

Project C7869.41

November 2, 1998

**CHEMICAL QUALITY ASSURANCE REPORT FOR
PLUM BROOK ORDNANCE WORKS
GROUNDWATER INVESTIGATION
SAMPLE DELIVERY GROUP PB023**

Submitted to:

International Technology Corporation
312 Directors Drive
Knoxville, Tennessee 37923-4799

Submitted by:

3D/International, Inc.
Environmental Group
781 Neeb Road
Cincinnati, Ohio 45233

Table of Contents

SECTION 1.0: INTRODUCTION AND EXECUTIVE SUMMARY.....	1
SECTION 2.0: LABORATORY QUALITY CONTROL DATA EVALUATION.....	3
2.1 PRIMARY LABORATORY.....	3
2.1.1 Volatile Organic Analyses.....	3
2.1.2 Semivolatile Organic Compounds	3
2.1.3 Polychlorinated Biphenyls	4
2.1.4 Metals	4
2.1.5 Nitroaromatics and Nitramines	4
2.2 QA LABORATORY.....	5
2.2.1 Volatile Organic Analyses.....	5
2.2.2 Semivolatile Organic Compounds	5
2.2.3 Polychlorinated Biphenyls	6
2.2.4 Metals	6
2.2.5 Nitroaromatics and Nitramines	7
SECTION 3.0: PRIMARY AND QA LABORATORY SAMPLE DATA COMPARISON.....	8
3.1 VOLATILE ORGANIC COMPOUNDS	8
3.2 SEMIVOLATILE ORGANIC COMPOUNDS.....	8
3.3 POLYCHLORINATED BIPHENYLS	8
3.4 DISSOLVED METALS	8
3.5 TOTAL METALS	9
3.6 NITROAROMATICS AND NITRAMINES.....	9
Appendix 1. Data Comparison Tables.	
Appendix 2. Analytical Reports and Chain of Custody Documents.	

Section 1.0: Introduction and Executive Summary

This Chemical Quality Assurance Report (CQAR) has been prepared for quality control and quality assurance samples collected during groundwater investigation at the Plum Brook Ordnance Works in Sandusky, Ohio. This report has been prepared in accordance with U.S. Army Corps of Engineers policy EM 200-1-6, **Chemical Quality Assurance for HTRW Projects**, dated 10 October 1997.

The samples included in this report consist of pairs of field duplicates and field split samples that were analyzed by Quanterra, Inc., Knoxville, Tennessee and Curtis & Tompkins, Ltd., Berkeley, California. Quanterra, Inc. served as the primary laboratory for this project, while Curtis & Tompkins served as the quality assurance laboratory.

The sample pairs addressed in this report are identified in Table 1. In this table, samples analyzed by Quanterra (the primary laboratory) are identified as QC samples, while those analyzed by Curtis & Tompkins are identified as QA samples. Table 2 identifies the analytical parameters for each sample.

Table 1. Sample Delivery Group PB026 Samples in Chemical Quality Assurance Report

Sample Pair	Sample Type		Sample Collection	
	QC	QA	Date	Time
5496	X		5/13/98	9:05 A.M.
5497		X	5/13/98	9:05 A.M.
9008	X		5/13/98	10:00 A.M.
9009		X	5/13/98	10:00 A.M.
5766	X		5/14/98	12:00 P.M.
5767		X	5/14/98	12:00 P.M.
9010	X		5/14/98	10:00 A.M.
9011		X	5/14/98	10:00 A.M.

Table 2. Sample Analytical Parameters

Analytical Parameter	SW846 Method*	QC and QA Sample Set			
		5496	9008	5766	9010
		5497	9009	5767	9011
Volatile Organic Compounds	8260A	X	X	X	X
Semivolatile Organic Compounds	8270B	X		X	
Polychlorinated Biphenyls	8081	X		X	
Dissolved Metals	6010A/ 7470A	X		X	
Total Metals	6010A/ 7470A	X		X	
Nitroaromatics and Nitramine	8330	X		X	

Section 2.0: Laboratory Quality Control Data Evaluation

2.1 PRIMARY LABORATORY

This section focuses on QC data generated by Quanterra, Inc., the primary laboratory for this effort. All samples were analyzed by Quanterra within recommended holding times.

All samples were received by Quanterra intact, with proper chain-of-custody documentation present and custody seals intact.

2.1.1 Volatile Organic Analyses

Samples 5496, 9008, 5766, and 9010 were analyzed for volatile organic compounds. A review of QC data for these samples revealed the following.

- Surrogate spike recoveries for all method blanks, laboratory control samples, matrix spike / matrix spike duplicates (MS/MSD), and samples were within recovery limits.
- Analyte recoveries and relative percent differences (RPDs) were within QC limits for all MS/MSD and laboratory control samples.
- All method blanks and samples had detectable concentrations of methylene chloride. The method blank contamination indicates that methylene chloride in the samples may be attributed to laboratory contamination.

2.1.2 Semivolatile Organic Compounds

Samples 5496 and 5766 were analyzed for semivolatile organic compounds. Review of QC data for these analyses revealed the following.

- Surrogate spike recoveries for all method blanks, laboratory control samples, matrix spike / matrix spike duplicates (MS/MSD), and samples were within recovery limits.
- Analyte recoveries were within QC limits for all MS/MSD and laboratory control samples. RPDs were within control limits with the exception of the RPD for 4-

chloro3-methylphenol in the MS/MSD sample associated with sample 5496. The high RPD was attributed by the laboratory to sample non-homogeneity. However, recoveries in laboratory control sample indicated that the analysis was in control.

- All method blanks were free of contamination.

2.1.3 Polychlorinated Biphenyls

Samples 5496 and 5766 were analyzed for PCBs with the following QC data results.

- Surrogate spike recoveries for all method blanks, laboratory control samples, matrix spike / matrix spike duplicates (MS/MSD), and samples were within recovery limits.
- Analyte recoveries and relative percent differences (RPDs) were within QC limits for all MS/MSD and laboratory control samples.
- All method blanks were free of contamination.

2.1.4 Metals

Samples 5496 and 5766 were analyzed for total metals and dissolved metals. The following QC data was generated with these analyses.

- All MS/MSD analyte recoveries and RPDs were within limits with the exception of silver and magnesium in the MS/MSD for total metals. However, laboratory control sample recoveries were within limits, indicating that the analyses were in control.
- All method/preparation blanks were free of contamination.

2.1.5 Nitroaromatics and Nitramines

Samples 5496 and 5766 were analyzed for nitroaromatics and nitramines. The following QC data was generated with these analyses.

- Surrogate spike recoveries for all method blanks, laboratory control samples, matrix spike samples, and samples 5496 and 5766 were within recovery limits.
- Analyte recoveries were within control limits for all MS/MSD and laboratory control samples.
- All method blanks were free of contamination.

2.2 QA LABORATORY

Samples 5497, 9009, 5767, and 9011 were received intact by Curtis & Tompkins, the quality assurance laboratory for this effort. Chain-of-custody documentation was present and custody seals intact. Sample temperatures ranged from 4.75 to 5.25°C, slightly above the recommended temperature of 4°C. The pH of all samples for volatile and total metals analysis was less than 2 standard units.

During the analysis of samples 5617 and 5557 for semivolatiles, the blank spike for this sample batch was broken. These samples were relogged as samples 5617 RE and 5557 RE, respectively, and reanalyzed. However, reanalysis occurred after expiration of the holding time. All other analytical holding times were met.

2.2.1 Volatile Organic Analyses

Samples 5497, 9009, 5767, and 9011 were analyzed for volatile organic compounds. A review of QC data for these samples revealed the following.

- Surrogate spike recoveries for all method blanks, blank spike / blank spike duplicates (BS/BSD), and samples were within recovery limits.
- Analyte recoveries and relative percent differences (RPDs) were within QC limits for all BS/BSD samples.
- All method blanks were free of contamination.

2.2.2 Semivolatile Organic Compounds

Samples 5497 and 5767 were analyzed for semivolatile organic compounds. Review of QC data for these analyses revealed the following.

- Surrogate recoveries for sample 5497 were outside of control limits for three of the six surrogates. Curtis & Tompkins renamed the sample as 5497RE, extracted an aliquot of the sample, and reanalyzed. Because all other QC data from the sample batch was inside control limits, the low recovery was attributed to matrix interferences.
- Surrogate spike recoveries for all method blanks, laboratory control samples, blank spike / blank spike duplicates (BS/BSD), and samples were within recovery limits.
- Analyte recoveries and relative percent differences (RPDs) were within QC limits for all BS/BSD and laboratory control samples.
- The laboratory reported high percent differences for two compounds in the continuing calibration verifications for these analyses. However, minimum response criteria for these were met, and neither of the compounds was detected

in the samples. Therefore, the high percent differences do not appear to have impacted the analytical results.

- All method blanks were free of contamination.

2.2.3 Polychlorinated Biphenyls

Samples 5497 and 5767 were analyzed for PCBs with the following QC data results.

- Surrogate spike recoveries for all method blanks, laboratory control samples, blank spike / blank spike duplicates (BS/BSD), and samples were within recovery limits.
- Analyte recoveries and relative percent differences (RPDs) were within QC limits for all BS/BMSD and laboratory control samples.
- A high relative percent difference for Aroclor 1221 was reported by the laboratory in one of the continuing calibration checks performed during analysis of these samples. However, this Aroclor was not detected in either sample; therefore, the quality of the data is apparently not affected.
- All method blanks were free of contamination.

2.2.4 Metals

Samples 5497 and 5767 were analyzed for total metals and dissolved metals. The following QC data was generated with these analyses.

- All BS/BSD analyte recoveries and RPDs were within limits.
- Laboratory control sample recoveries were within recovery limits.
- RPDs for sample 5497 and a duplicate were outside of control limits for thallium. All other recoveries and RPDs were within limits.
- Sample spike recoveries were within limits with the exception of calcium, copper, magnesium, and manganese in a sample spike associated with the batch in which sample 5497 was analyzed. The out-of-control recoveries were viewed by the lab as not meaningful because the spike concentrations were less than 25% of the sample concentrations of these analytes.
- All prep/method blanks were free of contamination.

2.2.5 Nitroaromatics and Nitramines

Samples 5497 and 5767 were analyzed for nitroaromatics and nitramines by Quanterra, West Sacramento, California under contract from Curtis & Tompkins. The following QC data was generated with these analyses.

- Surrogate spike recoveries for all method blanks, laboratory control / laboratory control duplicate samples, and samples were within recovery limits.
- Analyte recoveries and RPDs were within control limits for all laboratory control samples and laboratory control sample duplicates.
- All method blanks were free of contamination.

Section 3.0: Primary and QA Laboratory Sample Data Comparison

The following sections provide a comparison between sample data generated by Quanterra, Inc. and Curtis & Tompkins. The definitions of agreement, minor disagreement, and major disagreement used in this discussion are those presented in Table 4-1 (Criteria for Comparing QC and QA Sample Data) of U.S. Army Corps of Engineers policy EM-200-1-6, **Chemical Quality Assurance for HTRW Projects**.

3.1 VOLATILE ORGANIC COMPOUNDS

Results for sample pair 5496 (analyzed by Quanterra) and 5497 (analyzed by Curtis & Tompkins) were in agreement. Sample 5496 contained estimated concentrations of several compounds, as well as 1.1 ug/l of carbon disulfide. All of the concentrations reported by Quanterra were less than Curtis & Tompkins' reporting limits.

Results for sample pairs 9008 and 9009, 5766 and 5767, and 9010 and 9010 were in agreement. For each sample pair, several volatiles were reported at estimated concentrations below the reporting limit by Quanterra. These estimated detections were also well below the reporting limits utilized by Curtis & Tompkins.

3.2 SEMIVOLATILE ORGANIC COMPOUNDS

Results for sample pairs 5496 and 5497RE (the reextracted and reanalyzed sample 5497 as discussed in section 2.2.2) and for 5766 and 5767 were in agreement. No semivolatile organic compounds were detected in these samples.

3.3 POLYCHLORINATED BIPHENYLS

Results for sample sets 5496/5497 and 5766/5767 were in agreement. No PCBs were detected in any of these samples.

3.4 DISSOLVED METALS

Results for sample pair 5496 and 5497 were in agreement for all analytes with the exception of aluminum. Results for aluminum (non-detect at a reporting limit of 200 ug/l in sample 5496, 710 ug/l in sample 5497) were in disagreement. Results for sample pair 5766 and 5767 were in agreement.

3.5 TOTAL METALS

Analytical results for sample pair 5496 and 5497 were in agreement for all parameters with the exception of aluminum and iron. Aluminum results (non-detect at a reporting limit of 200 ug/l in sample 5496, 800 ug/l in sample 5497) were in disagreement, while iron results (37100 ug/l in sample 5496, 11000 ug/l in sample 5497) were in major disagreement. Results for sample pair 5766 and 5767 were in disagreement for aluminum (6200 ug/l in sample 5766, 2900 ug/l in sample 5767); all other analyte results were in agreement.

3.6 NITROAROMATICS AND NITRAMINES

Results for sample sets 5496 and 5497, as well as for 5766 and 5767, were in agreement. Only one analyte, nitrobenzene, was detected in one sample (sample 5496) at the reporting limit of 0.2 ug/l.

Appendix 1
Data Comparison Tables

Volatile Organic Compounds

QC Sample No. 5496	QA Sample No. 5497
Date Sampled 5/13/98	Date Sampled 5/13/98
Date Received 5/14/98	Date Received 5/14/98
Date Extracted 5/20/98	Date Extracted 5/19/98
Date Analyzed 5/20/98	Date Analyzed 5/19/98
Method No. SW846-8260A	Method No. SW846-8260A
Matrix: Water	Units: µg/L

PARAMETER	QC RESULT	QA RESULT
Chloromethane	ND	ND
Bromomethane	ND	ND
Vinyl chloride	ND	ND
Chloroethane	ND	ND
Methylene chloride	0.36 J,B	ND
Acetone	ND	ND
Carbon disulfide	1.1	ND
1,1-Dichloroethene	ND	ND
1,1-Dichloroethane	ND	ND
1,2-Dichloroethene (total)	ND	ND
Chloroform	ND	ND
1,2-Dichloroethane	ND	ND
2-Butanone	ND	ND
1,1,1-Trichloroethane	ND	ND
Carbon tetrachloride	ND	ND
Bromodichloromethane	ND	ND
1,2-Dichloropropane	ND	ND
cis-1,3-Dichloropropene	ND	ND
Trichloroethene	0.14 J	ND
Dibromochloromethane	ND	ND
1,1,2-Trichloroethane	ND	ND
Benzene	ND	ND
trans-1,3-Dichloropropene	ND	ND
Bromoform	ND	ND
4-Methyl-2-pentanone	ND	ND
2-Hexanone	ND	ND
Tetrachloroethene	ND	ND
1,1,2,2-Tetrachloroethane	ND	ND
Toluene	ND	ND
Chlorobenzene	ND	ND
Ethylbenzene	ND	ND
Styrene	ND	ND
Xylenes (total)	ND	ND

J - Estimated concentration below the reporting limit. B - Analyte detected in method blank

Volatile Organic Compounds

QC Sample No. 9008	QA Sample No. 9009
Date Sampled 5/13/98	Date Sampled 5/13/98
Date Received 5/14/98	Date Received 5/14/98
Date Extracted 5/22/98	Date Extracted 5/19/98
Date Analyzed 5/22/98	Date Analyzed 5/19/98
Method No. SW846-8260A	Method No. SW846-8260A
Matrix: Water	Units µg/L

PARAMETER	QC RESULT	QA RESULT
Chloromethane	ND	ND
Bromomethane	ND	ND
Vinyl chloride	ND	ND
Chloroethane	ND	ND
Methylene chloride	0.68 J,B	ND
Acetone	ND	ND
Carbon disulfide	ND	ND
1,1-Dichloroethene	ND	ND
1,1-Dichloroethane	ND	ND
Trans-1,2-Dichloroethene	ND	ND
Cis-1,2-Dichloroethene	ND	ND
Chloroform	0.47 J	ND
1,2-Dichloroethane	ND	ND
2-Butanone	ND	ND
1,1,1-Trichloroethane	ND	ND
Carbon Tetrachloride	ND	ND
Bromodichloromethane	ND	ND
1,2-Dichloropropane	ND	ND
Cis-1,3-Dichloropropene	ND	ND
Trichloroethene	ND	ND
Dibromochloromethane	ND	ND
1,1,2-Trichloroethane	ND	ND
Benzene	ND	ND
Trans-1,3-Dichloropropene	ND	ND
Bromoform	ND	ND
2-Hexanone	ND	ND
4-Methyl-2-Pentanone	ND	ND
1,1,2,2-Tetrachloroethane	ND	ND
Tetrachloroethene	ND	ND
Toluene	0.37 J	ND
Chlorobenzene	ND	ND
Ethylbenzene	ND	ND
Styrene	ND	ND
m,p-Xylenes		ND
o-Xylene	ND	ND

J – Estimated concentration below the reporting limit. B – Analyte detected in method blank

Volatile Organic Compounds

QC Sample No. 5766	QA Sample No. 5767
Date Sampled 5/14/98	Date Sampled 5/14/98
Date Received 5/15/98	Date Received 5/15/98
Date Extracted 5/22/98	Date Extracted 5/21/98
Date Analyzed 5/22/98	Date Analyzed 5/21/98
Method No. SW846-8260A	Method No. SW846-8260A
Matrix: Water	Units: µg/L

PARAMETER	QC RESULT	QA RESULT
Chloromethane	ND	ND
Bromomethane	ND	ND
Vinyl chloride	ND	ND
Chloroethane	ND	ND
Methylene chloride	0.95 J,B	ND
Acetone	ND	ND
Carbon disulfide	ND	ND
1,1-Dichloroethene	ND	ND
1,2-Dichloroethene (total)	ND	ND
Chloroform	ND	ND
1,2-Dichloroethane	ND	ND
2-Butanone	ND	ND
1,1,1-Trichloroethane	ND	ND
Carbon Tetrachloride	ND	ND
Bromodichloromethane	ND	ND
1,2-Dichloropropane	ND	ND
Cis-1,3-Dichloropropene	ND	ND
Trichloroethene	0.25 J	ND
Dibromochloromethane	ND	ND
1,1,2-Trichloroethane	ND	ND
Benzene	ND	ND
Trans-1,3-Dichloropropene	ND	ND
Bromoform	ND	ND
4-Methyl-2-Pentanone	ND	ND
2-Hexanone	ND	ND
Tetrachloroethene	ND	ND
1,1,2,2,-Tetrachloroethane	ND	ND
Toluene	ND	ND
Chlorobenzene	ND	ND
Ethylbenzene	ND	ND
Styrene	ND	ND
Xylenes (totals)	ND	ND

J – Estimated concentration below the reporting limit. B – Analyte detected in method blank

Volatile organic Compounds

QC Sample No. 9010	QA Sample No. 9011
Date Sampled 5/14/98	Date Sampled 5/14/98
Date Received 5/15/98	Date Received 5/15/98
Date Extracted 5/22/98	Date Extracted 5/21/98
Date Analyzed 5/22/98	Date Analyzed 5/21/98
Method No. SW846-8260A	Method No. SW846-8260A
Matrix: Water	Units: µg/L

PARAMETER	QC RESULT	QA RESULT
Chloromethane	ND	ND
Bromomethane	ND	ND
Vinyl chloride	ND	ND
Chloroethane	ND	ND
Methylene chloride	0.89 J,B	ND
Acetone	ND	ND
Carbon disulfide	ND	ND
1,1-Dichloroethene	ND	ND
1,1-Dichloroethane	ND	ND
1,2-Dichloroethene (total)	ND	ND
Chloroform	0.44 J	ND
1,2-Dichloroethane	ND	ND
2-Butanone	ND	ND
1,1,1-Trichloroethane	ND	ND
Carbon Tetrachloride	ND	ND
Bromodichloromethane	ND	ND
1,2-Dichloropropane	ND	ND
Cis-1,3-Dichloropropene	ND	ND
Trichloroethene	0.16 J	ND
Dibromochloromethane	ND	ND
1,1,2-Trichloroethane	ND	ND
Benzene	ND	ND
Trans-1,3-Dichloropropene	ND	ND
Bromoform	ND	ND
4-Methyl-2-Pentanone	ND	ND
2-Hexanone	ND	ND
Tetrachloroethene	ND	ND
1,1,2,2,-Tetrachloroethane	ND	ND
Toluene	0.33 J	ND
Chlorobenzene	ND	ND
Ethylbenzene	ND	ND
Styrene	ND	ND
Xylenes (totals)	ND	ND

J – Estimated concentration below the reporting limit. B – Analyte detected in method blank

Semivolatile Organic Compounds

QC Sample No. 5496	QA Sample No. 5497
Date Sampled 5/13/98	Date Sampled 5/13/98
Date Received 5/14/98	Date Received 5/14/98
Date Extracted 5/19/98	Date Extracted 5/18/98
Date Analyzed 5/29/98	Date Analyzed 5/20/98
Method No. SW846-8270B	Method No. SW846-8270B
Matrix: Water	Units: µg/L

PARAMETER	QC RESULT	QA RESULT
Phenol	ND	ND
bis (2-Chloroethyl) ether	ND	ND
2-Chlorophenol	ND	ND
1,3-Dichlorobenzene	ND	ND
1,4-Dichlorobenzene	ND	ND
2-Methylphenol	ND	ND
2-2'-oxybis (1-Chloropopane)	ND	ND
4-Methylphenol	ND	ND
N-Nitrosodi-n-propylamine	ND	ND
Hexachloroethane	ND	ND
Nitrobenzene	ND	ND
Isophorone	ND	ND
2-Nitrophenol	ND	ND
2,4-Dimethylphenol	ND	ND
bis (2-Chloroethoxy) methane	ND	ND
2,4-Dichlorophenol	ND	ND
1,2,4-Trichlorobenzene	ND	ND
Naphthalene	ND	ND
4-Chloroaniline	ND	ND
Hexachlorobutadiene	ND	ND
4-Chloro-3-methylphenol	ND	ND
2-Methylnaphthalene	ND	ND
Hexachlorocyclopentadiene	ND	ND
2,4,6-Trichlorophenol	ND	ND
2,4,5-Trichlorophenol	ND	ND
2-Chloronaphthalene	ND	ND
2-Nitroaniline	ND	ND
Dimethylphthalate	ND	ND
Acenaphthylene	ND	ND
2,6-Dinitrotoluene	ND	ND
3-Nitroaniline	ND	ND
Acenaphthene	ND	ND
2,4-Dinitrophenol	ND	ND
4-Nitrophenol	ND	ND
Dibenzofuran	ND	ND

2,4-Dinitrotoluene	ND	ND
Diethylphthalate	ND	ND
4-Chlorophenyl-phenylether	ND	ND
Fluorene	ND	ND
4- Nitroaniline	ND	ND
4,6-Dinitro-2-methylphenol	ND	ND
N-Nitrosodiphenylamine	ND	ND
4-Bromophenyl-phenylether	ND	ND
Hexachlorobenzene	ND	ND
Pentachlorophenol	ND	ND
Phenanthrene	ND	ND
Anthracene	ND	ND
Carbazole	ND	ND
Di-n-butylphthalate	ND	ND
Fluoranthene	ND	ND
Pyrene	ND	ND
Butylbenzylphthalate	ND	ND
3,3'-Dichlorobenzidine	ND	ND
Benzo(a)anthracene	ND	ND
Chrysene	ND	ND
bis(2-Ethylhexyl)phthalate	ND	ND
Di-n-octylphthalate	ND	ND
Benzo(b)fluoranthene	ND	ND
Benzo(k)fluoranthene	ND	ND
Benzo(a)pyrene	ND	ND
Indeno(1,2,3-cd)pyrene	ND	ND
Dibenz(a,h)anthracene	ND	ND
Benzo(g,h,i)perylene	ND	ND

Semivolatile Organic Compounds

QC Sample No. 5766	QA Sample No. 5767
Date Sampled 5/14/98	Date Sampled 5/14/98
Date Received 5/15/98	Date Received 5/15/98
Date Extracted 5/21/98	Date Extracted 5/18/98
Date Analyzed 6/02/98	Date Analyzed 5/20/98
Method No. SW846-8270B	Method No. SW846-8270B
Matrix: Water	Units µg/L

PARAMETER	QC RESULT	QA RESULT
Phenol	ND	ND
bis (2-Chloroethyl) ether	ND	ND
2-Chlorophenol	ND	ND
1,3-Dichlorobenzene	ND	ND
1,4-Dichlorobenzene	ND	ND
1,2-Dichlorobenzene	ND	ND
2-Methylphenol	ND	ND
2-2'-oxybis (1-Chloropopane)	ND	ND
4-Methylphenol	ND	ND
N-Nitrosodi-n-propylamine	ND	ND
Hexachloroethane	ND	ND
Nitrobenzene	ND	ND
Isophorone	ND	ND
2-Nitrophenol	ND	ND
2,4-Dimethylphenol	ND	ND
bis (2-Chloroethoxy) methane	ND	ND
2,4-Dichlorophenol	ND	ND
1,2,4-Trichlorobenzene	ND	ND
Naphthalene	ND	ND
4-Chloroaniline	ND	ND
Hexachlorobutadiene	ND	ND
4-Chloro-3-methylphenol	ND	ND
2-Methylnaphthalene	ND	ND
Hexachlorocyclopentadiene	ND	ND
2,4,6-Trichlorophenol	ND	ND
2,4,5-Trichlorophenol	ND	ND
2-Chloronaphthalene	ND	ND
2-Nitroaniline	ND	ND
Dimethylphthalate	ND	ND
Acenaphthylene	ND	ND
2,6-Dinitrotoluene	ND	ND
3-Nitroaniline	ND	ND
Acenaphthene	ND	ND
2,4-Dinitrophenol	ND	ND
4-Nitrophenol	ND	ND

Dibenzofuran	ND	ND
2,4-Dinitrotoluene	ND	ND
Diethylphthalate	ND	ND
4-Chlorophenyl-phenylether	ND	ND
Fluorene	ND	ND
4- Nitroaniline	ND	ND
4,6-Dinitro-2-methylphenol	ND	ND
N-Nitrosodiphenylamine	ND	ND
4-Bromophenyl-phenylether	ND	ND
Hexachlorobenzene	ND	ND
Pentachlorophenol	ND	ND
Phenanthrene	ND	ND
Anthracene	ND	ND
Carbazole	ND	ND
Di-n-butylphthalate	ND	ND
Fluoranthene	ND	ND
Pyrene	ND	ND
Butylbenzylphthalate	ND	ND
3,3'-Dichlorobenzidine	ND	ND
Benzo(a)anthracene	ND	ND
Chrysene	ND	ND
bis(2-Ethylhexyl)phthalate	ND	ND
Di-n-octylphthalate	ND	ND
Benzo(b)fluoranthene	ND	ND
Benzo(k)fluoranthene	ND	ND
Benzo(a)pyrene	ND	ND
Indeno(1,2,3-cd)pyrene	ND	ND
Dibenz(a,h)anthracene	ND	ND
Benzo(g,h,i)perylene	ND	ND

Polychlorinated Biphenyls

QC Sample No. 5496	QA Sample No. 5497
Date Sampled 5/13/98	Date Sampled 5/13/98
Date Received 5/14/98	Date Received 5/14/98
Date Extracted 5/18/98	Date Extracted 5/14/98
Date Analyzed 6/08/98	Date Analyzed 5/19/98
Method No. SW846-8081	Method No. SW846-8081
Matrix: Water	Units: µg/L

PARAMETER	QC RESULT	QA RESULT
Aroclor 1016	ND	ND
Aroclor 1221	ND	ND
Aroclor 1232	ND	ND
Aroclor 1242	ND	ND
Aroclor 1248	ND	ND
Aroclor 1254	ND	ND
Aroclor 1260	ND	ND

Polychlorinated Biphenyls

QC Sample No. 5766	QA Sample No. 5767
Date Sampled 5/14/98	Date Sampled 5/14/98
Date Received 5/15/98	Date Received 5/15/98
Date Extracted 5/18/98	Date Extracted 5/20/98
Date Analyzed 06/09/98	Date Analyzed 5/27/98
Method No. EPA 8081	Method No. EPA 8081
Matrix: Water	Units: µg/L

PARAMETER	QC RESULT	QA RESULT
Aroclor 1016	ND	ND
Aroclor 1221	ND	ND
Aroclor 1232	ND	ND
Aroclor 1242	ND	ND
Aroclor 1248	ND	ND
Aroclor 1254	ND	ND
Aroclor 1260	ND	ND

Dissolved Metals

QC Sample No. 5496	QA Sample No. 5497
Date Sampled 5/13/98	Date Sampled 5/13/98
Date Received 5/14/98	Date Received 5/14/98
Date Extracted 5/27, 28/98	Date Extracted 5/22/98
Date Analyzed 5/28, 6/10, 12/98	Date Analyzed 5/22, 26/98
Method No. SW846-6010A, SW846-7470 (Mercury only)	Method No. SW846-6010A, SW846-7470 (Mercury only)
Matrix: Water	Units: µg/L

PARAMETER	QC RESULT	QA RESULT
Aluminum	ND	710
Antimony	ND	ND
Arsenic	ND	ND
Barium	ND	48
Beryllium	ND	ND
Cadmium	ND	ND
Calcium	651000	490000
Chromium (total)	ND	ND
Cobalt	ND	24
Copper	ND	ND
Iron	14100	10000
Lead	ND	ND
Magnesium	428000	330000
Manganese	7230	5500
Mercury	ND	ND
Molybdenum		ND
Nickel	ND	ND
Potassium	8790	5900
Selenium	ND	24
Silver	ND	ND
Sodium	50100	37000
Thallium	ND	14
Vanadium	ND	ND
Zinc	47.4	31

Dissolved Metals

QC Sample No. 5766	QA Sample No. 5767
Date Sampled 5/14/98	Date Sampled 5/14/98
Date Received 5/15/98	Date Received 5/15/98
Date Extracted 5/27,28/98	Date Extracted 5/22/98
Date Analyzed 5/28, 6/10, 12/98	Date Analyzed 5/22,26, 27/98
Method No. SW846-6010A, SW846-7470 (Mercury only)	Method No. SW846-6010A, SW846-7470 (Mercury only)
Matrix: Water	Units: µg/L

PARAMETER	QC RESULT	QA RESULT
Aluminum	ND	280
Antimony	ND	ND
Arsenic	ND	ND
Barium	ND	150
Beryllium	ND	ND
Cadmium	ND	ND
Calcium	123000	140000
Chromium (total)	ND	ND
Cobalt	ND	ND
Copper	40.3	ND
Iron	19200	18000
Lead	ND	ND
Magnesium	19000	22000
Manganese	322	340
Mercury	ND	ND
Molybdenum		ND
Nickel	ND	ND
Potassium	ND	ND
Selenium	ND	ND
Silver	ND	ND
Sodium	5200	5000
Thallium	ND	9.4
Vanadium	ND	ND
Zinc	24.0	ND

Total Metals

QC Sample No. 5496	QA Sample No. 5497
Date Sampled 5/13/98	Date Sampled 5/13/98
Date Received 5/14/98	Date Received 5/14/98
Date Extracted 5/27, 28/98	Date Extracted 5/20, 26/98
Date Analyzed 5/28, 6/10, 12/98	Date Analyzed 5/20, 26/98
Method No. SW846-6010A, SW846-7470 (Mercury only)	Method No. SW846-6010A, SW846-7470 (Mercury only)
Matrix: Water	Units: µg/L

PARAMETER	QC RESULT	QA RESULT
Aluminum	ND	800
Antimony	ND	ND
Arsenic	ND	ND
Barium	ND	51
Beryllium	ND	ND
Cadmium	ND	ND
Calcium	554000	510000
Chromium (total)	ND	ND
Cobalt	ND	ND
Copper	ND	ND
Iron	37100	11000
Lead	ND	3.8
Magnesium	284000	380000
Manganese	5870	5600
Mercury	ND	ND
Molybdenum		ND
Nickel	ND	ND
Potassium	ND	4200
Selenium	ND	8.5
Silver	ND	ND
Sodium	25400	41000
Thallium	ND	14
Vanadium	ND	ND
Zinc	36.9	40

Total Metals

QC Sample No. 5766	QA Sample No. 5767
Date Sampled 5/14/98	Date Sampled 5/14/98
Date Received 5/15/98	Date Received 5/15/98
Date Extracted 5/27, 28/98	Date Extracted 5/20/98
Date Analyzed 5/28, 6/10/, 12/98	Date Analyzed 5/20, 26, 27/98
Method No. SW846-6010A, SW846-7470 (Mercury only)	Method No. SW846-6010A, SW846-7470 (Mercury only)
Matrix: Water	Units: µg/L

PARAMETER	QC RESULT	QA RESULT
Aluminum	6220	2900
Antimony	ND	ND
Arsenic	ND	ND
Barium	ND	110
Beryllium	ND	ND
Cadmium	ND	ND
Calcium	104000	100000
Chromium (total)	ND	ND
Cobalt	ND	ND
Copper	ND	ND
Iron	19700	17000
Lead	ND	ND
Magnesium	16800	17000
Manganese	282	270
Mercury	ND	ND
Molybdenum		ND
Nickel	ND	37
Potassium	ND	ND
Selenium	ND	ND
Silver	ND	ND
Sodium	ND	5000
Thallium	ND	17
Vanadium	ND	ND
Zinc	35.5	34

Nitroaromatics and Nitramines

QC Sample No. 5496	QA Sample No. 5497
Date Sampled 5/13/98	Date Sampled 5/13/98
Date Received 5/14/98	Date Received 5/19/98
Date Extracted 5/18/98	Date Extracted 5/20/98
Date Analyzed 5/21/98	Date Analyzed 5/21/98
Method No. SW846-8330	Method No. SW846-8330
Matrix: Water	Units: µg/L

PARAMETER	QC RESULT	QA RESULT
4-Amino-2,6-dinitrotoluene	ND	ND
1,3-Dinitrobenzene	ND	ND
2,4-Dinitrotoluene	ND	ND
2,6-Dinitrotoluene	ND	ND
HMX	ND	ND
Nitrobenzene	0.20	ND
2-Nitrotoluene	ND	ND
3-Nitrotoluene	ND	ND
RDX	ND	ND
Tetryl	ND	ND
1,3,5-Trinitrobenzene	ND	ND
2,4,6-Trinitrotoluene	ND	ND

Nitroaromatics and Nitramines

QC Sample No. 5766	QA Sample No. 5767
Date Sampled 5/14/98	Date Sampled 5/14/98
Date Received 5/15/98	Date Received 5/19/98
Date Extracted 5/18/98	Date Extracted 5/20/98
Date Analyzed 5/21/98	Date Analyzed 5/21/98
Method No. SW846-8330	Method No. SW846-8330
Matrix: Water	Units: µg/L

PARAMETER	QC RESULT	QA RESULT
4-Amino-2,6-dinitrotoluene	ND	ND
1,3-Dinitrobenzene	ND	ND
2,4-Dinitrotoluene	ND	ND
2,6-Dinitrotoluene	ND	ND
HMX	ND	ND
Nitrobenzene	ND	ND
2-Nitrotoluene	ND	ND
3-Nitrotoluene	ND	ND
RDX	ND	ND
Tetryl	ND	ND
1,3,5-Trinitrobenzene	ND	ND
2,4,6-Trinitrotoluene	ND	ND

Appendix 2

Analytical Results and Chain of Custody Documents

IT CORPORATION - KNOXVILLE

Client Sample ID: 5496

HPLC

Lot-Sample #....: H8E140209-003 Work Order #....: CH6CV10V Matrix.....: WATER
 Date Sampled...: 05/13/98 Date Received...: 05/14/98
 Prep Date.....: 05/18/98 Analysis Date...: 05/21/98
 Prep Batch #....: 8138247
 Dilution Factor: 1 Method.....: SW846 8330

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNITS</u>
4-Amino-2,6-dinitrotoluene	ND	0.20	ug/L
1,3-Dinitrobenzene	ND	0.20	ug/L
2,4-Dinitrotoluene	ND	0.20	ug/L
2,6-Dinitrotoluene	ND	0.20	ug/L
HMX	ND	0.50	ug/L
Nitrobenzene	0.20	0.20	ug/L
2-Nitrotoluene	ND	0.20	ug/L
3-Nitrotoluene	ND	0.20	ug/L
RDX	ND	0.50	ug/L
Tetryl	ND	0.20	ug/L
1,3,5-Trinitrobenzene	ND	0.20	ug/L
2,4,6-Trinitrotoluene	ND	0.20	ug/L

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
1-Chloro-3-nitrobenzene	102	(39 - 157)

IT CORPORATION - KNOXVILLE

Client Sample ID: 5766

HPLC

Lot-Sample #....: H8E160146-006 Work Order #....: CH86710V Matrix.....: WATER
 Date Sampled....: 05/14/98 Date Received...: 05/15/98
 Prep Date.....: 05/18/98 Analysis Date...: 05/21/98
 Prep Batch #....: 8138247
 Dilution Factor: 1 Method.....: SW846 8330

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNITS</u>
4-Amino-2,6-dinitrotoluene	ND	0.20	ug/L
1,3-Dinitrobenzene	ND	0.20	ug/L
2,4-Dinitrotoluene	ND	0.20	ug/L
2,6-Dinitrotoluene	ND	0.20	ug/L
HMX	ND	0.50	ug/L
Nitrobenzene	ND	0.20	ug/L
2-Nitrotoluene	ND	0.20	ug/L
3-Nitrotoluene	ND	0.20	ug/L
RDX	ND	0.50	ug/L
Tetryl	ND	0.20	ug/L
1,3,5-Trinitrobenzene	ND	0.20	ug/L
2,4,6-Trinitrotoluene	ND	0.20	ug/L

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
1-Chloro-3-nitrobenzene	90	(39 - 157)

IT CORPORATION - KNOXVILLE

Client Sample ID: 5496

GC Semivolatiles

Lot-Sample #...: H8E140209-003 Work Order #...: CH6CV103 Matrix.....: WATER
 Date Sampled...: 05/13/98 Date Received...: 05/14/98
 Prep Date.....: 05/18/98 Analysis Date...: 06/08/98
 Prep Batch #...: 8138148
 Dilution Factor: 1 Method.....: SW846 8081

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNITS</u>
Aroclor 1016	ND	1.0	ug/L
Aroclor 1221	ND	1.0	ug/L
Aroclor 1232	ND	1.0	ug/L
Aroclor 1242	ND	1.0	ug/L
Aroclor 1248	ND	1.0	ug/L
Aroclor 1254	ND	1.0	ug/L
Aroclor 1260	ND	1.0	ug/L

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
Tetrachloro-m-xylene	69	(30 - 133)
Decachlorobiphenyl	35	(30 - 139)

IT CORPORATION - KNOXVILLE

Client Sample ID: 5766

GC Semivolatiles

Lot-Sample #....: H8E160146-006 Work Order #....: CH867103 Matrix.....: WATER
 Date Sampled....: 05/14/98 Date Received...: 05/15/98
 Prep Date.....: 05/18/98 Analysis Date...: 06/09/98
 Prep Batch #....: 8138148
 Dilution Factor: 1 Method.....: SW846 8081

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNITS</u>
Aroclor 1016	ND	1.0	ug/L
Aroclor 1221	ND	1.0	ug/L
Aroclor 1232	ND	1.0	ug/L
Aroclor 1242	ND	1.0	ug/L
Aroclor 1248	ND	1.0	ug/L
Aroclor 1254	ND	1.0	ug/L
Aroclor 1260	ND	1.0	ug/L

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
Tetrachloro-m-xylene	84	(30 - 133)
Decachlorobiphenyl	44	(30 - 139)

IT CORPORATION - KNOXVILLE

Client Sample ID: 5496

GC/MS Semivolatiles

Lot-Sample #....: H8E140209-003 Work Order #....: CH6CV102 Matrix.....: WATER
 Date Sampled....: 05/13/98 Date Received...: 05/14/98
 Prep Date.....: 05/19/98 Analysis Date...: 05/29/98
 Prep Batch #....: 8139129
 Dilution Factor: 1 Method.....: SW846 8270B

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Phenol	ND	10	ug/L
bis(2-Chloroethyl) ether	ND	10	ug/L
2-Chlorophenol	ND	10	ug/L
1,3-Dichlorobenzene	ND	10	ug/L
1,4-Dichlorobenzene	ND	10	ug/L
1,2-Dichlorobenzene	ND	10	ug/L
2-Methylphenol	ND	10	ug/L
2,2'-oxybis(1-Chloro- propane)	ND	10	ug/L
4-Methylphenol	ND	10	ug/L
N-Nitrosodi-n-propylamine	ND	10	ug/L
Hexachloroethane	ND	10	ug/L
Nitrobenzene	ND	10	ug/L
Isophorone	ND	10	ug/L
2-Nitrophenol	ND	10	ug/L
2,4-Dimethylphenol	ND	10	ug/L
bis(2-Chloroethoxy) methane	ND	10	ug/L
2,4-Dichlorophenol	ND	10	ug/L
1,2,4-Trichlorobenzene	ND	10	ug/L
Naphthalene	ND	10	ug/L
4-Chloroaniline	ND	10	ug/L
Hexachlorobutadiene	ND	10	ug/L
4-Chloro-3-methylphenol	ND	10	ug/L
2-Methylnaphthalene	ND	10	ug/L
Hexachlorocyclopentadiene	ND	50	ug/L
2,4,6-Trichlorophenol	ND	10	ug/L
2,4,5-Trichlorophenol	ND	10	ug/L
2-Chloronaphthalene	ND	10	ug/L
2-Nitroaniline	ND	50	ug/L
Dimethyl phthalate	ND	10	ug/L
Acenaphthylene	ND	10	ug/L
2,6-Dinitrotoluene	ND	10	ug/L
3-Nitroaniline	ND	50	ug/L
Acenaphthene	ND	10	ug/L
2,4-Dinitrophenol	ND	50	ug/L
4-Nitrophenol	ND	50	ug/L
Dibenzofuran	ND	10	ug/L
2,4-Dinitrotoluene	ND	10	ug/L

(Continued on next page)

IT CORPORATION - KNOXVILLE

Client Sample ID: 5496

GC/MS Semivolatiles

Lot-Sample #....: H8E140209-003 Work Order #....: CH6CV102 Matrix.....: WATER

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNITS</u>
Diethyl phthalate	ND	10	ug/L
4-Chlorophenyl phenyl ether	ND	10	ug/L
Fluorene	ND	10	ug/L
4-Nitroaniline	ND	50	ug/L
4,6-Dinitro- 2-methylphenol	ND	50	ug/L
N-Nitrosodiphenylamine	ND	10	ug/L
4-Bromophenyl phenyl ether	ND	10	ug/L
Hexachlorobenzene	ND	10	ug/L
Pentachlorophenol	ND	50	ug/L
Phenanthrene	ND	10	ug/L
Anthracene	ND	10	ug/L
Carbazole	ND	10	ug/L
Di-n-butyl phthalate	ND	10	ug/L
Fluoranthene	ND	10	ug/L
Pyrene	ND	10	ug/L
Butyl benzyl phthalate	ND	10	ug/L
3,3'-Dichlorobenzidine	ND	50	ug/L
Benzo(a)anthracene	ND	10	ug/L
Chrysene	ND	10	ug/L
bis(2-Ethylhexyl) phthalate	ND	10	ug/L
Di-n-octyl phthalate	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
Dibenz(a,h)anthracene	ND	10	ug/L
Benzo(ghi)perylene	ND	10	ug/L

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
2-Fluorophenol	66	(27 - 106)
Phenol-d5	28	(27 - 111)
Nitrobenzene-d5	81	(37 - 115)
2-Fluorobiphenyl	87	(43 - 116)
2,4,6-Tribromophenol	96	(27 - 127)
Terphenyl-d14	42	(33 - 141)

IT CORPORATION - KNOXVILLE

Client Sample ID: 5766

GC/MS Semivolatiles

Lot-Sample #....: H8E160146-006 Work Order #....: CH867102 Matrix.....: WATER
 Date Sampled....: 05/14/98 Date Received...: 05/15/98
 Prep Date.....: 05/21/98 Analysis Date...: 06/02/98
 Prep Batch #....: 8141152
 Dilution Factor: 1 Method.....: SW846 8270B

PARAMETER	RESULT	REPORTING	
		LIMIT	UNITS
Phenol	ND	10	ug/L
bis(2-Chloroethyl) ether	ND	10	ug/L
2-Chlorophenol	ND	10	ug/L
1,3-Dichlorobenzene	ND	10	ug/L
1,4-Dichlorobenzene	ND	10	ug/L
1,2-Dichlorobenzene	ND	10	ug/L
2-Methylphenol	ND	10	ug/L
2,2'-oxybis(1-Chloro- propane)	ND	10	ug/L
4-Methylphenol	ND	10	ug/L
N-Nitrosodi-n-propylamine	ND	10	ug/L
Hexachloroethane	ND	10	ug/L
Nitrobenzene	ND	10	ug/L
Isophorone	ND	10	ug/L
2-Nitrophenol	ND	10	ug/L
2,4-Dimethylphenol	ND	10	ug/L
bis(2-Chloroethoxy) methane	ND	10	ug/L
2,4-Dichlorophenol	ND	10	ug/L
1,2,4-Trichlorobenzene	ND	10	ug/L
Naphthalene	ND	10	ug/L
4-Chloroaniline	ND	10	ug/L
Hexachlorobutadiene	ND	10	ug/L
4-Chloro-3-methylphenol	ND	10	ug/L
2-Methylnaphthalene	ND	10	ug/L
Hexachlorocyclopentadiene	ND	50	ug/L
2,4,6-Trichlorophenol	ND	10	ug/L
2,4,5-Trichlorophenol	ND	10	ug/L
2-Chloronaphthalene	ND	10	ug/L
2-Nitroaniline	ND	50	ug/L
Dimethyl phthalate	ND	10	ug/L
Acenaphthylene	ND	10	ug/L
2,6-Dinitrotoluene	ND	10	ug/L
3-Nitroaniline	ND	50	ug/L
Acenaphthene	ND	10	ug/L
2,4-Dinitrophenol	ND	50	ug/L
4-Nitrophenol	ND	50	ug/L
Dibenzofuran	ND	10	ug/L
2,4-Dinitrotoluene	ND	10	ug/L

(Continued on next page)

IT CORPORATION - KNOXVILLE

Client Sample ID: 5766

GC/MS Semivolatiles

Lot-Sample #....: H8E160146-006 Work Order #....: CH867102 Matrix.....: WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Diethyl phthalate	ND	10	ug/L
4-Chlorophenyl phenyl ether	ND	10	ug/L
Fluorene	ND	10	ug/L
4-Nitroaniline	ND	50	ug/L
4,6-Dinitro- 2-methylphenol	ND	50	ug/L
N-Nitrosodiphenylamine	ND	10	ug/L
4-Bromophenyl phenyl ether	ND	10	ug/L
Hexachlorobenzene	ND	10	ug/L
Pentachlorophenol	ND	50	ug/L
Phenanthrene	ND	10	ug/L
Anthracene	ND	10	ug/L
Carbazole	ND	10	ug/L
Di-n-butyl phthalate	ND	10	ug/L
Fluoranthene	ND	10	ug/L
Pyrene	ND	10	ug/L
Butyl benzyl phthalate	ND	10	ug/L
3,3'-Dichlorobenzidine	ND	50	ug/L
Benzo (a) anthracene	ND	10	ug/L
Chrysene	ND	10	ug/L
bis (2-Ethylhexyl) phthalate	ND	10	ug/L
Di-n-octyl phthalate	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
Dibenz (a,h) anthracene	ND	10	ug/L
Benzo (ghi) perylene	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
2-Fluorophenol	67	(27 - 106)
Phenol-d5	77	(27 - 111)
Nitrobenzene-d5	85	(37 - 115)
2-Fluorobiphenyl	88	(43 - 116)
2,4,6-Tribromophenol	106	(27 - 127)
Terphenyl-d14	66	(33 - 141)

IT CORPORATION - KNOXVILLE

Client Sample ID: 5496

GC/MS Volatiles

Lot-Sample #....: H8E140209-003 Work Order #....: CH6CV101 Matrix.....: WATER
 Date Sampled....: 05/13/98 Date Received...: 05/14/98
 Prep Date.....: 05/20/98 Analysis Date...: 05/20/98
 Prep Batch #....: 8140210
 Dilution Factor: 1 Method.....: SW846 8260A

PARAMETER	RESULT	REPORTING	
		LIMIT	UNITS
Chloromethane	ND	2.0	ug/L
Bromomethane	ND	2.0	ug/L
Vinyl chloride	ND	2.0	ug/L
Chloroethane	ND	2.0	ug/L
Methylene chloride	0.36 J,B	1.0	ug/L
Acetone	ND	10	ug/L
Carbon disulfide	1.1	1.0	ug/L
1,1-Dichloroethene	ND	1.0	ug/L
1,1-Dichloroethane	ND	1.0	ug/L
1,2-Dichloroethene	ND	1.0	ug/L
(total)			
Chloroform	ND	1.0	ug/L
1,2-Dichloroethane	ND	1.0	ug/L
2-Butanone	ND	5.0	ug/L
1,1,1-Trichloroethane	ND	1.0	ug/L
Carbon tetrachloride	ND	1.0	ug/L
Bromodichloromethane	ND	1.0	ug/L
1,2-Dichloropropane	ND	1.0	ug/L
cis-1,3-Dichloropropene	ND	1.0	ug/L
Trichloroethene	0.14 J	1.0	ug/L
Dibromochloromethane	ND	1.0	ug/L
1,1,2-Trichloroethane	ND	1.0	ug/L
Benzene	ND	1.0	ug/L
trans-1,3-Dichloropropene	ND	1.0	ug/L
Bromoform	ND	1.0	ug/L
4-Methyl-2-pentanone	ND	5.0	ug/L
2-Hexanone	ND	5.0	ug/L
Tetrachloroethene	ND	1.0	ug/L
1,1,2,2-Tetrachloroethane	ND	1.0	ug/L
Toluene	ND	1.0	ug/L
Chlorobenzene	ND	1.0	ug/L
Ethylbenzene	ND	1.0	ug/L
Styrene	ND	1.0	ug/L
Xylenes (total)	ND	1.0	ug/L

SURROGATE	PERCENT	RECOVERY
	RECOVERY	LIMITS
Dibromofluoromethane	100	(67 - 128)
1,2-Dichloroethane-d4	92	(67 - 128)
Toluene-d8	91	(71 - 119)
4-Bromofluorobenzene	86	(76 - 111)

(Continued on next page)

IT CORPORATION - KNOXVILLE

Client Sample ID: 5496

GC/MS Volatiles

Lot-Sample #....: H8E140209-003 Work Order #....: CH6CV101 Matrix.....: WATER

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.

IT CORPORATION - KNOXVILLE

Client Sample ID: 9008

GC/MS Volatiles

Lot-Sample #...: H8E140209-008 Work Order #...: CH6D2101 Matrix.....: WATER
 Date Sampled...: 05/13/98 Date Received...: 05/14/98
 Prep Date.....: 05/22/98 Analysis Date...: 05/22/98
 Prep Batch #...: 8142139
 Dilution Factor: 1 Method.....: SW846 8260A

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Chloromethane	ND	2.0	ug/L
Bromomethane	ND	2.0	ug/L
Vinyl chloride	ND	2.0	ug/L
Chloroethane	ND	2.0	ug/L
Methylene chloride	0.68 J,B	1.0	ug/L
Acetone	ND	10	ug/L
Carbon disulfide	ND	1.0	ug/L
1,1-Dichloroethene	ND	1.0	ug/L
1,1-Dichloroethane	ND	1.0	ug/L
1,2-Dichloroethene (total)	ND	1.0	ug/L
Chloroform	0.47 J	1.0	ug/L
1,2-Dichloroethane	ND	1.0	ug/L
2-Butanone	ND	5.0	ug/L
1,1,1-Trichloroethane	ND	1.0	ug/L
Carbon tetrachloride	ND	1.0	ug/L
Bromodichloromethane	ND	1.0	ug/L
1,2-Dichloropropane	ND	1.0	ug/L
cis-1,3-Dichloropropene	ND	1.0	ug/L
Trichloroethene	ND	1.0	ug/L
Dibromochloromethane	ND	1.0	ug/L
1,1,2-Trichloroethane	ND	1.0	ug/L
Benzene	ND	1.0	ug/L
trans-1,3-Dichloropropene	ND	1.0	ug/L
Bromoform	ND	1.0	ug/L
4-Methyl-2-pentanone	ND	5.0	ug/L
2-Hexanone	ND	5.0	ug/L
Tetrachloroethene	ND	1.0	ug/L
1,1,2,2-Tetrachloroethane	ND	1.0	ug/L
Toluene	0.37 J	1.0	ug/L
Chlorobenzene	ND	1.0	ug/L
Ethylbenzene	ND	1.0	ug/L
Styrene	ND	1.0	ug/L
Xylenes (total)	ND	1.0	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Dibromofluoromethane	100	(67 - 128)
1,2-Dichloroethane-d4	92	(67 - 128)
Toluene-d8	88	(71 - 119)
4-Bromofluorobenzene	84	(76 - 111)

(Continued on next page)

IT CORPORATION - KNOXVILLE

Client Sample ID: 9008

GC/MS Volatiles

Lot-Sample #...: H8E140209-008 Work Order #...: CH6D2101 Matrix.....: WATER

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.

IT CORPORATION - KNOXVILLE

Client Sample ID: 5766

GC/MS Volatiles

Lot-Sample #...: H8E160146-006 Work Order #...: CH867101 Matrix.....: WATER
 Date Sampled...: 05/14/98 Date Received...: 05/15/98
 Prep Date.....: 05/22/98 Analysis Date...: 05/22/98
 Prep Batch #...: 8142139
 Dilution Factor: 1 Method.....: SW846 8260A

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Chloromethane	ND	2.0	ug/L
Bromomethane	ND	2.0	ug/L
Vinyl chloride	ND	2.0	ug/L
Chloroethane	ND	2.0	ug/L
Methylene chloride	0.95 J,B	1.0	ug/L
Acetone	ND	10	ug/L
Carbon disulfide	ND	1.0	ug/L
1,1-Dichloroethene	ND	1.0	ug/L
1,1-Dichloroethane	ND	1.0	ug/L
1,2-Dichloroethene (total)	ND	1.0	ug/L
Chloroform	ND	1.0	ug/L
1,2-Dichloroethane	ND	1.0	ug/L
2-Butanone	ND	5.0	ug/L
1,1,1-Trichloroethane	ND	1.0	ug/L
Carbon tetrachloride	ND	1.0	ug/L
Bromodichloromethane	ND	1.0	ug/L
1,2-Dichloropropane	ND	1.0	ug/L
cis-1,3-Dichloropropene	ND	1.0	ug/L
Trichloroethene	0.25 J	1.0	ug/L
Dibromochloromethane	ND	1.0	ug/L
1,1,2-Trichloroethane	ND	1.0	ug/L
Benzene	ND	1.0	ug/L
trans-1,3-Dichloropropene	ND	1.0	ug/L
Bromoform	ND	1.0	ug/L
4-Methyl-2-pentanone	ND	5.0	ug/L
2-Hexanone	ND	5.0	ug/L
Tetrachloroethene	ND	1.0	ug/L
1,1,2,2-Tetrachloroethane	ND	1.0	ug/L
Toluene	ND	1.0	ug/L
Chlorobenzene	ND	1.0	ug/L
Ethylbenzene	ND	1.0	ug/L
Styrene	ND	1.0	ug/L
Xylenes (total)	ND	1.0	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Dibromofluoromethane	101	(67 - 128)
1,2-Dichloroethane-d4	92	(67 - 128)
Toluene-d8	88	(71 - 119)
4-Bromofluorobenzene	83	(76 - 111)

(Continued on next page)

IT CORPORATION - KNOXVILLE

Client Sample ID: 5766

GC/MS Volatiles

Lot-Sample #....: H8E160146-006 Work Order #....: CH867101 Matrix.....: WATER

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.

IT CORPORATION - KNOXVILLE

Client Sample ID: 9010

GC/MS Volatiles

Lot-Sample #...: H8E160146-008 Work Order #...: CH869101 Matrix.....: WATER
 Date Sampled...: 05/14/98 Date Received...: 05/15/98
 Prep Date.....: 05/22/98 Analysis Date...: 05/22/98
 Prep Batch #...: 8142139
 Dilution Factor: 1 Method.....: SW846 8260A

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Chloromethane	ND	2.0	ug/L
Bromomethane	ND	2.0	ug/L
Vinyl chloride	ND	2.0	ug/L
Chloroethane	ND	2.0	ug/L
Methylene chloride	0.89 J,B	1.0	ug/L
Acetone	ND	10	ug/L
Carbon disulfide	ND	1.0	ug/L
1,1-Dichloroethene	ND	1.0	ug/L
1,1-Dichloroethane	ND	1.0	ug/L
1,2-Dichloroethene (total)	ND	1.0	ug/L
Chloroform	0.44 J	1.0	ug/L
1,2-Dichloroethane	ND	1.0	ug/L
2-Butanone	ND	5.0	ug/L
1,1,1-Trichloroethane	ND	1.0	ug/L
Carbon tetrachloride	ND	1.0	ug/L
Bromodichloromethane	ND	1.0	ug/L
1,2-Dichloropropane	ND	1.0	ug/L
cis-1,3-Dichloropropene	ND	1.0	ug/L
Trichloroethene	0.16 J	1.0	ug/L
Dibromochloromethane	ND	1.0	ug/L
1,1,2-Trichloroethane	ND	1.0	ug/L
Benzene	ND	1.0	ug/L
trans-1,3-Dichloropropene	ND	1.0	ug/L
Bromoform	ND	1.0	ug/L
4-Methyl-2-pentanone	ND	5.0	ug/L
2-Hexanone	ND	5.0	ug/L
Tetrachloroethene	ND	1.0	ug/L
1,1,2,2-Tetrachloroethane	ND	1.0	ug/L
Toluene	0.33 J	1.0	ug/L
Chlorobenzene	ND	1.0	ug/L
Ethylbenzene	ND	1.0	ug/L
Styrene	ND	1.0	ug/L
Xylenes (total)	ND	1.0	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Dibromofluoromethane	103	(67 - 128)
1,2-Dichloroethane-d4	95	(67 - 128)
Toluene-d8	89	(71 - 119)
4-Bromofluorobenzene	83	(76 - 111)

(Continued on next page)

IT CORPORATION - KNOXVILLE

Client Sample ID: 9010

GC/MS Volatiles

Lot-Sample #...: H8E160146-008 Work Order #...: CH869101 Matrix.....: WATER

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.

Nitroaromatics and Nitramines by HPLC
Method 8330

Client Name: Curtis & Tompkins, Ltd.
Client ID: 5767
LAB ID: 099239-0001-SA
Matrix: AQUEOUS
Authorized: 19 MAY 98

Sampled: 14 MAY 98
Prepared: 20 MAY 98

Received: 19 MAY 98
Analyzed: 21 MAY 98

Dilution Factor: 1.0

Parameter	Result	Units	Reporting Limit	Qualifier
HMX	ND	ug/L	1.0	
1,3,5-Trinitrobenzene	ND	ug/L	0.30	
RDX	ND	ug/L	0.80	
1,3-Dinitrobenzene	ND	ug/L	0.10	
Nitrobenzene	ND	ug/L	1.0	
2,4,6-Trinitrotoluene	ND	ug/L	0.10	
Tetryl	ND	ug/L	1.0	
2,4-Dinitrotoluene	ND	ug/L	0.10	
2,6-Dinitrotoluene	ND	ug/L	0.30	
2-Am-DNT	ND	ug/L	0.10	
4-Am-DNT	ND	ug/L	0.10	
2-Nitrotoluene	ND	ug/L	1.0	
4-Nitrotoluene	ND	ug/L	1.0	
3-Nitrotoluene	ND	ug/L	1.0	

Surrogate	Recovery	Acceptable Range
2,4-Dinitrofluorobenzene	99 %	65 - 135

ND = Not Detected

Reported By: Jon Edmondson

Approved By: Emily Uebelhoer

The cover letter is an integral part of this report.
Rev 230787



PCBs

Client: IT Corporation
Project#: 773206
Location: Plumbrook Ordinance Wor

Analysis Method: PCB
Prep Method: EPA 3520

Field ID: 5767
Lab ID: 133643-001
Matrix: Water
Batch#: 41000
Units: ug/L
Diln Fac: 1

Sampled: 05/14/98
Received: 05/15/98
Extracted: 05/20/98
Analyzed: 05/27/98

Analyte	Result	Reporting Limit
Aroclor-1016	ND	0.47
Aroclor-1221	ND	0.94
Aroclor-1232	ND	0.47
Aroclor-1242	ND	0.47
Aroclor-1248	ND	0.47
Aroclor-1254	ND	0.47
Aroclor-1260	ND	0.47

Surrogate	%Recovery	Recovery Limits
TCMX	74	19-130
Decachlorobiphenyl	31	22-110



Semivolatile Organics by GC/MS

Client: IT Corporation
Project#: 773206
Location: Plumbrook Ordinance Wor

Analysis Method: EPA 8270B
Prep Method: EPA 3520

Field ID: 5767
Lab ID: 133643-001
Matrix: Water
Batch#: 40923
Units: ug/L
Diln Fac: 1

Sampled: 05/14/98
Received: 05/15/98
Extracted: 05/18/98
Analyzed: 05/20/98

Analyte	Result	Reporting Limit
Phenol	ND	9.4
2-Chlorophenol	ND	9.4
Benzyl alcohol	ND	9.4
2-Methylphenol	ND	9.4
3,4-Methylphenol	ND	9.4
2-Nitrophenol	ND	47
2,4-Dimethylphenol	ND	9.4
Benzoic acid	ND	47
2,4-Dichlorophenol	ND	9.4
4-Chloro-3-methylphenol	ND	9.4
2,4,6-Trichlorophenol	ND	9.4
2,4,5-Trichlorophenol	ND	9.4
2,4-Dinitrophenol	ND	47
4-Nitrophenol	ND	47
4,6-Dinitro-2-methylphenol	ND	47
Pentachlorophenol	ND	9.4
N-Nitrosodimethylamine	ND	9.4
Aniline	ND	9.4
bis(2-Chloroethyl) ether	ND	9.4
1,3-Dichlorobenzene	ND	9.4
1,4-Dichlorobenzene	ND	9.4
1,2-Dichlorobenzene	ND	9.4
bis(2-Chloroisopropyl) ether	ND	9.4
N-Nitroso-di-n-propylamine	ND	9.4
Hexachloroethane	ND	9.4
Nitrobenzene	ND	9.4
Isophorone	ND	9.4
bis(2-Chloroethoxy)methane	ND	9.4
1,2,4-Trichlorobenzene	ND	9.4
Naphthalene	ND	9.4
4-Chloroaniline	ND	9.4
Hexachlorobutadiene	ND	9.4
2-Methylnaphthalene	ND	9.4
Hexachlorocyclopentadiene	ND	47
2-Chloronaphthalene	ND	9.4
2-Nitroaniline	ND	47
Dimethylphthalate	ND	9.4
Acenaphthylene	ND	9.4



Semivolatile Organics by GC/MS

Field ID: 5767	Sampled: 05/14/98
Lab ID: 133643-001	Received: 05/15/98
Matrix: Water	Extracted: 05/18/98
Batch#: 40923	Analyzed: 05/20/98
Units: ug/L	
Diln Fac: 1	

Analyte	Result	Reporting Limit
2,6-Dinitrotoluene	ND	9.4
3-Nitroaniline	ND	47
Acenaphthene	ND	9.4
Dibenzofuran	ND	9.4
2,4-Dinitrotoluene	ND	9.4
Diethylphthalate	ND	9.4
4-Chlorophenyl-phenylether	ND	9.4
Fluorene	ND	9.4
4-Nitroaniline	ND	47
N-Nitrosodiphenylamine	ND	9.4
Azobenzene	ND	9.4
4-Bromophenyl-phenylether	ND	9.4
Hexachlorobenzene	ND	9.4
Phenanthrene	ND	9.4
Anthracene	ND	9.4
Di-n-butylphthalate	ND	9.4
Fluoranthene	ND	9.4
Pyrene	ND	9.4
Butylbenzylphthalate	ND	9.4
3,3'-Dichlorobenzidine	ND	47
Benzo(a)anthracene	ND	9.4
Chrysene	ND	9.4
bis(2-Ethylhexyl)phthalate	ND	9.4
Di-n-octylphthalate	ND	9.4
Benzo(b,k)fluoranthene	ND	9.4
Benzo(a)pyrene	ND	9.4
Indeno(1,2,3-cd)pyrene	ND	9.4
Dibenz(a,h)anthracene	ND	9.4
Benzo(g,h,i)perylene	ND	9.4

Surrogate	%Recovery	Recovery Limits
2-Fluorophenol	85	17-107
Phenol-d5	89	18-115
2,4,6-Tribromophenol	91	14-121
Nitrobenzene-d5	93	36-115
2-Fluorobiphenyl	92	36-113
Terphenyl-d14	83	17-115



Volatile Organics by GC/MS

Client: IT Corporation
Project#: 773206
Location: Plumbrook Ordinance Wor

Analysis Method: EPA 8260
Prep Method: EPA 5030

Field ID: 5767
Lab ID: 133643-001
Matrix: Water
Batch#: 40966
Units: ug/L
Diln Fac: 1

Sampled: 05/14/98
Received: 05/15/98
Extracted: 05/21/98
Analyzed: 05/21/98

Analyte	Result	Reporting Limit
Chloromethane	ND	10
Vinyl Chloride	ND	10
Bromomethane	ND	10
Chloroethane	ND	10
Acetone	ND	20
1,1-Dichloroethene	ND	5.0
Methylene Chloride	ND	20
Carbon Disulfide	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
1,1-Dichloroethane	ND	5.0
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	5.0
Chloroform	ND	5.0
1,1,1-Trichloroethane	ND	5.0
Carbon Tetrachloride	ND	5.0
1,2-Dichloroethane	ND	5.0
Benzene	ND	5.0
Trichloroethene	ND	5.0
1,2-Dichloropropane	ND	5.0
Bromodichloromethane	ND	5.0
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	5.0
Toluene	ND	5.0
trans-1,3-Dichloropropene	ND	5.0
1,1,2-Trichloroethane	ND	5.0
2-Hexanone	ND	10
Tetrachloroethene	ND	5.0
Dibromochloromethane	ND	5.0
Chlorobenzene	ND	5.0
Ethylbenzene	ND	5.0
m,p-Xylenes	ND	5.0
o-Xylene	ND	5.0
Styrene	ND	5.0
Bromoform	ND	5.0
1,1,2,2-Tetrachloroethane	ND	5.0
Surrogate	%Recovery	Recovery Limits
Dibromofluoromethane	103	76-128
1,2-Dichloroethane-d4	104	85-121
Toluene-d8	101	92-110
Bromofluorobenzene	106	84-115

Nitroaromatics and Nitramines by HPLC
Method 8330

Client Name: Curtis & Tompkins, Ltd.
Client ID: 5497
LAB ID: 099240-0001-SA
Matrix: AQUEOUS
Authorized: 19 MAY 98

Sampled: 13 MAY 98
Prepared: 20 MAY 98

Received: 19 MAY 98
Analyzed: 21 MAY 98

Dilution Factor: 1.0

Parameter	Result	Units	Reporting Limit	Qualifier
HMX	ND	ug/L	1.0	
1,3,5-Trinitrobenzene	ND	ug/L	0.30	
RDX	ND	ug/L	0.80	
1,3-Dinitrobenzene	ND	ug/L	0.10	
Nitrobenzene	ND	ug/L	1.0	
2,4,6-Trinitrotoluene	ND	ug/L	0.10	
Tetryl	ND	ug/L	1.0	
2,4-Dinitrotoluene	ND	ug/L	0.10	
2,6-Dinitrotoluene	ND	ug/L	0.30	
2-Am-DNT	ND	ug/L	0.10	
4-Am-DNT	ND	ug/L	0.10	
2-Nitrotoluene	ND	ug/L	1.0	
4-Nitrotoluene	ND	ug/L	1.0	
3-Nitrotoluene	ND	ug/L	1.0	

Surrogate	Recovery	Acceptable Range
2,4-Dinitrofluorobenzene	97 %	65 - 135

ND = Not Detected

Reported By: Jon Edmondson

Approved By: Emily Uebelhoer

The cover letter is an integral part of this report.
Rev 230787

PCBs

Client: IT Corporation	Analysis Method: PCB
Project#: 773206	Prep Method: EPA 3520
Location: Plumbrook Ordinance Wor	

Field ID: 5497	Sampled: 05/13/98
Lab ID: 133611-001	Received: 05/14/98
Matrix: Water	Extracted: 05/14/98
Batch#: 40860	Analyzed: 05/19/98
Units: ug/L	
Diln Fac: 1	

Analyte	Result	Reporting Limit
Aroclor-1016	ND	0.49
Aroclor-1221	ND	0.98
Aroclor-1232	ND	0.49
Aroclor-1242	ND	0.49
Aroclor-1248	ND	0.49
Aroclor-1254	ND	0.49
Aroclor-1260	ND	0.49

Surrogate	%Recovery	Recovery Limits
TCMX	61	19-130
Decachlorobiphenyl	30	22-110



Semivolatile Organics by GC/MS

Client: IT Corporation
Project#: 773206
Location: Plumbrook Ordinance Wor

Analysis Method: EPA 8270B
Prep Method: EPA 3520

Field ID: 5497 RE
Lab ID: 133611-003
Matrix: Water
Batch#: 41058
Units: ug/L
Diln Fac: 1

Sampled: 05/13/98
Received: 05/14/98
Extracted: 05/22/98
Analyzed: 05/28/98

Analyte	Result	Reporting Limit
Phenol	ND	9.7
2-Chlorophenol	ND	9.7
Benzyl alcohol	ND	9.7
2-Methylphenol	ND	9.7
3,4-Methylphenol	ND	9.7
2-Nitrophenol	ND	49
2,4-Dimethylphenol	ND	9.7
Benzoic acid	ND	49
2,4-Dichlorophenol	ND	9.7
4-Chloro-3-methylphenol	ND	9.7
2,4,6-Trichlorophenol	ND	9.7
2,4,5-Trichlorophenol	ND	9.7
2,4-Dinitrophenol	ND	49
4-Nitrophenol	ND	49
4,6-Dinitro-2-methylphenol	ND	49
Pentachlorophenol	ND	9.7
N-Nitrosodimethylamine	ND	9.7
Aniline	ND	9.7
bis(2-Chloroethyl) ether	ND	9.7
1,3-Dichlorobenzene	ND	9.7
1,4-Dichlorobenzene	ND	9.7
1,2-Dichlorobenzene	ND	9.7
bis(2-Chloroisopropyl) ether	ND	9.7
N-Nitroso-di-n-propylamine	ND	9.7
Hexachloroethane	ND	9.7
Nitrobenzene	ND	9.7
Isophorone	ND	9.7
bis(2-Chloroethoxy) methane	ND	9.7
1,2,4-Trichlorobenzene	ND	9.7
Naphthalene	ND	9.7
4-Chloroaniline	ND	9.7
Hexachlorobutadiene	ND	9.7
2-Methylnaphthalene	ND	9.7
Hexachlorocyclopentadiene	ND	49
2-Chloronaphthalene	ND	9.7
2-Nitroaniline	ND	49
Dimethylphthalate	ND	9.7
Acenaphthylene	ND	9.7



Semivolatile Organics by GC/MS

Field ID: 5497 RE	Sampled: 05/13/98
Lab ID: 133611-003	Received: 05/14/98
Matrix: Water	Extracted: 05/22/98
Batch#: 41058	Analyzed: 05/28/98
Units: ug/L	
Diln Fac: 1	

Analyte	Result	Reporting Limit
2,6-Dinitrotoluene	ND	9.7
3-Nitroaniline	ND	49
Acenaphthene	ND	9.7
Dibenzofuran	ND	9.7
2,4-Dinitrotoluene	ND	9.7
Diethylphthalate	ND	9.7
4-Chlorophenyl-phenylether	ND	9.7
Fluorene	ND	9.7
4-Nitroaniline	ND	49
N-Nitrosodiphenylamine	ND	9.7
Azobenzene	ND	9.7
4-Bromophenyl-phenylether	ND	9.7
Hexachlorobenzene	ND	9.7
Phenanthrene	ND	9.7
Anthracene	ND	9.7
Di-n-butylphthalate	ND	9.7
Fluoranthene	ND	9.7
Pyrene	ND	9.7
Butylbenzylphthalate	ND	9.7
3,3'-Dichlorobenzidine	ND	49
Benzo(a)anthracene	ND	9.7
Chrysene	ND	9.7
bis(2-Ethylhexyl)phthalate	ND	9.7
Di-n-octylphthalate	ND	9.7
Benzo(b,k)fluoranthene	ND	9.7
Benzo(a)pyrene	ND	9.7
Indeno(1,2,3-cd)pyrene	ND	9.7
Dibenz(a,h)anthracene	ND	9.7
Benzo(g,h,i)perylene	ND	9.7

Surrogate	%Recovery	Recovery Limits
2-Fluorophenol	0*	17-107
Phenol-d5	3*	18-115
2,4,6-Tribromophenol	2*	14-121
Nitrobenzene-d5	55	36-115
2-Fluorobiphenyl	67	36-113
Terphenyl-d14	42	17-115

* Values outside of QC limits



Semivolatile Organics by GC/MS

Client: IT Corporation
Project#: 773206
Location: Plumbrook Ordinance Wor

Analysis Method: EPA 8270B
Prep Method: EPA 3520

Field ID: 5497
Lab ID: 133611-001
Matrix: Water
Batch#: 40923
Units: ug/L
Diln Fac: 1

Sampled: 05/13/98
Received: 05/14/98
Extracted: 05/18/98
Analyzed: 05/20/98

Analyte	Result	Reporting Limit
Phenol	ND	10
2-Chlorophenol	ND	10
Benzyl alcohol	ND	10
2-Methylphenol	ND	10
3,4-Methylphenol	ND	10
2-Nitrophenol	ND	51
2,4-Dimethylphenol	ND	10
Benzoic acid	ND	51
2,4-Dichlorophenol	ND	10
4-Chloro-3-methylphenol	ND	10
2,4,6-Trichlorophenol	ND	10
2,4,5-Trichlorophenol	ND	10
2,4-Dinitrophenol	ND	51
4-Nitrophenol	ND	51
4,6-Dinitro-2-methylphenol	ND	51
Pentachlorophenol	ND	10
N-Nitrosodimethylamine	ND	10
Aniline	ND	10
bis(2-Chloroethyl) ether	ND	10
1,3-Dichlorobenzene	ND	10
1,4-Dichlorobenzene	ND	10
1,2-Dichlorobenzene	ND	10
bis(2-Chloroisopropyl) ether	ND	10
N-Nitroso-di-n-propylamine	ND	10
Hexachloroethane	ND	10
Nitrobenzene	ND	10
Isophorone	ND	10
bis(2-Chloroethoxy) methane	ND	10
1,2,4-Trichlorobenzene	ND	10
Naphthalene	ND	10
4-Chloroaniline	ND	10
Hexachlorobutadiene	ND	10
2-Methylnaphthalene	ND	10
Hexachlorocyclopentadiene	ND	51
2-Chloronaphthalene	ND	10
2-Nitroaniline	ND	51
Dimethylphthalate	ND	10
Acenaphthylene	ND	10



Semivolatile Organics by GC/MS

Field ID: 5497	Sampled: 05/13/98
Lab ID: 133611-001	Received: 05/14/98
Matrix: Water	Extracted: 05/18/98
Batch#: 40923	Analyzed: 05/20/98
Units: ug/L	
Diln Fac: 1	

Analyte	Result	Reporting Limit
2,6-Dinitrotoluene	ND	10
3-Nitroaniline	ND	51
Acenaphthene	ND	10
Dibenzofuran	ND	10
2,4-Dinitrotoluene	ND	10
Diethylphthalate	ND	10
4-Chlorophenyl-phenylether	ND	10
Fluorene	ND	10
4-Nitroaniline	ND	51
N-Nitrosodiphenylamine	ND	10
Azobenzene	ND	10
4-Bromophenyl-phenylether	ND	10
Hexachlorobenzene	ND	10
Phenanthrene	ND	10
Anthracene	ND	10
Di-n-butylphthalate	ND	10
Fluoranthene	ND	10
Pyrene	ND	10
Butylbenzylphthalate	ND	10
3,3'-Dichlorobenzidine	ND	51
Benzo(a)anthracene	ND	10
Chrysene	ND	10
bis(2-Ethylhexyl)phthalate	ND	10
Di-n-octylphthalate	ND	10
Benzo(b,k)fluoranthene	ND	10
Benzo(a)pyrene	ND	10
Indeno(1,2,3-cd)pyrene	ND	10
Dibenz(a,h)anthracene	ND	10
Benzo(g,h,i)perylene	ND	10

Surrogate	%Recovery	Recovery Limits
2-Fluorophenol	0*	17-107
Phenol-d5	8*	18-115
2,4,6-Tribromophenol	2*	14-121
Nitrobenzene-d5	99	36-115
2-Fluorobiphenyl	97	36-113
Terphenyl-d14	55	17-115

* Values outside of QC limits



Volatile Organics by GC/MS

Client: IT Corporation
Project#: 773206
Location: Plumbrook Ordinance WorAnalysis Method: EPA 8260
Prep Method: EPA 5030Field ID: 5497
Lab ID: 133611-001
Matrix: Water
Batch#: 40903
Units: ug/L
Diln Fac: 1Sampled: 05/13/98
Received: 05/14/98
Extracted: 05/19/98
Analyzed: 05/19/98

Analyte	Result	Reporting Limit
Chloromethane	ND	10
Vinyl Chloride	ND	10
Bromomethane	ND	10
Chloroethane	ND	10
Acetone	ND	20
1,1-Dichloroethene	ND	5.0
Methylene Chloride	ND	20
Carbon Disulfide	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
1,1-Dichloroethane	ND	5.0
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	5.0
Chloroform	ND	5.0
1,1,1-Trichloroethane	ND	5.0
Carbon Tetrachloride	ND	5.0
1,2-Dichloroethane	ND	5.0
Benzene	ND	5.0
Trichloroethene	ND	5.0
1,2-Dichloropropane	ND	5.0
Bromodichloromethane	ND	5.0
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	5.0
Toluene	ND	5.0
trans-1,3-Dichloropropene	ND	5.0
1,1,2-Trichloroethane	ND	5.0
2-Hexanone	ND	10
Tetrachloroethene	ND	5.0
Dibromochloromethane	ND	5.0
Chlorobenzene	ND	5.0
Ethylbenzene	ND	5.0
m,p-Xylenes	ND	5.0
o-Xylene	ND	5.0
Styrene	ND	5.0
Bromoform	ND	5.0
1,1,2,2-Tetrachloroethane	ND	5.0
Surrogate	%Recovery	Recovery Limits
Dibromofluoromethane	105	76-128
1,2-Dichloroethane-d4	109	85-121
Toluene-d8	98	92-110
Bromofluorobenzene	102	84-115



Volatile Organics by GC/MS		
Client: IT Corporation	Analysis Method: EPA 8260	
Project#: 773206	Prep Method: EPA 5030	
Location: Plumbrook Ordinance Wor		
Field ID: 9009	Sampled:	05/13/98
Lab ID: 133611-002	Received:	05/14/98
Matrix: Water	Extracted:	05/19/98
Batch#: 40903	Analyzed:	05/19/98
Units: ug/L		
Diln Fac: 1		
Analyte	Result	Reporting Limit
Chloromethane	ND	10
Vinyl Chloride	ND	10
Bromomethane	ND	10
Chloroethane	ND	10
Acetone	ND	20
1,1-Dichloroethene	ND	5.0
Methylene Chloride	ND	20
Carbon Disulfide	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
1,1-Dichloroethane	ND	5.0
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	5.0
Chloroform	ND	5.0
1,1,1-Trichloroethane	ND	5.0
Carbon Tetrachloride	ND	5.0
1,2-Dichloroethane	ND	5.0
Benzene	ND	5.0
Trichloroethene	ND	5.0
1,2-Dichloropropane	ND	5.0
Bromodichloromethane	ND	5.0
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	5.0
Toluene	ND	5.0
trans-1,3-Dichloropropene	ND	5.0
1,1,2-Trichloroethane	ND	5.0
2-Hexanone	ND	10
Tetrachloroethene	ND	5.0
Dibromochloromethane	ND	5.0
Chlorobenzene	ND	5.0
Ethylbenzene	ND	5.0
m,p-Xylenes	ND	5.0
o-Xylene	ND	5.0
Styrene	ND	5.0
Bromoform	ND	5.0
1,1,2,2-Tetrachloroethane	ND	5.0
Surrogate	%Recovery	Recovery Limits
Dibromofluoromethane	106	76-128
1,2-Dichloroethane-d4	109	85-121
Toluene-d8	97	92-110
Bromofluorobenzene	102	84-115

Nitroaromatics and Nitramines by HPLC
Method 8330

Client Name: Curtis & Tompkins, Ltd.
Client ID: 5767
LAB ID: 099239-0001-SA
Matrix: AQUEOUS
Authorized: 19 MAY 98

Sampled: 14 MAY 98
Prepared: 20 MAY 98

Received: 19 MAY 98
Analyzed: 21 MAY 98

Dilution Factor: 1.0

Parameter	Result	Units	Reporting Limit	Qualifier
HMX	ND	ug/L	1.0	
1,3,5-Trinitrobenzene	ND	ug/L	0.30	
RDX	ND	ug/L	0.80	
1,3-Dinitrobenzene	ND	ug/L	0.10	
Nitrobenzene	ND	ug/L	1.0	
2,4,6-Trinitrotoluene	ND	ug/L	0.10	
Tetryl	ND	ug/L	1.0	
2,4-Dinitrotoluene	ND	ug/L	0.10	
2,6-Dinitrotoluene	ND	ug/L	0.30	
2-Am-DNT	ND	ug/L	0.10	
4-Am-DNT	ND	ug/L	0.10	
2-Nitrotoluene	ND	ug/L	1.0	
4-Nitrotoluene	ND	ug/L	1.0	
3-Nitrotoluene	ND	ug/L	1.0	

Surrogate	Recovery	Acceptable Range
2,4-Dinitrofluorobenzene	99 %	65 - 135

ND = Not Detected

Reported By: Jon Edmondson

Approved By: Emily Uebelhoer

The cover letter is an integral part of this report.

Rev 230787

Nitroaromatics and Nitramines by HPLC
Method 8330

Client Name: Curtis & Tompkins, Ltd.
Client ID: 5767
LAB ID: 099239-0001-SA
Matrix: AQUEOUS
Authorized: 19 MAY 98

Sampled: 14 MAY 98
Prepared: 20 MAY 98

Received: 19 MAY 98
Analyzed: 21 MAY 98

Dilution Factor: 1.0

Parameter	Result	Units	Reporting Limit	Qualifier
HMX	ND	ug/L	1.0	
1,3,5-Trinitrobenzene	ND	ug/L	0.30	
RDX	ND	ug/L	0.80	
1,3-Dinitrobenzene	ND	ug/L	0.10	
Nitrobenzene	ND	ug/L	1.0	
2,4,6-Trinitrotoluene	ND	ug/L	0.10	
Tetryl	ND	ug/L	1.0	
2,4-Dinitrotoluene	ND	ug/L	0.10	
2,6-Dinitrotoluene	ND	ug/L	0.30	
2-Am-DNT	ND	ug/L	0.10	
4-Am-DNT	ND	ug/L	0.10	
2-Nitrotoluene	ND	ug/L	1.0	
4-Nitrotoluene	ND	ug/L	1.0	
3-Nitrotoluene	ND	ug/L	1.0	

Surrogate	Recovery	Acceptable Range
2,4-Dinitrofluorobenzene	99 %	65 - 135

ND = Not Detected

Reported By: Jon Edmondson

Approved By: Emily Uebelhoer

The cover letter is an integral part of this report.
Rev 230787



SAMPLE ID: 5497
 LAB ID: 133611-001
 CLIENT: IT Corporation
 PROJECT ID: 773206
 LOCATION: Plumbrook Ordinance Wor
 MATRIX: Filtrate

DATE SAMPLED: 05/13/98
 DATE RECEIVED: 05/14/98
 DATE REPORTED: 06/03/98

TARGET ANALYTE LIST

Compound	Result (ug/L)	Reporting Limit (ug/L)	IDF	QC Batch	Method	Analysis Date
Aluminum	710	100	1	40949	EPA 6010A	05/26/98
Antimony	ND	60	1	40949	EPA 6010A	05/26/98
Arsenic	ND	5.0	1	40949	EPA 6010A	05/26/98
Barium	48	10	1	40949	EPA 6010A	05/26/98
Beryllium	ND	2.0	1	40949	EPA 6010A	05/26/98
Cadmium	ND	5.0	1	40949	EPA 6010A	05/26/98
Calcium	490000	5000	10	40949	EPA 6010A	05/28/98
Chromium (total)	ND	10	1	40949	EPA 6010A	05/26/98
Cobalt	24	20	1	40949	EPA 6010A	05/26/98
Copper	ND	10	1	40949	EPA 6010A	05/26/98
Iron	10000	100	1	40949	EPA 6010A	05/26/98
Lead	ND	3.0	1	40949	EPA 6010A	05/26/98
Magnesium	330000	5000	10	40949	EPA 6010A	05/28/98
Manganese	5500	10	1	40949	EPA 6010A	05/26/98
Mercury	ND	0.20	1	41035	EPA 7470	05/22/98
Molybdenum	ND	20	1	40949	EPA 6010A	05/26/98
Nickel	ND	20	1	40949	EPA 6010A	05/26/98
Potassium	5900	500	1	40949	EPA 6010A	05/26/98
Selenium	ND	5.0	1	40949	EPA 6010A	05/26/98
Silver	ND	5.0	1	40949	EPA 6010A	05/26/98
Sodium	37000	500	1	40949	EPA 6010A	05/26/98
Thallium	14	5.0	1	40949	EPA 6010A	05/26/98
Vanadium	ND	10	1	40949	EPA 6010A	05/26/98
Zinc	31	20	1	40949	EPA 6010A	05/26/98

ND = Not detected at or above reporting limit



Curtis & Tompkins, Ltd.

SAMPLE ID: 5767
LAB ID: 133643-001
CLIENT: IT Corporation
PROJECT ID: 773206
LOCATION: Plumbrook Ordinance Wor
MATRIX: Water

DATE SAMPLED: 05/14/98
DATE RECEIVED: 05/15/98
DATE REPORTED: 05/28/98

TARGET ANALYTE LIST

Compound	Result (ug/L)	Reporting Limit (ug/L)	IDF	QC Batch	Method	Analysis Date
Aluminum	2900	100	1	41026	EPA 6010A	05/26/98
Antimony	ND	60	1	41026	EPA 6010A	05/26/98
Arsenic	ND	5.0	1	41026	EPA 6010A	05/27/98
Barium	110	10	1	41026	EPA 6010A	05/26/98
Beryllium	ND	2.0	1	41026	EPA 6010A	05/26/98
Cadmium	ND	5.0	1	41026	EPA 6010A	05/26/98
Calcium	100000	500	1	41026	EPA 6010A	05/26/98
Chromium (total)	ND	10	1	41026	EPA 6010A	05/26/98
Cobalt	ND	20	1	41026	EPA 6010A	05/26/98
Copper	ND	10	1	41026	EPA 6010A	05/26/98
Iron	17000	100	1	41026	EPA 6010A	05/26/98
Lead	ND	3.0	1	41026	EPA 6010A	05/27/98
Magnesium	17000	500	1	41026	EPA 6010A	05/26/98
Manganese	270	10	1	41026	EPA 6010A	05/26/98
Mercury	ND	0.20	1	40973	EPA 7470	05/20/98
Molybdenum	ND	20	1	41026	EPA 6010A	05/26/98
Nickel	37	20	1	41026	EPA 6010A	05/26/98
Potassium	ND	500	1	41026	EPA 6010A	05/26/98
Selenium	ND	5.0	1	41026	EPA 6010A	05/27/98
Silver	ND	5.0	1	41026	EPA 6010A	05/26/98
Sodium	5000	500	1	41026	EPA 6010A	05/26/98
Thallium	17	5.0	1	41026	EPA 6010A	05/27/98
Vanadium	ND	10	1	41026	EPA 6010A	05/26/98
Zinc	34	20	1	41026	EPA 6010A	05/26/98

ND = Not detected at or above reporting limit



SAMPLE ID: 5497
LAB ID: 133611-001
CLIENT: IT Corporation
PROJECT ID: 773206
LOCATION: Plumbrook Ordinance Wor
MATRIX: Water

DATE SAMPLED: 05/13/98
DATE RECEIVED: 05/14/98
DATE REPORTED: 06/03/98

TARGET ANALYTE LIST

Compound	Result (ug/L)	Reporting Limit (ug/L)	IDF	QC Batch	Method	Analysis Date
Aluminum	800	100	1	41026	EPA 6010A	05/26/98
Antimony	ND	60	1	41026	EPA 6010A	05/26/98
Arsenic	ND	5.0	1	41026	EPA 6010A	05/26/98
Barium	51	10	1	41026	EPA 6010A	05/26/98
Beryllium	ND	2.0	1	41026	EPA 6010A	05/26/98
Cadmium	ND	5.0	1	41026	EPA 6010A	05/26/98
Calcium	510000	5000	10	41026	EPA 6010A	05/26/98
Chromium (total)	ND	10	1	41026	EPA 6010A	05/26/98
Cobalt	ND	20	1	41026	EPA 6010A	05/26/98
Copper	ND	10	1	41026	EPA 6010A	05/26/98
Iron	11000	100	1	41026	EPA 6010A	05/26/98
Lead	ND	3.0	1	41026	EPA 6010A	05/26/98
Magnesium	380000	5000	10	41026	EPA 6010A	05/26/98
Manganese	5600	10	1	41026	EPA 6010A	05/26/98
Mercury	ND	0.20	1	40973	EPA 7470	05/20/98
Molybdenum	ND	20	1	41026	EPA 6010A	05/26/98
Nickel	ND	20	1	41026	EPA 6010A	05/26/98
Potassium	6400	500	1	41026	EPA 6010A	05/26/98
Selenium	ND	5.0	1	41026	EPA 6010A	05/26/98
Silver	ND	5.0	1	41026	EPA 6010A	05/26/98
Sodium	41000	500	1	41026	EPA 6010A	05/26/98
Thallium	14	5.0	1	41026	EPA 6010A	05/26/98
Vanadium	ND	10	1	41026	EPA 6010A	05/26/98
Zinc	40	20	1	41026	EPA 6010A	05/26/98

ND = Not detected at or above reporting limit



Curtis & Tompkins, Ltd.

SAMPLE ID: 5767
 LAB ID: 133643-001
 CLIENT: IT Corporation
 PROJECT ID: 773206
 LOCATION: Plumbrook Ordinance Wor
 MATRIX: Filtrate

DATE SAMPLED: 05/14/98
 DATE RECEIVED: 05/15/98
 DATE REPORTED: 05/28/98

TARGET ANALYTE LIST

Compound	Result (ug/L)	Reporting Limit (ug/L)	IDF	QC Batch	Method	Analysis Date
Aluminum	280	100	1	40949	EPA 6010A	05/26/98
Antimony	ND	60	1	40949	EPA 6010A	05/26/98
Arsenic	ND	5.0	1	40949	EPA 6010A	05/26/98
Barium	150	10	1	40949	EPA 6010A	05/26/98
Beryllium	ND	2.0	1	40949	EPA 6010A	05/26/98
Cadmium	ND	5.0	1	40949	EPA 6010A	05/26/98
Calcium	140000	500	1	40949	EPA 6010A	05/26/98
Chromium (total)	ND	10	1	40949	EPA 6010A	05/26/98
Cobalt	ND	20	1	40949	EPA 6010A	05/26/98
Copper	ND	10	1	40949	EPA 6010A	05/26/98
Iron	18000	100	1	40949	EPA 6010A	05/26/98
Lead	ND	3.0	1	40949	EPA 6010A	05/26/98
Magnesium	22000	500	1	40949	EPA 6010A	05/26/98
Manganese	340	10	1	40949	EPA 6010A	05/26/98
Mercury	ND	0.20	1	41035	EPA 7470	05/22/98
Molybdenum	ND	20	1	40949	EPA 6010A	05/26/98
Nickel	ND	20	1	40949	EPA 6010A	05/26/98
Potassium	ND	500	1	40949	EPA 6010A	05/26/98
Selenium	ND	5.0	1	40949	EPA 6010A	05/26/98
Silver	ND	5.0	1	40949	EPA 6010A	05/26/98
Sodium	5000	500	1	40949	EPA 6010A	05/26/98
Thallium	9.4	5.0	1	40949	EPA 6010A	05/27/98
Vanadium	ND	10	1	40949	EPA 6010A	05/26/98
Zinc	ND	20	1	40949	EPA 6010A	05/26/98

ND = Not detected at or above reporting limit

IT CORPORATION - KNOXVILLE

Client Sample ID: 5766

DISSOLVED Metals

Lot-Sample #...: H8E160146-014
Date Sampled...: 05/14/98

Date Received...: 05/15/98

Matrix.....: WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION- ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 8147114						
Mercury	ND	0.20	ug/L	SW846 7470A	05/27-05/28/98	CH86K100
		Dilution Factor: 1		Analysis Time...: 11:48		
Prep Batch #...: 8147200						
Aluminum	ND	200	ug/L	SW846 6010A	05/28-06/10/98	CH86K100
		Dilution Factor: 1		Analysis Time...: 13:52		
Arsenic	ND	10.0	ug/L	SW846 6010A	05/28-06/12/98	CH86K100
		Dilution Factor: 1		Analysis Time...: 17:41		
Lead	ND	3.0	ug/L	SW846 6010A	05/28-06/12/98	CH86K100
		Dilution Factor: 1		Analysis Time...: 17:41		
Antimony	ND	60.0	ug/L	SW846 6010A	05/28-06/10/98	CH86K100
		Dilution Factor: 1		Analysis Time...: 13:52		
Barium	ND	200	ug/L	SW846 6010A	05/28-06/10/98	CH86K100
		Dilution Factor: 1		Analysis Time...: 13:52		
Selenium	ND	5.0	ug/L	SW846 6010A	05/28-06/12/98	CH86K100
		Dilution Factor: 1		Analysis Time...: 17:41		
Beryllium	ND	5.0	ug/L	SW846 6010A	05/28-06/10/98	CH86K100
		Dilution Factor: 1		Analysis Time...: 13:52		
Thallium	ND	10.0	ug/L	SW846 6010A	05/28-06/12/98	CH86K100
		Dilution Factor: 1		Analysis Time...: 17:41		
Cadmium	ND	5.0	ug/L	SW846 6010A	05/28-06/10/98	CH86K100
		Dilution Factor: 1		Analysis Time...: 13:52		
Calcium	123000	5000	ug/L	SW846 6010A	05/28-06/10/98	CH86K100
		Dilution Factor: 1		Analysis Time...: 13:52		
Chromium	ND	10.0	ug/L	SW846 6010A	05/28-06/10/98	CH86K100
		Dilution Factor: 1		Analysis Time...: 13:52		
Cobalt	ND	50.0	ug/L	SW846 6010A	05/28-06/10/98	CH86K100
		Dilution Factor: 1		Analysis Time...: 13:52		
Copper	40.3	25.0	ug/L	SW846 6010A	05/28-06/10/98	CH86K100
		Dilution Factor: 1		Analysis Time...: 13:52		

(Continued on next page)

IT CORPORATION - KNOXVILLE

Client Sample ID: 5766

DISSOLVED Metals

Lot-Sample #...: H8E160146-014

Matrix.....: WATER

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u>		<u>METHOD</u>	<u>PREPARATION-</u>	<u>WORK</u>
		<u>LIMIT</u>	<u>UNITS</u>		<u>ANALYSIS DATE</u>	<u>ORDER #</u>
Iron	19200	100	ug/L	SW846 6010A	05/28-06/10/98	CH86K10F
		Dilution Factor: 1		Analysis Time...: 13:52		
Magnesium	19000	5000	ug/L	SW846 6010A	05/28-06/10/98	CH86K10C
		Dilution Factor: 1		Analysis Time...: 13:52		
Manganese	322	15.0	ug/L	SW846 6010A	05/28-06/10/98	CH86K10I
		Dilution Factor: 1		Analysis Time...: 13:52		
Nickel	ND	40.0	ug/L	SW846 6010A	05/28-06/10/98	CH86K10E
		Dilution Factor: 1		Analysis Time...: 13:52		
Potassium	ND	5000	ug/L	SW846 6010A	05/28-06/10/98	CH86K10I
		Dilution Factor: 1		Analysis Time...: 13:52		
Silver	ND	10.0	ug/L	SW846 6010A	05/28-06/10/98	CH86K10C
		Dilution Factor: 1		Analysis Time...: 13:52		
Sodium	5200	5000	ug/L	SW846 6010A	05/28-06/10/98	CH86K10I
		Dilution Factor: 1		Analysis Time...: 13:52		
Vanadium	ND	50.0	ug/L	SW846 6010A	05/28-06/10/98	CH86K10C
		Dilution Factor: 1		Analysis Time...: 13:52		
Zinc	24.0	20.0	ug/L	SW846 6010A	05/28-06/10/98	CH86K10C
		Dilution Factor: 1		Analysis Time...: 13:52		

IT CORPORATION - KNOXVILLE

Client Sample ID: 5496

DISSOLVED Metals

Lot-Sample #...: H8E140209-011
Date Sampled...: 05/13/98

Date Received...: 05/14/98

Matrix.....: WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION- ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 8147114						
Mercury	ND	0.20	ug/L	SW846 7470A	05/27-05/28/98	CH6D8100
		Dilution Factor: 1		Analysis Time...: 12:18		
Prep Batch #...: 8147200						
Aluminum	ND	200	ug/L	SW846 6010A	05/28-06/10/98	CH6D8100
		Dilution Factor: 1		Analysis Time...: 14:37		
Arsenic	ND	10.0	ug/L	SW846 6010A	05/28-06/12/98	CH6D8100
		Dilution Factor: 1		Analysis Time...: 18:31		
Lead	ND	3.0	ug/L	SW846 6010A	05/28-06/12/98	CH6D8100
		Dilution Factor: 1		Analysis Time...: 18:31		
Antimony	ND	60.0	ug/L	SW846 6010A	05/28-06/10/98	CH6D8100
		Dilution Factor: 1		Analysis Time...: 14:37		
Barium	ND	200	ug/L	SW846 6010A	05/28-06/10/98	CH6D8100
		Dilution Factor: 1		Analysis Time...: 14:37		
Selenium	ND	5.0	ug/L	SW846 6010A	05/28-06/12/98	CH6D8100
		Dilution Factor: 1		Analysis Time...: 18:31		
Beryllium	ND	5.0	ug/L	SW846 6010A	05/28-06/10/98	CH6D8100
		Dilution Factor: 1		Analysis Time...: 14:37		
Thallium	ND	10.0	ug/L	SW846 6010A	05/28-06/12/98	CH6D8100
		Dilution Factor: 1		Analysis Time...: 18:31		
Cadmium	ND	5.0	ug/L	SW846 6010A	05/28-06/10/98	CH6D8100
		Dilution Factor: 1		Analysis Time...: 14:37		
Calcium	651000	50000	ug/L	SW846 6010A	05/28-06/10/98	CH6D8100
		Dilution Factor: 10		Analysis Time...: 15:59		
Chromium	ND	10.0	ug/L	SW846 6010A	05/28-06/10/98	CH6D8100
		Dilution Factor: 1		Analysis Time...: 14:37		
Cobalt	ND	50.0	ug/L	SW846 6010A	05/28-06/10/98	CH6D8100
		Dilution Factor: 1		Analysis Time...: 14:37		
Copper	ND	25.0	ug/L	SW846 6010A	05/28-06/10/98	CH6D8100
		Dilution Factor: 1		Analysis Time...: 14:37		

(Continued on next page)

IT CORPORATION - KNOXVILLE

Client Sample ID: 5496

DISSOLVED Metals

Lot-Sample #....: H8E140209-011

Matrix.....: WATER

PARAMETER	RESULT	REPORTING		METHOD	PREPARATION-	WORK
		LIMIT	UNITS		ANALYSIS DATE	ORDER #
Iron	14100	100	ug/L	SW846 6010A	05/28-06/10/98	CH6D810A
		Dilution Factor: 1		Analysis Time...: 14:37		
Magnesium	428000	5000	ug/L	SW846 6010A	05/28-06/10/98	CH6D810C
		Dilution Factor: 1		Analysis Time...: 14:37		
Manganese	7230	15.0	ug/L	SW846 6010A	05/28-06/10/98	CH6D810D
		Dilution Factor: 1		Analysis Time...: 14:37		
Nickel	ND	40.0	ug/L	SW846 6010A	05/28-06/10/98	CH6D810E
		Dilution Factor: 1		Analysis Time...: 14:37		
Potassium	8190	5000	ug/L	SW846 6010A	05/28-06/10/98	CH6D810F
		Dilution Factor: 1		Analysis Time...: 14:37		
Silver	ND	10.0	ug/L	SW846 6010A	05/28-06/10/98	CH6D810G
		Dilution Factor: 1		Analysis Time...: 14:37		
Sodium	50100	5000	ug/L	SW846 6010A	05/28-06/10/98	CH6D810H
		Dilution Factor: 1		Analysis Time...: 14:37		
Vanadium	ND	50.0	ug/L	SW846 6010A	05/28-06/10/98	CH6D810J
		Dilution Factor: 1		Analysis Time...: 14:37		
Zinc	47.4	20.0	ug/L	SW846 6010A	05/28-06/10/98	CH6D810K
		Dilution Factor: 1		Analysis Time...: 14:37		

IT CORPORATION - KNOXVILLE

Client Sample ID: 5496

TOTAL Metals

Lot-Sample #...: H8E140209-003

Matrix.....: WATER

Date Sampled...: 05/13/98

Date Received...: 05/14/98

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION- ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 8147112						
Mercury	ND	0.20	ug/L	SW846 7470A	05/27-05/28/98	CH6CV101
		Dilution Factor: 1		Analysis Time...: 11:03		
Prep Batch #...: 8147191						
Aluminum	ND	200	ug/L	SW846 6010A	05/28-06/10/98	CH6CV104
		Dilution Factor: 1		Analysis Time...: 12:38		
Arsenic	ND	10.0	ug/L	SW846 6010A	05/28-06/12/98	CH6CV101
		Dilution Factor: 1		Analysis Time...: 16:24		
Lead	ND	3.0	ug/L	SW846 6010A	05/28-06/12/98	CH6CV101
		Dilution Factor: 1		Analysis Time...: 16:24		
Antimony	ND	60.0	ug/L	SW846 6010A	05/28-06/10/98	CH6CV101
		Dilution Factor: 1		Analysis Time...: 12:38		
Barium	ND	200	ug/L	SW846 6010A	05/28-06/10/98	CH6CV101
		Dilution Factor: 1		Analysis Time...: 12:38		
Selenium	ND	5.0	ug/L	SW846 6010A	05/28-06/12/98	CH6CV101
		Dilution Factor: 1		Analysis Time...: 16:24		
Beryllium	ND	5.0	ug/L	SW846 6010A	05/28-06/10/98	CH6CV101
		Dilution Factor: 1		Analysis Time...: 12:38		
Thallium	ND	10.0	ug/L	SW846 6010A	05/28-06/12/98	CH6CV101
		Dilution Factor: 1		Analysis Time...: 16:24		
Cadmium	ND	5.0	ug/L	SW846 6010A	05/28-06/10/98	CH6CV101
		Dilution Factor: 1		Analysis Time...: 12:38		
Calcium	559000	5000	ug/L	SW846 6010A	05/28-06/10/98	CH6CV101
		Dilution Factor: 1		Analysis Time...: 12:38		
Chromium	ND	10.0	ug/L	SW846 6010A	05/28-06/10/98	CH6CV101
		Dilution Factor: 1		Analysis Time...: 12:38		
Cobalt	ND	50.0	ug/L	SW846 6010A	05/28-06/10/98	CH6CV101
		Dilution Factor: 1		Analysis Time...: 12:38		
Copper	ND	25.0	ug/L	SW846 6010A	05/28-06/10/98	CH6CV101
		Dilution Factor: 1		Analysis Time...: 12:38		

(Continued on next page)

IT CORPORATION - KNOXVILLE

Client Sample ID: 5496

TOTAL Metals

Lot-Sample #....: H8E140209-003

Matrix.....: WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION- ANALYSIS DATE	WORK ORDER #
Iron	37100	100	ug/L	SW846 6010A	05/28-06/10/98	CH6CV101
		Dilution Factor: 1		Analysis Time...: 12:38		
Magnesium	284000	5000	ug/L	SW846 6010A	05/28-06/10/98	CH6CV101
		Dilution Factor: 1		Analysis Time...: 12:38		
Manganese	5870	15.0	ug/L	SW846 6010A	05/28-06/10/98	CH6CV100
		Dilution Factor: 1		Analysis Time...: 12:38		
Nickel	ND	40.0	ug/L	SW846 6010A	05/28-06/10/98	CH6CV101
		Dilution Factor: 1		Analysis Time...: 12:38		
Potassium	ND	5000	ug/L	SW846 6010A	05/28-06/10/98	CH6CV100
		Dilution Factor: 1		Analysis Time...: 12:38		
Silver	ND	10.0	ug/L	SW846 6010A	05/28-06/10/98	CH6CV100
		Dilution Factor: 1		Analysis Time...: 12:38		
Sodium	25400	5000	ug/L	SW846 6010A	05/28-06/10/98	CH6CV100
		Dilution Factor: 1		Analysis Time...: 12:38		
Vanadium	ND	50.0	ug/L	SW846 6010A	05/28-06/10/98	CH6CV101
		Dilution Factor: 1		Analysis Time...: 12:38		
Zinc	36.9	20.0	ug/L	SW846 6010A	05/28-06/10/98	CH6CV100
		Dilution Factor: 1		Analysis Time...: 12:38		

IT CORPORATION - KNOXVILLE

Client Sample ID: 5766

TOTAL Metals

Lot-Sample #....: H8E160146-006

Matrix.....: WATER

Date Sampled....: 05/14/98

Date Received...: 05/15/98

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNITS</u>	<u>METHOD</u>	<u>PREPARATION- ANALYSIS DATE</u>	<u>WORK ORDER #</u>
Prep Batch #....: 8147112						
Mercury	ND	0.20	ug/L	SW846 7470A	05/27-05/28/98	CH86710U
		Dilution Factor: 1		Analysis Time...: 10:46		
Prep Batch #....: 8147191						
Aluminum	6220	200	ug/L	SW846 6010A	05/28-06/10/98	CH867104
		Dilution Factor: 1		Analysis Time...: 11:53		
Arsenic	ND	10.0	ug/L	SW846 6010A	05/28-06/12/98	CH86710E
		Dilution Factor: 1		Analysis Time...: 15:34		
Lead	ND	3.0	ug/L	SW846 6010A	05/28-06/12/98	CH86710C
		Dilution Factor: 1		Analysis Time...: 15:34		
Antimony	ND	60.0	ug/L	SW846 6010A	05/28-06/10/98	CH867105
		Dilution Factor: 1		Analysis Time...: 11:53		
Barium	ND	200	ug/L	SW846 6010A	05/28-06/10/98	CH867106
		Dilution Factor: 1		Analysis Time...: 11:53		
Selenium	ND	5.0	ug/L	SW846 6010A	05/28-06/12/98	CH86710F
		Dilution Factor: 1		Analysis Time...: 15:34		
Beryllium	ND	5.0	ug/L	SW846 6010A	05/28-06/10/98	CH867107
		Dilution Factor: 1		Analysis Time...: 11:53		
Thallium	ND	10.0	ug/L	SW846 6010A	05/28-06/12/98	CH867108
		Dilution Factor: 1		Analysis Time...: 15:34		
Cadmium	ND	5.0	ug/L	SW846 6010A	05/28-06/10/98	CH867109
		Dilution Factor: 1		Analysis Time...: 11:53		
Calcium	104000	5000	ug/L	SW846 6010A	05/28-06/10/98	CH86710
		Dilution Factor: 1		Analysis Time...: 11:53		
Chromium	12.0	10.0	ug/L	SW846 6010A	05/28-06/10/98	CH86710
		Dilution Factor: 1		Analysis Time...: 11:53		
Cobalt	ND	50.0	ug/L	SW846 6010A	05/28-06/10/98	CH86710
		Dilution Factor: 1		Analysis Time...: 11:53		
Copper	ND	25.0	ug/L	SW846 6010A	05/28-06/10/98	CH86710
		Dilution Factor: 1		Analysis Time...: 11:53		

(Continued on next page)

IT CORPORATION - KNOXVILLE

Client Sample ID: 5766

TOTAL Metals

Lot-Sample #...: H8E160146-006

Matrix.....: WATER

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u>		<u>METHOD</u>	<u>PREPARATION-</u>	<u>WORK</u>
		<u>LIMIT</u>	<u>UNITS</u>		<u>ANALYSIS DATE</u>	<u>ORDER #</u>
Iron	19700	100	ug/L	SW846 6010A	05/28-06/10/98	CH867101
		Dilution Factor: 1		Analysis Time...: 11:53		
Magnesium	16800	5000	ug/L	SW846 6010A	05/28-06/10/98	CH867101
		Dilution Factor: 1		Analysis Time...: 11:53		
Manganese	282	15.0	ug/L	SW846 6010A	05/28-06/10/98	CH867101
		Dilution Factor: 1		Analysis Time...: 11:53		
Nickel	ND	40.0	ug/L	SW846 6010A	05/28-06/10/98	CH867101
		Dilution Factor: 1		Analysis Time...: 11:53		
Potassium	ND	5000	ug/L	SW846 6010A	05/28-06/10/98	CH867101
		Dilution Factor: 1		Analysis Time...: 11:53		
Silver	ND	10.0	ug/L	SW846 6010A	05/28-06/10/98	CH867101
		Dilution Factor: 1		Analysis Time...: 11:53		
Sodium	ND	5000	ug/L	SW846 6010A	05/28-06/10/98	CH867101
		Dilution Factor: 1		Analysis Time...: 11:53		
Vanadium	ND	50.0	ug/L	SW846 6010A	05/28-06/10/98	CH867101
		Dilution Factor: 1		Analysis Time...: 11:53		
Zinc	35.5	20.0	ug/L	SW846 6010A	05/28-06/10/98	CH867101
		Dilution Factor: 1		Analysis Time...: 11:53		

Plumbrook



COOLER RECEIPT CHECKLIST

Login#: 133643 Date Received: 5/15 Number of Coolers: 1
 Client: ITK Project: 773201 Plumbrook

A. Preliminary Examination Phase

- Date Opened: 5/15 By (print): J. Williams (sign) J. Williams
- Did cooler come with a shipping slip (airbill, etc.)? YES NO
If YES, enter carrier name and airbill number: Fedex 800185154018
 - Were custody seals on outside of cooler? YES NO
How many and where? front Seal date: 5/11 Seal name: _____
 - Were custody seals unbroken and intact at the date and time of arrival? YES NO
 - Were custody papers dry and intact when received? YES NO
 - Were custody papers filled out properly (ink, signed, etc.)? YES NO
 - Did you sign the custody papers in the appropriate place? YES NO
 - Was project identifiable from custody papers? YES NO
If YES, enter project name at the top of this form.
 - If required, was sufficient ice used? YES NO
Type of ice: Cube Temperature: 4.75°C

B. Login Phase

- Date Logged In: 5/15 By (print): J. Williams (sign) J. Williams
- Describe type of packing in cooler: vacuum seals
 - Did all bottles arrive unbroken? YES NO
 - Were labels in good condition and complete (ID, date, time, signature, etc.)? YES NO
 - Did bottle labels agree with custody papers? YES NO
 - Were appropriate containers used for the tests indicated? YES NO
 - Were correct preservatives added to samples? YES NO
 - Was sufficient amount of sample sent for tests indicated? YES NO
 - Were bubbles absent in VOA samples? If NO, list sample Ids below YES NO
 - Was the client contacted concerning this sample delivery? YES NO
If YES, give details below.
- Who was called? _____ By whom? _____ Date: _____

Additional Comments:

ASTODY SE
 [Signature]
 5/19/08
 rev. 1/05

Laboratory Numbers: 133643
Client: IT Corporation
Location: Plumbrook Ordnance Works
Project #: 773206

Received Date: 05/15/98

CASE NARRATIVE

This hardcopy data package contains sample and QC results for two water samples which were received from the site referenced above on May 15, 1998.

Volatiles: No analytical problems were encountered.

Semi-volatiles: A high relative standard deviation (%RSD) was observed for bis(2-ethylhexyl)phthalate in the initial calibration which was analyzed on May 19, 1998 (uej). The compound met the minimum response criteria and was not detected in the sample or method blank. No other analytical problems were encountered.

PCBs: A high percent difference (%D) was observed for Aroclor 1221 in the continuing calibration verification which was analyzed on May 27, 1998 (146A034). This should not affect the quality of the data as this Aroclor was not detected in the samples. No other analytical problems were encountered.

Metals: A high relative percent difference (%RPDs) was observed for thallium for the sample duplicate of 5497 (CT#133611-001). The spike recoveries for calcium, iron, magnesium, and manganese in the matrix spike of 5497 (CT#133611-001) are considered not meaningful (NM) as the sample concentrations are four times greater than the spiked levels. No other analytical problems were encountered.

Nitroaromatics and Nitramines: One sample was subcontracted to Quanterra Environmental Services for analysis.



**INTERNATIONAL
TECHNOLOGY
CORPORATION**

133643

**ANALYSIS REQUEST AND
CHAIN OF CUSTODY RECORD**

Reference Document No: PBGW-051498CURT
Page 1 of 1

Project Number: 773206

Samples Shipment Date: 14-MAY-98

Bill To: Accounts Receivable

Project Name: FLUMBROOK ORDNANCE WORK ab Destination: Curtis and Tomkins Lab

312 Directors Drive

Knoxville

TN 37923

Sample Coordinator: Duane Nielsen

Lab Contact: Carol Wortham (PM) or

Report To: Kim Napier

312 Directors Drive

Knoxville

TN 37923

Turnaround Time:

Project Contact: Kim Napier

Carrier/Waybill No.: Fed Ex/800185154018

Special Instructions:

Possible Hazard Identification:

Non-hazard Flammable Skin Irritant Poison B Unknown

Sample Disposal:

Return to Client Disposal by Lab Archive (mos.)

1. Relinquished By
(Signature/Affiliation)

[Signature]

Date: 5/14/98
Time: 1800

1. Received By
(Signature/Affiliation)

[Signature]

Date: 5/15/98
Time: 1000

2. Relinquished By
(Signature/Affiliation)

Date:
Time:

2. Received By
(Signature/Affiliation)

Date:
Time:

3. Relinquished By
(Signature/Affiliation)

Date:
Time:

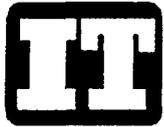
3. Received By
(Signature/Affiliation)

Date:
Time:

Comments:

Sample No	Sample Name	Sample Date	Sample Time	Container	Ctr Qty	Preservative	Requested Testing Program	File CID	Condition On Receipt
5767	PBOW-98-GW-1MKMW14-5767	14-MAY-98	12:00	1 L HDPE	2	HNO3, pH<2	TAL Metals by SW-846 6010A/7470 in water	N	
5767	PBOW-98-GW-1MKMW14-5767	14-MAY-98	12:00	1 L Amb. Glass	1	None except cool to 4 C	Nitroaromatics by SW-846 8330 in soil	N	
5767	PBOW-98-GW-1MKMW14-5767	14-MAY-98	12:00	40 ml GVIAL, SEP	3	HCl, pH<2	TCL Volatiles by SW-846 8260A	N	
5767	PBOW-98-GW-1MKMW14-5767	14-MAY-98	12:00	1 L Amb. Glass	2	None except cool to 4 C	TCL Semivolatiles by SW-846 8270B in soil	N	
5767	PBOW-98-GW-1MKMW14-5767	14-MAY-98	12:00	1 L Amb. Glass	2	None except cool to 4 C	PCBs by SW8081	N	
9011	PBOW-98-GW-1MKMW14-9011	14-MAY-98	10:00	40 ml GVIAL, SEP	3	HCl<pH 2	TCL Volatiles by SW-846 8260A	N	

003



**INTERNATIONAL
TECHNOLOGY
CORPORATION**

133611

**ANALYSIS REQUEST AND
CHAIN OF CUSTODY RECORD**

Reference Document No: PBGW-051398CURT

Page 1 of 1

Project Number: 773206

Samples Shipment Date: 13-MAY-98

Bill To: Accounts Receivable

Project Name: PLUMBROOK ORDNANCE WORK ab Destination: Curtis and Tomkins Lab

312 Directors Drive

Knoxville

TN 37923

Sample Coordinator: Duane Nielsen

Lab Contact: Carol Wortham (PM) or

Report To: Kim Napier ✓

312 Directors Drive

Knoxville

TN 37923

Turnaround Time:

Project Contact: Kim Napier

Carrier/Waybill No.: Fed Ex/800185153754

Special Instructions:

Possible Hazard Identification:

Non-hazard Flammable Skin Irritant Poison B Unknown

Sample Disposal:

Return to Client Disposal by Lab Archive (mos.)

1. Relinquished By *[Signature]*
(Signature/Affiliation)

Date: 5/13/98
Time: 1800

1. Received By *[Signature]*
(Signature/Affiliation)

Date: 5/14/98
Time:

2. Relinquished By
(Signature/Affiliation)

Date:
Time:

2. Received By
(Signature/Affiliation)

Date:
Time:

3. Relinquished By
(Signature/Affiliation)

Date:
Time:

3. Received By
(Signature/Affiliation)

Date:
Time:

Comments:

Sample No	Sample Name	Sample Date	Sample Time	Container	Ctr Qty	Preservative	Requested Testing Program	Fl	CID	Condition On Receipt
5497	PBOW-98-GW-AA1-GW-002-5497	13-MAY-98	09:05	1 L HDPE	2	HNO3, pH<2	TAL Metals by SW-846 6010A/7470 in water	N		
5497	PBOW-98-GW-AA1-GW-002-5497	13-MAY-98	09:05	1 L Amb. Glass	1	None except cool to 4 C	Nitroaromatics by SW-846 8330 in soil	N		
5497	PBOW-98-GW-AA1-GW-002-5497	13-MAY-98	09:05	40 ml GVIAL, SEP	3	HCl, pH<2	TCL Volatiles by SW-846 8260A	N		
5497	PBOW-98-GW-AA1-GW-002-5497	13-MAY-98	09:05	1 L Amb. Glass	2	None except cool to 4 C	TCL Semivolatiles by SW-846 8270B in soil	N		
5497	PBOW-98-GW-AA1-GW-002-5497	13-MAY-98	09:05	1 L Amb. Glass	2	None except cool to 4 C	PCBs by SW8081	N		
9009	PBOW-98-GW-AA1-GW-002-5497	13-MAY-98	10:00	40 ml GVIAL, SEP	3	HCl<pH 2	TCL Volatiles by SW-846 8260A	N		

00

Laboratory Numbers: 133611
Client: IT Corporation
Location: Plumbrook Ordnance Works
Project #: 773206

Received Date: 05/14/98

CASE NARRATIVE

This hardcopy data package contains sample and QC results for two water samples which were received from the site referenced above on May 14, 1998.

Volatiles: No analytical problems were encountered.

Semi-volatiles: Low surrogate recoveries were observed for 2-fluorophenol, phenol-d5, and 2,4,6-tribromophenol for 5497 (CT#133611-001). The sample was relogged as 5497 RE (CT#133611-003), re-extracted, and reanalyzed with similar surrogate recoveries. A high relative standard deviation (%RSD) was observed for bis(2-ethylhexyl)phthalate in the initial calibration which was analyzed on May 19, 1998 (uej). The compound met the minimum response criteria and was not detected in the sample or method blank. A high percent difference (%D) was observed for pyridine in the continuing calibration verification which was analyzed on May 28, 1998 (ues). The compound met the minimum response criteria and was not detected in the sample or method blank. No other analytical problems were encountered.

PCBs: A high percent difference (%D) was observed for Aroclor 1221 in the continuing calibration verification which was analyzed on May 20, 1998 (137A095). This should not affect the quality of the data as this Aroclor was not detected in the samples. No other analytical problems were encountered.

Metals: A high relative percent difference (%RPDs) was observed for thallium for the sample duplicate of 5497 (CT#133611-001). The spike recoveries for calcium, iron, magnesium, and manganese in the matrix spike of 5497 (CT#133611-001) are considered not meaningful (NM) as the sample concentrations are four times greater than the spiked levels. No other analytical problems were encountered.

Nitroaromatics and Nitramines: One sample was subcontracted to Quanterra Environmental Services for analysis.

Plumbrook

COOLER RECEIPT CHECKLIST

Login#: 133611 Date Received: 5/14 Number of Coolers: 1
Client: FT Project: 773206

A. Preliminary Examination Phase

Date Opened: 5/14 By (print): J. Williams (sign) J. Williams

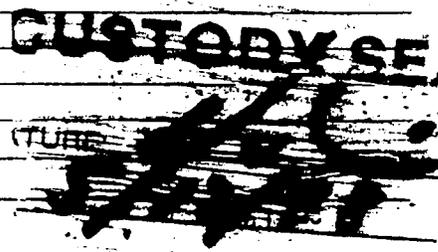
1. Did cooler come with a shipping slip (airbill, etc.)? YES NO
If YES, enter carrier name and airbill number: Fed ex 800185153754
2. Were custody seals on outside of cooler? YES NO
How many and where? 1 Front Seal date: 5/13 Seal name: _____
3. Were custody seals unbroken and intact at the date and time of arrival? YES NO
4. Were custody papers dry and intact when received? YES NO
5. Were custody papers filled out properly (ink, signed, etc.)? YES NO
6. Did you sign the custody papers in the appropriate place? YES NO
7. Was project identifiable from custody papers? YES NO
If YES, enter project name at the top of this form.
8. If required, was sufficient ice used? YES NO
Type of ice: Cube Temperature: 5.25°C

B. Login Phase

Date Logged In: 5/14 By (print): J. Williams (sign) J. Williams

1. Describe type of packing in cooler: Vermiculite
2. Did all bottles arrive unbroken? YES NO
3. Were labels in good condition and complete (ID, date, time, signature, etc.)? YES NO
4. Did bottle labels agree with custody papers? YES NO
5. Were appropriate containers used for the tests indicated? YES NO
6. Were correct preservatives added to samples? YES NO
7. Was sufficient amount of sample sent for tests indicated? YES NO
8. Were bubbles absent in VOA samples? If NO, list sample Ids below YES NO
9. Was the client contacted concerning this sample delivery? YES NO
If YES, give details below.
Who was called? _____ By whom? _____ Date: _____

Additional Comments:



Plumbrook



Curtis & Tompkins, Ltd.

COOLER RECEIPT CHECKLIST

Login#: 133643 Date Received: 5/15 Number of Coolers: 1
 Client: ITL Project: 773201 Plumbrook

A. Preliminary Examination Phase

Date Opened: 5/15 By (print): J. Williams (sign) J. Williams

1. Did cooler come with a shipping slip (airbill, etc.)?..... YES NO
 If YES, enter carrier name and airbill number: Fedex 800185154018
2. Were custody seals on outside of cooler?..... YES NO
 How many and where? (front) Seal date: 5/15 Seal name: _____
3. Were custody seals unbroken and intact at the date and time of arrival?..... YES NO
4. Were custody papers dry and intact when received?..... YES NO
5. Were custody papers filled out properly (ink, signed, etc.)?..... YES NO
6. Did you sign the custody papers in the appropriate place?..... YES NO
7. Was project identifiable from custody papers?..... YES NO
 If YES, enter project name at the top of this form.
8. If required, was sufficient ice used?..... YES NO
 Type of ice: Cube Temperature: 4.75°C

B. Login Phase

Date Logged In: 5/15 By (print): J. Williams (sign) J. Williams

1. Describe type of packing in cooler: Vermiculite
2. Did all bottles arrive unbroken?..... YES NO
3. Were labels in good condition and complete (ID, date, time, signature, etc.)?..... YES NO
4. Did bottle labels agree with custody papers?..... YES NO
5. Were appropriate containers used for the tests indicated?..... YES NO
6. Were correct preservatives added to samples?..... YES NO
7. Was sufficient amount of sample sent for tests indicated?..... YES NO
8. Were bubbles absent in VOA samples? If NO, list sample Ids below..... YES NO
9. Was the client contacted concerning this sample delivery?..... YES NO
 If YES, give details below.
 Who was called? _____ By whom? _____ Date: _____

Additional Comments:

ASTODY SE
 [Signature]
 5/19/08

Laboratory Numbers: 133643
Client: IT Corporation
Location: Plumbrook Ordnance Works
Project #: 773206

Received Date: 05/15/98

CASE NARRATIVE

This hardcopy data package contains sample and QC results for two water samples which were received from the site referenced above on May 15, 1998.

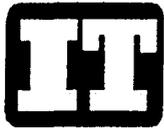
Volatiles: No analytical problems were encountered.

Semi-volatiles: A high relative standard deviation (%RSD) was observed for bis(2-ethylhexyl)phthalate in the initial calibration which was analyzed on May 19, 1998 (uej). The compound met the minimum response criteria and was not detected in the sample or method blank. No other analytical problems were encountered.

PCBs: A high percent difference (%D) was observed for Aroclor 1221 in the continuing calibration verification which was analyzed on May 27, 1998 (146A034). This should not affect the quality of the data as this Aroclor was not detected in the samples. No other analytical problems were encountered.

Metals: A high relative percent difference (%RPDs) was observed for thallium for the sample duplicate of 5497 (CT#133611-001). The spike recoveries for calcium, iron, magnesium, and manganese in the matrix spike of 5497 (CT#133611-001) are considered not meaningful (NM) as the sample concentrations are four times greater than the spiked levels. No other analytical problems were encountered.

Nitroaromatics and Nitramines: One sample was subcontracted to Quanterra Environmental Services for analysis.



**INTERNATIONAL
TECHNOLOGY
CORPORATION**

133643

**ANALYSIS REQUEST AND
CHAIN OF CUSTODY RECORD**

Reference Document No: PBGW-051498CURT
Page 1 of 1

Project Number: 773206

Samples Shipment Date: 14-MAY-98

Bill To: Accounts Receivable

Project Name: FLUMBROOK ORDNANCE WORK ab Destination: Curtis and Tomkins Lab

312 Directors Drive

Knoxville

TN 37923

Sample Coordinator: Duane Nielsen

Lab Contact: Carol Wortham (PM) or

Report To: Kim Napier

312 Directors Drive

Knoxville

TN 37923

Turnaround Time:

Project Contact: Kim Napier

Carrier/Waybill No.: Fed Ex/800185154018

Special Instructions:

Possible Hazard Identification:

Non-hazard Flammable Skin Irritant Poison B Unknown

Sample Disposal:

Return to Client Disposal by Lab Archive (mos.)

1. Relinquished By
(Signature/Affiliation)

Date: 5/14/98
Time: 1800

1. Received By
(Signature/Affiliation)

Date: 5/15/98
Time: 1000

2. Relinquished By
(Signature/Affiliation)

Date:
Time:

2. Received By
(Signature/Affiliation)

Date:
Time:

3. Relinquished By
(Signature/Affiliation)

Date:
Time:

3. Received By
(Signature/Affiliation)

Date:
Time:

Comments:

Sample No	Sample Name	Sample Date	Sample Time	Container	Ctr Qty	Preservative	Requested Testing Program	File	CID	Condition On Receipt
5767	PBOW-98-GW-11KMW14-5767	14-MAY-98	12:00	1 L HDPE	2	HNO3, pH<2	TAL Metals by SW-846 6010A/7470 in water	N		
5767	PBOW-98-GW-11KMW14-5767	14-MAY-98	12:00	1 L Amb. Glass	1	None except cool to 4 C	Nitroaromatics by SW-846 8330 in soil	N		
5767	PBOW-98-GW-11KMW14-5767	14-MAY-98	12:00	40 ml GVIAL, SEP	3	HCl, pH<2	TCL Volatiles by SW-846 8260A	N		
5767	PBOW-98-GW-11KMW14-5767	14-MAY-98	12:00	1 L Amb. Glass	2	None except cool to 4 C	TCL Semivolatiles by SW-846 8270B in soil	N		
5767	PBOW-98-GW-11KMW14-5767	14-MAY-98	12:00	1 L Amb. Glass	2	None except cool to 4 C	PCBs by SW8081	N		
9011	PBOW-98-GW-11KMW14-9011	14-MAY-98	10:00	40 ml GVIAL, SEP	3	HCl<pH 2	TCL Volatiles by SW-846 8260A	N		

003



**INTERNATIONAL
TECHNOLOGY
CORPORATION**

133611

**ANALYSIS REQUEST AND
CHAIN OF CUSTODY RECORD**

Reference Document No: PBGW-051398CURT

Page 1 of 1

Project Number: 773206

Samples Shipment Date: 13-MAY-98

Bill To: Accounts Receivable

Project Name: PLUMBROOK ORDNANCE WORK ab Destination: Curtis and Tomkins Lab

312 Directors Drive

Knoxville

TN 37923

Sample Coordinator: Duane Nielsen

Lab Contact: Carol Wortham (PM) or

Report To: Kim Napier ✓

312 Directors Drive

Knoxville

TN 37923

Turnaround Time:

Project Contact: Kim Napier

Carrier/Waybill No.: Fed Ex/800185153754

Special Instructions:

Possible Hazard Identification:

Non-hazard Flammable Skin Irritant Poison B Unknown

Sample Disposal:

Return to Client Disposal by Lab Archive (mos.)

1. Relinquished By
(Signature/Affiliation)

Date: 5/13/98
Time: 1800

1. Received By
(Signature/Affiliation)

Date: 5/14/98
Time:

2. Relinquished By
(Signature/Affiliation)

Date:
Time:

2. Received By
(Signature/Affiliation)

Date:
Time:

3. Relinquished By
(Signature/Affiliation)

Date:
Time:

3. Received By
(Signature/Affiliation)

Date:
Time:

Comments:

Sample No	Sample Name	Sample Date	Sample Time	Container	Ctr Qty	Preservative	Requested Testing Program	File CID	Condition On Receipt
5497	PBOW-98-GW-AA1-GW-002-5497	13-MAY-98	09:05	1 L HDPE	2	HNO3, pH<2	TAL Metals by SW-846 6010A/7470 in water	N	
5497	PBOW-98-GW-AA1-GW-002-5497	13-MAY-98	09:05	1 L Amb. Glass	1	None except cool to 4 C	Nitroaromatics by SW-846 8330 in soil	N	
5497	PBOW-98-GW-AA1-GW-002-5497	13-MAY-98	09:05	40 ml GVIAL,SEP	3	HCl, pH<2	TCL Volatiles by SW-846 8260A	N	
5497	PBOW-98-GW-AA1-GW-002-5497	13-MAY-98	09:05	1 L Amb. Glass	2	None except cool to 4 C	TCL Semivolatiles by SW-846 8270B in soil	N	
5497	PBOW-98-GW-AA1-GW-002-5497	13-MAY-98	09:05	1 L Amb. Glass	2	None except cool to 4 C	PCBs by SW8081	N	
9009	PBOW-98-GW-AA1-GW-002-9009	13-MAY-98	10:00	40 ml GVIAL,SEP	3	HCl-pH 2	TCL Volatiles by SW-846 8260A	N	

000

Plumbrook

COOLER RECEIPT CHECKLIST

Login#: 133611 Date Received: 5/14 Number of Coolers: 1
Client: FT Project: 773206

A. Preliminary Examination Phase

Date Opened: 5/14 By (print): Jacobs (sign) Jacobs

1. Did cooler come with a shipping slip (airbill, etc.)?..... YES NO
If YES, enter carrier name and airbill number: Fed ex 800185153754
2. Were custody seals on outside of cooler?..... YES NO
How many and where? 1 Front Seal date: 5/13 Seal name: _____
3. Were custody seals unbroken and intact at the date and time of arrival?..... YES NO
4. Were custody papers dry and intact when received?..... YES NO
5. Were custody papers filled out properly (ink, signed, etc.)?..... YES NO
6. Did you sign the custody papers in the appropriate place?..... YES NO
7. Was project identifiable from custody papers?..... YES NO
If YES, enter project name at the top of this form.
8. If required, was sufficient ice used?..... YES NO
Type of ice: Cube Temperature: 5.25°C

B. Login Phase

Date Logged In: 5/14 By (print): Jacobs (sign) Jacobs

1. Describe type of packing in cooler: Vermiculite
 2. Did all bottles arrive unbroken?..... YES NO
 3. Were labels in good condition and complete (ID, date, time, signature, etc.)?..... YES NO
 4. Did bottle labels agree with custody papers?..... YES NO
 5. Were appropriate containers used for the tests indicated?..... YES NO
 6. Were correct preservatives added to samples?..... YES NO
 7. Was sufficient amount of sample sent for tests indicated?..... YES NO
 8. Were bubbles absent in VOA samples? If NO, list sample Ids below..... YES NO
 9. Was the client contacted concerning this sample delivery?..... YES NO
- If YES, give details below.
Who was called? _____ By whom? _____ Date: _____

Additional Comments:

