyrene	6.9	1.9	ng/L
Perylene	3.1	2.5	ng/L
Quinoline	ND	6.9	ng/L
Dibenz(a,h)anthracene	ND	1.6	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	13	(10 - 118)
Fluorene d-10	57	(41 - 162)
Naphthalene-d8	53	(21 - 108)

CITY OF ST. LOUIS PARK

Client Sample ID: STP-W410-092198

GC/MS Semivolatiles

Lot-Sample #...: D8I220120-007 Work Order #...: CLNDE101 Matrix.....: WATER
Date Sampled...: 09/21/98 22:50 Date Received..: 09/22/98
Prep Date.....: 09/22/98 Analysis Date..: 10/23/98
Prep Batch #...: 8273207 Analysis Time..: 16:44
Dilution Factor: 102.1
Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	ND	140	ng/L
Naphthalene	**410 J**	**660**	**ng/L**
2-Methylnaphthalene	ND	400	ng/L
Acenaphthene	**380**	**130**	**ng/L**
Dibenzofuran	ND	100	ng/L
Fluorene	ND	100	ng/L
Phenanthrene	ND	130	ng/L
Anthracene	ND	280	ng/L
Carbazole	**180 J**	**190**	**ng/L**
Fluoranthene	ND	320	ng/L
Pyrene	ND	140	ng/L
Benzo(a)anthracene	ND	260	ng/L
Chrysene	ND	290	ng/L
Benzo(b)fluoranthene	ND	260	ng/L
Benzo(k)fluoranthene	ND	230	ng/L
Benzo(a)pyrene	ND	230	ng/L
Indeno(1,2,3-cd)pyrene	ND	210	ng/L
Benzo(ghi)perylene	ND	290	ng/L
Indene	**1400**	**92**	**ng/L**
1-Methylnaphthalene	**320**	**290**	**ng/L**
2,3-Benzofuran	ND	520	ng/L
2,3-Dihydroindene	**3100**	**510**	**ng/L**
Benzo(b)thiophene	**1000**	**92**	**ng/L**
Indole	ND	260	ng/L
Biphenyl	ND	440	ng/L
Dibenzothiophene	ND	110	ng/L
Acridine	ND	620	ng/L
Benzo(e)pyrene	ND	190	ng/L
Perylene	ND	260	ng/L
Quinoline	ND	700	ng/L
Dibenz(a,h)anthracene	ND	160	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	0.0 DIL,NC	(10 - 118)
Fluorene d-10	0.0 DIL,NC	(41 - 162)
Naphthalene-d8	0.0 DIL,NC	(21 - 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: STP-W410D-092198

GC/MS Semivolatiles

Lot-Sample #...: D8I220120-008 Work Order #...: CLNDG101 Matrix.....: WATER
Date Sampled...: 09/21/98 22:50 Date Received..: 09/22/98
Prep Date.....: 09/22/98 Analysis Date..: 10/23/98
Prep Batch #...: 8273207 Analysis Time..: 18:33
Dilution Factor: 100.9
Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	ND	140	ng/L
Naphthalene	**650 J**	**660**	**ng/L**
2-Methylnaphthalene	ND	390	ng/L
Acenaphthene	**480**	**130**	**ng/L**
Dibenzofuran	ND	100	ng/L
Fluorene	ND	100	ng/L
Phenanthrene	ND	130	ng/L
Anthracene	ND	270	ng/L
Carbazole	**210**	**190**	**ng/L**
Fluoranthene	ND	310	ng/L
Pyrene	ND	140	ng/L
Benzo(a)anthracene	ND	250	ng/L
Chrysene	ND	280	ng/L
Benzo(b)fluoranthene	ND	250	ng/L
Benzo(k)fluoranthene	ND	230	ng/L
Benzo(a)pyrene	ND	230	ng/L
Indeno(1,2,3-cd)pyrene	ND	210	ng/L
Benzo(ghi)perylene	ND	280	ng/L
Indene	**1900**	**91**	**ng/L**
1-Methylnaphthalene	**450**	**280**	**ng/L**
2,3-Benzofuran	ND	510	ng/L
2,3-Dihydroindene	**4400**	**500**	**ng/L**
Benzo(b)thiophene	**1600**	**91**	**ng/L**
Indole	ND	250	ng/L
Biphenyl	ND	430	ng/L
Dibenzothiophene	ND	110	ng/L
Acridine	ND	620	ng/L
Benzo(e)pyrene	ND	190	ng/L
Perylene	ND	250	ng/L
Quinoline	ND	700	ng/L
Dibenz(a,h)anthracene	ND	160	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	0.0 DIL,NC	(10 - 118)
Fluorene d-10	0.0 DIL,NC	(41 - 162)
Naphthalene-d8	0.0 DIL,NC	(21 - 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.

Chain of Custody Record

Quanterra

QUA 4124

Client: City of St Louis Park	Project Manager: B. Gregg	Date: 9/21/98	Chain Of Custody Number: 39625
Address: 3252 Woodale Ave	Telephone Number (Area Code)/Fax Number: 612-924-2557	Lab Number:	Page 1 of 1
City: St Louis Park; State: MN; Zip Code: 55416	Site Contact: Scott Anderson		
Project Name: SLP/Reilly	Carrier/Waybill Number:		
Contract/Purchase Order/Quote No:			

Sample I D No and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Analysis: PPT-MH
STP-W133-092198	9-21-98	11:00	G-W	6 Liter	1 Liter	6	—		X
STP-W412-092198	9-21-98	10:50	G-W	6 Liter	1 Liter	6	—		X

Special Instructions: PPT-75

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

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required: ☐ Normal ☐ Rush

QC Level: ☐ I. ☐ II. ☐ III.

Project Specific (Specify):

1 Relinquished By: P A Moe	Date: 9/21/98	Time: 15:00	1 Received By: D Buckheister	Date: 9-22-98	Time: 8:55
2 Relinquished By:	Date:	Time:	2 Received By:	Date:	Time:
3 Relinquished By:	Date:	Time:	3 Received By:	Date:	Time:

Comments: 2

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

Chain of Custody Record

Quanterra

QUA-4124

Client: City of St Louis Park	Project Manager: Bill Gregg	Date: 9/21/98	Chain Of Custody Number: 39624
Address: 3752 Woodale Ave S	Telephone Number (Area Code)/Fax Number: 612-924-2557	Lab Number:	Page 1 of 1
City: St Louis Park; State: MN; Zip Code: 55416	Site Contact: Scott Anderson		
Project Name: SLP/Reilly	Carrier/Waybill Number:		
Contract/Purchase Order/Quote No:			

Sample I D No and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No	Preservative	Condition on Receipt	Analysis: PPT-DALT
STP-W33-092198	9-21-98	15:00	GW	6 Liters	1 Liter	6	—		X
STP-W24-092198	9-21-98	~~15:40~~ 16:20	GW Dup	6 Liters	1 Liter	6	—		X

Special Instructions: PPT-75

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

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required: ☐ Normal ☑ Rush

QC Level: ☐ I. ☐ II. ☐ III.

Project Specific (Specify):

1 Relinquished By: [signature]	Date: 9-21-98	Time: ~~15:00~~ 12:00	1 Received By: D Buckheister	Date: 9-22-98	Time: 8:55
2 Relinquished By:	Date:	Time:	2. Received By:	Date:	Time:
3 Relinquished By:	Date:	Time:	3 Received By:	Date:	Time:

Comments: 2 3

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

Chain of Custody Record

Quanterra

QUA-4124 0797

~~13558~~

Client: CITY OF ST. LOUIS PARK UTILITY DIVISION 3752 WOODDALE AVENUE ST. LOUIS PARK, MN 55416	Project Manager: SCOTT ANDERSON	Date: 9-21-98	Chain of Custody Number: 13567
Address:	Telephone Number (Area Code)/Fax Number: 924-2557 (612) 924-2520	Lab Number:	Page ____ of ____
City:	Site Contact: SAME	Lab Contact:	
Project Name: SAME	Carrier/Waybill Number: FED EX 800846316746		
Contract/Purchase Order/Quote No.:			

Sample I D No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Aqueous	Sed	Soil		Containers & Preservatives: Unpres	H2SO4	HNOS	HCl	NaOH	ZnAc/NaOH	N/A	Analysis (Attach list if more space is needed): PPT PAH	Special Instructions/ Conditions of Receipt
STP-W410 -092198	9-21-98		X										X	X	PPT 75
STP-W410D -092198	9-21-98		X										X	X	PPT 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: MZH	9-21-98	1400	1. Received By: D BUCKHEISTER	9.22.98	855
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

Chain of Custody Record

Quanterra

QUA 4124

Client: CITY OF ST. LOUIS PARK UTILITY DIVISION	Project Manager: SCOTT ANDERSON	Date: 9-21-98	Chain Of Custody Number: 25[illegible]
Address: 3752 WOODDALE AVENUE	Telephone Number (Area Code)/Fax Number: 924-2557 (612) 924-2570	Lab Number:	Page ____ of ____
City: ST. LOUIS PARK, MN 55416	Site Contact: SAME		
Project Name: SAME	Carrier/Waybill Number: FED EX 800846316746		
Contract/Purchase Order/Quote No:			

Sample I D No and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No	Preservative	Condition on Receipt	Analysis: PPT PAH
STP-W410MS-092198	9-21-98		WATER	1 LITER	AMBER	6	N/A		X
STP-W410MSD-092198	9-21-98		WATER	1 LITER	AMBER	6	N/A		X

Special Instructions: PPT 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

Turn Around Time Required: [ ] Normal [ ] Rush

QC Level: [ ] I. [ ] II. [ ] III.

Project Specific (Specify):

	Date	Time		Date	Time
1 Relinquished By: MZH	9-21-98	1400	1 Received By: D BUCHEISTER	9-22-98	855
2 Relinquished By:			2 Received By:		
3 Relinquished By:			3 Received By:		

Comments: 25

DISTRIBUTION: [illegible] - Stays with Sample, CANARY - Returned to Client with Report, PINK - Field Copy

Chain of Custody Record

Quanterra

QUA 4124

Client: CITY OF ST. LOUIS PARK UTILITY DIVISION	Project Manager: SCOTT ANDERSON	Date: 9-21-98	Chain Of Custody Number: 2[illegible]53
Address: 3752 WOODDALE AVENUE	Telephone Number (Area Code)/Fax Number: 924-2557 (612) 924-2570	Lab Number:	Page ____ of ____
City: ST. LOUIS PARK, MN 55416	Site Contact: SAME		
Project Name: SAME	Carrier/Waybill Number: FEDEX 800846316746		
Contract/Purchase Order/Quote No			

Sample I D No and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Analysis: PPE PAH
STP-W410FD-092198	9-21-98		WATER	1 LITER	AMBER	6	N/A		X
STP-W410FBD-092198	9-21-98		WATER	1 LITER	AMBER	6	N/A		X

Special Instructions: PPE 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

Turn Around Time Required: [ ] Normal [ ] Rush

QC Level: [ ] I [ ] II. [ ] III.

Project Specific (Specify):

	Date	Time		Date	Time
1 Relinquished By: MJR	9-21-98	1400	1 Received By: D Buckhorster	9-22-98	855
2 Relinquished By			2 Received By		
3 Relinquished By			3. Received By		

Comments: 29

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

APPENDIX E
LABORATORY DATA SUMMARY PACKAGE:
DRIFT – PLATEVILLE AQUIFER

RAP SECTION 9.1.3 AND 9.2.3 PAH MONITORING

WELLS

W420 W421
W422 W434 W439

PAH MONITORING
FIRST QUARTER

Quanterra
Environmental Services

Quanterra Incorporated
4955 Yarrow Street
Arvada, Colorado 80002

303 421-6611 Telephone
303 431-7171 Fax

CASE NARRATIVE

FOR

CITY OF ST. LOUIS PARK

MARCH 9, 1998

QUANTERRA ENVIRONMENTAL SERVICES

PROJECT NUMBER 059065

Introduction

Twelve aqueous samples (including matrix QC) were received at Quanterra Environmental Services, Denver Laboratory on February 11, 1998. The samples were logged in under Quanterra Denver's project number 059065. A cross reference associating Quanterra Denver's laboratory sample numbers to the actual field sample number is included. The samples were analyzed for part-per-billion (ppb) polynuclear aromatic hydrocarbons (PAH).

Data Quality Assessment

The results contained in this report were reviewed relative to data acceptance criteria as specified in the October 1997 QAPP for completeness, precision, accuracy, representativeness and defensibility of the data. Unless otherwise stated below, no quality control problems or technical difficulties were encountered which would impact the interpretation or use of data in this report.

Client samples with laboratory IDs 059065-0001-SA, -0001-FD, -0001-MS, -0001-SD, -0003-SA, -0005-SA, and -0007-SA were analyzed at dilutions due to target analytes exceeding the calibration range of the instrument. The reporting limits were raised accordingly. All the surrogate compounds associated with these samples were not detected as a result of the dilutions and are reported as "0D".

Quanterra Environmental Services

SAMPLE DESCRIPTION INFORMATION
for
City of St. Louis Park

Lab ID	Client ID	Matrix	Sampled Date	Sampled Time	Received Date
059065-0001-SA	DPV-W420-021098	AQUEOUS	10 FEB 98		11 FEB 98
059065-0001-FD	DPV-W420D-021098	AQUEOUS	10 FEB 98		11 FEB 98
059065-0001-MS	DPV-W420MS-021098	AQUEOUS	10 FEB 98		11 FEB 98
059065-0001-SD	DPV-W420MSD-021098	AQUEOUS	10 FEB 98		11 FEB 98
059065-0002-FB	DPV-W420FB-021098	AQUEOUS	10 FEB 98		11 FEB 98
059065-0002-FD	DPV-W420FBD-021098	AQUEOUS	10 FEB 98		11 FEB 98
059065-0003-SA	DPV-W421-021098	AQUEOUS	10 FEB 98		11 FEB 98
059065-0004-SA	DPV-W422-021098	AQUEOUS	10 FEB 98		11 FEB 98
059065-0005-SA	DPV-W439-021098	AQUEOUS	10 FEB 98		11 FEB 98
059065-0006-SA	DPV-W434-021098	AQUEOUS	10 FEB 98		11 FEB 98
059065-0007-SA	GTF-SFR-021098	AQUEOUS	10 FEB 98		11 FEB 98
059065-0008-SA	GTF-ACFE-021098	AQUEOUS	10 FEB 98		11 FEB 98
059065-0009-SA	STP-W410-021098	AQUEOUS	10 FEB 98		11 FEB 98
059065-0010-SA	PCJ-W23-021098	AQUEOUS	10 FEB 98		11 FEB 98

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DPVW420

Lab Name: QUANTERRA DENVER Contract:

Lab Code: Case No.: 59065 SAS No.: SDG No.: 59065

Matrix: (soil/water) WATER Lab Sample ID: 59065-01

Sample wt/vol: 1040 (g/ml) ML Lab File ID: D3108

Level: (low/med) LOW Date Received: 02/11/98

% Moisture: _____ decanted: (Y/N)___ Date Extracted:02/12/98

Concentrated Extract Volume: 1.0(ml) Date Analyzed: 02/25/98

Injection Volume: 2.0(uL) Dilution Factor: 40.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
91-20-3	Naphthalene	2000	
91-57-6	2-Methylnaphthalene	66	J
208-96-8	Acenaphthylene	380	U
83-32-9	Acenaphthene	120	J
132-64-9	Dibenzofuran	39	J
86-73-7	Fluorene	43	J
85-01-8	Phenanthrene	380	U
120-12-7	Anthracene	380	U
206-44-0	Fluoranthene	380	U
129-00-0	Pyrene	380	U
56-55-3	Benzo(a)Anthracene	380	U
218-01-9	Chrysene	380	U
205-99-2	Benzo(b)fluoranthene	380	U
207-08-9	Benzo(k)fluoranthene	380	U
50-32-8	Benzo(a)pyrene	380	U
193-39-5	Indeno(1,2,3-cd)pyrene	380	U
53-70-3	Dibenz(a,h)anthracene	380	U
191-24-2	Benzo(g,h,i)perylene	380	U
86-74-8	Carbazole	76	J
95-13-6	1H-Indene	54	J
91-22-5	Quinoline	380	U
90-12-0	1-Methylnaphthalene	110	J
271-89-6	2,3-Benzofuran	380	U
496-11-7	2,3-Dihydroindene	310	J
95-15-8	Benzo(b)thiophene	120	J
120-72-9	1H-Indole	380	U
92-52-4	Biphenyl	380	U
132-65-0	Dibenzothiophene	380	U
260-94-6	Acridine	380	U
192-97-2	Benzo(e)pyrene	380	U
198-55-0	Perylene	380	U

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DPVW421

Lab Name: QUANTERRA DENVER Contract:

Lab Code: Case No.: 59065 SAS No.: SDG No.: 59065

Matrix: (soil/water) WATER Lab Sample ID: 59065-03

Sample wt/vol: 1050 (g/ml) ML Lab File ID: D3112

Level: (low/med) LOW Date Received: 02/11/98

% Moisture: _____ decanted: (Y/N)___ Date Extracted:02/12/98

Concentrated Extract Volume: 1.0(ml) Date Analyzed: 02/25/98

Injection Volume: 2.0(uL) Dilution Factor: 10.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
91-20-3	Naphthalene	450	
91-57-6	2-Methylnaphthalene	95	U
208-96-8	Acenaphthylene	95	U
83-32-9	Acenaphthene	59	J
132-64-9	Dibenzofuran	13	J
86-73-7	Fluorene	17	J
85-01-8	Phenanthrene	95	U
120-12-7	Anthracene	95	U
206-44-0	Fluoranthene	95	U
129-00-0	Pyrene	95	U
56-55-3	Benzo(a)Anthracene	95	U
218-01-9	Chrysene	95	U
205-99-2	Benzo(b)fluoranthene	95	U
207-08-9	Benzo(k)fluoranthene	95	U
50-32-8	Benzo(a)pyrene	95	U
193-39-5	Indeno(1,2,3-cd)pyrene	95	U
53-70-3	Dibenz(a,h)anthracene	95	U
191-24-2	Benzo(g,h,i)perylene	95	U
86-74-8	Carbazole	42	J
95-13-6	1H-Indene	46	J
91-22-5	Quinoline	95	U
90-12-0	1-Methylnaphthalene	59	J
271-89-6	2,3-Benzofuran	95	U
496-11-7	2,3-Dihydroindene	160	
95-15-8	Benzo(b)thiophene	69	J
120-72-9	1H-Indole	95	U
92-52-4	Biphenyl	95	U
132-65-0	Dibenzothiophene	95	U
260-94-6	Acridine	95	U
192-97-2	Benzo(e)pyrene	95	U
198-55-0	Perylene	95	U

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DPVW439

Lab Name: QUANTERRA DENVER Contract:

Lab Code: Case No.: 59065 SAS No.: SDG No.: 59065

Matrix: (soil/water) WATER Lab Sample ID: 59065-05

Sample wt/vol: 1050 (g/ml) ML Lab File ID: D3114

Level: (low/med) LOW Date Received: 02/11/98

% Moisture: _____ decanted: (Y/N)___ Date Extracted: 02/12/98

Concentrated Extract Volume: 1.0(ml) Date Analyzed: 02/25/98

Injection Volume: 2.0(uL) Dilution Factor: 10.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
91-20-3	Naphthalene	740	
91-57-6	2-Methylnaphthalene	25	J
208-96-8	Acenaphthylene	95	U
83-32-9	Acenaphthene	77	J
132-64-9	Dibenzofuran	18	J
86-73-7	Fluorene	11	J
85-01-8	Phenanthrene	13	J
120-12-7	Anthracene	95	U
206-44-0	Fluoranthene	95	U
129-00-0	Pyrene	95	U
56-55-3	Benzo(a)Anthracene	95	U
218-01-9	Chrysene	95	U
205-99-2	Benzo(b)fluoranthene	95	U
207-08-9	Benzo(k)fluoranthene	95	U
50-32-8	Benzo(a)pyrene	95	U
193-39-5	Indeno(1,2,3-cd)pyrene	95	U
53-70-3	Dibenz(a,h)anthracene	95	U
191-24-2	Benzo(g,h,i)perylene	95	U
86-74-8	Carbazole	16	J
95-13-6	1H-Indene	98	
91-22-5	Quinoline	95	U
90-12-0	1-Methylnaphthalene	89	J
271-89-6	2,3-Benzofuran	95	U
496-11-7	2,3-Dihydroindene	230	
95-15-8	Benzo(b)thiophene	60	J
120-72-9	1H-Indole	95	U
92-52-4	Biphenyl	95	U
132-65-0	Dibenzothiophene	95	U
260-94-6	Acridine	95	U
192-97-2	Benzo(e)pyrene	95	U
198-55-0	Perylene	95	U

Chain of Custody Record

Quanterra Environmental Services

QUA 4124

Client: CITY OF ST. LOUIS PARK UTILITY DIVISION 3752 WOODDALE AVENUE ST. LOUIS PARK, MN 55416	Project Manager: Scott Anderson	Date: 2-10-98	Chain Of Custody Number: 27631
Address:	Telephone Number (Area Code)/Fax Number: 924-2557 (612) 924-2570	Lab Number: 59065	Page 2 of 6
City:	Site Contact: SAME		
Project Name: SAME	Carrier/Waybill Number: FED EX 800846316930		
Contract/Purchase Order/Quote No:			

	Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Analysis: PPB PAH
01	DPV-W420-021098	2-10-98		WATER	1 LITER	AMBER	2	NONE		X
01SD	DPV-W420D-021098									
01MS	DPV-W420MS-021098									
01SD	DPV-W420MSD-021098									
02FB	DPV-W420FB-021098									
02FD	DPV-W420FBD-021098									
03	DPV-W421-021098									
04	DPV-W422-021098									
05	DPV-W439-021098	2-10-98		WATER	1 LITER	AMBER	2	NONE		X
	~~[illegible]~~									

Special Instructions: PPB 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

Turn Around Time Required: [X] Normal [ ] Rush

QC Level: [ ] I. [ ] II. [ ] III.

Project Specific (Specify):

	Relinquished By	Date	Time	Received By	Date	Time
1	MZH	2-10-98	1400	Rosalla Dalton	2-11-98	0835
2						
3						

Comments:

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

FIRST QUARTER
PHENOLIC MONITORING

Quanterra
Environmental Services

Quanterra Incorporated
4955 Yarrow Street
Arvada, Colorado 80002

303 421-6611 Telephone
303 431-7171 Fax

CASE NARRATIVE

FOR

CITY OF ST. LOUIS PARK

MARCH 2, 1998

QUANTERRA ENVIRONMENTAL SERVICES

PROJECT NUMBER 059066

Introduction

Ten aqueous samples (including matrix QC) were received at Quanterra Environmental Services, Denver Laboratory February 11, 1998. The samples were logged in under Quanterra Denver's project number 059066. A cross reference associating Quanterra Denver's laboratory sample numbers to the actual field sample number is included. The samples were analyzed for total phenolics.

Data Quality Assessment

The results contained in this report were reviewed relative to data acceptance criteria as specified in the October 1997 QAPP for completeness, precision, accuracy, representativeness and defensibility of the data. Unless otherwise stated below, no quality control problems or technical difficulties were encountered which would impact the interpretation or use of data in this report.

This data package is in compliance with the terms and conditions of the October 1997 QAPP, both technically and for completeness.

Reported By: Lindsay Breyer **Date:** 3/2/98

INORGANIC ANALYSIS DATA SHEET

Client ID
DPV-W420TP-021098

Laboratory Name: Quanterra Denver
Contract: City of St. Louis Park
Matrix (soil/water): Water
Level (low/med): Low
Lab Sample ID: 59066-01
% Solids: N/A
Date Received: 02/11/98

Concentration Units (ug/L or mg/kg dry weight): ug/L

CAS No.	Analyte	Concentration	C	Q	M
54-30-0	Phenols	124			C

Comments:

INORGANIC ANALYSIS DATA SHEET

Client ID
DPV-W421TP-021098

Laboratory Name: Quanterra Denver
Contract: City of St. Louis Park
Matrix (soil/water): Water
Level (low/med): Low
Lab Sample ID: 59066-03
% Solids: N/A
Date Received: 02/11/98

Concentration Units (ug/L or mg/kg dry weight): ug/L

CAS No.	Analyte	Concentration	C	Q	M
54-30-0	Phenols	19.5			C

Comments:

INORGANIC ANALYSIS DATA SHEET

Client ID
DPV-W434TP-021098

Laboratory Name: Quanterra Denver
Contract: City of St. Louis Park
Matrix (soil/water): Water
Level (low/med): Low
Lab Sample ID: 59066-06
% Solids: N/A
Date Received: 02/11/98

Concentration Units (ug/L or mg/kg dry weight): ug/L

CAS No.	Analyte	Concentration	C	Q	M
54-30-0	Phenols	5.0	U		C

Comments:

SECOND QUARTER
PAH MONITORING

Quanterra
Environmental Services

Quanterra Incorporated
4955 Yarrow Street
Arvada, Colorado 80002

303 421-6611 Telephone
303 431-7171 Fax

July 17, 1998

Mr. Scott Anderson
City of St. Louis Park
3752 Wooddale Ave.
St. Louis Park, MN 55416-2216

Dear Mr. Anderson:

Enclosed is the report for twelve water samples received at Quanterra Incorporated, Denver Laboratory on May 27, 1998. Included in the report is a quality control summary.

Please call if you have any questions.

Sincerely,

Christina Mott
Program Manager

bal
Enclosures

Quanterra # D8E270156

Quanterra

ANALYTICAL REPORT

Reilly Tar & Chemical NPL Site

Lot #: D8E270156

Scott Anderson

City of St. Louis Park

QUANTERRA INCORPORATED

Lindsay Breyer
Project Manager

July 15, 1998

Quanterra

Case Narrative

With noted exceptions, 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.

Quanterra

EXECUTIVE SUMMARY - Detection Highlights

D8E270156

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
DPV-W439-052698 05/26/98 001				
2,3-Dihydroindene	210	95	ug/L	SW846 8270B
Indene	110	95	ug/L	SW846 8270B
Naphthalene	660	95	ug/L	SW846 8270B
Benzo(b)thiophene	65 J	95	ug/L	SW846 8270B
1-Methylnaphthalene	92 J	95	ug/L	SW846 8270B
Acenaphthene	68 J	95	ug/L	SW846 8270B
Dibenzofuran	19 J	95	ug/L	SW846 8270B
DPV-W434-052698 05/26/98 002				
2,3-Dihydroindene	2.5 J	9.4	ug/L	SW846 8270B
GTF-SFR-052698 05/26/98 003				
2,3-Dihydroindene	28	9.5	ug/L	SW846 8270B
Indene	2.5 J	9.5	ug/L	SW846 8270B
Benzo(b)thiophene	8.2 J	9.5	ug/L	SW846 8270B
1-Methylnaphthalene	4.2 J	9.5	ug/L	SW846 8270B
Acenaphthene	26	9.5	ug/L	SW846 8270B
Dibenzofuran	7.8 J	9.5	ug/L	SW846 8270B
Fluorene	14	9.5	ug/L	SW846 8270B
Phenanthrene	4.4 J	9.5	ug/L	SW846 8270B
Acridine	2.5 J	9.5	ug/L	SW846 8270B
Carbazole	6.9 J	9.5	ug/L	SW846 8270B
Fluoranthene	1.8 J	9.5	ug/L	SW846 8270B
STP-W409-052698 05/26/98 005				
2,3-Dihydroindene	19	9.4	ug/L	SW846 8270B
Indene	31	9.4	ug/L	SW846 8270B
Naphthalene	10	9.4	ug/L	SW846 8270B
Benzo(b)thiophene	16	9.4	ug/L	SW846 8270B
1-Methylnaphthalene	23	9.4	ug/L	SW846 8270B
Biphenyl	4.7 J	9.4	ug/L	SW846 8270B
Acenaphthene	24	9.4	ug/L	SW846 8270B
Dibenzofuran	8.9 J	9.4	ug/L	SW846 8270B
Fluorene	9.3 J	9.4	ug/L	SW846 8270B
Phenanthrene	5.3 J	9.4	ug/L	SW846 8270B
Carbazole	8.0 J	9.4	ug/L	SW846 8270B

(Continued on next page)

Quanterra

EXECUTIVE SUMMARY - Detection Highlights

D8E270156

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
STP-W410-052698 05/26/98 006				
2,3-Dihydroindene	1.9 J	9.5	ug/L	SW846 8270B
DPV-W420-052698 05/26/98 007				
2,3-Benzofuran	50 J	380	ug/L	SW846 8270B
2,3-Dihydroindene	330 J	380	ug/L	SW846 8270B
Naphthalene	1900	380	ug/L	SW846 8270B
Benzo(b)thiophene	140 J	380	ug/L	SW846 8270B
1-Methylnaphthalene	130 J	380	ug/L	SW846 8270B
Acenaphthene	120 J	380	ug/L	SW846 8270B
Carbazole	75 J	380	ug/L	SW846 8270B
DPV-W420D-052698 05/26/98 008				
2,3-Benzofuran	53 J	380	ug/L	SW846 8270B
2,3-Dihydroindene	370 J	380	ug/L	SW846 8270B
Naphthalene	2100	380	ug/L	SW846 8270B
Benzo(b)thiophene	150 J	380	ug/L	SW846 8270B
1-Methylnaphthalene	140 J	380	ug/L	SW846 8270B
Acenaphthene	120 J	380	ug/L	SW846 8270B
DPV-W421-052698 05/26/98 011				
2,3-Dihydroindene	130	38	ug/L	SW846 8270B
Indene	41	38	ug/L	SW846 8270B
Naphthalene	270	38	ug/L	SW846 8270B
Benzo(b)thiophene	61	38	ug/L	SW846 8270B
1-Methylnaphthalene	55	38	ug/L	SW846 8270B
Biphenyl	7.6 J	38	ug/L	SW846 8270B
Acenaphthene	50	38	ug/L	SW846 8270B
Dibenzofuran	13 J	38	ug/L	SW846 8270B
Fluorene	16 J	38	ug/L	SW846 8270B
Phenanthrene	5.9 J	38	ug/L	SW846 8270B
Carbazole	34 J	38	ug/L	SW846 8270B
DPV-W422-052698 05/26/98 012				
2,3-Dihydroindene	7.1 J	9.5	ug/L	SW846 8270B
Acenaphthene	10	9.5	ug/L	SW846 8270B

Quanterra

SAMPLE SUMMARY

D8E270156

WO #	SAMPLE#	CLIENT SAMPLE ID	DATE	TIME
CHGAG	001	DPV-W439-052698	05/26/98	
CHGAT	002	DPV-W434-052698	05/26/98	
CHGAW	003	GTF-SFR-052698	05/26/98	
CHGAX	004	GTF-ACFE-052698	05/26/98	
CHGC1	005	STP-W409-052698	05/26/98	
CHGC2	006	STP-W410-052698	05/26/98	
CHGC6	007	DPV-W420-052698	05/26/98	
CHGC9	008	DPV-W420D-052698	05/26/98	
CHGCC	009	DPV-W420FB-052698	05/26/98	
CHGCH	010	DPV-W420FBD-052698	05/26/98	
CHGCJ	011	DPV-W421-052698	05/26/98	
CHGCM	012	DPV-W422-052698	05/26/98	

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

Quanterra

CITY OF ST. LOUIS PARK

Client Sample ID: DPV-W439-052698

GC/MS Semivolatiles

Lot-Sample #...: D8E270156-001 Work Order #...: CHGAG101 Matrix.....: WATER
Date Sampled...: 05/26/98 Date Received..: 05/27/98
Prep Date.....: 06/02/98 Analysis Date..: 07/07/98
Prep Batch #...: 8153304 Analysis Time..: 20:44
Dilution Factor: 9.52 Method.....: SW846 8270B

PARAMETER	RESULT	REPORTING LIMIT	UNITS
2,3-Benzofuran	ND	95	ug/L
2,3-Dihydroindene	210	95	ug/L
Indene	110	95	ug/L
Naphthalene	660	95	ug/L
Benzo(b)thiophene	65 J	95	ug/L
Quinoline	ND	95	ug/L
Indole	ND	95	ug/L
2-Methylnaphthalene	ND	95	ug/L
1-Methylnaphthalene	92 J	95	ug/L
Biphenyl	ND	95	ug/L
Acenaphthylene	ND	95	ug/L
Acenaphthene	68 J	95	ug/L
Dibenzofuran	19 J	95	ug/L
Fluorene	ND	95	ug/L
Dibenzothiophene	ND	95	ug/L
Phenanthrene	ND	95	ug/L
Anthracene	ND	95	ug/L
Acridine	ND	95	ug/L
Carbazole	ND	95	ug/L
Fluoranthene	ND	95	ug/L
Pyrene	ND	95	ug/L
Benzo(a)anthracene	ND	95	ug/L
Chrysene	ND	95	ug/L
Benzo(b)fluoranthene	ND	95	ug/L
Benzo(k)fluoranthene	ND	95	ug/L
Benzo(e)pyrene	ND	95	ug/L
Benzo(a)pyrene	ND	95	ug/L
Perylene	ND	95	ug/L
Indeno(1,2,3-cd)pyrene	ND	95	ug/L
Benzo(ghi)perylene	ND	95	ug/L

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

NOTE(S):

NC The recovery and/or RPD were not calculated

SRD The surrogate recovery was not calculated because the extract was diluted beyond the ability to quantitate a recovery

J Estimated result Result is less than RL

Quanterra

CITY OF ST. LOUIS PARK

Client Sample ID: DPV-W434-052698

GC/MS Semivolatiles

Lot-Sample #...: D8E270156-002 Work Order #...: CHGAT101 Matrix.....: WATER
Date Sampled...: 05/26/98 Date Received..: 05/27/98
Prep Date.....: 06/02/98 Analysis Date..: 07/07/98
Prep Batch #...: 8153304 Analysis Time..: 19:31
Dilution Factor: 0.94 Method.....: SW846 8270B

PARAMETER	RESULT	REPORTING LIMIT	UNITS
2,3-Benzofuran	ND	9.4	ug/L
2,3-Dihydroindene	2.5 J	9.4	ug/L
Indene	ND	9.4	ug/L
Naphthalene	ND	9.4	ug/L
Benzo(b)thiophene	ND	9.4	ug/L
Quinoline	ND	9.4	ug/L
Indole	ND	9.4	ug/L
2-Methylnaphthalene	ND	9.4	ug/L
1-Methylnaphthalene	ND	9.4	ug/L
Biphenyl	ND	9.4	ug/L
Acenaphthylene	ND	9.4	ug/L
Acenaphthene	ND	9.4	ug/L
Dibenzofuran	ND	9.4	ug/L
Fluorene	ND	9.4	ug/L
Dibenzothiophene	ND	9.4	ug/L
Phenanthrene	ND	9.4	ug/L
Anthracene	ND	9.4	ug/L
Acridine	ND	9.4	ug/L
Carbazole	ND	9.4	ug/L
Fluoranthene	ND	9.4	ug/L
Pyrene	ND	9.4	ug/L
Benzo(a)anthracene	ND	9.4	ug/L
Chrysene	ND	9.4	ug/L
Benzo(b)fluoranthene	ND	9.4	ug/L
Benzo(k)fluoranthene	ND	9.4	ug/L
Benzo(e)pyrene	ND	9.4	ug/L
Benzo(a)pyrene	ND	9.4	ug/L
Perylene	ND	9.4	ug/L
Indeno(1,2,3-cd)pyrene	ND	9.4	ug/L
Benzo(ghi)perylene	ND	9.4	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	38	(25 - 160)
Fluorene d-10	85	(36 - 127)
Naphthalene-d8	85	(37 - 107)

NOTE(S):

J Estimated result Result is less than RL

Quanterra

CITY OF ST. LOUIS PARK

Client Sample ID: DPV-W420-052698

GC/MS Semivolatiles

Lot-Sample #...:	D8E270156-007	Work Order #...:	CHGC6101	Matrix.....:	WATER
Date Sampled...:	05/26/98	Date Received..:	05/27/98		
Prep Date.....:	06/02/98	Analysis Date..:	07/08/98		
Prep Batch #...:	8153304	Analysis Time..:	00:22		
Dilution Factor:	38.09	Method.....:	SW846 8270B		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
2,3-Benzofuran	50 J	380	ug/L
2,3-Dihydroindene	330 J	380	ug/L
Indene	ND	380	ug/L
Naphthalene	1900	380	ug/L
Benzo(b)thiophene	140 J	380	ug/L
Quinoline	ND	380	ug/L
Indole	ND	380	ug/L
2-Methylnaphthalene	ND	380	ug/L
1-Methylnaphthalene	130 J	380	ug/L
Biphenyl	ND	380	ug/L
Acenaphthylene	ND	380	ug/L
Acenaphthene	120 J	380	ug/L
Dibenzofuran	ND	380	ug/L
Fluorene	ND	380	ug/L
Dibenzothiophene	ND	380	ug/L
Phenanthrene	ND	380	ug/L
Anthracene	ND	380	ug/L
Acridine	ND	380	ug/L
Carbazole	75 J	380	ug/L
Fluoranthene	ND	380	ug/L
Pyrene	ND	380	ug/L
Benzo(a)anthracene	ND	380	ug/L
Chrysene	ND	380	ug/L
Benzo(b)fluoranthene	ND	380	ug/L
Benzo(k)fluoranthene	ND	380	ug/L
Benzo(e)pyrene	ND	380	ug/L
Benzo(a)pyrene	ND	380	ug/L
Perylene	ND	380	ug/L
Indeno(1,2,3-cd)pyrene	ND	380	ug/L
Benzo(ghi)perylene	ND	380	ug/L

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

NOTE(S):

NC The recovery and/or RPD were not calculated

SRD The surrogate recovery was not calculated because the extract was diluted beyond the ability to quantitate a recovery

J Estimated result Result is less than RL

Quanterra

CITY OF ST. LOUIS PARK

Client Sample ID: DPV-W420D-052698

GC/MS Semivolatiles

Lot-Sample #...: D8E270156-008 Work Order #...: CHGC9101 Matrix.....: WATER
Date Sampled...: 05/26/98 Date Received..: 05/27/98
Prep Date.....: 06/02/98 Analysis Date..: 07/07/98
Prep Batch #...: 8153304 Analysis Time..: 23:46
Dilution Factor: 38.09 Method.....: SW846 8270B

PARAMETER	RESULT	REPORTING LIMIT	UNITS
2,3-Benzofuran	53 J	380	ug/L
2,3-Dihydroindene	370 J	380	ug/L
Indene	ND	380	ug/L
Naphthalene	2100	380	ug/L
Benzo(b)thiophene	150 J	380	ug/L
Quinoline	ND	380	ug/L
Indole	ND	380	ug/L
2-Methylnaphthalene	ND	380	ug/L
1-Methylnaphthalene	140 J	380	ug/L
Biphenyl	ND	380	ug/L
Acenaphthylene	ND	380	ug/L
Acenaphthene	120 J	380	ug/L
Dibenzofuran	ND	380	ug/L
Fluorene	ND	380	ug/L
Dibenzothiophene	ND	380	ug/L
Phenanthrene	ND	380	ug/L
Anthracene	ND	380	ug/L
Acridine	ND	380	ug/L
Carbazole	ND	380	ug/L
Fluoranthene	ND	380	ug/L
Pyrene	ND	380	ug/L
Benzo(a)anthracene	ND	380	ug/L
Chrysene	ND	380	ug/L
Benzo(b)fluoranthene	ND	380	ug/L
Benzo(k)fluoranthene	ND	380	ug/L
Benzo(e)pyrene	ND	380	ug/L
Benzo(a)pyrene	ND	380	ug/L
Perylene	ND	380	ug/L
Indeno(1,2,3-cd)pyrene	ND	380	ug/L
Benzo(ghi)perylene	ND	380	ug/L

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

NOTE(S):

NC The recovery and/or RPD were not calculated

SRD The surrogate recovery was not calculated because the extract was diluted beyond the ability to quantitate a recovery

J Estimated result Result is less than RL

Quanterra

CITY OF ST. LOUIS PARK

Client Sample ID: DPV-W421-052698

GC/MS Semivolatiles

Lot-Sample #...: D8E270156-011 Work Order #...: CHGCJ101 Matrix.....: WATER
Date Sampled...: 05/26/98 Date Received..: 05/27/98
Prep Date.....: 06/02/98 Analysis Date..: 07/07/98
Prep Batch #...: 8153304 Analysis Time..: 21:21
Dilution Factor: 3.81 Method.....: SW846 8270B

PARAMETER	RESULT	REPORTING LIMIT	UNITS
2,3-Benzofuran	ND	38	ug/L
2,3-Dihydroindene	130	38	ug/L
Indene	41	38	ug/L
Naphthalene	270	38	ug/L
Benzo(b)thiophene	61	38	ug/L
Quinoline	ND	38	ug/L
Indole	ND	38	ug/L
2-Methylnaphthalene	ND	38	ug/L
1-Methylnaphthalene	55	38	ug/L
Biphenyl	7.6 J	38	ug/L
Acenaphthylene	ND	38	ug/L
Acenaphthene	50	38	ug/L
Dibenzofuran	13 J	38	ug/L
Fluorene	16 J	38	ug/L
Dibenzothiophene	ND	38	ug/L
Phenanthrene	5.9 J	38	ug/L
Anthracene	ND	38	ug/L
Acridine	ND	38	ug/L
Carbazole	34 J	38	ug/L
Fluoranthene	ND	38	ug/L
Pyrene	ND	38	ug/L
Benzo(a)anthracene	ND	38	ug/L
Chrysene	ND	38	ug/L
Benzo(b)fluoranthene	ND	38	ug/L
Benzo(k)fluoranthene	ND	38	ug/L
Benzo(e)pyrene	ND	38	ug/L
Benzo(a)pyrene	ND	38	ug/L
Perylene	ND	38	ug/L
Indeno(1,2,3-cd)pyrene	ND	38	ug/L
Benzo(ghi)perylene	ND	38	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	65	(25 - 160)
Fluorene d-10	88	(36 - 127)
Naphthalene-d8	88	(37 - 107)

NOTE(S):

J Estimated result Result is less than RL

Quanterra

CITY OF ST. LOUIS PARK

Client Sample ID: DPV-W422-052698

GC/MS Semivolatiles

Lot-Sample #...: D8E270156-012 Work Order #...: CHGCM101 Matrix.....: WATER
Date Sampled...: 05/26/98 Date Received..: 05/27/98
Prep Date.....: 06/02/98 Analysis Date..: 07/07/98
Prep Batch #...: 8153304 Analysis Time..: 20:08
Dilution Factor: 0.95 Method.....: SW846 8270B

PARAMETER	RESULT	REPORTING LIMIT	UNITS
2,3-Benzofuran	ND	9.5	ug/L
2,3-Dihydroindene	7.1 J	9.5	ug/L
Indene	ND	9.5	ug/L
Naphthalene	ND	9.5	ug/L
Benzo(b)thiophene	ND	9.5	ug/L
Quinoline	ND	9.5	ug/L
Indole	ND	9.5	ug/L
2-Methylnaphthalene	ND	9.5	ug/L
1-Methylnaphthalene	ND	9.5	ug/L
Biphenyl	ND	9.5	ug/L
Acenaphthylene	ND	9.5	ug/L
Acenaphthene	10	9.5	ug/L
Dibenzofuran	ND	9.5	ug/L
Fluorene	ND	9.5	ug/L
Dibenzothiophene	ND	9.5	ug/L
Phenanthrene	ND	9.5	ug/L
Anthracene	ND	9.5	ug/L
Acridine	ND	9.5	ug/L
Carbazole	ND	9.5	ug/L
Fluoranthene	ND	9.5	ug/L
Pyrene	ND	9.5	ug/L
Benzo(a)anthracene	ND	9.5	ug/L
Chrysene	ND	9.5	ug/L
Benzo(b)fluoranthene	ND	9.5	ug/L
Benzo(k)fluoranthene	ND	9.5	ug/L
Benzo(e)pyrene	ND	9.5	ug/L
Benzo(a)pyrene	ND	9.5	ug/L
Perylene	ND	9.5	ug/L
Indeno(1,2,3-cd)pyrene	ND	9.5	ug/L
Benzo(ghi)perylene	ND	9.5	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	65	(25 - 160)
Fluorene d-10	82	(36 - 127)
Naphthalene-d8	82	(37 - 107)

NOTE(S):

J Estimated result Result is less than RL

Chain of Custody Record

D8E270156

Quanterra

QUA 4124

Client: CITY OF ST. LOUIS PARK UTILITY DIVISION	Project Manager: SCOTT ANDERSON	Date: 5-26-98	Chain Of Custody Number: 24273
Address: 3752 WOODDALE AVENUE	Telephone Number (Area Code)/Fax Number: 924-2557 (612) 924-2570	Lab Number:	Page ____ of ____
City: ST. LOUIS PARK, MN 55416	Site Contact: SAME		
Project Name: SAME	Carrier/Waybill Number: FED EX 8002463168 16		
Contract/Purchase Order/Quote No			

Sample I D No and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No	Preservative	Condition on Receipt	Analysis: DRB PAH
DPV-N439-052698	5-26-98		WATER	1 LITER	AMBER	2	N/A		X
DPV-N434-052698									
GTF-SFR-052698									
GTF-ACFE-052698									
STP-N409-052698									
STP-N410-052698	5-26-98		WATER	1 LITER	AMBER	2	N/A		X

Special Instructions

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

Sample Disposal: [ ] Return To Client [X] Disposal By Lab [ ] Archive For ____ Months

Turn Around Time Required: [ ] Normal [ ] Rush

QC Level: [ ] I. [ ] II. [ ] III

Project Specific (Specify)

1 Relinquished By: [signature]	Date: 5-26-98	Time: 1400	1 Received By: Thomas Williams	Date: 5/27/98	Time: 9:00
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 Sample CANARY - Returned to Client with Report, PINK - Field Copy

7.2

Chain of Custody Record

D8E270136

Quanterra

QUA 4124

Client: CITY OF ST. LOUIS PARK, UTILITY DIVISION	Project Manager: SCOTT ANDERSON	Date: 5-26-98	Chain Of Custody Number: 20372
Address: 3752 WOODDALE AVENUE	Telephone Number (Area Code)/Fax Number: 924-2557 (612) 924-2570	Lab Number:	Page ____ of ____
City: ST. LOUIS PARK, MN 55416	Site Contact: SAME		
Project No.: SAME	Carrier/Waybill Number: FED EX 8002463168 16		
Contract/Purchase Order/Quote No			

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No	Preservative	Condition on Receipt	Analysis: PPB PAH
OPV-W420 -052698	5-26-9		WATER	1 LITER	AMBER	2	N/A		X
OPV-W420D -052698									
OPV-W420MS -052698									
OPV-W420MSD -052698									
OPV-W420FB -052698									
OPV-W420FBD -052698									
OPV-W421 -052698									
OPV-W422 -052698	5-26-98		WATER	1 LITER	AMBER	2	N/A		X

Special Instructions

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

Sample Disposal: [ ] Return To Client [X] Disposal By Lab [ ] Archive For ____ Months

Turn Around Time Required: [ ] Normal [ ] Rush

QC Level: [ ] I. [ ] II. [ ] III.

Project Specific (Specify)

	Date	Time		Date	Time
1 Relinquished By: MZH	5-26-98	1400	1 Received By: Lima Williams	5/27/98	9:00
2 Relinquished By			2 Received By		
3 Relinquished By			3 Received By		

Comments

DISTRIBUTION: WH[illegible]ays with Sample, CANARY - Returned to Client with Report, PINK - Field Copy

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SECOND QUARTER
PHENOLIC MONITORING

ANALYTICAL REPORT

Reilly Tar & Chemical NPL Site

Lot #: D8E270141

Scott Anderson

City of St. Louis Park

QUANTERRA INCORPORATED

Lindsay Breyer
Project Manager

July 9, 1998

EXECUTIVE SUMMARY - Detection Highlights

D8E270141

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
DPV-420TP-052698 05/26/98 001				
Total Phenols	0.16 Q	0.010	mg/L	MCAWW 420.1
DPV-W420TPD-O52698 05/26/98 002				
Total Phenols	0.16 Q	0.010	mg/L	MCAWW 420.1
DPV-W421TP-052698 05/26/98 005				
Total Phenols	0.021	0.0050	mg/L	MCAWW 420.1
DPV-W422TP-052698 05/26/98 006				
Total Phenols	0.0089	0.0050	mg/L	MCAWW 420.1
DPV-W439TP-052698 05/26/98 007				
Total Phenols	0.035	0.0050	mg/L	MCAWW 420.1
DPV-W434TP-052698 05/26/98 008				
Total Phenols	0.0053	0.0050	mg/L	MCAWW 420.1
GTF-SFRTP-052698 05/26/98 009				
Total Phenols	0.048	0.0050	mg/L	MCAWW 420.1
PCJ-SLP4TP-052698 05/26/98 011				
Total Phenols	0.0067	0.0050	mg/L	MCAWW 420.1
STP-W410TP-052698 05/26/98 012				
Total Phenols	0.0053	0.0050	mg/L	MCAWW 420.1

SAMPLE SUMMARY

D8E270141

WO #	SAMPLE#	CLIENT SAMPLE ID	DATE	TIME
CHG6M	001	DPV-420TP-052698	05/26/98	
CHG6R	002	DPV-W420TPD-052698	05/26/98	
CHG77	003	DPV-W420TPFB-052698	05/26/98	
CHG7C	004	DPV-W420TPFBD-052698	05/26/98	
CHG7R	005	DPV-W421TP-052698	05/26/98	
CHG7X	006	DPV-W422TP-052698	05/26/98	
CHG81	007	DPV-W439TP-052698	05/26/98	
CHG82	008	DPV-W434TP-052698	05/26/98	
CHG83	009	GTF-SFRTP-052698	05/26/98	
CHG84	010	GTF-ACFETP-052698	05/26/98	
CHG86	011	PCJ-SLP4TP-052698	05/26/98	
CHG88	012	STP-W410TP-052698	05/26/98	

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-420TP-052698

General Chemistry

Lot-Sample #...: D8E270141-001 Work Order #...: CHG6M Matrix.....: WATER
Date Sampled...: 05/26/98 Date Received..: 05/27/98

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Total Phenols	0.16 Q	0.010	mg/L	MCAWW 420.1	06/22-06/23/98	8173295

Dilution Factor: 2 Analysis Time..: 18:00

NOTE(S):

RL Reporting Limit

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

CITY OF ST. LOUIS PARK

Client Sample ID: DPV-W420TPD-052698

General Chemistry

Lot-Sample #...: D8E270141-002 Work Order #...: CHG6R Matrix.....: WATER
Date Sampled...: 05/26/98 Date Received..: 05/27/98

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Total Phenols	0.16 Q	0.010	mg/L	MCAWW 420.1	06/22-06/23/98	8173295

Dilution Factor: 2 Analysis Time. : 18:00

NOTE(S):

RL Reporting Limit

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

CITY OF ST. LOUIS PARK

Client Sample ID: DPV-W421TP-052698

General Chemistry

Lot-Sample #...: D8E270141-005 **Work Order #...:** CHG7R **Matrix.....:** WATER
Date Sampled...: 05/26/98 **Date Received..:** 05/27/98

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Total Phenols	0.021	0.0050	mg/L	MCAWW 420.1	06/22-06/23/98	8173295

Dilution Factor: 1 Analysis Time..: 18:00

CITY OF ST. LOUIS PARK

Client Sample ID: DPV-W422TP-052698

General Chemistry

Lot-Sample #...: D8E270141-006 Work Order #...: CHG7X Matrix.....: WATER
Date Sampled...: 05/26/98 Date Received..: 05/27/98

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Total Phenols	0.0089	0.0050	mg/L	MCAWW 420.1	06/22-06/23/98	8173295

Dilution Factor. 1 Analysis Time .: 18:00

CITY OF ST. LOUIS PARK

Client Sample ID: DPV-W439TP-052698

General Chemistry

Lot-Sample #...: D8E270141-007 **Work Order #...:** CHG81 **Matrix.....:** WATER
Date Sampled...: 05/26/98 **Date Received..:** 05/27/98

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Total Phenols	0.035	0.0050	mg/L	MCAWW 420.1	06/22-06/23/98	8173295

Dilution Factor: 1 Analysis Time..: 18:00

CITY OF ST. LOUIS PARK

Client Sample ID: DPV-W434TP-052698

General Chemistry

Lot-Sample #...: D8E270141-008 **Work Order #...:** CHG82 **Matrix.....:** WATER
Date Sampled...: 05/26/98 **Date Received..:** 05/27/98

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Total Phenols	0.0053	0.0050	mg/L	MCAWW 420.1	06/22-06/23/98	8173295

Dilution Factor: 1 Analysis Time..: 18:00

THIRD QUARTER
PAH AND PHENOLIC MONITORING

Advanced Analytical Services

Quanterra Incorporated
4955 Yarrow Street
Arvada, Colorado 80002

303 421-6611 Telephone
303 467-9136 Fax

CASE NARRATIVE

FOR

City of St. Louis Park

November 6, 1998

Quanterra Environmental Services

Project Lot Number D8I090120

Introduction

Thirteen aqueous samples (including matrix QC) were received at Quanterra Environmental Services, Denver Laboratory on September 9, 1998. The samples were logged in under Quanterra Denver's project lot number D8I090120. A cross reference associating Quanterra Denver's laboratory sample numbers to the actual field sample number is included. The samples were analyzed for part per billion (ppb) PAHs and total recoverable phenolics.

Data Quality Assessment

The results contained in this report were reviewed relative to data acceptance criteria as specified in the October 1997 QAPP for completeness, precision, accuracy, representativeness and defensibility of the data. Unless otherwise stated below, no quality control problems or technical difficulties were encountered which would impact the interpretation or use of data in this report.

Due to a laboratory error the PAHs were extracted using incorrect spiking and surrogate mixtures. The samples were re-extracted (outside of holding time) using the correct spiking solutions. There was insufficient sample to re-extract samples D8I090120-002 and 006. The original extract was analyzed and reported. Both sets of data are reported.

Client samples with laboratory Ids D8I090120-001 and 002 were analyzed at a dilution due to target analytes exceeding the linear range of the instrument. The reporting limits were raised accordingly. As a result of dilution all of the surrogate compounds associated with these samples were not detected and are reported as "NC", not calculated.

The surrogate compounds associated with sample –006 are reported as NC because the sample was spiked with incorrect surrogates. There was no extra sample available for reanalysis.

Due to the high concentration of naphthalene in the sample the spike recoveries for this compound were low, outside acceptance limits. Naphthalene was recovered within acceptance limits in the laboratory control sample. Matrix effect is indicated.

Except for the above, this data package is in compliance with the terms and conditions of the October 1997 QAPP, both technically and for completeness

Reported By: Kurt C. Ill **Date:** November 16 1998

Kurt C. Ill
Customer Service Manger

ANALYTICAL REPORT

Reilly Tar & Chemical NPL Site

Lot #: D8I090120

Scott Anderson

City of St. Louis Park

QUANTERRA INCORPORATED

Kurt C. Ill
Project Manager

November 16, 1998

EXECUTIVE SUMMARY - Detection Highlights

D8I090120

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
DPV-W420TP-090898 09/08/98 001				
2,3-Benzofuran	82 J	100	ug/L	SW846 8270B
2,3-Dihydroindene	460	100	ug/L	SW846 8270B
Naphthalene	1800	100	ug/L	SW846 8270B
Benzo(b)thiophene	180	100	ug/L	SW846 8270B
2-Methylnaphthalene	120	100	ug/L	SW846 8270B
1-Methylnaphthalene	150	100	ug/L	SW846 8270B
Acenaphthene	140	100	ug/L	SW846 8270B
Dibenzofuran	56 J	100	ug/L	SW846 8270B
Fluorene	57 J	100	ug/L	SW846 8270B
Carbazole	99 J	100	ug/L	SW846 8270B
Total Phenols	0.080	0.010	mg/L	MCAWW 420.1
DPV-W420TPD-090898 09/08/98 002				
2,3-Benzofuran	67 J	100	ug/L	SW846 8270B
2,3-Dihydroindene	440	100	ug/L	SW846 8270B
Naphthalene	1800	100	ug/L	SW846 8270B
Benzo(b)thiophene	160	100	ug/L	SW846 8270B
2-Methylnaphthalene	110	100	ug/L	SW846 8270B
1-Methylnaphthalene	130	100	ug/L	SW846 8270B
Acenaphthene	130	100	ug/L	SW846 8270B
Dibenzofuran	52 J	100	ug/L	SW846 8270B
Fluorene	54 J	100	ug/L	SW846 8270B
Carbazole	93 J	100	ug/L	SW846 8270B
Total Phenols	0.095	0.010	mg/L	MCAWW 420.1
DPV-W420TPFB-090898 09/08/98 003				
Total Phenols	0.011	0.0050	mg/L	MCAWW 420.1
DPV-W420TPFBD-090898 09/08/98 004				
Total Phenols	0.0044 B	0.0050	mg/L	MCAWW 420.1
DPV-W421TP-090898 09/08/98 005				
Naphthalene	150	10	ug/L	SW846 8270B
Benzo(b)thiophene	41	10	ug/L	SW846 8270B
1-Methylnaphthalene	33	10	ug/L	SW846 8270B
Acenaphthene	37	10	ug/L	SW846 8270B
Dibenzofuran	8.2 J	10	ug/L	SW846 8270B
Fluorene	12	10	ug/L	SW846 8270B
Phenanthrene	3.5 J	10	ug/L	SW846 8270B

(Continued on next page)

EXECUTIVE SUMMARY - Detection Highlights

D8I090120

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
DPV-W421TP-090898 09/08/98 005				
Carbazole	21	10	ug/L	SW846 8270B
Total Phenols	0.0096	0.0050	mg/L	MCAWW 420.1
DPV-W422TP-090898 09/08/98 006				
Acenaphthene	7.3 J	10	ug/L	SW846 8270B
DPV-W439TP-090898 09/08/98 007				
2,3-Dihydroindene	280	100	ug/L	SW846 8270B
Naphthalene	450	100	ug/L	SW846 8270B
Benzo(b)thiophene	72 J	100	ug/L	SW846 8270B
1-Methylnaphthalene	99 J	100	ug/L	SW846 8270B
Acenaphthene	77 J	100	ug/L	SW846 8270B
Total Phenols	0.012	0.0050	mg/L	MCAWW 420.1
GTF-SRFTP-090898 09/08/98 009				
Benzo(b)thiophene	9.2 J	10	ug/L	SW846 8270B
Acenaphthene	35	10	ug/L	SW846 8270B
Dibenzofuran	10	10	ug/L	SW846 8270B
Fluorene	15	10	ug/L	SW846 8270B
Carbazole	3.7 J	10	ug/L	SW846 8270B
Total Phenols	0.050	0.0050	mg/L	MCAWW 420.1
GTF-PCJ-SLP4TP-090898 09/08/98 011				
Total Phenols	0.041	0.0050	mg/L	MCAWW 420.1
STP-W409TP-090898 09/08/98 013				
Naphthalene	7.8 J	10	ug/L	SW846 8270B
Benzo(b)thiophene	17	10	ug/L	SW846 8270B
1-Methylnaphthalene	20	10	ug/L	SW846 8270B
Acenaphthene	37	10	ug/L	SW846 8270B
Dibenzofuran	10	10	ug/L	SW846 8270B
Fluorene	12	10	ug/L	SW846 8270B
Carbazole	3.9 J	10	ug/L	SW846 8270B
Total Phenols	0.0039 B	0.0050	mg/L	MCAWW 420.1

SAMPLE SUMMARY

D8I090120

WO #	SAMPLE#	CLIENT SAMPLE ID	DATE	TIME
CLAP0	001	DPV-W420TP-090898	09/08/98	
CLAP2	002	DPV-W420TPD-090898	09/08/98	
CLAP3	003	DPV-W420TPFB-090898	09/08/98	
CLAP5	004	DPV-W420TPFBD-090898	09/08/98	
CLAP9	005	DPV-W421TP-090898	09/08/98	
CLAPC	006	DPV-W422TP-090898	09/08/98	
CLAPD	007	DPV-W439TP-090898	09/08/98	
CLAPF	008	DPV-W434TP-090898	09/08/98	
CLAPG	009	GTF-SRFTP-090898	09/08/98	
CLAPH	010	GTF-ACFETP-090898	09/08/98	
CLAPM	011	GTF-PCJ-SLP4TP-090898	09/08/98	
CLAPP	012	STP-W410TP-090898	09/08/98	
CLAPQ	013	STP-W409TP-090898	09/08/98	

NOTE(S):

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- 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-W420TP-090898

GC/MS Semivolatiles

Lot-Sample #...: D8I090120-001 Work Order #...: CLAP0101 Matrix.....: WATER
Date Sampled...: 09/08/98 Date Received..: 09/09/98
Prep Date.....: 09/09/98 Analysis Date..: 10/22/98
Prep Batch #...: 8253181 Analysis Time..: 07:24
Dilution Factor: 10

Method.....: SW846 8270B

PARAMETER	RESULT	REPORTING LIMIT	UNITS
2,3-Benzofuran	82 J	100	ug/L
2,3-Dihydroindene	460	100	ug/L
Indene	ND	100	ug/L
Naphthalene	1800	100	ug/L
Benzo(b)thiophene	180	100	ug/L
Quinoline	ND	100	ug/L
Indole	ND	100	ug/L
2-Methylnaphthalene	120	100	ug/L
1-Methylnaphthalene	150	100	ug/L
Biphenyl	ND	100	ug/L
Acenaphthylene	ND	100	ug/L
Acenaphthene	140	100	ug/L
Dibenzofuran	56 J	100	ug/L
Fluorene	57 J	100	ug/L
Dibenzothiophene	ND	100	ug/L
Phenanthrene	ND	100	ug/L
Anthracene	ND	100	ug/L
Acridine	ND	100	ug/L
Carbazole	99 J	100	ug/L
Fluoranthene	ND	100	ug/L
Pyrene	ND	100	ug/L
Benzo(a)anthracene	ND	100	ug/L
Chrysene	ND	100	ug/L
Benzo(b)fluoranthene	ND	100	ug/L
Benzo(k)fluoranthene	ND	100	ug/L
Benzo(e)pyrene	ND	100	ug/L
Benzo(a)pyrene	ND	100	ug/L
Perylene	ND	100	ug/L
Indeno(1,2,3-cd)pyrene	ND	100	ug/L
Benzo(ghi)perylene	ND	100	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	0.0 NC	(25 - 160)
Fluorene d-10	0.0 NC	(36 - 127)
Naphthalene-d8	0.0 NC	(37 - 107)

NOTE(S):

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: DPV-W420TPD-090898

GC/MS Semivolatiles

Lot-Sample #...: D8I090120-002 Work Order #...: CLAP2101 Matrix.....: WATER
Date Sampled...: 09/08/98 Date Received..: 09/09/98
Prep Date.....: 09/09/98 Analysis Date..: 10/22/98
Prep Batch #...: 8253181 Analysis Time..: 06:08
Dilution Factor: 10

Method.....: SW846 8270B

PARAMETER	RESULT	REPORTING LIMIT	UNITS
2,3-Benzofuran	67 J	100	ug/L
2,3-Dihydroindene	440	100	ug/L
Indene	ND	100	ug/L
Naphthalene	1800	100	ug/L
Benzo(b)thiophene	160	100	ug/L
Quinoline	ND	100	ug/L
Indole	ND	100	ug/L
2-Methylnaphthalene	110	100	ug/L
1-Methylnaphthalene	130	100	ug/L
Biphenyl	ND	100	ug/L
Acenaphthylene	ND	100	ug/L
Acenaphthene	130	100	ug/L
Dibenzofuran	52 J	100	ug/L
Fluorene	54 J	100	ug/L
Dibenzothiophene	ND	100	ug/L
Phenanthrene	ND	100	ug/L
Anthracene	ND	100	ug/L
Acridine	ND	100	ug/L
Carbazole	93 J	100	ug/L
Fluoranthene	ND	100	ug/L
Pyrene	ND	100	ug/L
Benzo(a)anthracene	ND	100	ug/L
Chrysene	ND	100	ug/L
Benzo(b)fluoranthene	ND	100	ug/L
Benzo(k)fluoranthene	ND	100	ug/L
Benzo(e)pyrene	ND	100	ug/L
Benzo(a)pyrene	ND	100	ug/L
Perylene	ND	100	ug/L
Indeno(1,2,3-cd)pyrene	ND	100	ug/L
Benzo(ghi)perylene	ND	100	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	0.0 NC	(25 - 160)
Fluorene d-10	0.0 NC	(36 - 127)
Naphthalene-d8	0.0 NC	(37 - 107)

NOTE(S):

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: DPV-W421TP-090898

GC/MS Semivolatiles

Lot-Sample #...: D8I090120-005 Work Order #...: CLAP9101 Matrix.....: WATER
Date Sampled...: 09/08/98 Date Received..: 09/09/98
Prep Date.....: 09/09/98 Analysis Date..: 10/15/98
Prep Batch #...: 8253181 Analysis Time..: 22:41
Dilution Factor: 1

Method.....: SW846 8270B

PARAMETER	RESULT	REPORTING LIMIT	UNITS
2,3-Benzofuran	ND	10	ug/L
2,3-Dihydroindene	ND	10	ug/L
Indene	ND	10	ug/L
Naphthalene	150	10	ug/L
Benzo(b)thiophene	41	10	ug/L
Quinoline	ND	10	ug/L
Indole	ND	10	ug/L
2-Methylnaphthalene	ND	10	ug/L
1-Methylnaphthalene	33	10	ug/L
Biphenyl	ND	10	ug/L
Acenaphthylene	ND	10	ug/L
Acenaphthene	37	10	ug/L
Dibenzofuran	8.2 J	10	ug/L
Fluorene	12	10	ug/L
Dibenzothiophene	ND	10	ug/L
Phenanthrene	3.5 J	10	ug/L
Anthracene	ND	10	ug/L
Acridine	ND	10	ug/L
Carbazole	21	10	ug/L
Fluoranthene	ND	10	ug/L
Pyrene	ND	10	ug/L
Benzo(a)anthracene	ND	10	ug/L
Chrysene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
Benzo(e)pyrene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Perylene	ND	10	ug/L
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Benzo(ghi)perylene	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	116	(25 - 160)
Fluorene d-10	78	(36 - 127)
Naphthalene-d8	69	(37 - 107)

NOTE(S):

J Estimated result. Result is less than RL

CITY OF ST. LOUIS PARK

Client Sample ID: DPV-W422TP-090898

GC/MS Semivolatiles

Lot-Sample #...: D8I090120-006 Work Order #...: CLAPC101 Matrix.....: WATER
Date Sampled...: 09/08/98 Date Received..: 09/09/98
Prep Date.....: 09/09/98 Analysis Date..: 10/16/98
Prep Batch #...: 8253181 Analysis Time..: 22:14
Dilution Factor: 1

Method.....: SW846 8270B

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

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	0.0 NC	(25 - 160)
Fluorene d-10	0.0 NC	(36 - 127)
Naphthalene-d8	0.0 NC	(37 - 107)

NOTE(S):

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: DPV-W439TP-090898

GC/MS Semivolatiles

Lot-Sample #...: D8I090120-007 Work Order #...: CLAPD101 Matrix.....: WATER
Date Sampled...: 09/08/98 Date Received..: 09/09/98
Prep Date.....: 09/09/98 Analysis Date..: 10/22/98
Prep Batch #...: 8253181 Analysis Time..: 06:46
Dilution Factor: 10

Method.....: SW846 8270B

PARAMETER	RESULT	REPORTING LIMIT	UNITS
2,3-Benzofuran	ND	100	ug/L
2,3-Dihydroindene	280	100	ug/L
Indene	ND	100	ug/L
Naphthalene	450	100	ug/L
Benzo(b)thiophene	72 J	100	ug/L
Quinoline	ND	100	ug/L
Indole	ND	100	ug/L
2-Methylnaphthalene	ND	100	ug/L
1-Methylnaphthalene	99 J	100	ug/L
Biphenyl	ND	100	ug/L
Acenaphthylene	ND	100	ug/L
Acenaphthene	77 J	100	ug/L
Dibenzofuran	ND	100	ug/L
Fluorene	ND	100	ug/L
Dibenzothiophene	ND	100	ug/L
Phenanthrene	ND	100	ug/L
Anthracene	ND	100	ug/L
Acridine	ND	100	ug/L
Carbazole	ND	100	ug/L
Fluoranthene	ND	100	ug/L
Pyrene	ND	100	ug/L
Benzo(a)anthracene	ND	100	ug/L
Chrysene	ND	100	ug/L
Benzo(b)fluoranthene	ND	100	ug/L
Benzo(k)fluoranthene	ND	100	ug/L
Benzo(e)pyrene	ND	100	ug/L
Benzo(a)pyrene	ND	100	ug/L
Perylene	ND	100	ug/L
Indeno(1,2,3-cd)pyrene	ND	100	ug/L
Benzo(ghi)perylene	ND	100	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	158	(25 - 160)
Fluorene d-10	84	(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: DPV-W434TP-090898

GC/MS Semivolatiles

Lot-Sample #...: D8I090120-008 Work Order #...: CLAPF101 Matrix.....: WATER
Date Sampled...: 09/08/98 Date Received..: 09/09/98
Prep Date.....: 09/09/98 Analysis Date..: 10/15/98
Prep Batch #...: 8253181 Analysis Time..: 23:19
Dilution Factor: 1

Method.....: SW846 8270B

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

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	113	(25 - 160)
Fluorene d-10	89	(36 - 127)
Naphthalene-d8	79	(37 - 107)

CITY OF ST. LOUIS PARK

Client Sample ID: DPV-W420TP-090898

General Chemistry

Lot-Sample #...: D8I090120-001 Work Order #...: CLAP0 Matrix.....: WATER
Date Sampled...: 09/08/98 Date Received..: 09/09/98

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Total Phenols	0.080	0.010	mg/L	MCAWW 420.1	10/05/98	8279220

Dilution Factor: 2 Analysis Time..: 16:00

CITY OF ST. LOUIS PARK

Client Sample ID: DPV-W420TPD-090898

General Chemistry

Lot-Sample #...: D8I090120-002 Work Order #...: CLAP2 Matrix.....: WATER
Date Sampled...: 09/08/98 Date Received..: 09/09/98

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Total Phenols	0.095	0.010	mg/L	MCAWW 420.1	10/05/98	8279220

Dilution Factor: 2 Analysis Time..: 16:00

CITY OF ST. LOUIS PARK

Client Sample ID: DPV-W421TP-090898

General Chemistry

Lot-Sample #...: D8I090120-005 Work Order #...: CLAP9 Matrix.....: WATER
Date Sampled...: 09/08/98 Date Received..: 09/09/98

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Total Phenols	0.0096	0.0050	mg/L	MCAWW 420.1	10/05/98	8279220

Dilution Factor: 1 Analysis Time..: 16:00

CITY OF ST. LOUIS PARK

Client Sample ID: DPV-W422TP-090898

General Chemistry

Lot-Sample #...: D8I090120-006 Work Order #...: CLAPC Matrix.....: WATER
Date Sampled...: 09/08/98 Date Received..: 09/09/98

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Total Phenols	ND	0.0050	mg/L	MCAWW 420.1	10/05/98	8279220

Dilution Factor: 1 Analysis Time..: 16:00

CITY OF ST. LOUIS PARK

Client Sample ID: DPV-W439TP-090898

General Chemistry

Lot-Sample #...: D8I090120-007 Work Order #...: CLAPD Matrix.....: WATER
Date Sampled...: 09/08/98 Date Received..: 09/09/98

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Total Phenols	0.012	0.0050	mg/L	MCAWW 420.1	10/05/98	8279220

Dilution Factor: 1 Analysis Time..: 16:00

CITY OF ST. LOUIS PARK

Client Sample ID: DPV-W434TP-090898

General Chemistry

Lot-Sample #...: D8I090120-008 Work Order #...: CLAPF Matrix.....: WATER
Date Sampled...: 09/08/98 Date Received..: 09/09/98

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Total Phenols	ND	0.0050	mg/L	MCAWW 420.1	10/05/98	8279220

Dilution Factor: 1 Analysis Time..: 16:00

Quote # 23558

Chain of Custody Record

Quanterra

QUA 4124

Client: CITY OF ST. LOUIS PARK UTILITY DIVISION	Project Manager: SCOTT ANDERSON	Date: 9-8-98	Chain Of Custody Number: 24400
Address: 3752 WOODDALE AVENUE	Telephone Number (Area Code)/Fax Number: 924-2557 (612) 924-2570	Lab Number: D8I090120	Page ____ of ____
City: ST. LOUIS PARK, MN 55416	Site Contact: SAME		
Project Name: SAME	Carrier/Waybill Number: FED EX 8008 4631 6768		
Contract/Purchase Order/Quote No			

Analysis: PHENOLS

	Sample I D No and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No	Preservative	Condition on Receipt	PHENOLS
01	DPV-W420TP-090898	9-8-98		WATER	16 oz	AMBER	1	H_2SO_4		X
02	DPV-W420TPD-090898									
03	DPV-W420TPMS-090898									
04	DPV-W420TPMSD-090898									
05	DPV-W420TPFB-090898									
06	DPV-W420TPFBD-090898									
07	DPV-W421TP-090898									
08	DPV-W422TP-090898									
09	DPV-W439TP-090898									
10	DPV-W434TP-090898									
11	GTF-SFRTP-090898									
12	GTF-ACFETP-090898									
13	PCJ-SLP4TP-090898									
14	STP-W410TP-090898									
	STP-W409TP-090898	9-8-98		WATER	16 oz	AMBER	1	H_2SO_4		X

Special Instructions

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

Sample Disposal: ☐ Return To Client ☒ Disposal By Lab ☐ Archive For ____ Months

Turn Around Time Required: ☐ Normal ☐ Rush

QC Level: ☐ I. ☐ II. ☐ III.

Project Specific (Specify)

	Date	Time		Date	Time
1 Relinquished By: M. Zak	9-8-98	1400	1 Received By: Kurt C. Lu	9/9/98	0850
2 Relinquished By			2 Received By		
3 Relinquished By			3 Received By		

Comments

DISTRIBUTION WHITE - Stays with Sample, CANARY - Returned to Client with Report, PINK - Field Copy

Chain of Custody Record

Quanterra

QUA 4124

Client: CITY OF ST. LOUIS PARK	Project Manager: SCOTT ANDERSON	Date: 9-8-98	Chain Of Custody Number: 25620
Address: UTILITY DIVISION, 3752 WOODDALE AVENUE	Telephone Number (Area Code)/Fax Number: 924-2557 (612) 924-2570	Lab Number:	Page ____ of ____
City: ST. LOUIS PARK, MN 55416	Site Contact: SAME		
Project Name: SAME	Carrier/Waybill Number: FED EX 800846316768		
Contract/Purchase Order/Quote No			

Sample I D No and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No	Preservative	Condition on Receipt	Analysis: PPB PAH
DPV-W420-090898	9-8-98		WATER	1 LITER	AMBER	2	N/A		X
DPV-W420D-090898	〃		〃	〃	〃	〃	〃		〃
DPV-W420MS-090898	〃		〃	〃	〃	〃	〃		〃
DPV-W420MSD-090898	〃		〃	〃	〃	〃	〃		〃
DPV-W420FB-090898	〃		〃	〃	〃	〃	〃		〃
DPV-W420FBD-090898	9-8-98		WATER	1 LITER	AMBER	2	NA		X

Special Instructions

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

Sample Disposal: ☐ Return To Client ☒ Disposal By Lab ☐ Archive For ____ Months

Turn Around Time Required: ☐ Normal ☐ Rush

QC Level: ☐ I. ☐ II. ☐ III.

Project Specific (Specify)

	Date	Time		Date	Time
1 Relinquished By: MJ 98	9-8-98	1400	1 Received By: Kurt C. [illegible]	9/9/98	0850
2 Relinquished By			2 Received By		
3 Relinquished By			3 Received By		

Comments

DISTRIBUTION WHITE - Stays with Sample, CANARY - Returned to Client with Report, PINK - Field Copy

Chain of Custody Record

Quanterra

QUA 4124

Client: CITY OF ST. LOUIS PARK UTILITY DIVISION 3752 WOODDALE AVENUE ST. LOUIS PARK, MN 55416	Project Manager: SCOTT ANDERSON	Date: 9-8-98	Chain Of Custody Number: 25630
Address	Telephone Number (Area Code)/Fax Number: 924-2557 (612) 924-2570	Lab Number	Page ____ of ____
City	Site Contact: SAME		
Project Name: SAME	Carrier/Waybill Number: FED EX 800846316768		
Contract/Purchase Order/Quote No			

Sample I.D. No and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No	Preservative	Condition on Receipt	Analysis: PPB PAH
DPU-W421 -090898	9-8-98		WATER	1LITER	AMBER	2	N/A		X
DPU-W422 -090898									
DPU-W439 -090898									
DPU-W434 -090898									
GTF-SFR -090898									
GTF-ACFE -090898	9-8-98		WATER	1LITER	AMBER	2	N/A		X

Special Instructions

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

Sample Disposal: [ ] Return To Client [X] Disposal By Lab [ ] Archive For ____ Months

Turn Around Time Required: [ ] Normal [ ] Rush

QC Level: [ ] I. [ ] II. [ ] III.

Project Specific (Specify)

	Date	Time		Date	Time
1 Relinquished By: MZH	9-8-98	1400	1 Received By: Kurt C. [illegible]	9/9/98	0850
2 Relinquished By			2 Received By		
3 Relinquished By			3 Received By		

Comments

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

FOURTH QUARTER
PAH AND PHENOLIC MONITORING

Advanced Analytical Services

Quanterra Incorporated
4955 Yarrow Street
Arvada, Colorado 80002

303 421-6611 Telephone
303 467-9136 Fax

CASE NARRATIVE

FOR

City of St. Louis Park

January 9, 1999

Quanterra Environmental Services

Project Lot Number D8K040122

Introduction

Fourteen aqueous samples (including matrix QC) were received at Quanterra Environmental Services, Denver Laboratory on November 4, 1998. The samples were logged in under Quanterra Denver's project lot number D8K040122. A cross reference associating Quanterra Denver's laboratory sample numbers to the actual field sample number is included. The samples were analyzed for part per billion (ppb) PAHs and total recoverable phenolics.

Data Quality Assessment

The results contained in this report were reviewed relative to data acceptance criteria as specified in the October 1997 QAPP for completeness, precision, accuracy, representativeness and defensibility of the data. Unless otherwise stated below, no quality control problems or technical difficulties were encountered which would impact the interpretation or use of data in this report.

All samples were extracted within holding times, however, due to laboratory error the 40 day analytical holding time was exceeded. The method blank, LCS, and samples –001 through –006 including the matrix spike and matrix spike duplicate samples were originally analyzed within holding times. The data for both sets of analyses correlate well. Both sets of data are included in the raw data.

Client sample with laboratory Id D8K040122-001, -002, -005 and -007 were analyzed at a dilution due to target analytes exceeding the linear range of the instrument. The reporting limits were raised accordingly.

The native concentration of naphthalene in the sample was greater than 5 times the concentration of the spiked amount in the matrix spike and matrix spike duplicate samples. As a result the percent recoveries are suspect and should not be used to demonstrate recoveries from the matrix.

Except for the above, this data package is in compliance with the terms and conditions of the October 1997 QAPP, both technically and for completeness.

Reported By: Phyllis Dickinson for Kurt Ill **Date:** Jan. 14, 1999

Kurt C. Ill
Customer Service Manger

EXECUTIVE SUMMARY - Detection Highlights

D8K040122

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
DPV-W420 11/03/98 001				
2,3-Benzofuran	48 J	200	ug/L	SW846 8270B
2,3-Dihydroindene	300	200	ug/L	SW846 8270B
Indene	61 J	200	ug/L	SW846 8270B
Naphthalene	1600	200	ug/L	SW846 8270B
Benzo(b)thiophene	120 J	200	ug/L	SW846 8270B
2-Methylnaphthalene	91 J	200	ug/L	SW846 8270B
1-Methylnaphthalene	110 J	200	ug/L	SW846 8270B
Biphenyl	21 J	200	ug/L	SW846 8270B
Acenaphthene	100 J	200	ug/L	SW846 8270B
Dibenzofuran	37 J	200	ug/L	SW846 8270B
Fluorene	34 J	200	ug/L	SW846 8270B
Carbazole	48 J	200	ug/L	SW846 8270B
Total Phenols	0.18 Q	0.010	mg/L	MCAWW 420.1
DPV-W420 D 11/03/98 002				
2,3-Benzofuran	49 J	200	ug/L	SW846 8270B
2,3-Dihydroindene	280	200	ug/L	SW846 8270B
Indene	55 J	200	ug/L	SW846 8270B
Naphthalene	1500	200	ug/L	SW846 8270B
Benzo(b)thiophene	110 J	200	ug/L	SW846 8270B
2-Methylnaphthalene	82 J	200	ug/L	SW846 8270B
1-Methylnaphthalene	98 J	200	ug/L	SW846 8270B
Biphenyl	18 J	200	ug/L	SW846 8270B
Acenaphthene	88 J	200	ug/L	SW846 8270B
Dibenzofuran	33 J	200	ug/L	SW846 8270B
Fluorene	34 J	200	ug/L	SW846 8270B
Carbazole	49 J	200	ug/L	SW846 8270B
Total Phenols	0.18 Q	0.010	mg/L	MCAWW 420.1
DPV-W420 FB 11/03/98 003				
2,3-Dihydroindene	0.090 J	10	ug/L	SW846 8270B
Biphenyl	0.013 J	10	ug/L	SW846 8270B
DPV-W420 FBD 11/03/98 004				
Benzo(e)pyrene	0.073 J	10	ug/L	SW846 8270B

(Continued on next page)

EXECUTIVE SUMMARY - Detection Highlights

D8K040122

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
DPV-W421 11/03/98 005				
2,3-Dihydroindene	110	20	ug/L	SW846 8270B
Naphthalene	220	20	ug/L	SW846 8270B
Benzo(b)thiophene	47	20	ug/L	SW846 8270B
1-Methylnaphthalene	43	20	ug/L	SW846 8270B
Biphenyl	6.1 J	20	ug/L	SW846 8270B
Acenaphthene	41	20	ug/L	SW846 8270B
Dibenzofuran	10 J	20	ug/L	SW846 8270B
Fluorene	12 J	20	ug/L	SW846 8270B
Phenanthrene	4.0 J	20	ug/L	SW846 8270B
Acridine	2.3 J	20	ug/L	SW846 8270B
Carbazole	23	20	ug/L	SW846 8270B
Total Phenols	0.026	0.0050	mg/L	MCAWW 420.1
DPV-W422 11/03/98 006				
2,3-Dihydroindene	5.0 J	10	ug/L	SW846 8270B
Benzo(b)thiophene	0.20 J	10	ug/L	SW846 8270B
Acenaphthene	7.9 J	10	ug/L	SW846 8270B
Total Phenols	0.0091	0.0050	mg/L	MCAWW 420.1
DPV-W439 11/03/98 007				
2,3-Benzofuran	8.2 J	100	ug/L	SW846 8270B
2,3-Dihydroindene	170	100	ug/L	SW846 8270B
Indene	87 J	100	ug/L	SW846 8270B
Naphthalene	520	100	ug/L	SW846 8270B
Benzo(b)thiophene	45 J	100	ug/L	SW846 8270B
1-Methylnaphthalene	65 J	100	ug/L	SW846 8270B
Biphenyl	7.0 J	100	ug/L	SW846 8270B
Acenaphthene	52 J	100	ug/L	SW846 8270B
Total Phenols	0.053	0.0050	mg/L	MCAWW 420.1
DPV-W434' 11/03/98 008				
2,3-Dihydroindene	2.0 J	10	ug/L	SW846 8270B
Benzo(b)thiophene	0.40 J	10	ug/L	SW846 8270B
Dibenzothiophene	9.2 J	10	ug/L	SW846 8270B
GTF-SFR 11/03/98 009				
2,3-Dihydroindene	29	10	ug/L	SW846 8270B
Benzo(b)thiophene	9.5 J	10	ug/L	SW846 8270B
Indole	0.062 J	10	ug/L	SW846 8270B

(Continued on next page)

SAMPLE SUMMARY

D8K040122

WO #	SAMPLE#	CLIENT SAMPLE ID	DATE	TIME
CN438	001	DPV-W420	11/03/98	
CN43N	002	DPV-W420' D	11/03/98	
CN43X	003	DPV-W420 'FB	11/03/98	
CN443	004	DPV-W420 FBD	11/03/98	
CN444	005	DPV-W421	11/03/98	
CN445	006	DPV-W422	11/03/98	
CN449	007	DPV-W439	11/03/98	
CN44A	008	DPV-W434	11/03/98	
CN44J	009	GTF-SFP	11/03/98	
CN44L	010	GTF-ACFE	11/03/98	
CN44Q	011	PCJ-SLP4	11/03/98	
CN44V	012	STP-W410	11/03/98	
CN451	013	PCJ-W23-110398	11/03/98	

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

GC/MS Semivolatiles

Lot-Sample #...: D8K040122-001 Work Order #...: CN438101 Matrix.....: WATER
Date Sampled...: 11/03/98 Date Received..: 11/04/98
Prep Date.....: 11/07/98 Analysis Date..: 01/08/99
Prep Batch #...: 8313369 Analysis Time..: 00:28
Dilution Factor: 20

Method.....: SW846 8270B

PARAMETER	RESULT	REPORTING LIMIT	UNITS
2,3-Benzofuran	48 J	200	ug/L
2,3-Dihydroindene	300	200	ug/L
Indene	61 J	200	ug/L
Naphthalene	1600	200	ug/L
Benzo(b)thiophene	120 J	200	ug/L
Quinoline	ND	200	ug/L
Indole	ND	200	ug/L
2-Methylnaphthalene	91 J	200	ug/L
1-Methylnaphthalene	110 J	200	ug/L
Biphenyl	21 J	200	ug/L
Acenaphthylene	ND	200	ug/L
Acenaphthene	100 J	200	ug/L
Dibenzofuran	37 J	200	ug/L
Fluorene	34 J	200	ug/L
Dibenzothiophene	ND	200	ug/L
Phenanthrene	ND	200	ug/L
Anthracene	ND	200	ug/L
Acridine	ND	200	ug/L
Carbazole	48 J	200	ug/L
Fluoranthene	ND	200	ug/L
Pyrene	ND	200	ug/L
Benzo(a)anthracene	ND	200	ug/L
Chrysene	ND	200	ug/L
Benzo(b)fluoranthene	ND	200	ug/L
Benzo(k)fluoranthene	ND	200	ug/L
Benzo(e)pyrene	ND	200	ug/L
Benzo(a)pyrene	ND	200	ug/L
Perylene	ND	200	ug/L
Indeno(1,2,3-cd)pyrene	ND	200	ug/L
Benzo(ghi)perylene	ND	200	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	74	(25 - 160)
Fluorene d-10	83	(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: DPV-W420 D

GC/MS Semivolatiles

Lot-Sample #...: D8K040122-002 Work Order #...: CN43N101 Matrix.....: WATER
Date Sampled...: 11/03/98 Date Received..: 11/04/98
Prep Date.....: 11/07/98 Analysis Date..: 01/07/99
Prep Batch #...: 8313369 Analysis Time..: 23:49
Dilution Factor: 20

Method.....: SW846 8270B

PARAMETER	RESULT	REPORTING LIMIT	UNITS
2,3-Benzofuran	49 J	200	ug/L
2,3-Dihydroindene	280	200	ug/L
Indene	55 J	200	ug/L
Naphthalene	1500	200	ug/L
Benzo(b)thiophene	110 J	200	ug/L
Quinoline	ND	200	ug/L
Indole	ND	200	ug/L
2-Methylnaphthalene	82 J	200	ug/L
1-Methylnaphthalene	98 J	200	ug/L
Biphenyl	18 J	200	ug/L
Acenaphthylene	ND	200	ug/L
Acenaphthene	88 J	200	ug/L
Dibenzofuran	33 J	200	ug/L
Fluorene	34 J	200	ug/L
Dibenzothiophene	ND	200	ug/L
Phenanthrene	ND	200	ug/L
Anthracene	ND	200	ug/L
Acridine	ND	200	ug/L
Carbazole	49 J	200	ug/L
Fluoranthene	ND	200	ug/L
Pyrene	ND	200	ug/L
Benzo(a)anthracene	ND	200	ug/L
Chrysene	ND	200	ug/L
Benzo(b)fluoranthene	ND	200	ug/L
Benzo(k)fluoranthene	ND	200	ug/L
Benzo(e)pyrene	ND	200	ug/L
Benzo(a)pyrene	ND	200	ug/L
Perylene	ND	200	ug/L
Indeno(1,2,3-cd)pyrene	ND	200	ug/L
Benzo(ghi)perylene	ND	200	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	69	(25 - 160)
Fluorene d-10	72	(36 - 127)
Naphthalene-d8	71	(37 - 107)

NOTE(S):

J Estimated result Result is less than RL

CITY OF ST. LOUIS PARK

Client Sample ID: DPV-W421

GC/MS Semivolatiles

Lot-Sample #...: D8K040122-005 Work Order #...: CN444101 Matrix.....: WATER
Date Sampled...: 11/03/98 Date Received..: 11/04/98
Prep Date.....: 11/07/98 Analysis Date..: 01/07/99
Prep Batch #...: 8313369 Analysis Time..: 22:30
Dilution Factor: 2

Method.....: SW846 8270B

PARAMETER	RESULT	REPORTING LIMIT	UNITS
2,3-Benzofuran	ND	20	ug/L
2,3-Dihydroindene	110	20	ug/L
Indene	ND	20	ug/L
Naphthalene	220	20	ug/L
Benzo(b)thiophene	47	20	ug/L
Quinoline	ND	20	ug/L
Indole	ND	20	ug/L
2-Methylnaphthalene	ND	20	ug/L
1-Methylnaphthalene	43	20	ug/L
Biphenyl	6.1 J	20	ug/L
Acenaphthylene	ND	20	ug/L
Acenaphthene	41	20	ug/L
Dibenzofuran	10 J	20	ug/L
Fluorene	12 J	20	ug/L
Dibenzothiophene	ND	20	ug/L
Phenanthrene	4.0 J	20	ug/L
Anthracene	ND	20	ug/L
Acridine	2.3 J	20	ug/L
Carbazole	23	20	ug/L
Fluoranthene	ND	20	ug/L
Pyrene	ND	20	ug/L
Benzo(a)anthracene	ND	20	ug/L
Chrysene	ND	20	ug/L
Benzo(b)fluoranthene	ND	20	ug/L
Benzo(k)fluoranthene	ND	20	ug/L
Benzo(e)pyrene	ND	20	ug/L
Benzo(a)pyrene	ND	20	ug/L
Perylene	ND	20	ug/L
Indeno(1,2,3-cd)pyrene	ND	20	ug/L
Benzo(ghi)perylene	ND	20	ug/L

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

NOTE(S):

J Estimated result Result is less than RL.

CITY OF ST. LOUIS PARK

Client Sample ID: DPV-W422

GC/MS Semivolatiles

Lot-Sample #...: D8K040122-006 Work Order #...: CN445101 Matrix.....: WATER
Date Sampled...: 11/03/98 Date Received..: 11/04/98
Prep Date.....: 11/07/98 Analysis Date..: 01/07/99
Prep Batch #...: 8313369 Analysis Time..: 21:14
Dilution Factor: 1

Method.....: SW846 8270B

PARAMETER	RESULT	REPORTING LIMIT	UNITS
2,3-Benzofuran	ND	10	ug/L
2,3-Dihydroindene	5.0 J	10	ug/L
Indene	ND	10	ug/L
Naphthalene	ND	10	ug/L
Benzo(b)thiophene	0.20 J	10	ug/L
Quinoline	ND	10	ug/L
Indole	ND	10	ug/L
2-Methylnaphthalene	ND	10	ug/L
1-Methylnaphthalene	ND	10	ug/L
Biphenyl	ND	10	ug/L
Acenaphthylene	ND	10	ug/L
Acenaphthene	7.9 J	10	ug/L
Dibenzofuran	ND	10	ug/L
Fluorene	ND	10	ug/L
Dibenzothiophene	ND	10	ug/L
Phenanthrene	ND	10	ug/L
Anthracene	ND	10	ug/L
Acridine	ND	10	ug/L
Carbazole	ND	10	ug/L
Fluoranthene	ND	10	ug/L
Pyrene	ND	10	ug/L
Benzo(a)anthracene	ND	10	ug/L
Chrysene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
Benzo(e)pyrene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Perylene	ND	10	ug/L
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Benzo(ghi)perylene	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	69	(25 - 160)
Fluorene d-10	72	(36 - 127)
Naphthalene-d8	67	(37 - 107)

NOTE(S):

J Estimated result Result is less than RL

CITY OF ST. LOUIS PARK

Client Sample ID: DPV-W439

GC/MS Semivolatiles

Lot-Sample #...: D8K040122-007 Work Order #...: CN449101 Matrix.....: WATER
Date Sampled...: 11/03/98 Date Received..: 11/04/98
Prep Date.....: 11/07/98 Analysis Date..: 01/07/99
Prep Batch #...: 8313369 Analysis Time..: 23:09
Dilution Factor: 10

Method.....: SW846 8270B

PARAMETER	RESULT	REPORTING LIMIT	UNITS
2,3-Benzofuran	8.2 J	100	ug/L
2,3-Dihydroindene	170	100	ug/L
Indene	87 J	100	ug/L
Naphthalene	520	100	ug/L
Benzo(b)thiophene	45 J	100	ug/L
Quinoline	ND	100	ug/L
Indole	ND	100	ug/L
2-Methylnaphthalene	ND	100	ug/L
1-Methylnaphthalene	65 J	100	ug/L
Biphenyl	7.0 J	100	ug/L
Acenaphthylene	ND	100	ug/L
Acenaphthene	52 J	100	ug/L
Dibenzofuran	ND	100	ug/L
Fluorene	ND	100	ug/L
Dibenzothiophene	ND	100	ug/L
Phenanthrene	ND	100	ug/L
Anthracene	ND	100	ug/L
Acridine	ND	100	ug/L
Carbazole	ND	100	ug/L
Fluoranthene	ND	100	ug/L
Pyrene	ND	100	ug/L
Benzo(a)anthracene	ND	100	ug/L
Chrysene	ND	100	ug/L
Benzo(b)fluoranthene	ND	100	ug/L
Benzo(k)fluoranthene	ND	100	ug/L
Benzo(e)pyrene	ND	100	ug/L
Benzo(a)pyrene	ND	100	ug/L
Perylene	ND	100	ug/L
Indeno(1,2,3-cd)pyrene	ND	100	ug/L
Benzo(ghi)perylene	ND	100	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	76	(25 - 160)
Fluorene d-10	69	(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: DPV-W434

GC/MS Semivolatiles

Lot-Sample #...: D8K040122-008 Work Order #...: CN44A101 Matrix.....: WATER
Date Sampled...: 11/03/98 Date Received..: 11/04/98
Prep Date.....: 11/07/98 Analysis Date..: 01/07/99
Prep Batch #...: 8313369 Analysis Time..: 03:02
Dilution Factor: 1

Method.....: SW846 8270B

PARAMETER	RESULT	REPORTING LIMIT	UNITS
2,3-Benzofuran	ND	10	ug/L
2,3-Dihydroindene	2.0 J	10	ug/L
Indene	ND	10	ug/L
Naphthalene	ND	10	ug/L
Benzo(b)thiophene	0.40 J	10	ug/L
Quinoline	ND	10	ug/L
Indole	ND	10	ug/L
2-Methylnaphthalene	ND	10	ug/L
1-Methylnaphthalene	ND	10	ug/L
Biphenyl	ND	10	ug/L
Acenaphthylene	ND	10	ug/L
Acenaphthene	ND	10	ug/L
Dibenzofuran	ND	10	ug/L
Fluorene	ND	10	ug/L
Dibenzothiophene	9.2 J	10	ug/L
Phenanthrene	ND	10	ug/L
Anthracene	ND	10	ug/L
Acridine	ND	10	ug/L
Carbazole	ND	10	ug/L
Fluoranthene	ND	10	ug/L
Pyrene	ND	10	ug/L
Benzo(a)anthracene	ND	10	ug/L
Chrysene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
Benzo(e)pyrene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Perylene	ND	10	ug/L
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Benzo(ghi)perylene	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	73	(25 - 160)
Fluorene d-10	87	(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: DPV-W420TP

General Chemistry

Lot-Sample #...: D8K040122-001 Work Order #...: CN438 Matrix.....: WATER
Date Sampled...: 11/03/98 Date Received..: 11/04/98

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Total Phenols	0.18 Q	0.010	mg/L	MCAWW 420.1	11/20-11/23/98	8328330

Dilution Factor: 2 Analysis Time .: 22:00

NOTE(S):

RL Reporting Limit

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

CITY OF ST. LOUIS PARK

Client Sample ID: DPV-W420TPD

General Chemistry

Lot-Sample #...: D8K040122-002 Work Order #...: CN43N Matrix.....: WATER
Date Sampled...: 11/03/98 Date Received..: 11/04/98

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH_#
Total Phenols	0.18 Q	0.010	mg/L	MCAWW 420.1	11/20-11/23/98	8328330

Dilution Factor: 2 Analysis Time..: 22.00

NOTE(S):

RL Reporting Limit

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

CITY OF ST. LOUIS PARK

Client Sample ID: DPV-W421TP

General Chemistry

Lot-Sample #...: D8K040122-005 Work Order #...: CN444 Matrix.....: WATER
Date Sampled...: 11/03/98 Date Received..: 11/04/98

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Total Phenols	0.026	0.0050	mg/L	MCAWW 420.1	11/20-11/23/98	8328330

Dilution Factor: 1 Analysis Time . 22:00

CITY OF ST. LOUIS PARK

Client Sample ID: DPV-W422TP

General Chemistry

Lot-Sample #...: D8K040122-006 Work Order #...: CN445 Matrix.....: WATER
Date Sampled...: 11/03/98 Date Received..: 11/04/98

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Total Phenols	0.0091	0.0050	mg/L	MCAWW 420.1	11/20-11/23/98	8328330

Dilution Factor: 1 Analysis Time..: 22:00

CITY OF ST. LOUIS PARK

Client Sample ID: DPV-W439TP

General Chemistry

Lot-Sample #...: D8K040122-007 Work Order #...: CN449 Matrix.....: WATER
Date Sampled...: 11/03/98 Date Received..: 11/04/98

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Total Phenols	0.053	0.0050	mg/L	MCAWW 420.1	11/20-11/23/98	8328330

Dilution Factor: 1 Analysis Time .: 22:00

CITY OF ST. LOUIS PARK

Client Sample ID: DPV-W434TP

General Chemistry

Lot-Sample #...: D8K040122-008 Work Order #...: CN44A Matrix.....: WATER
Date Sampled...: 11/03/98 Date Received..: 11/04/98

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Total Phenols	ND	0.0050	mg/L	MCAWW 420.1	11/20-11/23/98	8328330

Dilution Factor: 1 Analysis Time .: 22.00

Chain of Custody Record

Quanterra Environmental Services

QUA 4124

Client: CITY OF ST. LOUIS PARK UTILITY DIVISION	Project Manager: SCOTT ANDERSON	Date: 11-3-98	Chain Of Custody Number: 25655
Address: 3752 WOODDALE AVENUE	Telephone Number (Area Code)/Fax Number: 924-2597 (612) 924-2570	Lab Number:	Page ____ of ____
City: ST. LOUIS PARK, MN 55416	Site Contact: SAME		
Project Name: SAME	Carrier/Waybill Number: FED EX 8CC846316713		
Contract/Purchase Order/Quote No:			

Sample I D No and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No	Preservative	Condition on Receipt	Analysis: Phenols
DPV-W420TP	11-3-98		WATER	16 oz	AMBER	1	H_2SO_4		X
DPV-W420TPD									
DPV-W420TPMS									
DPV-W420TPMSD									
DPV-W420TPFD									
DPV-W420TPFAD									
DPV-W421TP									
DPV-W422TP									
DPV-W439TP									
DPV-W434TP									
STF-SFRTP									
STF-ACFETP									
PCJ-SLP4TP									
STP-W410TP	11-3-98		WATER	16 oz	AMBER	1	H_2SO_4		X

Special Instructions

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

Sample Disposal: ☐ Return To Client ☒ Disposal By Lab ☐ Archive For ____ Months

Turn Around Time Required: ☐ Normal ☐ Rush

QC Level: ☐ I. ☐ II. ☐ III

Project Specific (Specify):

1 Relinquished By: MZB	Date: 11-3-98	Time: 1400	1 Received By: [illegible]	Date: 11/4/98	Time: 0900
2 Relinquished By:	Date:	Time:	2 Received By:	Date:	Time:
3 Relinquished By:	Date:	Time:	3 Received By:	Date:	Time:

Comments: N-SLP [illegible] 7.2°C

DISTRIBUTION: W[illegible] Stays with Sample, CANARY - Returned to Client with Report, PINK - Field Copy

Chain of Custody Record

Quanterra Environmental Services

QUA 4124

Client: CITY OF ST. LOUIS PARK UTILITY DIVISION	Project Manager: SCOTT ANDERSON	Date: 11-3-98	Chain Of Custody Number: 25656
Address: 3752 WOODDALE AVENUE	Telephone Number (Area Code)/Fax Number: 924-2557 (612) 924-2570	Lab Number:	Page ____ of ____
City: ST. LOUIS PARK, MN 55416	Site Contact: SAME		
Project Name: SAME	Carrier/Waybill Number: FED EX 800846316 212		
Contract/Purchase Order/Quote No			

Sample I D No and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No	Preservative	Condition on Receipt	Analysis: PPB PAH
DPU-W420 -110398	11-3-98		WATER	1 LITER	AMBER	2	N/A		X
DPU-W420D -110398									
DPU-W420MS -110398									
DPU-W420MSD -110398									
DPU-W420FB -110398									
DPU-W420FBD-110398	11-3-98		WATER	1 LITER	AMBER	2	N/A		X

Special Instructions

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

Sample Disposal: ☐ Return To Client ☒ Disposal By Lab ☐ Archive For ____ Months

Turn Around Time Required: ☐ Normal ☐ Rush

QC Level: ☐ I. ☐ II ☐ III.

Project Specific (Specify)

	Date	Time		Date	Time
1 Relinquished By: MZ	11-03-98	1400	1 Received By: [illegible]	11/4/98	0900
2 Relinquished By:			2 Received By:		
3 Relinquished By:			3 Received By:		

Comments: WSLP 0003 2.8°C

DISTRIBUTION. WHITE - Stays with Sample, CANARY - Returned to Client with Report, PINK - Field Copy

Chain of Custody Record

Quanterra Environmental Services

QUA-4124

Client: CITY OF ST. LOUIS PARK UTILITY DIVISION 3752 WOODDALE AVENUE ST. LOUIS PARK, MN 55416	Project Manager: SCOTT ANDERSON	Date: 11-3-98	Chain Of Custody Number: 25657
Address	Telephone Number (Area Code)/Fax Number: 924-2557 (612) 924-2570	Lab Number	Page ____ of ____
City	Site Contact: SAME		
Project Name: SAME	Carrier/Waybill Number: FED EX 800846316713		
Contract/Purchase Order/Quote No			

Sample I D No and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No	Preservative	Condition on Receipt	Analysis: PPB PAH
DPV-W421 - 110398	11-3-98		WATER	1 LITER	AMBER	2	N/A		X
DPV-W422 - 110398									
DPV-W439 - 110398									
DPV-W434 - 110398									
GTF-SFR - 110398									
GTF-ACFE - 110398	11-3-98		WATER	1 LITER	AMBER	2	N/A		X

Special Instructions

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

Sample Disposal: [ ] Return To Client [X] Disposal By Lab [ ] Archive For ____ Months

Turn Around Time Required: [ ] Normal [ ] Rush

QC Level: [ ] I. [ ] II. [ ] III.

Project Specific (Specify)

	Date	Time		Date	Time
1 Relinquished By: MJH	11-3-98	1400	1 Received By: Kurt C. [illegible]	11/4/98	0900
2 Relinquished By			2 Received By		
3 Relinquished By			3 Received By		

Comments: CAP CO[illegible] - 1.4°C

DISTRIBUTION. W[illegible] - Stays with Sample, CANARY - Returned to Client with Report, PINK - Field Copy

Chain of Custody Record

Quanterra Environmental Services

QUA 4124

Client: CITY OF ST. LOUIS PARK UTILITY DIVISION	Project Manager: Scott Anderson	Date: 11-3-98	Chain Of Custody Number: 25658
Address: 3752 WOODDALE AVENUE	Telephone Number (Area Code)/Fax Number: 924-2557 (612) 924-2570	Lab Number:	Page ____ of ____
City: ST. LOUIS PARK, MN 55416	Site Contact: SAME		
Project Name: SAME	Carrier/Waybill Number: FED EX 800846316713		
Contract/Purchase Order/Quote No:			

Sample I D No and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No	Preservative	Condition on Receipt	Analysis: PPB PAH
STP-W410-110398	11-3-98		WATER	1 LITER	AMBER	2	N/A		X
PCJ-W23-110398	11-3-98		WATER	1 LITER	AMBER	2	N/A		X

Special Instructions

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

Sample Disposal: [ ] Return To Client [X] Disposal By Lab [ ] Archive For ____ Months

Turn Around Time Required: [ ] Normal [ ] Rush

QC Level: [ ] I. [ ] II. [ ] III.

Project Specific (Specify)

	Date	Time		Date	Time
1 Relinquished By: [signature]	11-3-98	1900	1 Received By: [signature]	11/4/98	0900
2 Relinquished By:			2 Received By:		
3 Relinquished By:			3 Received By:		

Comments: 45 SXP 0002 7.2°C

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

SECTION 9.5

RAP SECTION 9.5
PAH MONITORING

WELLS

W1 W18 W19 W20 W22
W27 W101 W120 W121
W124 W130 W131 W143
W424 W426 W428 W431
W432 W433

FIRST HALF
PAH MONITORING

Quanterra
Environmental Services

Quanterra Incorporated
4955 Yarrow Street
Arvada, Colorado 80002

303 421-6611 Telephone
303 431-7171 Fax

June 1, 1998

Mr. Scott E. Anderson
Superintendent of Utilities
City of St. Louis Park
3752 Wooddale Ave.
St. Louis Park, MN 55416-2216

Dear Scott:

Enclosed is the report for 11 aqueous samples received at Quanterra Environmental Services, Denver on April 22, 1998. Included with the report is a quality control summary. Please call if you have any questions.

Sincerely,

Kurt C. Ill
Technology Manager

Enclosures

Quanterra #0060040

A 1

Quanterra
Environmental Services

ANALYTICAL RESULTS

FOR

CITY OF ST. LOUIS PARK

QUANTERRA NO. 060040

June 1, 1998

Prepared by: _____
Kurt C. III

Quanterra
Environmental Services

NARRATIVE

On April 22, 1998, Quanterra Environmental Services, Denver received 11 aqueous samples from the City of St. Louis Park.

This report presents the analytical results as well as supporting information to aid in the evaluation and interpretation of the data.

General Comments

Dilution factors listed on the data sheets for the aqueous semivolatile organic parameters are based on the volume of sample actually extracted relative to the nominal volume of 1.0 liter. Any additional dilutions performed on the samples after extraction are also included in the dilution factor. All results and reporting limits are adjusted relative to the sample volume extracted and any subsequent dilutions performed. Dilution factors are rounded to two significant figures for reporting; all calculations are performed before rounding.

GC/MS Semivolatile Organics

Client samples with laboratory Ids 060040-0001SA, -0003SA through –0009SA were analyzed at a dilution due to target analytes exceeding the linear range of the instrument. The reporting limits were raised accordingly. As a result of dilution, the surrogate compounds associated with the above samples were not detected and are reported as "NC", not calculated.

The matrix spike and matrix spike duplicate samples were analyzed at a dilution due to target analytes exceeding the linear range of the instrument. As a result of this dilution, the matrix spike compounds were not detected and are reported as "NC", not calculated.

With the exceptions noted above, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. All laboratory QC samples analyzed in conjunction with the samples in this project were within established control limits.

Quanterra
Environmental Services

SAMPLE DESCRIPTION INFORMATION
for
City of St. Louis Park

Lab ID	Client ID	Matrix	Sampled Date	Sampled Time	Received Date
060040-0001-SA	DPV-W27-042198	AQUEOUS	21 APR 98	14:00	22 APR 98
060040-0002-FB	IGV-W105FB-042198	AQUEOUS	21 APR 98	00:00	22 APR 98
060040-0002-FD	IGV-W105FBD-042198	AQUEOUS	21 APR 98	00:00	22 APR 98
060040-0003-SA	DPV-W143-042198	AQUEOUS	21 APR 98	09:40	22 APR 98
060040-0004-SA	DPV-W432-042198	AQUEOUS	21 APR 98	10:35	22 APR 98
060040-0005-SA	DPV-W22-042198	AQUEOUS	21 APR 98	11:30	22 APR 98
060040-0006-SA	DPV-W426-042198	AQUEOUS	21 APR 98	11:40	22 APR 98
060040-0007-SA	IGV-W105-042198	AQUEOUS	21 APR 98	00:00	22 APR 98
060040-0007-FD	IGV-W105D-042198	AQUEOUS	21 APR 98	00:00	22 APR 98
060040-0008-SA	DPV-W101-042198	AQUEOUS	21 APR 98	08:30	22 APR 98
060040-0009-SA	DPV-W120-042198	AQUEOUS	21 APR 98	09:00	22 APR 98

Quanterra Environmental Services

Method 8270B SIM - Polynuclear Aromatic Hydrocarbons
Method 8270B

Client Name: City of St. Louis Park
Client ID: DPV-W27-042198
Lab ID: 060040-0001-SA
Matrix: AQUEOUS Sampled: 21 APR 98 Prepared: 24 APR 98
Authorized: 22 APR 98 Received: 22 APR 98 Analyzed: 15 MAY 98

Parameter	Result	Units	Reporting Limit	
2,3-Benzofuran	ND	ng/L	2500	
2,3-Dihydroindene	28000	ng/L	2500	
Indene	27000	ng/L	440	
Naphthalene	38000	ng/L	3200	
Benzo(b)thiophene	12000	ng/L	440	
Quinoline	ND	ng/L	3400	
1H-Indole	ND	ng/L	1200	
2-Methylnaphthalene	ND	ng/L	1900	
1-Methylnaphthalene	18000	ng/L	1400	
Biphenyl	4400	ng/L	2100	
Acenaphthylene	790	ng/L	690	
Acenaphthene	29000	ng/L	640	
Dibenzofuran	7800	ng/L	490	
Fluorene	10000	ng/L	490	
Dibenzothiophene	ND	ng/L	540	
Phenanthrene	3200	ng/L	640	B
Anthracene	ND	ng/L	1300	
Acridine	ND	ng/L	3000	
Carbazole	6100	ng/L	930	
Fluoranthene	ND	ng/L	1500	
Pyrene	ND	ng/L	690	
Benzo(a)anthracene	ND	ng/L	1200	
Chrysene	ND	ng/L	1400	
Benzo(b)fluoranthene	ND	ng/L	1200	
Benzo(k)fluoranthene	ND	ng/L	1100	
Benzo(e)pyrene	ND	ng/L	930	
Benzo(a)pyrene	ND	ng/L	1100	
Perylene	ND	ng/L	1200	
Indeno(1,2,3-cd)pyrene	ND	ng/L	1000	
Dibenz(a,h)anthracene	ND	ng/L	780	
Benzo(g,h,i)perylene	ND	ng/L	1400	

Surrogate	Recovery		Limits
Naphthalene-d8	NC	%	24-108
Fluorene-d10	NC	%	21-103
Chrysene-d12	NC	%	1-137

Dilution factor is 490. All results and limits are corrected for dilution.

B = Compound is also detected in the blank.
NC = Not Calculated, calculation not applicable.
ND = Not Detected

Reported By: Tom Claeys Approved By: Audrey Cornell

Quanterra Environmental Services

Method 8270B SIM - Polynuclear Aromatic Hydrocarbons
Method 8270B

Client Name: City of St. Louis Park
Client ID: DPV-W143-042198
Lab ID: 060040-0003-SA
Matrix: AQUEOUS Sampled: 21 APR 98 Prepared: 24 APR 98
Authorized: 22 APR 98 Received: 22 APR 98 Analyzed: 15 MAY 98

Parameter	Result	Units	Reporting Limit
2,3-Benzofuran	ND	ng/L	240
2,3-Dihydroindene	3100	ng/L	240
Indene	140	ng/L	43
Naphthalene	ND	ng/L	310
Benzo(b)thiophene	1200	ng/L	43
Quinoline	ND	ng/L	330
1H-Indole	ND	ng/L	120
2-Methylnaphthalene	ND	ng/L	180
1-Methylnaphthalene	ND	ng/L	130
Biphenyl	ND	ng/L	200
Acenaphthylene	ND	ng/L	66
Acenaphthene	ND	ng/L	62
Dibenzofuran	ND	ng/L	47
Fluorene	ND	ng/L	47
Dibenzothiophene	ND	ng/L	52
Phenanthrene	ND	ng/L	62
Anthracene	ND	ng/L	130
Acridine	ND	ng/L	290
Carbazole	ND	ng/L	90
Fluoranthene	ND	ng/L	150
Pyrene	ND	ng/L	66
Benzo(a)anthracene	ND	ng/L	120
Chrysene	ND	ng/L	130
Benzo(b)fluoranthene	ND	ng/L	120
Benzo(k)fluoranthene	ND	ng/L	110
Benzo(e)pyrene	ND	ng/L	90
Benzo(a)pyrene	ND	ng/L	110
Perylene	ND	ng/L	120
Indeno(1,2,3-cd)pyrene	ND	ng/L	100
Dibenz(a,h)anthracene	ND	ng/L	76
Benzo(g,h,i)perylene	ND	ng/L	130

Surrogate	Recovery		Limits
Naphthalene-d8	NC	%	24-108
Fluorene-d10	NC	%	21-103
Chrysene-d12	NC	%	1-137

Dilution factor is 47. All results and limits are corrected for dilution.

NC = Not Calculated, calculation not applicable.
ND = Not Detected

Reported By: Tom Claeys Approved By: Audrey Cornell

Quanterra Environmental Services

Method 8270B SIM - Polynuclear Aromatic Hydrocarbons
Method 8270B

Client Name: City of St. Louis Park
Client ID: DPV-W432-042198
Lab ID: 060040-0004-SA
Matrix: AQUEOUS Sampled: 21 APR 98 Prepared: 24 APR 98
Authorized: 22 APR 98 Received: 22 APR 98 Analyzed: 15 MAY 98

Parameter	Result	Units	Reporting Limit
2,3-Benzofuran	ND	ng/L	490
2,3-Dihydroindene	4400	ng/L	480
Indene	1200	ng/L	86
Naphthalene	1100	ng/L	620
Benzo(b)thiophene	2600	ng/L	86
Quinoline	ND	ng/L	660
1H-Indole	ND	ng/L	240
2-Methylnaphthalene	ND	ng/L	370
1-Methylnaphthalene	ND	ng/L	270
Biphenyl	ND	ng/L	410
Acenaphthylene	ND	ng/L	130
Acenaphthene	ND	ng/L	120
Dibenzofuran	ND	ng/L	95
Fluorene	ND	ng/L	95
Dibenzothiophene	ND	ng/L	100
Phenanthrene	ND	ng/L	120
Anthracene	ND	ng/L	260
Acridine	ND	ng/L	580
Carbazole	ND	ng/L	180
Fluoranthene	ND	ng/L	300
Pyrene	ND	ng/L	130
Benzo(a)anthracene	ND	ng/L	240
Chrysene	ND	ng/L	270
Benzo(b)fluoranthene	ND	ng/L	240
Benzo(k)fluoranthene	ND	ng/L	220
Benzo(e)pyrene	ND	ng/L	180
Benzo(a)pyrene	ND	ng/L	220
Perylene	ND	ng/L	240
Indeno(1,2,3-cd)pyrene	ND	ng/L	200
Dibenz(a,h)anthracene	ND	ng/L	150
Benzo(g,h,i)perylene	ND	ng/L	270

Surrogate	Recovery		Limits
Naphthalene-d8	NC	%	24-108
Fluorene-d10	NC	%	21-103
Chrysene-d12	NC	%	1-137

Dilution factor is 95. All results and limits are corrected for dilution.

NC = Not Calculated, calculation not applicable.
ND = Not Detected

Reported By: Tom Claeys Approved By: Audrey Cornell

Quanterra Environmental Services

Method 8270B SIM - Polynuclear Aromatic Hydrocarbons
Method 8270B

Client Name: City of St. Louis Park
Client ID: DPV-W22-042198
Lab ID: 060040-0005-SA
Matrix: AQUEOUS Sampled: 21 APR 98 Prepared: 24 APR 98
Authorized: 22 APR 98 Received: 22 APR 98 Analyzed: 13 MAY 98

Parameter	Result	Units	Reporting Limit
2,3-Benzofuran	150	ng/L	49
2,3-Dihydroindene	640	ng/L	48
Indene	260	ng/L	8.6
Naphthalene	ND	ng/L	62
Benzo(b)thiophene	ND	ng/L	8.6
Quinoline	ND	ng/L	66
1H-Indole	ND	ng/L	24
2-Methylnaphthalene	ND	ng/L	37
1-Methylnaphthalene	ND	ng/L	27
Biphenyl	ND	ng/L	41
Acenaphthylene	ND	ng/L	13
Acenaphthene	15	ng/L	12
Dibenzofuran	ND	ng/L	9.5
Fluorene	ND	ng/L	9.5
Dibenzothiophene	ND	ng/L	11
Phenanthrene	ND	ng/L	12
Anthracene	ND	ng/L	26
Acridine	ND	ng/L	58
Carbazole	ND	ng/L	18
Fluoranthene	ND	ng/L	30
Pyrene	ND	ng/L	13
Benzo(a)anthracene	ND	ng/L	24
Chrysene	ND	ng/L	27
Benzo(b)fluoranthene	ND	ng/L	24
Benzo(k)fluoranthene	ND	ng/L	22
Benzo(e)pyrene	ND	ng/L	18
Benzo(a)pyrene	ND	ng/L	22
Perylene	ND	ng/L	24
Indeno(1,2,3-cd)pyrene	ND	ng/L	20
Dibenz(a,h)anthracene	ND	ng/L	15
Benzo(g,h,i)perylene	ND	ng/L	27

Surrogate	Recovery		Limits
Naphthalene-d8	NC	%	24-108
Fluorene-d10	NC	%	21-103
Chrysene-d12	NC	%	1-137

Dilution factor is 9.5. All results and limits are corrected for dilution.

NC = Not Calculated, calculation not applicable.
ND = Not Detected

Reported By: Tom Claeys Approved By: Audrey Cornell

Quanterra Environmental Services

Method 8270B SIM - Polynuclear Aromatic Hydrocarbons
Method 8270B

Client Name: City of St. Louis Park
Client ID: DPV-W426-042198
Lab ID: 060040-0006-SA
Matrix: AQUEOUS Sampled: 21 APR 98 Prepared: 24 APR 98
Authorized: 22 APR 98 Received: 22 APR 98 Analyzed: 15 MAY 98

Parameter	Result	Units	Reporting Limit	
2,3-Benzofuran	ND	ng/L	970	
2,3-Dihydroindene	7700	ng/L	950	
Indene	4200	ng/L	170	
Naphthalene	7300	ng/L	1200	
Benzo(b)thiophene	3400	ng/L	170	
Quinoline	ND	ng/L	1300	
1H-Indole	ND	ng/L	470	
2-Methylnaphthalene	ND	ng/L	740	
1-Methylnaphthalene	17000	ng/L	530	
Biphenyl	2000	ng/L	820	
Acenaphthylene	4700	ng/L	270	
Acenaphthene	21000	ng/L	250	
Dibenzofuran	7900	ng/L	190	
Fluorene	15000	ng/L	190	
Dibenzothiophene	960	ng/L	210	
Phenanthrene	9600	ng/L	250	B
Anthracene	1100	ng/L	510	
Acridine	ND	ng/L	1200	
Carbazole	4900	ng/L	360	
Fluoranthene	600	ng/L	590	
Pyrene	460	ng/L	270	
Benzo(a)anthracene	ND	ng/L	470	
Chrysene	ND	ng/L	530	
Benzo(b)fluoranthene	ND	ng/L	470	
Benzo(k)fluoranthene	ND	ng/L	440	
Benzo(e)pyrene	ND	ng/L	360	
Benzo(a)pyrene	ND	ng/L	440	
Perylene	ND	ng/L	470	
Indeno(1,2,3-cd)pyrene	ND	ng/L	400	
Dibenz(a,h)anthracene	ND	ng/L	300	
Benzo(g,h,i)perylene	ND	ng/L	530	

Surrogate	Recovery		Limits
Naphthalene-d8	NC	%	24-108
Fluorene-d10	NC	%	21-103
Chrysene-d12	NC	%	1-137

Dilution factor is 190. All results and limits are corrected for dilution.

B = Compound is also detected in the blank.
NC = Not Calculated, calculation not applicable.
ND = Not Detected

Reported By: Tom Claeys Approved By: Audrey Cornell

Quanterra Environmental Services

Method 8270B SIM - Polynuclear Aromatic Hydrocarbons
Method 8270B

Client Name: City of St. Louis Park
Client ID: DPV-W101-042198
Lab ID: 060040-0008-SA
Matrix: AQUEOUS Sampled: 21 APR 98 Prepared: 24 APR 98
Authorized: 22 APR 98 Received: 22 APR 98 Analyzed: 15 MAY 98

Parameter	Result	Units	Reporting Limit
2,3-Benzofuran	ND	ng/L	960
2,3-Dihydroindene	12000	ng/L	950
Indene	190	ng/L	170
Naphthalene	ND	ng/L	1200
Benzo(b)thiophene	4600	ng/L	170
Quinoline	ND	ng/L	1300
1H-Indole	ND	ng/L	470
2-Methylnaphthalene	ND	ng/L	740
1-Methylnaphthalene	ND	ng/L	530
Biphenyl	ND	ng/L	810
Acenaphthylene	ND	ng/L	260
Acenaphthene	550	ng/L	250
Dibenzofuran	ND	ng/L	190
Fluorene	ND	ng/L	190
Dibenzothiophene	ND	ng/L	210
Phenanthrene	ND	ng/L	250
Anthracene	ND	ng/L	510
Acridine	ND	ng/L	1200
Carbazole	ND	ng/L	360
Fluoranthene	ND	ng/L	590
Pyrene	ND	ng/L	260
Benzo(a)anthracene	ND	ng/L	470
Chrysene	ND	ng/L	530
Benzo(b)fluoranthene	ND	ng/L	470
Benzo(k)fluoranthene	ND	ng/L	430
Benzo(e)pyrene	ND	ng/L	360
Benzo(a)pyrene	ND	ng/L	430
Perylene	ND	ng/L	470
Indeno(1,2,3-cd)pyrene	ND	ng/L	400
Dibenz(a,h)anthracene	ND	ng/L	300
Benzo(g,h,i)perylene	ND	ng/L	530

Surrogate	Recovery		Limits
Naphthalene-d8	NC	%	24-108
Fluorene-d10	NC	%	21-103
Chrysene-d12	NC	%	1-137

Dilution factor is 190. All results and limits are corrected for dilution.

NC = Not Calculated, calculation not applicable.
ND = Not Detected

Reported By: Tom Claeys Approved By: Audrey Cornell

Quanterra Environmental Services

Method 8270B SIM - Polynuclear Aromatic Hydrocarbons
Method 8270B

Client Name: City of St. Louis Park
Client ID: DPV-W120-042198
Lab ID: 060040-0009-SA
Matrix: AQUEOUS Sampled: 21 APR 98 Prepared: 24 APR 98
Authorized: 22 APR 98 Received: 22 APR 98 Analyzed: 18 MAY 98

Parameter	Result	Units	Reporting Limit
2,3-Benzofuran	ND	ng/L	130
2,3-Dihydroindene	1700	ng/L	130
Indene	110	ng/L	23
Naphthalene	ND	ng/L	170
Benzo(b)thiophene	440	ng/L	23
Quinoline	ND	ng/L	180
1H-Indole	ND	ng/L	64
2-Methylnaphthalene	ND	ng/L	100
1-Methylnaphthalene	ND	ng/L	72
Biphenyl	ND	ng/L	110
Acenaphthylene	ND	ng/L	36
Acenaphthene	67	ng/L	33
Dibenzofuran	ND	ng/L	26
Fluorene	ND	ng/L	26
Dibenzothiophene	ND	ng/L	28
Phenanthrene	ND	ng/L	33
Anthracene	ND	ng/L	69
Acridine	ND	ng/L	160
Carbazole	ND	ng/L	49
Fluoranthene	ND	ng/L	79
Pyrene	ND	ng/L	36
Benzo(a)anthracene	ND	ng/L	64
Chrysene	ND	ng/L	72
Benzo(b)fluoranthene	ND	ng/L	64
Benzo(k)fluoranthene	ND	ng/L	59
Benzo(e)pyrene	ND	ng/L	49
Benzo(a)pyrene	ND	ng/L	59
Perylene	ND	ng/L	64
Indeno(1,2,3-cd)pyrene	ND	ng/L	54
Dibenz(a,h)anthracene	ND	ng/L	41
Benzo(g,h,i)perylene	ND	ng/L	72

Surrogate	Recovery		Limits
Naphthalene-d8	NC	%	24-108
Fluorene-d10	NC	%	21-103
Chrysene-d12	NC	%	1-137

Dilution factor is 26. All results and limits are corrected for dilution.

NC = Not Calculated, calculation not applicable.
ND = Not Detected

Reported By: Tom Claeys Approved By: Audrey Cornell

Chain of Custody Record

Quanterra

QUA-4124

Client: SLP	Project Manager: Scott Anderson	Date: 4-21-98	Chain Of Custody Number: 24342
Address: 3752 Wooddale Ave	Telephone Number (Area Code)/Fax Number: 612 924 2557	Lab Number: 60040	Page ____ of ____
City: St. Louis Park; State: MN; Zip Code: 55416	Site Contact: Bill Gregg		
Project Name: Reilly Site	Carrier/Waybill Number:		
Contract/Purchase Order/Quote No:			

Analysis: PAH ppt 75

	Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt
08	DPV-W101-042198	4-21-98	0830	Water	6L	1L Amb.	6		
09	DPV-W120-042198	4-21-98	0900	"	6L	"	6		

Special Instructions

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

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For ____ Months

Turn Around Time Required: ☐ Normal ☐ Rush

QC Level: ☐ I. ☐ II. ☐ III.

Project Specific (Specify):

	Date	Time		Date	Time
1. Relinquished By: William M Gregg	4-21-98	1700	1. Received By: Rosalla Dalton	4-22-98	0830
2. Relinquished By			2. Received By		
3 Relinquished By			3 Received By		

Comments

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

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Chain of Custody Record

Quanterra

QUA 4124

Client: City of St. Louis Park	Project Manager: Scott Anderson	Date: 4/21/98	Chain Of Custody Number: 24343
Address: 3752 Wooddale Ave	Telephone Number (Area Code)/Fax Number: (612) 924-2557	Lab Number: 60040	Page 1 of 1
City: St. Louis Park; State: MN; Zip Code: 55416	Site Contact: Bill Gregg/ENSR		
Project Name: Reilly Site	Carrier/Waybill Number: FedEx		
Contract/Purchase Order/Quote No.			

	Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Analysis: PAH-PPL (35)
05	DPV-W22-042198	4/21/98	1130	H_2O	6L	1L Amb	6	None		X
06	DPV-W426-042198	"	1140	"	"	"	"	"		"

Special Instructions

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown	Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Turn Around Time Required: ☐ Normal ☐ Rush	QC Level: ☐ I. ☐ II. ☐ III.
	Project Specific (Specify)

	Date	Time		Date	Time
1 Relinquished By: [signature]	4/21/98	1700	1. Received By: [signature]	4-22-98	0830
2 Relinquished By			2 Received By		
3 Relinquished By			3 Received By		

Comments

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

A 30

Chain of Custody Record

Quanterra

QUA-4124

Client: SLP	Project Manager: Scott Anderson	Date: 4-21-98	Chain Of Custody Number: 24345
Address: 3752 Wooddale Ave	Telephone Number (Area Code)/Fax Number: 612 924 2557	Lab Number: 60040	Page ____ of ____
City: St Louis Park; State: MN; Zip Code: 55416	Site Contact: Bill Gregg		
Project Name: Reilly Site	Carrier/Waybill Number:		
Contract/Purchase Order/Quote No			

	Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Analysis: PAH 8270
03	DPV-W143-042198	4-21-98	0940	Water	6L	1L Amb	6			X
04	DPV-W432-042198	4-21-98	1035	"	6L	"	6			X

Special Instructions

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

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For ____ Months

Turn Around Time Required: ☐ Normal ☐ Rush

QC Level: ☐ I. ☐ II. ☐ III.

Project Specific (Specify)

	Date	Time		Date	Time
1. Relinquished By: William M. Gregg	4-21-98	1700	1. Received By: Paul Dalton	4-22-98	0850
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

DISTRIBU[illegible] WHITE - Stays with Sample, CANARY - Returned to Client with Report; PINK - Field Copy

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Chain of Custody Record

Quanterra

QUA-4124

Client: City of St. Louis Park	Project Manager: Scott Anderson	Date: 4/21/98	Chain Of Custody Number: 24344
Address: 3752 Woodale Ave	Telephone Number (Area Code)/Fax Number: (612) 924-2557	Lab Number: 60040	Page 1 of 1
City: St. Louis Park; State: MN; Zip Code: 55416	Site Contact: Bill Gray/EMSR		
Project Name: Reilly Site	Carrier/Waybill Number: FedEx		
Contract/Purchase Order/Quote No			

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Analysis: PAH-PPT (15)
01 OPV-W27-042498	4/21/98	1400	H_2O	6L	1L Amber	6	none		

Special Instructions

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

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required: ☐ Normal ☐ Rush

QC Level: ☐ I. ☐ II. ☐ III.

Project Specific (Specify)

1. Relinquished By: [signature]	Date: 4/21/98	Time: 1700	1. Received By: [signature]	Date: 4-22-98	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 Sample, CANARY - Returned to Client with Report, PINK - Field Copy

A 27

Quanterra
Environmental Services

Quanterra Incorporated
4955 Yarrow Street
Arvada, Colorado 80002

303 421-6611 Telephone
303 431-7171 Fax

July 17, 1998

Mr. Scott Anderson
City of St. Louis Park
3752 Wooddale Ave.
St. Louis Park, MN 55416-2216

Dear Mr. Anderson:

Enclosed is the report for eight water samples received at Quanterra Incorporated, Denver Laboratory on May 5, 1998. Included in the report is a quality control summary.

Please call if you have any questions.

Sincerely,

Christina Mott
Program Manager

bal
Enclosures

Quanterra # D8E050138

Quanterra

ANALYTICAL REPORT

Reilly Tar & Chemical NPL Site

Lot #: D8E050138

Scott Anderson

City of St. Louis Park

QUANTERRA INCORPORATED

Lindsay Breyer
Project Manager

July 15, 1998

Quanterra

Case Narrative

Method 8270A surrogate fluorene d-10 was out of control in sample D8E050138-008. The sample was reprepped outside of holding time and reanalyzed with confirming results. Both sets of data have been reported.

With noted exceptions, 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.

Quanterra

EXECUTIVE SUMMARY - Detection Highlights

D8E050138

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
PCJ-SLP6-050498 05/04/98 001				
Acenaphthylene	16	1.4	ng/L	SW846 8270A SIM
Acenaphthene	50	1.3	ng/L	SW846 8270A SIM
Dibenzofuran	4.6	1.0	ng/L	SW846 8270A SIM
Fluorene	20	1.0	ng/L	SW846 8270A SIM
Phenanthrene	3.4	1.3	ng/L	SW846 8270A SIM
Indene	2.8	0.90	ng/L	SW846 8270A SIM
2,3-Dihydroindene	44	5.0	ng/L	SW846 8270A SIM
Benzo(b)thiophene	4.7	0.90	ng/L	SW846 8270A SIM
DPV-W20-050498 05/04/98 11:00 002				
Acenaphthene	18	13	ng/L	SW846 8270A SIM
Indene	36	9.0	ng/L	SW846 8270A SIM
2,3-Dihydroindene	1000	50	ng/L	SW846 8270A SIM
Benzo(b)thiophene	40	9.0	ng/L	SW846 8270A SIM
DPV-W1-050498 05/04/98 11:45 003				
Naphthalene	34	32	ng/L	SW846 8270A SIM
2-Methylnaphthalene	33	20	ng/L	SW846 8270A SIM
Acenaphthene	19	6.5	ng/L	SW846 8270A SIM
Dibenzofuran	11	5.0	ng/L	SW846 8270A SIM
Phenanthrene	16	6.5	ng/L	SW846 8270A SIM
Carbazole	14	9.5	ng/L	SW846 8270A SIM
Fluoranthene	20	16	ng/L	SW846 8270A SIM
Pyrene	34	7.0	ng/L	SW846 8270A SIM
Benzo(b)fluoranthene	13	12	ng/L	SW846 8270A SIM
Indene	13	4.5	ng/L	SW846 8270A SIM
1-Methylnaphthalene	23	14	ng/L	SW846 8270A SIM
2,3-Dihydroindene	28	25	ng/L	SW846 8270A SIM
DPV-W19-050498 05/04/98 09:00 004				
Acenaphthylene	1.9	1.4	ng/L	SW846 8270A SIM
Naphthalene	18	6.5	ng/L	SW846 8270A SIM
2-Methylnaphthalene	17	3.9	ng/L	SW846 8270A SIM
Acenaphthene	4.8	1.3	ng/L	SW846 8270A SIM
Dibenzofuran	3.7	1.0	ng/L	SW846 8270A SIM
Fluorene	4.6	1.0	ng/L	SW846 8270A SIM
Phenanthrene	19	1.3	ng/L	SW846 8270A SIM
Pyrene	6.8	1.4	ng/L	SW846 8270A SIM
Indene	6.9	0.90	ng/L	SW846 8270A SIM
1-Methylnaphthalene	12	2.8	ng/L	SW846 8270A SIM

(Continued on next page)

Quanterra

EXECUTIVE SUMMARY - Detection Highlights

D8E050138

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
DPV-W19-050498 05/04/98 09:00 004				
2,3-Dihydroindene	4.8 J	5.0	ng/L	SW846 8270A SIM
Dibenzothiophene	1.4	1.1	ng/L	SW846 8270A SIM
DPV-W18-050498 05/04/98 09:40 005				
Acenaphthene	84	6.5	ng/L	SW846 8270A SIM
Carbazole	42	9.5	ng/L	SW846 8270A SIM
Indene	28	4.5	ng/L	SW846 8270A SIM
2,3-Dihydroindene	400	25	ng/L	SW846 8270A SIM
Benzo(b)thiophene	73	4.5	ng/L	SW846 8270A SIM
PCJ-SLP6D-050498 05/04/98 008				
Acenaphthylene	8.7	1.4	ng/L	SW846 8270A SIM
Acenaphthylene	14	1.3	ng/L	SW846 8270A SIM
Naphthalene	8.1	6.2	ng/L	SW846 8270A SIM
Acenaphthene	26	1.3	ng/L	SW846 8270A SIM
Acenaphthene	44	1.2	ng/L	SW846 8270A SIM
Dibenzofuran	2.5	1.0	ng/L	SW846 8270A SIM
Dibenzofuran	3.8	0.96	ng/L	SW846 8270A SIM
Fluorene	11	1.0	ng/L	SW846 8270A SIM
Fluorene	14	0.96	ng/L	SW846 8270A SIM
Phenanthrene	1.9	1.3	ng/L	SW846 8270A SIM
Phenanthrene	2.6	1.2	ng/L	SW846 8270A SIM
Indene	1.5	0.90	ng/L	SW846 8270A SIM
Indene	2.8	0.86	ng/L	SW846 8270A SIM
2,3-Dihydroindene	24	5.0	ng/L	SW846 8270A SIM
2,3-Dihydroindene	42	4.8	ng/L	SW846 8270A SIM
Benzo(b)thiophene	2.6	0.90	ng/L	SW846 8270A SIM
Benzo(b)thiophene	4.1	0.86	ng/L	SW846 8270A SIM

Quanterra

SAMPLE SUMMARY

D8E050138

WO #	SAMPLE#	CLIENT SAMPLE ID	DATE	TIME
CGX34	001	PCJ-SLP6-050498	05/04/98	
CGX37	002	DPV-W20-050498	05/04/98	11:00
CGX38	003	DPV-W1-050498	05/04/98	11:45
CGX39	004	DPV-W19-050498	05/04/98	09:00
CGX3A	005	DPV-W18-050498	05/04/98	09:40
CGX49	006	PCJ-SLP6FB-050498	05/04/98	
CGX4C	007	PCJ-SLP6FBD-050498	05/04/98	
CGX4D	008	PCJ-SLP6D-050498	05/04/98	

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

Quanterra

CITY OF ST. LOUIS PARK

Client Sample ID: DPV-W20-050498

GC/MS Semivolatiles

Lot-Sample #...: D8E050138-002 Work Order #...: CGX37101 Matrix.....: WATER
Date Sampled...: 05/04/98 11:00 Date Received..: 05/05/98
Prep Date.....: 05/10/98 Analysis Date..: 05/29/98
Prep Batch #...: 8130121 Analysis Time..: 12:28
Dilution Factor: 10 Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	ND	14	ng/L
Naphthalene	ND	65	ng/L
2-Methylnaphthalene	ND	39	ng/L
Acenaphthene	**18**	**13**	**ng/L**
Dibenzofuran	ND	10	ng/L
Fluorene	ND	10	ng/L
Phenanthrene	ND	13	ng/L
Anthracene	ND	27	ng/L
Carbazole	ND	19	ng/L
Fluoranthene	ND	31	ng/L
Pyrene	ND	14	ng/L
Benzo(a)anthracene	ND	25	ng/L
Chrysene	ND	28	ng/L
Benzo(b)fluoranthene	ND	25	ng/L
Benzo(k)fluoranthene	ND	23	ng/L
Benzo(a)pyrene	ND	23	ng/L
Indeno(1,2,3-cd)pyrene	ND	21	ng/L
Benzo(ghi)perylene	ND	28	ng/L
Indene	**36**	**9.0**	**ng/L**
1-Methylnaphthalene	ND	28	ng/L
2,3-Benzofuran	ND	51	ng/L
2,3-Dihydroindene	**1000**	**50**	**ng/L**
Benzo(b)thiophene	**40**	**9.0**	**ng/L**
Indole	ND	25	ng/L
Biphenyl	ND	43	ng/L
Dibenzothiophene	ND	11	ng/L
Acridine	ND	61	ng/L
Benzo(e)pyrene	ND	19	ng/L
Perylene	ND	25	ng/L
Quinoline	ND	69	ng/L
Dibenz(a,h)anthracene	ND	16	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	NC,SRD	(10 - 118)
Fluorene d-10	NC,SRD	(41 - 162)
Naphthalene-d8	NC,SRD	(21 - 108)

NOTE(S):

NC The recovery and/or RPD were not calculated

SRD The surrogate recovery was not calculated because the extract was diluted beyond the ability to quantitate a recovery.

Quanterra

CITY OF ST. LOUIS PARK

Client Sample ID: DPV-W1-050498

GC/MS Semivolatiles

Lot-Sample #...: D8E050138-003 Work Order #...: CGX38101 Matrix.....: WATER
Date Sampled...: 05/04/98 11:45 Date Received..: 05/05/98
Prep Date.....: 05/10/98 Analysis Date..: 06/01/98
Prep Batch #...: 8130121 Analysis Time..: 09:18
Dilution Factor: 5 Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	ND	7.0	ng/L
Naphthalene	34	32	ng/L
2-Methylnaphthalene	33	20	ng/L
Acenaphthene	19	6.5	ng/L
Dibenzofuran	11	5.0	ng/L
Fluorene	ND	5.0	ng/L
Phenanthrene	16	6.5	ng/L
Anthracene	ND	14	ng/L
Carbazole	14	9.5	ng/L
Fluoranthene	20	16	ng/L
Pyrene	34	7.0	ng/L
Benzo(a)anthracene	ND	12	ng/L
Chrysene	ND	14	ng/L
Benzo(b)fluoranthene	13	12	ng/L
Benzo(k)fluoranthene	ND	12	ng/L
Benzo(a)pyrene	ND	12	ng/L
Indeno(1,2,3-cd)pyrene	ND	10	ng/L
Benzo(ghi)perylene	ND	14	ng/L
Indene	13	4.5	ng/L
1-Methylnaphthalene	23	14	ng/L
2,3-Benzofuran	ND	26	ng/L
2,3-Dihydroindene	28	25	ng/L
Benzo(b)thiophene	ND	4.5	ng/L
Indole	ND	12	ng/L
Biphenyl	ND	22	ng/L
Dibenzothiophene	ND	5.5	ng/L
Acridine	ND	30	ng/L
Benzo(e)pyrene	ND	9.5	ng/L
Perylene	ND	12	ng/L
Quinoline	ND	34	ng/L
Dibenz(a,h)anthracene	ND	8.0	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	NC,SRD	(10 - 118)
Fluorene d-10	NC,SRD	(41 - 162)
Naphthalene-d8	NC,SRD	(21 - 108)

NOTE(S):

NC The recovery and/or RPD were not calculated

SRD The surrogate recovery was not calculated because the extract was diluted beyond the ability to quantitate a recovery

Quanterra

CITY OF ST. LOUIS PARK

Client Sample ID: DPV-W19-050498

GC/MS Semivolatiles

Lot-Sample #...: D8E050138-004 Work Order #...: CGX39101 Matrix.....: WATER
Date Sampled...: 05/04/98 09:00 Date Received..: 05/05/98
Prep Date.....: 05/10/98 Analysis Date..: 05/28/98
Prep Batch #...: 8130121 Analysis Time..: 14:41
Dilution Factor: 1 Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	1.9	1.4	ng/L
Naphthalene	18	6.5	ng/L
2-Methylnaphthalene	17	3.9	ng/L
Acenaphthene	4.8	1.3	ng/L
Dibenzofuran	3.7	1.0	ng/L
Fluorene	4.6	1.0	ng/L
Phenanthrene	19	1.3	ng/L
Anthracene	ND	2.7	ng/L
Carbazole	ND	1.9	ng/L
Fluoranthene	ND	3.1	ng/L
Pyrene	6.8	1.4	ng/L
Benzo(a)anthracene	ND	2.5	ng/L
Chrysene	ND	2.8	ng/L
Benzo(b)fluoranthene	ND	2.5	ng/L
Benzo(k)fluoranthene	ND	2.3	ng/L
Benzo(a)pyrene	ND	2.3	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Benzo(ghi)perylene	ND	2.8	ng/L
Indene	6.9	0.90	ng/L
1-Methylnaphthalene	12	2.8	ng/L
2,3-Benzofuran	ND	5.1	ng/L
2,3-Dihydroindene	4.8 J	5.0	ng/L
Benzo(b)thiophene	ND	0.90	ng/L
Indole	ND	2.5	ng/L
Biphenyl	ND	4.3	ng/L
Dibenzothiophene	1.4	1.1	ng/L
Acridine	ND	6.1	ng/L
Benzo(e)pyrene	ND	1.9	ng/L
Perylene	ND	2.5	ng/L
Quinoline	ND	6.9	ng/L
Dibenz(a,h)anthracene	ND	1.6	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	35	(10 - 118)
Fluorene d-10	77	(41 - 162)
Naphthalene-d8	71	(21 - 108)

NOTE(S):

J Estimated result Result is less than RL.

Quanterra

CITY OF ST. LOUIS PARK

Client Sample ID: DPV-W18-050498

GC/MS Semivolatiles

Lot-Sample #...: D8E050138-005 Work Order #...: CGX3A101 Matrix.....: WATER
Date Sampled...: 05/04/98 09:40 Date Received..: 05/05/98
Prep Date.....: 05/10/98 Analysis Date..: 05/29/98
Prep Batch #...: 8130121 Analysis Time..: 14:16
Dilution Factor: 5 Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	ND	7.0	ng/L
Naphthalene	ND	32	ng/L
2-Methylnaphthalene	ND	20	ng/L
Acenaphthene	**84**	**6.5**	**ng/L**
Dibenzofuran	ND	5.0	ng/L
Fluorene	ND	5.0	ng/L
Phenanthrene	ND	6.5	ng/L
Anthracene	ND	14	ng/L
Carbazole	**42**	**9.5**	**ng/L**
Fluoranthene	ND	16	ng/L
Pyrene	ND	7.0	ng/L
Benzo(a)anthracene	ND	12	ng/L
Chrysene	ND	14	ng/L
Benzo(b)fluoranthene	ND	12	ng/L
Benzo(k)fluoranthene	ND	12	ng/L
Benzo(a)pyrene	ND	12	ng/L
Indeno(1,2,3-cd)pyrene	ND	10	ng/L
Benzo(ghi)perylene	ND	14	ng/L
Indene	**28**	**4.5**	**ng/L**
1-Methylnaphthalene	ND	14	ng/L
2,3-Benzofuran	ND	26	ng/L
2,3-Dihydroindene	**400**	**25**	**ng/L**
Benzo(b)thiophene	**73**	**4.5**	**ng/L**
Indole	ND	12	ng/L
Biphenyl	ND	22	ng/L
Dibenzothiophene	ND	5.5	ng/L
Acridine	ND	30	ng/L
Benzo(e)pyrene	ND	9.5	ng/L
Perylene	ND	12	ng/L
Quinoline	ND	34	ng/L
Dibenz(a,h)anthracene	ND	8.0	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	NC,SRD	(10 - 118)
Fluorene d-10	NC,SRD	(41 - 162)
Naphthalene-d8	NC,SRD	(21 - 108)

NOTE(S):

NC The recovery and/or RPD were not calculated

SRD The surrogate recovery was not calculated because the extract was diluted beyond the ability to quantitate a recovery

D8E050138

Chain of Custody Record

Quanterra

QUA-4124

Client: City of St Louis Park	Project Manager: Bill Gregg	Date: 5-4-98	Chain Of Custody Number: 24346
Address: 3752 Woodale Ave	Telephone Number (Area Code)/Fax Number: 612-924-2557	Lab Number:	Page 1 of 1
City: St Louis Park; State: ; Zip Code:	Site Contact: Scott Anderson		
Project Name: SLP	Carrier/Waybill Number:		
Contract/Purchase Order/Quote No:			

Sample I.D No and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No	Preservative	Condition on Receipt	Analysis: PPT-PAH
DPV-W20-050498	5-4-98	11:00	H_2O	6 Liters	1L Amber	6	—		X
DPV-W1-050498	5-4-98	11:45	H_2O	6 Liters	1L Amber	6	—		X

Special Instructions: PPT-5

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

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required: ☐ Normal ☐ Rush

QC Level: ☐ I. ☐ II. ☐ III.

Project Specific (Specify):

	Date	Time		Date	Time
1 Relinquished By: [signature]	5-4-98	17:00	1 Received By: Priscilla Dalton	5-5-98	0830
2 Relinquished By:			2 Received By:		
3 Relinquished By:			3 Received By:		

Comments:

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

D8E050138

Chain of Custody Record

Quanterra

QUA 4124

Client: City of St Louis Park	Project Manager: Bill Gregg	Date: 5/4/98	Chain Of Custody Number: 24347
Address: 3352 Woodale	Telephone Number (Area Code)/Fax Number: 612-924-2557	Lab Number:	Page 2 of 2
City: St Louis Park State: Mn Zip Code: 55416	Site Contact: Scott Anderson		
Project Name: SLP	Carrier/Waybill Number:		
Contract/Purchase Order/Quote No:			

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No	Preservative	Condition on Receipt	Analysis: DPT-PAH
DPV-W19-050498	5-4-98	9:00	H_2O	6 L	1L Amber	6	—		X
DPV-W18-050498	5-4-98	9:40	H_2O	6 L	" "	6	—		X

Special Instructions: DPT-5

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

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required: ☐ Normal ☐ Rush

QC Level: ☐ I. ☐ II. ☐ III

Project Specific (Specify):

1 Relinquished By: Pat Moore	Date: 5-4-98	Time: 17:00	1 Received By: Paulette Dalton	Date: 5-5-98	Time: 0850
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 Sample, CANARY - Returned to Client with Report, PINK - Field Copy

Quanterra
Environmental Services

Quanterra Incorporated
4955 Yarrow Street
Arvada, Colorado 80002

303 421-6611 Telephone
303 431-7171 Fax

July 17, 1998

Mr. Scott Anderson
City of St. Louis Park
3752 Wooddale Ave.
St. Louis Park, MN 55416-2216

Dear Mr. Anderson:

Enclosed is the report for eleven water samples received at Quanterra Incorporated, Denver Laboratory on May 6, 1998. Included in the report is a quality control summary.

Please call if you have any questions.

Sincerely,

Christina Mott
Program Manager

bal
Enclosures

Quanterra # D8E060147

ANALYTICAL REPORT

Reilly Tar & Chemical NPL Site

Lot #: D8E060147

Scott Anderson

City of St. Louis Park

QUANTERRA INCORPORATED

Lindsay Breyer
Project Manager

July 15, 1998

Quanterra

Case Narrative

With noted exceptions, 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.

Quanterra

EXECUTIVE SUMMARY - Detection Highlights

D8E060147

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
DPV-W121-050598 05/05/98 16:15 001				
Naphthalene	77	65	ng/L	SW846 8270A SIM
2-Methylnaphthalene	38 J	39	ng/L	SW846 8270A SIM
Acenaphthene	19	13	ng/L	SW846 8270A SIM
Dibenzofuran	12	10	ng/L	SW846 8270A SIM
Fluorene	10	10	ng/L	SW846 8270A SIM
Phenanthrene	31	13	ng/L	SW846 8270A SIM
Pyrene	27	14	ng/L	SW846 8270A SIM
1-Methylnaphthalene	28	28	ng/L	SW846 8270A SIM
DPV-W130FB-050598 05/05/98 13:30 002				
Phenanthrene	1.4	1.3	ng/L	SW846 8270A SIM
DPV-W130FBD-050598 05/05/98 13:30 003				
Phenanthrene	1.3	1.3	ng/L	SW846 8270A SIM
DPV-W433-050598 05/05/98 13:00 004				
Acenaphthene	13	13	ng/L	SW846 8270A SIM
Phenanthrene	6.6 J	13	ng/L	SW846 8270A SIM
Indene	39	9.0	ng/L	SW846 8270A SIM
2,3-Dihydroindene	980	50	ng/L	SW846 8270A SIM
Benzo(b)thiophene	210	9.0	ng/L	SW846 8270A SIM
DPV-W431-050598 05/05/98 15:40 005				
Acenaphthene	84	26	ng/L	SW846 8270A SIM
Carbazole	42	38	ng/L	SW846 8270A SIM
Indene	28	18	ng/L	SW846 8270A SIM
2,3-Dihydroindene	400	100	ng/L	SW846 8270A SIM
Benzo(b)thiophene	73	18	ng/L	SW846 8270A SIM
DPV-W424-050598 05/05/98 10:00 006				
Naphthalene	27	6.5	ng/L	SW846 8270A SIM
2-Methylnaphthalene	11	3.9	ng/L	SW846 8270A SIM
Acenaphthene	4.4	1.3	ng/L	SW846 8270A SIM
Dibenzofuran	2.1	1.0	ng/L	SW846 8270A SIM
Fluorene	2.1	1.0	ng/L	SW846 8270A SIM
Phenanthrene	5.7	1.3	ng/L	SW846 8270A SIM
Pyrene	2.4	1.4	ng/L	SW846 8270A SIM
Indene	5.5	0.90	ng/L	SW846 8270A SIM

(Continued on next page)

Quanterra

EXECUTIVE SUMMARY - Detection Highlights

D8E060147

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
DPV-W424-050598 05/05/98 10:00 006				
1-Methylnaphthalene	9.7	2.8	ng/L	SW846 8270A SIM
2,3-Dihydroindene	9.0	5.0	ng/L	SW846 8270A SIM
Benzo(b)thiophene	2.8	0.90	ng/L	SW846 8270A SIM
Acridine	7.5	6.1	ng/L	SW846 8270A SIM
DPV-W131-050598 05/05/98 12:00 007				
Acenaphthylene	1.6	1.4	ng/L	SW846 8270A SIM
Naphthalene	60	6.5	ng/L	SW846 8270A SIM
2-Methylnaphthalene	14	3.9	ng/L	SW846 8270A SIM
Acenaphthene	16	1.3	ng/L	SW846 8270A SIM
Dibenzofuran	6.8	1.0	ng/L	SW846 8270A SIM
Fluorene	7.5	1.0	ng/L	SW846 8270A SIM
Phenanthrene	11	1.3	ng/L	SW846 8270A SIM
Carbazole	5.3	1.9	ng/L	SW846 8270A SIM
Fluoranthene	4.7	3.1	ng/L	SW846 8270A SIM
Pyrene	3.9	1.4	ng/L	SW846 8270A SIM
Indene	21	0.90	ng/L	SW846 8270A SIM
1-Methylnaphthalene	24	2.8	ng/L	SW846 8270A SIM
2,3-Dihydroindene	32	5.0	ng/L	SW846 8270A SIM
Benzo(b)thiophene	9.2	0.90	ng/L	SW846 8270A SIM
Biphenyl	5.3	4.3	ng/L	SW846 8270A SIM
Dibenzothiophene	1.2	1.1	ng/L	SW846 8270A SIM
DPV-W124-050598 05/05/98 09:00 008				
Acenaphthylene	10	1.4	ng/L	SW846 8270A SIM
Naphthalene	15	6.5	ng/L	SW846 8270A SIM
2-Methylnaphthalene	12	3.9	ng/L	SW846 8270A SIM
Acenaphthene	29	1.3	ng/L	SW846 8270A SIM
Dibenzofuran	5.1	1.0	ng/L	SW846 8270A SIM
Fluorene	13	1.0	ng/L	SW846 8270A SIM
Phenanthrene	11	1.3	ng/L	SW846 8270A SIM
Pyrene	7.1	1.4	ng/L	SW846 8270A SIM
Indene	2.4	0.90	ng/L	SW846 8270A SIM
1-Methylnaphthalene	10	2.8	ng/L	SW846 8270A SIM
2,3-Dihydroindene	24	5.0	ng/L	SW846 8270A SIM
Benzo(b)thiophene	3.6	0.90	ng/L	SW846 8270A SIM

(Continued on next page)

Quanterra

EXECUTIVE SUMMARY - Detection Highlights

D8E060147

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
DPV-W428-050598 05/05/98 09:30 009				
Naphthalene	34	26	ng/L	SW846 8270A SIM
2-Methylnaphthalene	24	16	ng/L	SW846 8270A SIM
Acenaphthene	9.1	5.2	ng/L	SW846 8270A SIM
Dibenzofuran	6.1	4.0	ng/L	SW846 8270A SIM
Phenanthrene	10	5.2	ng/L	SW846 8270A SIM
Carbazole	7.7	7.6	ng/L	SW846 8270A SIM
Pyrene	6.6	5.6	ng/L	SW846 8270A SIM
Indene	15	3.6	ng/L	SW846 8270A SIM
1-Methylnaphthalene	19	11	ng/L	SW846 8270A SIM
2,3-Dihydroindene	170	20	ng/L	SW846 8270A SIM
Benzo(b)thiophene	44	3.6	ng/L	SW846 8270A SIM
DPV-W130-050598 05/05/98 13:40 010				
2-Methylnaphthalene	16	16	ng/L	SW846 8270A SIM
Phenanthrene	9.0	5.2	ng/L	SW846 8270A SIM
Pyrene	7.5	5.6	ng/L	SW846 8270A SIM
Indene	4.4	3.6	ng/L	SW846 8270A SIM
Indole	10	10	ng/L	SW846 8270A SIM
DPV-W130D-050598 05/05/98 13:40 011				
2-Methylnaphthalene	23	16	ng/L	SW846 8270A SIM
Phenanthrene	12	5.2	ng/L	SW846 8270A SIM
Pyrene	8.9	5.6	ng/L	SW846 8270A SIM
Indene	5.8	3.6	ng/L	SW846 8270A SIM
1-Methylnaphthalene	14	11	ng/L	SW846 8270A SIM

Quanterra

SAMPLE SUMMARY

D8E060147

WO #	SAMPLE#	CLIENT SAMPLE ID	DATE	TIME
CGXT2	001	DPV-W121-050598	05/05/98	16:15
CGXT9	002	DPV-W130FB-050598	05/05/98	13:30
CGXTC	003	DPV-W130FBD-050598	05/05/98	13:30
CGXTD	004	DPV-W433-050598	05/05/98	13:00
CGXTE	005	DPV-W431-050598	05/05/98	15:40
CGXTF	006	DPV-W424-050598	05/05/98	10:00
CGXTG	007	DPV-W131-050598	05/05/98	12:00
CGXTH	008	DPV-W124-050598	05/05/98	09:00
CGXTJ	009	DPV-W428-050598	05/05/98	09:30
CGXTK	010	DPV-W130-050598	05/05/98	13:40
CGXTL	011	DPV-W130D-050598	05/05/98	13:40

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

Quanterra

CITY OF ST. LOUIS PARK

Client Sample ID: DPV-W121-050598

GC/MS Semivolatiles

Lot-Sample #...: D8E060147-001 Work Order #...: CGXT2101 Matrix.....: WATER
Date Sampled...: 05/05/98 16:15 Date Received..: 05/06/98
Prep Date.....: 05/10/98 Analysis Date..: 05/29/98
Prep Batch #...: 8130121 Analysis Time..: 13:05
Dilution Factor: 10 Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	ND	14	ng/L
Naphthalene	77	65	ng/L
2-Methylnaphthalene	38 J	39	ng/L
Acenaphthene	19	13	ng/L
Dibenzofuran	12	10	ng/L
Fluorene	10	10	ng/L
Phenanthrene	31	13	ng/L
Anthracene	ND	27	ng/L
Carbazole	ND	19	ng/L
Fluoranthene	ND	31	ng/L
Pyrene	27	14	ng/L
Benzo(a)anthracene	ND	25	ng/L
Chrysene	ND	28	ng/L
Benzo(b)fluoranthene	ND	25	ng/L
Benzo(k)fluoranthene	ND	23	ng/L
Benzo(a)pyrene	ND	23	ng/L
Indeno(1,2,3-cd)pyrene	ND	21	ng/L
Benzo(ghi)perylene	ND	28	ng/L
Indene	ND	9.0	ng/L
1-Methylnaphthalene	28	28	ng/L
2,3-Benzofuran	ND	51	ng/L
2,3-Dihydroindene	ND	50	ng/L
Benzo(b)thiophene	ND	9.0	ng/L
Indole	ND	25	ng/L
Biphenyl	ND	43	ng/L
Dibenzothiophene	ND	11	ng/L
Acridine	ND	61	ng/L
Benzo(e)pyrene	ND	19	ng/L
Perylene	ND	25	ng/L
Quinoline	ND	69	ng/L
Dibenz(a,h)anthracene	ND	16	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	NC,SRD	(10 - 118)
Fluorene d-10	NC,SRD	(41 - 162)
Naphthalene-d8	NC,SRD	(21 - 108)

NOTE(S):

NC The recovery and/or RPD were not calculated

SRD The surrogate recovery was not calculated because the extract was diluted beyond the ability to quantitate a recovery

J Estimated result Result is less than RL

Quanterra

CITY OF ST. LOUIS PARK

Client Sample ID: DPV-W433-050598

GC/MS Semivolatiles

Lot-Sample #...: D8E060147-004 Work Order #...: CGXTD101 Matrix.....: WATER
Date Sampled...: 05/05/98 13:00 Date Received..: 05/06/98
Prep Date.....: 05/10/98 Analysis Date..: 05/29/98
Prep Batch #...: 8130121 Analysis Time..: 13:41
Dilution Factor: 10 Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	ND	14	ng/L
Naphthalene	ND	65	ng/L
2-Methylnaphthalene	ND	39	ng/L
Acenaphthene	**13**	**13**	**ng/L**
Dibenzofuran	ND	10	ng/L
Fluorene	ND	10	ng/L
Phenanthrene	**6.6 J**	**13**	**ng/L**
Anthracene	ND	27	ng/L
Carbazole	ND	19	ng/L
Fluoranthene	ND	31	ng/L
Pyrene	ND	14	ng/L
Benzo(a)anthracene	ND	25	ng/L
Chrysene	ND	28	ng/L
Benzo(b)fluoranthene	ND	25	ng/L
Benzo(k)fluoranthene	ND	23	ng/L
Benzo(a)pyrene	ND	23	ng/L
Indeno(1,2,3-cd)pyrene	ND	21	ng/L
Benzo(ghi)perylene	ND	28	ng/L
Indene	**39**	**9.0**	**ng/L**
1-Methylnaphthalene	ND	28	ng/L
2,3-Benzofuran	ND	51	ng/L
2,3-Dihydroindene	**980**	**50**	**ng/L**
Benzo(b)thiophene	**210**	**9.0**	**ng/L**
Indole	ND	25	ng/L
Biphenyl	ND	43	ng/L
Dibenzothiophene	ND	11	ng/L
Acridine	ND	61	ng/L
Benzo(e)pyrene	ND	19	ng/L
Perylene	ND	25	ng/L
Quinoline	ND	69	ng/L
Dibenz(a,h)anthracene	ND	16	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	NC,SRD	(10 - 118)
Fluorene d-10	NC,SRD	(41 - 162)
Naphthalene-d8	NC,SRD	(21 - 108)

NOTE(S):

NC The recovery and/or RPD were not calculated

SRD The surrogate recovery was not calculated because the extract was diluted beyond the ability to quantitate a recovery

J Estimated result Result is less than RL

Quanterra

CITY OF ST. LOUIS PARK

Client Sample ID: DPV-W431-050598

GC/MS Semivolatiles

Lot-Sample #...: D8E060147-005 Work Order #...: CGXTE101 Matrix.....: WATER
Date Sampled...: 05/05/98 15:40 Date Received..: 05/06/98
Prep Date.....: 05/10/98 Analysis Date..: 05/29/98
Prep Batch #...: 8130121 Analysis Time..: 14:16
Dilution Factor: 20 Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	ND	28	ng/L
Naphthalene	ND	130	ng/L
2-Methylnaphthalene	ND	78	ng/L
Acenaphthene	**84**	**26**	**ng/L**
Dibenzofuran	ND	20	ng/L
Fluorene	ND	20	ng/L
Phenanthrene	ND	26	ng/L
Anthracene	ND	54	ng/L
Carbazole	**42**	**38**	**ng/L**
Fluoranthene	ND	62	ng/L
Pyrene	ND	28	ng/L
Benzo(a)anthracene	ND	50	ng/L
Chrysene	ND	56	ng/L
Benzo(b)fluoranthene	ND	50	ng/L
Benzo(k)fluoranthene	ND	46	ng/L
Benzo(a)pyrene	ND	46	ng/L
Indeno(1,2,3-cd)pyrene	ND	42	ng/L
Benzo(ghi)perylene	ND	56	ng/L
Indene	**28**	**18**	**ng/L**
1-Methylnaphthalene	ND	56	ng/L
2,3-Benzofuran	ND	100	ng/L
2,3-Dihydroindene	**400**	**100**	**ng/L**
Benzo(b)thiophene	**73**	**18**	**ng/L**
Indole	ND	50	ng/L
Biphenyl	ND	86	ng/L
Dibenzothiophene	ND	22	ng/L
Acridine	ND	120	ng/L
Benzo(e)pyrene	ND	38	ng/L
Perylene	ND	50	ng/L
Quinoline	ND	140	ng/L
Dibenz(a,h)anthracene	ND	32	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	NC,SRD	(10 - 118)
Fluorene d-10	NC,SRD	(41 - 162)
Naphthalene-d8	NC,SRD	(21 - 108)

NOTE(S):

NC The recovery and/or RPD were not calculated

SRD The surrogate recovery was not calculated because the extract was diluted beyond the ability to quantitate a recovery

Quanterra

CITY OF ST. LOUIS PARK

Client Sample ID: DPV-W424-050598

GC/MS Semivolatiles

Lot-Sample #...: D8E060147-006 Work Order #...: CGXTF101 Matrix.....: WATER
Date Sampled...: 05/05/98 10:00 Date Received..: 05/06/98
Prep Date.....: 05/10/98 Analysis Date..: 05/28/98
Prep Batch #...: 8130121 Analysis Time..: 18:50
Dilution Factor: 1 Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	ND	1.4	ng/L
Naphthalene	27	6.5	ng/L
2-Methylnaphthalene	11	3.9	ng/L
Acenaphthene	4.4	1.3	ng/L
Dibenzofuran	2.1	1.0	ng/L
Fluorene	2.1	1.0	ng/L
Phenanthrene	5.7	1.3	ng/L
Anthracene	ND	2.7	ng/L
Carbazole	ND	1.9	ng/L
Fluoranthene	ND	3.1	ng/L
Pyrene	2.4	1.4	ng/L
Benzo(a)anthracene	ND	2.5	ng/L
Chrysene	ND	2.8	ng/L
Benzo(b)fluoranthene	ND	2.5	ng/L
Benzo(k)fluoranthene	ND	2.3	ng/L
Benzo(a)pyrene	ND	2.3	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Benzo(ghi)perylene	ND	2.8	ng/L
Indene	5.5	0.90	ng/L
1-Methylnaphthalene	9.7	2.8	ng/L
2,3-Benzofuran	ND	5.1	ng/L
2,3-Dihydroindene	9.0	5.0	ng/L
Benzo(b)thiophene	2.8	0.90	ng/L
Indole	ND	2.5	ng/L
Biphenyl	ND	4.3	ng/L
Dibenzothiophene	ND	1.1	ng/L
Acridine	7.5	6.1	ng/L
Benzo(e)pyrene	ND	1.9	ng/L
Perylene	ND	2.5	ng/L
Quinoline	ND	6.9	ng/L
Dibenz(a,h)anthracene	ND	1.6	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	67	(10 - 118)
Fluorene d-10	118	(41 - 162)
Naphthalene-d8	80	(21 - 108)

Quanterra

CITY OF ST. LOUIS PARK

Client Sample ID: DPV-W131-050598

GC/MS Semivolatiles

Lot-Sample #...: D8E060147-007 Work Order #...: CGXTG101 Matrix.....: WATER
Date Sampled...: 05/05/98 12:00 Date Received..: 05/06/98
Prep Date.....: 05/10/98 Analysis Date..: 05/28/98
Prep Batch #...: 8130121 Analysis Time..: 19:25
Dilution Factor: 1 Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	1.6	1.4	ng/L
Naphthalene	60	6.5	ng/L
2-Methylnaphthalene	14	3.9	ng/L
Acenaphthene	16	1.3	ng/L
Dibenzofuran	6.8	1.0	ng/L
Fluorene	7.5	1.0	ng/L
Phenanthrene	11	1.3	ng/L
Anthracene	ND	2.7	ng/L
Carbazole	5.3	1.9	ng/L
Fluoranthene	4.7	3.1	ng/L
Pyrene	3.9	1.4	ng/L
Benzo(a)anthracene	ND	2.5	ng/L
Chrysene	ND	2.8	ng/L
Benzo(b)fluoranthene	ND	2.5	ng/L
Benzo(k)fluoranthene	ND	2.3	ng/L
Benzo(a)pyrene	ND	2.3	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Benzo(ghi)perylene	ND	2.8	ng/L
Indene	21	0.90	ng/L
1-Methylnaphthalene	24	2.8	ng/L
2,3-Benzofuran	ND	5.1	ng/L
2,3-Dihydroindene	32	5.0	ng/L
Benzo(b)thiophene	9.2	0.90	ng/L
Indole	ND	2.5	ng/L
Biphenyl	5.3	4.3	ng/L
Dibenzothiophene	1.2	1.1	ng/L
Acridine	ND	6.1	ng/L
Benzo(e)pyrene	ND	1.9	ng/L
Perylene	ND	2.5	ng/L
Quinoline	ND	6.9	ng/L
Dibenz(a,h)anthracene	ND	1.6	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	77	(10 - 118)
Fluorene d-10	120	(41 - 162)
Naphthalene-d8	95	(21 - 108)

Quanterra

CITY OF ST. LOUIS PARK

Client Sample ID: DPV-W124-050598

GC/MS Semivolatiles

Lot-Sample #...: D8E060147-008 Work Order #...: CGXTH101 Matrix.....: WATER
Date Sampled...: 05/05/98 09:00 Date Received..: 05/06/98
Prep Date.....: 05/10/98 Analysis Date..: 05/28/98
Prep Batch #...: 8130121 Analysis Time..: 20:00
Dilution Factor: 1 Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	10	1.4	ng/L
Naphthalene	15	6.5	ng/L
2-Methylnaphthalene	12	3.9	ng/L
Acenaphthene	29	1.3	ng/L
Dibenzofuran	5.1	1.0	ng/L
Fluorene	13	1.0	ng/L
Phenanthrene	11	1.3	ng/L
Anthracene	ND	2.7	ng/L
Carbazole	ND	1.9	ng/L
Fluoranthene	ND	3.1	ng/L
Pyrene	7.1	1.4	ng/L
Benzo(a)anthracene	ND	2.5	ng/L
Chrysene	ND	2.8	ng/L
Benzo(b)fluoranthene	ND	2.5	ng/L
Benzo(k)fluoranthene	ND	2.3	ng/L
Benzo(a)pyrene	ND	2.3	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Benzo(ghi)perylene	ND	2.8	ng/L
Indene	2.4	0.90	ng/L
1-Methylnaphthalene	10	2.8	ng/L
2,3-Benzofuran	ND	5.1	ng/L
2,3-Dihydroindene	24	5.0	ng/L
Benzo(b)thiophene	3.6	0.90	ng/L
Indole	ND	2.5	ng/L
Biphenyl	ND	4.3	ng/L
Dibenzothiophene	ND	1.1	ng/L
Acridine	ND	6.1	ng/L
Benzo(e)pyrene	ND	1.9	ng/L
Perylene	ND	2.5	ng/L
Quinoline	ND	6.9	ng/L
Dibenz(a,h)anthracene	ND	1.6	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	58	(10 - 118)
Fluorene d-10	126	(41 - 162)
Naphthalene-d8	86	(21 - 108)

Quanterra

CITY OF ST. LOUIS PARK

Client Sample ID: DPV-W428-050598

GC/MS Semivolatiles

Lot-Sample #...: D8E060147-009 Work Order #...: CGXTJ101 Matrix.....: WATER
Date Sampled...: 05/05/98 09:30 Date Received..: 05/06/98
Prep Date.....: 05/10/98 Analysis Date..: 05/29/98
Prep Batch #...: 8130121 Analysis Time..: 16:02
Dilution Factor: 4 Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	ND	5.6	ng/L
Naphthalene	34	26	ng/L
2-Methylnaphthalene	24	16	ng/L
Acenaphthene	9.1	5.2	ng/L
Dibenzofuran	6.1	4.0	ng/L
Fluorene	ND	4.0	ng/L
Phenanthrene	10	5.2	ng/L
Anthracene	ND	11	ng/L
Carbazole	7.7	7.6	ng/L
Fluoranthene	ND	12	ng/L
Pyrene	6.6	5.6	ng/L
Benzo(a)anthracene	ND	10	ng/L
Chrysene	ND	11	ng/L
Benzo(b)fluoranthene	ND	10	ng/L
Benzo(k)fluoranthene	ND	9.2	ng/L
Benzo(a)pyrene	ND	9.2	ng/L
Indeno(1,2,3-cd)pyrene	ND	8.4	ng/L
Benzo(ghi)perylene	ND	11	ng/L
Indene	15	3.6	ng/L
1-Methylnaphthalene	19	11	ng/L
2,3-Benzofuran	ND	20	ng/L
2,3-Dihydroindene	170	20	ng/L
Benzo(b)thiophene	44	3.6	ng/L
Indole	ND	10	ng/L
Biphenyl	ND	17	ng/L
Dibenzothiophene	ND	4.4	ng/L
Acridine	ND	24	ng/L
Benzo(e)pyrene	ND	7.6	ng/L
Perylene	ND	10	ng/L
Quinoline	ND	28	ng/L
Dibenz(a,h)anthracene	ND	6.4	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	NC,SRD	(10 - 118)
Fluorene d-10	NC,SRD	(41 - 162)
Naphthalene-d8	NC,SRD	(21 - 108)

NOTE(S):

NC The recovery and/or RPD were not calculated

SRD The surrogate recovery was not calculated because the extract was diluted beyond the ability to quantitate a recovery

Quanterra

CITY OF ST. LOUIS PARK

Client Sample ID: DPV-W130-050598

GC/MS Semivolatiles

Lot-Sample #...: D8E060147-010 Work Order #...: CGXTK101 Matrix.....: WATER
Date Sampled...: 05/05/98 13:40 Date Received..: 05/06/98
Prep Date.....: 05/10/98 Analysis Date..: 05/29/98
Prep Batch #...: 8130121 Analysis Time..: 14:51
Dilution Factor: 4 Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	ND	5.6	ng/L
Naphthalene	ND	26	ng/L
2-Methylnaphthalene	16	16	ng/L
Acenaphthene	ND	5.2	ng/L
Dibenzofuran	ND	4.0	ng/L
Fluorene	ND	4.0	ng/L
Phenanthrene	9.0	5.2	ng/L
Anthracene	ND	11	ng/L
Carbazole	ND	7.6	ng/L
Fluoranthene	ND	12	ng/L
Pyrene	7.5	5.6	ng/L
Benzo(a)anthracene	ND	10	ng/L
Chrysene	ND	11	ng/L
Benzo(b)fluoranthene	ND	10	ng/L
Benzo(k)fluoranthene	ND	9.2	ng/L
Benzo(a)pyrene	ND	9.2	ng/L
Indeno(1,2,3-cd)pyrene	ND	8.4	ng/L
Benzo(ghi)perylene	ND	11	ng/L
Indene	4.4	3.6	ng/L
1-Methylnaphthalene	ND	11	ng/L
2,3-Benzofuran	ND	20	ng/L
2,3-Dihydroindene	ND	20	ng/L
Benzo(b)thiophene	ND	3.6	ng/L
Indole	10	10	ng/L
Biphenyl	ND	17	ng/L
Dibenzothiophene	ND	4.4	ng/L
Acridine	ND	24	ng/L
Benzo(e)pyrene	ND	7.6	ng/L
Perylene	ND	10	ng/L
Quinoline	ND	28	ng/L
Dibenz(a,h)anthracene	ND	6.4	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	NC,SRD	(10 - 118)
Fluorene d-10	NC,SRD	(41 - 162)
Naphthalene-d8	NC,SRD	(21 - 108)

NOTE(S):

NC The recovery and/or RPD were not calculated.

SRD The surrogate recovery was not calculated because the extract was diluted beyond the ability to quantitate a recovery.

Quanterra

CITY OF ST. LOUIS PARK

Client Sample ID: DPV-W130D-050598

GC/MS Semivolatiles

Lot-Sample #...: D8E060147-011 Work Order #...: CGXTL101 Matrix.....: WATER
Date Sampled...: 05/05/98 13:40 Date Received..: 05/06/98
Prep Date.....: 05/10/98 Analysis Date..: 05/29/98
Prep Batch #...: 8130121 Analysis Time..: 15:27
Dilution Factor: 4 Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	ND	5.6	ng/L
Naphthalene	ND	26	ng/L
2-Methylnaphthalene	23	16	ng/L
Acenaphthene	ND	5.2	ng/L
Dibenzofuran	ND	4.0	ng/L
Fluorene	ND	4.0	ng/L
Phenanthrene	12	5.2	ng/L
Anthracene	ND	11	ng/L
Carbazole	ND	7.6	ng/L
Fluoranthene	ND	12	ng/L
Pyrene	8.9	5.6	ng/L
Benzo(a)anthracene	ND	10	ng/L
Chrysene	ND	11	ng/L
Benzo(b)fluoranthene	ND	10	ng/L
Benzo(k)fluoranthene	ND	9.2	ng/L
Benzo(a)pyrene	ND	9.2	ng/L
Indeno(1,2,3-cd)pyrene	ND	8.4	ng/L
Benzo(ghi)perylene	ND	11	ng/L
Indene	5.8	3.6	ng/L
1-Methylnaphthalene	14	11	ng/L
2,3-Benzofuran	ND	20	ng/L
2,3-Dihydroindene	ND	20	ng/L
Benzo(b)thiophene	ND	3.6	ng/L
Indole	ND	10	ng/L
Biphenyl	ND	17	ng/L
Dibenzothiophene	ND	4.4	ng/L
Acridine	ND	24	ng/L
Benzo(e)pyrene	ND	7.6	ng/L
Perylene	ND	10	ng/L
Quinoline	ND	28	ng/L
Dibenz(a,h)anthracene	ND	6.4	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	NC,SRD	(10 - 118)
Fluorene d-10	NC,SRD	(41 - 162)
Naphthalene-d8	NC,SRD	(21 - 108)

NOTE(S):

NC The recovery and/or RPD were not calculated.

SRD The surrogate recovery was not calculated because the extract was diluted beyond the ability to quantitate a recovery

Chain of Custody Record

Quanterra

QUA 4124

Client: City of St. Louis Park	Project Manager: Bill Gregg	Date: 5/5/98	Chain Of Custody Number: 24350
Address: 3752 Wooddale Ave	Telephone Number (Area Code)/Fax Number: 612-924-2557	Lab Number:	Page 1 of 1
City: St. Louis Park; State: MN; Zip Code: 55416	Site Contact: Scott Anderson		
Project Name: SLP	Carrier/Waybill Number:		
Contract/Purchase Order/Quote No:			

Sample I.D. No and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No	Preservative	Condition on Receipt	Analysis: PPT-PAH
DPV-W121-050598	5/5/98	1615	Water	6L	Amber	6	None		X

Special Instructions: PPT 5

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

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required: ☐ Normal ☐ Rush

QC Level: ☐ I. ☐ II. ☐ III.

Project Specific (Specify):

	Date	Time		Date	Time
1 Relinquished By: Jan Curt	5/5/98	1630	1 Received By: Priscilla Dalton	5-6-98	0845
2 Relinquished By:			2 Received By:		
3 Relinquished By:			3 Received By:		

Comments:

DISTRIBUTION: [redacted] - Stays with Sample, CANARY - Returned to Client with Report, PINK - Field Copy

Chain of Custody Record

Quanterra

QUA 4124

Client: City of St. Louis Park	Project Manager: Bill Gregg	Date: 5/5/98	Chain Of Custody Number: 24352
Address: 3752 Wooddale Ave	Telephone Number (Area Code)/Fax Number: 612-924-2557	Lab Number:	Page 1 of 1
City: St. Louis Park; State: MN; Zip Code: 55416	Site Contact: Scott Andersun		
Project Name: SLP	Carrier/Waybill Number:		
Contract/Purchase Order/Quote No:			

Sample I D No and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No	Preservative	Condition on Receipt	Analysis: PPT - PAH
BDPV - W13DFB - 050598	5/5/98	1330	Water	6 L	Amber	6	None		X
DDPV - W13D FBD - 050598	5/5/98	1330	Water	6 L	Amber	6	None		X

Special Instructions: PPT5

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

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required: ☐ Normal ☐ Rush

QC Level: ☐ I. ☐ II. ☐ III.

Project Specific (Specify):

1 Relinquished By: Jim Cutter	Date: 5/5/98	Time: 1600	1 Received By: Priscilla Dalton	Date: 5-6-98	Time: 0845
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 Sample, CANARY - Returned to Client with Report, PINK - Field Copy

Chain of Custody Record

Quanterra

QUA 4124

Client: City of St Louis Park	Project Manager: Bill Gregg	Date: 5/5/98	Chain Of Custody Number: 24351
Address: 3752 Wooddale Ave	Telephone Number (Area Code)/Fax Number: 612-924-2557	Lab Number:	Page 1 of 1
City: St. Louis Park; State: MN; Zip Code: 55416	Site Contact: Scott Anderson		
Project Name: SLP	Carrier/Waybill Number:		
Contract/Purchase Order/Quote No:			

Sample I D No and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No	Preservative	Condition on Receipt	Analysis: PPT-PAH
DPV-W433-050598	5/5/98	1300	Water	6L	Amber	6	None		X
DPV-W431-050598	5/5/98	1540	Water	6L	Amber	6	None		X

Special Instructions: PPT 5

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

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required: ☐ Normal ☐ Rush

QC Level: ☐ I. ☐ II. ☐ III

Project Specific (Specify):

1 Relinquished By: Jim Curtis	Date: 5/5/98	Time: 1600	1 Received By: Priscilla Dalton	Date: 5-6-98	Time: 0845
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 Sample, CANARY - Returned to Client with Report, PINK - Field Copy

Chain of Custody Record

Quanterra

QUA 4124

Client: City of St. Louis Park	Project Manager: Bill Gregg	Date: 5/5/98	Chain Of Custody Number: 24349
Address: 3752 Wooddale Ave	Telephone Number (Area Code)/Fax Number: 612-924-2557	Lab Number:	Page 1 of 1
City: St. Louis Park; State: MN; Zip Code: 55416	Site Contact: Scott Anderson		
Project Name: SLP	Carrier/Waybill Number:		
Contract/Purchase Order/Quote No:			

Sample I D No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Analysis: PPT-PAH
DPV-W424-050598	5/5/98	1000	Water	6L	Amber	6	None		X
DPV-W131-050598	5/5/98	1200	Water	6L	Amber	6	None		X

Special Instructions: PPT 5

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

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required: ☐ Normal ☐ Rush

QC Level: ☐ I. ☐ II. ☐ III.

Project Specific (Specify):

1 Relinquished By: Jim Curtis	Date: 5/5/98	Time: 1600	1 Received By: Priscilla Dalton	Date: 5-6-98	Time: 0845
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 Sample, CANARY - Returned to Client with Report, PINK - Field Copy

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Chain of Custody Record

Quanterra

DUA 4124

Client: City of St. Louis Park	Project Manager: Bill Gregg	Date: 5/5/98	Chain Of Custody Number: 24353
Address: 3752 Wooddale	Telephone Number (Area Code)/Fax Number: 612-924-2557	Lab Number:	Page 1 of 1
City: St. Louis Park; State: MN; Zip Code: 55416	Site Contact: Scott Anderson		
Project Name: SLP	Carrier/Waybill Number:		
Contract/Purchase Order/Quote No:			

Sample I D No and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No	Preservative	Condition on Receipt	Analysis: PPT-PAH
-W124-050548	5/5/98	0900	Water	6L	Amber	6	None		X
DPV-W428-050598	5/5/98	0930	Water	6L	Ambir	6	None		X

Special Instructions: PPT5

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

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required: ☐ Normal ☐ Rush

QC Level: ☐ I. ☐ II. ☐ III.

Project Specific (Specify):

1 Relinquished By: Jim Curtis	Date: 5/5/98	Time: 1600	1 Received By: Dispalla Dalton	Date: 5-6-98	Time: 0845
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 Sample, CANARY - Returned to Client with Report, PINK - Field Copy

Chain of Custody Record

Quanterra

DUA 4124

Client: City of St. Louis Park	Project Manager: Bill Gregg	Date: 5/5/98	Chain Of Custody Number: 24348
Address: 3752 Wooddale Ave	Telephone Number (Area Code)/Fax Number: 612-924-2557	Lab Number:	Page 1 of 1
City: St. Louis Park; State: MN; Zip Code: 55416	Site Contact: Scott Anderson		
Project Name: SLP	Carrier/Waybill Number:		
Contract/Purchase Order/Quote No:			

Sample I D No and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Analysis: PPT-PAH
~~DPV-W433-050598~~	~~5/5/98~~	~~1300~~	~~Water~~	~~6L~~	~~Amber~~	~~6~~	~~None~~		~~X~~
DPV-W130-050598	5/5/98	1340	Water	~~12L~~ 6 pts	Amber	~~12~~ 6 pts	None		X
DPV-W130D-050598	5/5/98	1340	Water	6L	Amber	6	None		X

Special Instructions: PPT 5

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

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required: ☐ Normal ☐ Rush

QC Level: ☐ I. ☐ II. ☐ III.

Project Specific (Specify):

1 Relinquished By: Jim Gutz	Date: 5/5/98	Time: 1600	1 Received By:	Date:	Time:
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 Sample, CANARY - Returned to Client with Report, PINK - Field Copy

SECOND HALF
PAH MONITORING

Quanterra Incorporated
4955 Yarrow Street
Arvada, Colorado 80002

303 421-6611 Telephone
303 431-7171 Fax

Quanterra Environmental Services

ANALYTICAL REPORT

Reilly Tar & Chemical NPL Site

Lot #: D8I150121

Scott Anderson

City of St. Louis Park

QUANTERRA INCORPORATED

Kurt C. Ill
Project Manager

October 16, 1998

Advanced Analytical Services

Quanterra Incorporated
4955 Yarrow Street
Arvada, Colorado 80002

303 421-6611 Telephone
303 467-9136 Fax

CASE NARRATIVE

FOR

City of St. Louis Park

October 16, 1998

Quanterra Environmental Services

Project Lot Number D8I150121

Introduction

Eleven aqueous samples (including matrix QC) were received at Quanterra Environmental Services, Denver Laboratory on September 14, 1998. The samples were logged in under Quanterra Denver's project lot number D8I150121. A cross reference associating Quanterra Denver's laboratory sample numbers to the actual field sample number is included. The samples were analyzed for part per trillion (ppt) PAHs.

Data Quality Assessment

The results contained in this report were reviewed relative to data acceptance criteria as specified in the October 1997 QAPP for completeness, precision, accuracy, representativeness and defensibility of the data. Unless otherwise stated below, no quality control problems or technical difficulties were encountered which would impact the interpretation or use of data in this report.

Client samples with laboratory Id's D8i150121-005 and –009 have recoveries for the surrogate fluorene d-10 repor below the 41% to 162 acceptance limits but above the 30% lower limit. Fluorene d-10 in the method blank and LCS are within acceptance limits. A possible matrix effect is indicated.

The RPD for naphthalene, 2-methylnaphthalene, fluorene and quinoline are reported above the 20% acceptance limits. The LCS associated with these samples is within acceptance limits. A possible matrix effect is indicated.

Except for the above, this data package is in compliance with the terms and conditions of the October 1997 QAPP, both technically and for completeness

Reported By: Kurt C. Ill **Date:** October 16, 1998

Kurt C. Ill
Customer Service Manger

EXECUTIVE SUMMARY - Detection Highlights

D8I150121

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
PCJ-SLP4FBD-091498 09/14/98 004				
Naphthalene	2.3 J	6.5	ng/L	SW846 8270A SIM
2-Methylnaphthalene	1.9 J	3.9	ng/L	SW846 8270A SIM
Fluorene	0.57 J	1.0	ng/L	SW846 8270A SIM
Phenanthrene	2.9 B	1.3	ng/L	SW846 8270A SIM
Anthracene	0.21 J	2.7	ng/L	SW846 8270A SIM
Fluoranthene	1.3 J	3.1	ng/L	SW846 8270A SIM
Pyrene	0.97 J	1.4	ng/L	SW846 8270A SIM
Benzo(a)anthracene	0.13 J	2.5	ng/L	SW846 8270A SIM
1-Methylnaphthalene	0.87 J	2.8	ng/L	SW846 8270A SIM
Biphenyl	0.28 J	4.3	ng/L	SW846 8270A SIM
DPV-W1-091498 09/14/98 07:50 005				
Naphthalene	28	6.7	ng/L	SW846 8270A SIM
2-Methylnaphthalene	18	4.0	ng/L	SW846 8270A SIM
Acenaphthene	5.9	1.3	ng/L	SW846 8270A SIM
Dibenzofuran	5.2	1.0	ng/L	SW846 8270A SIM
Fluorene	4.6	1.0	ng/L	SW846 8270A SIM
Phenanthrene	13 B	1.3	ng/L	SW846 8270A SIM
Anthracene	11	2.8	ng/L	SW846 8270A SIM
Carbazole	8.8 B	2.0	ng/L	SW846 8270A SIM
Fluoranthene	13	3.2	ng/L	SW846 8270A SIM
Pyrene	15	1.4	ng/L	SW846 8270A SIM
Benzo(a)anthracene	11	2.6	ng/L	SW846 8270A SIM
Chrysene	12	2.9	ng/L	SW846 8270A SIM
Benzo(b)fluoranthene	12	2.6	ng/L	SW846 8270A SIM
Benzo(k)fluoranthene	4.5	2.3	ng/L	SW846 8270A SIM
Benzo(a)pyrene	9.4	2.4	ng/L	SW846 8270A SIM
Indeno(1,2,3-cd)pyrene	6.6	2.2	ng/L	SW846 8270A SIM
Benzo(ghi)perylene	5.8	2.9	ng/L	SW846 8270A SIM
Indene	9.1 B	0.93	ng/L	SW846 8270A SIM
1-Methylnaphthalene	11	2.9	ng/L	SW846 8270A SIM
2,3-Dihydroindene	14	5.1	ng/L	SW846 8270A SIM
Biphenyl	4.4	4.4	ng/L	SW846 8270A SIM
Benzo(e)pyrene	7.3	2.0	ng/L	SW846 8270A SIM
Perylene	2.2 J	2.6	ng/L	SW846 8270A SIM
Dibenz(a,h)anthracene	1.7	1.6	ng/L	SW846 8270A SIM
DPV-W20-091498 09/14/98 08:30 006				
Naphthalene	7.5	7.1	ng/L	SW846 8270A SIM
Acenaphthene	7.1	1.4	ng/L	SW846 8270A SIM
Fluorene	2.6	1.1	ng/L	SW846 8270A SIM

(Continued on next page)

EXECUTIVE SUMMARY - Detection Highlights

D8I150121

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
DPV-W20-091498 09/14/98 08:30 006				
Carbazole	6.8 B	2.1	ng/L	SW846 8270A SIM
Fluoranthene	5.6	3.4	ng/L	SW846 8270A SIM
Pyrene	9.3	1.5	ng/L	SW846 8270A SIM
Benzo(a)anthracene	2.6 J	2.7	ng/L	SW846 8270A SIM
Chrysene	2.7 J	3.0	ng/L	SW846 8270A SIM
Benzo(b)fluoranthene	3.6	2.7	ng/L	SW846 8270A SIM
Benzo(a)pyrene	3.1	2.5	ng/L	SW846 8270A SIM
Benzo(ghi)perylene	2.5 J	3.0	ng/L	SW846 8270A SIM
Indene	14 B	0.98	ng/L	SW846 8270A SIM
2,3-Dihydroindene	290	5.4	ng/L	SW846 8270A SIM
Biphenyl	2.1 J	4.7	ng/L	SW846 8270A SIM
Acridine	9.6	6.6	ng/L	SW846 8270A SIM
Benzo(e)pyrene	2.6	2.1	ng/L	SW846 8270A SIM
Perylene	0.85 J	2.7	ng/L	SW846 8270A SIM
DPV-W121-091498 09/14/98 09:20 007				
Naphthalene	13	6.9	ng/L	SW846 8270A SIM
Acenaphthene	5.4	1.4	ng/L	SW846 8270A SIM
Fluorene	2.5	1.1	ng/L	SW846 8270A SIM
Phenanthrene	6.5 B	1.4	ng/L	SW846 8270A SIM
Anthracene	1.2 J	2.9	ng/L	SW846 8270A SIM
Fluoranthene	3.2 J	3.3	ng/L	SW846 8270A SIM
Pyrene	2.8	1.5	ng/L	SW846 8270A SIM
Benzo(a)anthracene	0.60 J	2.7	ng/L	SW846 8270A SIM
Chrysene	0.60 J	3.0	ng/L	SW846 8270A SIM
Benzo(a)pyrene	0.87 J	2.5	ng/L	SW846 8270A SIM
Benzo(ghi)perylene	0.90 J	3.0	ng/L	SW846 8270A SIM
Indene	8.2 B	0.96	ng/L	SW846 8270A SIM
1-Methylnaphthalene	10	3.0	ng/L	SW846 8270A SIM
2,3-Dihydroindene	7.9	5.3	ng/L	SW846 8270A SIM
Indole	14	2.7	ng/L	SW846 8270A SIM
Biphenyl	4.9	4.6	ng/L	SW846 8270A SIM
Acridine	14	6.5	ng/L	SW846 8270A SIM
Benzo(e)pyrene	0.42 J	2.0	ng/L	SW846 8270A SIM
Quinoline	3.0 J	7.4	ng/L	SW846 8270A SIM
DPV-W18-091498 09/14/98 10:45 008				
Naphthalene	11	6.8	ng/L	SW846 8270A SIM
Acenaphthene	44	1.4	ng/L	SW846 8270A SIM
Fluorene	6.4	1.0	ng/L	SW846 8270A SIM
Phenanthrene	25 B	1.4	ng/L	SW846 8270A SIM

(Continued on next page)

EXECUTIVE SUMMARY - Detection Highlights

D8I150121

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
DPV-W18-091498 09/14/98 10:45 008				
Carbazole	37 B	2.0	ng/L	SW846 8270A SIM
Fluoranthene	8.8	3.2	ng/L	SW846 8270A SIM
Pyrene	14	1.5	ng/L	SW846 8270A SIM
Chrysene	1.1 J	2.9	ng/L	SW846 8270A SIM
Benzo(b)fluoranthene	1.1 J	2.6	ng/L	SW846 8270A SIM
Benzo(a)pyrene	1.4 J	2.4	ng/L	SW846 8270A SIM
Indeno(1,2,3-cd)pyrene	0.91 J	2.2	ng/L	SW846 8270A SIM
Benzo(ghi)perylene	2.2 J	2.9	ng/L	SW846 8270A SIM
Indene	18 B	0.94	ng/L	SW846 8270A SIM
2,3-Dihydroindene	60	5.2	ng/L	SW846 8270A SIM
Benzo(b)thiophene	75	0.94	ng/L	SW846 8270A SIM
Biphenyl	4.1 J	4.5	ng/L	SW846 8270A SIM
Benzo(e)pyrene	1.6 J	2.0	ng/L	SW846 8270A SIM
Perylene	0.17 J	2.6	ng/L	SW846 8270A SIM
DPV-W19-091498 09/14/98 11:25 009				
2-Methylnaphthalene	7.4	4.0	ng/L	SW846 8270A SIM
Acenaphthene	3.4	1.3	ng/L	SW846 8270A SIM
Dibenzofuran	2.8	1.0	ng/L	SW846 8270A SIM
Fluorene	3.3	1.0	ng/L	SW846 8270A SIM
Phenanthrene	12 B	1.3	ng/L	SW846 8270A SIM
Fluoranthene	3.6	3.2	ng/L	SW846 8270A SIM
Pyrene	8.2	1.4	ng/L	SW846 8270A SIM
Benzo(a)anthracene	0.98 J	2.6	ng/L	SW846 8270A SIM
Chrysene	1.3 J	2.9	ng/L	SW846 8270A SIM
Benzo(b)fluoranthene	1.6 J	2.6	ng/L	SW846 8270A SIM
Benzo(a)pyrene	1.4 J	2.4	ng/L	SW846 8270A SIM
Indeno(1,2,3-cd)pyrene	1.0 J	2.2	ng/L	SW846 8270A SIM
Benzo(ghi)perylene	1.9 J	2.9	ng/L	SW846 8270A SIM
Indene	4.1 B	0.92	ng/L	SW846 8270A SIM
1-Methylnaphthalene	5.5	2.9	ng/L	SW846 8270A SIM
Biphenyl	5.2	4.4	ng/L	SW846 8270A SIM
Benzo(e)pyrene	1.5 J	1.9	ng/L	SW846 8270A SIM
Perylene	0.37 J	2.6	ng/L	SW846 8270A SIM

SAMPLE SUMMARY

D8I150121

WO #	SAMPLE#	CLIENT SAMPLE ID	DATE	TIME
CLG4C	001	PCJ-SLP4-091498	09/14/98	
CLG4W	002	PCJ-SLP4D-091498	09/14/98	
CLG50	003	PCJ-SLP4FB-091498	09/14/98	
CLG52	004	PCJ-SLP4FBD-091498	09/14/98	
CLG55	005	DPV-W1-091498	09/14/98	07:50
CLG5D	006	DPV-W20-091498	09/14/98	08:30
CLG5E	007	DPV-W121-091498	09/14/98	09:20
CLG5F	008	DPV-W18-091498	09/14/98	10:45
CLG5G	009	DPV-W19-091498	09/14/98	11:25

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-W1-091498

GC/MS Semivolatiles

Lot-Sample #...: D8I150121-005 Work Order #...: CLG55101 Matrix.....: WATER
Date Sampled...: 09/14/98 07:50 Date Received..: 09/15/98
Prep Date.....: 09/16/98 Analysis Date..: 10/09/98
Prep Batch #...: 8264137 Analysis Time..: 20:39
Dilution Factor: 1.01

Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	ND	1.4	ng/L
Naphthalene	28	6.7	ng/L
2-Methylnaphthalene	18	4.0	ng/L
Acenaphthene	5.9	1.3	ng/L
Dibenzofuran	5.2	1.0	ng/L
Fluorene	4.6	1.0	ng/L
Phenanthrene	13 B	1.3	ng/L
Anthracene	11	2.8	ng/L
Carbazole	8.8 B	2.0	ng/L
Fluoranthene	13	3.2	ng/L
Pyrene	15	1.4	ng/L
Benzo(a)anthracene	11	2.6	ng/L
Chrysene	12	2.9	ng/L
Benzo(b)fluoranthene	12	2.6	ng/L
Benzo(k)fluoranthene	4.5	2.3	ng/L
Benzo(a)pyrene	9.4	2.4	ng/L
Indeno(1,2,3-cd)pyrene	6.6	2.2	ng/L
Benzo(ghi)perylene	5.8	2.9	ng/L
Indene	9.1 B	0.93	ng/L
1-Methylnaphthalene	11	2.9	ng/L
2,3-Benzofuran	ND	5.2	ng/L
2,3-Dihydroindene	14	5.1	ng/L
Benzo(b)thiophene	ND	0.93	ng/L
Indole	ND	2.6	ng/L
Biphenyl	4.4	4.4	ng/L
Dibenzothiophene	ND	1.1	ng/L
Acridine	ND	6.3	ng/L
Benzo(e)pyrene	7.3	2.0	ng/L
Perylene	2.2 J	2.6	ng/L
Quinoline	ND	7.1	ng/L
Dibenz(a,h)anthracene	1.7	1.6	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	64	(10 - 118)
Fluorene d-10	37 *	(41 - 162)
Naphthalene-d8	71	(21 - 108)

NOTE(S):

* Surrogate recovery is outside stated control limits.

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

J Estimated result. Result is less than RL.

CITY OF ST. LOUIS PARK

Client Sample ID: DPV-W20-091498

GC/MS Semivolatiles

Lot-Sample #...: D8I150121-006 Work Order #...: CLG5D101 Matrix.....: WATER
Date Sampled...: 09/14/98 08:30 Date Received..: 09/15/98
Prep Date.....: 09/16/98 Analysis Date..: 10/09/98
Prep Batch #...: 8264137 Analysis Time..: 21:16
Dilution Factor: 1.04

Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	ND	1.5	ng/L
Naphthalene	7.5	7.1	ng/L
2-Methylnaphthalene	ND	4.2	ng/L
Acenaphthene	7.1	1.4	ng/L
Dibenzofuran	ND	1.1	ng/L
Fluorene	2.6	1.1	ng/L
Phenanthrene	ND	1.4	ng/L
Anthracene	ND	2.9	ng/L
Carbazole	6.8 B	2.1	ng/L
Fluoranthene	5.6	3.4	ng/L
Pyrene	9.3	1.5	ng/L
Benzo(a)anthracene	2.6 J	2.7	ng/L
Chrysene	2.7 J	3.0	ng/L
Benzo(b)fluoranthene	3.6	2.7	ng/L
Benzo(k)fluoranthene	ND	2.4	ng/L
Benzo(a)pyrene	3.1	2.5	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.3	ng/L
Benzo(ghi)perylene	2.5 J	3.0	ng/L
Indene	14 B	0.98	ng/L
1-Methylnaphthalene	ND	3.0	ng/L
2,3-Benzofuran	ND	5.5	ng/L
2,3-Dihydroindene	290	5.4	ng/L
Benzo(b)thiophene	ND	0.98	ng/L
Indole	ND	2.7	ng/L
Biphenyl	2.1 J	4.7	ng/L
Dibenzothiophene	ND	1.2	ng/L
Acridine	9.6	6.6	ng/L
Benzo(e)pyrene	2.6	2.1	ng/L
Perylene	0.85 J	2.7	ng/L
Quinoline	ND	7.5	ng/L
Dibenz(a,h)anthracene	ND	1.7	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	67	(10 - 118)
Fluorene d-10	57	(41 - 162)
Naphthalene-d8	70	(21 - 108)

NOTE(S):

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

J Estimated result. Result is less than RL.

CITY OF ST. LOUIS PARK

Client Sample ID: DPV-W121-091498

GC/MS Semivolatiles

Lot-Sample #...: D8I150121-007 Work Order #...: CLG5E101 Matrix.....: WATER
Date Sampled...: 09/14/98 09:20 Date Received..: 09/15/98
Prep Date.....: 09/16/98 Analysis Date..: 10/09/98
Prep Batch #...: 8264137 Analysis Time..: 21:52
Dilution Factor: 1.03

Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	ND	1.5	ng/L
Naphthalene	13	6.9	ng/L
2-Methylnaphthalene	ND	4.2	ng/L
Acenaphthene	5.4	1.4	ng/L
Dibenzofuran	ND	1.1	ng/L
Fluorene	2.5	1.1	ng/L
Phenanthrene	6.5 B	1.4	ng/L
Anthracene	1.2 J	2.9	ng/L
Carbazole	ND	2.0	ng/L
Fluoranthene	3.2 J	3.3	ng/L
Pyrene	2.8	1.5	ng/L
Benzo(a)anthracene	0.60 J	2.7	ng/L
Chrysene	0.60 J	3.0	ng/L
Benzo(b)fluoranthene	ND	2.7	ng/L
Benzo(k)fluoranthene	ND	2.4	ng/L
Benzo(a)pyrene	0.87 J	2.5	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.2	ng/L
Benzo(ghi)perylene	0.90 J	3.0	ng/L
Indene	8.2 B	0.96	ng/L
1-Methylnaphthalene	10	3.0	ng/L
2,3-Benzofuran	ND	5.4	ng/L
2,3-Dihydroindene	7.9	5.3	ng/L
Benzo(b)thiophene	ND	0.96	ng/L
Indole	14	2.7	ng/L
Biphenyl	4.9	4.6	ng/L
Dibenzothiophene	ND	1.2	ng/L
Acridine	14	6.5	ng/L
Benzo(e)pyrene	0.42 J	2.0	ng/L
Perylene	ND	2.7	ng/L
Quinoline	3.0 J	7.4	ng/L
Dibenz(a,h)anthracene	ND	1.7	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	40	(10 - 118)
Fluorene d-10	43	(41 - 162)
Naphthalene-d8	61	(21 - 108)

NOTE(S):

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

J Estimated result. Result is less than RL.

CITY OF ST. LOUIS PARK

Client Sample ID: DPV-W18-091498

GC/MS Semivolatiles

Lot-Sample #...: D8I150121-008 Work Order #...: CLG5F101 Matrix.....: WATER
Date Sampled...: 09/14/98 10:45 Date Received..: 09/15/98
Prep Date.....: 09/16/98 Analysis Date..: 10/09/98
Prep Batch #...: 8264137 Analysis Time..: 22:29
Dilution Factor: 1.02

Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	ND	1.5	ng/L
Naphthalene	11	6.8	ng/L
2-Methylnaphthalene	ND	4.1	ng/L
Acenaphthene	44	1.4	ng/L
Dibenzofuran	ND	1.0	ng/L
Fluorene	6.4	1.0	ng/L
Phenanthrene	25 B	1.4	ng/L
Anthracene	ND	2.8	ng/L
Carbazole	37 B	2.0	ng/L
Fluoranthene	8.8	3.2	ng/L
Pyrene	14	1.5	ng/L
Benzo(a)anthracene	ND	2.6	ng/L
Chrysene	1.1 J	2.9	ng/L
Benzo(b)fluoranthene	1.1 J	2.6	ng/L
Benzo(k)fluoranthene	ND	2.3	ng/L
Benzo(a)pyrene	1.4 J	2.4	ng/L
Indeno(1,2,3-cd)pyrene	0.91 J	2.2	ng/L
Benzo(ghi)perylene	2.2 J	2.9	ng/L
Indene	18 B	0.94	ng/L
1-Methylnaphthalene	ND	2.9	ng/L
2,3-Benzofuran	ND	5.3	ng/L
2,3-Dihydroindene	60	5.2	ng/L
Benzo(b)thiophene	75	0.94	ng/L
Indole	ND	2.6	ng/L
Biphenyl	4.1 J	4.5	ng/L
Dibenzothiophene	ND	1.2	ng/L
Acridine	ND	6.4	ng/L
Benzo(e)pyrene	1.6 J	2.0	ng/L
Perylene	0.17 J	2.6	ng/L
Quinoline	ND	7.2	ng/L
Dibenz(a,h)anthracene	ND	1.7	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	34	(10 - 118)
Fluorene d-10	58	(41 - 162)
Naphthalene-d8	43	(21 - 108)

NOTE(S):

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

J Estimated result. Result is less than RL.

CITY OF ST. LOUIS PARK

Client Sample ID: DPV-W19-091498

GC/MS Semivolatiles

Lot-Sample #...: D8I150121-009 Work Order #...: CLG5G101 Matrix.....: WATER
Date Sampled...: 09/14/98 11:25 Date Received..: 09/15/98
Prep Date.....: 09/16/98 Analysis Date..: 10/09/98
Prep Batch #...: 8264137 Analysis Time..: 23:05
Dilution Factor: 1.01
Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	ND	1.4	ng/L
Naphthalene	ND	6.7	ng/L
2-Methylnaphthalene	7.4	4.0	ng/L
Acenaphthene	3.4	1.3	ng/L
Dibenzofuran	2.8	1.0	ng/L
Fluorene	3.3	1.0	ng/L
Phenanthrene	12 B	1.3	ng/L
Anthracene	ND	2.8	ng/L
Carbazole	ND	1.9	ng/L
Fluoranthene	3.6	3.2	ng/L
Pyrene	8.2	1.4	ng/L
Benzo(a)anthracene	0.98 J	2.6	ng/L
Chrysene	1.3 J	2.9	ng/L
Benzo(b)fluoranthene	1.6 J	2.6	ng/L
Benzo(k)fluoranthene	ND	2.3	ng/L
Benzo(a)pyrene	1.4 J	2.4	ng/L
Indeno(1,2,3-cd)pyrene	1.0 J	2.2	ng/L
Benzo(ghi)perylene	1.9 J	2.9	ng/L
Indene	4.1 B	0.92	ng/L
1-Methylnaphthalene	5.5	2.9	ng/L
2,3-Benzofuran	ND	5.2	ng/L
2,3-Dihydroindene	ND	5.1	ng/L
Benzo(b)thiophene	ND	0.92	ng/L
Indole	ND	2.6	ng/L
Biphenyl	5.2	4.4	ng/L
Dibenzothiophene	ND	1.1	ng/L
Acridine	ND	6.2	ng/L
Benzo(e)pyrene	1.5 J	1.9	ng/L
Perylene	0.37 J	2.6	ng/L
Quinoline	ND	7.1	ng/L
Dibenz(a,h)anthracene	ND	1.6	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	46	(10 - 118)
Fluorene d-10	36 *	(41 - 162)
Naphthalene-d8	63	(21 - 108)

NOTE(S):

* Surrogate recovery is outside stated control limits.

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

J Estimated result. Result is less than RL.

Chain of Custody Record

Quanterra

DUA-4124

Client: City of St Louis Park	Project Manager: Bill Gregg	Date: 9/14/98	Chain Of Custody Number: 39609
Address: 3752 Woodale Ave	Telephone Number (Area Code)/Fax Number: 612-924-2557	Lab Number: DBI 150121	Page 1 of 1
City: St Louis Park; State: MN; Zip Code: 55416	Site Contact: Scott Anderson		
Project Name: SLP	Carrier/Waybill Number:		
Contract/Purchase Order/Quote No			

Sample I D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Analysis: PPT-PFAA
DPV-W1-091498	9-14-98	7:50	G.W.	6 Liters	1 Liter	6	—		X
DPV-W20-091498	9-14-98	8:30	G.W.	6 Liters	1 Liter	6	—		X

Special Instructions: PPT-5

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

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required: ☐ Normal ☐ Rush

QC Level: ☐ I. ☐ II. ☐ III.

Project Specific (Specify):

1 Relinquished By: [signature]	Date: 9/14/98	Time: 15:00	1 Received By: [signature]	Date: 9/15/98	Time: 0845
2 Relinquished By	Date	Time	2 Received By	Date	Time
3 Relinquished By	Date	Time	3 Received By	Date	Time

Comments: 2

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

Chain of Custody Record

Quanterra

QUA-4124

Client: City of St Louis Park	Project Manager: Bill Gregg	Date: 9-14-98	Chain Of Custody Number: 39608
Address: 3252 Woodale Ave	Telephone Number (Area Code)/Fax Number: 612-924-2557	Lab Number: D8I150121	Page 1 of 1
City: St Louis Park; State: MN; Zip Code: 55416	Site Contact: Scott Anderson		
Project Name: SLP	Carrier/Waybill Number:		
Contract/Purchase Order/Quote No:			

Sample I D No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No	Preservative	Condition on Receipt	Analysis: PAT-PAH
DPV-W121-091498	9-14-98	9:20	GW	6 Liters	1 Liter	6	—		X
DPV-W18-091498	9-14-98	10:45	GW	6 Liters	1 Liter	6	—		X

Special Instructions: PPT-5

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

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required: ☐ Normal ☐ Rush

QC Level: ☐ I. ☐ II. ☐ III.

Project Specific (Specify):

	Date	Time		Date	Time
1 Relinquished By: [signature]	9/14/98	15:00	1 Received By: D. Buckheister	9.15.98	8:55
2 Relinquished By:			2 Received By:		
3 Relinquished By:			3 Received By:		

Comments:

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

Chain of Custody Record

Quanterra

QUA-4124

Client: City of St Louis Park	Project Manager: B. Gregg	Date: 9-14-98	Chain Of Custody Number: 39607
Address: 3252 Woodale Ave	Telephone Number (Area Code)/Fax Number: 612-924-2557	Lab Number: DEI150121	Page 1 of 1
City: St Louis Park; State: MN; Zip Code: 55416	Site Contact: Scott Anderson		
Project Name: SLP	Carrier/Waybill Number		
Contract/Purchase Order/Quote No			

Sample I.D. No and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No	Preservative	Condition on Receipt	Analysis: PPT-DAI
DPV-WIP-091498	9-14-98	11:25	GW	6 Liters	1 Liter	6	—		X

Special Instructions: PPT-5

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

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required: ☐ Normal ☑ Rush

QC Level: ☐ I. ☐ II. ☐ III.

Project Specific (Specify):

1 Relinquished By: [signature]	Date: 9-14-98	Time: 15:00	1 Received By: D Buchchester	Date: 9-15-98	Time: 902
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 Sample, CANARY - Returned to Client with Report, PINK - Field Copy

Advanced Analytical Services

Quanterra Incorporated
4955 Yarrow Street
Arvada, Colorado 80002

303 421-6611 Telephone
303 467-9136 Fax

CASE NARRATIVE

FOR

City of St. Louis Park

October 19, 1998

Quanterra Environmental Services

Project Lot Number D8I160118

Introduction

Ten aqueous samples (including matrix QC) were received at Quanterra Environmental Services, Denver Laboratory on September 16, 1998. The samples were logged in under Quanterra Denver's project lot number D8I160118. A cross reference associating Quanterra Denver's laboratory sample numbers to the actual field sample number is included. The samples were analyzed for part per trillion (ppt) PAHs.

Data Quality Assessment

The results contained in this report were reviewed relative to data acceptance criteria as specified in the October 1997 QAPP for completeness, precision, accuracy, representativeness and defensibility of the data. Unless otherwise stated below, no quality control problems or technical difficulties were encountered which would impact the interpretation or use of data in this report.

Client samples with laboratory Ids D8I160-005 and -009 was analyzed at a dilution due to target analytes exceeding the linear range of the instrument. The reporting limits were raised accordingly. As a result of the dilution, the surrogate compounds were not detected in sample D8I160118-005 and are reported as "NC".

Except for the above, this data package is in compliance with the terms and conditions of the October 1997 QAPP, both technically and for completeness

Reported By: Kurt C. Ill **Date:** October 19, 1998

Kurt C. Ill
Customer Service Manger

ANALYTICAL REPORT

Reilly Tar & Chemical NPL Site

Lot #: D8I160118

Scott Anderson

City of St. Louis Park

QUANTERRA INCORPORATED

Kurt C. Ill
Project Manager

October 19, 1998

EXECUTIVE SUMMARY - Detection Highlights

D8I160118

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
DPV-W124-091598 09/15/98 08:45 001				
Naphthalene	9.5	6.5	ng/L	SW846 8270A SIM
2-Methylnaphthalene	10	3.9	ng/L	SW846 8270A SIM
Acenaphthene	4.7	1.3	ng/L	SW846 8270A SIM
Fluorene	2.5	1.0	ng/L	SW846 8270A SIM
Phenanthrene	9.7	1.3	ng/L	SW846 8270A SIM
Fluoranthene	3.8	3.1	ng/L	SW846 8270A SIM
Pyrene	8.9	1.4	ng/L	SW846 8270A SIM
Chrysene	0.47 J	2.8	ng/L	SW846 8270A SIM
Benzo(ghi)perylene	1.5 J	2.8	ng/L	SW846 8270A SIM
Indene	1.1	0.90	ng/L	SW846 8270A SIM
1-Methylnaphthalene	6.7	2.8	ng/L	SW846 8270A SIM
2,3-Dihydroindene	1.2 J	5.0	ng/L	SW846 8270A SIM
Biphenyl	11	4.3	ng/L	SW846 8270A SIM
Quinoline	56	6.9	ng/L	SW846 8270A SIM
DPV-W124D-091598 09/15/98 08:45 002				
Naphthalene	7.6	6.6	ng/L	SW846 8270A SIM
2-Methylnaphthalene	8.2	4.0	ng/L	SW846 8270A SIM
Acenaphthene	3.7	1.3	ng/L	SW846 8270A SIM
Dibenzofuran	2.3	1.0	ng/L	SW846 8270A SIM
Fluorene	2.1	1.0	ng/L	SW846 8270A SIM
Phenanthrene	8.8	1.3	ng/L	SW846 8270A SIM
Fluoranthene	3.6	3.2	ng/L	SW846 8270A SIM
Pyrene	7.4	1.4	ng/L	SW846 8270A SIM
Benzo(a)anthracene	0.38 J	2.6	ng/L	SW846 8270A SIM
Chrysene	0.50 J	2.9	ng/L	SW846 8270A SIM
Benzo(a)pyrene	0.57 J	2.4	ng/L	SW846 8270A SIM
Benzo(ghi)perylene	0.83 J	2.9	ng/L	SW846 8270A SIM
Indene	1.1	0.92	ng/L	SW846 8270A SIM
1-Methylnaphthalene	5.0	2.9	ng/L	SW846 8270A SIM
2,3-Dihydroindene	1.4 J	5.1	ng/L	SW846 8270A SIM
Benzo(b)thiophene	0.67 J	0.92	ng/L	SW846 8270A SIM
Biphenyl	5.1	4.4	ng/L	SW846 8270A SIM
Benzo(e)pyrene	0.34 J	1.9	ng/L	SW846 8270A SIM
DPV-W124FB-091598 09/15/98 08:30 003				
Naphthalene	2.7 J	6.9	ng/L	SW846 8270A SIM
2-Methylnaphthalene	2.5 J	4.1	ng/L	SW846 8270A SIM
Phenanthrene	5.2	1.4	ng/L	SW846 8270A SIM
Anthracene	0.61 J	2.9	ng/L	SW846 8270A SIM
Fluoranthene	1.9 J	3.3	ng/L	SW846 8270A SIM

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EXECUTIVE SUMMARY - Detection Highlights

D8I160118

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
DPV-W124FB-091598 09/15/98 08:30 003				
Pyrene	1.3 J	1.5	ng/L	SW846 8270A SIM
Indene	0.65 J	0.95	ng/L	SW846 8270A SIM
1-Methylnaphthalene	1.2 J	3.0	ng/L	SW846 8270A SIM
2,3-Dihydroindene	0.60 J	5.3	ng/L	SW846 8270A SIM
DPV-W124FBD-091598 09/15/98 08:30 004				
Naphthalene	22	7.3	ng/L	SW846 8270A SIM
2-Methylnaphthalene	13	4.4	ng/L	SW846 8270A SIM
Acenaphthene	3.7	1.5	ng/L	SW846 8270A SIM
Dibenzofuran	2.6	1.1	ng/L	SW846 8270A SIM
Fluorene	2.3	1.1	ng/L	SW846 8270A SIM
Phenanthrene	5.8	1.5	ng/L	SW846 8270A SIM
Anthracene	0.57 J	3.0	ng/L	SW846 8270A SIM
Carbazole	2.7	2.1	ng/L	SW846 8270A SIM
Fluoranthene	2.1 J	3.5	ng/L	SW846 8270A SIM
Pyrene	1.9	1.6	ng/L	SW846 8270A SIM
Indene	7.3	1.0	ng/L	SW846 8270A SIM
1-Methylnaphthalene	11	3.2	ng/L	SW846 8270A SIM
2,3-Dihydroindene	6.6	5.6	ng/L	SW846 8270A SIM
Biphenyl	3.5 J	4.8	ng/L	SW846 8270A SIM
Acridine	5.3 J	6.9	ng/L	SW846 8270A SIM
DPV-W433-091598 09/15/98 16:10 005				
Acenaphthene	23	13	ng/L	SW846 8270A SIM
Fluorene	5.4 J	10	ng/L	SW846 8270A SIM
Carbazole	10 J	19	ng/L	SW846 8270A SIM
Fluoranthene	8.9 J	31	ng/L	SW846 8270A SIM
Pyrene	18	14	ng/L	SW846 8270A SIM
Benzo(a)anthracene	1.0 J	25	ng/L	SW846 8270A SIM
Chrysene	4.1 J	28	ng/L	SW846 8270A SIM
Indene	52	9.1	ng/L	SW846 8270A SIM
2,3-Dihydroindene	1200	50	ng/L	SW846 8270A SIM
Benzo(b)thiophene	300	9.1	ng/L	SW846 8270A SIM
Acridine	37 J	62	ng/L	SW846 8270A SIM
DPV-W130-091598 09/15/98 16:10 006				
Naphthalene	14	6.5	ng/L	SW846 8270A SIM
2-Methylnaphthalene	14	3.9	ng/L	SW846 8270A SIM
Acenaphthene	6.5	1.3	ng/L	SW846 8270A SIM
Fluorene	5.1	1.0	ng/L	SW846 8270A SIM

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EXECUTIVE SUMMARY - Detection Highlights

D8I160118

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
DPV-W130-091598 09/15/98 16:10 006				
Carbazole	6.0	1.9	ng/L	SW846 8270A SIM
Fluoranthene	4.7	3.1	ng/L	SW846 8270A SIM
Pyrene	7.7	1.4	ng/L	SW846 8270A SIM
Benzo(b)fluoranthene	0.59 J	2.5	ng/L	SW846 8270A SIM
Benzo(a)pyrene	0.51 J	2.3	ng/L	SW846 8270A SIM
Indeno(1,2,3-cd)pyrene	0.42 J	2.1	ng/L	SW846 8270A SIM
Benzo(ghi)perylene	0.66 J	2.8	ng/L	SW846 8270A SIM
Indene	5.9	0.91	ng/L	SW846 8270A SIM
1-Methylnaphthalene	10	2.8	ng/L	SW846 8270A SIM
2,3-Dihydroindene	4.9 J	5.0	ng/L	SW846 8270A SIM
Indole	11	2.5	ng/L	SW846 8270A SIM
Benzo(e)pyrene	0.76 J	1.9	ng/L	SW846 8270A SIM
DPV-W131-091598 09/15/98 10:15 007				
Naphthalene	22	6.5	ng/L	SW846 8270A SIM
2-Methylnaphthalene	22	3.9	ng/L	SW846 8270A SIM
Acenaphthene	12	1.3	ng/L	SW846 8270A SIM
Dibenzofuran	7.5	1.0	ng/L	SW846 8270A SIM
Fluorene	8.6	1.0	ng/L	SW846 8270A SIM
Phenanthrene	31	1.3	ng/L	SW846 8270A SIM
Anthracene	3.1	2.7	ng/L	SW846 8270A SIM
Fluoranthene	11	3.1	ng/L	SW846 8270A SIM
Pyrene	18	1.4	ng/L	SW846 8270A SIM
Benzo(a)anthracene	0.96 J	2.5	ng/L	SW846 8270A SIM
Chrysene	1.1 J	2.8	ng/L	SW846 8270A SIM
Benzo(b)fluoranthene	1.4 J	2.5	ng/L	SW846 8270A SIM
Benzo(k)fluoranthene	0.42 J	2.3	ng/L	SW846 8270A SIM
Benzo(a)pyrene	0.99 J	2.3	ng/L	SW846 8270A SIM
Indeno(1,2,3-cd)pyrene	0.98 J	2.1	ng/L	SW846 8270A SIM
Benzo(ghi)perylene	1.6 J	2.8	ng/L	SW846 8270A SIM
Indene	3.0	0.90	ng/L	SW846 8270A SIM
1-Methylnaphthalene	20	2.8	ng/L	SW846 8270A SIM
2,3-Dihydroindene	3.8 J	5.0	ng/L	SW846 8270A SIM
Indole	4.1	2.5	ng/L	SW846 8270A SIM
Biphenyl	3.9 J	4.3	ng/L	SW846 8270A SIM
Dibenzothiophene	4.5	1.1	ng/L	SW846 8270A SIM
Benzo(e)pyrene	1.2 J	1.9	ng/L	SW846 8270A SIM
Perylene	0.34 J	2.5	ng/L	SW846 8270A SIM

(Continued on next page)

EXECUTIVE SUMMARY - Detection Highlights

D8I160118

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
DPV-W424-091598 09/15/98 008				
Naphthalene	3.4 J	6.5	ng/L	SW846 8270A SIM
2-Methylnaphthalene	2.2 J	3.9	ng/L	SW846 8270A SIM
Acenaphthene	0.30 J	1.3	ng/L	SW846 8270A SIM
Dibenzofuran	0.75 J	1.0	ng/L	SW846 8270A SIM
Fluorene	0.64 J	1.0	ng/L	SW846 8270A SIM
Phenanthrene	3.6	1.3	ng/L	SW846 8270A SIM
Pyrene	0.90 J	1.4	ng/L	SW846 8270A SIM
Chrysene	0.10 J	2.8	ng/L	SW846 8270A SIM
Indene	0.57 J	0.90	ng/L	SW846 8270A SIM
1-Methylnaphthalene	1.5 J	2.8	ng/L	SW846 8270A SIM
2,3-Dihydroindene	1.1 J	5.0	ng/L	SW846 8270A SIM
DPV-W431-091598 09/15/98 15:00 009				
Naphthalene	24	13	ng/L	SW846 8270A SIM
Acenaphthene	22	2.6	ng/L	SW846 8270A SIM
Dibenzofuran	4.4	2.0	ng/L	SW846 8270A SIM
Fluorene	4.6	2.0	ng/L	SW846 8270A SIM
Phenanthrene	7.0	2.6	ng/L	SW846 8270A SIM
Indene	8.8	1.8	ng/L	SW846 8270A SIM
2,3-Dihydroindene	240	10	ng/L	SW846 8270A SIM
Benzo(b)thiophene	8.8	1.8	ng/L	SW846 8270A SIM
Acridine	54	12	ng/L	SW846 8270A SIM
DPV-W428-091598 09/15/98 14:00 010				
Naphthalene	42	6.5	ng/L	SW846 8270A SIM
2-Methylnaphthalene	42	3.9	ng/L	SW846 8270A SIM
Acenaphthene	26	1.3	ng/L	SW846 8270A SIM
Dibenzofuran	15	1.0	ng/L	SW846 8270A SIM
Fluorene	19	1.0	ng/L	SW846 8270A SIM
Phenanthrene	68	1.3	ng/L	SW846 8270A SIM
Anthracene	6.6	2.7	ng/L	SW846 8270A SIM
Carbazole	8.4	1.9	ng/L	SW846 8270A SIM
Fluoranthene	23	3.1	ng/L	SW846 8270A SIM
Pyrene	42	1.4	ng/L	SW846 8270A SIM
Benzo(a)pyrene	1.3 J	2.3	ng/L	SW846 8270A SIM
Indeno(1,2,3-cd)pyrene	0.91 J	2.1	ng/L	SW846 8270A SIM
Benzo(ghi)perylene	2.4 J	2.8	ng/L	SW846 8270A SIM
Indene	12	0.90	ng/L	SW846 8270A SIM
1-Methylnaphthalene	28	2.8	ng/L	SW846 8270A SIM
2,3-Dihydroindene	120	5.0	ng/L	SW846 8270A SIM
Benzo(b)thiophene	38	0.90	ng/L	SW846 8270A SIM

(Continued on next page)

EXECUTIVE SUMMARY - Detection Highlights

D8I160118

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
DPV-W428-091598 09/15/98 14:00 010				
Biphenyl	14	4.3	ng/L	SW846 8270A SIM
Acridine	6.8	6.1	ng/L	SW846 8270A SIM
Benzo(e)pyrene	2.4	1.9	ng/L	SW846 8270A SIM

SAMPLE SUMMARY

D8I160118

WO #	SAMPLE#	CLIENT SAMPLE ID	DATE	TIME
CLH87	001	DPV-W124-091598	09/15/98	08:45
CLH8G	002	DPV-W124D-091598	09/15/98	08:45
CLH8H	003	DPV-W124FB-091598	09/15/98	08:30
CLH8J	004	DPV-W124FBD-091598	09/15/98	08:30
CLH8K	005	DPV-W433-091598	09/15/98	16:10
CLH8M	006	DPV-W130-091598	09/15/98	16:10
CLH8N	007	DPV-W131-091598	09/15/98	10:15
CLH8P	008	DPV-W424-091598	09/15/98	
CLH8Q	009	DPV-W431-091598	09/15/98	15:00
CLH8R	010	DPV-W428-091598	09/15/98	14:00

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: DPV-W124-091598

GC/MS Semivolatiles

Lot-Sample #...: D8I160118-001 Work Order #...: CLH87101 Matrix.....: WATER
Date Sampled...: 09/15/98 08:45 Date Received..: 09/16/98
Prep Date.....: 09/17/98 Analysis Date..: 10/13/98
Prep Batch #...: 8264138 Analysis Time..: 19:27
Dilution Factor: 1
Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	ND	1.4	ng/L
Naphthalene	**9.5**	**6.5**	**ng/L**
2-Methylnaphthalene	**10**	**3.9**	**ng/L**
Acenaphthene	**4.7**	**1.3**	**ng/L**
Dibenzofuran	ND	1.0	ng/L
Fluorene	**2.5**	**1.0**	**ng/L**
Phenanthrene	**9.7**	**1.3**	**ng/L**
Anthracene	ND	2.7	ng/L
Carbazole	ND	1.9	ng/L
Fluoranthene	**3.8**	**3.1**	**ng/L**
Pyrene	**8.9**	**1.4**	**ng/L**
Benzo(a)anthracene	ND	2.5	ng/L
Chrysene	**0.47 J**	**2.8**	**ng/L**
Benzo(b)fluoranthene	ND	2.5	ng/L
Benzo(k)fluoranthene	ND	2.3	ng/L
Benzo(a)pyrene	ND	2.3	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Benzo(ghi)perylene	**1.5 J**	**2.8**	**ng/L**
Indene	**1.1**	**0.90**	**ng/L**
1-Methylnaphthalene	**6.7**	**2.8**	**ng/L**
2,3-Benzofuran	ND	5.1	ng/L
2,3-Dihydroindene	**1.2 J**	**5.0**	**ng/L**
Benzo(b)thiophene	ND	0.90	ng/L
Indole	ND	2.5	ng/L
Biphenyl	**11**	**4.3**	**ng/L**
Dibenzothiophene	ND	1.1	ng/L
Acridine	ND	6.1	ng/L
Benzo(e)pyrene	ND	1.9	ng/L
Perylene	ND	2.5	ng/L
Quinoline	**56**	**6.9**	**ng/L**
Dibenz(a,h)anthracene	ND	1.6	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	28	(10 - 118)
Fluorene d-10	66	(41 - 162)
Naphthalene-d8	70	(21 - 108)

NOTE(S):

J Estimated result Result is less than RL

CITY OF ST. LOUIS PARK

Client Sample ID: DPV-W124D-091598

GC/MS Semivolatiles

Lot-Sample #...: D8I160118-002 Work Order #...: CLH8G101 Matrix.....: WATER
Date Sampled...: 09/15/98 08:45 Date Received..: 09/16/98
Prep Date.....: 09/17/98 Analysis Date..: 10/13/98
Prep Batch #...: 8264138 Analysis Time..: 20:02
Dilution Factor: 1.02
Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	ND	1.4	ng/L
Naphthalene	7.6	6.6	ng/L
2-Methylnaphthalene	8.2	4.0	ng/L
Acenaphthene	3.7	1.3	ng/L
Dibenzofuran	2.3	1.0	ng/L
Fluorene	2.1	1.0	ng/L
Phenanthrene	8.8	1.3	ng/L
Anthracene	ND	2.8	ng/L
Carbazole	ND	1.9	ng/L
Fluoranthene	3.6	3.2	ng/L
Pyrene	7.4	1.4	ng/L
Benzo(a)anthracene	0.38 J	2.6	ng/L
Chrysene	0.50 J	2.9	ng/L
Benzo(b)fluoranthene	ND	2.6	ng/L
Benzo(k)fluoranthene	ND	2.4	ng/L
Benzo(a)pyrene	0.57 J	2.4	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Benzo(ghi)perylene	0.83 J	2.9	ng/L
Indene	1.1	0.92	ng/L
1-Methylnaphthalene	5.0	2.9	ng/L
2,3-Benzofuran	ND	5.2	ng/L
2,3-Dihydroindene	1.4 J	5.1	ng/L
Benzo(b)thiophene	0.67 J	0.92	ng/L
Indole	ND	2.6	ng/L
Biphenyl	5.1	4.4	ng/L
Dibenzothiophene	ND	1.1	ng/L
Acridine	ND	6.2	ng/L
Benzo(e)pyrene	0.34 J	1.9	ng/L
Perylene	ND	2.6	ng/L
Quinoline	ND	7.1	ng/L
Dibenz(a,h)anthracene	ND	1.6	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	23	(10 - 118)
Fluorene d-10	69	(41 - 162)
Naphthalene-d8	77	(21 - 108)

NOTE(S):

J Estimated result. Result is less than RL.

CITY OF ST. LOUIS PARK

Client Sample ID: DPV-W433-091598

GC/MS Semivolatiles

Lot-Sample #...: D8I160118-005 Work Order #...: CLH8K101 Matrix.....: WATER
Date Sampled...: 09/15/98 16:10 Date Received..: 09/16/98
Prep Date.....: 09/17/98 Analysis Date..: 10/16/98
Prep Batch #...: 8264138 Analysis Time..: 17:16
Dilution Factor: 10.1

Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	ND	14	ng/L
Naphthalene	ND	66	ng/L
2-Methylnaphthalene	ND	39	ng/L
Acenaphthene	**23**	**13**	**ng/L**
Dibenzofuran	ND	10	ng/L
Fluorene	**5.4 J**	**10**	**ng/L**
Phenanthrene	ND	13	ng/L
Anthracene	ND	27	ng/L
Carbazole	**10 J**	**19**	**ng/L**
Fluoranthene	**8.9 J**	**31**	**ng/L**
Pyrene	**18**	**14**	**ng/L**
Benzo(a)anthracene	**1.0 J**	**25**	**ng/L**
Chrysene	**4.1 J**	**28**	**ng/L**
Benzo(b)fluoranthene	ND	25	ng/L
Benzo(k)fluoranthene	ND	23	ng/L
Benzo(a)pyrene	ND	23	ng/L
Indeno(1,2,3-cd)pyrene	ND	21	ng/L
Benzo(ghi)perylene	ND	28	ng/L
Indene	**52**	**9.1**	**ng/L**
1-Methylnaphthalene	ND	28	ng/L
2,3-Benzofuran	ND	52	ng/L
2,3-Dihydroindene	**1200**	**50**	**ng/L**
Benzo(b)thiophene	**300**	**9.1**	**ng/L**
Indole	ND	25	ng/L
Biphenyl	ND	43	ng/L
Dibenzothiophene	ND	11	ng/L
Acridine	**37 J**	**62**	**ng/L**
Benzo(e)pyrene	ND	19	ng/L
Perylene	ND	25	ng/L
Quinoline	ND	70	ng/L
Dibenz(a,h)anthracene	ND	16	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	0.0 DIL,NC	(10 - 118)
Fluorene d-10	0.0 DIL,NC	(41 - 162)
Naphthalene-d8	0.0 DIL,NC	(21 - 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: DPV-W130-091598

GC/MS Semivolatiles

Lot-Sample #...: D8I160118-006 Work Order #...: CLH8M101 Matrix.....: WATER
Date Sampled...: 09/15/98 16:10 Date Received..: 09/16/98
Prep Date.....: 09/17/98 Analysis Date..: 10/13/98
Prep Batch #...: 8264138 Analysis Time..: 22:26
Dilution Factor: 1
Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	ND	1.4	ng/L
Naphthalene	14	6.5	ng/L
2-Methylnaphthalene	14	3.9	ng/L
Acenaphthene	6.5	1.3	ng/L
Dibenzofuran	ND	1.0	ng/L
Fluorene	5.1	1.0	ng/L
Phenanthrene	ND	1.3	ng/L
Anthracene	ND	2.7	ng/L
Carbazole	6.0	1.9	ng/L
Fluoranthene	4.7	3.1	ng/L
Pyrene	7.7	1.4	ng/L
Benzo(a)anthracene	ND	2.5	ng/L
Chrysene	ND	2.8	ng/L
Benzo(b)fluoranthene	0.59 J	2.5	ng/L
Benzo(k)fluoranthene	ND	2.3	ng/L
Benzo(a)pyrene	0.51 J	2.3	ng/L
Indeno(1,2,3-cd)pyrene	0.42 J	2.1	ng/L
Benzo(ghi)perylene	0.66 J	2.8	ng/L
Indene	5.9	0.91	ng/L
1-Methylnaphthalene	10	2.8	ng/L
2,3-Benzofuran	ND	5.1	ng/L
2,3-Dihydroindene	4.9 J	5.0	ng/L
Benzo(b)thiophene	ND	0.91	ng/L
Indole	11	2.5	ng/L
Biphenyl	ND	4.3	ng/L
Dibenzothiophene	ND	1.1	ng/L
Acridine	ND	6.1	ng/L
Benzo(e)pyrene	0.76 J	1.9	ng/L
Perylene	ND	2.5	ng/L
Quinoline	ND	6.9	ng/L
Dibenz(a,h)anthracene	ND	1.6	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	28	(10 - 118)
Fluorene d-10	75	(41 - 162)
Naphthalene-d8	68	(21 - 108)

NOTE(S):

J Estimated result. Result is less than RL.

CITY OF ST. LOUIS PARK

Client Sample ID: DPV-W131-091598

GC/MS Semivolatiles

Lot-Sample #...: D8I160118-007 Work Order #...: CLH8N101 Matrix.....: WATER
Date Sampled...: 09/15/98 10:15 Date Received..: 09/16/98
Prep Date.....: 09/17/98 Analysis Date..: 10/13/98
Prep Batch #...: 8264138 Analysis Time..: 23:01
Dilution Factor: 0.99

Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	ND	1.4	ng/L
Naphthalene	22	6.5	ng/L
2-Methylnaphthalene	22	3.9	ng/L
Acenaphthene	12	1.3	ng/L
Dibenzofuran	7.5	1.0	ng/L
Fluorene	8.6	1.0	ng/L
Phenanthrene	31	1.3	ng/L
Anthracene	3.1	2.7	ng/L
Carbazole	ND	1.9	ng/L
Fluoranthene	11	3.1	ng/L
Pyrene	18	1.4	ng/L
Benzo(a)anthracene	0.96 J	2.5	ng/L
Chrysene	1.1 J	2.8	ng/L
Benzo(b)fluoranthene	1.4 J	2.5	ng/L
Benzo(k)fluoranthene	0.42 J	2.3	ng/L
Benzo(a)pyrene	0.99 J	2.3	ng/L
Indeno(1,2,3-cd)pyrene	0.98 J	2.1	ng/L
Benzo(ghi)perylene	1.6 J	2.8	ng/L
Indene	3.0	0.90	ng/L
1-Methylnaphthalene	20	2.8	ng/L
2,3-Benzofuran	ND	5.1	ng/L
2,3-Dihydroindene	3.8 J	5.0	ng/L
Benzo(b)thiophene	ND	0.90	ng/L
Indole	4.1	2.5	ng/L
Biphenyl	3.9 J	4.3	ng/L
Dibenzothiophene	4.5	1.1	ng/L
Acridine	ND	6.1	ng/L
Benzo(e)pyrene	1.2 J	1.9	ng/L
Perylene	0.34 J	2.5	ng/L
Quinoline	ND	6.9	ng/L
Dibenz(a,h)anthracene	ND	1.6	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	26	(10 - 118)
Fluorene d-10	72	(41 - 162)
Naphthalene-d8	79	(21 - 108)

NOTE(S):

J Estimated result. Result is less than RL.

CITY OF ST. LOUIS PARK

Client Sample ID: DPV-W424-091598

GC/MS Semivolatiles

Lot-Sample #...: D8I160118-008 Work Order #...: CLH8P101 Matrix.....: WATER
Date Sampled...: 09/15/98 Date Received..: 09/16/98
Prep Date.....: 09/17/98 Analysis Date..: 10/15/98
Prep Batch #...: 8264138 Analysis Time..: 18:45
Dilution Factor: 0.99

Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	ND	1.4	ng/L
Naphthalene	3.4 J	6.5	ng/L
2-Methylnaphthalene	2.2 J	3.9	ng/L
Acenaphthene	0.30 J	1.3	ng/L
Dibenzofuran	0.75 J	1.0	ng/L
Fluorene	0.64 J	1.0	ng/L
Phenanthrene	3.6	1.3	ng/L
Anthracene	ND	2.7	ng/L
Carbazole	ND	1.9	ng/L
Fluoranthene	ND	3.1	ng/L
Pyrene	0.90 J	1.4	ng/L
Benzo(a)anthracene	ND	2.5	ng/L
Chrysene	0.10 J	2.8	ng/L
Benzo(b)fluoranthene	ND	2.5	ng/L
Benzo(k)fluoranthene	ND	2.3	ng/L
Benzo(a)pyrene	ND	2.3	ng/L
Indeno(1,2,3-cd)pyrene	ND	2.1	ng/L
Benzo(ghi)perylene	ND	2.8	ng/L
Indene	0.57 J	0.90	ng/L
1-Methylnaphthalene	1.5 J	2.8	ng/L
2,3-Benzofuran	ND	5.1	ng/L
2,3-Dihydroindene	1.1 J	5.0	ng/L
Benzo(b)thiophene	ND	0.90	ng/L
Indole	ND	2.5	ng/L
Biphenyl	ND	4.3	ng/L
Dibenzothiophene	ND	1.1	ng/L
Acridine	ND	6.1	ng/L
Benzo(e)pyrene	ND	1.9	ng/L
Perylene	ND	2.5	ng/L
Quinoline	ND	6.9	ng/L
Dibenz(a,h)anthracene	ND	1.6	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	64	(10 - 118)
Fluorene d-10	68	(41 - 162)
Naphthalene-d8	73	(21 - 108)

NOTE(S):

J Estimated result Result is less than RL.

CITY OF ST. LOUIS PARK

Client Sample ID: DPV-W431-091598

GC/MS Semivolatiles

Lot-Sample #...: D8I160118-009 Work Order #...: CLH8Q101 Matrix.....: WATER
Date Sampled...: 09/15/98 15:00 Date Received..: 09/16/98
Prep Date.....: 09/17/98 Analysis Date..: 10/16/98
Prep Batch #...: 8264138 Analysis Time..: 17:52
Dilution Factor: 1.99

Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	ND	2.8	ng/L
Naphthalene	**24**	**13**	**ng/L**
2-Methylnaphthalene	ND	7.8	ng/L
Acenaphthene	**22**	**2.6**	**ng/L**
Dibenzofuran	**4.4**	**2.0**	**ng/L**
Fluorene	**4.6**	**2.0**	**ng/L**
Phenanthrene	**7.0**	**2.6**	**ng/L**
Anthracene	ND	5.4	ng/L
Carbazole	ND	3.8	ng/L
Fluoranthene	ND	6.2	ng/L
Pyrene	ND	2.8	ng/L
Benzo(a)anthracene	ND	5.0	ng/L
Chrysene	ND	5.6	ng/L
Benzo(b)fluoranthene	ND	5.0	ng/L
Benzo(k)fluoranthene	ND	4.6	ng/L
Benzo(a)pyrene	ND	4.6	ng/L
Indeno(1,2,3-cd)pyrene	ND	4.2	ng/L
Benzo(ghi)perylene	ND	5.6	ng/L
Indene	**8.8**	**1.8**	**ng/L**
1-Methylnaphthalene	ND	5.6	ng/L
2,3-Benzofuran	ND	10	ng/L
2,3-Dihydroindene	**240**	**10**	**ng/L**
Benzo(b)thiophene	**8.8**	**1.8**	**ng/L**
Indole	ND	5.0	ng/L
Biphenyl	ND	8.6	ng/L
Dibenzothiophene	ND	2.2	ng/L
Acridine	**54**	**12**	**ng/L**
Benzo(e)pyrene	ND	3.8	ng/L
Perylene	ND	5.0	ng/L
Quinoline	ND	14	ng/L
Dibenz(a,h)anthracene	ND	3.2	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	41	(10 - 118)
Fluorene d-10	74	(41 - 162)
Naphthalene-d8	57	(21 - 108)

CITY OF ST. LOUIS PARK

Client Sample ID: DPV-W428-091598

GC/MS Semivolatiles

Lot-Sample #...: D8I160118-010 Work Order #...: CLH8R101 Matrix.....: WATER
Date Sampled...: 09/15/98 14:00 Date Received..: 09/16/98
Prep Date.....: 09/17/98 Analysis Date..: 10/15/98
Prep Batch #...: 8264138 Analysis Time..: 19:58
Dilution Factor: 0.99

Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	ND	1.4	ng/L
Naphthalene	42	6.5	ng/L
2-Methylnaphthalene	42	3.9	ng/L
Acenaphthene	26	1.3	ng/L
Dibenzofuran	15	1.0	ng/L
Fluorene	19	1.0	ng/L
Phenanthrene	68	1.3	ng/L
Anthracene	6.6	2.7	ng/L
Carbazole	8.4	1.9	ng/L
Fluoranthene	23	3.1	ng/L
Pyrene	42	1.4	ng/L
Benzo(a)anthracene	ND	2.5	ng/L
Chrysene	ND	2.8	ng/L
Benzo(b)fluoranthene	ND	2.5	ng/L
Benzo(k)fluoranthene	ND	2.3	ng/L
Benzo(a)pyrene	1.3 J	2.3	ng/L
Indeno(1,2,3-cd)pyrene	0.91 J	2.1	ng/L
Benzo(ghi)perylene	2.4 J	2.8	ng/L
Indene	12	0.90	ng/L
1-Methylnaphthalene	28	2.8	ng/L
2,3-Benzofuran	ND	5.1	ng/L
2,3-Dihydroindene	120	5.0	ng/L
Benzo(b)thiophene	38	0.90	ng/L
Indole	ND	2.5	ng/L
Biphenyl	14	4.3	ng/L
Dibenzothiophene	ND	1.1	ng/L
Acridine	6.8	6.1	ng/L
Benzo(e)pyrene	2.4	1.9	ng/L
Perylene	ND	2.5	ng/L
Quinoline	ND	6.9	ng/L
Dibenz(a,h)anthracene	ND	1.6	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	19	(10 - 118)
Fluorene d-10	64	(41 - 162)
Naphthalene-d8	90	(21 - 108)

NOTE(S):

J Estimated result. Result is less than RL.

Chain of Custody Record

Quanterra

QUA-4124

Client: City of St. Louis Park	Project Manager: Scott Anderson	Date: 9-15-98	Chain Of Custody Number: 39601
Address: ~~St~~ 3752 Woodale	Telephone Number (Area Code)/Fax Number: 612 924 2557	Lab Number:	Page 1 of 1
City: St Louis Park; State: MN; Zip Code: 55416	Site Contact: Pete Moore		
Project Name: Reilly Site	Carrier/Waybill Number:		
Contract/Purchase Order/Quote No:			

Sample I D No and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Analysis: PAH-PPTS
DPV-W124-091598	9-15-98	0845	gw	6 L	glass amber	6			x
DPV-W124D-091598 ~~D~~ PSM	9-15-98	0845	gw	6 L	glass amber	6			x

Special Instructions: PPT 5

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

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required: ☐ Normal ☐ Rush

QC Level: ☐ I. ☐ II. ☐ III.

Project Specific (Specify):

	Date	Time		Date	Time
1 Relinquished By: William McGregg	9-15-98	1700	1 Received By: DBuckheister / KILL	9.16.98	920
2 Relinquished By:			2 Received By:		
3 Relinquished By:			3 Received By:		

Comments

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Chain of Custody Record

Quanterra

QUA-4124

Client: City of St. Louis Park	Project Manager: Scott Anderson	Date: 9-15-98	Chain Of Custody Number: 39606
Address: 3752 Wooddale Ave	Telephone Number (Area Code)/Fax Number: 612 924 2557	Lab Number:	Page ____ of ____
City: St. Louis Park; State: MN; Zip Code: 55416	Site Contact: Pete Moore		
Project Name: Reilly Site	Carrier/Waybill Number:		
Contract/Purchase Order/Quote No:			

Sample I.D No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Analysis: PAH-PPT5
DPV-W124-091598-~~FB~~ FB PJM	9-15-98	0830	gw	6L	amber glass	6	—		X
DPV-W124-091598-~~FBD~~ FBD PJM	9-15-98	0830	gw	6L	"	6	—		X

Special Instructions: PPT 5

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

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For ____ Months

Turn Around Time Required: ☐ Normal ☐ Rush

QC Level: ☐ I. ☐ II. ☐ III.

Project Specific (Specify):

1 Relinquished By: William M Hegg	Date: 9-15-98	Time: 1700	1. Received By: D Buckhelster / K. Ill	Date: 9-16-98	Time: 920
2 Relinquished By:	Date:	Time:	2 Received By:	Date:	Time:
3 Relinquished By:	Date:	Time:	3 Received By:	Date:	Time:

Comments:

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Chain of Custody Record

Quanterra

QUA 4124

Client: City of St Louis Park	Project Manager: Bill Gross	Date: 9-15-98	Chain Of Custody Number: 39604
Address: 3252 Woodale Ave	Telephone Number (Area Code)/Fax Number: 612-924-2557	Lab Number:	Page 1 of 1
City: St Louis Park; State: Mn; Zip Code: 55416	Site Contact: Scott Anderson		
Project Name: SLP/Reilly	Carrier/Waybill Number:		
Contract/Purchase Order/Quote No:			

Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No	Preservative	Condition on Receipt	Analysis: PDT-PAH
DPV-W433-091598	9-15-98	16:40	GW	6 Liter	1 Liter	6	—		X
DPV-W130-091598	9-15-98	16:40	GW	6 Liter	1 Liter	6	—		X

Special Instructions: PPT-5

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

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required: ☐ Normal ☐ Rush

QC Level: ☐ I. ☐ II. ☐ III.

Project Specific (Specify):

1 Relinquished By: [signature]	Date: 9/15/98	Time: 17:00	1 Received By: D. Buchholzer	Date: 9-16-98	Time: 9:20
2 Relinquished By	Date	Time	2 Received By	Date	Time
3 Relinquished By	Date	Time	3 Received By	Date	Time

Comments

Chain of Custody Record

Quanterra

QUA-4124

Client: City of St. Louis Park	Project Manager: Scott Anderson	Date: 9-15-98	Chain Of Custody Number: 39603
Address: Wooddale Ave	Telephone Number (Area Code)/Fax Number: 612 924 2557	Lab Number:	Page 1 of 1
City: St. Louis Park; State: MN; Zip Code: 55416	Site Contact: Pete Moore		
Project Name: Reilly Site	Carrier/Waybill Number:		
Contract/Purchase Order/Quote No:			

Sample I D No and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Analysis: PAH-PPT-5
DPV-W431-091598	9-15-98	1500	gw	6L	amber glass	6			X
DPV-W428-091598	9-15-98	1400	gw	6L	"	6			X

Special Instructions: PPT 5

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

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required: ☐ Normal ☐ Rush

QC Level: ☐ I. ☐ II. ☐ III

Project Specific (Specify):

	Date	Time		Date	Time
1 Relinquished By: William M. Gregg	9-15-98	1700	1. Received By: D Duckhelster / K.M	9.16.98	9 20
2 Relinquished By:			2 Received By:		
3 Relinquished By:			3 Received By:		

Comments:

Chain of Custody Record

Quanterra

QUA-4124

Client: City of St Louis Park	Project Manager: Bill Gregg	Date: 9/15/98	Chain Of Custody Number: 39602
Address: 3752 Woodale Ave	Telephone Number (Area Code)/Fax Number: 612-924-2557	Lab Number:	Page 1 of 1
City: St Louis Park; State: MN; Zip Code: 55416	Site Contact: Scott Anderson		
Project Name: SLP / Reilly Site	Carrier/Waybill Number:		
Contract/Purchase Order/Quote No:			

Sample I.D No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No	Preservative	Condition on Receipt	Analysis: PPT-PAH
DPV-W131-091998 (15 min)	9-19-98 (15 min)	10:15	GW	6 Liters	1 Liter	6	—		X
DPV-W424-091598	9-15-98	12:00	GW	6 Liters	1 Liter	6	—		X

Special Instructions: PPT-5

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

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required: ☐ Normal ☐ Rush

QC Level: ☐ I. ☐ II. ☐ III.

Project Specific (Specify):

	Date	Time		Date	Time
1 Relinquished By: [signature]	9/15/98	12:00	1 Received By: D Buckheister / K. Ill	9.16.98	9:20
2 Relinquished By:			2 Received By:		
3 Relinquished By:			3 Received By:		

Comments

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Advanced Analytical Services

Quanterra Incorporated
4955 Yarrow Street
Arvada, Colorado 80002

303 421-6611 Telephone
303 467-9136 Fax

CASE NARRATIVE

FOR

City of St. Louis Park

November, 17, 1998

Quanterra Environmental Services

Project Lot Number D8I230123

Introduction

Ten aqueous samples (including matrix QC) were received at Quanterra Environmental Services, Denver Laboratory on September 23, 1998. The samples were logged in under Quanterra Denver's project lot number D8I230123. A cross reference associating Quanterra Denver's laboratory sample numbers to the actual field sample number is included. The samples were analyzed for part per trillion (ppt-75) PAHs.

Data Quality Assessment

The results contained in this report were reviewed relative to data acceptance criteria as specified in the October 1997 QAPP for completeness, precision, accuracy, representativeness and defensibility of the data. Unless otherwise stated below, no quality control problems or technical difficulties were encountered which would impact the interpretation or use of data in this report.

Client samples with laboratory Ids D8I230123-001, -002, -005 , -006, -007, -008, -009 and 010 were analyzed at a dilution due to target analytes exceeding the linear range of the instrument. The reporting limits were raised accordingly. As a result of the dilutions, the surrogate compounds were not detected and are reported as "NC".

The sample and sample duplicate analyses did not have good correlation. Mr. Scott Anderson and Mr. William Gregg were contacted. Quanterra was advised to report the data for review. The method blank and laboratory control samples were within acceptance limits.

The field blank and field blank duplicate samples contained analytes above the acceptance range. The method blank and laboratory control samples associated with these samples were within acceptance limits.

Except for the above, this data package is in compliance with the terms and conditions of the October 1997 QAPP, both technically and for completeness

Reported By: Kurt C. Ill **Date:** November 17, 1998

Kurt C. Ill
Customer Service Manger

ANALYTICAL REPORT

Reilly Tar & Chemical NPL Site

Lot #: D8I230123

Scott Anderson

City of St. Louis Park

QUANTERRA INCORPORATED

Kurt C. Ill
Project Manager

November 17, 1998

EXECUTIVE SUMMARY - Detection Highlights

D8I230123

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
DPV-W143-092298 09/22/98 001				
Naphthalene	220 J	1300	ng/L	SW846 8270A SIM
Acenaphthene	260	260	ng/L	SW846 8270A SIM
Phenanthrene	150 J	260	ng/L	SW846 8270A SIM
Carbazole	140 J	380	ng/L	SW846 8270A SIM
Fluoranthene	54 J	620	ng/L	SW846 8270A SIM
Indene	770	180	ng/L	SW846 8270A SIM
2,3-Dihydroindene	15000	1000	ng/L	SW846 8270A SIM
Benzo(b)thiophene	4500	180	ng/L	SW846 8270A SIM
Indole	2900	500	ng/L	SW846 8270A SIM
DPV-W120-092298 09/22/98 002				
Acenaphthene	43	26	ng/L	SW846 8270A SIM
Fluorene	12 J	20	ng/L	SW846 8270A SIM
Phenanthrene	58	26	ng/L	SW846 8270A SIM
Carbazole	22 J	38	ng/L	SW846 8270A SIM
Fluoranthene	23 J	62	ng/L	SW846 8270A SIM
Pyrene	33	28	ng/L	SW846 8270A SIM
Indene	150	18	ng/L	SW846 8270A SIM
2,3-Dihydroindene	2200	100	ng/L	SW846 8270A SIM
Benzo(b)thiophene	1000	18	ng/L	SW846 8270A SIM
Acridine	56 J	120	ng/L	SW846 8270A SIM
DPV-W22FB-092298 09/22/98 08:00 003				
Acenaphthylene	3.5	1.4	ng/L	SW846 8270A SIM
Naphthalene	28	6.5	ng/L	SW846 8270A SIM
2-Methylnaphthalene	41	3.9	ng/L	SW846 8270A SIM
Acenaphthene	5.7	1.3	ng/L	SW846 8270A SIM
Dibenzofuran	9.0	1.0	ng/L	SW846 8270A SIM
Fluorene	15	1.0	ng/L	SW846 8270A SIM
Phenanthrene	87	1.3	ng/L	SW846 8270A SIM
Anthracene	7.5	2.7	ng/L	SW846 8270A SIM
Fluoranthene	32	3.1	ng/L	SW846 8270A SIM
Pyrene	19	1.4	ng/L	SW846 8270A SIM
Indene	2.1	0.90	ng/L	SW846 8270A SIM
1-Methylnaphthalene	15	2.8	ng/L	SW846 8270A SIM
Biphenyl	5.0	4.3	ng/L	SW846 8270A SIM
2,3-Dihydroindene	2.9 J	5.0	ng/L	SW846 8270A SIM
Dibenzothiophene	6.0	1.1	ng/L	SW846 8270A SIM

(Continued on next page)

EXECUTIVE SUMMARY - Detection Highlights

D8I230123

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
DPV-W22FBD-092298 09/22/98 08:00 004				
Naphthalene	16	6.5	ng/L	SW846 8270A SIM
2-Methylnaphthalene	22	3.9	ng/L	SW846 8270A SIM
Dibenzofuran	4.6	1.0	ng/L	SW846 8270A SIM
Fluorene	7.5	1.0	ng/L	SW846 8270A SIM
Phenanthrene	39	1.3	ng/L	SW846 8270A SIM
Anthracene	3.5	2.7	ng/L	SW846 8270A SIM
Fluoranthene	14	3.1	ng/L	SW846 8270A SIM
Pyrene	8.8	1.4	ng/L	SW846 8270A SIM
Indene	1.5	0.90	ng/L	SW846 8270A SIM
1-Methylnaphthalene	8.2	2.8	ng/L	SW846 8270A SIM
Biphenyl	2.6 J	4.3	ng/L	SW846 8270A SIM
2,3-Benzofuran	0.44 J	5.1	ng/L	SW846 8270A SIM
2,3-Dihydroindene	2.1 J	5.0	ng/L	SW846 8270A SIM
Dibenzothiophene	2.8	1.1	ng/L	SW846 8270A SIM
DPV-W22-092298 09/22/98 08:10 005				
Naphthalene	4600	650	ng/L	SW846 8270A SIM
Indene	1200	90	ng/L	SW846 8270A SIM
2,3-Benzofuran	720	510	ng/L	SW846 8270A SIM
2,3-Dihydroindene	1000	500	ng/L	SW846 8270A SIM
DPV-W22D-092298 09/22/98 08:10 006				
Naphthalene	66000	3200	ng/L	SW846 8270A SIM
Indene	16000	450	ng/L	SW846 8270A SIM
2,3-Benzofuran	13000	2600	ng/L	SW846 8270A SIM
2,3-Dihydroindene	12000	2500	ng/L	SW846 8270A SIM
Benzo(b)thiophene	8000	450	ng/L	SW846 8270A SIM
DPV-W426-092298 09/22/98 09:10 007				
Acenaphthylene	24000	2800	ng/L	SW846 8270A SIM
Naphthalene	230000	13000	ng/L	SW846 8270A SIM
Acenaphthene	240000	2600	ng/L	SW846 8270A SIM
Dibenzofuran	97000	2000	ng/L	SW846 8270A SIM
Fluorene	140000	2000	ng/L	SW846 8270A SIM
Phenanthrene	150000	2600	ng/L	SW846 8270A SIM
Anthracene	17000	5400	ng/L	SW846 8270A SIM
Carbazole	49000	3800	ng/L	SW846 8270A SIM
Fluoranthene	12000	6200	ng/L	SW846 8270A SIM
Pyrene	6100	2800	ng/L	SW846 8270A SIM
Indene	57000	1800	ng/L	SW846 8270A SIM

(Continued on next page)

EXECUTIVE SUMMARY - Detection Highlights

D8I230123

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
DPV-W426-092298 09/22/98 09:10 007				
1-Methylnaphthalene	280000	5600	ng/L	SW846 8270A SIM
Biphenyl	49000	8600	ng/L	SW846 8270A SIM
2,3-Benzofuran	3800 J	10000	ng/L	SW846 8270A SIM
2,3-Dihydroindene	100000	10000	ng/L	SW846 8270A SIM
Benzo(b)thiophene	40000	1800	ng/L	SW846 8270A SIM
Dibenzothiophene	13000	2200	ng/L	SW846 8270A SIM
DPV-W432-092298 09/22/98 10:15 008				
Naphthalene	2100	650	ng/L	SW846 8270A SIM
Carbazole	29 J	190	ng/L	SW846 8270A SIM
Indene	2600	90	ng/L	SW846 8270A SIM
2,3-Dihydroindene	9800	500	ng/L	SW846 8270A SIM
Benzo(b)thiophene	4500	90	ng/L	SW846 8270A SIM
DPV-W27-092298 09/22/98 12:20 009				
Acenaphthylene	1800	1400	ng/L	SW846 8270A SIM
Naphthalene	100000	6500	ng/L	SW846 8270A SIM
Acenaphthene	45000	1300	ng/L	SW846 8270A SIM
Dibenzofuran	14000	1000	ng/L	SW846 8270A SIM
Fluorene	14000	1000	ng/L	SW846 8270A SIM
Phenanthrene	5100	1300	ng/L	SW846 8270A SIM
Carbazole	9800	1900	ng/L	SW846 8270A SIM
Indene	69000	900	ng/L	SW846 8270A SIM
1-Methylnaphthalene	48000	2800	ng/L	SW846 8270A SIM
Biphenyl	8200	4300	ng/L	SW846 8270A SIM
2,3-Dihydroindene	80000	5000	ng/L	SW846 8270A SIM
Benzo(b)thiophene	27000	900	ng/L	SW846 8270A SIM
DPV-W101-092298 09/22/98 13:10 010				
Acenaphthylene	260 J	2800	ng/L	SW846 8270A SIM
Naphthalene	6200 J	13000	ng/L	SW846 8270A SIM
Acenaphthene	4400	2600	ng/L	SW846 8270A SIM
Dibenzofuran	830 J	2000	ng/L	SW846 8270A SIM
Phenanthrene	400 J	2600	ng/L	SW846 8270A SIM
Carbazole	510 J	3800	ng/L	SW846 8270A SIM
Indene	5300	1800	ng/L	SW846 8270A SIM
1-Methylnaphthalene	3200 J	5600	ng/L	SW846 8270A SIM
Biphenyl	510 J	8600	ng/L	SW846 8270A SIM
2,3-Dihydroindene	80000	10000	ng/L	SW846 8270A SIM
Benzo(b)thiophene	23000	1800	ng/L	SW846 8270A SIM

SAMPLE SUMMARY

D8I230123

WO #	SAMPLE#	CLIENT SAMPLE ID	DATE	TIME
CLPF1	001	DPV-W143-092298	09/22/98	
CLPF4	002	DPV-W120-092298	09/22/98	
CLPF5	003	DPV-W22FB-092298	09/22/98	08:00
CLPF6	004	DPV-W22FBD-092298	09/22/98	08:00
CLPF7	005	DPV-W22-092298	09/22/98	08:10
CLPF9	006	DPV-W22D-092298	09/22/98	08:10
CLPFA	007	DPV-W426-092298	09/22/98	09:10
CLPFC	008	DPV-W432-092298	09/22/98	10:15
CLPFE	009	DPV-W27-092298	09/22/98	12:20
CLPFF	010	DPV-W101-092298	09/22/98	13:10

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-W143-092298

GC/MS Semivolatiles

Lot-Sample #...: D8I230123-001 Work Order #...: CLPF1101 Matrix.....: WATER
Date Sampled...: 09/22/98 Date Received..: 09/23/98
Prep Date.....: 09/24/98 Analysis Date..: 11/12/98
Prep Batch #...: 8273209 Analysis Time..: 17:41
Dilution Factor: 200

Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	ND	280	ng/L
Naphthalene	220 J	1300	ng/L
2-Methylnaphthalene	ND	780	ng/L
Acenaphthene	260	260	ng/L
Dibenzofuran	ND	200	ng/L
Fluorene	ND	200	ng/L
Phenanthrene	150 J	260	ng/L
Anthracene	ND	540	ng/L
Carbazole	140 J	380	ng/L
Fluoranthene	54 J	620	ng/L
Pyrene	ND	280	ng/L
[illegible]nzo(a)anthracene	ND	500	ng/L
[illegible]rysene	ND	560	ng/L
Benzo(b)fluoranthene	ND	500	ng/L
Benzo(k)fluoranthene	ND	460	ng/L
Benzo(a)pyrene	ND	460	ng/L
Indeno(1,2,3-cd)pyrene	ND	420	ng/L
Benzo(ghi)perylene	ND	560	ng/L
Indene	770	180	ng/L
1-Methylnaphthalene	ND	560	ng/L
Benzo(e)pyrene	ND	380	ng/L
Biphenyl	ND	860	ng/L
Dibenz(a,h)anthracene	ND	320	ng/L
Quinoline	ND	1400	ng/L
2,3-Benzofuran	ND	1000	ng/L
2,3-Dihydroindene	15000	1000	ng/L
Benzo(b)thiophene	4500	180	ng/L
Indole	2900	500	ng/L
Acridine	ND	1200	ng/L
Perylene	ND	500	ng/L
Dibenzothiophene	ND	220	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	0.0 DIL,NC	(10 - 118)
Fluorene d-10	0.0 DIL,NC	(41 - 162)
Naphthalene-d8	0.0 DIL,NC	(21 - 108)

[illegible]TE(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: DPV-W120-092298

GC/MS Semivolatiles

Lot-Sample #...: D8I230123-002 Work Order #...: CLPF4101 Matrix.....: WATER
Date Sampled...: 09/22/98 Date Received..: 09/23/98
Prep Date.....: 09/24/98 Analysis Date..: 10/21/98
Prep Batch #...: 8273209 Analysis Time..: 21:58
Dilution Factor: 20

Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	ND	28	ng/L
Naphthalene	ND	130	ng/L
2-Methylnaphthalene	ND	78	ng/L
Acenaphthene	43	26	ng/L
Dibenzofuran	ND	20	ng/L
Fluorene	12 J	20	ng/L
Phenanthrene	58	26	ng/L
Anthracene	ND	54	ng/L
Carbazole	22 J	38	ng/L
Fluoranthene	23 J	62	ng/L
Pyrene	33	28	ng/L
Benzo(a)anthracene	ND	50	ng/L
Chrysene	ND	56	ng/L
Benzo(b)fluoranthene	ND	50	ng/L
Benzo(k)fluoranthene	ND	46	ng/L
Benzo(a)pyrene	ND	46	ng/L
Indeno(1,2,3-cd)pyrene	ND	42	ng/L
Benzo(ghi)perylene	ND	56	ng/L
Indene	150	18	ng/L
1-Methylnaphthalene	ND	56	ng/L
Benzo(e)pyrene	ND	38	ng/L
Biphenyl	ND	86	ng/L
Dibenz(a,h)anthracene	ND	32	ng/L
Quinoline	ND	140	ng/L
2,3-Benzofuran	ND	100	ng/L
2,3-Dihydroindene	2200	100	ng/L
Benzo(b)thiophene	1000	18	ng/L
Indole	ND	50	ng/L
Acridine	56 J	120	ng/L
Perylene	ND	50	ng/L
Dibenzothiophene	ND	22	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	0.0 DIL,NC	(10 - 118)
Fluorene d-10	0.0 DIL,NC	(41 - 162)
Naphthalene-d8	0.0 DIL,NC	(21 - 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. : . IIS PARK

Client Sample ID: 'V-W22-092298

GC/MS Semi: :atiles

Lot-Sample #...:	D8I 23-005	Work Order #	: CLPF7101	Matrix.....:	WA
Date Sampled...:	09/.. '8 08:10	Date Receive.	: 09/23/98		
Prep Date.....:	09/. '8	Analysis Dat.	: 10/21/98		
Prep Batch #...:	827 '	Analysis Tim.	: 23:10		
Dilution Factor:	10C				
		Method.....	.: SW846 8270A SIM		

PARAMETER		RESULT	REPORTING LIMIT	UNITS
Acenaphthylene		ND	140	ng/L
Naphthalene		**4600**	**650**	**ng/L**
2-Methylnaphthalene		ND	390	ng/L
Acenaphthene		ND	130	ng/L
Dibenzofuran		ND	100	ng/L
Fluorene		ND	100	ng/L
Phenanthrene		ND	130	ng/L
Anthracene		ND	270	ng/L
Carbazole		ND	190	ng/L
Fluoranthene		ND	310	ng/L
Pyrene		ND	140	ng/L
Benzo(a)anthracene		ND	250	ng/L
Chrysene		ND	280	ng/L
Benzo(b)fluoranthene		ND	250	ng/L
Benzo(k)fluoranthene		ND	230	ng/L
Benzo(a)pyrene		ND	230	ng/L
Indeno(1,2,3-cd)pyre		ND	210	ng/L
Benzo(ghi)perylene		ND	280	ng/L
Indene		**1200**	**90**	**ng/L**
1-Methylnaphthalene		ND	280	ng/L
Benzo(e)pyrene		ND	190	ng/L
Biphenyl		ND	430	ng/L
Dibenz(a,h)anthracen		ND	160	ng/L
Quinoline		ND	690	ng/L
2,3-Benzofuran		**720**	**510**	**ng/L**
2,3-Dihydroindene		**1000**	**500**	**ng/L**
Benzo(b)thiophene		ND	90	ng/L
Indole		ND	250	ng/L
Acridine		ND	610	ng/L
Perylene		ND	250	ng/L
Dibenzothiophene		ND	110	ng/L

SURROGATE		PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12		0.0 DIL,NC	(10 - 118)
Fluorene d-10		0.0 DIL,NC	(41 - 162)
Naphthalene-d8		0.0 DIL,NC	(21 - 108)

NOTE(S):

DIL The concentration is estimated or n ed due to dilution or the presence of interf nalytes

NC The recovery and/or RPD were not ted

CITY OF ST. LOUIS PARK

Client Sample ID: DPV-W22D-092298

GC/MS Semivolatiles

Lot-Sample #...: D8I230123-006 Work Order #...: CLPF9101 Matrix.....: WATER
Date Sampled...: 09/22/98 08:10 Date Received..: 09/23/98
Prep Date.....: 09/24/98 Analysis Date..: 11/13/98
Prep Batch #...: 8273209 Analysis Time..: 13:42
Dilution Factor: 500

Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	ND	700	ng/L
Naphthalene	**66000**	**3200**	**ng/L**
2-Methylnaphthalene	ND	2000	ng/L
Acenaphthene	ND	650	ng/L
Dibenzofuran	ND	500	ng/L
Fluorene	ND	500	ng/L
Phenanthrene	ND	650	ng/L
Anthracene	ND	1400	ng/L
Carbazole	ND	950	ng/L
Fluoranthene	ND	1600	ng/L
Pyrene	ND	700	ng/L
Benzo(a)anthracene	ND	1200	ng/L
Chrysene	ND	1400	ng/L
Benzo(b)fluoranthene	ND	1200	ng/L
Benzo(k)fluoranthene	ND	1200	ng/L
Benzo(a)pyrene	ND	1200	ng/L
Indeno(1,2,3-cd)pyrene	ND	1000	ng/L
Benzo(ghi)perylene	ND	1400	ng/L
Indene	**16000**	**450**	**ng/L**
1-Methylnaphthalene	ND	1400	ng/L
Benzo(e)pyrene	ND	950	ng/L
Biphenyl	ND	2200	ng/L
Dibenz(a,h)anthracene	ND	800	ng/L
Quinoline	ND	3400	ng/L
2,3-Benzofuran	**13000**	**2600**	**ng/L**
2,3-Dihydroindene	**12000**	**2500**	**ng/L**
Benzo(b)thiophene	**8000**	**450**	**ng/L**
Indole	ND	1200	ng/L
Acridine	ND	3000	ng/L
Perylene	ND	1200	ng/L
Dibenzothiophene	ND	550	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	0.0 DIL,NC	(10 - 118)
Fluorene d-10	0.0 DIL,NC	(41 - 162)
Naphthalene-d8	0.0 DIL,NC	(21 - 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: DPV-W426-092298

GC/MS Semivolatiles

Lot-Sample #...: D8I230123-007 Work Order #...: CLPFA101 Matrix.....: WATER
Date Sampled...: 09/22/98 09:10 Date Received..: 09/23/98
Prep Date.....: 09/24/98 Analysis Date..: 11/12/98
Prep Batch #...: 8273209 Analysis Time..: 18:55
Dilution Factor: 2000
Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	24000	2800	ng/L
Naphthalene	230000	13000	ng/L
2-Methylnaphthalene	ND	7800	ng/L
Acenaphthene	240000	2600	ng/L
Dibenzofuran	97000	2000	ng/L
Fluorene	140000	2000	ng/L
Phenanthrene	150000	2600	ng/L
Anthracene	17000	5400	ng/L
Carbazole	49000	3800	ng/L
Fluoranthene	12000	6200	ng/L
Pyrene	6100	2800	ng/L
Benzo(a)anthracene	ND	5000	ng/L
Chrysene	ND	5600	ng/L
Benzo(b)fluoranthene	ND	5000	ng/L
Benzo(k)fluoranthene	ND	4600	ng/L
Benzo(a)pyrene	ND	4600	ng/L
Indeno(1,2,3-cd)pyrene	ND	4200	ng/L
Benzo(ghi)perylene	ND	5600	ng/L
Indene	57000	1800	ng/L
1-Methylnaphthalene	280000	5600	ng/L
Benzo(e)pyrene	ND	3800	ng/L
Biphenyl	49000	8600	ng/L
Dibenz(a,h)anthracene	ND	3200	ng/L
Quinoline	ND	14000	ng/L
2,3-Benzofuran	3800 J	10000	ng/L
2,3-Dihydroindene	100000	10000	ng/L
Benzo(b)thiophene	40000	1800	ng/L
Indole	ND	5000	ng/L
Acridine	ND	12000	ng/L
Perylene	ND	5000	ng/L
Dibenzothiophene	13000	2200	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	0.0 DIL,NC	(10 - 118)
Fluorene d-10	0.0 DIL,NC	(41 - 162)
Naphthalene-d8	0.0 DIL,NC	(21 - 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: DPV-W432-092298

GC/MS Semivolatiles

Lot-Sample #...: D8I230123-008 Work Order #...: CLPFC101 Matrix.....: WATER
Date Sampled...: 09/22/98 10:15 Date Received..: 09/23/98
Prep Date.....: 09/24/98 Analysis Date..: 11/12/98
Prep Batch #...: 8273209 Analysis Time..: 19:31
Dilution Factor: 100

Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	ND	140	ng/L
Naphthalene	2100	650	ng/L
2-Methylnaphthalene	ND	390	ng/L
Acenaphthene	ND	130	ng/L
Dibenzofuran	ND	100	ng/L
Fluorene	ND	100	ng/L
Phenanthrene	ND	130	ng/L
Anthracene	ND	270	ng/L
Carbazole	29 J	190	ng/L
Fluoranthene	ND	310	ng/L
Pyrene	ND	140	ng/L
Benzo(a)anthracene	ND	250	ng/L
Chrysene	ND	280	ng/L
Benzo(b)fluoranthene	ND	250	ng/L
Benzo(k)fluoranthene	ND	230	ng/L
Benzo(a)pyrene	ND	230	ng/L
Indeno(1,2,3-cd)pyrene	ND	210	ng/L
Benzo(ghi)perylene	ND	280	ng/L
Indene	2600	90	ng/L
1-Methylnaphthalene	ND	280	ng/L
Benzo(e)pyrene	ND	190	ng/L
Biphenyl	ND	430	ng/L
Dibenz(a,h)anthracene	ND	160	ng/L
Quinoline	ND	690	ng/L
2,3-Benzofuran	ND	510	ng/L
2,3-Dihydroindene	9800	500	ng/L
Benzo(b)thiophene	4500	90	ng/L
Indole	ND	250	ng/L
Acridine	ND	610	ng/L
Perylene	ND	250	ng/L
Dibenzothiophene	ND	110	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	0.0 DIL,NC	(10 - 118)
Fluorene d-10	0.0 DIL,NC	(41 - 162)
Naphthalene-d8	0.0 DIL,NC	(21 - 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: DPV-W27-092298

GC/MS Semivolatiles

Lot-Sample #...: D8I230123-009 Work Order #...: CLPFE101 Matrix.....: WATER
Date Sampled...: 09/22/98 12:20 Date Received..: 09/23/98
Prep Date.....: 09/24/98 Analysis Date..: 11/13/98
Prep Batch #...: 8273209 Analysis Time..: 14:18
Dilution Factor: 1000
Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	1800	1400	ng/L
Naphthalene	100000	6500	ng/L
2-Methylnaphthalene	ND	3900	ng/L
Acenaphthene	45000	1300	ng/L
Dibenzofuran	14000	1000	ng/L
Fluorene	14000	1000	ng/L
Phenanthrene	5100	1300	ng/L
Anthracene	ND	2700	ng/L
Carbazole	9800	1900	ng/L
Fluoranthene	ND	3100	ng/L
Pyrene	ND	1400	ng/L
Benzo(a)anthracene	ND	2500	ng/L
Chrysene	ND	2800	ng/L
Benzo(b)fluoranthene	ND	2500	ng/L
Benzo(k)fluoranthene	ND	2300	ng/L
Benzo(a)pyrene	ND	2300	ng/L
Indeno(1,2,3-cd)pyrene	ND	2100	ng/L
Benzo(ghi)perylene	ND	2800	ng/L
Indene	69000	900	ng/L
1-Methylnaphthalene	48000	2800	ng/L
Benzo(e)pyrene	ND	1900	ng/L
Biphenyl	8200	4300	ng/L
Dibenz(a,h)anthracene	ND	1600	ng/L
Quinoline	ND	6900	ng/L
2,3-Benzofuran	ND	5100	ng/L
2,3-Dihydroindene	80000	5000	ng/L
Benzo(b)thiophene	27000	900	ng/L
Indole	ND	2500	ng/L
Acridine	ND	6100	ng/L
Perylene	ND	2500	ng/L
Dibenzothiophene	ND	1100	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	0.0 DIL,NC	(10 - 118)
Fluorene d-10	0.0 DIL,NC	(41 - 162)
Naphthalene-d8	0.0 DIL,NC	(21 - 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: DPV-W101-092298

GC/MS Semivolatiles

Lot-Sample #...: D8I230123-010 Work Order #...: CLPFF101 Matrix.....: WATER
Date Sampled...: 09/22/98 13:10 Date Received..: 09/23/98
Prep Date.....: 09/24/98 Analysis Date..: 11/12/98
Prep Batch #...: 8273209 Analysis Time..: 20:44
Dilution Factor: 2000
Method.....: SW846 8270A SIM

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acenaphthylene	260 J	2800	ng/L
Naphthalene	6200 J	13000	ng/L
2-Methylnaphthalene	ND	7800	ng/L
Acenaphthene	4400	2600	ng/L
Dibenzofuran	830 J	2000	ng/L
Fluorene	ND	2000	ng/L
Phenanthrene	400 J	2600	ng/L
Anthracene	ND	5400	ng/L
Carbazole	510 J	3800	ng/L
Fluoranthene	ND	6200	ng/L
Pyrene	ND	2800	ng/L
Benzo(a)anthracene	ND	5000	ng/L
Chrysene	ND	5600	ng/L
Benzo(b)fluoranthene	ND	5000	ng/L
Benzo(k)fluoranthene	ND	4600	ng/L
Benzo(a)pyrene	ND	4600	ng/L
Indeno(1,2,3-cd)pyrene	ND	4200	ng/L
Benzo(ghi)perylene	ND	5600	ng/L
Indene	5300	1800	ng/L
1-Methylnaphthalene	3200 J	5600	ng/L
Benzo(e)pyrene	ND	3800	ng/L
Biphenyl	510 J	8600	ng/L
Dibenz(a,h)anthracene	ND	3200	ng/L
Quinoline	ND	14000	ng/L
2,3-Benzofuran	ND	10000	ng/L
2,3-Dihydroindene	80000	10000	ng/L
Benzo(b)thiophene	23000	1800	ng/L
Indole	ND	5000	ng/L
Acridine	ND	12000	ng/L
Perylene	ND	5000	ng/L
Dibenzothiophene	ND	2200	ng/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Chrysene-d12	0.0 DIL,NC	(10 - 118)
Fluorene d-10	0.0 DIL,NC	(41 - 162)
Naphthalene-d8	0.0 DIL,NC	(21 - 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.

Chain of Custody Record

Quanterra

QUA 4124

Client: City of St Louis Park	Project Manager: Bill Gregg	Date: 9-22-98	Chain Of Custody Number: 39631
Address: 3252 Woodale Ave	Telephone Number (Area Code)/Fax Number: 612-924-2557	Lab Number:	Page 1 of 1
City: St Louis Park; State: Mn; Zip Code: 55416	Site Contact: Scott Anderson		
Project Name: Reilly/SLP	Carrier/Waybill Number:		
Contract/Purchase Order/Quote No:			

Sample I D No and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Analysis: PPT-PAH
DPV-W22-092298	9-22-98	8:10	GW	6 Liters	1 Liter	6	—		X
DPV-W22D-092298	9-22-98	8:10	GW	6 Liters	1 Liter	6	—		X

Special Instructions: PPT-75

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

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required: ☐ Normal ☐ Rush

QC Level: ☐ I. ☐ II. ☐ III.

Project Specific (Specify):

	Date	Time		Date	Time
1 Relinquished By: [signature]	7-22-98	17:00	1 Received By: D Buuchester	9/23/98	930
2 Relinquished By:			2 Received By:		
3 Relinquished By:			3 Received By:		

Comments: 22

DISTRIBUTION. WHITE - Stays with Sample, CANARY - Returned to Client with Report, PINK - Field Copy

Chain of Custody Record

Quanterra

QUA 4124

Client: City of St Louis Park	Project Manager: Bill Gross	Date: 9/22/98	Chain Of Custody Number: 39635
Address: 3752 Woodale Ave	Telephone Number (Area Code)/Fax Number: 612-924-2557	Lab Number:	Page 1 of 1
City: St Louis Park; State: MN; Zip Code: 55416	Site Contact: Scott Anderson		
Project Name: Reilly / SLP	Carrier/Waybill Number:		
Contract/Purchase Order/Quote No:			

Sample I D No and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Analysis: PPT-DAH
DPV-W22FB-092298	9-22-98	8:00	G-W	6 Liters	1L Liter	6	—	2 Broken	X
DPV-W22FBD-092298	9-22-98	8:00	G-W	6 Liters	1 Liter	6	—		X

Special Instructions: PPT-75

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

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required: ☐ Normal ☐ Rush

QC Level: ☐ I. ☐ II. ☐ III.

Project Specific (Specify):

	Date	Time		Date	Time
1 Relinquished By: [signature]	9-22-98	12:00	1 Received By: D Buckheister	9-22-98	9:30
2 Relinquished By			2 Received By		
3 Relinquished By			3 Received By		

Comments: 2 3

DISTRIBUTION: W[illegible] Stays with Sample, CANARY - Returned to Client with Report, PINK - Field Copy

Chain of Custody Record

Quanterra

OUA 4124

Client: City of St Louis Park	Project Manager: Bill Grigg	Date: 9-22-98	Chain Of Custody Number: 39627
Address: 3752 Woodale Ave	Telephone Number (Area Code)/Fax Number: 612-924-2557	Lab Number:	Page 1 of 1
City: St Louis Park; State: MN; Zip Code: 55416	Site Contact: Scott Anderson		
Project Name: Reilly/SLP	Carrier/Waybill Number:		
Contract/Purchase Order/Quote No:			

Sample I.D. No and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No	Preservative	Condition on Receipt	Analysis: PPT-PAH
DPV-W27-092298	9-22-98	12:20	GW	6 Liters	1 Liter	6	—		X
DPV-W101-092298	9-22-98	13:10	GW	6 Liters	1 Liter	6	—		X

Special Instructions: PPT-25

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

Sample Disposal: ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Turn Around Time Required: ☐ Normal ☐ Rush

QC Level: ☐ I. ☐ II. ☐ III.

Project Specific (Specify):

1 Relinquished By: [signature]	Date: 9/22/98	Time: 17:00	1 Received By: D Bouchheister	Date: 9/23/98	Time: 930 A
2 Relinquished By:	Date:	Time:	2 Received By:	Date:	Time:
3 Relinquished By:	Date:	Time:	3 Received By:	Date:	Time:

Comments: 24

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