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CHEMICAL QUALITY ASSURANCE REPORT FOR PLUM BROOK ORDNANCE WORKS GROUNDWATER INVESTIGATION SAMPLE DELIVERY GROUP PB010

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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 samples in this report are shown in Table 1. Samples analyzed by Quanterra (the primary laboratory) are identified as QC samples; those analyzed by Curtis & Tompkins are identified as QA samples. Table 2 identifies analytical parameters for each sample.

Table 1. Sample Delivery Group PB010 Samples in Chemical Quality Assurance Report

Sample Pair	Sample Type		Sample Collection	
	QC	QA	Date	Time
5761	X		11/16/97	10:00 A.M.
5762		X	11/16/97	10:00 A.M.

Table 2. Sample Analytical Parameters

Analytical Parameter	SW846 Method*	QC and QA Sample Set 5761 5762
Volatile Organic Compounds	8260A	X
Semivolatile Organic Compounds	8270B	X
Polychlorinated Biphenyls	8081	X
Dissolved Metals	6010A/ 7470A	X
Total Metals	6010A/ 7470A	X
Nitroaromatics and Nitramine	8330	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, at a temperature of 4°C.

2.1.1 Volatile Organic Analyses

A review of QC data for sample 5761 revealed the following.

- Surrogate spike recoveries for all method blanks, laboratory control samples, and sample 5761 were within recovery limits.
- Analyte recoveries and relative percent differences (RPDs) were within QC limits for all laboratory control samples.
- The method blank associated with this sample contained an estimated concentration of 0.44 ug/l methylene chloride, while sample 5761 contained an estimated concentration of 0.77 ug/l of this compound. The presence of methylene chloride in the sample may be attributed to laboratory contamination.

2.1.2 Semivolatile Organic Compounds

Review of QC data for semivolatile analysis of sample 5761 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.
- All LCS/LCSD recoveries (for both surrogates and analytes) and RPDs (for analytes) were within limits.

- One calibration standard, di-n-octylphthalate, was outside of control limits in a continuing calibration check. However, this compound was not detected in sample 5761, and data quality should not be impacted.

- The method blank associated with the sample was free of contamination.

2.1.3 Polychlorinated Biphenyls

- Surrogate spike recoveries for all method blanks, matrix spike / matrix spike duplicates (MS/MSD), and sample 5761 were within recovery limits.

- Analyte recoveries and relative percent differences (RPDs) were within QC limits for all MS/MSD and laboratory control samples.

- The method blank associated with this sample was free of contamination.

2.1.4 Metals

- All MS/MSD analyte recoveries and RPDs were within limits.

- Laboratory control sample recoveries were within recovery limits.

- The method / prep blank was free of contamination.

2.1.5 Nitraoaromatics and Nitramines

- Surrogate spike recoveries for all method blanks, matrix spike / matrix spike duplicates (MS/MSD), and sample 5761 were within recovery limits.

- Apparent matrix interferences led to elevated reporting limits for 3-nitrotoluene in sample 5761.

- The method blank associated with this sample was free of contamination.

2.2 QA LABORATORY

Sample 5762 was received intact by Curtis & Tompkins, the quality assurance laboratory for this effort. Chain-of-custody documentation was present and custody seals were intact. Sample temperature ranged between 4.5 and 5°C in multiple measurements.

2.2.1 Volatile Organic Analyses

- Surrogate spike recoveries for all method blanks, blank spike / blank spike duplicates (BS/BSD), and sample 5762 were within recovery limits.

- Analyte recoveries and relative percent differences (RPDs) were within control limits for all BS/BSD samples.

- The method blank associated with this sample contained 2.2 ug/l of methylene chloride, while sample 5762 contained a concentration of 7.4 ug/l of this compound. The presence of methylene chloride in sample 5762 may be attributed, at least in part, to laboratory contamination.

2.2.2 Semivolatile Organic Compounds

- Surrogate spike recoveries for all method blanks, blank spike / blank spike duplicates (BS/BSD), and sample 5762 were within recovery limits.

- All BS/BSD analyte recoveries and RPDs were within control limits.

- The method blank associated with this sample was free of contamination.

2.2.3 Polychlorinated Biphenyls

- Surrogate spike recoveries for all method blanks, blank spike / blank spike duplicates (BS/BSD), and sample 5762 were within recovery limits.

- Analyte recoveries and relative percent differences (RPDs) were within QC limits for all BS/BMSD samples.

- The method blank associated with this sample was free of contamination.

2.2.4 Metals

Samples 5612 and 5562 were analyzed for total metals and dissolved metals. The following QC data was generated with these analyses.

- All BS/BSD recoveries were within control limits, and all RPDs, with the exception of potassium, were within control limits.

- Sample spike recoveries were within control limits with the exception of calcium recovery. The low recovery for calcium in this sample spike was considered not meaningful by the laboratory because the sample concentration was greater than four times the spike concentration.

- Method / prep blank samples were free of contamination.

2.2.5 Nitraoaromatics and Nitramines

Sample 5762 was 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 laboratory control samples / laboratory control sample duplicates and sample 5762 were within recovery limits.
- Analyte recoveries and RPDs were within control limits for all laboratory control samples and laboratory control sample duplicates.
- The method blank associated with this sample was 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

Volatile organic results for samples 5761 and 5762 were in agreement for all parameters. Quanterra identified methylene chloride and carbon disulfide at estimated concentrations below the reporting limit; no other compounds were detected.

3.2 SEMIVOLATILE ORGANIC COMPOUNDS

Semivolatile organic results for sample set 5761 and 5762 were in agreement for all parameters. No semivolatile compounds were detected in either sample.

3.3 POLYCHLORINATED BIPHENYLS

Polychlorinated biphenyl results for sample 5761 and 5762 were in agreement. No PCBS were detected in either sample

3.4 TOTAL METALS

Total metals results for samples 5761 and 5762 were in agreement for all parameters with the exception of aluminum and zinc. Aluminum results (non-detect at 200 ug/l in sample 5761, 540 ug/l in sample 5762) were in disagreement; while zinc results (non-detect at 20 ug/l in sample 5761, 100 ug/l in sample 5762 were in major disagreement.

3.5 DISSOLVED METALS

Analytical results for samples 5611 and 5612 were in agreement for all parameters.

3.6 NITROAROMATICS AND NITRAMINES

Results for samples 5761 and 5762 were in agreement for all parameters.

Appendix 1

Data Comparison Tables

Volatile Organic Compounds

QC Sample No. 5761	QA Sample No. 5762
Date Sampled 11/16/97	Date Sampled 11/16/97
Date Received 11/18/97	Date Received 11/18/97
Date Extracted 11/24/97	Date Extracted 11/22/97
Date Analyzed 11/24/97	Date Analyzed 11/22/97
Method No. EPA SW846-8260A	Method No. EPA 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	0.77 J,B	ND
Acetone	ND	ND
Carbon disulfide	0.47 J	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	ND	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

Semivolatile Organic Compounds

QC Sample No. 5761	QA Sample No. 5762
Date Sampled 11/16/97	Date Sampled 11/16/97
Date Received 11/18/97	Date Received 11/18/97
Date Extracted 11/23/97	Date Extracted 11/21/97
Date Analyzed 12/02/97	Date Analyzed 11/25/97
Method No. EPA 8270B	Method No. EPA 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-Chloropropane)	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
Dimethyl phthalate	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
Diethyl phthalate	ND	ND
4-Chlorophynyl phenyl ether	ND	ND
Fluorene	ND	ND
4-Nitroaniline	ND	ND
4,6-Dinitro-2-methylphenol	ND	ND
N-Nitrosodiphenylamine	ND	ND
4-Bromophyenyl phenyl ether	ND	ND
Hexachlorobenzene	ND	ND
Pentachlorophenol	ND	ND
Phenanthrene	ND	ND
Anthracene	ND	ND
Carbazole	ND	ND
Di-n-butyl phthalate	ND	ND
Fluoranthene	ND	ND
Pyrene	ND	ND
Butyl benzyl phthalate	ND	ND
3,3'-Dichlorobenzidine	ND	ND
Benzo (a) anthracene	ND	ND
Chrysene	ND	ND
bis (2-Ethylhexyl) phthalate	ND	ND
Di-n-octyl phthalate	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 (ghi) perylene	ND	ND

Polychlorinated Biphenyls

QC Sample No. 5761	QA Sample No. 5762
Date Sampled 11/16/97	Date Sampled 11/16/97
Date Received 11/18/97	Date Received 11/18/97
Date Extracted 11/19/97	Date Extracted 11/21/97
Date Analyzed 12/05/97	Date Analyzed 11/25/97
Method No. PCB	Method No. PCB
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. 5761	QA Sample No. 5762
Date Sampled 11/16/97	Date Sampled 11/16/97
Date Received 11/18/97	Date Received 11/16/97
Date Extracted 12/08/97	Date Extracted 11/18/97
Date Analyzed 12/08/97	Date Analyzed 12/22/97
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
Mercury	ND	ND
Aluminum	310	300
Arsenic	ND	ND
Lead	ND	ND
Antimony	ND	ND
Barium	ND	140
Selenium	ND	8.5
Beryllium	ND	ND
Thallium	ND	ND
Cadmium	ND	ND
Calcium	225000	16000
Chromium	ND	ND
Cobalt	ND	ND
Copper	ND	ND
Iron	24900	19000
Magnesium	34400	28000
Manganese	475	380
Nickel	ND	ND
Potassium	ND	800
Silver	ND	ND
Sodium	7920	6600
Vanadium	ND	ND
Zinc	ND	ND

Total Metals

QC Sample No. 5761	QA Sample No. 5762
Date Sampled 11/16/97	Date Sampled 11/16/97
Date Received 11/18/97	Date Received 11/18/97
Date Extracted 12/08/97	Date Extracted 12/01/97
Date Analyzed 12/08/97	Date Analyzed 12/01/97
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	540
Arsenic	ND	ND
Lead	ND	ND
Antimony	ND	ND
Barium	ND	120
Selenium	ND	ND
Beryllium	ND	ND
Thallium	ND	ND
Cadmium	ND	ND
Calcium	181000	150000
Chromium	ND	ND
Cobalt	ND	ND
Copper	ND	ND
Iron	20300	18000
Magnesium	27600	26000
Manganese	379	350
Nickel	ND	ND
Potassium	ND	710
Silver	ND	ND
Sodium	6240	5900
Vanadium	ND	ND
Zinc	ND	100

Nitroaromatics and Nitramines

QC Sample No. 5761	QA Sample No. 5762
Date Sampled 11/16/97	Date Sampled 11/16/97
Date Received 11/18/97	Date Received 11/21/97
Date Extracted 11/20/97	Date Extracted 11/25/97
Date Analyzed 11/24/97	Date Analyzed 12/15/97
Method No. SW846-8330	Method No. SW846-8330
Matrix: Water	Units: µg/L

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

Appendix 2

Analytical Results and Chain-of-Custody Documentation

IT CORPORATION - KNOXVILLE

Client Sample ID: 5761

GC/MS Volatiles

Lot-Sample #...: H7K180152-002 **Work Order #...:** CE3NX101 **Matrix.....:** WATER
Date Sampled...: 11/16/97 **Date Received..:** 11/18/97
Prep Date.....: 11/24/97 **Analysis Date..:** 11/24/97
Prep Batch #...: 7328152
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Chloromethane	ND	2.0	ug/L	SW846 8260A
Bromomethane	ND	2.0	ug/L	SW846 8260A
Vinyl chloride	ND	2.0	ug/L	SW846 8260A
Chloroethane	ND	2.0	ug/L	SW846 8260A
Methylene chloride	**0.77 J,B**	**1.0**	**ug/L**	**SW846 8260A**
Acetone	ND	10	ug/L	SW846 8260A
Carbon disulfide	**0.47 J**	**1.0**	**ug/L**	**SW846 8260A**
1,1-Dichloroethene	ND	1.0	ug/L	SW846 8260A
1,1-Dichloroethane	ND	1.0	ug/L	SW846 8260A
1,2-Dichloroethene (total)	ND	1.0	ug/L	SW846 8260A
Chloroform	ND	1.0	ug/L	SW846 8260A
1,2-Dichloroethane	ND	1.0	ug/L	SW846 8260A
2-Butanone	ND	5.0	ug/L	SW846 8260A
1,1,1-Trichloroethane	ND	1.0	ug/L	SW846 8260A
Carbon tetrachloride	ND	1.0	ug/L	SW846 8260A
Bromodichloromethane	ND	1.0	ug/L	SW846 8260A
1,2-Dichloropropane	ND	1.0	ug/L	SW846 8260A
cis-1,3-Dichloropropene	ND	1.0	ug/L	SW846 8260A
Trichloroethene	ND	1.0	ug/L	SW846 8260A
Dibromochloromethane	ND	1.0	ug/L	SW846 8260A
1,1,2-Trichloroethane	ND	1.0	ug/L	SW846 8260A
Benzene	ND	1.0	ug/L	SW846 8260A
trans-1,3-Dichloropropene	ND	1.0	ug/L	SW846 8260A
Bromoform	ND	1.0	ug/L	SW846 8260A
4-Methyl-2-pentanone	ND	5.0	ug/L	SW846 8260A
2-Hexanone	ND	5.0	ug/L	SW846 8260A
Tetrachloroethene	ND	1.0	ug/L	SW846 8260A
1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	SW846 8260A
Toluene	ND	1.0	ug/L	SW846 8260A
Chlorobenzene	ND	1.0	ug/L	SW846 8260A
Ethylbenzene	ND	1.0	ug/L	SW846 8260A
Styrene	ND	1.0	ug/L	SW846 8260A
Xylenes (total)	ND	1.0	ug/L	SW846 8260A

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1,2-Dichloroethane-d4	97	(67 - 128)
Toluene-d8	96	(71 - 119)
4-Bromofluorobenzene	98	(76 - 111)

(Continued on next page)

IT CORPORATION - KNOXVILLE

Client Sample ID: 5761

GC/MS Volatiles

Lot-Sample #...: H7K180152-002 Work Order #...: CE3NX101 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: 5761

GC/MS Semivolatiles

Lot-Sample #...: H7K180152-002 Work Order #...: CE3NX102 Matrix.....: WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Diethyl phthalate	ND	10	ug/L	SW846 8270B
4-Chlorophenyl phenyl ether	ND	10	ug/L	SW846 8270B
Fluorene	ND	10	ug/L	SW846 8270B
4-Nitroaniline	ND	50	ug/L	SW846 8270B
4,6-Dinitro-2-methylphenol	ND	50	ug/L	SW846 8270B
N-Nitrosodiphenylamine	ND	10	ug/L	SW846 8270B
4-Bromophenyl phenyl ether	ND	10	ug/L	SW846 8270B
Hexachlorobenzene	ND	10	ug/L	SW846 8270B
Pentachlorophenol	ND	50	ug/L	SW846 8270B
Phenanthrene	ND	10	ug/L	SW846 8270B
Anthracene	ND	10	ug/L	SW846 8270B
Carbazole	ND	10	ug/L	SW846 8270B
Di-n-butyl phthalate	ND	10	ug/L	SW846 8270B
Fluoranthene	ND	10	ug/L	SW846 8270B
Pyrene	ND	10	ug/L	SW846 8270B
Butyl benzyl phthalate	ND	10	ug/L	SW846 8270B
3,3'-Dichlorobenzidine	ND	50	ug/L	SW846 8270B
Benzo(a)anthracene	ND	10	ug/L	SW846 8270B
Chrysene	ND	10	ug/L	SW846 8270B
bis(2-Ethylhexyl) phthalate	ND	10	ug/L	SW846 8270B
Di-n-octyl phthalate	ND	10	ug/L	SW846 8270B
Benzo(b)fluoranthene	ND	10	ug/L	SW846 8270B
Benzo(k)fluoranthene	ND	10	ug/L	SW846 8270B
Benzo(a)pyrene	ND	10	ug/L	SW846 8270B
Indeno(1,2,3-cd)pyrene	ND	10	ug/L	SW846 8270B
Dibenz(a,h)anthracene	ND	10	ug/L	SW846 8270B
Benzo(ghi)perylene	ND	10	ug/L	SW846 8270B

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
2-Fluorophenol	86	(11 - 121)
Phenol-d5	87	(19 - 125)
Nitrobenzene-d5	90	(49 - 124)
2-Fluorobiphenyl	82	(46 - 120)
2,4,6-Tribromophenol	77	(36 - 144)
Terphenyl-d14	80	(22 - 152)

IT CORPORATION - KNOXVILLE

Client Sample ID: 5761

GC Semivolatiles

Lot-Sample #...: H7K180152-002 **Work Order #...:** CE3NX103 **Matrix.....:** WATER
Date Sampled...: 11/16/97 **Date Received..:** 11/18/97
Prep Date.....: 11/19/97 **Analysis Date..:** 12/05/97
Prep Batch #...: 7323170
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Aroclor 1016	ND	1.0	ug/L	SW846 8081
Aroclor 1221	ND	1.0	ug/L	SW846 8081
Aroclor 1232	ND	1.0	ug/L	SW846 8081
Aroclor 1242	ND	1.0	ug/L	SW846 8081
Aroclor 1248	ND	1.0	ug/L	SW846 8081
Aroclor 1254	ND	1.0	ug/L	SW846 8081
Aroclor 1260	ND	1.0	ug/L	SW846 8081

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Tetrachloro-m-xylene	72	(30 - 133)
Decachlorobiphenyl	43	(30 - 139)

IT CORPORATION - KNOXVILLE

Client Sample ID: 5761

TOTAL Metals

Lot-Sample #...: H7K180152-002 **Matrix.....:** WATER
Date Sampled...: 11/16/97 **Date Received..:** 11/18/97

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 7342104						
Mercury	ND	0.20	ug/L	SW846 7470A	12/08-12/09/97	CE3NX10U
		Dilution Factor: 1				
Prep Batch #...: 7342109						
Aluminum	ND	200	ug/L	SW846 6010A	12/08/97	CE3NX104
		Dilution Factor: 1				
Arsenic	ND	10.0	ug/L	SW846 6010A	12/08-12/09/97	CE3NX10F
		Dilution Factor: 1				
Lead	ND	3.0	ug/L	SW846 6010A	12/08-12/09/97	CE3NX10Q
		Dilution Factor: 1				
Antimony	ND	60.0	ug/L	SW846 6010A	12/08/97	CE3NX105
		Dilution Factor: 1				
Barium	ND	200	ug/L	SW846 6010A	12/08/97	CE3NX106
		Dilution Factor: 1				
Selenium	ND	5.0	ug/L	SW846 6010A	12/08-12/09/97	CE3NX10R
		Dilution Factor: 1				
Beryllium	ND	5.0	ug/L	SW846 6010A	12/08/97	CE3NX107
		Dilution Factor: 1				
Thallium	ND	10.0	ug/L	SW846 6010A	12/08-12/09/97	CE3NX10T
		Dilution Factor: 1				
Cadmium	ND	5.0	ug/L	SW846 6010A	12/08/97	CE3NX108
		Dilution Factor: 1				
Calcium	**181000**	**5000**	**ug/L**	**SW846 6010A**	**12/08/97**	**CE3NX109**
		Dilution Factor: 1				
Chromium	ND	10.0	ug/L	SW846 6010A	12/08/97	CE3NX10A
		Dilution Factor: 1				
Cobalt	ND	50.0	ug/L	SW846 6010A	12/08/97	CE3NX10C
		Dilution Factor: 1				
Copper	ND	25.0	ug/L	SW846 6010A	12/08/97	CE3NX10D
		Dilution Factor: 1				

(Continued on next page)

IT CORPORATION - KNOXVILLE

Client Sample ID: 5761

TOTAL Metals

Lot-Sample #...: H7K180152-002 Matrix.....: WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Iron	**20300**	**100**	**ug/L**	**SW846 6010A**	**12/08/97**	**CE3NX10I**
		Dilution Factor: 1				
Magnesium	**27600**	**5000**	**ug/L**	**SW846 6010A**	**12/08/97**	**CE3NX10I**
		Dilution Factor: 1				
Manganese	**397**	**15.0**	**ug/L**	**SW846 6010A**	**12/08/97**	**CE3NX10(**
		Dilution Factor: 1				
Nickel	ND	40.0	ug/L	SW846 6010A	12/08/97	CE3NX10I
		Dilution Factor: 1				
Potassium	ND	5000	ug/L	SW846 6010A	12/08/97	CE3NX10(
		Dilution Factor: 1				
Silver	ND	10.0	ug/L	SW846 6010A	12/08/97	CE3NX10I
		Dilution Factor: 1				
Sodium	**6240**	**5000**	**ug/L**	**SW846 6010A**	**12/08/97**	**CE3NX10I**
		Dilution Factor: 1				
Vanadium	ND	50.0	ug/L	SW846 6010A	12/08/97	CE3NX10N
		Dilution Factor: 1				
Zinc	ND	20.0	ug/L	SW846 6010A	12/08/97	CE3NX10N
		Dilution Factor: 1				

IT CORPORATION - KNOXVILLE

Client Sample ID: 5761F

DISSOLVED Metals

Lot-Sample #...: H7K180152-006 **Matrix.....:** WATER
Date Sampled...: 11/16/97 **Date Received..:** 11/18/97

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 7342105						
Mercury	ND	0.20	ug/L	SW846 7470A	12/08-12/09/97	CE3P410Q
		Dilution Factor: 1				
Prep Batch #...: 7342110						
Aluminum	**310**	**200**	**ug/L**	**SW846 6010A**	**12/08/97**	**CE3P4101**
		Dilution Factor: 1				
Arsenic	ND	10.0	ug/L	SW846 6010A	12/08-12/09/97	CE3P410L
		Dilution Factor: 1				
Lead	ND	3.0	ug/L	SW846 6010A	12/08-12/09/97	CE3P410M
		Dilution Factor: 1				
Antimony	ND	60.0	ug/L	SW846 6010A	12/08/97	CE3P4102
		Dilution Factor: 1				
Barium	ND	200	ug/L	SW846 6010A	12/08/97	CE3P4103
		Dilution Factor: 1				
Selenium	ND	5.0	ug/L	SW846 6010A	12/08-12/09/97	CE3P410N
		Dilution Factor: 1				
Beryllium	ND	5.0	ug/L	SW846 6010A	12/08/97	CE3P4104
		Dilution Factor: 1				
Thallium	ND	10.0	ug/L	SW846 6010A	12/08-12/09/97	CE3P410P
		Dilution Factor: 1				
Cadmium	ND	5.0	ug/L	SW846 6010A	12/08/97	CE3P4105
		Dilution Factor: 1				
Calcium	**225000**	**5000**	**ug/L**	**SW846 6010A**	**12/08/97**	**CE3P4106**
		Dilution Factor: 1				
Chromium	ND	10.0	ug/L	SW846 6010A	12/08/97	CE3P4107
		Dilution Factor: 1				
Cobalt	ND	50.0	ug/L	SW846 6010A	12/08/97	CE3P4108
		Dilution Factor: 1				
Copper	ND	25.0	ug/L	SW846 6010A	12/08/97	CE3P4109
		Dilution Factor: 1				

(Continued on next page)

IT CORPORATION - KNOXVILLE

Client Sample ID: 5761F

DISSOLVED Metals

Lot-Sample #...: H7K180152-006 Matrix.....: WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Iron	**24900**	**100**	**ug/L**	**SW846 6010A**	**12/08/97**	**CE3P410A**
		Dilution Factor: 1				
Magnesium	**34400**	**5000**	**ug/L**	**SW846 6010A**	**12/08/97**	**CE3P410C**
		Dilution Factor: 1				
Manganese	**475**	**15.0**	**ug/L**	**SW846 6010A**	**12/08/97**	**CE3P410D**
		Dilution Factor: 1				
Nickel	ND	40.0	ug/L	SW846 6010A	12/08/97	CE3P410E
		Dilution Factor: 1				
Potassium	ND	5000	ug/L	SW846 6010A	12/08/97	CE3P410F
		Dilution Factor: 1				
Silver	ND	10.0	ug/L	SW846 6010A	12/08/97	CE3P410G
		Dilution Factor: 1				
Sodium	**7920**	**5000**	**ug/L**	**SW846 6010A**	**12/08/97**	**CE3P410B**
		Dilution Factor: 1				
Vanadium	ND	50.0	ug/L	SW846 6010A	12/08/97	CE3P410J
		Dilution Factor: 1				
Zinc	ND	20.0	ug/L	SW846 6010A	12/08/97	CE3P410K
		Dilution Factor: 1				

IT CORPORATION - KNOXVILLE

Client Sample ID: 5761

HPLC

Lot-Sample #...: H7K180152-002 **Work Order #...:** CE3NX10V **Matrix.....:** WATER
Date Sampled...: 11/16/97 **Date Received..:** 11/18/97
Prep Date.....: 11/20/97 **Analysis Date..:** 11/24/97
Prep Batch #...: 7324174
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
4-Amino-2,6-dinitrotoluene	ND	0.20	ug/L	SW846 8330
1,3-Dinitrobenzene	ND	0.20	ug/L	SW846 8330
2,4-Dinitrotoluene	ND	0.20	ug/L	SW846 8330
2,6-Dinitrotoluene	ND	0.20	ug/L	SW846 8330
HMX	ND	0.50	ug/L	SW846 8330
Nitrobenzene	ND	0.20	ug/L	SW846 8330
2-Nitrotoluene	ND	0.20	ug/L	SW846 8330
3-Nitrotoluene	ND G	0.66	ug/L	SW846 8330
RDX	ND	0.50	ug/L	SW846 8330
Tetryl	ND	0.20	ug/L	SW846 8330
1,3,5-Trinitrobenzene	ND	0.20	ug/L	SW846 8330
2,4,6-Trinitrotoluene	ND	0.20	ug/L	SW846 8330

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1-Chloro-3-nitrobenzene	103	(50 - 150)

NOTE(S):

G Elevated reporting limit. The reporting limit is elevated due to matrix interference.

Volatile Organics by GC/MS

Client: IT Corporation
Project#: 771481
Location: Plumbrook Ordnance Works

Analysis Method: EPA 8260
Prep Method: EPA 5030

Field ID: 5762
Lab ID: 131460-001
Matrix: Water
Batch#: 37705
Units: ug/L
Diln Fac: 1

Sampled: 11/16/97
Received: 11/18/97
Extracted: 11/22/97
Analyzed: 11/22/97

Analyte	Result	Reporting Limit
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl Chloride	ND	10
Chloroethane	ND	10
Methylene Chloride	ND	5.0
Acetone	ND	20
Carbon Disulfide	ND	5.0
1,1-Dichloroethene	ND	5.0
1,1-Dichloroethane	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
cis-1,2-Dichloroethene	ND	5.0
Chloroform	ND	5.0
1,2-Dichloroethane	ND	5.0
2-Butanone	ND	20
1,1,1-Trichloroethane	ND	5.0
Carbon Tetrachloride	ND	5.0
Bromodichloromethane	ND	5.0
1,2-Dichloropropane	ND	5.0
cis-1,3-Dichloropropene	ND	5.0
Trichloroethene	ND	5.0
Dibromochloromethane	ND	5.0
1,1,2-Trichloroethane	ND	5.0
Benzene	ND	5.0
trans-1,3-Dichloropropene	ND	5.0
Bromoform	ND	5.0
2-Hexanone	ND	20
4-Methyl-2-Pentanone	ND	20
1,1,2,2-Tetrachloroethane	ND	5.0
Tetrachloroethene	ND	5.0
Toluene	ND	5.0
Chlorobenzene	ND	5.0
Ethylbenzene	ND	5.0
Styrene	ND	5.0
m,p-Xylenes	ND	5.0
o-Xylene	ND	5.0

Surrogate	%Recovery	Recovery Limits
1,2-Dichloroethane-d4	114	87-121
Toluene-d8	102	92-107
Bromofluorobenzene	103	80-121
Dibromofluoromethane	105	88-118

Semivolatile Organics by GC/MS

Client: IT Corporation
Project#: 771481
Location: Plumbrook Ordnance Works

Analysis Method: EPA 8270B
Prep Method: EPA 3520

Field ID: 5762
Lab ID: 131460-001
Matrix: Water
Batch#: 37715
Units: ug/L
Diln Fac: 1

Sampled: 11/16/97
Received: 11/18/97
Extracted: 11/21/97
Analyzed: 11/25/97

Analyte	Result	Reporting Limit
Phenol	ND	9.6
2-Chlorophenol	ND	9.6
2-Methylphenol	ND	9.6
3,4-Methylphenol	ND	9.6
2-Nitrophenol	ND	48
2,4-Dimethylphenol	ND	9.6
2,4-Dichlorophenol	ND	9.6
4-Chloro-3-methylphenol	ND	9.6
2,4,6-Trichlorophenol	ND	9.6
2,4,5-Trichlorophenol	ND	9.6
2,4-Dinitrophenol	ND	48
4-Nitrophenol	ND	48
4,6-Dinitro-2-methylphenol	ND	48
Pentachlorophenol	ND	48
bis(2-Chloroethyl)ether	ND	9.6
1,3-Dichlorobenzene	ND	9.6
1,4-Dichlorobenzene	ND	9.6
1,2-Dichlorobenzene	ND	9.6
bis(2-Chloroisopropyl) ether	ND	9.6
N-Nitroso-di-n-propylamine	ND	9.6
Hexachloroethane	ND	9.6
Nitrobenzene	ND	9.6
Isophorone	ND	9.6
bis(2-Chloroethoxy)methane	ND	9.6
1,2,4-Trichlorobenzene	ND	9.6
Naphthalene	ND	9.6
4-Chloroaniline	ND	9.6
Hexachlorobutadiene	ND	9.6
2-Methylnaphthalene	ND	9.6
Hexachlorocyclopentadiene	ND	48
2-Chloronaphthalene	ND	9.6
2-Nitroaniline	ND	48
Dimethylphthalate	ND	9.6
Acenaphthylene	ND	9.6
2,6-Dinitrotoluene	ND	9.6
3-Nitroaniline	ND	48
Acenaphthene	ND	9.6
Dibenzofuran	ND	9.6

Semivolatile Organics by GC/MS

Field ID:	5762	Sampled:	11/16/97
Lab ID:	131460-001	Received:	11/18/97
Matrix:	Water	Extracted:	11/21/97
Batch#:	37715	Analyzed:	11/25/97
Units:	ug/L		
Diln Fac:	1		

Analyte	Result	Reporting Limit
2,4-Dinitrotoluene	ND	9.6
Diethylphthalate	ND	9.6
4-Chlorophenyl-phenylether	ND	9.6
Fluorene	ND	9.6
4-Nitroaniline	ND	48
N-Nitrosodiphenylamine	ND	9.6
4-Bromophenyl-phenylether	ND	9.6
Hexachlorobenzene	ND	9.6
Phenanthrene	ND	9.6
Anthracene	ND	9.6
Di-n-butylphthalate	ND	9.6
Fluoranthene	ND	9.6
Carbazole	ND	9.6
Pyrene	ND	9.6
Butylbenzylphthalate	ND	9.6
3,3'-Dichlorobenzidine	ND	48
Benzo(a)anthracene	ND	9.6
Chrysene	ND	9.6
bis(2-Ethylhexyl)phthalate	ND	9.6
Di-n-octylphthalate	ND	9.6
Benzo(b,k)fluoranthene	ND	9.6
Benzo(a)pyrene	ND	9.6
Indeno(1,2,3-cd)pyrene	ND	9.6
Dibenz(a,h)anthracene	ND	9.6
Benzo(g,h,i)perylene	ND	9.6

Surrogate	%Recovery	Recovery Limits
2-Fluorophenol	71	21-110
Phenol-d5	76	10-110
2,4,6-Tribromophenol	81	10-123
Nitrobenzene-d5	83	35-114
2-Fluorobiphenyl	86	43-116
Terphenyl-d14	89	33-141

PCBs

Client:	IT Corporation	Analysis Method:	PCB
Project#:	771481	Prep Method:	EPA 3520
Location:	Plumbrook Ordnance Works	Cleanup Method:	EPA acid

Field ID:	5762	Sampled:	11/16/97
Lab ID:	131460-001	Received:	11/18/97
Matrix:	Water	Extracted:	11/21/97
Batch#:	37716	Analyzed:	11/25/97
Units:	ug/L		
Diln Fac:	1		

Analyte	Result	Reporting Limit
Aroclor-1016	ND	0.95
Aroclor-1221	ND	0.95
Aroclor-1232	ND	0.95
Aroclor-1242	ND	0.95
Aroclor-1248	ND	0.95
Aroclor-1254	ND	0.95
Aroclor-1260	ND	0.95

Surrogate	%Recovery	Recovery Limits
TCMX	78	60-150
Decachlorobiphenyl	38	30-130

Curtis & Tompkins, Ltd.

SAMPLE ID: 5762
LAB ID: 131460-001
CLIENT: IT Corporation
PROJECT ID: 771481
LOCATION: Plumbrook Ordnance Works
MATRIX: Filtrate

DATE SAMPLED: 11/16/97
DATE RECEIVED: 11/18/97
DATE REPORTED: 12/22/97

EPA CLP TARGET ANALYTE LIST

Compound	Result (ug/L)	Reporting Limit (ug/L)	IDF	QC Batch	Method	Analysis Date
Aluminum	300	100	1	37796	EPA 6010A	12/01/97
Antimony	ND	60	1	37796	EPA 6010A	11/26/97
Arsenic	ND	5.0	1	37796	EPA 6010A	12/01/97
Barium	140	10	1	37796	EPA 6010A	11/26/97
Beryllium	ND	2.0	1	37796	EPA 6010A	11/26/97
Cadmium	ND	5.0	1	37796	EPA 6010A	11/26/97
Calcium	160000	500	1	37796	EPA 6010A	11/26/97
Chromium (total)	ND	10	1	37796	EPA 6010A	11/26/97
Cobalt	ND	20	1	37796	EPA 6010A	11/26/97
Copper	ND	10	1	37796	EPA 6010A	11/26/97
Iron	19000	100	1	37796	EPA 6010A	12/01/97
Lead	ND	3.0	1	37796	EPA 6010A	11/26/97
Magnesium	28000	500	1	37796	EPA 6010A	11/26/97
Manganese	380	10	1	37796	EPA 6010A	11/26/97
Mercury	ND	0.20	1	37706	EPA 7470	11/21/97
Molybdenum	ND	20	1	37796	EPA 6010A	11/26/97
Nickel	ND	20	1	37796	EPA 6010A	11/26/97
Potassium	800	500	1	37796	EPA 6010A	12/01/97
Selenium	8.5	5.0	1	37796	EPA 6010A	11/26/97
Silver	ND	5.0	1	37796	EPA 6010A	12/01/97
Sodium	6600	500	1	37796	EPA 6010A	12/01/97
Thallium	ND	5.0	1	37796	EPA 6010A	11/26/97
Vanadium	ND	10	1	37796	EPA 6010A	11/26/97
Zinc	ND	20	1	37796	EPA 6010A	11/26/97

ND = Not detected at or above reporting limit

Curtis & Tompkins, Ltd.

SAMPLE ID: 5762
LAB ID: 131460-001
CLIENT: IT Corporation
PROJECT ID: 771481
LOCATION: Plumbrook Ordnance Works
MATRIX: Water

DATE SAMPLED: 11/16/97
DATE RECEIVED: 11/18/97
DATE REPORTED: 12/22/97

EPA CLP TARGET ANALYTE LIST

Compound	Result (ug/L)	Reporting Limit (ug/L)	IDF	QC Batch	Method	Analysis Date
Aluminum	540	100	1	37797	EPA 6010A	12/01/97
Antimony	ND	60	1	37797	EPA 6010A	12/01/97
Arsenic	ND	5.0	1	37797	EPA 6010A	12/01/97
Barium	120	10	1	37797	EPA 6010A	12/01/97
Beryllium	ND	2.0	1	37797	EPA 6010A	12/01/97
Cadmium	ND	5.0	1	37797	EPA 6010A	12/01/97
Calcium	150000	500	1	37797	EPA 6010A	12/01/97
Chromium (total)	ND	10	1	37797	EPA 6010A	12/01/97
Cobalt	ND	20	1	37797	EPA 6010A	12/01/97
Copper	ND	10	1	37797	EPA 6010A	12/01/97
Iron	18000	100	1	37797	EPA 6010A	12/01/97
Lead	ND	3.0	1	37797	EPA 6010A	12/01/97
Magnesium	26000	500	1	37797	EPA 6010A	12/01/97
Manganese	350	10	1	37797	EPA 6010A	12/01/97
Mercury	ND	0.20	1	37704	EPA 7470	11/21/97
Molybdenum	ND	20	1	37797	EPA 6010A	12/01/97
Nickel	ND	20	1	37797	EPA 6010A	12/01/97
Potassium	710	500	1	37797	EPA 6010A	12/01/97
Selenium	ND	5.0	1	37797	EPA 6010A	12/01/97
Silver	ND	5.0	1	37797	EPA 6010A	12/01/97
Sodium	5900	500	1	37797	EPA 6010A	12/01/97
Thallium	ND	5.0	1	37797	EPA 6010A	12/01/97
Vanadium	ND	10	1	37797	EPA 6010A	12/01/97
Zinc	100	20	1	37797	EPA 6010A	12/01/97

ND = Not detected at or above reporting limit

Quanterra Environmental Services

Nitroaromatics and Nitramines by HPLC
Method 8330

Client Name: Curtis & Tompkins, Ltd.
Client ID: 5762
LAB ID: 096224-0001-SA
Matrix: AQUEOUS — Sampled: 16 NOV 97 — Received: 21 NOV 97
Authorized: 21 NOV 97 — Prepared: 25 NOV 97 — Analyzed: 15 DEC 97

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	84 %	65 - 135

ND = Not Detected

Reported By: Jon Edmondson — Approved By: Kris Rogers

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

Quanterra
Environmental Services

SAMPLE SUMMARY

PB010 : H7K180152

WO #	SAMPLE#	CLIENT SAMPLE ID	DATE	TIME
CE3NW	001	5770	11/16/97	11:0
CE3NX	002	5761	11/16/97	10:0
CE3P0	003	5760	11/16/97	10:0
CE3P1	004	5430	11/16/97	15:3
CE3P3	005	5770F	11/16/97	11:0
CE3P4	006	5761F	11/16/97	10:0
CE3P5	007	5760F	11/16/97	10:0
CE3P6	008	5430F	11/16/97	15:3

NOTE(S) :

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

NTERNATIONAL
ECHNOLOGY
ORPORATION

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

H7K180152
Reference Document No: 10018
Page 1 of 3

Project Number: 771481
Samples Shipment Date: 17-NOV-97
Project Name: PLUMBROOK ORDNANCE WORKS
Lab Destination: Quanterra - Knoxville
ample Coordinator: ~~Dave Parsell~~ Brad Bundt
Lab Contact: John Reynolds
Turnaround Time:
Project Contact: Kim Arrant/Kim Napier
Carrier/Waybill No.: Fed Ex/801624850579

Bill To: Accounts Receivable
312 Directors Drive
Knoxville TN 37923

Report To: Kim Arrant
312 Directors Drive
Knoxville TN 37923

pecial Instructions:

ossible Hazard Indentification:
on-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☑

Sample Disposal:
Return to Client ☐ Disposal by Lab ☑ Archive (mos.)

. Relinquished By (Signature/Affiliation) Brad Bundt — Date: 11-17-97 Time: 1630
. Relinquished By (Signature/Affiliation) — Date: Time:
. Relinquished By (Signature/Affiliation) — Date: Time:

1. Received By (Signature/Affiliation) Diane Yange — Date: 11/18/97 Time: 9:00
2. Received By (Signature/Affiliation) — Date: Time:
3. Received By (Signature/Affiliation) — Date: Time:

omments:
TAL METALS = 1 L = FILTERED
1 L = UNFILTERED

ALKALINITY, TDS & TSS = COMBINED IN 1 x 1 L HDPE!

ample No	Sample Name	Sample Date	Sample Time	Container	Ctr Qty	Preservative	Requested Testing Program	Fil	CID	Condition On Receipt
51	PBOW97-IT-AA1-BEDGW-001-GW-5451-FD	16-NOV-97	16:30	1000 ml HDPE	2	HNO3, pH<2	TAL Metals by SW-846 6010A/7470 in water	N		pH<2
51	PBOW97-IT-AA1-BEDGW-001-GW-5451-FD	16-NOV-97	16:30	1000 ml A GLASS	2	NONE	PCBs by SW8081 in water	N		
51	PBOW97-IT-AA1-BEDGW-001-GW-5451-FD	16-NOV-97	16:30	1000 ml A GLASS	2	NONE	TCL Semivolatiles by SW-846 8270B in wate	N		RES CL2 NO
51	PBOW97-IT-AA1-BEDGW-001-GW-5451-FD	16-NOV-97	16:30	40 ml GVIAL,SEP	3	HCl, pH<2	TCL Volatiles by SW-846 8260A in water	N		
20	PBOW97-MK-MW09-GW-5720-REG	16-NOV-97	16:45	1000 ml HDPE	1	NONE	ALKALINITY by E310.1 in water	N		
20	PBOW97-MK-MW09-GW-5720-REG	16-NOV-97	16:45	1000 ml HDPE	1	NaOH to pH12	Total Cyanide by SW-846 9010A in water	N		pH>12
20	PBOW97-MK-MW09-GW-5720-REG	16-NOV-97	16:45	1000 ml A GLASS	1	NONE	Nitroaromatics by SW-846 8330 in water	N		
20	PBOW97-MK-MW09-GW-5720-REG	16-NOV-97	16:45	1000 ml HDPE	1	HNO3, pH<2	Hardness by E130.2 in water	N		pH<2
20	PBOW97-MK-MW09-GW-5720-REG	16-NOV-97	16:45	1000 ml HDPE	2	HNO3, pH<2	TAL Metals by SW-846 6010A/7470 in water	N		pH<2
20	PBOW97-MK-MW09-GW-5720-REG	16-NOV-97	16:45	1000 ml A GLASS	2	NONE	PCBs by SW8081 in water	N		
20	PBOW97-MK-MW09-GW-5720-REG	16-NOV-97	16:45	1000 ml A GLASS	2	NONE	TCL Semivolatiles by SW-846 8270B in wate	N		RES CL2 NO
20	PBOW97-MK-MW09-GW-5720-REG	16-NOV-97	16:45	1000 ml HDPE	1	NONE	Total dissolved solids by E160.1 in water	N		
50	PBOW97-IT-AA1-BEDGW-001-GW-5450-REG	16-NOV-97	16:30	1000 ml HDPE	1	NONE	ALKALINITY by E310.1 in water	N		
50	PBOW97-IT-AA1-BEDGW-001-GW-5450-REG	16-NOV-97	16:30	1000 ml HDPE	1	NaOH to pH12	Total Cyanide by SW-846 9010A in water	N		pH>12
50	PBOW97-IT-AA1-BEDGW-001-GW-5450-REG	16-NOV-97	16:30	1000 ml A GLASS	1	NONE	Nitroaromatics by SW-846 8330 in water	N		

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ECHNOLOGY
ORPORATION

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

H7K180152

Reference Document No: 10018

ample No	Sample Name	Sample Date	Sample Time	Container		Preservative	Requested Testing Program	Fil	CID	Condition On Receipt
0	PBOW97-IT-AA1-BEDGW-001-GW-5450-REG	16-NOV-97	16:30	1000 ml HDPE	1	HNO3, pH<2	Hardness by E130.2 in water	N		PH<2
0	PBOW97-IT-AA1-BEDGW-001-GW-5450-REG	16-NOV-97	16:30	1000 ml HDPE	2	HNO3, pH<2	TAL Metals by SW-846 6010A/7470 in water	N		↓
0	PBOW97-IT-AA1-BEDGW-001-GW-5450-REG	16-NOV-97	16:30	1000 ml A GLASS	2	NONE	PCBs by SW8081 in water	N		
0	PBOW97-IT-AA1-BEDGW-001-GW-5450-REG	16-NOV-97	16:30	1000 ml A GLASS	2	NONE	TCL Semivolatiles by SW-846 8270B in wate	N		ABS CL2 NO
0	PBOW97-IT-AA1-BEDGW-001-GW-5450-REG	16-NOV-97	16:30	1000 ml HDPE	1	NONE	Total dissolved solids by E160.1 in water	N		
0	PBOW97-IT-AA1-BEDGW-001-GW-5450-REG	16-NOV-97	16:30	1000 ml HDPE	1	pH<2 H2SO4	TOC by SW-9060 in water	N		PH<2
0	PBOW97-IT-AA1-BEDGW-001-GW-5450-REG	16-NOV-97	16:30	1000 ml HDPE	1	NONE	Total suspended solids by E160.2	N		
0	PBOW97-IT-AA1-BEDGW-001-GW-5450-REG	16-NOV-97	16:30	40 ml GVIAL,SEP	3	HCl, pH<2	TCL Volatiles by SW-846 8260A in water	N		
1	PBOW97-IT-AA1-BEDGW-001-GW-5451-FD	16-NOV-97	16:30	1000 ml A GLASS	1	NONE	Nitroaromatics by SW-846 8330 in water	N		
T H012	PBOW97-LAB-BW-LOT H012-FB	16-NOV-97	08:00	1000 ml A GLASS	1	NONE	Nitroaromatics by SW-846 8330 in water	N		
T H012	PBOW97-LAB-BW-LOT H012-FB	16-NOV-97	08:00	1000 ml HDPE	2	pH<2 HNO3	TAL Metals by SW-846 6010A/7470 in water	N		PH<2
T H012	PBOW97-LAB-BW-LOT H012-FB	16-NOV-97	08:00	1000 ML A GLASS	2	NONE	PCBs by SW8081 in water	N		
T H012	PBOW97-LAB-BW-LOT H012-FB	16-NOV-97	08:00	1000 ml A GLASS	2	NONE	TCL Semivolatiles by SW-846 8270B in wate	N		ABS CL2 NO
T H012	PBOW97-LAB-BW-LOT H012-FB	16-NOV-97	08:00	40 ml VOA VIAL	3	HCl, pH<2	TCL Volatiles by SW-846 8260A in water	N		
0-MSD	PBOW97-MK-MW19-GW-5800-MSD-MSD	16-NOV-97	17:00	40 ml VOA VIAL	3	HCl, pH<2	TCL Volatiles by SW-846 8260A in water	N		
0	PBOW97-MK-MW20-GW-5810-REG	16-NOV-97	15:45	1000 ml HDPE	1	NONE	ALKALINITY by E310.1 in water	N		
0	PBOW97-MK-MW20-GW-5810-REG	16-NOV-97	15:45	1000 ml HDPE	1	NaOH to pH12	Total Cyanide by SW-846 9010A in water	N		PH>12
0	PBOW97-MK-MW20-GW-5810-REG	16-NOV-97	15:45	1000 ml A GLASS	1	NONE	Nitroaromatics by SW-846 8330 in water	N		
0	PBOW97-MK-MW20-GW-5810-REG	16-NOV-97	15:45	1000 ml HDPE	1	HNO3, pH<2	Hardness by E130.2 in water	N		PH<2
0	PBOW97-MK-MW20-GW-5810-REG	16-NOV-97	15:45	1000 ml HDPE	2	HNO3, pH<2	TAL Metals by SW-846 6010A/7470 in water	N		↓
0	PBOW97-MK-MW20-GW-5810-REG	16-NOV-97	15:45	1000 ml A GLASS	2	NONE	PCBs by SW8081 in water	N		
0	PBOW97-MK-MW20-GW-5810-REG	16-NOV-97	15:45	1000 ml A GLASS	2	NONE	TCL Semivolatiles by SW-846 8270B in wate	N		ABS CL2 NO
0	PBOW97-MK-MW20-GW-5810-REG	16-NOV-97	15:45	1000 ml HDPE	1	NONE	Total dissolved solids by E160.1 in water	N		
0	PBOW97-MK-MW20-GW-5810-REG	16-NOV-97	15:45	1000 ml HDPE	1	pH<2 H2SO4	TOC by SW-9060 in water	N		PH<2
0	PBOW97-MK-MW20-GW-5810-REG	16-NOV-97	15:45	1000 ml HDPE	1	NONE	Total suspended solids by E160.2	N		
0	PBOW97-MK-MW20-GW-5810-REG	16-NOV-97	15:45	40 ml GVIAL,SEP	3	HCl, pH<2	TCL Volatiles by SW-846 8260A in water	N		
1	PBOW97-MK-MW20-BW-5811-TB	16-NOV-97	07:00	40 ml VOA VIAL	2	HCl, pH<2	TCL Volatiles by SW-846 8260A in water	N		
0	PBOW97-MK-MW19-GW-5800-REG	16-NOV-97	17:00	1000 ml HDPE	1	pH<2 H2SO4	TOC by SW-9060 in water	N		PH<2
0	PBOW97-MK-MW19-GW-5800-REG	16-NOV-97	17:00	1000 ml HDPE	1	NONE	Total suspended solids by E160.2	N		
0	PBOW97-MK-MW19-GW-5800-REG	16-NOV-97	17:00	40 ml GVIAL,SEP	3	HCl, pH<2	TCL Volatiles by SW-846 8260A in water	N		
0-MS	PBOW97-MK-MW19-GW-5800-MS-MS	16-NOV-97	17:00	1000 ml A GLASS	1	NONE	Nitroaromatics by SW-846 8330 in water	N		
0-MS	PBOW97-MK-MW19-GW-5800-MS-MS	16-NOV-97	17:00	1000 ml HDPE	2	HNO3, pH<2	TAL Metals by SW-846 6010A/7470 in water	N		PH<2
0-MS	PBOW97-MK-MW19-GW-5800-MS-MS	16-NOV-97	17:00	1000 ml A GLASS	2	NONE	PCBs by SW8081 in water	N		
0-MS	PBOW97-MK-MW19-GW-5800-MS-MS	16-NOV-97	17:00	1000 ml A GLASS	2	NONE	TCL Semivolatiles by SW-846 8270B in wate	N		ABS CL2 NO
0-MS	PBOW97-MK-MW19-GW-5800-MS-MS	16-NOV-97	17:00	40 ml GVIAL,SEP	3	HCl, pH<2	TCL Volatiles by SW-846 8260A in water	N		
0-MSD	PBOW97-MK-MW19-GW-5800-MSD-MSD	16-NOV-97	17:00	1000 ml A GLASS	1	NONE	Nitroaromatics by SW-846 8330 in water	N		
0-MSD	PBOW97-MK-MW19-GW-5800-MSD-MSD	16-NOV-97	17:00	1000 ml HDPE	2	pH<2 HNO3	TAL Metals by SW-846 6010A/7470 in water	N		PH<2
0-MSD	PBOW97-MK-MW19-GW-5800-MSD-MSD	16-NOV-97	17:00	1000 ML A GLASS	2	NONE	PCBs by SW8081 in water	N		
0-MSD	PBOW97-MK-MW19-GW-5800-MSD-MSD	16-NOV-97	17:00	1000 ml A GLASS	2	NONE	TCL Semivolatiles by SW-846 8270B in wate	N		ABS CL2 NO
70	PBOW97-MK-MW15-GW-5770-REG	16-NOV-97	11:05	1000 ml A GLASS	2	NONE	TCL Semivolatiles by SW-846 8270B in wate	N		↓
70	PBOW97-MK-MW15-GW-5770-REG	16-NOV-97	11:05	1000 ml HDPE	1	NONE	Total dissolved solids by E160.1 in water	N		
70	PBOW97-MK-MW15-GW-5770-REG	16-NOV-97	11:05	1000 ml HDPE	1	pH<2 H2SO4	TOC by SW-9060 in water	N		PH<2
70	PBOW97-MK-MW15-GW-5770-REG	16-NOV-97	11:05	1000 ml HDPE	1	NONE	Total suspended solids by E160.2	N		

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H7K80152

NTERNATIONAL
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ORPORATION

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

Reference Document No: 10018

Sample No	Sample Name	Sample Date	Sample Time	Container		Preservative	Requested Testing Program	Fil	CID	Condition On Receipt
0	PBOW97-MK-MW19-GW-5800-REG	16-NOV-97	17:00	1000 ml HDPE	1	NONE	ALKALINITY by E310.1 in water	N		
0	PBOW97-MK-MW19-GW-5800-REG	16-NOV-97	17:00	1000 ml HDPE	1	NaOH to pH12	Total Cyanide by SW-846 9010A in water	N		PH>12
0	PBOW97-MK-MW19-GW-5800-REG	16-NOV-97	17:00	1000 ml A GLASS	1	NONE	Nitroaromatics by SW-846 8330 in water	N		
0	PBOW97-MK-MW19-GW-5800-REG	16-NOV-97	17:00	1000 ml HDPE	1	HNO3, pH<2	Hardness by E130.2 in water	N		PH<2
0	PBOW97-MK-MW19-GW-5800-REG	16-NOV-97	17:00	1000 ml HDPE	2	HNO3, pH<2	TAL Metals by SW-846 6010A/7470 in water	N		↓
0	PBOW97-MK-MW19-GW-5800-REG	16-NOV-97	17:00	1000 ml A GLASS	2	NONE	PCBs by SW8081 in water	N		
0	PBOW97-MK-MW19-GW-5800-REG	16-NOV-97	17:00	1000 ml A GLASS	2	NONE	TCL Semivolatiles by SW-846 8270B in wate	N		ABS CL2 ND
0	PBOW97-MK-MW19-GW-5800-REG	16-NOV-97	17:00	1000 ml HDPE	1	NONE	Total dissolved solids by E160.1 in water	N		
30	PBOW97-MK-MW14-GW-5760-REG	16-NOV-97	10:00	40 ml GVIAL,SEP	3	HCl, pH<2	TCL Volatiles by SW-846 8260A in water	N		
31	PBOW97-MK-MW14-GW-5761-FD	16-NOV-97	10:00	1000 ml A GLASS	1	NONE	Nitroaromatics by SW-846 8330 in water	N		
31	PBOW97-MK-MW14-GW-5761-FD	16-NOV-97	10:00	1000 ml HDPE	2	HNO3, pH<2	TAL Metals by SW-846 6010A/7470 in water	N		PH<2
31	PBOW97-MK-MW14-GW-5761-FD	16-NOV-97	10:00	1000 ml A GLASS	2	NONE	PCBs by SW8081 in water	N		
31	PBOW97-MK-MW14-GW-5761-FD	16-NOV-97	10:00	1000 ml A GLASS	2	NONE	TCL Semivolatiles by SW-846 8270B in wate	N		ABS CL2 ND
31	PBOW97-MK-MW14-GW-5761-FD	16-NOV-97	10:00	40 ml GVIAL,SEP	3	HCl, pH<2	TCL Volatiles by SW-846 8260A in water	N		
01	PBOW97-MK-MW15-GW-5770-REG	16-NOV-97	11:05	1000 ml HDPE	1	NONE	ALKALINITY by E310.1 in water	N		
0	PBOW97-MK-MW15-GW-5770-REG	16-NOV-97	11:05	1000 ml HDPE	1	NaOH to pH12	Total Cyanide by SW-846 9010A in water	N		PH>12
0	PBOW97-MK-MW15-GW-5770-REG	16-NOV-97	11:05	1000 ml A GLASS	1	NONE	Nitroaromatics by SW-846 8330 in water	N		
0	PBOW97-MK-MW15-GW-5770-REG	16-NOV-97	11:05	1000 ml HDPE	1	HNO3, pH<2	Hardness by E130.2 in water	N		PH<2
0	PBOW97-MK-MW15-GW-5770-REG	16-NOV-97	11:05	1000 ml HDPE	2	HNO3, pH<2	TAL Metals by SW-846 6010A/7470 in water	N		↓
0	PBOW97-MK-MW15-GW-5770-REG	16-NOV-97	11:05	1000 ml A GLASS	2	NONE	PCBs by SW8081 in water	N		
20	PBOW97-MK-MW09-GW-5720-REG	16-NOV-97	16:45	1000 ml HDPE	1	pH<2 H2SO4	TOC by SW-9060 in water	N		PH<2
20	PBOW97-MK-MW09-GW-5720-REG	16-NOV-97	16:45	1000 ml HDPE	1	NONE	Total suspended solids by E160.2	N		
20	PBOW97-MK-MW09-GW-5720-REG	16-NOV-97	16:45	40 ml GVIAL,SEP	3	HCl, pH<2	TCL Volatiles by SW-846 8260A in water	N		
30	PBOW97-MK-MW14-GW-5760-REG	16-NOV-97	10:00	1000 ml HDPE	1	NONE	ALKALINITY by E310.1 in water	N		
30	PBOW97-MK-MW14-GW-5760-REG	16-NOV-97	10:00	1000 ml HDPE	1	NaOH to pH12	Total Cyanide by SW-846 9010A in water	N		PH>12
30	PBOW97-MK-MW14-GW-5760-REG	16-NOV-97	10:00	1000 ml A GLASS	1	NONE	Nitroaromatics by SW-846 8330 in water	N		
30	PBOW97-MK-MW14-GW-5760-REG	16-NOV-97	10:00	1000 ml HDPE	1	HNO3, pH<2	Hardness by E130.2 in water	N		PH<2
30	PBOW97-MK-MW14-GW-5760-REG	16-NOV-97	10:00	1000 ml HDPE	2	HNO3, pH<2	TAL Metals by SW-846 6010A/7470 in water	N		↓
30	PBOW97-MK-MW14-GW-5760-REG	16-NOV-97	10:00	1000 ml A GLASS	2	NONE	PCBs by SW8081 in water	N		
30	PBOW97-MK-MW14-GW-5760-REG	16-NOV-97	10:00	1000 ml A GLASS	2	NONE	TCL Semivolatiles by SW-846 8270B in wate	N		ABS CL2 ND
30	PBOW97-MK-MW14-GW-5760-REG	16-NOV-97	10:00	1000 ml HDPE	1	NONE	Total dissolved solids by E160.1 in water	N		
30	PBOW97-MK-MW14-GW-5760-REG	16-NOV-97	10:00	1000 ml HDPE	1	pH<2 H2SO4	TOC by SW-9060 in water	N		PH<2
30	PBOW97-MK-MW14-GW-5760-REG	16-NOV-97	10:00	1000 ml HDPE	1	NONE	Total suspended solids by E160.2	N		
30	PBOW97-IT-TNTB-BEDGW-002-GW-5430-RE	16-NOV-97	15:30	1000 ml HDPE	1	NONE	ALKALINITY by E310.1 in water	N		
30	PBOW97-IT-TNTB-BEDGW-002-GW-5430-RE	16-NOV-97	15:30	1000 ml HDPE	1	NaOH to pH12	Total Cyanide by SW-846 9010A in water	N		PH>12
30	PBOW97-IT-TNTB-BEDGW-002-GW-5430-RE	16-NOV-97	15:30	1000 ml A GLASS	1	NONE	Nitroaromatics by SW-846 8330 in water	N		
30	PBOW97-IT-TNTB-BEDGW-002-GW-5430-RE	16-NOV-97	15:30	1000 ml HDPE	1	HNO3, pH<2	Hardness by E130.2 in water	N		PH<2
30	PBOW97-IT-TNTB-BEDGW-002-GW-5430-RE	16-NOV-97	15:30	1000 ml HDPE	2	HNO3, pH<2	TAL Metals by SW-846 6010A/7470 in water	N		↓
30	PBOW97-IT-TNTB-BEDGW-002-GW-5430-RE	16-NOV-97	15:30	1000 ml A GLASS	2	NONE	PCBs by SW8081 in water	N		
30	PBOW97-IT-TNTB-BEDGW-002-GW-5430-RE	16-NOV-97	15:30	1000 ml A GLASS	2	NONE	TCL Semivolatiles by SW-846 8270B in wate	N		ABS CL2 ND
30	PBOW97-IT-TNTB-BEDGW-002-GW-5430-RE	16-NOV-97	15:30	1000 ml HDPE	1	NONE	Total dissolved solids by E160.1 in water	N		
30	PBOW97-IT-TNTB-BEDGW-002-GW-5430-RE	16-NOV-97	15:30	1000 ml HDPE	1	pH<2 H2SO4	TOC by SW-9060 in water	N		PH<2
30	PBOW97-IT-TNTB-BEDGW-002-GW-5430-RE	16-NOV-97	15:30	1000 ml HDPE	1	NONE	Total suspended solids by E160.2	N		
30	PBOW97-IT-TNTB-BEDGW-002-GW-5430-RE	16-NOV-97	15:30	40 ml GVIAL,SEP	3	HCl, pH<2	TCL Volatiles by SW-846 8260A in water	N		

Custody seals intact received at 2°C

G0000012

INTERNATIONAL TECHNOLOGY CORPORATION

131460

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

Reference Document No: 10020

Project Number: 771481

Samples Shipment Date: 17-NOV-97

Project Name: PLUMBROOK ORDNANCE WORKS

Lab Destination: ~~Quanterra - Knoxville~~ CURTIS + TOMPKINS, LTD

Sample Coordinator: ~~Dave Purcell~~ BRUCE BURNETT

Lab Contact: ~~John Reynolds~~ CAROL WORTHAM

Turnaround Time:

Project Contact: Kim Arrant/KIM NAPIER

Carrier/Waybill No.: Fed Ex/800185090907

Bill To: Accounts Receivable
312 Directors Drive
Knoxville TN 37923

Report To: Kim ~~Arrant~~ NAPIER
312 Directors Drive
Knoxville TN. 37923

Special Instructions: FIELD SPLIT SAMPLES

Possible Hazard Indentification:

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: 11-17-97 Time: 1630

2. Relinquished By (Signature/Affiliation) Date: Time:

3. Relinquished By (Signature/Affiliation) Date: Time:

1. Received By (Signature/Affiliation) [signature] Date: 11/18/97 Time: 10

2. Received By (Signature/Affiliation) Date: Time:

3. Received By (Signature/Affiliation) Date: Time:

Comments: CURTIS AND TOMPKINS LAB; ATTN: CAROL WORTHAM

NOTE: 2 x 1L HDPE CONTAINERS FOR TAL METALS = 1 L - FILTERED FOR DISSOLVED METAL ANALYSIS AND 1 L - UNFILTERED FOR TOTAL METAL ANALYSIS.

Sample No	Sample Name	Sample Date	Sample Time	Container	Ctr Qty	Preservative	Requested Testing Program	Fil	CID	Condition On Receipt
5762	PBOW97-MK-MW14-GW-5762-FS	16-NOV-97	10:00	1000 ml HDPE	2	HNO3, pH<2	TAL Metals by SW-846 6010A/7470 in water	N		
5762	PBOW97-MK-MW14-GW-5762-FS	16-NOV-97	10:00	1000 ml A GLASS	2	NONE	PCBs by SW8081 in water	N		
5762	PBOW97-MK-MW14-GW-5762-FS	16-NOV-97	10:00	1000 ml A GLASS	2	NONE	TCL Semivolatiles by SW-846 8270B in water	N		
5762	PBOW97-MK-MW14-GW-5762-FS	16-NOV-97	10:00	40 ml GVIAL,SEP	3	HCl, pH<2	TCL Volatiles by SW-846 8260A in water	N		
5763 ✓	PBOW97-MK-MW14-BW-5763-TB	16-NOV-97	08:00	40 ml VOA VIAL	2	HCl, pH<2	TCL Volatiles by SW-846 8260A in water	N		
5412	PBOW97-IT-BG8-BEDGW-001-GW-5412-FS	17-NOV-97	10:20	1000 ml A GLASS	2	NONE	Nitroaromatics by SW-846 8330 in water	N		
5412	PBOW97-IT-BG8-BEDGW-001-GW-5412-FS	17-NOV-97	10:20	1000 ml HDPE	2	HNO3, pH<2	TAL Metals by SW-846 6010A/7470 in water	N		
5412	PBOW97-IT-BG8-BEDGW-001-GW-5412-FS	17-NOV-97	10:20	1000 ml A GLASS	2	NONE	PCBs by SW8081 in water	N		
5412	PBOW97-IT-BG8-BEDGW-001-GW-5412-FS	17-NOV-97	10:20	1000 ml A GLASS	2	NONE	TCL Semivolatiles by SW-846 8270B in water	N		
5412 ✓	PBOW97-IT-BG8-BEDGW-001-GW-5412-FS	17-NOV-97	10:20	40 ml GVIAL,SEP	3	HCl, pH<2	TCL Volatiles by SW-846 8260A in water	N		
5452	PBOW97-IT-AA1-BEDGW-001-GW-5452-FS	16-NOV-97	16:30	1000 ml A GLASS	2	NONE	Nitroaromatics by SW-846 8330 in water	N		
5452	PBOW97-IT-AA1-BEDGW-001-GW-5452-FS	16-NOV-97	16:30	1000 ml HDPE	2	HNO3, pH<2	TAL Metals by SW-846 6010A/7470 in water	N		
5452	PBOW97-IT-AA1-BEDGW-001-GW-5452-FS	16-NOV-97	16:30	1000 ml A GLASS	2	NONE	PCBs by SW8081 in water	N		
5452	PBOW97-IT-AA1-BEDGW-001-GW-5452-FS	16-NOV-97	16:30	1000 ml A GLASS	2	NONE	TCL Semivolatiles by SW-846 8270B in water	N		
5452 ✓	PBOW97-IT-AA1-BEDGW-001-GW-5452-FS	16-NOV-97	16:30	40 ml GVIAL,SEP	3	HCl, pH<2	TCL Volatiles by SW-846 8260A in water	N		

INTERNATIONAL
TECHNOLOGY
CORPORATION

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

Reference Document No: 10020

Sample No	Sample Name	Sample Date	Sample Time	Container		Preservative	Requested Testing Program	Fil	CID	Condition On Receipt
5762	PBOW97-MK-MW14-GW-5762-FS	16-NOV-97	10:00	1000 ml A GLASS	2	NONE	Nitroaromatics by SW-846 8330 in water	N		

Plumbrook

771481

Curtis & Tompkins, Ltd.

COOLER RECEIPT CHECKLIST

Login#: 131460 Date Received: 11/18 Number of Coolers: 3
Client: IT Plum Project: Plumbrook Orchard

A. Preliminary Examination Phase
Date Opened: 11/18 By (print): [illegible] (sign) [illegible]

1. Did cooler come with a shipping slip (airbill, etc.)? ..... (YES) NO
   If YES, enter carrier name and airbill number: Fed Ex 8001850909097
2. Were custody seals on outside of cooler? ..... (YES) NO
   How many and where? _____ Seal date: _____ 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: Cub Temperature: 4.75°C, 5.0°C, 4.5°C

B. Login Phase
Date Logged In: 11/18 By (print): [illegible] (sign) [illegible]

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:

STOP! (SEAL

Filename: F:\qc\forms\cooler.wpd Rev. 1 4/95

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Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878
2323 Fifth Street
Berkeley, CA 94710
(510)486-0900 ph
(510)486-0532 fx

Project Number: 131460

Subcontract Lab:

Quanterra
880 Riverside Parkway
West Sacramento, CA 95605
(916) 373-5600

Please send report to: Carol Wortham

Turnaround Time: Normal

Sample ID	Date Sampled	Matrix	Analysis	C&T Lab #
5762	16-NOV-97	Water	8330 *	131460-001
5412	17-NOV-97	Water	8330	131460-003
5452	16-NOV-97	Water	8330 *	131460-004

***Please report using Sample ID instead of C&T Lab #.

Notes:

RELINQUISHED BY:	RECEIVED BY:
11/20/97 Date/Time	11/21/97 @ 0945 Date/Time
Date/Time	Date/Time

* Hold expire 11/23/97

Signature on this form constitutes a firm Purchase Order for the services requested above.

Received in good condition. MCD 11/21/97