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Superfund - HW
Spills - SP
ERP - E
VCP - V
BCP - C

DSS#12

The RETEC Group, Inc.
1001 W. Seneca Street, Suite 204
Ithaca, NY 14850-3342

RETEC

(607) 277-5716 Phone
(607) 277-9057 Fax
www.retec.com

October 9, 2003

Mr. Charles Burke
National Fuel Gas Distribution Corporation
Building 11
365 Mineral Springs Road
Buffalo, NY 14210

RE: Groundwater and Surface Water Monitoring Results
July 2003
Mineral Springs Road MGP Site

Dear Charlie:

This report provides the results of a groundwater and surface water sampling event completed by The RETEC Group, Inc. (RETEC) on July 22 and 23, 2003, at the Mineral Springs Road former MGP site in West Seneca (and Buffalo), New York.

The work at the Mineral Springs site is being conducted under a NYSDEC Voluntary Cleanup Agreement (number B9-0538-98-08) as described in the Remedial Design, dated February 10, 1999, and the Final Engineering Report, Volume II – Operations and Maintenance Plan, dated May 2002.

Summary

A total of 13 groundwater samples and 2 surface water samples were collected and analyzed. A total of 15 depth-to-water measurements were taken. Sampling locations are shown in the attached figure. Analytical results are summarized in the attached table.

Concentrations of BTEX and PAH compounds were below the detection limit in the surface water, upgradient perimeter, and MW-10 samples. Concentrations of some hydrocarbon compounds were in exceedance of standards in three of the onsite groundwater samples, including the newly installed MW-11A.

Total cyanide concentrations were in exceedance of the groundwater standard in seven of the groundwater samples, but below the standard in the surface water samples. Free cyanide was detected at low concentrations in all monitoring wells tested and at SW-01.

Groundwater Elevations

Depth-to-water measurements were taken at 14 monitoring wells and at surface water sampling point SW-01. The measurements were used to construct the groundwater contours shown in the attached figure.

At the time of the sampling, groundwater flowed onto the site from the east and southeast, then flowed to the west and northwest towards Calais Street and Mineral Springs Road. Onsite groundwater also appears to discharge to the Class D Stream, which in turn discharges to the Calais Street storm sewer and the municipal wastewater treatment system.

These results are consistent with previous sampling events conducted at the site.

Sampling and Analysis

A total of 13 monitoring wells were purged and sampled by a RETEC geologist. Two surface water samples were also collected. Sampling locations are shown on the attached figure.

Severn Trent Laboratories (STL) of Pittsburgh, PA, performed the analyses of the groundwater and surface water samples for hydrocarbon COI. STL is currently certified to perform the requested analyses under the NYSDOH Environmental Laboratory Approval Program. The samples were analyzed for Manufactured Gas Plant (MGP) indicators using the following methods:

BTEX	Method SW846 8260B
PAHs	Method SW846 8270C

Samples were also sent to Exygen Research (formerly Centre Analytical Laboratories) of State College, PA, for cyanide analysis using the following methods:

Cyanide (free)	Method ASTM D4282-89
Cyanide (total)	Method SW864 9012A

All sampling and analyses were conducted according to RETEC's Standard Operating Procedures as provided in the project Quality Assurance Plan of June 11, 1999.

Analytical Results and Conclusions

The results of the laboratory analyses are summarized in the attached table. The laboratory reports and the chain-of-custody forms are attached as well. The locations, sampling objectives, and a discussion of the analytical results for each of the specific areas of interest at the site are provided in the following sections.

Upgradient Site Perimeter

Well MW-17 is located in the southeast corner of the site and monitors upgradient groundwater quality. The results of the analyses indicate that no BTEX or PAH compounds were detected in concentrations greater than the method detection limits. Total cyanide was detected at a concentration of 50 ug/L; free cyanide was detected at 16 ug/L.

Downgradient Site Perimeter

Wells MW-20 and MW-21 are located downgradient of the western boundary of the site on Calais Street. Wells MW-13, MW-14, MW-22 and MW-23 are located just inside the northern property boundary near Mineral Springs Road. These six "sentinel" wells monitor groundwater quality downgradient of the site. All six wells were analyzed for total and free cyanide.

The six wells were found to contain total cyanide in concentrations above the NYSDEC groundwater standard of 200 ug/L. Concentrations ranged from 399 ug/L at MW-20 to 962 ug/L at MW-14. These concentrations are generally consistent with previous results. Free cyanide was also detected in all six wells during this sampling event.

Onsite Purifier Residuals Impacted Areas

Wells MW-12 and MW-16 monitor groundwater quality at locations of known subsurface deposits of purifier box residuals. These deposits were remediated by capping. Samples from these two wells were analyzed for total and free cyanide.

Total cyanide concentrations were 384 ug/L at MW-12 and 130 ug/L at MW-16. Free cyanide was also detected in both wells.

Onsite Hydrocarbon NAPL Impacted Areas

Wells MW-7, MW-10, MW-11A, and MW-19 monitor onsite groundwater quality downgradient of subsurface soil impacted with hydrocarbon NAPL. Samples from these wells were analyzed for BTEX and PAHs.

The former monitoring well MW-11 was replaced (at the same location) on July 14, 2003, with MW-11A. MW-11 had been installed with the screen straddling the upper clay layer; MW-11A was installed entirely in the aquifer of concern with bottom-of-screen at the lower clay layer. As seen at other locations near the hydrocarbon impacted areas, BTEX and PAH concentrations are higher near the lower clay layer and the MW-11A results are higher than the average (former) MW-11 results.

No BTEX or PAH compounds were detected in MW-10. BTEX and naphthalene were detected above the groundwater standards in MW-7, MW-11A, and MW-19. BTEX concentrations at MW-19, as initially reported by the laboratory, were approximately 10 times higher than anticipated. PAH concentrations at MW-19 were as anticipated. A re-analysis of an archived sample (beyond holding time) qualitatively confirmed the possible error. BTEX results for MW-19 are, therefore, not included on the summary table but are included in the attached original lab report.

Surface Water

Two surface water samples were collected during this sampling event. Sample SW-01 was collected at the Calais Street storm sewer inlet. Sample SW-02 was collected from the Eastern Drainage Ditch near the Class D Stream. These surface sampling locations monitor the effectiveness of the Eastern Drainage Ditch Cap and also monitor the concentrations of COI in surface water at its most downgradient location at the Mineral Springs site.

BTEX and PAHs were not detected in the surface water samples. Total cyanide was detected below the NYSDEC standard in both SW-01 and SW-02. Free cyanide was detected (below the NYSDEC standard) in SW-01.

QA/QC Samples

Three quality control samples were collected during the sampling event to meet the requirements of the project QAP.

Sample "SW-03" was collected as a duplicate from SW-02 and submitted for analysis of BTEX, PAHs, total cyanide and free cyanide. The results were within the acceptable range for the duplicate sample.

An equipment blank (EB) was prepared using organic free water supplied by the laboratory that was run over and through a sample collection bailer and through peristaltic pump tubing. No cyanide, BTEX, or PAH compounds were detected in the equipment blank.

A trip blank (TB) sample was prepared by the laboratory and was stored in the sample cooler throughout the sampling event and during transportation back to the laboratory. The trip blank was analyzed for BTEX and no compounds were detected in concentrations greater than the method detection limits.

DNAPL Recovery Test Well (RTW-1)

During this groundwater sampling event, the Recovery System was operated to purge RTW-1 of DNAPL that had accumulated since the previous (April 2003) sampling event. Approximately two gallons of water was pumped out, of which the first gallon appeared tarry (< 5% NAPL) and the second appeared clear.

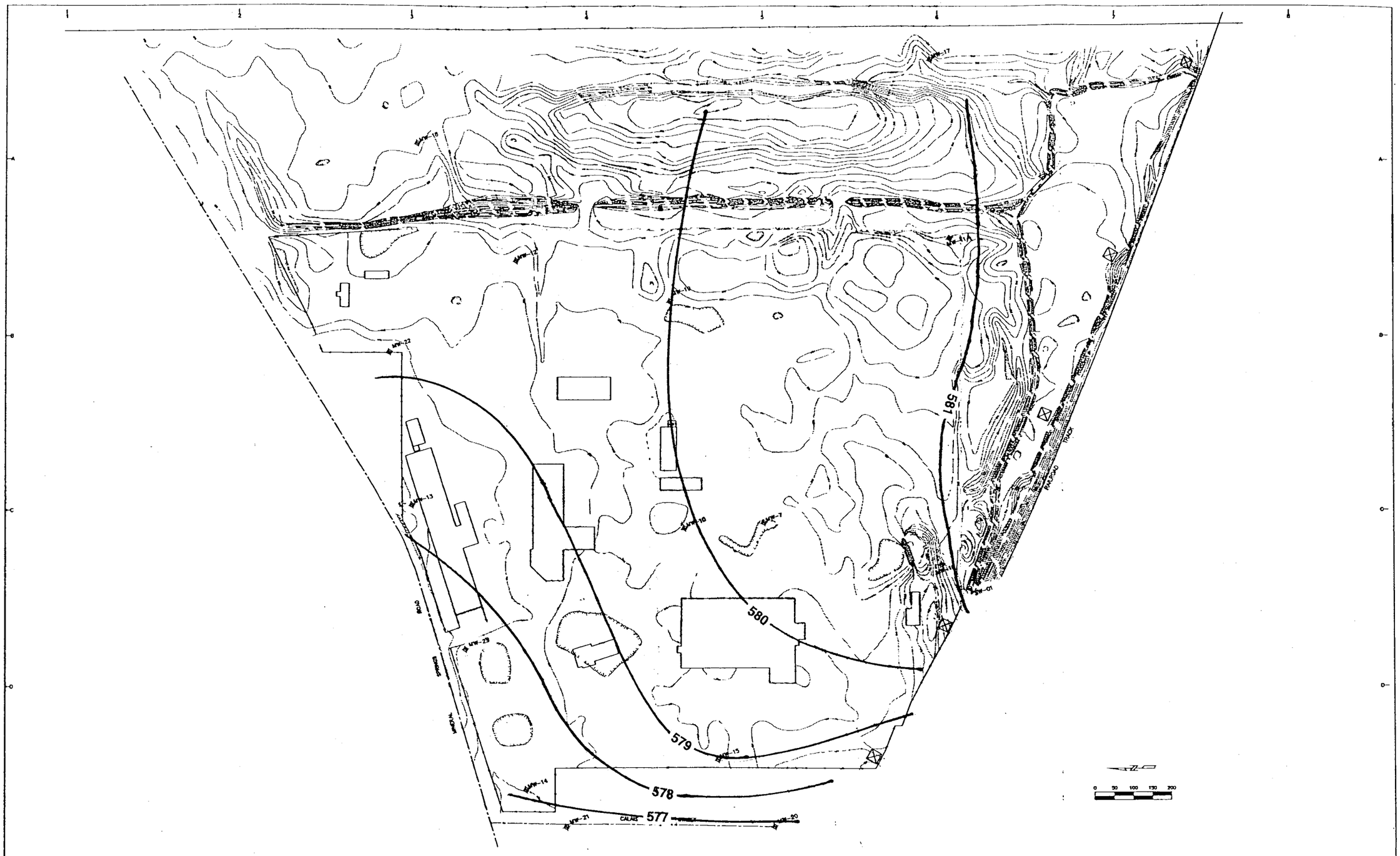
If you have any questions or comments, please do not hesitate to call me at (607) 277-5716.

Sincerely,
The RETEC Group, Inc.

Mark Hofferbert, P.E.
Project Engineer

encl: Groundwater Contours (Figure)
Laboratory Results Summary (Table)
Laboratory Reports

cc: T. Alexander - NFG
D. Flynn - Phillips, Lytle
G. Sutton - NYSDEC
C. O'Connor - NYSDOH (w. figure/table only)
G. Bailey - NYSDEC (w. figure/table only)
G. Litwin - NYSDOH (w. figure/table only)
File: NFGD3-14852-300



GROUNDWATER CONTOURS
July, 2003

NATIONAL FUEL GAS
MINERAL SPRINGS ROAD SITE

RETEC

Groundwater and Surface Water Monitoring Results
Mineral Springs Road MGP Site

July 2003

PARAMETER	GROUNDWATER SAMPLES															SURFACE WATER SAMPLES			QA/QC SAMPLES		
Sample ID :	MW-07	MW-10	MW-11 A	MW-12	MW-13	MW-14	MW-15	MW-16	MW-17	MW-19	MW-20	MW-21	MW-22	MW-23	*Groundwater*	SW-01	SW-02	*Class D Stream*	TB	EB	SW-02 Dup
Sample Date :	07/23/03	07/23/03	07/22/03	07/23/03	07/23/03	07/23/03	07/23/03	07/23/03	07/22/03	07/23/03	07/23/03	07/23/03	07/23/03	07/23/03	*Standard (1)*	07/23/03	07/23/03	*Standard (1)*	07/23/03	07/23/03	07/23/03
BTEX (µg/L)																					
Benzene	1900	nd	350	---	---	---	---	---	nd	error	---	---	---	---	1	nd	nd	10	nd	nd	nd
Toluene	930	nd	230	---	---	---	---	---	nd	error	---	---	---	---	5	nd	nd	6000	nd	nd	nd
Ethylbenzene	1900	nd	650	---	---	---	---	---	nd	error	---	---	---	---	5	nd	nd	150 *	nd	nd	nd
Xylene (sum of isomers)	1000	nd	410	---	---	---	---	---	nd	error	---	---	---	---	5 (each)	nd	nd	590 *	nd	nd	nd
PAHs (µg/L)																					
Naphthalene	3800	nd	150	---	---	---	---	---	nd	2100	---	---	---	---	10 *	nd	nd	110 *	---	nd	nd
Acenaphthylene	nd	nd	12	---	---	---	---	---	nd	nd	---	---	---	---	NL *	nd	nd	NL	---	nd	nd
Acenaphthene	160 J	nd	4.4 J	---	---	---	---	---	nd	nd	---	---	---	---	20 *	nd	nd	48 *	---	nd	nd
Fluorene	nd	nd	2.2 J	---	---	---	---	---	nd	nd	---	---	---	---	50 *	nd	nd	4.8 *	---	nd	nd
Phenanthrene	nd	nd	2.7 J	---	---	---	---	---	nd	nd	---	---	---	---	50 *	nd	nd	45 *	---	nd	nd
Anthracene	nd	nd	nd	---	---	---	---	---	nd	nd	---	---	---	---	50 *	nd	nd	35 *	---	nd	nd
Fluoranthene	nd	nd	nd	---	---	---	---	---	nd	nd	---	---	---	---	50 *	nd	nd	NL	---	nd	nd
Pyrene	nd	nd	nd	---	---	---	---	---	nd	nd	---	---	---	---	50 *	nd	nd	42 *	---	nd	nd
Benzo(a)Anthracene	nd	nd	nd	---	---	---	---	---	nd	nd	---	---	---	---	0.002 *	nd	nd	0.23 *	---	nd	nd
Chrysene	nd	nd	nd	---	---	---	---	---	nd	nd	---	---	---	---	0.002 *	nd	nd	NL	---	nd	nd
Benzo(b)Fluoranthene	nd	nd	nd	---	---	---	---	---	nd	nd	---	---	---	---	0.002 *	nd	nd	NL	---	nd	nd
Benzo(k)Fluoranthene	nd	nd	nd	---	---	---	---	---	nd	nd	---	---	---	---	0.002 *	nd	nd	NL	---	nd	nd
Benzo(a)Pyrene	nd	nd	nd	---	---	---	---	---	nd	nd	---	---	---	---	ND	nd	nd	0.0012 *	---	nd	nd
Indeno(1,2,3-cd)Pyrene	nd	nd	nd	---	---	---	---	---	nd	nd	---	---	---	---	0.002 *	nd	nd	NL	---	nd	nd
Dibenzo(a,h)Anthracene	nd	nd	nd	---	---	---	---	---	nd	nd	---	---	---	---	NL	nd	nd	NL	---	nd	nd
Benzo(g,h,i)Perylene	nd	nd	nd	---	---	---	---	---	nd	nd	---	---	---	---	NL	nd	nd	NL	---	nd	nd
2-Methylnaphthalene	280 J	nd	31	---	---	---	---	---	nd	nd	---	---	---	---	NL	nd	nd	NL	---	nd	nd
CYANIDE (µg/L)																					
Cyanide, total	---	---	---	384	423	962	---	130	50	---	399	708	560	620	200	88	30	9000	---	nd	36
Cyanide, free	---	---	---	88	51	9	---	89	16	---	44	11	88	15	NL	10	nd	22	---	nd	7
Water Elevation (feet)	580.31	579.93	580.70	579.59	578.13	577.23	579.11	580.42	580.46	580.01	576.90	576.55	579.42	577.40	NL	581.4	581.5 (est.)	---	---	---	---

Notes:

NL Not listed

nd Not detected above method detection limit

--- Not analyzed for

J Indicates laboratory estimated value

(1) NYSDEC Division of Water Technical and Operational Guidance Series (1.1.1), Ambient Water Quality Standards and Guidance Values 6 NYCRR 700 - revised June 1998.

* Groundwater or Surface Water Guidance Value (no Standard value listed)

Concentrations exceeding NYSDEC regulatory standard or guidance value

error Possible dilution error by laboratory resulted in atypically high concentrations; re-analysis of post-holding time sample confirmed error.

Analytical Data

STL Laboratories

SEVERN TRENT STL

STL Pittsburgh
450 William Pitt Way, Building 6
Pittsburgh, PA 15238

Tel: 412 820 8380 Fax: 412 820 2080
www.stl-inc.com

ANALYTICAL REPORT

PROJECT NO. NFGD3-14852-300

Retec-Mineral Springs

Lot #: C3G240142

Jim Edwards

The RETEC Group Inc

SEVERN TRENT LABORATORIES, INC.

Dave Dunlap
Project Manager

August 7, 2003

SEVERN TRENT STL

ACCREDITED IN ACCORDANCE WITH nelac

NELAC REPORTING:

The format and content of the attached report meets NELAC standards and guidelines except as noted in the narrative. The table below presents a summary of the certifications held by STL Pittsburgh. Our primary accreditation authority for the Non-potable water and Solid & Hazardous waste programs is New York State DOH. A more detailed parameter list is available upon request. Please ask your project manager for this information when required.

Table - Certifications/Accreditation

Certifying State/Program	Certificate #	Program Types	STL Pittsburgh
NFESC	NA	NAVY	X
USACE	NA	Corps of Engineers	X
US Dept of Agriculture	(#S-46425)	Foreign Soil Import Permit	X
Arkansas	(#03-022-1)	WW	X
		HW	X
Connecticut	(#PH-0688)	WW	X
		HW	X
Florida – nelac	(#E87660)	WW	X
		HW	X
Illinois – nelac	(#200005)	WW	X
		HW	X
Kansas – nelac	(#E-10350)	WW	X
		HW	X
Louisiana – nelac	(#93200)	WW	X
		HW	X
New Hampshire – nelac	(#203002)	WW	X
New Jersey – nelac	(PA-005)	WW	X
		HW	X
New York – nelac	(#11182)	WW	X
		HW	X
North Carolina	(#434)	WW	X
		HW	X
Ohio Vap	(#CL0063)	WW	X
		HW	X
South Carolina	(#89014001)	WW	X
		HW	X
Utah – nelac	(STLP)	WW	X
		HW	X
West Virginia	(#142)	WW	X
		HW	X

The codes utilized for program types are described below:

HW Hazardous Waste certification
WW Non-potable Water and/or Wastewater certification
X Laboratory has some form of certification under the specific program. Many states certify laboratories for specific parameters or tests within a category. The information in the table indicates the lab is certified in a general category of testing. Please contact the laboratory if parameter specific certification information is required.

CASE NARRATIVE

THE RETEC GROUP

STL Lot # C3G240142

Sample Receiving:
Samples were received at STL Pittsburgh on July 24, 2003. The coolers were within proper temperature.

If project specific QC was not required for samples contained in this report, when batch QC was completed on these samples, anomalous results will be discussed below.

GC/MS Volatiles:
Due to the concentration of compounds detected, samples MW07, MW11A, and MW19 were analyzed at a dilution.

The initial calibration analyzed had compounds outside the 15%RSD criteria. The average %RSD of all the compounds in the five-point calibration mix was less than 15%. Therefore, the average response factor was used for all compounds. See the following sheets for the compounds and the %RSDs.

The continuing calibrations analyzed had compounds outside the ±15%D criteria. The average %D of all the compounds in the continuing calibration mix was less than 15%. Therefore, analysis continued and the results for the samples reported. See the following sheets for the compounds and the %Ds.

GC/MS Semivolatiles:
The reporting limits are adjusted to reflect the amount of sample used in the extraction procedure.

Due to the concentration of compounds detected, samples MW07, MW11A, and MW19 were analyzed at a dilution. The surrogates were diluted out for the analyses of MW07 and MW19.

The initial calibration analyzed had compounds outside the 15%RSD criteria. The average %RSD of all the compounds in the five-point calibration mix was less than 15%. Therefore, the average response factor was used for all compounds. See the following sheets for the compounds and the %RSDs.

The continuing calibration analyzed had compounds outside the ±15%D criteria. The average %D of all the compounds in the continuing calibration mix was less than 15%. Therefore, analysis continued and the results for the samples reported. See the following sheets for the compounds and the %Ds.

Data File: \\qpitpa02\d\chem\hp5.i\50722k.b/2A50722K.D
Report Date: 07/22/2003

p

INITIAL CALIBRATION REPORT

Instrument ID: hp5.i
Lab File ID: 2A50722K.D
Analysis Type: WATER

Injection Date: 22-JUL-2003 10:19
Lab Sample ID: vstd1
Method File: \\QPITPA02\D\chem\hp5.i\50722k.b\8260bl

COMPOUND	%RSD
1,2-Dichloroethene (total)	8.2
Xylenes (total)	8.8
Dichlorodifluoromethane	5.9
Chloromethane	12.6
Vinyl Chloride	8.9
Bromomethane	66.3
Chloroethane	12.5
Trichlorofluoromethane	6.7
1,1-Dichloroethene	6.4
1,1,2-Trichloro-1,2,2-Trifluo	6.3
Acetone	20.3
Carbon Disulfide	9.8
Acetonitrile	33.8
Methyl Acetate	14.3
Methylene Chloride	14.3
trans-1,2-Dichloroethene	7.9
Methyl tert-butyl ether	11.5
1,1-Dichloroethane	10.0
2,2-Dichloropropane	9.4
cis-1,2-dichloroethene	8.5
2-Butanone	15.5
Bromochloromethane	11.1
Chloroform	9.9
1,1,1-Trichloroethane	9.2
Dibromofluoromethane	8.6
Cyclohexane	8.3
Carbon Tetrachloride	11.6
1,1-Dichloropropene	9.0
1,2-Dichloroethane-d4	5.1
Benzene	8.5
1,2-Dichloroethane	9.6
Trichloroethene	8.9
Methyl Cyclohexane	7.5
1,2-Dichloropropane	10.9
Dibromomethane	12.0
Bromodichloromethane	10.3
cis-1,3-Dichloropropene	12.4
4-Methyl-2-Pentanone	10.8
Toluene-d8	6.2

Data File: \\qpitpa02\d\chem\hp5.i\50722k.b/2A50722K.D
Report Date: 07/22/2003

INITIAL CALIBRATION REPORT

Instrument ID: hp5.i
Lab File ID: 2A50722K.D
Analysis Type: WATER

Injection Date: 22-JUL-2003 10:19
Lab Sample ID: vstd1
Method File: \\QPITPA02\D\chem\hp5.i\50722k.b

COMPOUND	%RSD
Toluene	7.5
trans-1,3-Dichloropropene	12.1
1,1,2-Trichloroethane	9.2
Tetrachloroethene	8.3
1,3-Dichloropropane	9.2
2-Hexanone	15.9
Dibromochloromethane	14.2
1,2-Dibromoethane	13.0
Chlorobenzene	8.1
1,1,1,2-Tetrachloroethane	11.0
Ethylbenzene	9.1
m + p-Xylene	8.3
Xylene-o	9.9
Styrene	11.0
Bromoform	22.6
Isopropylbenzene	8.4
Bromofluorobenzene	10.4
Bromobenzene	9.4
1,1,2,2-Tetrachloroethane	12.3
1,2,3-Trichloropropane	10.3
n-Propylbenzene	8.3
2-Chlorotoluene	9.1
1,3,5-Trimethylbenzene	8.4
4-Chlorotoluene	9.1
tert-Butylbenzene	8.3
1,2,4-Trimethylbenzene	8.5
sec-Butylbenzene	9.6
1,3-Dichlorobenzene	10.5
4-Isopropyltoluene	8.5
1,4-Dichlorobenzene	13.2
n-Butylbenzene	8.0
1,2-Dichlorobenzene	13.7

The average of all %RSD's in the initial calibration is 11.3

Data File: \\QPITPA02\d\chem\hp5.i\50724n.b/1C50724N.D
Report Date: 07/24/2003

CONTINUING CALIBRATION REPORT

Instrument ID: hp5.i
Lab File ID: 1C50724N.D
Analysis Type: WATER

Injection Date: 24-JUL-2003 18:20
Lab Sample ID: vstd10
Method File: \\QPITPA02\d\chem\hp5.i\50724n.b

COMPOUND	%D
1,2-Dichloroethene (total)	2.3
Xylenes (total)	2.3
Dichlorodifluoromethane	27.3
Chloromethane	3.4
Vinyl Chloride	13.1
Bromomethane	26.6
Chloroethane	2.0
Trichlorofluoromethane	9.6
1,1-Dichloroethene	13.3
1,1,2-Trichloro-1,2,2-Trifluo	39.1
Acetone	11.8
Carbon Disulfide	9.5
Acetonitrile	7.5
Methyl Acetate	0.6
Methylene Chloride	7.0
trans-1,2-Dichloroethene	5.0
Methyl tert-butyl ether	7.8
1,1-Dichloroethane	1.4
2,2-Dichloropropane	1.9
cis-1,2-dichloroethene	0.5
2-Butanone	3.7
Bromochloromethane	0.2
Chloroform	2.6
Dibromofluoromethane	9.9
1,1,1-Trichloroethane	1.5
Cyclohexane	24.3
Carbon Tetrachloride	6.0
1,1-Dichloropropene	4.2
1,2-Dichloroethane-d4	9.5
Benzene	3.2
1,2-Dichloroethane	6.0
Trichloroethene	0.4
Methyl Cyclohexane	25.5
1,2-Dichloropropane	6.3
Dibromomethane	5.5
Bromodichloromethane	7.6
cis-1,3-Dichloropropene	9.7
4-Methyl-2-Pentanone	8.1
Toluene-d8	3.8

Data File: \\QPITPA02\d\chem\hp5.i\50724n.b/1C50724N.D
Report Date: 07/24/2003

CONTINUING CALIBRATION REPORT

Instrument ID: hp5.i
Lab File ID: 1C50724N.D
Analysis Type: WATER

Injection Date: 24-JUL-2003 18:20
Lab Sample ID: vstd10
Method File: \\QPITPA02\d\chem\hp5.i\50724n.b

COMPOUND	%D
Toluene	0.8
trans-1,3-Dichloropropene	9.2
1,1,2-Trichloroethane	2.0
Tetrachloroethene	6.3
1,3-Dichloropropane	4.0
2-Hexanone	8.4
Dibromochloromethane	3.0
1,2-Dibromoethane	0.7
Chlorobenzene	1.1
1,1,1,2-Tetrachloroethane	2.7
Ethylbenzene	0.2
m + p-Xylene	2.2
Xylene-o	2.5
Styrene	0.3
Bromoform	4.9
Isopropylbenzene	1.7
Bromofluorobenzene	4.6
Bromobenzene	0.4
1,1,2,2-Tetrachloroethane	3.6
1,2,3-Trichloropropane	4.7
n-Propylbenzene	3.5
2-Chlorotoluene	0.8
1,3,5-Trimethylbenzene	4.0
4-Chlorotoluene	5.4
tert-Butylbenzene	3.0
1,2,4-Trimethylbenzene	6.9
sec-Butylbenzene	3.3
1,3-Dichlorobenzene	3.3
4-Isopropyltoluene	0.4
1,4-Dichlorobenzene	5.7
n-Butylbenzene	0.5
1,2-Dichlorobenzene	5.8

The average of %D's in the continuing calibration is 6.1

Data File: \\QPITPA02\d\chem\hp5.i\50728n.b/CC50728N.D
Report Date: 07/28/2003

P

CONTINUING CALIBRATION REPORT

Instrument ID: hp5.i
Lab File ID: CC50728N.D
Analysis Type: WATER

Injection Date: 28-JUL-2003 14:22
Lab Sample ID: vstd10
Method File: \\QPITPA02\d\chem\hp5.i\50728n.b\8260bl

COMPOUND	%D
1,2-Dichloroethene (total)	2.8
Xylenes (total)	4.4
Dichlorodifluoromethane	32.4
Chloromethane	0.6
Vinyl Chloride	13.1
Bromomethane	36.9
Chloroethane	2.5
Trichlorofluoromethane	9.4
1,1-Dichloroethene	17.4
1,1,2-Trichloro-1,2,2-Trifluo	35.8
Acetone	36.4
Carbon Disulfide	8.2
Acetonitrile	1.3
Methyl Acetate	8.3
Methylene Chloride	8.7
trans-1,2-Dichloroethene	6.5
Methyl tert-butyl ether	10.0
1,1-Dichloroethane	0.4
2,2-Dichloropropane	11.7
cis-1,2-dichloroethene	0.9
2-Butanone	14.6
Bromochloromethane	0.2
Chloroform	1.0
1,1,1-Trichloroethane	9.6
Dibromofluoromethane	13.0
Cyclohexane	32.3
Carbon Tetrachloride	21.0
1,1-Dichloropropene	19.6
1,2-Dichloroethane-d4	16.9
Benzene	0.8
1,2-Dichloroethane	7.5
Trichloroethene	2.3
Methyl Cyclohexane	44.0
1,2-Dichloropropane	0.5
Dibromomethane	12.9
Bromodichloromethane	1.7
cis-1,3-Dichloropropene	3.9
4-Methyl-2-Pentanone	6.1
Toluene-d8	4.9

Data File: \\QPITPA02\d\chem\hp5.i\50728n.b/CC50728N.D
Report Date: 07/28/2003

CONTINUING CALIBRATION REPORT

Instrument ID: hp5.i
Lab File ID: CC50728N.D
Analysis Type: WATER

Injection Date: 28-JUL-2003 14:22
Lab Sample ID: vstd10
Method File: \\QPITPA02\d\chem\hp5.i\50728n.b

COMPOUND	%D
Toluene	2.7
trans-1,3-Dichloropropene	2.5
1,1,2-Trichloroethane	3.8
Tetrachloroethene	21.3
1,3-Dichloropropane	3.8
2-Hexanone	25.6
Dibromochloromethane	0.6
1,2-Dibromoethane	1.2
Chlorobenzene	3.0
1,1,1,2-Tetrachloroethane	8.5
Ethylbenzene	7.9
m + p-Xylene	4.9
Xylene-o	3.3
Styrene	3.3
Bromoform	2.7
Isopropylbenzene	10.0
Bromofluorobenzene	1.4
Bromobenzene	5.4
1,1,2,2-Tetrachloroethane	3.5
1,2,3-Trichloropropane	9.0
n-Propylbenzene	10.1
2-Chlorotoluene	5.7
1,3,5-Trimethylbenzene	7.4
4-Chlorotoluene	0.5
tert-Butylbenzene	10.3
1,2,4-Trimethylbenzene	3.5
sec-Butylbenzene	8.0
1,3-Dichlorobenzene	0.3
4-Isopropyltoluene	10.1
1,4-Dichlorobenzene	4.2
n-Butylbenzene	9.7
1,2-Dichlorobenzene	1.9

The average of %D's in the continuing calibration is 9.2

Data File: \\qpitpa02\d\chem\731.i\V080403.b/V0804IC5.D
Report Date: 08/04/2003

INITIAL CALIBRATION REPORT

Instrument ID: 731.i
Lab File ID: V0804IC5.D
Analysis Type: NONE

Injection Date: 04-AUG-2003 08:44
Lab Sample ID: sstd160
Method File: \\qpitpa02\d\chem\731.i\V080403.b\8270b.

COMPOUND	%RSD
N Nitrosodimethylamine	2.1
Pyridine	3.5
Methyl methanesulfonate	13.1
2 Fluorophenol	2.7
Benzaldehyde	30.1
Phenol d5	4.5
Phenol	5.9
Aniline	5.0
bis(2 Chloroethyl)ether	6.0
2 Chlorophenol d4	4.7
2 Chlorophenol	5.4
1,3 Dichlorobenzene	5.9
1,4 Dichlorobenzene	5.8
Benzyl Alcohol	6.3
1,2 Dichlorobenzene d4	7.3
1,2 Dichlorobenzene	7.3
2 Methylphenol	7.3
2,2' oxybis(1 Chloropropane)	7.7
4 Methylphenol	9.0
N Nitroso di n propylamine	9.5
Acetophenone	9.9
Hexachloroethane	5.3
Nitrobenzene d5	2.1
Nitrobenzene	4.3
Isophorone	4.1
2 Nitrophenol	1.9
2,4 Dimethylphenol	3.1
bis(2 Chloroethoxy)methane	5.3
Benzoic Acid	23.3
2,4 Dichlorophenol	3.7
1,2,4 Trichlorobenzene	4.8
Naphthalene	6.8
4 Chloroaniline	4.1
Hexachlorobutadiene	4.3
Caprolactam	0.8
4 Chloro 3 Methylphenol	3.9
2 Methylnaphthalene	5.5
1 Methylnaphthalene	12.0
Hexachlorocyclopentadiene	4.9

Data File: \\qpitpa02\d\chem\731.i\V080403.b/V0804IC5.D
Report Date: 08/04/2003

INITIAL CALIBRATION REPORT

Instrument ID: 731.i
Lab File ID: V0804IC5.D
Analysis Type: NONE

Injection Date: 04-AUG-2003 08:44
Lab Sample ID: sstd160
Method File: \\qpitpa02\d\chem\731.i\V080403.b

COMPOUND	%RSD
2,4,6 Trichlorophenol	2.2
2,4,5 Trichlorophenol	2.9
2 Fluorobiphenyl	4.8
1,1' Biphenyl	4.8
2 Chloronaphthalene	4.4
2 Nitroaniline	1.7
3 Nitroaniline	2.9
Dimethylphthalate	3.3
2,6 Dinitrotoluene	3.9
Acenaphthylene	4.2
Acenaphthene	4.5
2,4 Dinitrophenol	31.9
4 Nitrophenol	10.2
2,4 Dinitrotoluene	4.2
Dibenzofuran	6.5
2,3,5,6 Tetrachlorophenol	9.3
2,3,4,6 Tetrachlorophenol	9.3
2 Naphthylamine	38.1
Diethylphthalate	2.7
4 Chlorophenyl phenylether	5.7
Fluorene	5.0
4 Nitroaniline	3.9
4,6 Dinitro 2 methylphenol	17.9
N Nitrosodiphenylamine	2.3
1,2 Diphenylhydrazine	5.4
2,4,6 Tribromophenol	7.7
4 Bromophenyl phenylether	2.9
Hexachlorobenzene	3.3
Atrazine	6.0
Pentachlorophenol	20.3
Phenanthrene	3.0
Anthracene	3.0
Carbazole	1.7
Di n Butylphthalate	1.5
Fluoranthene	1.0
Benzidine	4.9
Pyrene	6.8
Terphenyl d14	5.1
Butylbenzylphthalate	1.8

Data File: \\qpitpa02\d\chem\731.i\V080403.b/V0804IC5.D
Report Date: 08/04/2003

INITIAL CALIBRATION REPORT

Instrument ID: 731.i
Lab File ID: V0804IC5.D
Analysis Type: NONE

Injection Date: 04-AUG-2003 08:44
Lab Sample ID: sstd160
Method File: \\qpitpa02\d\chem\731.i\V080403.b

COMPOUND	%RSD
Bis(2 ethylhexyl)Phthalate	1.9
3,3' Dichlorobenzidine	1.7
Benzo(a)Anthracene	2.7
Chrysene	3.2
Di n octylphthalate	2.8
7,12 dimethylbenz[a]anthracen	10.1
Benzo(b)fluoranthene	5.7
Benzo(k)fluoranthene	3.7
Benzo(a)pyrene	1.6
Indeno(1,2,3 cd)pyrene	1.9
Dibenz(a,h)anthracene	2.7
Benzo(g,h,i)perylene	1.2

The average of all %RSD's in the initial calibration is 6.1

Data File: \\qpitpa02\d\chem\731.i\V080503.b/V08050CC.D
Report Date: 08/05/2003

CONTINUING CALIBRATION REPORT

Instrument ID: 731.i
Lab File ID: V08050CC.D
Analysis Type: NONE

Injection Date: 05-AUG-2003 07:58
Lab Sample ID: sstd050
Method File: \\QPITPA02\D\chem\731.i\V080503.b\8270b.

COMPOUND	%D
N-Nitrosodimethylamine	1.5
Pyridine	3.1
Methyl methanesulfonate	23.6
2-Fluorophenol	4.3
Benzaldehyde	30.1
Phenol-d5	5.5
Phenol	5.6
Aniline	6.9
bis(2-Chloroethyl)ether	5.7
2-Chlorophenol-d4	3.9
2-Chlorophenol	3.0
1,3-Dichlorobenzene	2.9
1,4-Dichlorobenzene	2.2
Benzyl Alcohol	8.5
1,2-Dichlorobenzene-d4	3.2
1,2-Dichlorobenzene	3.4
2-Methylphenol	6.6
2,2'-oxybis(1-Chloropropane)	6.3
N-Nitroso-di n-propylamine	5.4
4-Methylphenol	6.6
Acetophenone	7.0
Hexachloroethane	5.3
Nitrobenzene-d5	1.3
Nitrobenzene	1.6
Isophorone	3.1
2-Nitrophenol	1.2
2,4-Dimethylphenol	2.7
bis(2-Chloroethoxy)methane	2.1
Benzoic Acid	3.0
2,4-Dichlorophenol	0.5
1,2,4-Trichlorobenzene	1.2
Naphthalene	1.1
4-Chloroaniline	3.6
Hexachlorobutadiene	4.3
Caprolactam	11.4
4-Chloro-3-Methylphenol	7.1
2-Methylnaphthalene	3.1
1-Methylnaphthalene	19.6
Hexachlorocyclopentadiene	12.5

Data File: \\qpitpa02\d\chem\731.i\V080503.b/V08050CC.D
Report Date: 08/05/2003

CONTINUING CALIBRATION REPORT

Instrument ID: 731.i
Lab File ID: V08050CC.D
Analysis Type: NONE

Injection Date: 05-AUG-2003 07:58
Lab Sample ID: sstd050
Method File: \\QPITPA02\D\chem\731.i\V080503.b

COMPOUND	%D
2,4,6-Trichlorophenol	2.6
2,4,5-Trichlorophenol	1.2
2-Fluorobiphenyl	1.3
1,1'-Biphenyl	0.1
2-Chloronaphthalene	1.2
2-Nitroaniline	3.3
3-Nitroaniline	4.6
Dimethylphthalate	3.5
2,6-Dinitrotoluene	4.0
Acenaphthylene	0.9
Acenaphthene	0.4
2,4-Dinitrophenol	12.3
4-Nitrophenol	5.3
2,4-Dinitrotoluene	7.2
Dibenzofuran	1.9
2,3,5,6-Tetrachlorophenol	12.9
2,3,4,6-Tetrachlorophenol	21.7
2-Naphthylamine	26.3
Diethylphthalate	4.8
4-Chlorophenyl-phenylether	1.2
Fluorene	2.7
4-Nitroaniline	7.9
4,6-Dinitro-2-methylphenol	5.7
N-Nitrosodiphenylamine	1.3
1,2-Diphenylhydrazine	2.0
2,4,6-Tribromophenol	2.6
4 Bromophenyl-phenylether	3.7
Hexachlorobenzene	3.5
Atrazine	0.4
Pentachlorophenol	18.9
Phenanthrene	0.3
Anthracene	0.2
Carbazole	2.4
Di-n-Butylphthalate	0.7
Fluoranthene	1.1
Benzidine	5.6
Pyrene	1.7
Terphenyl-d14	0.3
Butylbenzylphthalate	0.6

Data File: \\qpitpa02\d\chem\731.i\V080503.b/V08050CC.D
Report Date: 08/05/2003

CONTINUING CALIBRATION REPORT

Instrument ID: 731.i
Lab File ID: V08050CC.D
Analysis Type: NONE

Injection Date: 05-AUG-2003 07:58
Lab Sample ID: sstd050
Method File: \\QPITPA02\D\chem\731.i\V080503.b

COMPOUND	%D
bis(2-ethylhexyl)Phthalate	1.5
3,3'-Dichlorobenzidine	0.9
Benzo(a)Anthracene	0.8
Chrysene	0.4
Di-n-octylphthalate	1.5
7,12-dimethylbenz[a]anthracen	15.2
Benzo(b)fluoranthene	2.6
Benzo(k)fluoranthene	0.3
Benzo(a)pyrene	0.0
Indeno(1,2,3-cd)pyrene	0.7
Dibenz(a,h)anthracene	1.4
Benzo(g,h,i)perylene	0.2

The average of %D's in the continuing calibration is 4.8

METHODS SUMMARY

C3G240142

PARAMETER	ANALYTICAL METHOD	PREPARATION METHOD
Semivolatile Organic Compounds by GC/MS	SW846 8270C	SW846 3520C
Volatile Organics by GC/MS	SW846 8260B	SW846 5030B/826

References:

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

SAMPLE SUMMARY

C3G240142

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
FT00E	001	MW07	07/23/03	12:00
FT00F	002	MW10	07/23/03	12:45
FT00J	003	MW11A	07/23/03	09:15
FT00K	004	MW17	07/22/03	14:30
FT00L	005	MW19	07/23/03	11:20
FT00N	006	SW01	07/23/03	10:00
FT00Q	007	SW02	07/23/03	09:30
FT00W	008	TB (7.23.03)	07/23/03	
FT002	009	SW03	07/23/03	09:45
FT004	010	EB (7.22.03)	07/22/03	13:15

NOTE(S):

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

No.

CHAIN OF CUSTODY RECORD

PROJ. NO.	PROJECT NAME
NF6D3-1485	Mineral Springs

SAMPLERS: 300
James Edwards

RECEIVING LABORATORY:
STL Pittsburgh

SAMPLE NO.	DATE	TIME	SAMPLE LOCATION	NO. OF CONTAINERS	BTEX EPA 8260B	PAH EPA 8270C					REMARKS
	7/23	1200	MW07		X	X					8260B - low level scan
	7/23	1245	MW10		X	X					
	7/23	915	MW11A		X	X					
	7/22	230	MW17		X	X					
	7/23	1120	MW19		X	X					
	7/23	1000	SW01		X	X					
	7/23	930	SW02		X	X					
	NA	NA	TB(7.23.03)		X						
	7/23	945	SW03		X	X					
	7/22	115	EB(7.22.03)		X	X					

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
James Edwards	7/23/03	Fedex			
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Relinquished by: (Signature)	Date/Time	Received for laboratory by: (Signature)	Date/Time		
		Deanna Hall	7/24/03 0950		

REMARKS:

REMEDIATION TECHNOLOGIES INC
REMEDIATION TECHNOLOGIES
1001 W. Seneca Street, Suite 204
Ithaca, NY 14850
(607) 277-5716
Fax (607) 277-9057

PINK COPY - Sampler YELLOW COPY - Laboratory WHITE COPY - RETEC

THE RETEC GROUP INC

Client Sample ID: MW07

GC/MS Volatiles

Lot-Sample #...: C3G240142-001 Work Order #...: FT00E1AA Matrix.....: WATER
Date Sampled...: 07/23/03 Date Received..: 07/24/03 MS Run #.....: 3209265
Prep Date.....: 07/28/03 Analysis Date..: 07/28/03
Prep Batch #...: 3209615
Dilution Factor: 75 Method.....: SW846 8260B

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Benzene	1900	75	ug/L
Ethylbenzene	1900	75	ug/L
Toluene	930	75	ug/L
Xylenes (total)	1000	220	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Toluene-d8	86	(76 - 110)
1,2-Dichloroethane-d4	86	(61 - 128)
4-Bromofluorobenzene	92	(74 - 116)
Dibromofluoromethane	82	(73 - 122)

THE RETEC GROUP INC

Client Sample ID: MW07

GC/MS Semivolatiles

Lot-Sample #...: C3G240142-001 Work Order #...: FT00E1AC Matrix.....: WATER
Date Sampled...: 07/23/03 Date Received..: 07/24/03 MS Run #.....:
Prep Date.....: 07/24/03 Analysis Date..: 08/05/03
Prep Batch #...: 3205310
Dilution Factor: 100 Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
2-Methylnaphthalene	**280 J**	**1000**	**ug/L**
Naphthalene	**3800**	**1000**	**ug/L**
Acenaphthylene	ND	1000	ug/L
Acenaphthene	**160 J**	**1000**	**ug/L**
Fluorene	ND	1000	ug/L
Phenanthrene	ND	1000	ug/L
Anthracene	ND	1000	ug/L
Fluoranthene	ND	1000	ug/L
Pyrene	ND	1000	ug/L
Benzo(a)anthracene	ND	1000	ug/L
Chrysene	ND	1000	ug/L
Benzo(b)fluoranthene	ND	1000	ug/L
Benzo(k)fluoranthene	ND	1000	ug/L
Benzo(a)pyrene	ND	1000	ug/L
Indeno(1,2,3-cd)pyrene	ND	1000	ug/L
Dibenzo(a,h)anthracene	ND	1000	ug/L
Benzo(ghi)perylene	ND	1000	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
2,4,6-Tribromophenol	NC,DIL	(21 - 122)
2-Fluorobiphenyl	NC,DIL	(30 - 110)
2-Fluorophenol	NC,DIL	(13 - 110)
Nitrobenzene-d5	NC,DIL	(32 - 112)
Phenol-d5	NC,DIL	(10 - 113)
Terphenyl-d14	NC,DIL	(10 - 144)

NOTE(S):

NC The recovery and/or RPD were not calculated.

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

J Estimated result. Result is less than RL.

THE RETEC GROUP INC

Client Sample ID: MW10

GC/MS Volatiles

Lot-Sample #...: C3G240142-002	Work Order #...: FT00F1AA	Matrix.....: WATER
Date Sampled...: 07/23/03	Date Received..: 07/24/03	MS Run #.....:
Prep Date.....: 07/24/03	Analysis Date..: 07/25/03	
Prep Batch #...: 3205605		
Dilution Factor: 1	Method.....: SW846 8260B	

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Benzene	ND	1.0	ug/L
Ethylbenzene	ND	1.0	ug/L
Toluene	ND	1.0	ug/L
Xylenes (total)	ND	3.0	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Toluene-d8	90	(76 - 110)
1,2-Dichloroethane-d4	102	(61 - 128)
4-Bromofluorobenzene	94	(74 - 116)
Dibromofluoromethane	95	(73 - 122)

THE RETEC GROUP INC

Client Sample ID: MW10

GC/MS Semivolatiles

Lot-Sample #...: C3G240142-002
Date Sampled...: 07/23/03
Prep Date.....: 07/24/03
Prep Batch #...: 3205310
Dilution Factor: 0.98

Work Order #...: FT00F1AC
Date Received..: 07/24/03
Analysis Date..: 08/05/03

Method.....: SW846 8270C

Matrix.....: WATER
MS Run #.....:

PARAMETER	RESULT	REPORTING LIMIT	UNITS
2-Methylnaphthalene	ND	9.8	ug/L
Naphthalene	ND	9.8	ug/L
Acenaphthylene	ND	9.8	ug/L
Acenaphthene	ND	9.8	ug/L
Fluorene	ND	9.8	ug/L
Phenanthrene	ND	9.8	ug/L
Anthracene	ND	9.8	ug/L
Fluoranthene	ND	9.8	ug/L
Pyrene	ND	9.8	ug/L
Benzo(a)anthracene	ND	9.8	ug/L
Chrysene	ND	9.8	ug/L
Benzo(b)fluoranthene	ND	9.8	ug/L
Benzo(k)fluoranthene	ND	9.8	ug/L
Benzo(a)pyrene	ND	9.8	ug/L
Indeno(1,2,3-cd)pyrene	ND	9.8	ug/L
Dibenzo(a,h)anthracene	ND	9.8	ug/L
Benzo(ghi)perylene	ND	9.8	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
2,4,6-Tribromophenol	66	(21 - 122)
2-Fluorobiphenyl	62	(30 - 110)
2-Fluorophenol	56	(13 - 110)
Nitrobenzene-d5	64	(32 - 112)
Phenol-d5	62	(10 - 113)
Terphenyl-d14	46	(10 - 144)

THE RETEC GROUP INC

Client Sample ID: MW11A

GC/MS Volatiles

Lot-Sample #...:	C3G240142-003	Work Order #...: FT00J1AA	Matrix.....: WATER
Date Sampled...:	07/23/03	Date Received..: 07/24/03	MS Run #.....:
Prep Date.....:	07/24/03	Analysis Date..: 07/25/03	
Prep Batch #...:	3205605		
Dilution Factor:	30	Method.....: SW846 8260B	

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Benzene	350	30	ug/L
Ethylbenzene	650	30	ug/L
Toluene	230	30	ug/L
Xylenes (total)	410	90	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Toluene-d8	95	(76 - 110)
1,2-Dichloroethane-d4	111	(61 - 128)
4-Bromofluorobenzene	103	(74 - 116)
Dibromofluoromethane	105	(73 - 122)

THE RETEC GROUP INC

Client Sample ID: MW11A

GC/MS Semivolatiles

Lot-Sample #...: C3G240142-003 Work Order #...: FT00J1AC Matrix.....: WATER
Date Sampled...: 07/23/03 Date Received..: 07/24/03 MS Run #.....:
Prep Date.....: 07/24/03 Analysis Date..: 08/05/03
Prep Batch #...: 3205310
Dilution Factor: 1.05 Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
2-Methylnaphthalene	31	10	ug/L
Naphthalene	140 E	10	ug/L
Acenaphthylene	12	10	ug/L
Acenaphthene	4.4 J	10	ug/L
Fluorene	2.2 J	10	ug/L
Phenanthrene	2.7 J	10	ug/L
Anthracene	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(a)pyrene	ND	10	ug/L
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Dibenzo(a,h)anthracene	ND	10	ug/L
Benzo(ghi)perylene	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
2,4,6-Tribromophenol	65	(21 - 122)
2-Fluorobiphenyl	60	(30 - 110)
2-Fluorophenol	56	(13 - 110)
Nitrobenzene-d5	64	(32 - 112)
Phenol-d5	60	(10 - 113)
Terphenyl-d14	37	(10 - 144)

NOTE(S):

E Estimated result. Result concentration exceeds the calibration range.

J Estimated result. Result is less than RL.

THE RETEC GROUP INC

Client Sample ID: MW11A

GC/MS Semivolatiles

Lot-Sample #...: C3G240142-003 Work Order #...: FT00J2AC Matrix.....: WATER
Date Sampled...: 07/23/03 Date Received..: 07/24/03 MS Run #.....:
Prep Date.....: 07/24/03 Analysis Date..: 08/05/03
Prep Batch #...: 3205310
Dilution Factor: 3.15 Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
2-Methylnaphthalene	30 J	32	ug/L
Naphthalene	150	32	ug/L
Acenaphthylene	11 J	32	ug/L
Acenaphthene	4.1 J	32	ug/L
Fluorene	ND	32	ug/L
Phenanthrene	2.5 J	32	ug/L
Anthracene	ND	32	ug/L
Fluoranthene	ND	32	ug/L
Pyrene	ND	32	ug/L
Benzo(a)anthracene	ND	32	ug/L
Chrysene	ND	32	ug/L
Benzo(b)fluoranthene	ND	32	ug/L
Benzo(k)fluoranthene	ND	32	ug/L
Benzo(a)pyrene	ND	32	ug/L
Indeno(1,2,3-cd)pyrene	ND	32	ug/L
Dibenzo(a,h)anthracene	ND	32	ug/L
Benzo(ghi)perylene	ND	32	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
2,4,6-Tribromophenol	57	(21 - 122)
2-Fluorobiphenyl	60	(30 - 110)
2-Fluorophenol	55	(13 - 110)
Nitrobenzene-d5	60	(32 - 112)
Phenol-d5	58	(10 - 113)
Terphenyl-d14	35	(10 - 144)

NOTE(S):

J Estimated result. Result is less than RL.

THE RETEC GROUP INC

Client Sample ID: MW17

GC/MS Volatiles

Lot-Sample #...: C3G240142-004 Work Order #...: FT00K1AA Matrix.....: WATER
Date Sampled...: 07/22/03 Date Received..: 07/24/03 MS Run #.....:
Prep Date.....: 07/24/03 Analysis Date..: 07/25/03
Prep Batch #...: 3205605
Dilution Factor: 1 Method.....: SW846 8260B

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Benzene	ND	1.0	ug/L
Ethylbenzene	ND	1.0	ug/L
Toluene	ND	1.0	ug/L
Xylenes (total)	ND	3.0	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Toluene-d8	92	(76 - 110)
1,2-Dichloroethane-d4	97	(61 - 128)
4-Bromofluorobenzene	94	(74 - 116)
Dibromofluoromethane	96	(73 - 122)

THE RETEC GROUP INC

Client Sample ID: MW17

GC/MS Semivolatiles

Lot-Sample #...: C3G240142-004 Work Order #...: FT00K1AC Matrix.....: WATER
Date Sampled...: 07/22/03 Date Received..: 07/24/03 MS Run #.....:
Prep Date.....: 07/24/03 Analysis Date..: 08/05/03
Prep Batch #...: 3205310
Dilution Factor: 1.03 Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
2-Methylnaphthalene	ND	10	ug/L
Naphthalene	ND	10	ug/L
Acenaphthylene	ND	10	ug/L
Acenaphthene	ND	10	ug/L
Fluorene	ND	10	ug/L
Phenanthrene	ND	10	ug/L
Anthracene	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(a)pyrene	ND	10	ug/L
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Dibenzo(a,h)anthracene	ND	10	ug/L
Benzo(ghi)perylene	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
2,4,6-Tribromophenol	58	(21 - 122)
2-Fluorobiphenyl	57	(30 - 110)
2-Fluorophenol	47	(13 - 110)
Nitrobenzene-d5	56	(32 - 112)
Phenol-d5	51	(10 - 113)
Terphenyl-d14	38	(10 - 144)

THE RETEC GROUP INC

Client Sample ID: MW19

GC/MS Volatiles

Lot-Sample #...: C3G240142-005	Work Order #...: FT00L1AA	Matrix.....: WATER	
Date Sampled...: 07/23/03	Date Received..: 07/24/03	MS Run #.....:	
Prep Date.....: 07/24/03	Analysis Date..: 07/25/03		
Prep Batch #...: 3205605			
Dilution Factor: 1250	Method.....: SW846 8260B		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Benzene	23000	1200	ug/L
Ethylbenzene	3300	1200	ug/L
Toluene	ND	1200	ug/L
Xylenes (total)	7700	3800	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Toluene-d8	92	(76 - 110)
1,2-Dichloroethane-d4	108	(61 - 128)
4-Bromofluorobenzene	103	(74 - 116)
Dibromofluoromethane	109	(73 - 122)

THE RETEC GROUP INC

Client Sample ID: MW19

GC/MS Semivolatiles

Lot-Sample #...: C3G240142-005 Work Order #...: FT00L1AC Matrix.....: WATER
Date Sampled...: 07/23/03 Date Received..: 07/24/03 MS Run #.....:
Prep Date.....: 07/24/03 Analysis Date..: 08/05/03
Prep Batch #...: 3205310
Dilution Factor: 52 Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
2-Methylnaphthalene	ND	520	ug/L
Naphthalene	2100	520	ug/L
Acenaphthylene	ND	520	ug/L
Acenaphthene	ND	520	ug/L
Fluorene	ND	520	ug/L
Phenanthrene	ND	520	ug/L
Anthracene	ND	520	ug/L
Fluoranthene	ND	520	ug/L
Pyrene	ND	520	ug/L
Benzo(a)anthracene	ND	520	ug/L
Chrysene	ND	520	ug/L
Benzo(b)fluoranthene	ND	520	ug/L
Benzo(k)fluoranthene	ND	520	ug/L
Benzo(a)pyrene	ND	520	ug/L
Indeno(1,2,3-cd)pyrene	ND	520	ug/L
Dibenzo(a,h)anthracene	ND	520	ug/L
Benzo(ghi)perylene	ND	520	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
2,4,6-Tribromophenol	NC,DIL	(21 - 122)
2-Fluorobiphenyl	NC,DIL	(30 - 110)
2-Fluorophenol	NC,DIL	(13 - 110)
Nitrobenzene-d5	NC,DIL	(32 - 112)
Phenol-d5	NC,DIL	(10 - 113)
Terphenyl-d14	NC,DIL	(10 - 144)

NOTE(S):

NC The recovery and/or RPD were not calculated.

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

THE RETEC GROUP INC

Client Sample ID: SW01

GC/MS Volatiles

Lot-Sample #...: C3G240142-006
Date Sampled...: 07/23/03
Prep Date.....: 07/24/03
Prep Batch #...: 3205605
Dilution Factor: 1

Work Order #...: FT00N1AA
Date Received..: 07/24/03
Analysis Date..: 07/25/03

Method.....: SW846 8260B

Matrix.....: WATER
MS Run #.....:

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Benzene	ND	1.0	ug/L
Ethylbenzene	ND	1.0	ug/L
Toluene	ND	1.0	ug/L
Xylenes (total)	ND	3.0	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Toluene-d8	90	(76 - 110)
1,2-Dichloroethane-d4	97	(61 - 128)
4-Bromofluorobenzene	95	(74 - 116)
Dibromofluoromethane	94	(73 - 122)

THE RETEC GROUP INC

Client Sample ID: SW01

GC/MS Semivolatiles

Lot-Sample #...: C3G240142-006 Work Order #...: FT00N1AC Matrix.....: WATER
Date Sampled...: 07/23/03 Date Received..: 07/24/03 MS Run #.....:
Prep Date.....: 07/24/03 Analysis Date..: 08/05/03
Prep Batch #...: 3205310
Dilution Factor: 1.14 Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
2-Methylnaphthalene	ND	11	ug/L
Naphthalene	ND	11	ug/L
Acenaphthylene	ND	11	ug/L
Acenaphthene	ND	11	ug/L
Fluorene	ND	11	ug/L
Phenanthrene	ND	11	ug/L
Anthracene	ND	11	ug/L
Fluoranthene	ND	11	ug/L
Pyrene	ND	11	ug/L
Benzo(a)anthracene	ND	11	ug/L
Chrysene	ND	11	ug/L
Benzo(b)fluoranthene	ND	11	ug/L
Benzo(k)fluoranthene	ND	11	ug/L
Benzo(a)pyrene	ND	11	ug/L
Indeno(1,2,3-cd)pyrene	ND	11	ug/L
Dibenzo(a,h)anthracene	ND	11	ug/L
Benzo(ghi)perylene	ND	11	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
2,4,6-Tribromophenol	60	(21 - 122)
2-Fluorobiphenyl	55	(30 - 110)
2-Fluorophenol	49	(13 - 110)
Nitrobenzene-d5	57	(32 - 112)
Phenol-d5	54	(10 - 113)
Terphenyl-d14	31	(10 - 144)

THE RETEC GROUP INC

Client Sample ID: SW02

GC/MS Volatiles

Lot-Sample #...: C3G240142-007	Work Order #...: FT00Q1AA	Matrix.....: WATER
Date Sampled...: 07/23/03	Date Received..: 07/24/03	MS Run #.....:
Prep Date.....: 07/24/03	Analysis Date..: 07/25/03	
Prep Batch #...: 3205605		
Dilution Factor: 1	Method.....: SW846 8260B	

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Benzene	ND	1.0	ug/L
Ethylbenzene	ND	1.0	ug/L
Toluene	ND	1.0	ug/L
Xylenes (total)	ND	3.0	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Toluene-d8	90	(76 - 110)
1,2-Dichloroethane-d4	105	(61 - 128)
4-Bromofluorobenzene	95	(74 - 116)
Dibromofluoromethane	100	(73 - 122)

THE RETEC GROUP INC

Client Sample ID: SW02

GC/MS Semivolatiles

Lot-Sample #...: C3G240142-007 Work Order #...: FT00Q1AC Matrix.....: WATER
Date Sampled...: 07/23/03 Date Received..: 07/24/03 MS Run #.....:
Prep Date.....: 07/24/03 Analysis Date..: 08/05/03
Prep Batch #...: 3205310
Dilution Factor: 0.94 Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
2-Methylnaphthalene	ND	9.4	ug/L
Naphthalene	ND	9.4	ug/L
Acenaphthylene	ND	9.4	ug/L
Acenaphthene	ND	9.4	ug/L
Fluorene	ND	9.4	ug/L
Phenanthrene	ND	9.4	ug/L
Anthracene	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(a)pyrene	ND	9.4	ug/L
Indeno(1,2,3-cd)pyrene	ND	9.4	ug/L
Dibenzo(a,h)anthracene	ND	9.4	ug/L
Benzo(ghi)perylene	ND	9.4	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
2,4,6-Tribromophenol	62	(21 - 122)
2-Fluorobiphenyl	57	(30 - 110)
2-Fluorophenol	54	(13 - 110)
Nitrobenzene-d5	61	(32 - 112)
Phenol-d5	59	(10 - 113)
Terphenyl-d14	29	(10 - 144)

THE RETEC GROUP INC

Client Sample ID: TB (7.23.03)

GC/MS Volatiles

Lot-Sample #...: C3G240142-008	Work Order #...: FT00W1AA	Matrix.....: WATER
Date Sampled...: 07/23/03	Date Received..: 07/24/03	MS Run #.....:
Prep Date.....: 07/24/03	Analysis Date..: 07/25/03	
Prep Batch #...: 3205605		
Dilution Factor: 1	Method.....: SW846 8260B	

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Benzene	ND	1.0	ug/L
Ethylbenzene	ND	1.0	ug/L
Toluene	ND	1.0	ug/L
Xylenes (total)	ND	3.0	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Toluene-d8	104	(76 - 110)
1,2-Dichloroethane-d4	120	(61 - 128)
4-Bromofluorobenzene	109	(74 - 116)
Dibromofluoromethane	114	(73 - 122)

THE RETEC GROUP INC

Client Sample ID: SW03 SW-02 Dup

GC/MS Volatiles

Lot-Sample #...: C3G240142-009	Work Order #...: FT0021AA	Matrix.....: WATER
Date Sampled...: 07/23/03	Date Received..: 07/24/03	MS Run #.....: 3209265
Prep Date.....: 07/28/03	Analysis Date..: 07/28/03	
Prep Batch #...: 3209615		
Dilution Factor: 1	Method.....: SW846 8260B	

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Benzene	ND	1.0	ug/L
Ethylbenzene	ND	1.0	ug/L
Toluene	ND	1.0	ug/L
Xylenes (total)	ND	3.0	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Toluene-d8	88	(76 - 110)
1,2-Dichloroethane-d4	91	(61 - 128)
4-Bromofluorobenzene	90	(74 - 116)
Dibromofluoromethane	83	(73 - 122)

THE RETEC GROUP INC

Client Sample ID: SW03 SW-02 Dup

GC/MS Semivolatiles

Lot-Sample #...: C3G240142-009 Work Order #...: FT0021AC Matrix.....: WATER
Date Sampled...: 07/23/03 Date Received..: 07/24/03 MS Run #.....:
Prep Date.....: 07/24/03 Analysis Date..: 08/05/03
Prep Batch #...: 3205310
Dilution Factor: 0.96 Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
2-Methylnaphthalene	ND	9.6	ug/L
Naphthalene	ND	9.6	ug/L
Acenaphthylene	ND	9.6	ug/L
Acenaphthene	ND	9.6	ug/L
Fluorene	ND	9.6	ug/L
Phenanthrene	ND	9.6	ug/L
Anthracene	ND	9.6	ug/L
Fluoranthene	ND	9.6	ug/L
Pyrene	ND	9.6	ug/L
Benzo(a)anthracene	ND	9.6	ug/L
Chrysene	ND	9.6	ug/L
Benzo(b)fluoranthene	ND	9.6	ug/L
Benzo(k)fluoranthene	ND	9.6	ug/L
Benzo(a)pyrene	ND	9.6	ug/L
Indeno(1,2,3-cd)pyrene	ND	9.6	ug/L
Dibenzo(a,h)anthracene	ND	9.6	ug/L
Benzo(ghi)perylene	ND	9.6	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
2,4,6-Tribromophenol	65	(21 - 122)
2-Fluorobiphenyl	58	(30 - 110)
2-Fluorophenol	56	(13 - 110)
Nitrobenzene-d5	60	(32 - 112)
Phenol-d5	60	(10 - 113)
Terphenyl-d14	30	(10 - 144)

THE RETEC GROUP INC

Client Sample ID: EB (7.22.03)

GC/MS Volatiles

Lot-Sample #...: C3G240142-010	Work Order #...: FT0041AA	Matrix.....: WATER
Date Sampled...: 07/22/03	Date Received..: 07/24/03	MS Run #.....:
Prep Date.....: 07/24/03	Analysis Date..: 07/25/03	
Prep Batch #...: 3205605		
Dilution Factor: 1	Method.....: SW846 8260B	

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Benzene	ND	1.0	ug/L
Ethylbenzene	ND	1.0	ug/L
Toluene	ND	1.0	ug/L
Xylenes (total)	ND	3.0	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Toluene-d8	94	(76 - 110)
1,2-Dichloroethane-d4	109	(61 - 128)
4-Bromofluorobenzene	96	(74 - 116)
Dibromofluoromethane	104	(73 - 122)

THE RETEC GROUP INC

Client Sample ID: EB (7.22.03)

GC/MS Semivolatiles

Lot-Sample #...: C3G240142-010 Work Order #...: FT0041AC Matrix.....: WATER
Date Sampled...: 07/22/03 Date Received..: 07/24/03 MS Run #.....:
Prep Date.....: 07/24/03 Analysis Date..: 08/05/03
Prep Batch #...: 3205310
Dilution Factor: 1.04 Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS
2-Methylnaphthalene	ND	10	ug/L
Naphthalene	ND	10	ug/L
Acenaphthylene	ND	10	ug/L
Acenaphthene	ND	10	ug/L
Fluorene	ND	10	ug/L
Phenanthrene	ND	10	ug/L
Anthracene	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(a)pyrene	ND	10	ug/L
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
Dibenzo(a,h)anthracene	ND	10	ug/L
Benzo(ghi)perylene	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
2,4,6-Tribromophenol	61	(21 - 122)
2-Fluorobiphenyl	58	(30 - 110)
2-Fluorophenol	56	(13 - 110)
Nitrobenzene-d5	61	(32 - 112)
Phenol-d5	60	(10 - 113)
Terphenyl-d14	60	(10 - 144)

METHOD BLANK REPORT

GC/MS Volatiles

Client Lot #...: C3G240142 Work Order #...: FT2V11AA Matrix.....: WATER
MB Lot-Sample #: C3G240000-605

Prep Date.....: 07/24/03
Analysis Date..: 07/24/03 Prep Batch #...: 3205605
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Benzene	ND	1.0	ug/L	SW846 8260B
Ethylbenzene	ND	1.0	ug/L	SW846 8260B
Toluene	ND	1.0	ug/L	SW846 8260B
Xylenes (total)	ND	3.0	ug/L	SW846 8260B

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Toluene-d8	92	(76 - 110)
1,2-Dichloroethane-d4	81	(61 - 128)
4-Bromofluorobenzene	91	(74 - 116)
Dibromofluoromethane	84	(73 - 122)

NOTE(S):

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

METHOD BLANK REPORT

GC/MS Volatiles

Client Lot #...: C3G240142 **Work Order #...:** FT70K1AA **Matrix.....:** WATER
MB Lot-Sample #: C3G280000-615

Prep Date.....: 07/28/03
Analysis Date..: 07/28/03 **Prep Batch #...:** 3209615
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Benzene	ND	1.0	ug/L	SW846 8260B
Ethylbenzene	ND	1.0	ug/L	SW846 8260B
Toluene	ND	1.0	ug/L	SW846 8260B
Xylenes (total)	ND	3.0	ug/L	SW846 8260B

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Toluene-d8	96	(76 - 110)
1,2-Dichloroethane-d4	88	(61 - 128)
4-Bromofluorobenzene	98	(74 - 116)
Dibromofluoromethane	90	(73 - 122)

NOTE(S):

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

METHOD BLANK REPORT

GC/MS Semivolatiles

Client Lot #...: C3G240142 Work Order #...: FT1G41AA Matrix.....: WATER
MB Lot-Sample #: C3G240000-310

Prep Date.....: 07/24/03
Analysis Date..: 08/05/03 Prep Batch #...: 3205310
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
2-Methylnaphthalene	ND	10	ug/L	SW846 8270C
Naphthalene	ND	10	ug/L	SW846 8270C
Acenaphthylene	ND	10	ug/L	SW846 8270C
Acenaphthene	ND	10	ug/L	SW846 8270C
Fluorene	ND	10	ug/L	SW846 8270C
Phenanthrene	ND	10	ug/L	SW846 8270C
Anthracene	ND	10	ug/L	SW846 8270C
Fluoranthene	ND	10	ug/L	SW846 8270C
Pyrene	ND	10	ug/L	SW846 8270C
Benzo(a)anthracene	ND	10	ug/L	SW846 8270C
Chrysene	ND	10	ug/L	SW846 8270C
Benzo(b)fluoranthene	ND	10	ug/L	SW846 8270C
Benzo(k)fluoranthene	ND	10	ug/L	SW846 8270C
Benzo(a)pyrene	ND	10	ug/L	SW846 8270C
Indeno(1,2,3-cd)pyrene	ND	10	ug/L	SW846 8270C
Dibenzo(a,h)anthracene	ND	10	ug/L	SW846 8270C
Benzo(ghi)perylene	ND	10	ug/L	SW846 8270C

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
2,4,6-Tribromophenol	61	(21 - 122)
2-Fluorobiphenyl	64	(30 - 110)
2-Fluorophenol	64	(13 - 110)
Nitrobenzene-d5	67	(32 - 112)
Phenol-d5	69	(10 - 113)
Terphenyl-d14	63	(10 - 144)

NOTE(S):

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

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Volatiles

Client Lot #...: C3G240142 Work Order #...: FT2V11AC-LCS Matrix.....: WATER
LCS Lot-Sample#: C3G240000-605 FT2V11AD-LCSD
Prep Date.....: 07/24/03 Analysis Date..: 07/24/03
Prep Batch #...: 3205605
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Benzene	**95**	**(80 - 116)**			**SW846 8260B**
	93	**(80 - 116)**	**1.7**	**(0-20)**	**SW846 8260B**
Toluene	**99**	**(74 - 119)**			**SW846 8260B**
	95	**(74 - 119)**	**5.0**	**(0-20)**	**SW846 8260B**
1,1-Dichloroethene	**111**	**(63 - 130)**			**SW846 8260B**
	110	**(63 - 130)**	**1.4**	**(0-20)**	**SW846 8260B**
Trichloroethene	**100**	**(75 - 122)**			**SW846 8260B**
	100	**(75 - 122)**	**0.60**	**(0-20)**	**SW846 8260B**
Chlorobenzene	**98**	**(76 - 117)**			**SW846 8260B**
	96	**(76 - 117)**	**3.0**	**(0-20)**	**SW846 8260B**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Toluene-d8	102	(76 - 110)
	89	(76 - 110)
1,2-Dichloroethane-d4	89	(61 - 128)
	84	(61 - 128)
4-Bromofluorobenzene	101	(74 - 116)
	87	(74 - 116)
Dibromofluoromethane	92	(73 - 122)
	86	(73 - 122)

NOTE(S):

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

Bold print denotes control parameters

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Volatiles

Client Lot #...: C3G240142 Work Order #...: FT70K1AC Matrix.....: WATER
LCS Lot-Sample#: C3G280000-615
Prep Date.....: 07/28/03 Analysis Date..: 07/28/03
Prep Batch #...: 3209615
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD
Benzene	86	(80 - 116)	SW846 8260B
Toluene	92	(74 - 119)	SW846 8260B
1,1-Dichloroethene	86	(63 - 130)	SW846 8260B
Trichloroethene	98	(75 - 122)	SW846 8260B
Chlorobenzene	96	(76 - 117)	SW846 8260B

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Toluene-d8	95	(76 - 110)
1,2-Dichloroethane-d4	95	(61 - 128)
4-Bromofluorobenzene	101	(74 - 116)
Dibromofluoromethane	95	(73 - 122)

NOTE(S):

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

Bold print denotes control parameters

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: C3G240142 Work Order #...: FT1G41AC-LCS Matrix.....: WATER
LCS Lot-Sample#: C3G240000-310 FT1G41AD-LCSD
Prep Date.....: 07/24/03 Analysis Date..: 08/05/03
Prep Batch #...: 3205310
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Phenol	71	(10 - 131)			SW846 8270C
	70	(10 - 131)	1.9	(0-43)	SW846 8270C
2-Chlorophenol	69	(19 - 124)			SW846 8270C
	68	(19 - 124)	1.9	(0-43)	SW846 8270C
Acenaphthene	71	(39 - 118)			SW846 8270C
	70	(39 - 118)	1.4	(0-35)	SW846 8270C
1,4-Dichlorobenzene	69	(28 - 110)			SW846 8270C
	69	(28 - 110)	1.2	(0-36)	SW846 8270C
N-Nitrosodi-n-propyl-amine	78	(30 - 115)			SW846 8270C
	77	(30 - 115)	2.3	(0-36)	SW846 8270C
1,2,4-Trichloro-benzene	67	(31 - 110)			SW846 8270C
	66	(31 - 110)	2.1	(0-37)	SW846 8270C
Pyrene	74	(46 - 130)			SW846 8270C
	72	(46 - 130)	2.2	(0-31)	SW846 8270C
4-Chloro-3-methylphenol	74	(29 - 124)			SW846 8270C
	72	(29 - 124)	2.2	(0-55)	SW846 8270C
4-Nitrophenol	72	(19 - 144)			SW846 8270C
	71	(19 - 144)	0.92	(0-34)	SW846 8270C
2,4-Dinitrotoluene	74	(47 - 131)			SW846 8270C
	72	(47 - 131)	1.9	(0-32)	SW846 8270C
Pentachlorophenol	62	(10 - 140)			SW846 8270C
	58	(10 - 140)	5.6	(0-56)	SW846 8270C

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
2,4,6-Tribromophenol	71	(21 - 122)
	69	(21 - 122)
2-Fluorobiphenyl	69	(30 - 110)
	68	(30 - 110)
2-Fluorophenol	71	(13 - 110)
	70	(13 - 110)
Nitrobenzene-d5	70	(32 - 112)
	69	(32 - 112)
Phenol-d5	74	(10 - 113)
	72	(10 - 113)
Terphenyl-d14	67	(10 - 144)

(Continued on next page)

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: C3G240142 Work Order #...: FT1G41AC-LCS Matrix.....: WATER
LCS Lot-Sample#: C3G240000-310 FT1G41AD-LCSD

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
	66	(10 - 144)

NOTE(S):

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

Bold print denotes control parameters

MATRIX SPIKE SAMPLE EVALUATION REPORT

GC/MS Volatiles

Client Lot #...: C3G240142 Work Order #...: FT32E1AC-MS Matrix.....: WATER
MS Lot-Sample #: C3G250189-001 FT32E1AD-MSD
Date Sampled...: 07/24/03 Date Received..: 07/25/03 MS Run #.....: 3209265
Prep Date.....: 07/28/03 Analysis Date..: 07/28/03
Prep Batch #...: 3209615
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Benzene	91	(76 - 118)			SW846 8260B
	92	(76 - 118)	0.75	(0-20)	SW846 8260B
Toluene	84	(70 - 119)			SW846 8260B
	90	(70 - 119)	6.7	(0-20)	SW846 8260B
1,1-Dichloroethene	97	(62 - 130)			SW846 8260B
	108	(62 - 130)	10	(0-20)	SW846 8260B
Trichloroethene	86	(62 - 130)			SW846 8260B
	85	(62 - 130)	1.1	(0-20)	SW846 8260B
Chlorobenzene	89	(76 - 117)			SW846 8260B
	90	(76 - 117)	0.81	(0-20)	SW846 8260B

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Toluene-d8	83	(76 - 110)
	89	(76 - 110)
1,2-Dichloroethane-d4	104	(61 - 128)
	92	(61 - 128)
4-Bromofluorobenzene	95	(74 - 116)
	100	(74 - 116)
Dibromofluoromethane	98	(73 - 122)
	90	(73 - 122)

NOTE(S):

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

Bold print denotes control parameters

Analytical Data

Exygen Research

Exygen™ RESEARCH
Precise Research.
Proven Results.

Analytical Report

The RETEC Group

National Fuel Gas – Mineral Springs (NFGD3-14852-300)

Exygen Research Report No. L34906

Testing Laboratory

Exygen Research
3058 Research Drive
State College, PA 16801

Requester

James Edwards
The RETEC Group
1001 West Seneca Street
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Ithaca, NY 14850-3342

July 2003

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1 Introduction

Results are reported for the analyses of a series of aqueous samples received from The RETEC Group. The samples were taken from the National Fuel Gas Mineral Springs site. The analyses were performed in order to characterize various cyanide species that may be present in the samples.

The samples were prepared and analyzed for the following parameters:

- Table 1: Target Analysis

Compound Name	Acronym
Total Cyanide	CN-Total
Free Cyanides	CN-Free

2 Sample Receipt

The samples were submitted in amber containers. Samples were cooled to 4°C and preserved with sodium hydroxide to pH > 12. Samples were collected on 7/22/03 and 7/23/03 and were received on 7/24/03. Thirteen samples were received for analysis. Chain of custody forms are included in Attachment A.

3 Holding Times

A fourteen-day holding time is required for analysis. All samples were analyzed within the required holding time.

4 Methods - Analytical and Preparatory

4.1 Total Cyanides

Total cyanides were determined according to USEPA Method 335.4. A representative portion of the sample was placed in a distillation vessel, acidified with sulfuric acid to pH < 2 and treated with a magnesium chloride catalyst to liberate cyanide. Sulfamic acid was added to the distillation vessel to remove potential interferences from the reaction of organic compounds with any nitrogen present. The cyanide was distilled from the sample and the HCN trapped in an absorbing solution of sodium hydroxide. The absorbing solution contained a small amount of lead carbonate to precipitate any interfering sulfides as lead sulfide.

Analysis for cyanide after distillation was performed using a colorimetric reaction with pyridine-barbituric acid. An Alpkem Model 501 segmented flow automated analysis system was used for the determination.

4.2 Free Cyanides

Free cyanides were determined according to ASTM Method D4282-89. A portion of sample was first treated with cadmium ion to precipitate hexacyanoferrates. The samples were buffered to pH 6 with potassium phosphate and allowed to sit in the dark for 4 hours. The liberated HCN was allowed to diffuse into a sodium hydroxide solution. The cyanides absorbed were determined using a manual colorimetric procedure with pyridine-barbituric acid. A HACH model DR4000 spectrophotometer was used for the determinations.

5 Analysis

5.1 Calibration

Calibration curves were analyzed at the beginning of the analytical sequence for the compounds of interest. The calibration points were prepared to span the linear range of the methodology. The response versus the concentration is plotted for each point. Using linear regression, the slope, y-intercept and correlation coefficient (r^2) were determined. A calibration curve is acceptable if $r^2 \geq 0.99$.

A mid-point calibration check standard was analyzed at least every ten-sample injections. Compliance is obtained if the standard analyte concentrations are within +/-20% of the actual value.

For the results reported here, calibration criteria were met.

5.2 Blanks

Method blanks were prepared and analyzed with every batch of samples. The blanks should not have any target analytes present at or above the concentration of the low-level calibration standard. For these samples, all components were below the level of the lowest calibration standard.

Instrument blanks in the form of clean water were also analyzed after every high-level calibration standard, after each calibration check standard, and after known high-level samples. Again, the blanks should not have any target analytes present at or above the low-level calibration standard. For the samples presented here the instrument blanks were compliant.

5.3 Surrogates

Surrogate spikes are not a component of the cyanide analytical procedures.

5.4 Matrix Spikes

Matrix spikes were prepared with each batch of samples. The matrix spikes were prepared by adding components to the sample matrix and reanalyzing. The percent recovery of the spiked analyte is used to indicate the presence of matrix interferences in the sample. Matrix spike recoveries are given in Attachment C.

5.5 Laboratory Control Samples

Milliq water was spiked with all compounds of interest to serve as a laboratory control sample. Laboratory control samples should have a recovery between 80 and 120%. All LCS recoveries for all analyses were +/-20%.

6 Data Summary

Please see Attachment B for a detailed listing of the analytical results. All results are reported in ug /mL (parts per million) as CN^-.

7 Data/Sample Retention

Samples are disposed of one month after the report is issued unless otherwise specified. All electronic data is archived on retrievable media and hard copy reports are stored in data folders maintained by Exygen.

8 Attachments

8.1 Attachment A: Chain of Custody and Lab Request.

8.2 Attachment B: Summary of Results.

8.3 Attachment C: Matrix Spike Recoveries

8.4 Attachment D: Raw Analytical Data

9 *Signatures*

G. Ronald Ripper, Team Leader - Inorganics — Date: 7/31/03

John M. Flaherty, Vice President — Date: 7/31/03

No.

CHAIN OF CUSTODY RECORD

PROJ. NO.	PROJECT NAME
WFCD3-14852 300	Mineral Springs

SAMPLERS: James Edwards

RECEIVING LABORATORY: Exygen Research

SAMPLE NO.	DATE	TIME	SAMPLE LOCATION		NO. OF CONTAINERS	EPA 9012A Total CN	ASTM D4282-88 Amenable CN						REMARKS
	7/22	445	MW12	L34906-1		X	X						
	7/22	1200	MW13	L34906-2		X	X						
	7/22	145	MW14	L34906-3		X	X						
	7/22	345	MW16	L34906-4		X	X						
	7/22	230	MW17	L34906-5		X	X						
	7/22	1000	MW20	L34906-6		X	X						
	7/22	1100	MW21	L34906-7		X	X						
	7/23	1030	MW22	L34906-8		X	X						
	7/22	1245	MW23	L34906-9		X	X						
	7/23	1000	SW01	L34906-10		X	X						
	7/23	930	SW02	L34906-11		X	X						
	7/23	945	SW03	L34906-12		X	X						
	7/22	115	EB(7.22.03)	L34906-13		X	X						

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
James Edwards	7/23/03 1500	Fed-X			
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Relinquished by: (Signature)	Date/Time	Received for laboratory by: (Signature)	Date/Time		
			07/24/03	1630	

REMARKS:

REMEDIATION TECHNOLOGIES INC

REMEDIATION TECHNOLOGIES
1001 W. Seneca Street, Suite 204
Ithaca, NY 14850
(607) 277-5716
Fax (607) 277-9057

PINK COPY - Sampler YELLOW COPY - Laboratory WHITE COPY - RETEC

Exygen RESEARCH
3058 Research Drive
State College, PA 16801
Phone: 800-281-3219
Fax: 814-272-1019

Laboratory Sample Log-in Sheet (Environmental)

Complete upon sample receipt:

Client and/or Project Name	Meter - Haag	
Method of Delivery	☐ Walk-in ☐ Pick-up ☐ UPS ☑ FedEx. ☐ Air Borne Tracking #: ~~8383 88~~ 8383 8892 2880	☐ Other (explain)
Chain of Custody	Custody Seals: ☐ present, & ☐ intact / ☐ broken (explain) ☐ absent	Chain of Custody Record: ☑ present ☐ absent
Temperature Preservation	Thermometer ID: cc234 Cooler ID: Cooler 38 Cooler temp: 18 °C Cooler ID: _____ Cooler temp: _____ °C Cooler ID: _____ Cooler temp: _____ °C Cooler ID: _____ Cooler temp: _____ °C	Samples Received: ☑ on ice ☑ in ice melt ☐ with ice pack ☐ none
Explanation		
Completed by	Signature: _____ Date (Time): 7/24/07 1030	

Complete during sample log-in:

LIMS Log-in #	L34906	
Physical Condition	Samples intact?	☑ Yes ☐ No (explain)
Chain of Custody	Samples received agree with COC record?	☑ Yes ☐ No (explain)
Analysis Request	Analysis request clear?	☑ Yes ☐ No (explain)
Preservation	Sample containers appropriate?	☑ Yes ☐ No (explain)
	Chemical preservation appropriate?	☑ Yes ☐ No (explain)
	Samples received within holding time?	☑ Yes ☐ No (explain)
	Sample volume/mass adequate?	☑ Yes ☐ No (explain)
Explanation		
Completed by	Signature: _____ Date: 7/24/07 1230	

Complete following resolution of any nonconformances:

Client Contacted	☐ Yes ☐ No Client: _____	Date (Time): _____
Resolution		
Completed by	Signature: _____	Date: _____

46

52

NO POUCH NEEDED.
See back for peel and stick application instructions.

RECIPIENT: PEEL HERE

FedEx Express USA Airbill

FedEx Tracking Number 8383 8892 2880

0215

Recipient's Copy

1 From This portion can be removed for Recipient's records.

Date 11/3/03 FedEx Tracking Number 838388923880

Sender's Name JAMES EDWARDS Phone (607) 277-7116

Company RETEC GROUP, INC. THE

Address 1001 W SENECA ST STE 204

Dept/Floor/Suite/Room

City ITHACA State NY ZIP 14850

2 Your Internal Billing Reference NYED3 - 14452 - 300

3 To

Recipient's Name JOHN FLATLEY Phone (814) 231 8632

Company EXYGEN

Address 3141 Research Drive

To "HOLD" at FedEx location, print FedEx address. We cannot deliver to P.O. boxes or P.O. ZIP codes.

Address

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City State College State PA ZIP 16801

8383 8892 2880

0233264039

4a Express Package Service *Packages up to 150 lbs.* Delivery commitment may be later in some areas.

- [X] FedEx Priority Overnight — Next business morning
- [ ] FedEx Standard Overnight — Next business afternoon
- [ ] FedEx First Overnight — Earliest next business morning delivery to select locations
- [ ] FedEx 2Day — Second business day
- [ ] FedEx Express Saver — Third business day

FedEx Envelope rate not available. Minimum charge: One-pound rate

4b Express Freight Service *Packages over 150 lbs.* Delivery commitment may be later in some areas.

- [ ] FedEx 1Day Freight* — Next business day
- [ ] FedEx 2Day Freight — Second business day
- [ ] FedEx 3Day Freight — Third business day

* Call for Confirmation:

5 Packaging * Declared value limit $500

- [ ] FedEx Envelope*
- [ ] FedEx Pak* — Includes FedEx Small Pak, FedEx Large Pak, and FedEx Sturdy Pak
- [X] Other

6 Special Handling Include FedEx address in Section 3

- [ ] SATURDAY Delivery — Available only for FedEx Priority Overnight and FedEx 2Day to select ZIP codes
- [ ] HOLD Weekday at FedEx Location — Not available for FedEx First Overnight
- [ ] HOLD Saturday at FedEx Location — Available only for FedEx Priority Overnight and FedEx 2Day to select locations

Does this shipment contain dangerous goods? One box must be checked.

- [X] No
- [ ] Yes — As per attached Shipper's Declaration
- [ ] Yes — Shipper's Declaration not required
- [ ] Dry Ice — Dry Ice, 9, UN 1845 ____ kg

Dangerous Goods (including Dry Ice) cannot be shipped in FedEx packaging. [ ] Cargo Aircraft Only

7 Payment *Bill to:* Enter FedEx Acct. No. or Credit Card No. below.

- [X] Sender — Acct. No. in Section 1 will be billed.
- [ ] Recipient
- [ ] Third Party
- [ ] Credit Card
- [ ] Cash/Check

Total Packages	Total Weight	Total Charges
1	53	Credit Card Auth.

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447

LOGIN CHAIN OF CUSTODY REPORT (ln01)
Jul 25 2003, 08:01 am

Login Number: L34906
Account: 2056 RETEC-ITHACA

Laboratory Sample Number		Client Sample Number	Collect Date	Receive Date	Due PR Date
L34906-1		MW12	22-JUL-03	24-JUL-03	
WATER	S CN		Hold:07-AUG-03 d0000539		
L34906-2		MW13	22-JUL-03	24-JUL-03	
WATER	S CN		Hold:07-AUG-03 d0000539		
L34906-3		MW14	22-JUL-03	24-JUL-03	
WATER	S CN		Hold:07-AUG-03 d0000539		
L34906-4		MW16	22-JUL-03	24-JUL-03	
WATER	S CN		Hold:07-AUG-03 d0000539		
L34906-5		MW17	22-JUL-03	24-JUL-03	
WATER	S CN		Hold:07-AUG-03 d0000539		
L34906-6		MW20	22-JUL-03	24-JUL-03	
WATER	S CN		Hold:07-AUG-03 d0000539		
L34906-7		MW21	22-JUL-03	24-JUL-03	
WATER	S CN		Hold:07-AUG-03 d0000539		
L34906-8		MW22	23-JUL-03	24-JUL-03	
WATER	S CN		Hold:07-AUG-03 d0000539		
L34906-9		MW23	22-JUL-03	24-JUL-03	
WATER	S CN		Hold:07-AUG-03 d0000539		
L34906-10		SW01	23-JUL-03	24-JUL-03	
WATER	S CN		Hold:07-AUG-03 d0000539		
L34906-11		SW02	23-JUL-03	24-JUL-03	
WATER	S CN		Hold:07-AUG-03 d0000539		
L34906-12		SW03	23-JUL-03	24-JUL-03	
WATER	S CN		Hold:07-AUG-03 d0000539		
L34906-13		EB (7-22-03)	22-JUL-03	24-JUL-03	
WATER	S CN		Hold:07-AUG-03 d0000539		

Signature: SCA

Date: 7/25/2003

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Analytical Report

SAMPLE RESULTS

RETEC ID	EXYGEN RESEARCH ID	TOTAL CN Analysis Date	TOTAL CN (µg/mL)	FREE (Microdiffusion) CN Analysis Date	FREE (Microdiffusion) CN (µg/mL)
MW12	L34906-1	07/29/03	0.384	07/30/03	0.088
MW~~14~~ 13	L34906-2	07/29/03	0.423	07/30/03	0.051
MW14	L34906-3	07/29/03	0.962	07/30/03	0.009
MW16	L34906-4	07/29/03	0.13	07/30/03	0.089
MW17	L34906-5	07/29/03	0.05	07/30/03	0.016
MW20	L34906-6	07/29/03	0.399	07/30/03	0.044
MW21	L34906-7	07/29/03	0.708	07/30/03	0.011
MW22	L34906-8	07/29/03	0.56	07/30/03	0.088
MW23	L34906-9	07/29/03	0.620	07/30/03	0.015
SW01	L34906-10	07/29/03	0.088	07/30/03	0.010
SW02	L34906-11	07/29/03	0.030	07/30/03	<0.005
SW03	L34906-12	07/29/03	0.036	07/30/03	0.007
EB (7-22-03)	L34906-13	07/29/03	<0.005	07/30/03	<0.005

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Total Cyanide Matrix Spike Data

EXYGEN RESEARCH ID	Sample Result (µg/mL)	Spike Level (µg/mL)	Matrix Spike Result (µg/mL)	Matrix Spike Duplicate Result (µg/mL)	Matrix Spike Recovery (%)	Matrix Spike Duplicate Recovery (%)	Relative Percent Difference
L34906-1	0.384	0.400	0.839	0.798	114	104	4.95

Free (Microdiffusion) Cyanide Matrix Spike Data

EXYGEN RESEARCH ID	Sample Result (µg/mL)	Spike Level (µg/mL)	Matrix Spike Result (µg/mL)	Matrix Spike Duplicate Result (µg/mL)	Matrix Spike Recovery (%)	Matrix Spike Duplicate Recovery (%)	Relative Percent Difference
L34906-2	0.051	0.050	0.096	0.097	90.0	92.0	1.04

Acceptable matrix spike % recovery limits: 75-125

3058 Research Drive
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exygen.com

Analyst: JPB

Work Group: WG46101
Analysis: CN Title: Send

Date Prepared: 28-Jul-2003

ID	Result	Product	Matrix	DF	MDLxDF	CRDLxDF	Flags	Time Collect	Time Run	Client ID
L34906-1	0.383893	CN	LIQUID	1	0.00252	0.005		22-Jul-03 16:45	29-Jul-03 14:42	MW12
L34906-2	0.422946	CN	LIQUID	1	0.00252	0.005		22-Jul-03 12:00	29-Jul-03 14:42	MW13
L34906-3	0.961948	CN	LIQUID	2	0.00504	0.01		22-Jul-03 13:45	29-Jul-03 14:42	MW14
L34906-4	0.125566	CN	LIQUID	1	0.00252	0.005		22-Jul-03 15:45	29-Jul-03 14:42	MW16
L34906-5	0.04594	CN	LIQUID	1	0.00252	0.005		22-Jul-03 14:30	29-Jul-03 14:42	MW17
L34906-6	0.399062	CN	LIQUID	1	0.00252	0.005		22-Jul-03 10:00	29-Jul-03 14:42	MW20
L34906-7	0.70828	CN	LIQUID	2	0.00504	0.01		22-Jul-03 11:00	29-Jul-03 14:42	MW21
L34906-8	0.563367	CN	LIQUID	2	0.00504	0.01		22-Jul-03 10:30	29-Jul-03 14:42	MW22
L34906-9	0.62032	CN	LIQUID	2	0.00504	0.01		23-Jul-03 12:45	29-Jul-03 14:42	MW23
L34906-10	0.087531	CN	LIQUID	1	0.00252	0.005		23-Jul-03 10:00	29-Jul-03 14:42	SW01
L34906-11	0.030038	CN	LIQUID	1	0.00252	0.005		23-Jul-03 09:30	29-Jul-03 14:42	SW02
L34906-12	0.036066	CN	LIQUID	1	0.00252	0.005		23-Jul-03 09:45	29-Jul-03 14:42	SW03
L34906-13	-0.000186	CN	LIQUID	1	0.00252	0.005	U	23-Jul-03 01:35	29-Jul-03 14:42	EB (7-22-03)

CN: Calibration, Peak 4-50

File name: C:\FLOW_4\WG46101.TXT
Date: July 29, 2003
Operator: JPB

Name	Conc	Height
* S1	0.01	3658
* S2	0.05	17108
* S3	0.125	44177
* S4	0.25	87702
* S5	0.375	134916
* S6	0.5	169021

Calib Coef:
y=bx+a
a: (intercep 6.94E+02
b: 3.45E+05

Corr Coef: 0.999201

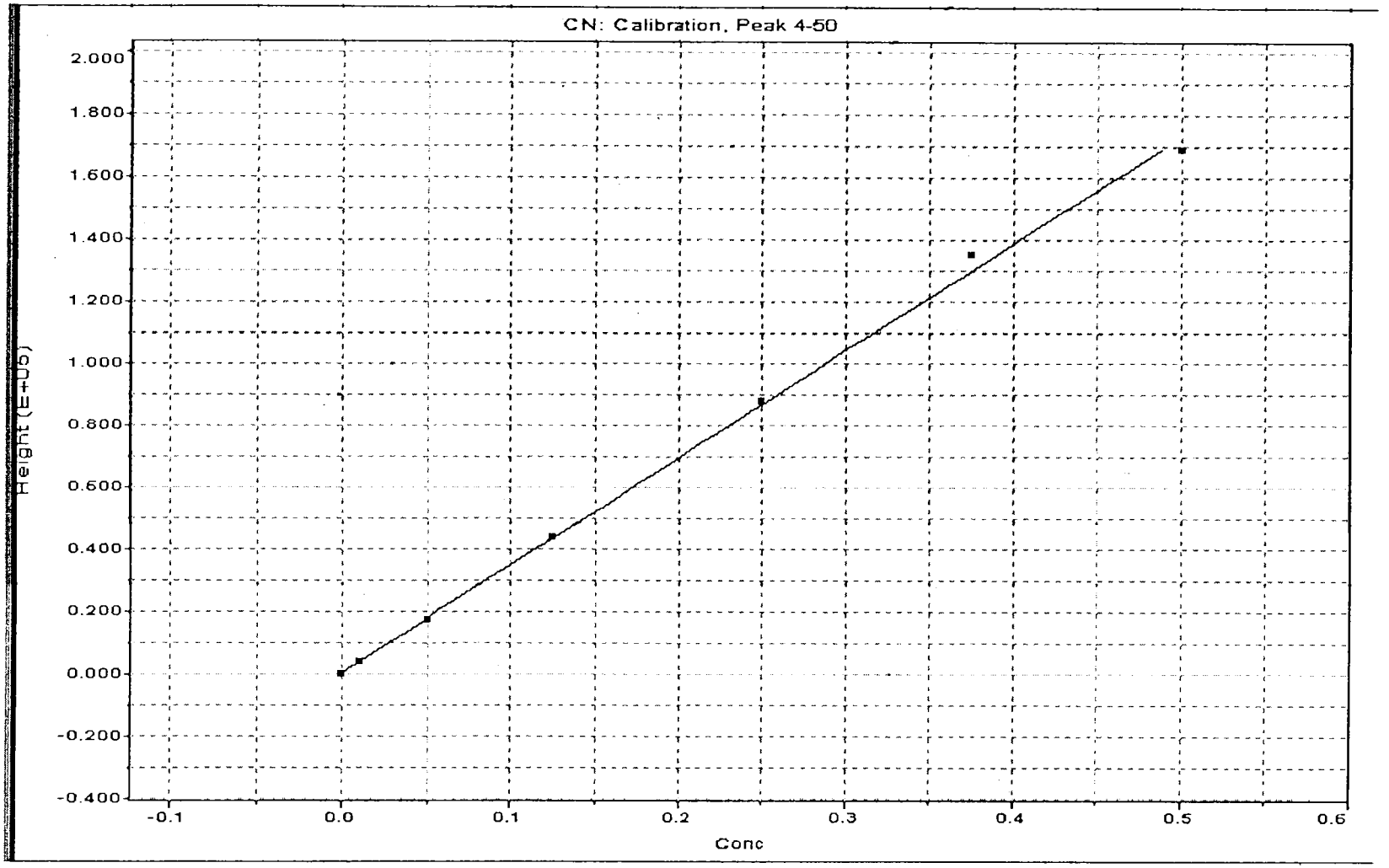
Carryover: 0.31%

No Drift Peaks

Analyst: JPB

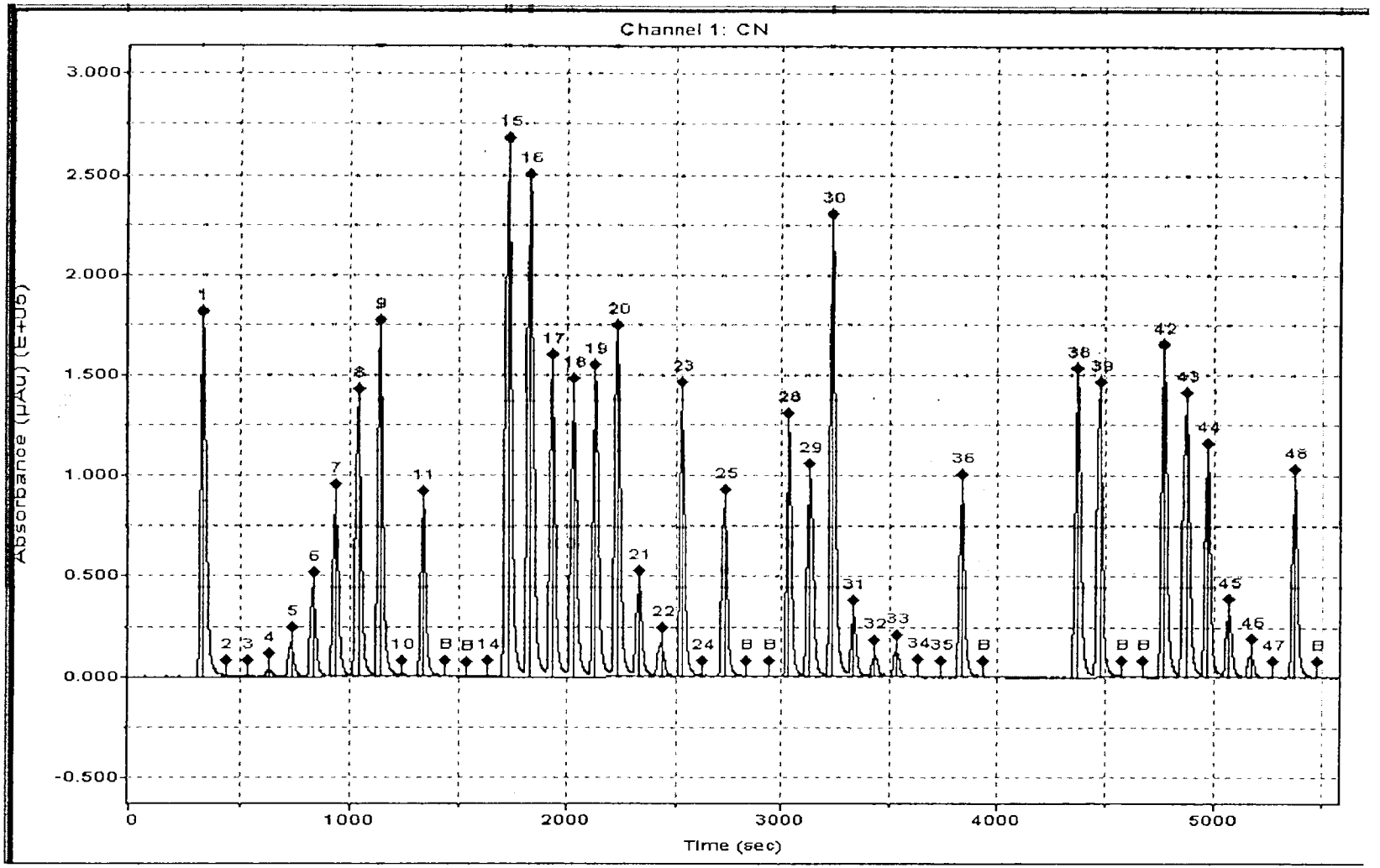
Work Group: WG46101
Analysis: CN Title: curve

Date Prepared: 28-Jul-2003



Work Group: WG46101
Analysis: CN Title: Data

CAL ID	CLIENT ID	Matrix	Sample Volume (g) or (ml)	Final Volume (ml)	Final Dilution Factor	Final Concentration (mg/L)
WG46101-1	MB	CN | LIQUID	50.0	50.0	1.00	-0.00157
WG46101-2	MS: L34906-1	CN | LIQUID	50.0	50.0	2.00	0.838726
WG46101-3	SD: L34906-1	CN | LIQUID	50.0	50.0	2.00	0.798178
WG46101-4	LCS	CN | LIQUID	50.0	50.0	1.00	0.455547
L34906-1	MW12	CN | LIQUID	50.0	50.0	1.00	0.383893
L34906-2	MW13	CN | LIQUID	50.0	50.0	1.00	0.422946
L34906-3	MW14	CN | LIQUID	50.0	100	2.00	0.961948
L34906-4	MW16	CN | LIQUID	50.0	50.0	1.00	0.125566
L34906-5	MW17	CN | LIQUID	50.0	50.0	1.00	0.04594
L34906-6	MW20	CN | LIQUID	50.0	50.0	1.00	0.399062
L34906-7	MW21	CN | LIQUID	50.0	100	2.00	0.70828
L34906-8	MW22	CN | LIQUID	50.0	100	2.00	0.563367
L34906-9	MW23	CN | LIQUID	50.0	50.0	2.00	0.62032
L34906-10	SW01	CN | LIQUID	50.0	50.0	1.00	0.087531
L34906-11	SW02	CN | LIQUID	50.0	50.0	1.00	0.030038
L34906-12	SW03	CN | LIQUID	50.0	50.0	1.00	0.036066
L34906-13	EB (7-22-03)	CN | LIQUID	50.0	50.0	1.00	-0.000186


Channel 1: CN
Absorbance (µAU) (E+05)
Time (sec)
3.000
2.500
2.000
1.500
1.000
0.500
0.000
-0.500
0
1000
2000
3000
4000
5000

Analyst: JPB

Work Group: WG46101

Date Prepared: 28-Jul-2003

Analysis: CN Title: QC Calibration

QC ID	CN
CCB	0.00
TV	0.00
Q>1.98xMDL	U
CCV	0.24
TV	0.25
Accuracy (%)	97.30
Q+/-10%	
CCB	0.00
TV	0.00
Q>1.98xMDL	B
CCV	0.24
TV	0.25
Accuracy (%)	97.30
Q+/-10%	
CCB	0.00
TV	0.00
Q>1.98xMDL	U
CCV	0.27
TV	0.25
Accuracy (%)	107.01
Q+/-10%	
CCB	0.00
TV	0.00
Q>1.98xMDL	U
CCV	0.27
TV	0.25
Accuracy (%)	109.67
Q+/-10%	

Analyst: JPB

Work Group: WG46101
Analysis: CN Title: QC Workgroup

Date Prepared: 28-Jul-2003

LAB ID	Matrix	QC ID	DF	CN
WG46101-1	LIQUID	MB	1.00	0.00
TV				0.00
Q>1.98xMDL				U
WG46101-2	LIQUID	MS: L34906-1	2.00	0.84
Spike				0.40
Recovery (%)				113.71
Q+/-25%				
WG46101-3	LIQUID	MSD: L34906-1	2.00	0.80
Spike				0.40
Recovery (%)				103.57
Q+/-25%				
WG46101-4	LIQUID	LCS	1.00	0.46
TV				0.40
Recovery (%)				113.89
Q+/-15%				

Analyst: JPB

Work Group: WG46101
Analysis: CN Title: Reagents

Date Prepared: 28-Jul-2003

Chemical	ExyLims ID
50% H2SO4 Solution	SL0004187
Magnesium Chloride Solution	SL0004387
10% Sodium Hydroxide	RE0007837
Lead Carbonate	RE0008624
Sulfamic Acid	RE0004188
Chloramine-T	RE0006846
Pyridine	RE0007721
Barbituric Acid	RE0008872
HCl	RE0007047
Phosphoric Acid	RE0007606
Hypophorus Acid	RE0000296
Sodium Phosphate Monobasic	RE0002597

Peak Table: CN

File name: C:\FLOW_4\WG46101.TXT
Date: July 29, 2003
Operator: JPB

Peak	Cup		Name	Type	Dil	Wt		Height	Calc. (ppm)	Peak	Cup		Flags
	1	1	sync	SYNC		1	1	173718	0.501771		1	1	
	2	2	co	CO		1	1	531	-0.000473		2	2	LO
	3	2	co	CO		1	1	87	-0.001761		3	2	LO
	4	3	S1	C		1	1	3658	0.008596		4	3	
	5	4	S2	C		1	1	17108	0.047602		5	4	
	6	5	S3	C		1	1	44177	0.1261		6	5	
	7	6	S4	C		1	1	87702	0.252323		7	6	
	8	7	S5	C		1	1	134916	0.389243		8	7	
	9	8	S6	C		1	1	169021	0.488149		9	8	
	10	9	CCB	BLNK		1	1	-129	-0.002386		10	9	LO
	11	10	CCV	CCV		1	1	84570	0.243242		11	10	
B			Baseline	WBL		1	1	0	-0.002013	B			BL
B			Baseline	WBL		1	1	0	-0.002013	B			BL
	14	11	WG46101-1	U		50	50	153	-0.00157		14	11	LO
	15	12	WG46101-2	U		50	50	260704	0.754031		15	12	HI
	16	13	WG46101-3	U		50	50	241709	0.698944		16	13	HI
	17	14	WG46101-4	U		50	50	151906	0.438515		17	14	FL
	18	15	L34906-1	U		50	50	139951	0.403846		18	15	FL
	19	16	L34906-2	U		50	50	146537	0.422946		19	16	
	20	17	L34906-3	U		100	50	166547	0.961948		20	17	
	21	18	L34906-4	U		50	50	43993	0.125566		21	18	
	22	19	L34906-5	U		50	50	16535	0.04594		22	19	
	23	20	L34906-6	U		50	50	138301	0.399062		23	20	
	24	**9**	**CCB**	**BLNK**		**1**	1	-232	**-0.002685**		**24**	9	**LO**
	25	10	CCV	CCV		1	1	84574	0.243253		25	10	
B			Baseline	WBL		1	1	0	-0.002013	B			BL
B			Baseline	WBL		1	1	0	-0.002013	B			BL
	28	21	L34906-7	U		100	50	122811	0.70828		28	21	
	29	22	L34906-8	U		100	50	97826	0.563367		29	22	
	30	23	L34906-9	U		50	50	222499	0.643235		30	23	HI
	31	24	L34906-10	U		50	50	29472	0.083457		31	24	FL

	32	25	L34906-11	U	50	50	10424	0.028217	32	25	FL
	33	26	L34906-12	U	50	50	13130	0.036066	33	26	
	34	27	L34906-13	U	50	50	630	-0.000186	34	27	LO
	35	9	CCB	BLNK	1	1	-93	-0.002284	35	9	LO
	36	10	CCV	CCV	1	1	92946	0.26753	36	10	
B		2	WASH	WBL	1	1	0	-0.002013 B		2	BL
	38	28	WG46101-2	U	100	50	145302	0.838726	38	28	
	39	29	WG46101-3	U	100	50	138311	0.798178	39	29	
B			Baseline	WBL	1	1	0	-0.002013 B			BL
B			Baseline	WBL	1	1	0	-0.002013 B			BL
	42	30	WG46101-4	U	50	50	157779	0.455547	42	30	
	43	31	L34906-1	U	50	50	133071	0.383893	43	31	
	44	32	L34906-9	U	100	50	107646	0.62032	44	32	
	45	33	L34906-10	U	50	50	30877	0.087531	45	33	
	46	34	L34906-11	U	50	50	11052	0.030038	46	34	
	47	9	CCB	BLNK	1	1	-20	-0.002071	47	9	LO
	48	10	CCV	CCV	1	1	95237	0.274176	48	10	
B		2	WASH	WBL	1	1	0	-0.002013 B		2	BL

Analyst: JPB

Work Group: WG46101

Date Prepared: 28-Jul-2003

Analysis: CN Title: Solution Information

Stock Log Number	From Stock Solution ID	Description	Date Received or Made	Date Expires	Date Opened	Solvent	Login Initials
15247	Ultra Scientific (SP0002405)	Cyanide Standard	17-Jan-03	30-Sep-05	17-Jan-03	Water	JPB
15248	Ultra Scientific (SP0002405)	Cyanide Intermediate	17-Jan-03	30-Sep-05	17-Jan-03	Water	JPB
15280	SP0004235	CN Spike	18-Jul-03	17-Jul-04	28-Jul-2003	Water	JPB
S072803-01	15247	STOCK	28-Jul-03	29-Jul-03	28-Jul-03	Water	JPB
S072803-02	15248	S0 (CCB)	28-Jul-03	29-Jul-03	28-Jul-03	Water	JPB
S072803-03	15248	S1	28-Jul-03	29-Jul-03	28-Jul-03	Water	JPB
S072803-04	15248	S2	28-Jul-03	29-Jul-03	28-Jul-03	Water	JPB
S072803-05	15248	S3	28-Jul-03	29-Jul-03	28-Jul-03	Water	JPB
S072803-06	15248	S4 (CCV)	28-Jul-03	29-Jul-03	28-Jul-03	Water	JPB
S072803-07	15248	S5	28-Jul-03	29-Jul-03	28-Jul-03	Water	JPB
S072803-08	15248	S6	28-Jul-03	29-Jul-03	28-Jul-03	Water	JPB
S072803-09	15280	LCS	28-Jul-03	29-Jul-03	28-Jul-03	Water	JPB
S072803-10	15280	MS (MSD)	28-Jul-03	29-Jul-03	28-Jul-03	Water	JPB
S072803-11	15280	MS2 (MSD2)	28-Jul-03	29-Jul-03	28-Jul-03	Water	JPB

Analyst: JPB

Work Group: WG46101

Date Prepared: 28-Jul-2003

Analysis: CN Title: Solution Preparation

Prepared Solution	Stock Log Number	Stock Volume (ml)	Final Volume (ml)	CN Stock mg/L	CN-AMEN Stock mg/L	CN-FREE Stock mg/L	CN Final mg/L	CN-AMEN Final mg/L	CN-FREE Final mg/L
STOCK	15247	1	400	1000	1000	1000	2.5	2.5	2.5
S0 (CCB)	15248	0	10	2.5	2.5	2.5	0	0	0
S1	15248	0.04	10	2.5	2.5	2.5	0.01	0.01	0.01
S2	15248	0.2	10	2.5	2.5	2.5	0.05	0.05	0.05
S3	15248	0.5	10	2.5	2.5	2.5	0.125	0.125	0.125
S4 (CCV)	15248	1	10	2.5	2.5	2.5	0.25	0.25	0.25
S5	15248	1.5	10	2.5	2.5	2.5	0.375	0.375	0.375
S6	15248	2	10	2.5	2.5	2.5	0.5	0.5	0.5
LCS	15280	0.2	50	100			0.4		
MS (MSD)	15280	0.2	100	100			0.2		
MS2 (MSD2)	15280	0.2	50	100			0.4		

Free CN

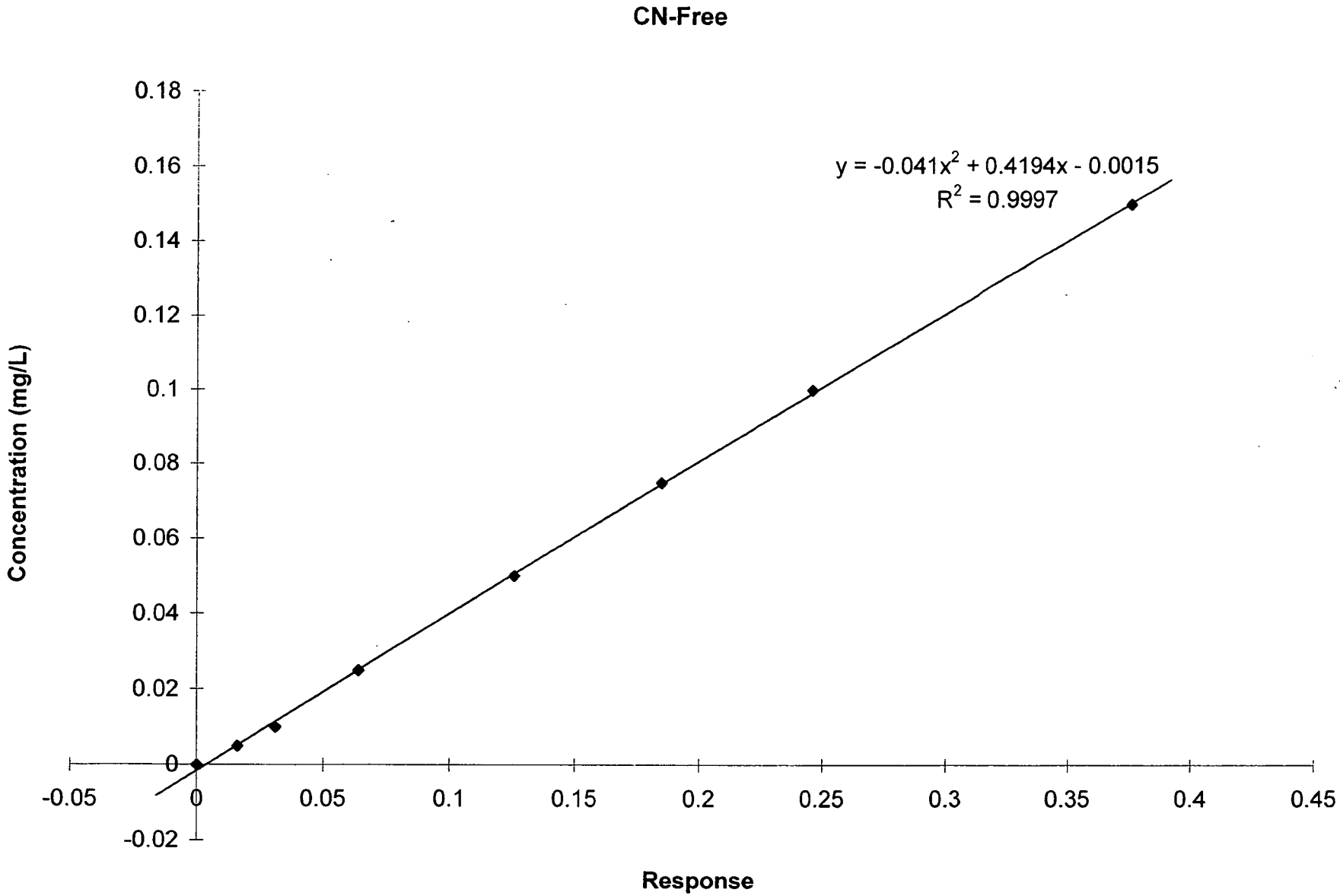
ID	%T	Absorbance	Concentration	Calculated	Exclude (X),
Std 0	1	0.000	0.000	0.000	2
Std 1	1	0.016	0.005	0.005	-
Std 2	1	0.031	0.010	0.011	-
Std 3	1	0.064	0.025	0.025	-
Std 4	1	0.126	0.050	0.051	-
Std 5	1	0.185	0.075	0.075	-
Std 6	1	0.246	0.100	0.099	-
Std 7	1	0.376	0.150	0.150	-

CAL ID	CLIENT ID	Matrix	Sample Volume (g) or	Final Volume (ml)	Dilution Factor	%T	Absorbance	Concentration (mg/L)	% Recovery
CCV	-	LIQUID	1.00	1.00	1.00	1	0.181	0.073	97
CCB	-	LIQUID	1.00	1.00	1.00	1	0.000	-0.002	
L34906-1	-	LIQUID	1.00	1.00	1.00	1	0.218	0.088	
L34906-2	-	LIQUID	1.00	1.00	1.00	1	0.128	0.051	
L34906-2MS	-	LIQUID	1.00	1.00	1.00	1	0.239	0.096	90
L34906-2MSD	-	LIQUID	1.00	1.00	1.00	1	0.241	0.097	92
L34906-3	-	LIQUID	1.00	1.00	1.00	1	0.026	0.009	
L34906-4	-	LIQUID	1.00	1.00	1.00	1	0.221	0.089	
L34906-5	-	LIQUID	1.00	1.00	1.00	1	0.041	0.016	
L34906-6	-	LIQUID	1.00	1.00	1.00	1	0.109	0.044	
L34906-7	-	LIQUID	1.00	1.00	1.00	1	0.029	0.011	
L34906-8	-	LIQUID	1.00	1.00	1.00	1	0.218	0.088	
CCV	-	LIQUID	1.00	1.00	1.00	1	0.179	0.072	96
CCB	-	LIQUID	1.00	1.00	1.00	1	0.000	-0.002	
L34906-9	-	LIQUID	1.00	1.00	1.00	1	0.039	0.015	
L34906-10	-	LIQUID	1.00	1.00	1.00	1	0.028	0.010	
L34906-11	-	LIQUID	1.00	1.00	1.00	1	0.006	0.001	
L34906-12	-	LIQUID	1.00	1.00	1.00	1	0.021	0.007	
L34906-12MS	-	LIQUID	1.00	1.00	1.00	1	0.127	0.051	88
L34906-12MSD	-	LIQUID	1.00	1.00	1.00	1	0.132	0.053	92
L34906-13	-	LIQUID	1.00	1.00	1.00	1	0.009	0.002	
CCV	-	LIQUID	1.00	1.00	1.00	1	0.172	0.069	92
CCB	-	LIQUID	1.00	1.00	1.00	1	0.000	-0.002	

Analyst: PL

Work Group: WG073003
Analysis: CN-Free Title: Beers Plot

Date Prepared: 30-July-2003



Print Date: 30-Jul-03