Olin Corporation

Wilmington, Massachusetts Facility

Supplemental Phase II Report

Volume IV

June 1997

Prepared by:

ABB Environmental Services, Inc.

Geomega

PTI Environmental Services

SMITH Technology Corporation

Olin Corporation
Wilmington, MA

Supplemental Phase II Report

Volume IV

June 1997

Prepared by:

*
ABB Environmental Services, Inc.
*
Geomega
*
PTI Environmental Services
*
Smith Technology Corporation
*

Appendix O

SMITH

APPENDIX O

DATA VALIDATION REPORTS

SMITH

DATA VALIDATION REPORT
METALS AND SELECTED ANALYTES
OLIN CORPORATION
GROUNDWATER SAMPLES

INTRODUCTION

A data validation was performed on the analytical data from the groundwater samples collected on January 11, 1995 at the Olin Corporation's Wilmington, Massachusetts Facility. This review is of work order number WL-0048 which contained 5 groundwater samples and 1 field duplicate sample. All samples in this report were analyzed by Pace, Incorporated Environmental Laboratories (Pace, Inc.), Westbrook, Maine, following United States Environmental Protection Agency (EPA) Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (SW-846), Methods for Chemical Analysis of Water and Wastes (MCAWW), and Standard Methods for the Examination of Water and Wastewater, 16th Edition, 1985 (SM), American Public Health Association (APHA). The individual analyses were performed using the following methods:

Analytes	Methods
aluminum, barium, calcium, chromium, iron, magnesium, manganese, potassium, silicon, and sodium	200.7
hexavalent chromium	7195/6010
arsenic	206.2
lead	239.2
bicarbonate as HCO3 and carbonate as CO3	SM406C
bromide	320.1
nitrate as N and nitrite as N	353.2
dissolved organic carbon (DOC)	415.1
phosphorus as P	365.4
solids - filterable residue (TDS)	160.1

Because the analyses were not performed according to the EPA Contract Laboratory Program (CLP) methods, the findings in this report are based upon a review of sample data and of quality control (QC) specified by the individual analytical methods and provided by the laboratory. The quality assurance review was prepared according to EPA Region I Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analysis, June 1988, where applicable.

DATA VALIDATION REPORT

FOR THE ANALYTICAL RESULTS

OF GROUNDWATER SAMPLES

COLLECTED ON JANUARY 11, 1995

FOR

OLIN CORPORATION
WILMINGTON, MASSACHUSETTS

SMITH PROJECT NO. 00-7047-0102

JANUARY 1996

PREPARED BY

E. Bryan Rivers

E. BRYAN RIVERS
QUALITY ASSURANCE SCIENTIST

Marybeth Ousey

MARYBETH OUSEY
QUALITY ASSURANCE SCIENTIST

Atwood F. Davis

ATWOOD F. DAVIS, CPC
QUALITY ASSURANCE MANAGER

SMITH

ENVIRONMENTAL TECHNOLOGIES CORPORATION

Engineering · *Consulting* · *Remediation* · *Construction*

SMITH

The support documentation in Appendix A of this report summarizes the specifics of this review. Appendix A also provides the sample results as reported by the laboratory. The data summary lists all compounds that were analyzed. Analytical problems are outlined in the following Findings/Qualifiers section. Other issues which arose which did not warrant qualification are detailed in the Notes Section.

FINDINGS/QUALIFIERS

This data validation report addresses Pace, Inc. work order number WL-0048 which contained 3 groundwater samples and 1 field duplicate sample. The data were evaluated for the following parameters:

- * data completeness
- holding times
- * data calibration verification
- * laboratory blank analysis
- \+ field blank analysis
- * interference check sample results
- matrix spike recoveries
- laboratory duplicates
- field duplicates
- * laboratory control sample results
- furnace atomic absorption results
- \+ serial dilution results
- \+ detection limit results
- sample results

* All criteria were met for this parameter.

\+ All criteria were met for this parameter; however, this parameter is discussed in the Notes Section of this report.

The data summary table provided at the end of this report summarizes the validation recommendations which were based on the following information:

- Hexavalent chromium results are estimated because holding times were not met.

- All positive results for potassium are estimated because the matrix spike percent recovery (%R) was below 30%. All positive results and detection limits for nitrite and dissolved organic carbon (DOC) are estimated because the matrix spike %Rs were below criteria. (Matrix spike results are also discussed in the Notes Section.)

- The graphite furnace post-digestion analytical spike %Rs for arsenic and lead for samples GW-42-D (S000006/WL-0048-1), GW-50-S (S000007/WL-0048-4), and GW-42-S (S000002/WL-0048-6) and arsenic for field duplicate sample GW-42-D (S000005/WL-0048-8) were below criteria. These results are estimated. The detection limits for these results were elevated to reflect the dilution factor as indicated on the Report of Analysis Forms included in Appendix A.

- All positive phosphorus as P and solids-filterable residue (TDS) results are estimated because laboratory duplicate precision was not met.

- All positive nitrite, phosphorus as P, and TDS results are estimated because field duplicate precision was not met. Details are presented on the Field Duplicate Precision Worksheet provided in Appendix A.

- The reported 200 mg/L hexavalent chromium result for field duplicate sample GW-42-D (S000005/WL-0048-16) is rejected because the various dilutions performed on the sample did not result in consistent values. The logic for choosing the hexavalent chromium results of record was explained by the Pace Inc. analyst on the bottom of notebook page 25 which is included in Appendix A of this report. The original result reported on the Report of Analysis Form was changed by the laboratory from 110 mg/L (which was reported from the preparation dilution of 5) to 200 mg/L (which was reported from the preparation dilution factor of 20). However, this sample was the blind field duplicate sample of sample GW-42-D (S000006/WL-0048-9). Sample WL-0048-9 had consistent results at the 5 and 20 preparation dilution factors which agree with the result originally reported for WL-0048-16 of 110 mg/L (see the Field Duplicate Precision Worksheet in Appendix A). The 94 mg/L result for sample WL-0048-9 is considered the appropriate result of record for the sampling location.

  Additionally, because trivalent chromium is calculated using the hexavalent chromium result, the trivalent chromium result for sample GW-42-D (S000005/WL-0048-16) is also rejected. The trivalent chromium result for sample GW-42-D (S000006/WL-0048-9) is considered the appropriate result of record for the sampling location.

NOTES

The following items were noted during the validation review which did not impact results or necessitate further qualification of data:

1. All bromide data were attempted to be analyzed by Method 320.1. The laboratory was unable to analyzed all data associated with sampling location GW-42-D for bromide by Method 320.1. This data includes the field duplicate sample, laboratory duplicate sample, and the matrix spike sample The samples were very dark in color and could not be colormetrically

analyzed according to the Pace Inc. analyst. These samples were reanalyzed for bromide by Method 300.0 and are reported as non-detect. The associated detection limits were elevated by the laboratory to reflect the sample dilutions necessary because of the levels of chloride and sulfate present in the samples.

2. Arsenic and lead for sample WL-0048-2 (matrix spike), WL-0048-3 (laboratory duplicate), and field duplicate sample GW-42-D (S000005/WL-0048-8) were analyzed at dilutions. The detection limits of these results were elevated by the laboratory to reflect the dilution factors as indicated on the Report of Analysis Forms included in Appendix A.

3. Matrix spike %Rs for aluminum, calcium, chromium, hexavalent chromium, iron, magnesium, manganese, sodium, and silicon were out of the associated acceptance ranges. Because the spike concentrations significantly below the sample concentrations (i.e., less than four times), no data are qualified.

4. The matrix spike %Rs for arsenic and lead were zero; however, both the sample results and the spike sample results were non-detect and were analyzed with elevated detection limits due to interferences. The spike concentrations were below these elevated detection limits, no data are qualified.

5. A serial dilution sample was not provided by the laboratory as recommended by the MCAWW Method 200.7. Since performance of a serial dilution is not required by the method, no data are qualified.

6. There are no field blank samples associated with this order.

SUMMARY

This review has identified holding times, matrix spike %Rs, graphite furnace post-digestion analytical spike %Rs, laboratory and field duplicate precision, and a sample result for hexavalent chromium as areas of concern. The reported data are usable as qualified on the data summary table. For specifics relating to this review, see the attached documentation in Appendix A.

SMITH

QUALIFIER CODES

R - The data are unusable.

J - The associated value is an estimated quantity.

UJ - The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.

DATA SUMMARY TABLE

Site Name: Olin, Wilmington
Project Number: 00-7047-0102
Sampling Date(s): 1/11/95

Liquid mg/l

Laboratory: Pace Env. Laboratories
Case/Order #: WL-0048
Field Duplicates: S000005 and S000006

PQL	Sample location or description	GW-42-D S000006		GW-50-S S000007		GW-40-S S000001		GW-40-D S000002		GW-42-S S000003		GW-42-D S000005	
	Sample number	WL-0048-1, -9		WL-0048-4 -12		WL-0048-5 -13		WL-0048-6 -14		WL-0048-7 -15		WL-0048-8 -16	
	Sampling date	1/11/95		1/11/95		1/11/95		1/11/95		1/11/95		1/11/95	
	unfilt./filt.	filt.		filt.		filt.		filt.		filt.		filt.	
PQL	Comments	Field Dup. A										Field Dup. B	
0.10	Aluminum *	2000				1.7				0.36		2100	
0.005	Arsenic *		UJ		UJ				UJ				UJ
0.005	Barium *	0.050		0.015		0.086		0.013		0.023		0.046	
0.050	Calcium *	690		200		14		230		6.9		580	
0.015	Chromium *	3800										3500	
0.015	Chromium, Hexavalent	94	J		UJ		UJ		UJ		UJ	200	R
0.015	Chromium, Trivalent	3700										3300	R
0.025	Iron *	2000						0.20		3.4		2100	
0.005	Lead *		UJ		UJ				UJ				
0.050	Magnesium *	1200		41		1.7		17		1.4		1100	
0.005	Manganese *	590		5.8		0.17		3.5		0.31		570	
0.50	Potassium *	77	J	9.4	J	2.0	J	7.8	J	0.80	J	85	J
0.10	Silicon	120		7.2		3.0		2.4		5.1		120	
0.10	Sodium *	25000		310		47		190		21		23000	
20	Bicarbonate as HCO3	N/A		45				190				N/A	
1	Bromide							2.3					
20	Carbonate as CO3	N/A										N/A	
0.050	Nitrate as N *	14		3.2		0.38		0.36				14	
0.050	Nitrite as N *	0.34	J		UJ		UJ		UJ		UJ	0.24	J
1.0	Diss. Organic Carbon	2800	J	6.9	J	1.9	J	18	J	5.8	J	2900	J
0.10	Phosphorus as P *	54	J	0.12	J	0.15	J					35	J
10	Solids-Filterable Residue (TDS)	120000	J	2000	J	220	J	1300	J	130	J	97000	J

*=Reported as dissolved.
N/A = Analyte not analyzed by the laboratory because the pH was less than 4.5.

Marybeth Ousey 1/28/96

INWL0048.XLS

SMITH

DATA VALIDATION REPORT
CHLORIDE, SULFATE, ORTHOPHOSPHATE, SULFIDE, AND AMMONIA-N
OLIN CORPORATION
GROUNDWATER SAMPLES

INTRODUCTION

A data validation was performed on additional data from the groundwater samples collected on January 11, 1995 (5 groundwater samples and 1 field duplicate sample) at the Olin Corporation's Wilmington, Massachusetts Facility. This review is of Pace Inc.'s Hampton, New Hampshire laboratory work order number 42773 which contained the same 5 groundwater samples and 1 field duplicate sample that were analyzed in work order number WL-0048 by Pace Inc. of Westbrook, Maine. The individual analyses were performed using the following from Methods for Chemical Analysis of Water and Wastes (MCAWW):

Analytes	Methods
chloride and sulfate	300.0
orthophosphate	365.2
sulfide	376.1
ammonia-N	350.2

The findings in this report are based upon a review of sample data and of quality control (QC) specified by the individual analytical methods and provided by the laboratory. The quality assurance review was prepared according to EPA Region I Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analysis, June 1988, where applicable.

The support documentation in Appendix B of this report summarizes the specifics of this review. Appendix B also provides the samples results as reported by the laboratory. The data summary lists all compounds that were analyzed. Analytical problems are outlined in the following Findings/Qualifiers section. Other issues which arose which did not warrant qualification are detailed in the Notes Section.

SMITH

FINDINGS/QUALIFIERS

This data validation report addresses Pace, Inc. work order number 42773 which contained 5 groundwater samples and 1 field duplicate sample. The data were evaluated for the following parameters:

- * data completeness
- * holding times
- * data calibration verification
- * laboratory blank analysis
- \+ field blank analysis
- * matrix spike recoveries
- * laboratory duplicates
- * field duplicates
- * laboratory control sample results
- * detection limit results
- sample results

* All criteria were met for this parameter.

\+ All criteria were met for this parameter; however, this parameter is discussed in the Notes Section of this report. Issues discussed in the Notes Section do not require qualification based on the associated methods performed.

The data summary table provided at the end of this report summarizes the validation recommendations which were based on the following information:

- The chloride result for GW-42-S (S000003/42773-009) is estimated because the reported concentration of 53 mg/L exceeded the maximum standard concentration, and the sample was not reanalyzed at a dilution.

NOTES

The following items were noted during the validation review which did not impact results or necessitate further qualification of data:

1. The reported sulfide result for sample GW-42-D (S000006/42773-017) was analyzed at a dilution due to matrix interferences. The detection limit was elevated to reflect the dilution factor as indicated on the laboratory-reported sample results included in Appendix B.

2. There are no field blank samples associated with this order.

SMITH

SUMMARY

This review has identified a saturated chloride peak as an area of concern. The reported sulfide result is usable as qualified on the data summary table. For specifics relating to this review, see the attached documentation in Appendix B.

SMITH

QUALIFIER CODES

J - The associated value is an estimated quantity.

DATA SUMMARY TABLE

Site Name	Olin, Wilmington		Laboratory	Pace Env. Laboratories
Project Number	00-7047-0102	Liquid mg/l	Case/Order #	42773
Sampling Date(s)	January 11, 1995		Field Duplicates	S000005 and S000006

PQL	Sample location or description	GW-40-S S000001	GW-40-D S000002	GW-42-S S000003	GW-42-D S000005	GW-42-D S000006	GW-50-S S000007				
	Sample number	42773-001 -007, -013	42773-002 -008, -014	42773-003 -009, -015	42773-004 -010, -016	42773-005 -011, -017	42773-006 -012, -018				
	Sampling date	1/11/95	1/11/95	1/11/95	1/11/95	1/11/95	1/11/95				
	unfilt. / filt.	filt.	filt.	filt.	filt.	filt.	filt.				
	Comments				Field Dup. A	Field Dup. B					
1	Chloride	90	160	53 J	24000	20000	350				
1.0	Sulfate	33	830	13	74000	74000	1400				
0.02	Orthophosphate		0.07		0.3	0.3					
1	Sulfide		3		4						
0.05	Ammonia-N	0.06	120	3.7	7100	7000	130				

Marybeth Ousey 1/28/96

I2WL0048.XLS

SMITH

APPENDIX A

ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-0048-1
Report Date: 02/03/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
S000006	Aqueous	CLIENT	01/11/95	01/11/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Dissolved	2000	mg/L	100	0.10	200.7/6010	01/26/95	KW	1
Arsenic, Dissolved	<0.50	mg/L	100	0.005	206.2/7060	01/24/95	KW	2
Barium, Dissolved	0.050	mg/L	1.0	0.005	200.7/6010	01/23/95	KW	1
Calcium, Dissolved	690	mg/L	20	0.050	200.7/6010	01/23/95	KW	1
Chromium, Dissolved	3800	mg/L	1000	0.015	200.7/6010	01/23/95	KW	1
Iron, Dissolved	2000.	mg/L	200	0.025	200.7/6010	01/25/95	KW	1
Lead, Dissolved	<1.0	mg/L	200	0.005	239.2/7421	01/26/95	KW	2,3
Magnesium, Dissolved	1200	mg/L	20	0.050	200.7/6010	01/26/95	KW	1
Manganese, Dissolved	590	mg/L	200	0.005	200.7/6010	01/26/95	KW	1
Potassium, Dissolved	77.	mg/L	1.0	0.50	200.7/6010	01/25/95	KW	1
Silicon, Dissolved	120	mg/L	40	0.10	200.7/6010	01/30/95	KW	4
Sodium, Dissolved	25000.	mg/L	400	0.10	200.7/6010	01/25/95	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 01/20/95 by WD using 3010
(2) Sample Preparation on 01/20/95 by WD using 3020
(3) The laboratory's Practical Quantitation Level could not be achieved for this parameter due to sample composition, matrix effects, sample volume, or quantity used for analysis.
(4) Sample Preparation on 01/27/95 by WD using 3010

02/03/95

LJO/ejnjbb(dw)
LA20IA1
CC: OLIN(TN)
ATTN:STEVE MORROW
BCM-RICK SACKS
PTI-COLLEEN CUSHING

340 County Road #5 PO Box 720
Westbrook ME 04098
TEL 207-874-2400
FAX 207 775-4029

REPORT OF LABORATORY ANALYSIS

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-0048-1
Report Date: 02/03/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVE
S000006	Aqueous	CLIENT	01/11/95	01/11/9

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTE
Bicarbonate as HCO3	NR	mg/L	1.0	20	APHA 406C	01/18/95	CM	
Bromide	<1000.	mg/L	1000	1	300.0	01/15/95	NH	
Carbonate, as CO3	NR	mg/L	1.0	20	APHA 406C	01/18/95	CM	
Nitrate as N, Dissolved	14.	mg/L	10	0.050	353.2	01/17/95	BC	
Nitrite as N, Dissolved	0.34	mg/L	2.0	0.050	353.2	01/13/95	BC	
Organic Carbon, Dissolved (DOC)	2800	mg/L	8.0	1.0	415.1	01/16/95	BC	
Phosphorus, Dissolved as P	54.	mg/L	10	0.10	365.4	01/18/95	BC	
Solids - Filterable Residue (TDS)	120000	mg/L	100	10	160.1	01/17/95	BC	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample specific reporting limits. Sample-specific limits are indicated by results annotated with '<' value

(1) Initial sample pH was <4.5. Bicarbonate could not be analyzed.
(2) The laboratory's Practical Quantitation Level could not be achieved for this parameter due to sample composition, matrix effects, sample volume, or quantity used for analysis.
(3) Initial sample pH was <4.5. Carbonate could not be analyzed.
(4) Sample Preparation on 01/17/95 by BAC
(5) Sample Preparation on 01/16/95 by JF

02/03/95

LJO/ejnbac/jbb(dw)

CC: OLIN(TN)
ATTN:STEVE MORROW
BCM-RICK SACKS
PTI-COLLEEN CUSHING

ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-0048-2
Report Date: 02/03/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
S000006-MS	Aqueous	CLIENT	01/11/95	01/11/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTE
Aluminum, Dissolved	1960	mg/L	200	0.10	200.7/6010	02/01/95	KW	1
Arsenic, Dissolved	<1.00	mg/L	200	0.005	206.2/7060	02/01/95	KW	2,3
Barium, Dissolved	1.55	mg/L	1.0	0.005	200.7/6010	02/01/95	KW	1
Calcium, Dissolved	543	mg/L	20	0.050	200.7/6010	02/01/95	KW	1
Chromium, Dissolved	3450	mg/L	1000	0.015	200.7/6010	02/01/95	KW	1
Iron, Dissolved	2040	mg/L	200	0.025	200.7/6010	02/01/95	KW	1
Lead, Dissolved	<1.00	mg/L	200	0.005	239.2/7421	01/31/95	KW	2,3
Magnesium, Dissolved	1100	mg/L	20	0.050	200.7/6010	02/01/95	KW	
Manganese, Dissolved	563	mg/L	200	0.005	200.7/6010	02/01/95	KW	1
Potassium, Dissolved	81.2	mg/L	20	0.50	200.7/6010	02/01/95	KW	1
Silicon, Dissolved	114	mg/L	40	0.10	200.7/6010	01/30/95	KW	4
Sodium, Dissolved	24200	mg/L	1000	0.10	200.7/6010	02/01/95	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values

(1) Sample Preparation on 01/31/95 by WD using 3010
(2) Sample Preparation on 01/31/95 by WD using 3020
(3) The laboratory's Practical Quantitation Level could not be achieved for this parameter due to sample composition, matrix effects, sample volume, or quantity used for analysis.
(4) Sample Preparation on 01/27/95 by WD using 3010

02/03/95

LJO/ejnejn/kaw
LA20IA1
CC: OLIN(TN)
ATTN:STEVE MORROW
BCM-RICK SACKS
PTI-COLLEEN CUSHING

PACE INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-0048-2
Report Date: 02/03/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
S000006-MS	Aqueous	CLIENT	01/11/95	01/11/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Bicarbonate as HCO3	NR	mg/L	1.0	20	APHA 406C	01/18/95	CM	1
Bromide	9930	mg/L	1000	1	300.0	01/15/95	NH	
Carbonate, as CO3	NR	mg/L	1.0	20	APHA 406C	01/18/95	CM	2
Nitrate as N, Dissolved	N.A.	mg/L	20	0.050	353.2	01/17/95	BC	3
Nitrite as N, Dissolved	1.05	mg/L	2.0	0.050	353.2	01/13/95	BC	
Organic Carbon, Dissolved (DOC)	3260	mg/L	8.0	1.0	415.1	01/16/95	BC	
Phosphorus, Dissolved as P	64.2	mg/L	20	0.10	365.4	01/18/95	BC	4
Solids - Filterable Residue (TDS)	N/A	mg/L	1.0	10	160.1	01/17/95	BC	5,6

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values

(1) Initial sample pH was <4.5. Bicarbonate could not be analyzed.
(2) Initial sample pH was <4.5. Carbonate could not be analyzed.
(3) This is a calculation and is not applicable to a matrix spike.
(4) Sample Preparation on 01/17/95 by BAC
(5) Sample Preparation on 01/16/95 by JF
(6) NA=Matrix spike analysis is not applicable for this parameter.

02/03/95

LJO/ejnbac/jbb(dw)/pph

CC: OLIN(TN)
ATTN:STEVE MORROW
BCM-RICK SACKS
PTI-COLLEEN CUSHING

340 County Road #5 PO Box 720
Westbrook ME 04098
TEL: 207-874-2400
FAX 207 775 4029

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-0048-3
Report Date: 02/03/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVE
S000006-DUP	Aqueous	CLIENT	01/11/95	01/11/9

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTI
Aluminum, Dissolved	2030	mg/L	100	0.10	200.7/6010	01/25/95	KW	
Arsenic, Dissolved	<0.50	mg/L	100	0.005	206.2/7060	01/24/95	KW	2,
Barium, Dissolved	0.049	mg/L	1.0	0.005	200.7/6010	01/23/95	KW	
Calcium, Dissolved	627	mg/L	20	0.050	200.7/6010	01/23/95	KW	
Chromium, Dissolved	3560.	mg/L	1000	0.015	200.7/6010	01/23/95	KW	
Iron, Dissolved	2190	mg/L	200	0.025	200.7/6010	01/25/95	KW	
Lead, Dissolved	<1.00	mg/L	200	0.005	239.2/7421	01/26/95	KW	2
Magnesium, Dissolved	1180	mg/L	20	0.050	200.7/6010	01/25/95	KW	
Manganese, Dissolved	580.	mg/L	200	0.005	200.7/6010	01/25/95	KW	
Potassium, Dissolved	85.4	mg/L	1.0	0.50	200.7/6010	01/25/95	KW	
Silicon, Dissolved	119	mg/L	40	0.10	200.7/6010	01/30/95	KW	
Sodium, Dissolved	27500	mg/L	400	0.10	200.7/6010	01/25/95	KW	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample specific reporting limits. Sample-specific limits are indicated by results annotated with '<' value

(1) Sample Preparation on 01/20/95 by WD using 3010
(2) Sample Preparation on 01/20/95 by WD using 3020
(3) The laboratory's Practical Quantitation Level could not be achieved for this parameter due to sample composition, matrix effects, sample volume, or quantity used for analysis.
(4) Sample Preparation on 01/27/95 by WD using 3010

02/03/95

LJO/ejnejn
LA20IA1
CC: OLIN(TN)
ATTN:STEVE MORROW
BCM-RICK SACKS
PTI-COLLEEN CUSHING

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-0048-3
Report Date: 02/07/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
S000006-DUP	Aqueous	CLIENT	01/11/95	01/11/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTE
Bicarbonate as HCO3	NR	mg/L	1.0	20	APHA 406C	01/18/95	CM	:
Bromide	<1000.	mg/L	1000	1	300.0	01/15/95	NH	:
Carbonate, as CO3	NR	mg/L	1.0	20	APHA 406C	01/18/95	CM	:
Nitrate as N, Dissolved	12.5	mg/L	10	0.050	353.2	01/17/95	BC	
Nitrite as N, Dissolved	0.335	mg/L	2.0	0.050	353.2	01/13/95	BC	
Organic Carbon, Dissolved (DOC)	2820	mg/L	8.0	1.0	415.1	01/16/95	BC	
Phosphorus, Dissolved as P	43.7	mg/L	10	0.10	365.4	01/18/95	BC	,
Solids - Filterable Residue (TDS)	80300	mg/L	100	10	160.1	01/17/95	BC	!

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values

(1) Initial sample pH was <4.5. Bicarbonate could not be analyzed.
(2) The laboratory's Practical Quantitation Level could not be achieved for this parameter due to sample composition, matrix effects, sample volume, or quantity used for analysis.
(3) Initial sample pH was <4.5. Carbonate could not be analyzed.
(4) Sample Preparation on 01/17/95 by BAC
(5) Sample Preparation on 01/16/95 by JF

02/07/95

LJO/ejnbac/jbb(dw)/pph

CC: OLIN(TN)
ATTN:STEVE MORROW
BCM-RICK SACKS
PTI-COLLEEN CUSHING

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-0048-4
Report Date: 02/03/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVE
S000007	Aqueous	CLIENT	01/11/95	01/11/9

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTI
Aluminum, Dissolved	<0.10	mg/L	1.0	0.10	200.7/6010	01/26/95	KW	
Arsenic, Dissolved	<0.005	mg/L	1.0	0.005	206.2/7060	01/24/95	KW	
Barium, Dissolved	0.015	mg/L	1.0	0.005	200.7/6010	01/23/95	KW	
Calcium, Dissolved	200	mg/L	5.0	0.050	200.7/6010	01/23/95	KW	
Chromium, Dissolved	<0.015	mg/L	1.0	0.015	200.7/6010	01/31/95	KW	
Iron, Dissolved	<0.025	mg/L	1.0	0.025	200.7/6010	01/25/95	KW	
Lead, Dissolved	<0.010	mg/L	2.0	0.005	239.2/7421	01/25/95	KW	2
Magnesium, Dissolved	41	mg/L	1.0	0.050	200.7/6010	01/26/95	KW	
Manganese, Dissolved	5.8	mg/L	1.0	0.005	200.7/6010	01/25/95	KW	
Potassium, Dissolved	9.4	mg/L	1.0	0.50	200.7/6010	01/25/95	KW	
Silicon, Dissolved	7.2	mg/L	2.0	0.10	200.7/6010	01/30/95	KW	
Sodium, Dissolved	310.	mg/L	5.0	0.10	200.7/6010	01/25/95	KW	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample specific reporting limits. Sample-specific limits are indicated by results annotated with '<' value

(1) Sample Preparation on 01/20/95 by WD using 3010
(2) Sample Preparation on 01/20/95 by WD using 3020
(3) The laboratory's Practical Quantitation Level could not be achieved for this parameter due to sample composition, matrix effects, sample volume, or quantity used for analysis.
(4) Sample Preparation on 01/27/95 by WD using 3010

02/03/95

LJO/ejnjbb(dw)
LA20IA1
CC: OLIN(TN)
ATTN:STEVE MORROW
BCM-RICK SACKS
PTI-COLLEEN CUSHING

REPORT OF LABORATORY ANALYSIS

pace INCORPORATED ENVIRONMENTAL LABORATORIES

Lab Number : WL-0048-4
Report Date: 02/03/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVE
S000007	Aqueous	CLIENT	01/11/95	01/11/9

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTE
Bicarbonate as HCO3	45.	mg/L	1.0	20	APHA 406C	01/17/95	CM	
Bromide	<2.0	mg/L	1.0	2.0	320.1	01/23/95	NN	
Carbonate, as CO3	<20	mg/L	1.0	20	APHA 406C	01/17/95	CM	
Nitrate as N, Dissolved	3.2	mg/L	4.0	0.050	353.2	01/17/95	BC	
Nitrite as N, Dissolved	<0.050	mg/L	1.0	0.050	353.2	01/13/95	BC	
Organic Carbon, Dissolved (DOC)	6.9	mg/L	1.0	1.0	415.1	01/16/95	BC	
Phosphorus, Dissolved as P	0.12	mg/L	1.0	0.10	365.4	01/18/95	BC	
Solids - Filterable Residue (TDS)	2000.	mg/L	1.0	10	160.1	01/16/95	JF	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample specific reporting limits. Sample-specific limits are indicated by results annotated with '<' value
(1) Sample Preparation on 01/17/95 by BAC
(2) Sample Preparation on 01/13/95 by JF

02/03/95

LJO/ejnjbb(dw)

CC: OLIN(TN)
ATTN:STEVE MORROW
BCM-RICK SACKS
PTI-COLLEEN CUSHING

3?? County Road #5 PO Box 720
Westbrook ME 04098
TEL: 207-874-2400
FAX 207 775 4029

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-0048-5
Report Date: 02/03/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVE
S000001	Aqueous	CLIENT	01/11/95	01/11/9

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOT
Aluminum, Dissolved	1.7	mg/L	1.0	0.10	200.7/6010	01/23/95	KW	
Arsenic, Dissolved	<0.005	mg/L	1.0	0.005	206.2/7060	01/24/95	KW	
Barium, Dissolved	0.086	mg/L	1.0	0.005	200.7/6010	01/23/95	KW	
Calcium, Dissolved	14	mg/L	1.0	0.050	200.7/6010	01/23/95	KW	
Chromium, Dissolved	<0.015	mg/L	1.0	0.015	200.7/6010	01/23/95	KW	
Iron, Dissolved	<0.025	mg/L	1.0	0.025	200.7/6010	01/23/95	KW	
Lead, Dissolved	<0.005	mg/L	1.0	0.005	239.2/7421	01/23/95	KW	
Magnesium, Dissolved	1.7	mg/L	1.0	0.050	200.7/6010	01/23/95	KW	
Manganese, Dissolved	0.17	mg/L	1.0	0.005	200.7/6010	01/25/95	KW	
Potassium, Dissolved	2.0	mg/L	1.0	0.50	200.7/6010	01/25/95	KW	
Silicon, Dissolved	3.0	mg/L	1.0	0.10	200.7/6010	01/30/95	KW	
Sodium, Dissolved	47	mg/L	1.0	0.10	200.7/6010	01/23/95	KW	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sampl
specific reporting limits. Sample-specific limits are indicated by results annotated with '<' valu

(1) Sample Preparation on 01/20/95 by WD using 3010
(2) Sample Preparation on 01/20/95 by WD using 3020
(3) Sample Preparation on 01/27/95 by WD using 3010

02/03/95

LJO/ejnejn/kaw/kew
LA20IA1
CC: OLIN(TN)
ATTN:STEVE MORROW
BCM-RICK SACKS
PTI-COLLEEN CUSHING

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-0048-5
Report Date: 02/03/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
S000001	Aqueous	CLIENT	01/11/95	01/11/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Bicarbonate as HCO3	<20	mg/L	1.0	20	APHA 406C	01/17/95	CM	
Bromide	<2.0	mg/L	1.0	2.0	320.1	01/23/95	NN	
Carbonate, as CO3	<20	mg/L	1.0	20	APHA 406C	01/17/95	CM	
Nitrate as N, Dissolved	0.38	mg/L	1.0	0.050	353.2	01/17/95	BC	
Nitrite as N, Dissolved	<0.050	mg/L	1.0	0.050	353.2	01/13/95	BC	
Organic Carbon, Dissolved (DOC)	1.9	mg/L	1.0	1.0	415.1	01/16/95	BC	
Phosphorus, Dissolved as P	0.15	mg/L	1.0	0.10	365.4	01/18/95	BC	1
Solids - Filterable Residue (TDS)	220.	mg/L	1.0	10	160.1	01/16/95	JF	2

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values

(1) Sample Preparation on 01/17/95 by BAC

(2) Sample Preparation on 01/13/95 by JF

02/03/95

LJO/ejnjbb(dw)

CC: OLIN(TN)
ATTN:STEVE MORROW
BCM-RICK SACKS
PTI-COLLEEN CUSHING

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-0048-6
Report Date: 02/03/95
PO No. : SB-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVE
S000002	Aqueous	CLIENT	01/11/95	01/11/9

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTE
Aluminum, Dissolved	<0.10	mg/L	1.0	0.10	200.7/6010	01/23/95	KW	
Arsenic, Dissolved	<0.005	mg/L	1.0	0.005	206.2/7060	01/24/95	KW	
Barium, Dissolved	0.013	mg/L	1.0	0.005	200.7/6010	01/23/95	KW	
Calcium, Dissolved	230	mg/L	5.0	0.050	200.7/6010	01/25/95	KW	
Chromium, Dissolved	<0.015	mg/L	1.0	0.015	200.7/6010	01/23/95	KW	
Iron, Dissolved	0.20	mg/L	1.0	0.025	200.7/6010	01/25/95	KW	
Lead, Dissolved	<0.005	mg/L	1.0	0.005	239.2/7421	01/23/95	KW	
Magnesium, Dissolved	17.	mg/L	1.0	0.050	200.7/6010	01/23/95	KW	
Manganese, Dissolved	3.5	mg/L	1.0	0.005	200.7/6010	01/25/95	KW	
Potassium, Dissolved	7.8	mg/L	1.0	0.50	200.7/6010	01/25/95	KW	
Silicon, Dissolved	2.4	mg/L	1.0	0.10	200.7/6010	01/30/95	KW	
Sodium, Dissolved	190.	mg/L	5.0	0.10	200.7/6010	01/25/95	KW	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample specific reporting limits. Sample-specific limits are indicated by results annotated with '<' value

(1) Sample Preparation on 01/20/95 by WD using 3010
(2) Sample Preparation on 01/20/95 by WD using 3020
(3) Sample Preparation on 01/27/95 by WD using 3010

02/03/95

LJO/ejnjbb(dw)
LA20IA1
CC: OLIN(TN)
ATTN:STEVE MORROW
BCM-RICK SACKS
PTI-COLLEEN CUSHING

REPORT OF LABORATORY ANALYSIS

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-0048-C
Report Date: 02/03/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
S000002	Aqueous	CLIENT	01/11/95	01/11/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTE
Bicarbonate as HCO3	190.	mg/L	1.0	20	APHA 406C	01/17/95	CM	
Bromide	2.3	mg/L	1.0	2.0	320.1	01/23/95	NN	
Carbonate, as CO3	<20	mg/L	1.0	20	APHA 406C	01/17/95	CM	
Nitrate as N, Dissolved	0.36	mg/L	1.0	0.050	353.2	01/17/95	BC	
Nitrite as N, Dissolved	<0.050	mg/L	1.0	0.050	353.2	01/13/95	BC	
Organic Carbon, Dissolved (DOC)	18	mg/L	1.0	1.0	415.1	01/16/95	BC	
Phosphorus, Dissolved as P	<0.10	mg/L	1.0	0.10	365.4	01/18/95	BC	
Solids - Filterable Residue (TDS)	1300.	mg/L	1.0	10	160.1	01/16/95	JF	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample specific reporting limits. Sample-specific limits are indicated by results annotated with '<' value
(1) Sample Preparation on 01/17/95 by BAC
(2) Sample Preparation on 01/13/95 by JF

02/03/95

LJO/ejnjbb(dw)

CC: OLIN(TN)
ATTN:STEVE MORROW
BCM-RICK SACKS
PTI-COLLEEN CUSHING

REPORT OF LABORATORY ANALYSIS

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

Lab Number : WL-0048-7
Report Date: 02/03/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVE
S000003	Aqueous	CLIENT	01/11/95	01/11/9

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTE
Aluminum, Dissolved	0.36	mg/L	1.0	0.10	200.7/6010	01/23/95	KW	
Arsenic, Dissolved	<0.005	mg/L	1.0	0.005	206.2/7060	01/24/95	KW	
Barium, Dissolved	0.023	mg/L	1.0	0.005	200.7/6010	01/23/95	KW	
Calcium, Dissolved	6.9	mg/L	1.0	0.050	200.7/6010	01/23/95	KW	
Chromium, Dissolved	<0.015	mg/L	1.0	0.015	200.7/6010	01/23/95	KW	
Iron, Dissolved	3.4	mg/L	1.0	0.025	200.7/6010	01/25/95	KW	
Lead, Dissolved	<0.005	mg/L	1.0	0.005	239.2/7421	01/23/95	KW	
Magnesium, Dissolved	1.4	mg/L	1.0	0.050	200.7/6010	01/23/95	KW	
Manganese, Dissolved	0.31	mg/L	1.0	0.005	200.7/6010	01/25/95	KW	
Potassium, Dissolved	0.80	mg/L	1.0	0.50	200.7/6010	01/25/95	KW	
Silicon, Dissolved	5.1	mg/L	2.0	0.10	200.7/6010	01/30/95	KW	
Sodium, Dissolved	21	mg/L	5.0	0.10	200.7/6010	01/26/95	KW	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample specific reporting limits. Sample-specific limits are indicated by results annotated with '<' value

(1) Sample Preparation on 01/20/95 by WD using 3010
(2) Sample Preparation on 01/20/95 by WD using 3020
(3) Sample Preparation on 01/27/95 by WD using 3010

02/03/95

LJO/ejnjbb(dw)/kaw
LA20IA1
CC: OLIN(TN)
ATTN:STEVE MORROW
BCM-RICK SACKS
PTI-COLLEEN CUSHING

3?C County Road #5 PO Box 720
Westbrook ME 04098
TEL: 207-874-2400
FAX 207-775-4029

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-0048-7
Report Date: 02/03/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
S000003	Aqueous	CLIENT	01/11/95	01/11/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Bicarbonate as HCO3	<20	mg/L	1.0	20	APHA 406C	01/17/95	CM	
Bromide	<2.0	mg/L	1.0	2.0	320.1	01/23/95	NN	
Carbonate, as CO3	<20	mg/L	1.0	20	APHA 406C	01/17/95	CM	
Nitrate as N, Dissolved	<0.050	mg/L	1.0	0.050	353.2	01/17/95	BC	
Nitrite as N, Dissolved	<0.050	mg/L	1.0	0.050	353.2	01/13/95	BC	
Organic Carbon, Dissolved (DOC)	5.8	mg/L	1.0	1.0	415.1	01/16/95	BC	
Phosphorus, Dissolved as P	<0.10	mg/L	1.0	0.10	365.4	01/18/95	BC	1
Solids - Filterable Residue (TDS)	130.	mg/L	1.0	10	160.1	01/16/95	JF	2

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values

(1) Sample Preparation on 01/17/95 by BAC
(2) Sample Preparation on 01/13/95 by JF

02/03/95

LJO/ejnjbb(dw)

CC: OLIN(TN)
ATTN:STEVE MORROW
BCM-RICK SACKS
PTI-COLLEEN CUSHING

ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-0048-8
Report Date: 02/03/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
S000005	Aqueous	CLIENT	01/11/95	01/11/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Dissolved	2100.	mg/L	200	0.10	200.7/6010	01/25/95	KW	1
Arsenic, Dissolved	<0.50	mg/L	100	0.005	206.2/7060	01/24/95	KW	2,3
Barium, Dissolved	0.046	mg/L	1.0	0.005	200.7/6010	01/23/95	KW	1
Calcium, Dissolved	580.	mg/L	20	0.050	200.7/6010	01/25/95	KW	1
Chromium, Dissolved	3500	mg/L	1000	0.015	200.7/6010	01/23/95	KW	1
Iron, Dissolved	2100.	mg/L	200	0.025	200.7/6010	01/25/95	KW	1
Lead, Dissolved	<1.0	mg/L	200	0.005	239.2/7421	01/26/95	KW	2,3
Magnesium, Dissolved	1100.	mg/L	20	0.050	200.7/6010	01/25/95	KW	.
Manganese, Dissolved	570.	mg/L	200	0.005	200.7/6010	01/25/95	KW	1
Potassium, Dissolved	85.	mg/L	1.0	0.50	200.7/6010	01/25/95	KW	1
Silicon, Dissolved	120	mg/L	40	0.10	200.7/6010	01/30/95	KW	4
Sodium, Dissolved	23000.	mg/L	500	0.10	200.7/6010	01/25/95	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values

(1) Sample Preparation on 01/20/95 by WD using 3010
(2) Sample Preparation on 01/20/95 by WD using 3020
(3) The laboratory's Practical Quantitation Level could not be achieved for this parameter due to sample composition, matrix effects, sample volume, or quantity used for analysis.
(4) Sample Preparation on 01/27/95 by WD using 3010

02/03/95

LJO/ejnjbb(dw)
LA20IA1
CC: OLIN(TN)
ATTN:STEVE MORROW
BCM-RICK SACKS
PTI-COLLEEN CUSHING

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-0048-8
Report Date: 02/03/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
S000005	Aqueous	CLIENT	01/11/95	01/11/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Bicarbonate as HCO3	NR	mg/L	1.0	20	APHA 406C	01/18/95	CM	:
Bromide	<500.	mg/L	500	1	300.0	01/15/95	NH	:
Carbonate, as CO3	NR	mg/L	1.0	20	APHA 406C	01/18/95	CM	:
Nitrate as N, Dissolved	14.	mg/L	10	0.050	353.2	01/17/95	BC	
Nitrite as N, Dissolved	0.24	mg/L	2.0	0.050	353.2	01/13/95	BC	
Organic Carbon, Dissolved (DOC)	2900	mg/L	20	1.0	415.1	01/16/95	BC	
Phosphorus, Dissolved as P	35.	mg/L	10	0.10	365.4	01/18/95	BC	‹
Solids - Filterable Residue (TDS)	97000	mg/L	100	10	160.1	01/17/95	BC	!

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values

(1) Initial sample pH was <4.5. Bicarbonate could not be analyzed.
(2) The laboratory's Practical Quantitation Level could not be achieved for this parameter due to sample composition, matrix effects, sample volume, or quantity used for analysis.
(3) Initial sample pH was <4.5. Carbonate could not be analyzed.
(4) Sample Preparation on 01/17/95 by BAC
(5) Sample Preparation on 01/16/95 by JF

02/03/95

LJO/ejnbac/jbb(dw)

CC: OLIN(TN)
ATTN:STEVE MORROW
BCM-RICK SACKS
PTI-COLLEEN CUSHING

REPORT OF LABORATORY ANALYSIS

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-0048-9
Report Date: 02/03/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
S000006	Aqueous	CLIENT	01/11/95	01/12/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Chromium, Hexavalent	94	mg/L	50.	0.015	6010	01/13/95	KW	1
Chromium, Trivalent	3700	mg/L	1.0	0.015	Calculation	01/31/95	GB	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values
(1) Sample Preparation on 01/12/95 by GFB using 7195

02/03/95

LJO/ejnejn/jbb(dw)

CC: OLIN(TN)
ATTN:STEVE MORROW
BCM-RICK SACKS
PTI-COLLEEN CUSHING

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-0048-10
Report Date: 02/03/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
S000006-MS	Aqueous	CLIENT	01/11/95	01/12/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Chromium, Hexavalent	102	mg/L	50.	0.015	6010	01/13/95	KW	1
Chromium, Trivalent	N.A.	mg/L	1.0	0.015	Calculation	01/31/95	GB	2

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values
(1) Sample Preparation on 01/12/95 by GFB using 7195
(2) This is a calculation and is not applicable for a matrix spike.

02/03/95

LJO/ejnejn/jbb(dw)

CC: OLIN(TN)
ATTN:STEVE MORROW
BCM-RICK SACKS
PTI-COLLEEN CUSHING

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-0048-11
Report Date: 02/03/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
S000006-DUP	Aqueous	CLIENT	01/11/95	01/12/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTE
Chromium, Hexavalent	96.2	mg/L	50.	0.015	6010	01/13/95	KW	:
Chromium, Trivalent	3460	mg/L	1.0	0.015	Calculation	01/31/95	GB	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values
(1) Sample Preparation on 01/12/95 by GFB using 7195

02/03/95

LJO/ejngfb/jbb(dw)

CC: OLIN(TN)
ATTN:STEVE MORROW
BCM-RICK SACKS
PTI-COLLEEN CUSHING

3?? County Road #5 PO Box 720
Westbrook ME 04098
TEL: 207-874-2400
FAX 207 775 4029

REPORT OF LABORATORY ANALYSIS

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

Lab Number : WL 0048-12
Report Date: 02/03/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
S000007	Aqueous	CLIENT	01/11/95	01/12/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Chromium, Hexavalent	<0.015	mg/L	1.0	0.015	6010	01/13/95	KW	1
Chromium, Trivalent	<0.015	mg/L	1.0	0.015	Calculation	01/31/95	GB	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values
(1) Sample Preparation on 01/12/95 by GFB using 7195

02/03/95

LJO/ejnejn/jbb(dw)

CC: OLIN(TN)
ATTN:STEVE MORROW
BCM-RICK SACKS
PTI-COLLEEN CUSHING

REPORT OF LABORATORY ANALYSIS

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

Lab Number : WL-0048-13
Report Date: 02/03/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
S000001	Aqueous	CLIENT	01/11/95	01/12/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Chromium, Hexavalent	<0.015	mg/L	1.0	0.015	6010	01/13/95	KW	1
Chromium, Trivalent	<0.015	mg/L	1.0	0.015	Calculation	01/31/95	GB	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values
(1) Sample Preparation on 01/12/95 by GFB using 7195

02/03/95

LJO/ejngfb/jbb(dw)

CC: OLIN(TN)
ATTN:STEVE MORROW
BCM-RICK SACKS
PTI-COLLEEN CUSHING

340 County Road #5 PO Box 720
Westbrook ME 04098
TEL 207-874-2400
FAX 207 775-4029

REPORT OF LABORATORY ANALYSIS

pace INCORPORATED ENVIRONMENTAL LABORATORIES

Lab Number : WL-0048-14
Report Date: 02/03/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
S000002	Aqueous	CLIENT	01/11/95	01/12/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Chromium, Hexavalent	<0.015	mg/L	1.0	0.015	6010	01/13/95	KW	:
Chromium, Trivalent	<0.015	mg/L	1.0	0.015	Calculation	01/31/95	GB	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values
(1) Sample Preparation on 01/12/95 by GFB using 7195

02/03/95

LJO/ejngfb/jbb(dw)

CC: OLIN(TN)
ATTN:STEVE MORROW
BCM-RICK SACKS
PTI-COLLEEN CUSHING

340 County Road #5 PO Box 720
Westbrook ME 04098
TEL: 207-874-2400
FAX 207 775-4029

An Equal Opportunity Employer

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-0048-15
Report Date: 02/03/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
S000003	Aqueous	CLIENT	01/11/95	01/12/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Chromium, Hexavalent	<0.015	mg/L	1.0	0.015	6010	01/13/95	KW	1
Chromium, Trivalent	<0.015	mg/L	1.0	0.015	Calculation	01/31/95	GB	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values
(1) Sample Preparation on 01/12/95 by GFB using 7195

02/03/95

LJO/ejngfb/jbb(dw)

CC: OLIN(TN)
ATTN:STEVE MORROW
BCM-RICK SACKS
PTI-COLLEEN CUSHING

REPORT OF LABORATORY ANALYSIS

PACE INCORPORATED
ENVIRONMENTAL LABORATORIES

Lab Number : WL-0048-16
Report Date: 02/03/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIV
S000005	Aqueous	CLIENT	01/11/95	01/12/

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NO
Chromium, Hexavalent	~~110~~ 200	mg/L	50	0.015	6010	01/16/95	KW	
Chromium, Trivalent	~~3400~~ 3300	mg/L	1.0	0.015	Calculation	01/31/95	GB	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sampl specific reporting limits. Sample-specific limits are indicated by results annotated with '<' valu

(1) Sample Preparation on 01/12/95 by GFB using 7195

WDrisey
1/16/96

02/03/95

LJO/ejngfb/jbb(dw)

CC: OLIN(TN)
ATTN:STEVE MORROW
BCM-RICK SACKS
PTI-COLLEEN CUSHING

Respectfully submitted,
PACE, INC.

Laura J. O'Meara
Supervisor, Client Services

PACE, Inc.
Maine Laboratory
Quality Control Report

Duplicate and Matrix Spike/Matrix Spike Duplicate Results

		DUPLICATE RESULTS						MATRIX SPIKE/MATRIX SPIKE DUPLICATE RESULTS									
			Sample Measurement						Concentration or Quantity				Matrix Spike Recovery (%)				
Parameter	PACE Sample No	Units	Rep 1	Rep 2	Mean Conc	RPD (%)	Acceptance Range for RPD (%)	Units	Sample Only	Spike Added	Sample +Spike Dup 1	Sample +Spike Dup 2	Sample +Spike Dup 1	Sample +Spike Dup 2	Acceptance Range (%)	RPD (%)	Acceptance Range (%)
Aluminum	WL0048-1	mg/L	2010	2030	2020	1 0	0-20	mg/L	2010	2 00	1960	NA	0	NA	75-125	NA	0-20
Arsenic	WL0048-1	mg/L	<0 500	<0 500	<0 500	NC	0 20	mg/L	<0 500	0 040	<1 00	NA	0	NA	75-125	NA	0-20
Barium	WL0048-1	mg/L	0 050	0 049	0 050	2 0	0 20	mg/L	0.050	2 00	1 55	NA	75.0	NA	75-125	NA	0-20
Calcium	WL0048-1	mg/L	692	627	660	9.9	0-20	mg/L	692	2 00	543	NA	0	NA	75-125	NA	0-20
Chromium	WL0048-1	mg/L	3830	3560	3695	7.3	0 20	mg/L	3830	0.200	3450	NA	0	NA	75-125	NA	0-20
Chromium, Hexavalent	WL0048-9	mg/L	93 6	96 2	94.9	2 7	0-20	mg/L	93.6	12.5	102	NA	67.2	NA	75-125	NA	0-20
Chromium, Trivalent	See Chromium and Chromium Hexavalent																
Iron	WL0048-1	mg/L	1980	2190	2085	10	0-20	mg/L	1980	1.00	2040	NA	6000	NA	75-125	NA	0-20
Lead	WL0048-1	mg/L	<1.00	<1.00	<1.00	NC	0-20	mg/L	<1.00	0.020	<1.00	NA	0	NA	75-125	NA	0-20
Magnesium	WL0048-1	mg/L	1160	1180	1170	1.7	0-20	mg/L	1160	4 00	1100	NA	0	NA	75-125	NA	0-20
Manganese	WL0048-1	mg/L	594	580	587	2 4	0-20	mg/L	594	0 500	563	NA	0	NA	75-125	NA	0-20
Potassium	WL0048-1	mg/L	77.2	85 4	81.3	10	0 20	mg/L	77.2	20 0	81.2	NA	20.0	NA	75-125	NA	0-20
Sodium	WL0048-1	mg/L	25200	27500	26350	8.7	0-20	mg/L	25200	6.00	24200	NA	0	NA	75-125	NA	0-20
Silicon	WL0048-1	mg/L	123	119	121	3 3	0-20	mg/L	123	5.00	114	NA	0	NA	75-125	NA	0-20

RPD = Relative percent difference, which is the absolute value of the difference between two duplicate results divided by the mean concentration then multiplied by 100%.

NA = Not applicable.

NC = Relative percent difference cannot be calculated for sample results less than the PQL.

DATA QUALITY COMMENTS:
Results of all quality control measurements are within the laboratory or contract specified acceptance range except as noted. The laboratory does not use the sample duplicate and matrix spike acceptance ranges as acceptance criteria for a specific analysis. Sample duplicate and matrix spike data are used to evaluate method performance in the environmental sample matrix only. Please refer to LCS data for assessment

Potassium is estimated. The remaining criteria outlined are described in the Notes Section of the report. M Dusing 1/19/96

Client Olin Chemicals, Work Order WL0048   02-Feb-95

PACE, Inc.
Maine Laboratory
Quality Control Report

Duplicate and Matrix Spike/Matrix Spike Duplicate Results

		DUPLICATE RESULTS						*MATRIX SPIKE/MATRIX SPIKE DUPLICATE RESULTS*									
			Sample Measurements				Acceptance	Concentration or Quantity					Matrix Spike Recovery (%)				
Parameter	PACE Sample No.	Units	Rep 1	Rep 2	Mean Conc	RPD (%)	Range for RPD (%)	Units	Sample Only	Spike Added	Sample +Spike Dup 1	Sample +Spike Dup 2	Sample +Spike Dup 1	Sample +Spike Dup 2	Acceptance Range (%)	RPD (%)	Acceptance Range (%)
Alkalinity	WL0048-1	mg/L	NR	NR	NR	NC	0-20	mg/L	NR	NA	NR	NA	NA	NA	75-125	NA	0-20
Bromide	WL0048-1	mg/L	<1000	<1000	<1000	NC	0-20	mg/L	<1000	10000	9930	NA	99.3	NA	75-125	NA	0-20
Nitrate+Nitrite	WL0048-1	mg/L	13.9	12.8	13.4	8.2	0-20	mg/L	13.9	12.0	25.6	NA	97.5	NA	75-125	NA	0-20
Nitrate - N	See Nitrate+Nitrite, Nitrite																
Nitrite - N	WL0048-1	mg/L	0.342	0.335	0.339	2.1	0-20	mg/L	0.342	1.00	1.05	NA	70.8 *	NA	75-125	NA	0-20
Phosphate,Tota	WL0048-1	mg/L	54.1	43.7	48.9	21	0-20	mg/L	54.1	12.5	64.2	NA	80.8	NA	75-125	NA	0-20
TDS	WL0048-1	mg/L	120000	80300	100150	40 &	0-20	Matrix Spike/Matrix Spike Duplicate Not Applicable to this parameter									
DOC	WL0048-1	mg/L	2800	2820	2810	0.7	0-20	mg/L	2800	800	3260	NA	57.5 *	NA	75-125	NA	0-20

RPD = Relative percent difference, which is the absolute value of the difference between two replicate results divided by the mean concentration then multiplied by 100%.

→ out of range

→ below criteria

NC = Relative percent difference cannot be calculated for sample results less than the PQL.

NA = Not applicable.

MOusey 1/16/96

DATA QUALITY COMMENTS:

Results of all quality control measurements are within the laboratory or contract specified acceptance range except as noted. The laboratory does not use the sample duplicate and matrix spike acceptance ranges as acceptance criteria for a specific analysis. Sample duplicate and matrix spike data are used to evaluate method performance in the environmental sample matrix only. Please refer to LCS data for assessment of quality control for each parameter.

* Matrix spike recovery is outside the laboratory's specified acceptance range indicating potential sample matrix interference and potential bias of reported value for this parameter.

& Precision of replicate analysis as measured by RPD is outside the laboratory's acceptance range for this parameter. Sample homogeneity may be a factor.

NR = Initial sample pH was <4.5 Alkalinity could not be analyzed.

	<-As------------------------------>	
Burns	02.28	01.30
Mean	1.790	
CV %	38.71	<5CC JT
Sample value	179.00	

66	0048-1	AS		100.00x	01/24/95	15:01

	<-As------------------------------>	
Burns	12.35	10.35
Mean	11.350	
CV %	12.46	
Sample value	1135.00	below limit
Spike added	20.00	
Spike recovery, %	47.80 ***	MOusey 1/16/95

TJA S-H 22/CTF-188 (Arsenic - Concentration Mode - 2 Burns)
Run: TJ 9502302 Analyst: KEW Page 1

Concentrations

POS	SAMPLE ID	CODE	CLIENT ID	DILUTION	DATE	TIME
67	CCV	CCV		1.00x	01/24/95	15:06

	<-As------------------------------>	
Burns	29.09	28.32
Mean	28.705	
CV %	1.90	
Sample value	28.70	95.7%

68	CCB	CCB		1.00x	01/24/95	15:11

	<-As------------------------------>	
Burns	00.21	00.33
Mean	0.270	
CV %	31.43	/
Sample value	0.98U	

69	SO	AZ		1.00x	01/24/95	15:17

	<-As------------------------------>	
Burns	00.21	00.26
Mean	0.235	

0048-3

	<-As------>	
Burns	13.91	11.36
Mean	12.635	
CV %	14.27	
Sample value	1263.50	
Spike added	20.00	
Spike recovery, %	51.65 ***	

below limit (matrix spike result)
MOusey 1/16/95

95 0048-4 S 1.00x 01/24/95 17:34

	<-As------>	
Burns	-00.23	-00.48
Mean	-0.355	
CV %	49.80	
Sample value	0.98U	

ARGOS MODEL S4 Version 1.30

TJA S-H 22/CTF-188 (Arsenic - Concentration Mode - 2 Burns)
Run: TJ 9502302 Analyst: KEW Page 3

Concentrations

POS	SAMPLE ID	CODE	CLIENT ID	DILUTION	DATE	TIME
96	0048-4	AS		1.00x	01/24/95	17:39

	<-As------>	
Burns	10.15	09.47
Mean	9.810	
CV %	4.90	
Sample value	9.81	
Spike added	20.00	
Spike recovery, %	49.05 ***	

below limit
MOusey 1/16/96

97 0048-4 S 2.00x 01/24/95 17:44

	<-As------>	
Burns	-00.15	-00.41
Mean	-0.280	
CV %	65.66	
Sample value	1.96U	

(use above result w/ no dilu)

98 0048-4 AS 2.00x 01/24/95 17:49

	<-As------>	
Burns	15.20	13.57
Mean	14.385	
CV %	8.01	
Sample value	28.77	
Spike added	20.00	

TJA S-H 22/CTF-188 (~~Arsenic~~ Conc...

Burns	-00.48	-00.50
Mean	-0.490	
CV %	2.89	
Sample value	1.96U	

use above undiluted result

108 0048-5 AS 2.00x 01/24/95 18:42

	(-As	
Burns	21.39	17.56
Mean	19.475	
CV %	13.91	
Sample value	38.95	
Spike added	20.00	
Spike recovery, %	97.38	

109 0048-6 S 1.00x 01/24/95 18:47

	(-As	
Burns	02.34	01.01
Mean	1.675	
CV %	56.15	
Sample value	1.67	

110 0048-6 AS 1.00x 01/24/95 18:53

	(-As	
Burns	17.60	17.31
Mean	17.455	
CV %	1.18	
Sample value	17.45	
Spike added	20.00	
Spike recovery, %	78.90 ***	

below limit
[illegible]
1/16/96

111 0048-6 S 2.00x 01/24/95 18:58

	(-As	
Burns	00.04	00.33
Mean	0.185	
CV %	110.84	
Sample value	1.96U	

use above undiluted result.

ARGOS MODEL S4 Version 1.30

TJA S-H 22/CTF-188 (Arsenic - Concentration Mode - 2 Burns)
Run: TJ 9502302 Analyst: KEW Page 3

Concentrations

POS	SAMPLE ID	CODE	CLIENT ID	DILUTION	DATE	TIME
112	0048-6	AS		2.00x	01/24/95	19:03

TJA S-H 22/CTF-188 (Arsenic - Concentration Mode - 2 Burns)
Run: TJ 9502401 Analyst: KEW Page 9

Concentrations

POS	SAMPLE ID	CODE	CLIENT ID	DILUTION	DATE	TIME
46	WL0048-8	AS		100.00x	01/25/95	01:34

	<-As	--->
Burns	12.74	10.90
Mean	11.820	
CV %	11.01	
Sample value	1182.00	
Spike added	~~20.00~~	
Spike recovery, %	59.10 *** ✓	

below limit
[signature]
1/16/95

POS	SAMPLE ID	CODE	CLIENT ID	DILUTION	DATE	TIME
47	BOMBBLANK	S		1.00x	01/25/95	01:39

	<-As	--->
Burns	01.28	01.23
Mean	1.255	
CV %	2.82	
Sample value	1.25 <	

POS	SAMPLE ID	CODE	CLIENT ID	DILUTION	DATE	TIME
48	BOMBBLANK	AS		1.00x	01/25/95	01:44

	<-As	--->
Burns	22.54	21.53
Mean	22.035	
CV %	3.24	
Sample value	22.03	
Spike added	20.00	
Spike recovery, %	103.90 ✓	

POS	SAMPLE ID	CODE	CLIENT ID	DILUTION	DATE	TIME
49	WL0018-1	S		1.00x	01/25/95	01:50

	<-As	--->
Burns	00.44	00.70
Mean	0.570	
CV %	32.25	
Sample value	0.98U <	

POS	SAMPLE ID	CODE	CLIENT ID	DILUTION	DATE	TIME
50	WL0018-1	AS		1.00x	01/25/95	01:55

	<-As	--->
Burns	20.14	18.91
Mean	19.525	
CV %	4.45	
Sample value	19.52	
Spike added	20.00	
Spike recovery, %	97.63 ✓	

<-Pb------------------------------------>

Burns	-00.87	-00.99
Mean	-0.930	
CV %	9.12	
Sample value	49.00U	

17
0062-3 AS 200.00x 01/26/95 13:56

<-Pb------------------------------------>

Burns	06.94	08.41
Mean	7.675	
CV %	13.54	
Sample value	1535.00	
Spike added	20.00	
Spike recovery, %	38.38 ***	

18 0048-1 S 200.00x 01/26/95 12:25

<-Pb------------------------------------>

Burns	00.14	00.03
Mean	0.085	
CV %	91.51	
Sample value	98.00U	<1000

ARGOS MODEL S4 Version 1.30

TJA S-H 22/CTF-188 (Lead - Concentration Mode - 2 Burns)
Run: TJ 9502601 Analyst: KAW Page 4

Concentrations

POS	SAMPLE ID	CODE	CLIENT ID	DILUTION	DATE	TIME
19	0048-1	AS		200.00x	01/26/95	12:28

<-Pb------------------------------------>

Burns	15.39	15.93
Mean	15.660	
CV %	2.44	
Sample value	3132.00	
Spike added	20.00	
Spike recovery, %	78.30 *** ✓	

below limit
MOusey
1/16/95

POS	SAMPLE ID	CODE	CLIENT ID	DILUTION	DATE	TIME
20	CCV	CCV		1.00x	01/26/95	12:32

<-Pb------------------------------------>

Burns	31.74	33.03
Mean	32.385	
CV %	2.82	
Sample value	32.38	108% ✓

POS	SAMPLE ID	CODE	CLIENT ID	DILUTION	DATE	TIME
21	CCB	CCB		1.00x	01/26/95	12:35

Spike added 20.00
Spike recovery, % 0.00 ***

82	0048-4	S		2.00x	01/23/95	14:59

<-Pb------------------------------------>

Burns	00.16	00.12
Mean	0.140	
CV %	20.20	
Sample value	0.98U	<IC J? ✓

ARGOS MODEL S4 Version 1.30

TJA S-H 22/CTF-188 (Lead - Concentration Mode - 2 Burns)
Run: TJ 9502301 Analyst: KEW Page 2

Concentrations

POS	SAMPLE ID	CODE	CLIENT ID	DILUTION	DATE	TIME
83	0048-4	AS		2.00x	01/23/95	15:04

<-Pb------------------------------------>

Burns	10.10	12.51
Mean	11.305	
CV %	15.07	
Sample value	22.61	
Spike added	20.00	
Spike recovery, %	56.53 ***	

below limit
MDusey
1/16/98

TJA S-H 22/CTF-188 (Lead - Concentration Mode - 2 Burns)
Run: TJ 9502301 Analyst: KEW Page 1

Concentrations

POS	SAMPLE ID	CODE	CLIENT ID	DILUTION	DATE	TIME
84	CCV	CCV		1.00x	01/23/95	15:09

<-Pb------------------------------------>

Burns	24.71	24.08
Mean	24.395	
CV %	1.83	
Sample value	24.40 *** 81.3%	

85	CCB	CCB		1.00x	01/23/95	15:14

<-Pb------------------------------------>

Mean	-20.945
CV %	10.43
Sample value	20.94
Spike added	20.00
Spike recovery, %	104.72

~~TJA S-H 22/CTF-188 (Lead - Concentration Mode - 2 Burns)~~
Run: TJ 9502301 Analyst: KEW Page 1

Concentrations

POS	SAMPLE ID	CODE	CLIENT ID	DILUTION	DATE	TIME
30	0048-6	S	LA20GA1 OLIN	1.00x	01/23/95	10:46

	<-Pb	-->
Burns	-01.08	-00.95
Mean	-1.015	
CV %	9.06	
Sample value	0.49U	

POS	SAMPLE ID	CODE	CLIENT ID	DILUTION	DATE	TIME
31	0048-6	AS		1.00x	01/23/95	10:51

	<-Pb	-->
Burns	09.11	09.03
Mean	9.070	
CV %	0.62	
Sample value	9.07	
Spike added	20.00	
Spike recovery, %	45.35 ***	

below limit
MOursey
1/16/95

POS	SAMPLE ID	CODE	CLIENT ID	DILUTION	DATE	TIME
32	0048-7	S	LA20GA1 OLIN	1.00x	01/23/95	10:56

	<-Pb	-->
Burns	00.27	-00.03
Mean	0.120	
CV %	176.78	
Sample value	0.49U	

POS	SAMPLE ID	CODE	CLIENT ID	DILUTION	DATE	TIME
33	0048-7	AS		1.00x	01/23/95	11:01

	<-Pb	-->
Burns	22.41	19.67
Mean	21.040	
CV %	9.21	
Sample value	21.04	
Spike added	20.00	
Spike recovery, %	105.20	

TJA S-H 22/CTF-188 (Lead - Concentration Mode - 2 Burns)
Run: TJ 9502301 Analyst: KEW Page 1

Concentrations

Field Duplicate Precision Worksheet — Smith

Project Name Olin Chemicals
Project Num 00-7047-0102

Case Number: WL-0048

Sample location	GW-42-D	GW-42-D
Sample ID number	S000005 WL-0048-1	S000006 WL-0048-8
Matrix	Aqueous	Aqueous
Units	mg/L	mg/L
	filt.	filt.

Compound	Sample Concentration	Field Duplicate Concentration	RPD	Q
Aluminum	2000	2100	4.9	
Arsenic				
Barium	0.050	0.046	8.3	
Calcium	690	580	17.3	
Chromium	3800	3500	8.2	
Chromium, Hexavalent	94	200 / 110	72.1 / 15.7	+
Chromium, Trivalent	3700	3400	8.5	
Iron	2000	2100	4.9	
Lead				
Magnesium	1200	1100	8.7	
Manganese	590	570	3.4	
Potassium	77	85	9.9	
Silicon	120	120	0.0	
Sodium	25000	23000	8.3	
Bicarbonate as HCO3				
Bromide				
Carbonate as CO3				
Nitrate as N	14	14	0.0	
Nitrite as N	0.34	0.24	34.5	*
Total Organic Carbon	2800	2900	3.5	
Phosphorus as P	54	35	42.7	*
Solids-Filterable Residue (TDS)	120000	97000	21.2	*

* Indicates control limit out of criteria
\+ Updated result reported by the laboratory / Result reported by the laboratory.

Smith CQAD has established a control limit of 20 percent RPD.

FD0048.XLS

QA Scientist MOrsey

Date 1/16/96

Katahdin

DATE: 01/17/96

TO: Mary Beth Ousey

FROM: Lil Pepin

RE: Hexavalent Chromium

At your request, we have reviewed the raw data for PACE Work Order Number WL0048. We have determined that a calculation error resulted in the reporting of erroneous hexavalent chromium and trivalent chromium results for Sample Number S000005 (PACE Sample Number WL0048-16). The correct results for this sample are 2[illegible] mg/L for hexavalent chromium and 3300 mg/L for trivalent chromium. We regret this error and will issue a corrected report of analysis.

Lil Pepin

340 County Road No. 5
P.O. Box 720, Westbrook, ME 04098
Tel. (207) 874-2400 Fax (207) 775-4029

210 West Road No.
Tel: (603) 431-5[illegible]

Notebook No. 2

Cr+6 - Waters

PROJECT Method 7195 (Coprecipitation)

Continued From Page 24

Race Sample No	Prep Dil Factor	Anal Dil Factor	Total D.F.	Measured Cr (mg/L)	Final Cr+6 (mg/L)
PBW (01/12/95)	1.0	1.0	1.0	<0.015	<0.015
LCSW (01/12/95)	1.0	1.0	1.0	2.155	2.155
WL0048-9	1.0	10.0	10.0	3.671	36.7
-9	5.0	10.0	50.0	1.876	93.8
-9	20.0	2.0	40.0	2.519	101.
WL0048-10	1.0	10.0	10.0	3.650	36.5
-10	5.0	10.0	50.0	2.043	102.
-10	20.0	2.0	40.0	2.846	114.
WL0048-11	~~5.0~~ 5.0	10.0	50.0	1.923	96.2
-11	20.0	2.0	40.0	2.487	99.5
WL0048-12	1.0	1.0	1.0	<0.015	<0.015
-12	5.0	1.0	5.0	<0.015	<0.075
WL0048-13	1.0	1.0	1.0	<0.015	<0.015
-13	5.0	1.0	5.0	<0.015	<0.075
WL0048-14	1.0	1.0	1.0	<0.015	<0.015
-14	5.0	1.0	5.0	<0.015	<0.075
WL0048-15	1.0	1.0	1.0	<0.015	<0.015
-15	5.0	1.0	5.0	<0.015	<0.075
WL0048-16	5.0	10.0	50	2.114	106.
-16	20.0	~~2.0~~ (4.0)	~~40~~ 80	2.462	~~98.5~~ 196.96

Due to a hand calculation error at the (? laboratory)

WL0048-16 was not further diluted

(see [illegible])

★ Samples WL0048-(9-15) analyzed by ICP on 01/13/95. Sample WL0048-16 analyzed by ICP on 01/16/95. Results are tabulated above. In each case, have reported the lowest dilution that provides results consistent with more highly diluted samples. For green samples, this corresponds to a prep. dilution factor of 5.0. Clear colorless samples had no detectable Cr for any dilution.

★ LCS recovery = 2.155 / 2.50 × 100% = 86.2%

★ WL0048-10 Spike Recovery → Sample + spike = 102., spike added = 2.5 × 5.0 (dil factor) = 12.5, sample = 93.8. Spike recovery =

$$\frac{102 - 93.8}{12.5} \times 100\% = 65.6\%$$

Continued on Page 25

Read and Understood By

[signature] 01/16/95 [signature] 2.1.95

PROJECT Bromide EPA 320.1 (titrimetric)   Notebook No. 3   Continued From Page 10   11

Spike + CCV:

Because I had virtually no recovery of these during my last set of bromides (12-27-94), I used a different solution to make the CCVs and Spike. I used the Br⁻ Stock Std which yielded high recoveries for the standards (A+B) during the previous run. I used the following volumes:

Spike: (1.0 ml × 1.0 mg/ml)/.10 L = 10.0 mg/l
CCV: (1.0 ml × 1.0 mg/ml)/.10 L = 10.0 mg/l

$[I^-] = \frac{N(\Delta ml - Blank)}{Sample\ Vol}$ N = .0075

I⁻ Determination

Client	Sample ID	Site ID	Sample Vol (ml)	Δml STS	[I⁻]
Olin-Converon	WL0069-3		100.0	0.38	6.00×10^{-6}
↓	WL0069-4		100.0	0.41	8.25×10^{-6}
	WL0069-5		100.0	~~0.33~~ 0.52	1.65×10^{-5}
	WL0069-6		100.0	~~.57~~ 1.98	1.26×10^{-4}
	CCV		100.0	0.33	2.25×10
	CCV *		100.0	0.41	1.275×10
	WL0059-1		100.0	2.87	1.9275×10

* CCV was titrated (read) after WL0069-4 (20TH sample). Remaining CCV was titrated after sample WL0059-1.

Samples WL0048-1-3, WL0048-5, WL0062-1, WL0062-3 were a very dark "inky" color and could not be colorimetrically (titrated) analyzed. I attempted to titrate all 6 in case something could be detected - but I could not see a color change.

These samples were run by Method 300.0 QA 1/16/95
Nancy Smith

Continued on Page 12

Nancy E. Hoftle   1-20-95   Read and Understood By   [signature]   1-27-95
Signed   Date   Signed   Date

SMITH

APPENDIX B

Field Identification: S000001 Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Ammonia-N, dissolved (mg/L as N)	0.06	0.05	42773-001	01/16/95	533	350.2/1
Chloride, dissolved (mg/L)	90	3	42773-007	01/14/95	626A	300.0/1
Sulfate, dissolved (mg/L)	33	1	42773-007	01/13/95	626A	300.0/1
Ortho Phosphate, dissolved (mg/L as P)	BDL	0.02	42773-007	01/12/95	182	365.2/1
Sulfide, dissolved (mg/L)	BDL	1	42773-013	01/13/95	280	376.1/1

Field Identification: S000002 Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Ammonia-N, dissolved (mg/L as N)	120	0.5	42773-002	01/16/95	533	350.2/1
Chloride, dissolved (mg/L)	160	5	42773-008	01/12/94	625A	300.0/1
Sulfate, dissolved (mg/L)	830	10	42773-008	01/12/95	625A	300.0/1
Ortho Phosphate, dissolved (mg/L as P)	0.07	0.02	42773-008	01/12/95	182	365.2/1
Sulfide, dissolved (mg/L)	3	1	42773-014	01/13/95	280	376.1/1

Field Identification: S000003 Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Ammonia-N, dissolved (mg/L as N)	3.7	0.05	42773-003	01/16/95	533	350.2/1
Chloride, dissolved (mg/L)	33	0.5	42773-009	01/13/95	626A	300.0/1
Sulfate, dissolved (mg/L)	13	1	42773-009	01/13/95	626A	300.0/1
Ortho Phosphate, dissolved (mg/L as P)	BDL	0.02	42773-009	01/12/95	182	365.2/1
Sulfide, dissolved (mg/L)	BDL	1	42773-015	01/13/95	280	376.1/1

Field Identification: S000005 Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Ammonia-N, dissolved (mg/L as N)	7100	50	42773-004	01/13/95	532	350.2/1
Chloride, dissolved (mg/L)	24000	300	42773-010	01/14/95	626A	300.0/1
Sulfate, dissolved (mg/L)	74000	2000	42773-010	01/14/95	626A	300.0/1
Ortho Phosphate, dissolved (mg/L as P)	0.3	0.2	42773-010	01/12/95	182	365.2/1
Sulfide, dissolved (mg/L)	4	4	42773-016	01/13/95	280	376.1/1

Field Identification: S000006 Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Ammonia-N, dissolved (mg/L as N)	7000	50	42773-005	01/13/95	532	350.2/1
Chloride, dissolved (mg/L)	20000	500	42773-011	01/15/95	626A	300.0/1
Sulfate, dissolved (mg/L)	74000	1000	42773-011	01/15/95	626A	300.0/1
Ortho Phosphate, dissolved (mg/L as P)	0.3	0.2	42773-011	01/12/95	182	365.2/1
Sulfide, dissolved (mg/L)	BDL	4	42773-017	01/13/95	280	376.1/1

Field Identification: S000007 Matrix: WATER

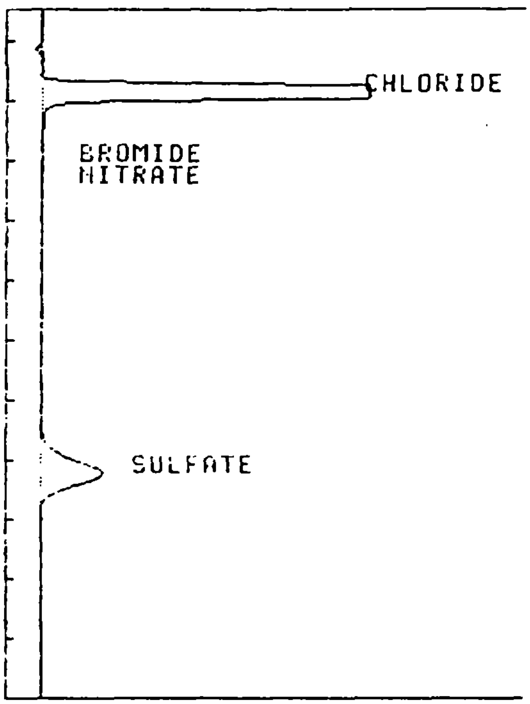
Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Ammonia-N, dissolved (mg/L as N)	130	0.5	42773-006	01/16/95	533	350.2/1
Chloride, dissolved (mg/L)	350	5	42773-012	01/13/95	626A	300.0/1
Sulfate, dissolved (mg/L)	1400	100	42773-012	01/13/95	626A	300.0/1
Ortho Phosphate, dissolved (mg/L as P)	BDL	0.02	42773-012	01/12/95	182	365.2/1
Sulfide, dissolved (mg/L)	BDL	1	42773-018	01/13/95	280	376.1/1

References: 1) 40 CFR Part 136, Friday, October 26, 1984

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0 n
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802 µ
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : 42773-9 Report No : 77.00

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 11/ 11



Sequence File: /DATA/DIONEX/SEQUENCE/IC_01_13.SEQ
Method File : /DATA/DIONEX/METHOD/IC514.MTH
Result File : /DATA/DIONEX/RESULT/IC0522450.RES

Run Time : 12.03 Minutes Injected on 1846 13Jan1995
Report Time : 1859 13Jan1995
Run Status : RunStatusOK
EndOffBaseline

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	1.10		6.00E-07	-3751	PP	.0145	
2	1.25		6.00E-07	2464	PP	.0089	
3	1.81	1.70	6.52E-06	724580	PV	53.2810	CHLORIDE
4	2.97	2.85	1.81E-05	780	VV	1.8698	BROMIDE
5	3.34	3.16	3.01E-06	494	VP	.4473	NITRATE
6	4.71		6.00E-07	-338	PP	.0034	
7	5.40		6.00E-07	544	PP	.0052	
8	8.19	#8.11	8.76E-06	50973	VP	13.0541	SULFATE

exceeds max. std concentra of 50mg/l
MO 1/16/96

MGB 1/14/95

Field Duplicate Precision Worksheet Smith

Project Name: Olin Chemicals
Project Numbe 00-7047-0102

Case Number: 42964

Sample location	GW-42-D	GW-42-D
Sample ID number	S000005 42773-004, -010, -016	S000006 42773-005, -011 -017
Matrix	Aqueous	Aqueous
Units	mg/L	mg/L
	filt.	filt.

Compound	Sample Concentration	Field Duplicate Concentration	RPD	Q
Chloride	24000	20000	18.2	
Sulfate	74000	74000	0.0	
Ortho Phosphate	0.300	0.3	0.0	
Sulfide	4			→ DL=4
Ammonia-N	7100	7000	1.4	Do not qualify

* Indicates control limit out of criteria.

Smith CQAD has established a control limit of 20 percent RPD.

FD0048A.XLS

QA Scientist M Dusey Date 1/16/96

REPORT OF LABORATORY ANALYSIS

pace INCORPORATED THE ASSURANCE OF QUALITY

TECHNICAL NARRATIVE

Laboratory Number: 42773

Samples were received in acceptable condition, with the exceptions noted on the sample receipt condition report.

All samples were prepared and analyzed within the holding times specified in the referenced methods.

Instrumentation used for analysis was calibrated and/or tuned with the appropriate frequency and to the appropriate specifications required by the referenced methods.

Blank contamination was not observed at levels affecting the analytical results.

Matrix effects, as monitored by matrix spike recovery, unusual physical properties and/or surrogate analyte recovery, were not apparent with the following exception:

> The detection limit for the analysis of sulfide was raised for laboratory number 42773-17 due to matrix interference.

Accuracy and precision as monitored by laboratory control sample analyses were within laboratory acceptance limits.

P O Box 2130
1 Lafayette Road
Hampton, NH 03842
TEL: 603-926-7777

DATA VALIDATION REPORT

FOR THE ANALYTICAL RESULTS

OF GROUNDWATER CONFIRMATION SAMPLES

FOR

OLIN CORPORATION
WILMINGTON, MASSACHUSETTS

SMITH PROJECT NO. 00-7047-0102

JANUARY 1996

PREPARED BY

E. Bryan Rivers
E. BRYAN RIVERS
QUALITY ASSURANCE SCIENTIST

Marybeth Ousey
MARYBETH OUSEY
QUALITY ASSURANCE SCIENTIST

Atwood F. Davis
ATWOOD F. DAVIS, CPC
QUALITY ASSURANCE MANAGER

SMITH
ENVIRONMENTAL TECHNOLOGIES CORPORATION

Engineering • Consulting • Remediation • Construction

SMITH

DATA VALIDATION REPORT
OLIN CORPORATION
GROUNDWATER CONFIRMATION SAMPLES

INTRODUCTION

A data validation was performed on the analytical data from the groundwater samples collected on January 11 and 17, 1995 at the Olin Corporation's Wilmington, Massachusetts Facility. This review is of work order number S000004, case number 50184 which contained 2 groundwater samples. All samples in this report were analyzed by Columbia Analytical Services (CAS), Boulder, Colorado, following modified United States Environmental Protection Agency (EPA) Contract Laboratory Program (CLP) Statement of Work (SOW) for Inorganics Analysis, March 1990 (ILM03.0), EPA Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (SW-846), Methods for Chemical Analysis of Water and Wastes (MCAWW), and Standard Methods for the Examination of Water and Wastewater, 17th Ed., 1989 (SM), American Public Health Association (APHA). The individual analyses were performed using the following methods:

Analytes	Methods
aluminum, arsenic, barium, calcium, chromium, iron, magnesium, manganese, potassium, silicon, and sodium	CLP modified
hexavalent chromium	7195/6010
alkalinity as CaCO3	310.1
bicarbonate as HCO3 and carbonate as CO3	SM 2320B
ammonia as nitrogen (for sample S000004)	350.3
ammonia as nitrogen (for sample S000017)	350.1
bromide, chloride, sulfate	300.0
total and dissolved organic carbon (TOC and DOC)	415.1
nitrate as N and nitrite as N (for sample S000004)	353.2
nitrate as N and nitrite as N (for sample S000017)	300.0
orthophosphate as phosphorus and total phosphorus	365.3
solids, filterable residue (TDS)	160.1
sulfide	9030 (modified)

Because not all of the analyses were performed according to the EPA Contract Laboratory Program (CLP) methods, the findings in this report are based upon a review of sample data and of quality control (QC) specified by the individual analytical methods and provided by the laboratory. The quality assurance review was prepared according to EPA

Region I Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analysis, June 1988, where applicable.

The support documentation in Appendix A of this report summarizes the specifics of this review. Appendix A also provides the sample results as reported by the laboratory. The data summary lists all compounds that were analyzed. All results on the data summary table are reported in mg/L. Analytical problems are outlined in the following Findings/Qualifiers section. Other issues which arose which did not warrant qualification are detailed in the Notes Section.

FINDINGS/QUALIFIERS

This data validation report addresses Pace, Inc. work order number S000004 which contained 2 groundwater samples. The data were evaluated for the following parameters:

*	data completeness
	holding times
*	data calibration verification
*	laboratory blank analysis
+	field blank analysis
	interference check sample results
	matrix spike recoveries
	laboratory duplicates
+	field duplicates
*	laboratory control sample results
+	furnace atomic absorption results
	serial dilution results
+	detection limit results
*	sample results

* All criteria were met for this parameter.

\+ All criteria were met for this parameter; however, this parameter is discussed in the Notes Section of this report.

The data summary table provided at the end of this report summarizes the validation recommendations which were based on the following information:

- Hexavalent chromium and total dissolved solids (TDS) results for both samples and nitrate and nitrite results for sample GW-42-D (S000004/K950184-001) are estimated because method-specific holding times were not met.

- Manganese and silicon results are estimated for sample GW-42-D (S000004/K950184-001) because false positives may exist as indicated by positive manganese and silicon results in the ICP interference check samples (ICS). These analytes are not present in the EPA-provided solutions, and the interferent analytes that may contribute to the presence of these compounds (aluminum, chromium, iron, and magnesium) are present at concentrations which may be effecting the reported sample results for manganese and silicon.

- The non-detect sulfide result for sample GW-42-D (S000004/K950184-001) is rejected because the matrix spike percent recovery (%R) was below 30%. (Matrix spike results are also discussed in the Notes Section.)

- The chromium results for both samples and the hexavalent chromium result for sample GW-64-S (S000017/K950265-001) are estimated because laboratory duplicate precision was not met.

- The barium and potassium results for sample GW-42-D (S000004/K950184-001) and the iron result for sample GW-64-S (S000017/K950265-001) are estimated because the associated serial dilution results were out of criteria .

NOTES

The following items were noted during the validation review which did not impact results or necessitate further qualification of data:

1. Transcription errors exist on the Analysis Run Log (Form 14) for arsenic. The reviewer-corrected form is included in Appendix A. Also, because several dilutions were performed for sample GW-42-D (S000004/K950184-001), the Form 14 (page 27) is included in Appendix A to clarify which results were reported as sample results and which were reported as serial dilution results.

2. Nitrite for sample GW-42-D (S000004/K950184-001) was analyzed at a dilution because of matrix interferences. The detection limit was elevated by the laboratory to reflect the dilution factors as indicated on the Report of Analysis Forms included in Appendix A. Also, the matrix spike level and spiked sample result associated with this nitrite result were reported at a level below the method reporting limit (MRL). No data are qualified.

3. Several transcription errors exist in the Laboratory QC Results reported for all methods except modified CLP. The reviewer-corrected forms are included in Appendix A.

4. Matrix spike %Rs for total phosphorus and hexavalent chromium associated with sample GW-42-D (S000004/K950184-001) were out of the associated

SMITH

acceptance ranges. Because the spike concentrations were significantly below the sample concentrations (i.e., less than four times), no data are qualified.

5. There are no field blank or field duplicate samples associated with this order.

SUMMARY

This review has identified holding times, ICP ICS results, matrix spike %Rs, laboratory duplicate precision, and serial dilution results as areas of concern. The reported data are usable as qualified on the data summary table. For specifics relating to this review, see the attached documentation in Appendix A.

SMITH

QUALIFIER CODES

R - The data are unusable.

J - The associated value is an estimated quantity.

UJ - The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.

DATA SUMMARY - INORGANIC ANALYTES

Site Name	Olin, Wilmington		Laboratory	Columbia Laboratories
Project Number	00-7074-0102	Liquid mg/l	Case/Order #	50184/S000004
Sampling Date(s)	1/11/95, 1/17/95		Field Duplicates	S00017

	Sample location or description	GW-42-D S000004		GW-64-S S000017	
	Sample number	K950184-001		K950265-001	
	Sampling date	1/11/95		1/17/95	
MRL	unfilt. / filt.	filt.*		filt.	
0.01	Aluminum	1910		0.463	
0.001	Arsenic	0.804			
0.001	Barium	0.0557	J	0.0306	
0.006	Calcium	589		11	
0.003	Chromium	3250	J	0.0574	J
0.01	Chromium, Hexavalent	42	J	0.013	J
0.003	Iron	1890		0.203	J
0.06	Magnesium	1090		2.46	
0.001	Manganese	529	J	0.0295	
0.33	Potassium	65.7	J	1.74	
0.038	Silicon	96.1	J	4.25	
0.038	Sodium	21300		37.5	

Marybeth Ousey 1/28/96

DATA SUMMARY - INORGANIC ANALYTES

Site Name	Olin, Wilmington		Laboratory	Columbia Laboratories
Project Number	00-7074-0102	Liquid mg/l	Case/Order #	50184/S000004
Sampling Date(s)	1/11/95, 1/17/95		Field Duplicates	S00017

	Sample location or description	GW-42-D S000004		GW-64-S S000017	
	Sample number	K950184-001		K950265-001	
20	Alkalinity as CaCO3				
20	Bicarbonate as HCO3				
20	Carbonate as CO3				
0.05	Ammonia-N	5600			
0.2	Bromide	33			
0.2	Chloride	17000		65	
0.5	Organic Carbon	2800*		5.5+	
0.2	Nitrate as N	12	J	0.4	
0.2	Nitrite as N		UJ		
0.01	Orthophosphate	0.7			
0.01	Phosphorus as P	19			
5	Solids - Filterable Residue (TDS)	108000	J	148	J
0.2	Sulfate	69000		17	
0.05	Sulfide		R		

* = TOC unfiltered.

+ = Reported as dissolved organic carbon.

Marybeth Ousey 1/28/96

SMITH

APPENDIX A

ENVIROFORMS/INORGANIC CLP

SAMPLE NO.

1

INORGANIC ANALYSIS DATA SHEET

S00004

Lab Name: Columbia Analytical Svcs. Contract: 950198

Lab Code: COLUMB Case No.: 50184 SAS No.: SDG No.: S00004

Matrix (soil/water): WATER Lab Sample ID: ~950184-01

Level (low/med): LOW Date Received: 01/11/95

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	1910000			P
7440-36-0	Antimony				
7440-38-2	Arsenic	804		S	F
7440-39-3	Barium	55.7	B	E	P
7440-41-7	Beryllium				
7440-43-9	Cadmium				
7440-70-2	Calcium	589000			P
7440-47-3	Chromium	3250000		*	P
7440-48-4	Cobalt				
7440-50-8	Copper				
7439-89-6	Iron	1890000			P
7439-92-1	Lead				
7439-95-4	Magnesium	1090000			P
7439-96-5	Manganese	529000			P
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium	65700			P
7782-49-2	Selenium				
7440-22-4	Silver				
7440-23-5	Sodium	21300000			P
7440-28-0	Thallium				
7440-62-2	Vanadium				
7440-66-6	Zinc				
57-12-5	Cyanide				
	Boron				
	Lithium				
	Silicon	96100			P

Color Before: BLUE Clarity Before: OPQAUE Texture:

Color After: BLUE Clarity After: OPAQUE Artifacts:

Comments:

00004

FORM I - IN

ENVIROFORMS/INORGANIC CLP

SAMPLE NO.

1
INORGANIC ANALYSIS DATA SHEET

S00017

Lab Name: Columbia Analytical Svcs. Contract: 950198

Lab Code: COLUMB Case No.: 50184 SAS No.: SDG No.: S00004

Matrix (soil/water): WATER Lab Sample ID: K950265-01

Level (low/med): LOW Date Received: 01/17/95

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	463			P
7440-36-0	Antimony				
7440-38-2	Arsenic	1.0	U		F
7440-39-3	Barium	30.6	B		P
7440-41-7	Beryllium				
7440-43-9	Cadmium				
7440-70-2	Calcium	11000			P
7440-47-3	Chromium	57.4		*	P
7440-48-4	Cobalt				
7440-50-8	Copper				
7439-89-6	Iron	203		E	P
7439-92-1	Lead				
7439-95-4	Magnesium	2460	B		P
7439-96-5	Manganese	29.5			P
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium	1740	B		P
7782-49-2	Selenium				
7440-22-4	Silver				
7440-23-5	Sodium	37500			P
7440-28-0	Thallium				
7440-62-2	Vanadium				
7440-66-6	Zinc				
57-12-5	Cyanide				
	Boron				
	Lithium				
	Silicon	4250			P

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	PTI Environmental Services, Inc	**Service Request:**	K950184
Project:	Olin Chromium	**Date Collected:**	1/11/95
Sample Matrix:	Water	**Date Received:**	1/12/95
		Date Extracted:	NA

Inorganic Parameters
Units: mg/L (ppm)

		Sample Name:	S000004	Method Blank
		Lab Code:	K950184-001	K950184-MB
Analyte	**EPA Method**	**MRL**		
Alkalinity as $CaCO_3$	310 1	20	ND	ND
Bicarbonate Alkalinity as $CaCO_3$	*SM* 2320B	20	ND	ND
Carbonate Alkalinity as $CaCO_3$	*SM* 2320B	20	ND	ND
Ammonia as Nitrogen	350.3	0.05	5600	ND
Bromide	300.0	0.2	33	ND
Chloride	300 0	0.2	17000	ND
Total Organic Carbon (TOC)	415 1	0.5	2800	ND
Nitrate as Nitrogen	353.2	10	12	ND
Nitrite as Nitrogen	353.2	0 2	< 5 (a)	ND
Orthophosphate as Phosphorus	365 3	0 01	0.7	ND
Phosphorus, Total	365 3	0 01	19	ND
Solids, Total Dissolved (TDS)	160.1	5	108000	ND
Sulfate	300 0	0 2	69000	ND
Sulfide	9030M	0 05	ND	ND

SM *Standard Methods for the Examination of Water and Wastewater*, 17th Ed., 1989.
a The MRL is elevated because of matrix interferences.

Approved By: [signature] Date: 2/6/95

1S30EPA/102094

0184WET TPI - Mixed 2/6/95

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: PTI Environmental Services, Inc.
Project: Olin Chromium
Sample Matrix: Water

Service Request: K950184
Date Collected: 1/11/95
Date Received: 1/12/95
Date Extracted: NA
Date Analyzed: 1/31/95

Chromium, Hexavalent
EPA Method 7195/6010A
Units: µg/L (ppb)

Sample Name	Lab Code	MRL	Result
S000004	K950184-001	100(a)	42000
Method Blank	K950184-MB	100(a)	ND

a MRL is elevated because the sample required dilution.

Approved By: [signature] Date: 2/8/95

1AMRL/102594
01841CP JC1 - Sample 2/8/95

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	PTI Environmental Services, Inc	**Service Request:**	K950265
Project:	Wilmington	**Date Collected:**	1/16/95
Sample Matrix:	Water	**Date Received:**	1/17/95
		Date Extracted:	NA

Inorganic Parameters
Units: mg/L (ppm)

			Sample Name:	**S000017**	**Method Blank**
			Lab Code:	K950265-001	K950265-MB
Analyte	**EPA Method**	**MRL**			
Alkalinity as $CaCO_3$	310.1	20		ND	ND
Bicarbonate Alkalinity as $CaCO_3$	*SM* 2320B	20		ND	ND
Carbonate Alkalinity as $CaCO_3$	*SM* 2320B	20		ND	ND
Ammonia as Nitrogen	350.1	0.05		ND	ND
Bromide	300.0	0.2		ND	ND
Chloride	300.0	0.2		65	ND
Dissolved Organic Carbon (DOC)	415.1	0.5		5.5	ND
Nitrate as Nitrogen	300 0	0.2		0.4	ND
Nitrite as Nitrogen	300.0	0.2		ND	ND
Orthophosphate as Phosphorus	365.3	0.01		ND	ND
Phosphorus, Total	365.3	0.01		ND	ND
Solids, Total Dissolved (TDS)	160.1	5		148	ND
Sulfate	300.0	0 2		17	ND
Sulfide	9030M	0 05		ND	ND

SM *Standard Methods for the Examination of Water and Wastewater*, 17th Ed., 1989.

Approved By: [signature] Date: 2/1/95

1S30EPA/102094

0265WET TP1 - Mused 2/1/95

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	PTI Environmental Services, Inc.	**Service Request:**	K950265
Project:	Wilmington	**Date Collected:**	1/16/95
Sample Matrix:	Water	**Date Received:**	1/17/95
		Date Extracted:	NA
		Date Analyzed:	1/31/95

Chromium, Hexavalent
EPA Method 7195/6010A
Units: μg/L (ppb)

Sample Name	Lab Code	MRL	Result
S000017	K950265-001	10	13
Method Blank	K950265-MB	10	ND

Approved By: Jeff C... Date: 2/8/95

1AMRL/102594
0265HCP.JC1 - Sample 2/8/95

ENVIROFORMS/INORGANIC CLP

4
ICP INTERFERENCE CHECK SAMPLE

Lab Name: Columbia Analytical Svcs. Contract: 950198

Lab Code: COLUMB Case No.: 50184 SAS No.: SDG No.: S00004

ICP ID Number: ICS Source: INOR-VNT

Concentration Units: ug/L

Analyte	True Sol. A	True Sol. AB	Initial Found Sol. A	Initial Found Sol. AB	Initial Found %R	Final Found Sol. A	Final Found Sol. AB	Final Found %R
Aluminum	500000	500000	479679	475475.5	95.1	448252	470673.4	94.1
Antimony								
Arsenic								
Barium		500	4	467.1	93.4	6	453.0	90.6
Beryllium								
Cadmium								
Calcium	500000	500000	453415	452560.1	90.5	472115	501935.4	100.4
Chromium		500	-7	429.4	85.9	-5	463.0	92.6
Cobalt								
Copper								
Iron	200000	200000	167712	167335.1	83.7	165970	175993.0	88.0
Lead								
Magnesium	500000	500000	466264	463141.2	92.6	441549	464108.9	92.8
Manganese	34	500	1	424.6	84.9	5	451.8	90.4
Mercury								
Nickel								
Potassium			-544	-505.0		2188	1714.9	
Selenium								
Silver								
Sodium			49	223.0		89	248.3	
Thallium								
Vanadium								
Zinc								
Boron								
Lithium								
Silicon			126	498.9		136	528.1	

* Ba, K, & Na are not listed as potentially arising from interferents on Table 2 page 26-D of the SOW.

* Mn & Si are estimated.

FORM IV - IN

MOusey 1/20/96

ENVIROFORMS/INORGANIC CLP

6
DUPLICATES

SAMPLE NO.

S00017D

Lab Name: Columbia Analytical Svcs. Contract: 950198

Lab Code: COLUMB Case No.: 50184 SAS No.: SDG No.: S00004

Matrix (soil/water): WATER Level (low/med): LOW

% Solids for Sample: 0.0 % Solids for Duplicate: 0.0

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

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Aluminum	200.0	462.6600		454.5000		1.8		P
Antimony								
Arsenic		1.0000	U	1.0000	U			F
Barium		30.6200	B	28.1700	B	8.3		P
Beryllium								
Cadmium								
Calcium	5000.0	11035.2000		10329.3200		6.6		P
Chromium		57.4400		100.8800		54.9	*	P
Cobalt								
Copper								
Iron	100.0	203.2600		214.6100		5.4		P
Lead								
Magnesium		2464.3000	B	2313.5900	B	6.3		P
Manganese	15.0	29.5100		35.1700		17.5		P
Mercury								
Nickel								
Potassium		1739.4900	B	1672.8600	B	3.9		P
Selenium								
Silver								
Sodium		37475.4100		35355.0600		5.8		P
Thallium								
Vanadium								
Zinc								
Cyanide								
Boron								
Lithium								
Silicon		4254.2400		4025.1600		5.5		P

FORM VI - IN

Cr out of acceptance
Tinut MOursey 1/29

ENVIROFORMS/INORGANIC CLP

9
ICP SERIAL DILUTIONS

SAMPLE NO.

S00004L

Lab Name: Columbia Analytical Svcs. Contract: 950198

Lab Code: COLUMB Case No.: 50184 SAS No.: SDG No.: S00004

Matrix (soil/water): WATER Level (low/med): LOW

Concentration Units: ug/L

Analyte	Initial Sample Result (I)	C	Serial Dilution Result (S)	C	% Differ-ence	Q	M
Aluminum	15318.98		15727.90		2.7		P
Antimony					0.0		
Arsenic							
Barium	55.74	B	71.95	B	29.1	E	P
Beryllium					0.0		
Cadmium					0.0		
Calcium	23545.90		24948.75	B	6.0		P
Chromium	26021.27		26614.50		2.3		P
Cobalt					0.0		
Copper					0.0		
Iron	15087.64		15523.05		2.9		P
Lead					0.0		
Magnesium	43495.50		44645.65		2.6		P
Manganese	4234.96		4333.55		2.3		P
Mercury					0.0		
Nickel					0.0		
Potassium	65704.56		56393.30		14.2	E	P
Selenium					0.0		
Silver					0.0		
Sodium	170035.58		177983.75		4.7		P
Thallium					0.0		
Vanadium					0.0		
Zinc					0.0		
Boron					0.0		
Lithium					0.0		
Silicon	19229.92		21048.40		9.5		P

Results reported at a dilution factor of 1

Reported at concentrations comparable to intial.

Fe & K are out- estimate

FORM IX - IN

1/20/96

ENVIROFORMS/INORGANIC CLP

9
ICP SERIAL DILUTIONS

SAMPLE NO.

S00017L

Lab Name: Columbia Analytical Svcs. Contract: 950198

Lab Code: COLUMB Case No.: 50184 SAS No.: SDG No.: S00004

Matrix (soil/water): WATER Level (low/med): LOW

Concentration Units: ug/L

Analyte	Initial Sample Result (I)	C	Serial Dilution Result (S)	C	% Differ-ence	Q	M
Aluminum	462.66		453.90	B	1.9		P
Antimony					0.0		
Arsenic							
Barium	30.62	B	30.60	B	0.1		P
Beryllium					0.0		
Cadmium					0.0		
Calcium	11035.20		11241.05	B	1.9		P
Chromium	57.44		53.20		7.4		P
Cobalt					0.0		
Copper					0.0		
Iron	203.26		224.35	B	10.4	E	P
Lead					0.0		
Magnesium	2464.30	B	2459.00	B	0.2		P
Manganese	29.51		25.35	B	14.1		P
Mercury					0.0		
Nickel					0.0		
Potassium	1739.49	B	2612.70	B	50.2		P
Selenium					0.0		
Silver					0.0		
Sodium	37475.41		37481.10		0.0		P
Thallium					0.0		
Vanadium					0.0		
Zinc					0.0		
Boron					0.0		
Lithium					0.0		
Silicon	4254.24		4259.85		0.1		P

Fe of of acceptance limit
estimate in S000017.
MOasey
1/20/96

FORM IX - IN

ENVIROFORMS/INORGANIC CLP

14
Analysis Run Log

Lab Name: Columbia Analytical Svcs. Contract: 950198
Lab Code: COLUMB Case No.: 50184 SAS No.: SDG No.: S00004
Instrument ID Number: TJA-1 Method: P
Start Date: 01/31/95 End Date: 01/31/95

Sample No.	D/F	Time	%R	AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	SI
S0	1.00	1704		X			X			X	X			X		X	X			X			X				X
S	1.00	1707		X						X	X			X		X	X										
S	1.00	1710					X				X									X			X				
S	1.00	1712																									X
ICV	1.00	1715		X			X			X	X			X		X	X			X			X				
ICV	1.00	1717																									X
ICB	1.00	1722		X			X			X	X			X		X	X			X			X				X
CCV1	1.00	1724		X			X			X	X			X		X	X			X			X				
CCV1	1.00	1727																									X
CCB1	1.00	1730		X			X			X	X			X		X	X			X			X				X
CRII	1.00	1737									X						X										
ICSAI	1.00	1740		X			X			X	X			X		X	X			X			X				X
ICSABI	1.00	1744		X			X			X	X			X		X	X			X			X				X
PBW	1.00	1749		X			X			X	X			X		X	X			X			X				X
LCSW	1.00	1751		X			X			X	X			X		X	X			X			X				
LCSW	1.00	1754																									X
S00017	1.00	1758		X			X			X	X			X		X	X			X			X				X
S00017L	5.00	1802		X			X			X	X			X		X	X			X			X				X
S00017D	1.00	1806		X			X			X	X			X		X	X			X			X				X
S00017S	1.00	1809		X			X			X	X			X		X	X			X			X				X
CCV2	1.00	1813		X			X			X	X			X		X	X			X			X				
CCV2	1.00	1815																									X
CCB2	1.00	1817		X			X			X	X			X		X	X			X			X				X
S00004	1.00	1822					X													X							
S00004 & S00004L	5.00	1828					X													X							X
S00004 & S00004L	125.00	1845		X						X	X			X		X	X						X				
S00004L	625.00	1850		X							X			X			X						X				
S00004 & S00004L	25.00	1852								X						X											X
ZZZZZZ	1.00	1857																									
CCV3	1.00	1906		X			X			X	X			X		X	X			X			X				
CCV3	1.00	1908		X			X			X	X			X		X	X			X			X				X
CCB3	1.00	1925																									X

For S00004, circled results are the serial dilution results
MOusey 1/20/96

FORM XIV - IN

ENVIROFORMS/INORGANIC CLP

14
Analysis Run Log

Lab Name: Columbia Analytical Svcs. Contract: *950198*
Lab Code: COLUMB Case No.: 50184 SAS No.: SDG No.: S00004
Instrument ID Number: VARIAN-4 Method: F
Start Date: 01/26/95 End Date: 01/26/95

Sample No.	D/F	Time	%R	AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
S0	1.00	1804				X																					
S10	1.00	1808				X																					
S20	1.00	1812				X																					
S40	1.00	1816				X																					
S60	1.00	1820				X																					
ICV	1.00	1824				X																					
ICB	1.00	1828				X																					
CCV1	1.00	1832				X																					
CCB1	1.00	1836				X																					
CRA	1.00	1840				X																					
PBW	1.00	1844				X																					
PBWA	1.00	1848	104.5			X																					
LCSW	1.00	1852				X																					
LCSWA	1.00	1856	96.5			X																					
CCV2	1.00	1900				X																					
CCB2	1.00	1904				X																					
S00017	1.00	1908				X																					
S00017A	*1.00*	*1912*	*102.5*			X																					
S00017D	1.00	1916				X																					
S00017DA	1.00	1920	105.5			X																					
S00017S	1.00	1924				X																					
S00004	1.00	1928				~~X~~																					
S00004A	1.00	1932	-0.9			~~X~~																					
CCV3	1.00	1936				X																					
CCB3	1.00	1940				X																					
CCV4	1.00	1952				X																					
CCB4	1.00	1956				X																					
S00004	5.00	2000																									
S00004A	5.00	2004	0.0																								
S00004	10.00	2008				~~X~~																					
S00004A	10.00	2012	0.0			~~X~~																					
CCV5	1.00	2016				X																					

MOusey 1/20/96

FORM XIV - IN

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	PTI Environmental Services, Inc	**Service Request:**	K950265
Project:	Wilmington	**Date Collected:**	1/16/95
Sample Matrix:	Water	**Date Received:**	1/17/95
		Date Analyzed:	1/21/95

Dissolved Organic Carbon (DOC)
EPA Method 415.1
Units: mg/L (ppm)

LABORATORY CONTROL SAMPLE

		True Value	Measured Value	Percent Recovery
Source:	APG 1074 Lot #12721	30.7	29.0	94
	APG 1075 Lot #13356	6.0	5.8	97

CALIBRATION VERIFICATION STANDARD

	True Value	Measured Value		Percent Recovery
CCV 1 Result	25.0	~~25.4~~ 24.8	uo	~~102~~ 99
CCV 2 Result	25.0	~~25.2~~ 24.4	1/22/96	~~101~~ 98

LABORATORY BLANK

	MRL	Blank Value
CCB 1 Result	0.5	ND
CCB 2 Result	0.5	ND

DUPLICATE ANALYSIS

Sample Name	Lab Code	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference
S000017	K950265-001	0.5	5.5	5.7	5.6	4

MATRIX SPIKE ANALYSIS

Sample Name	Lab Code	MRL	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery
S000017	K950265-001	0.5	25.0	5.5	30.2	99

Approved By: ______ Date: 2/1/95

COMBOQCD/102194

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	PTI Environmental Services, Inc	**Service Request:**	K950184
Project:	Olin Chromium	**Date Collected:**	1/11/95
Sample Matrix:	Water	**Date Received:**	1/12/95
		Date Analyzed:	2/3/95

Nitrate as Nitrogen
EPA Method 353.2
Units: mg/L (ppm)

LABORATORY CONTROL SAMPLE

		True Value	Measured Value	Percent Recovery
Source:	APG 2185 Lot #12724	3.0	3.2	107

CALIBRATION VERIFICATION STANDARD

	True Value	Measured Value	Percent Recovery
CCV 1 Result	3.0	~~3.0~~ 3.1	~~100~~ 103
CCV 2 Result	3.0	~~3.2~~ 3.1	~~107~~ 103

MO 1/20/96

LABORATORY BLANK

	MRL	Blank Value
CCB 1 Result	0.2	ND
CCB 2 Result	0.2	ND

DUPLICATE ANALYSIS

Sample Name	Lab Code	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference
S000004	K950184-001	10	12	12	12	< 1

MATRIX SPIKE ANALYSIS

Sample Name	Lab Code	MRL	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery
S000004	K950184-001	10	100	12	94	82

Approved By: [signature] Date: 2/6/95

COMBOQCD/102194

018WET TP1 - no3 2/6/95

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	PTI Environmental Services, Inc	**Service Request:**	K950184
Project:	Olin Chromium	**Date Collected:**	1/11/95
Sample Matrix:	Water	**Date Received:**	1/12/95
		Date Analyzed:	~~1/13/95~~ 2/3/95 mo 1/20/96

Nitrite as Nitrogen
EPA Method 353.2
Units: mg/L (ppm)

LABORATORY CONTROL SAMPLE

		True Value	Measured Value	Percent Recovery
Source:	APG AN1-11-B	2.5	2.6	104

CALIBRATION VERIFICATION STANDARD

	True Value	Measured Value	Percent Recovery
CCV 1 Result	3.0	3.0	100
CCV 2 Result	3.0	3.0	100

LABORATORY BLANK

	MRL	Blank Value
CCB 1 Result	0.2	ND
CCB 2 Result	0.2	ND

DUPLICATE ANALYSIS

Sample Name	Lab Code	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference
S000004	K950184-001	5	ND	ND	ND	--

MATRIX SPIKE ANALYSIS

Sample Name	Lab Code	MRL	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery
S000004	K950184-001	5	2.0	ND	1.5	75

below MRL

Reported below MRL mg 1/20/96

Approved By: [signature] Date: 2/6/95

COMBOQCD/102194

0184WET TP1 - no2 2/6/95

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	PTI Environmental Services, Inc	**Service Request:**	K950184
Project:	Olin Chromium	**Date Collected:**	1/11/95
Sample Matrix:	Water	**Date Received:**	1/12/95
		Date Analyzed:	1/13/95

Orthophosphate as Phosphorus
EPA Method 365.3
Units: mg/L (ppm)

LABORATORY CONTROL SAMPLE

		True Value	Measured Value	Percent Recovery
Source:	APG 2185 Lot #12724	7.0	7.1	101

CALIBRATION VERIFICATION STANDARD

	True Value	Measured Value	Percent Recovery
CCV 1 Result	0 50	0.50	100
CCV 2 Result	0 50	0.49	98

LABORATORY BLANK

	MRL	Blank Value
CCB 1 Result	0 01	ND
CCB 2 Result	0 01	ND

DUPLICATE ANALYSIS

Sample Name	Lab Code	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference
S000004	K950184-001	0 01	0.7	0.6	0.6	~~17~~ 15

MO 1/22/9

MATRIX SPIKE ANALYSIS

Sample Name	Lab Code	MRL	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery
S000004	K950184-001	0.01	1.0	0.7	1.7	100

Approved By: ______________________ Date: 2/6/95

COMBOQCD/102194

0184WET TP1 - orthos 2/6/95

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	PTI Environmental Services, Inc	**Service Request:**	K950265
Project:	Wilmington	**Date Collected:**	1/16/95
Sample Matrix:	Water	**Date Received:**	1/17/95
		Date Analyzed:	1/18/95

Orthophosphate as Phosphorus
EPA Method 365.3
Units: mg/L (ppm)

LABORATORY CONTROL SAMPLE

		True Value	Measured Value	Percent Recovery
Source:	APG 2185 Lot #12724	7.0	7.3	104

CALIBRATION VERIFICATION STANDARD

	True Value	Measured Value	Percent Recovery
CCV 1 Result	0.50	0.52	104
CCV 2 Result	0.50	0.52	104

LABORATORY BLANK

	MRL	Blank Value
CCB 1 Result	0 01	ND
CCB 2 Result	0 01	ND

DUPLICATE ANALYSIS

Sample Name	Lab Code	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference
S000017	K950265-001	0 01	ND	ND	ND	–

MATRIX SPIKE ANALYSIS

Sample Name	Lab Code	MRL	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery
S000017	K950265-001	0.01	0.20	~~0.01~~ ND	0.20	~~95~~ 100

MO 1/20/96

Approved By: ______________________ Date: 2/1/95

COMBOQCD/102194

0026WET TP1 - ophos 2/1/95

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	PTI Environmental Services, Inc	**Service Request:**	K950184
Project:	Olin Chromium	**Date Collected:**	1/11/95
Sample Matrix:	Water	**Date Received:**	1/12/95
		Date Analyzed:	1/25/95

Phosphorus, Total
EPA Method 365.3
Units: mg/L (ppm)

LABORATORY CONTROL SAMPLE

		True Value	Measured Value	Percent Recovery
Source:	APG 2185 Lot #13950	7.8	8.7	112

CALIBRATION VERIFICATION STANDARD

	True Value	Measured Value	Percent Recovery
CCV 1 Result	0.50	0.50	100
CCV 2 Result	0.50	0.50	100

LABORATORY BLANK

	MRL	Blank Value
CCB 1 Result	0.01	ND
CCB 2 Result	0.01	ND

DUPLICATE ANALYSIS

Sample Name	Lab Code	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference
S000004	K950184-001	0.01	19	18	18	~~6~~ 5.4 mo 1/20

MATRIX SPIKE ANALYSIS

Sample Name	Lab Code	MRL	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery
S000004	K950184-001	0.01	0.20	19	17	NA

NA Not Applicable because of the sample matrix. Accuracy of spike recovery value is reduced since the sample concentration was greater than 3 times the amount spiked. mo 1/20

Approved By: [signature] Date: 2/6/95

COMBOQCD/102194

0184WET TP1 - sphos 2/6/95

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	PTI Environmental Services, Inc	**Service Request:**	K950184
Project:	Olin Chromium	**Date Collected:**	1/11/95
Sample Matrix:	Water	**Date Received:**	1/12/95
		Date Analyzed:	1/13/95

Sulfate
EPA Method 300.0
Units: mg/L (ppm)

LABORATORY CONTROL SAMPLE

		True Value	Measured Value	Percent Recovery
Source:	APG 4873 Lot #13244	93	90	97

CALIBRATION VERIFICATION STANDARD

	True Value	Measured Value	Percent Recovery
CCV 1 Result	5.0	4.9	98
CCV 2 Result	5.0	4.8	96

LABORATORY BLANK

	MRL	Blank Value
CCB 1 Result	0.2	ND
CCB 2 Result	0.2	ND

DUPLICATE ANALYSIS

Sample Name	Lab Code	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference
S000004	K950184-001	0.2	69000	68000 ~~69000~~	69000	~~<1~~ 1.5

MO 1/20/96

MATRIX SPIKE ANALYSIS

Sample Name	Lab Code	MRL	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery
S000004	K950184-001	0.2	40000	69000	100000	78

Approved By: [signature] Date: 2/6/95

COMBOQCD/102194

0184WET TP1 - s04 2/6/95

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	PTI Environmental Services, Inc	**Service Request:**	K950184
Project:	Olin Chromium	**Date Collected:**	1/11/95
Sample Matrix:	Water	**Date Received:**	1/12/95
		Date Analyzed:	1/13/95

Sulfide
EPA Method 9030 Modified
Units: mg/L (ppm)

LABORATORY CONTROL SAMPLE

		True Value	Measured Value	Percent Recovery
Source:	S21-2-H	0.56	0.52	93

CALIBRATION VERIFICATION STANDARD

	True Value	Measured Value	Percent Recovery
CCV 1 Result	~~0.49~~ 0.56	~~0.49~~ 0.55	~~100~~ 98
CCV 2 Result	~~0.49~~ 0.56	~~0.49~~ 0.55	~~100~~ 98

M Ousey 1/20/96

LABORATORY BLANK

	MRL	Blank Value
CCB 1 Result	0.05	ND
CCB 2 Result	0.05	ND

DUPLICATE ANALYSIS

Sample Name	Lab Code	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference
S000004	K950184-001	0.05	ND	ND	ND	–

MATRIX SPIKE ANALYSIS

Sample Name	Lab Code	MRL	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery
S000004	K950184-001	0.05	0.56	ND	ND (a)	0

a Outside of acceptance limits because of matrix effects. This sample was analyzed a second time, and again produced unacceptable recovery values. The results from the initial analysis are reported.

Approved By: [signature] Date: 2/6/95

COMBOQCD/102194

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	PTI Environmental Services, Inc.	**Service Request:**	K950184
Project:	Olin Chromium	**Date Collected:**	1/11/95
Sample Matrix:	Water	**Date Received:**	
		Date Extracted:	NA
		Date Analyzed:	1/31/95

Matrix Spike Summary
Total Metals
Units: μg/L (ppb)

Sample Name: S000004
Lab Code: K950184-001

Analyte	**MRL**	**Spike Level**	**Sample Result**	**Spiked Sample Result**	**Percent Recovery**	**CAS Percent Recovery Acceptance Limits**
Chromium, Hexavalent	* 100(a)	10000	42000	23500	NA	75-125

SA < 4XS sample result.
No data qualified.

MOusey 1/20/96

a MRL is elevated because the sample required dilution.
NA Not applicable because of the sample matrix. Accuracy of spike recovery value is reduced since the sample concentration was greater than four times the amount spiked.

Approved By: [signature] Date: 2/8/95

MS1S/102194
01841CP.IC: Spike 2/8/95

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	PTI Environmental Services, Inc.		**Service Request:**	K950265
Project:	Wilmington		**Date Collected:**	1/16/95
Sample Matrix:	Water		**Date Received:**	1/17/95
			Date Extracted:	NA
			Date Analyzed:	1/31/95

Duplicate Summary
Total Metals
Units: µg/L (ppb)

17 MO 1/20/96

Sample Name: S000004
Lab Code: K950184-001

Analyte	EPA Method	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference
Chromium, Hexavalent	7195/6010A	10	13	ND	NC	NC

out of criteria
MO 1/20/96

Approved By: ____________________ Date: 2/3/95

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	PTI Environmental Services, Inc.	**Service Request:**	K950265
Project:	Wilmington	**Date Collected:**	1/16/95
Sample Matrix:	Water	**Date Received:**	1/17/95
		Date Extracted:	NA
		Date Analyzed:	1/31/95

Matrix Spike Summary
Total Metals
Units: µg/L (ppb)

Sample Name: S00000~~4~~ 17 MO 1/20/96
Lab Code: K950184-001

Analyte	**MRL**	**Spike Level**	**Sample Result**	**Spiked Sample Result**	**Percent Recovery**	**CAS Percent Recovery Acceptance Limits**
Chromium, Hexavalent	10	1000	13	858	84	75-125

Approved By: ______________________ Date: 2/8/95

MS1S-102194

0265ICP.JC1 - Spike 2/8/95

DATA VALIDATION REPORT
FOR THE ANALYTICAL RESULTS
OF GROUNDWATER SAMPLES
COLLECTED ON JANUARY 16, 1995

FOR

OLIN CORPORATION
WILMINGTON, MASSACHUSETTS

SMITH PROJECT NO. 00-7047-0102

JANUARY 1996

PREPARED BY

E. Bryan Rivers
E. BRYAN RIVERS
QUALITY ASSURANCE SCIENTIST

Marybeth Ousey
MARYBETH OUSEY
QUALITY ASSURANCE SCIENTIST

Atwood F. Davis
ATWOOD F. DAVIS, CPC
QUALITY ASSURANCE MANAGER

SMITH

Engineering • Consulting • Remediation • Construction

SMITH

DATA VALIDATION REPORT
METALS AND SELECTED ANALYTES
OLIN CORPORATION
GROUNDWATER SAMPLES

INTRODUCTION

A data validation was performed on the analytical data from the groundwater samples collected on January 16, 1995 at the Olin Corporation's Wilmington, Massachusetts Facility. This review is of work order number WL-0069 which contained 3 groundwater samples and 1 field duplicate sample. All samples in this report were analyzed by Pace, Incorporated Environmental Laboratories (Pace, Inc.), Westbrook, Maine, following United States Environmental Protection Agency (EPA) Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (SW-846), Methods for Chemical Analysis of Water and Wastes (MCAWW), and Standard Methods for the Examination of Water and Wastewater, 16th Edition, 1985 (SM), American Public Health Association (APHA). The individual analyses were performed using the following methods:

Analytes	Methods
aluminum, barium, calcium, chromium, iron, magnesium, manganese, potassium, silicon, and sodium	200.7
hexavalent chromium	7195/6010
arsenic	206.2
lead	239.2
bicarbonate as HCO3 and carbonate as CO3	SM406C
bromide	320.1
nitrate as N and nitrite as N	353.2
dissolved organic carbon (DOC)	415.1
phosphorus as P	365.4
solids - filterable residue (TDS)	160.1

Because the analyses were not performed according to the EPA Contract Laboratory Program (CLP) methods, the findings in this report are based upon a review of sample data and of quality contro! (QC) specified by the individual analytical methods and provided by the laboratory. The quality assurance review was prepared according to EPA Region I Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analysis, June 1988, where applicable.

The support documentation in Appendix A of this report summarizes the specifics of this review. Appendix A also provides the sample data as reported by the laboratory. The data summary lists all compounds that were analyzed. Analytical problems are outlined in the following Findings/Qualifiers Section. Other issues which arose which did not warrant qualification are detailed in the Notes Section.

FINDINGS/QUALIFIERS

This data validation report addresses Pace, Inc. work order number WL-0069 which contained 3 groundwater samples and 1 field duplicate sample. The data were evaluated for the following parameters:

*	data completeness
	holding times
*	data calibration verification
*	laboratory blank analysis
+	field blank analysis
*	interference check sample results
	matrix spike recoveries
	laboratory duplicates
	field duplicates
*	laboratory control sample results
	furnace atomic absorption results
+	serial dilution results
*	detection limit results
+	sample results

* All criteria were met for this parameter.

\+ All criteria were met for this parameter; however, this parameter is discussed in the Notes Section of this report.

The data summary table provided at the end of this report summarizes the validation recommendations which were based on the following information:

- Hexavalent chromium results were analyzed 40 minutes outside the 24 hour holding time. All hexavalent chromium results are estimated. Since all results were non-detect and trivalent chromium results were also non-detect and were acceptable, the impact is considered minor.

- The bromide results are rejected for sample GW-64-S (S000018/WL-0069-1) and estimated for samples GW-64-S (S000019/WL-0069-4) (field duplicate), GW-64-D (S000020/WL-0069-5), and GW-62-BR (S000011/WL-0069-6) because the matrix spike percent recovery (%R) was less than 30 %. All positive results and detection limits for phosphorus as P are estimated because the matrix spike %Rs were below criteria. (Matrix spike results are also discussed in the Notes Section.)

- All positive results for iron and manganese except sample GW-62-BR (S000011/WL-0069-6) and all positive phosphorus as P results are estimated because the laboratory duplicate precision was not met.

- The graphite furnace post-digestion analytical spike %Rs for arsenic and lead for sample GW-62-BR (S000011/WL-0069-6) were below criteria. These results are considered estimated. The detection limits for these results were elevated to reflect the dilution factor as indicated on the Report of Analysis Forms included in Appendix A.

- All positive results for iron, manganese, potassium, silicon, nitrate, and bromide are estimated because field duplicate precision was not met. Details are presented on the Field Duplicate Precision Worksheet provided in Appendix A.

NOTES

The following items were noted during the validation review which did not impact results or necessitate further qualification of data:

1. Matrix spike %Rs for calcium, iron, magnesium, manganese, and sodium were out of the associated acceptance ranges. Because the spike concentrations were significantly below the sample concentrations (i.e., less than four times), no data are qualified.

2. A serial dilution sample was not provided by the laboratory as recommended by the MCAWW Method 200.7. Since performance of a serial dilution is not required by the method, no data are qualified.

3. The laboratory duplicate results and the matrix spike results for magnesium and manganese results were reported incorrectly on the laboratory-supplied Quality Control Reports. The reviewer-corrected forms are included in Appendix A.

4. The incorrect sample result was reported on the Quality Control Report for dissolved organic carbon (DOC) for sample WL-0069-1. The reviewer-corrected form is included in Appendix A.

5. Transcription errors for DOC are present on the Quality Control Report Form. The reviewer-corrected form is included in Appendix A.

6. There are no field blank samples associated with this order.

SUMMARY

This review has identified holding times, matrix spike %Rs, graphite furnace post-digestion analytical spike recoveries, and laboratory and field duplicate precision as areas of concern. The reported data are usable as qualified on the data summary table. For specifics relating to this review, see the attached documentation in Appendix A.

SMITH

QUALIFIER CODES

J - The associated value is an estimated quantity.

UJ - The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.

DATA SUMMARY TABLE

Site Name: Olin, Wilmington
Project Number: 00-7047-0102
Sampling Date(s): January 16, 1995

Liquid mg/l

Laboratory: Pace Inc.
Case/Order #: WL-0069
Field Duplicates: S000018 and S000019

PQL	Sample location or description	GW-64-S S000018		GW-64-S S000019		GW-64-D S000020		GW-62-BR S000011	
	Sample number	WL-0069-1		WL-0069-4		WL-0069-5		WL-0069-6	
	Sampling date	1/16/95		1/16/95		1/16/95		1/16/95	
	unfilt./filt.	filt.		filt.		filt.		filt.	
PQL	Comments	Field Dup. A		Field Dup. B					
0.10	Aluminum *	0.39		0.41					
0.005	Arsenic *					0.010			UJ
0.005	Barium *	0.031		0.033		0.057		0.019	
0.050	Calcium *	10		9.9		71		460	
0.015	Chromium *								
0.015	Chromium, Hexavalent		UJ		UJ		UJ		UJ
0.015	Chromium, Trivalent								
0.025	Iron *	0.10	J	0.073	J	45	J	6.8	J
0.005	Lead *								UJ
0.050	Magnesium *	2.4		2.4		21		360	
0.005	Manganese *	0.018	J	0.010	J	2.1	J	40	J
0.50	Potassium *	1.3	J	1.7	J	7.7	J	32	J
0.10	Silicon *	3.5	J	8.2	J	3.4	J	11	J
0.10	Sodium *	34		35		120		2000	
20	Bicarbonate as HCO3					470		94	
2.0	Bromide		R	2.7	J	4.4	J	4.5	J
20	Carbonate as CO3								
0.050	Nitrate as N *	0.17	J	0.24	J			0.14	J
0.050	Nitrite as N *								
1.0	Dissolved Organic Carbon	5.7		5.9		5.5		32	
0.10	Phosphorus as P *		UJ	0.18	J		UJ	0.20	J
10	Solids-Filterable Residue (TDS)	140		150		900		9700	

*=Reported as dissolved.

Maryfaith Quisey 1/28/96

WL0069I.XLS

SMITH

DATA VALIDATION REPORT
CHLORIDE, SULFATE, ORTHOPHOSPHATE, SULFIDE, AND AMMONIA-N
OLIN CORPORATION
GROUNDWATER SAMPLES

INTRODUCTION

A data validation was performed on additional data from the groundwater samples collected on January 16, 1995 (3 groundwater samples and 1 field duplicate sample) at the Olin Corporation's Wilmington, Massachusetts Facility. This review is of Pace Inc.'s Hampton, New Hampshire laboratory work order number 42817 which contained the same 3 groundwater samples and 1 field duplicate sample that were analyzed in work order WL-0069 by Pace Inc. of Westbrook, Maine. The individual analyses were performed using the following from Methods for Chemical Analysis of Water and Wastes (MCAWW):

Analytes	Methods
chloride and sulfate	300.0
orthophosphate	365.2
sulfide	376.1
ammonia-N	350.2

The findings in this report are based upon a review of sample data and of quality control (QC) specified by the individual analytical methods and provided by the laboratory. The quality assurance review was prepared according to EPA Region I Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analysis, June 1988, where applicable.

The support documentation in Appendix B of this report summarizes the specifics of this review. Appendix B also provides the sample results as reported by the laboratory. The data summary lists all compounds that were analyzed. Analytical problems are outlined in the following Findings/Qualifiers section. Other issues which arose which did not warrant qualification are detailed in the Notes Section.

SMITH

FINDINGS/QUALIFIERS

This data validation report addresses Pace, Inc. work order number 42817 which contained 4 groundwater samples and 1 field duplicate sample. The data were evaluated for the following parameters:

+ data completeness
* holding times
* data calibration verification
* laboratory blank analysis
+ field blank analysis
  matrix spike recoveries
* laboratory duplicates
  field duplicates
* laboratory control sample results
* detection limit results
+ sample results

* All criteria were met for this parameter.

\+ All criteria were met for this parameter; however, this parameter is discussed in the Notes Section of this report.

The data summary table provided at the end of this report summarizes the validation recommendations which were based on the following information:

- All sulfate results are estimated because the matrix spike percent recovery (%R) was below criteria. (Matrix spike results are also discussed in the Notes Section.)

- All sulfate results are estimated because field duplicate precision was not met. Details are presented on the Field Duplicate Precision Worksheet provided in Appendix B.

SMITH

NOTES

The following items were noted during the validation review which did not impact results or necessitate further qualification of data:

1. The chloride results for samples GW-64-S (S000018/42817-005) and GW-64-S (S000019/42817-006) were each reported incorrectly as 60 mg/L. The correct result for each is 61 mg/L. The reviewer corrected forms are included in Appendix B.

2. A quality control report for chloride (page 12) was not complete. Also, the incorrect laboratory control sample result was reported. The reviewer-corrected form is included in Appendix B.

3. A matrix spike was not provided by the laboratory for sulfide. All other laboratory-supplied QC was within acceptance limits.

4. There are no field blank samples associated with this order.

SUMMARY

This review has identified matrix spike %Rs and field duplicate precision as areas of concern. The reported data are usable as qualified on the data summary table. For specifics relating to this review, see the attached documentation in Appendix B.

QUALIFIER CODES

J - The associated value is an estimated quantity.

DATA SUMMARY TABLE

Site Name: Olin, Wilmington
Project Number: 00-7047-0102
Sampling Date(s): January 16, 1995

Liquid mg/l

Laboratory: Pace Env. Laboratories
Case/Order #: 42817
Field Duplicates: S000018 and S000019

PQL	Sample location or description	GW-64-S S000018		GW-64-S S000019		GW-64-D S000020		GW-62-BR S000011													
	Sample number	42817-001 -005, -009		42817-002 -006, -010		42817-003 -007, -011		42817-004 -008, -012													
	Sampling date	1/16/95		1/16/95		1/16/95		1/16/95													
	unfilt. / filt.	filt.		filt.		filt.		filt.													
	Comments	Field Dup. A		Field Dup. B																	
1	Chloride	61		61		190		2100													
1.0	Sulfate	22	J	17	J	350	J	4700	J												
0.02	Orthophosphate																				
1	Sulfide																				
0.05	Ammonia-N	0.07		0.07		7.1		98													

Marybeth Orsey 1/28/96

12WL0069.XLS

SMITH

APPENDIX A

ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-0069-1
Report Date: 02/03/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
S000018	Aqueous	CLIENT	01/16/95	01/16/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTE
Aluminum, Dissolved	0.39	mg/L	1.0	0.10	200.7/6010	01/25/95	KW	:
Arsenic, Dissolved	<0.005	mg/L	1.0	0.005	206.2/7060	01/25/95	KW	:
Barium, Dissolved	0.031	mg/L	1.0	0.005	200.7/6010	01/25/95	KW	:
Calcium, Dissolved	10	mg/L	1.0	0.050	200.7/6010	01/27/95	KW	:
Chromium, Dissolved	<0.015	mg/L	1.0	0.015	200.7/6010	01/25/95	KW	:
Chromium, Hexavalent	<0.015	mg/L	1.0	0.015	6010	01/18/95	KW	3,4
Chromium, Trivalent	<0.015	mg/L	1.0	0.015	Calculation	01/31/95	GB	
Iron, Dissolved	0.10	mg/L	1.0	0.025	200.7/6010	01/27/95	KW	
Lead, Dissolved	<0.005	mg/L	1.0	0.005	239.2/7421	01/26/95	KW	.
Magnesium, Dissolved	2.4	mg/L	1.0	0.050	200.7/6010	01/25/95	KW	1
Manganese, Dissolved	0.018	mg/L	1.0	0.005	200.7/6010	01/25/95	KW	1
Potassium, Dissolved	1.3	mg/L	1.0	0.50	200.7/6010	01/27/95	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values

(1) Sample Preparation on 01/24/95 by WD using 3010
(2) Sample Preparation on 01/23/95 by WD using 3020
(3) Sample Preparation on 01/17/95 by GFB using 7195
(4) Sample preparation was begun 40 minutes after the expiration of the analytical hold time.

02/03/95

LJO/ejngbp(dw)/kaw
LA24IA1

pace
INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-0069-1
Report Date: 02/03/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
S000018	Aqueous	CLIENT	01/16/95	01/16/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTE
Silicon, Dissolved	3.5	mg/L	1.0	0.10	200.7/6010	01/30/95	KW	:
⁄Sodium, Dissolved	34	mg/L	1.0	0.10	200.7/6010	01/27/95	KW	:

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' value:
(1) Sample Preparation on 01/27/95 by WD using 3010
(2) Sample Preparation on 01/24/95 by WD using 3010

02/03/95

LJO/ejngbp(dw)/kaw
LA24IA1

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-0069-1
Report Date: 02/03/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
S000018	Aqueous	CLIENT	01/16/95	01/16/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Bicarbonate as HCO3	<20	mg/L	1.0	20	APHA 406C	01/17/95	CM	
Bromide	<2.0	mg/L	1.0	2.0	320.1	01/23/95	NN	
Carbonate, as CO3	<20	mg/L	1.0	20	APHA 406C	01/17/95	CM	
Nitrate as N, Dissolved	0.17	mg/L	1.0	0.050	353.2	01/17/95	BC	
Nitrite as N, Dissolved	<0.050	mg/L	1.0	0.050	353.2	01/17/95	CM	
Organic Carbon, Dissolved (DOC)	5.7	mg/L	1.0	1.0	415.1	01/23/95	BC	
Phosphorus, Dissolved as P	<0.10	mg/L	1.0	0.10	365.4	01/27/95	BC	1
Solids - Filterable Residue (TDS)	140.	mg/L	1.0	10	160.1	01/19/95	JF	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values

(1) Sample Preparation on 01/25/95 by NEN

(2) Sample Preparation on 01/18/95 by JF

02/03/95

LJO/ejnejn

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-0069-2
Report Date: 02/03/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
S000018-MS	Aqueous	CLIENT	01/16/95	01/16/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Dissolved	2.53	mg/L	1.0	0.10	200.7/6010	02/01/95	KW	1
Arsenic, Dissolved	0.041	mg/L	2.0	0.005	206.2/7060	02/01/95	KW	2
Barium, Dissolved	2.10	mg/L	1.0	0.005	200.7/6010	02/01/95	KW	1
Calcium, Dissolved	11.8	mg/L	1.0	0.050	200.7/6010	02/01/95	KW	1
Chromium, Dissolved	0.216	mg/L	1.0	0.015	200.7/6010	02/01/95	KW	1
Chromium, Hexavalent	2.43	mg/L	1.0	0.015	6010	01/18/95	KW	3,4
Chromium, Trivalent	N.A.	mg/L	1.0	0.015	Calculation	01/31/95	GB	5
Iron, Dissolved	1.13	mg/L	1.0	0.025	200.7/6010	02/01/95	KW	1
Lead, Dissolved	0.021	mg/L	2.0	0.005	239.2/7421	01/31/95	KW	2
Magnesium, Dissolved	6.44	mg/L	1.0	0.050	200.7/6010	02/01/95	KW	1
Manganese, Dissolved	0.536	mg/L	1.0	0.005	200.7/6010	02/01/95	KW	1
Potassium, Dissolved	22.3	mg/L	1.0	0.50	200.7/6010	02/01/95	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values

(1) Sample Preparation on 01/31/95 by WD using 3010
(2) Sample Preparation on 01/31/95 by WD using 3020
(3) Sample Preparation on 01/17/95 by GFB using 7195
(4) Sample preparation was begun 40 minutes after the expiration of the analytical hold time.
(5) This is a calculation and is not applicable to a matrix spike.

02/03/95

LJO/ejnejn/kaw
LA24IA1

REPORT OF LABORATORY ANALYSIS

pace INCORPORATED ENVIRONMENTAL LABORATORIES

Lab Number : WL-0065-
Report Date: 02/03/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
S000018-MS	Aqueous	CLIENT	01/16/95	01/16/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTE
Silicon, Dissolved	8.27	mg/L	2.0	0.10	200.7/6010	01/30/95	KW	:
Sodium, Dissolved	42.6	mg/L	1.0	0.10	200.7/6010	02/01/95	KW	:

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' value

(1) Sample Preparation on 01/27/95 by WD using 3010
(2) Sample Preparation on 01/31/95 by WD using 3010

02/03/95

LJO/ejnejn/kaw
LA24IA1

340 County Road #5 PO Box 720
Westbrook ME 04098
TEL. 207-874-2400
FAX 207 775-4029

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-0069-2
Report Date: 02/03/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
S000018-MS	Aqueous	CLIENT	01/16/95	01/16/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Bicarbonate as HCO3	135	mg/L	1.0	20	APHA 406C	01/17/95	CM	
Bromide	<2.00	mg/L	1.0	2.0	320.1	01/23/95	NN	
Carbonate, as CO3	<20.0	mg/L	1.0	20	APHA 406C	01/17/95	CM	
Nitrate as N, Dissolved	N.A.	mg/L	1.0	0.050	353.2	01/17/95	BC	1
Nitrite as N, Dissolved	0.515	mg/L	1.0	0.050	353.2	01/17/95	CM	
Organic Carbon, Dissolved (DOC)	45.7	mg/L	1.0	1.0	415.1	01/23/95	BC	
Phosphorus, Dissolved as P	0.900	mg/L	1.0	0.10	365.4	01/27/95	BC	2
Solids - Filterable Residue (TDS)	N/A	mg/L	1.0	10	160.1	01/19/95	JF	3,4

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values

(1) This is a calculation and is not applicable to a matrix spike.
(2) Sample Preparation on 01/25/95 by NEN
(3) Sample Preparation on 01/18/95 by JF
(4) NA=Matrix spike analysis is not applicable for this parameter.

02/03/95

LJO/ejnejn/pph

340 County Road #5 PO Box 720
Westbrook ME 04098
TEL 207-874-2400
FAX 207 775-4029

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-0069-3
Report Date: 02/03/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
S000018-DUP	Aqueous	CLIENT	01/16/95	01/16/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Dissolved	0.418	mg/L	1.0	0.10	200.7/6010	01/25/95	KW	1
Arsenic, Dissolved	<0.005	mg/L	1.0	0.005	206.2/7060	01/25/95	KW	2
Barium, Dissolved	0.032	mg/L	1.0	0.005	200.7/6010	01/25/95	KW	1
Calcium, Dissolved	9.92	mg/L	1.0	0.050	200.7/6010	01/27/95	KW	1
Chromium, Dissolved	<0.015	mg/L	1.0	0.015	200.7/6010	01/25/95	KW	1
Chromium, Hexavalent	<0.015	mg/L	1.0	0.015	6010	01/18/95	KW	3,4
Chromium, Trivalent	<0.015	mg/L	1.0	0.015	Calculation	01/31/95	GB	
Iron, Dissolved	0.069	mg/L	1.0	0.025	200.7/6010	01/27/95	KW	1
Lead, Dissolved	<0.005	mg/L	1.0	0.005	239.2/7421	01/26/95	KW	2
Magnesium, Dissolved	2.40	mg/L	1.0	0.050	200.7/6010	01/25/95	KW	1
Manganese, Dissolved	0.011	mg/L	1.0	0.005	200.7/6010	01/25/95	KW	1
Potassium, Dissolved	1.61	mg/L	1.0	0.50	200.7/6010	01/27/95	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 01/24/95 by WD using 3010
(2) Sample Preparation on 01/23/95 by WD using 3020
(3) Sample Preparation on 01/17/95 by GFB using 7195
(4) Sample preparation was begun 40 minutes after the expiration of the analytical hold time.

02/03/95

LJO/ejnejn/kaw
LA24IA1

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-0069-3
Report Date: 02/03/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
S000018-DUP	Aqueous	CLIENT	01/16/95	01/16/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Silicon, Dissolved	3.77	mg/L	1.0	0.10	200.7/6010	01/30/95	KW	1
Sodium, Dissolved	34.9	mg/L	1.0	0.10	200.7/6010	01/27/95	KW	2

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values
(1) Sample Preparation on 01/27/95 by WD using 3010
(2) Sample Preparation on 01/24/95 by WD using 3010

02/03/95

LJO/ejnejn/kaw
LA24IA1

3?? County Road #5 PO Box 720
Westbrook ME 04098
TEL: 207-874-2400
FAX: 207-775-4029

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-0069-3
Report Date: 02/03/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
S000018-DUP	Aqueous	CLIENT	01/16/95	01/16/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Bicarbonate as HCO3	<20.0	mg/L	1.0	20	APHA 406C	01/17/95	CM	
Bromide	<2.00	mg/L	1.0	2.0	320.1	01/23/95	NN	
Carbonate, as CO3	<20.0	mg/L	1.0	20	APHA 406C	01/17/95	CM	
Nitrate as N, Dissolved	0.202	mg/L	1.0	0.050	353.2	01/17/95	BC	
Nitrite as N, Dissolved	<0.050	mg/L	1.0	0.050	353.2	01/17/95	CM	
Organic Carbon, Dissolved (DOC)	5.90	mg/L	1.0	1.0	415.1	01/23/95	BC	
Phosphorus, Dissolved as P	0.226	mg/L	1.0	0.10	365.4	01/27/95	BC	1
Solids - Filterable Residue (TDS)	158	mg/L	1.0	10	160.1	01/19/95	JF	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values

(1) Sample Preparation on 01/25/95 by NEN

(2) Sample Preparation on 01/18/95 by JF

02/03/95

LJO/ejnejn/pph

REPORT OF LABORATORY ANALYSIS

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

Lab Number : WL-0069-4
Report Date: 02/03/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
S000019	Aqueous	CLIENT	01/16/95	01/16/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Dissolved	0.41	mg/L	1.0	0.10	200.7/6010	01/25/95	KW	1
Arsenic, Dissolved	<0.005	mg/L	1.0	0.005	206.2/7060	01/25/95	KW	2
Barium, Dissolved	0.033	mg/L	1.0	0.005	200.7/6010	01/25/95	KW	1
Calcium, Dissolved	9.9	mg/L	1.0	0.050	200.7/6010	01/27/95	KW	1
Chromium, Dissolved	<0.015	mg/L	1.0	0.015	200.7/6010	01/25/95	KW	1
Chromium, Hexavalent	<0.015	mg/L	1.0	0.015	6010	01/18/95	KW	3,4
Chromium, Trivalent	<0.015	mg/L	1.0	0.015	Calculation	01/31/95	GB	
Iron, Dissolved	0.073	mg/L	1.0	0.025	200.7/6010	01/27/95	KW	1
Lead, Dissolved	<0.005	mg/L	1.0	0.005	239.2/7421	01/26/95	KW	2
Magnesium, Dissolved	2.4	mg/L	1.0	0.050	200.7/6010	01/25/95	KW	1
Manganese, Dissolved	0.010	mg/L	1.0	0.005	200.7/6010	01/25/95	KW	1
Potassium, Dissolved	1.7	mg/L	1.0	0.50	200.7/6010	01/27/95	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values

(1) Sample Preparation on 01/24/95 by WD using 3010
(2) Sample Preparation on 01/23/95 by WD using 3020
(3) Sample Preparation on 01/17/95 by GFB using 7195
(4) Sample preparation was begun 23 minutes after the expiration of the analytical hold time.

02/03/95

LJO/ejngbp(dw)/kaw
LA24IA1

340 County Road #5 PO Box 720
Westbrook ME 04098
TEL: 207-874-2400
FAX 207 775-4029

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-0069-4
Report Date: 02/03/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
S000019	Aqueous	CLIENT	01/16/95	01/16/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Silicon, Dissolved	8.2	mg/L	2.0	0.10	200.7/6010	01/30/95	KW	1
Sodium, Dissolved	35	mg/L	1.0	0.10	200.7/6010	01/27/95	KW	2

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values
(1) Sample Preparation on 01/27/95 by WD using 3010
(2) Sample Preparation on 01/24/95 by WD using 3010

02/03/95

LJO/ejngbp(dw)/kaw
LA24IA1

3?? County Road #5 PO Box 720
Westbrook ME 04098
TEL: 207-874-2400
FAX 207-775-4029

An Equal Opportunity Employer

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-0069-4
Report Date: 02/03/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
S000019	Aqueous	CLIENT	01/16/95	01/16/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Bicarbonate as HCO3	<20	mg/L	1.0	20	APHA 406C	01/17/95	CM	
Bromide	2.7	mg/L	1.0	2.0	320.1	01/23/95	NN	
Carbonate, as CO3	<20	mg/L	1.0	20	APHA 406C	01/17/95	CM	
Nitrate as N, Dissolved	0.24	mg/L	1.0	0.050	353.2	01/17/95	BC	
Nitrite as N, Dissolved	<0.050	mg/L	1.0	0.050	353.2	01/17/95	CM	
Organic Carbon, Dissolved (DOC)	5.9	mg/L	1.0	1.0	415.1	01/23/95	BC	
Phosphorus, Dissolved as P	0.18	mg/L	1.0	0.10	365.4	01/27/95	BC	1
Solids - Filterable Residue (TDS)	150.	mg/L	1.0	10	160.1	01/19/95	JF	2

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values
(1) Sample Preparation on 01/25/95 by NEN
(2) Sample Preparation on 01/18/95 by JF

02/03/95

LJO/ejnejn

340 County Road #5 PO Box 720
Westbrook ME 04098
TEL: 207-874-2400
FAX 207 775-4029

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-0069-5
Report Date: 02/03/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
S000020	Aqueous	CLIENT	01/16/95	01/16/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Dissolved	<0.10	mg/L	1.0	0.10	200.7/6010	01/25/95	KW	1
Arsenic, Dissolved	0.010	mg/L	1.0	0.005	206.2/7060	01/25/95	KW	2,3
Barium, Dissolved	0.057	mg/L	1.0	0.005	200.7/6010	01/25/95	KW	1
Calcium, Dissolved	71	mg/L	1.0	0.050	200.7/6010	01/27/95	KW	1
Chromium, Dissolved	<0.015	mg/L	1.0	0.015	200.7/6010	01/25/95	KW	1
Chromium, Hexavalent	<0.015	mg/L	1.0	0.015	6010	01/18/95	KW	4,5
Chromium, Trivalent	<0.015	mg/L	1.0	0.015	Calculation	01/31/95	GB	
Iron, Dissolved	45	mg/L	5.0	0.025	200.7/6010	01/27/95	KW	1
Lead, Dissolved	<0.005	mg/L	1.0	0.005	239.2/7421	01/26/95	KW	2
Magnesium, Dissolved	21	mg/L	1.0	0.050	200.7/6010	01/25/95	KW	1
Manganese, Dissolved	2.1	mg/L	1.0	0.005	200.7/6010	01/25/95	KW	1
Potassium, Dissolved	7.7	mg/L	1.0	0.50	200.7/6010	01/27/95	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 01/24/95 by WD using 3010
(2) Sample Preparation on 01/23/95 by WD using 3020
(3) Due to sample matrix interferences, the reported value has been determined by the technique of standard additions (i.e., standards for the analyte of interest added directly to an aliquot of the sample).
(4) Sample Preparation on 01/17/95 by GFB using 7195
(5) Sample preparation was begun 5 minutes after the expiration of the analytical hold time.

02/03/95

LJO/ejngbp(dw)/kaw
LA24IA1

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-0069-5
Report Date: 02/03/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
S000020	Aqueous	CLIENT	01/16/95	01/16/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Silicon, Dissolved	3.4	mg/L	1.0	0.10	200.7/6010	01/30/95	KW	:
Sodium, Dissolved	120	mg/L	5.0	0.10	200.7/6010	01/27/95	KW	;

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values
(1) Sample Preparation on 01/27/95 by WD using 3010
(2) Sample Preparation on 01/24/95 by WD using 3010

S

02/03/95

LJO/ejngbp(dw)/kaw
LA24IA1

3:C County Road #5 PO Box 720
Westbrook ME 04098
TEL: 207-874-2400
FAX 207-775-4029

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-0069-5
Report Date: 02/03/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
S000020	Aqueous	CLIENT	01/16/95	01/16/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTE
Bicarbonate as HCO3	470.	mg/L	1.0	20	APHA 406C	01/17/95	CM	
Bromide	4.4	mg/L	1.0	2.0	320.1	01/23/95	NN	
Carbonate, as CO3	<20	mg/L	1.0	20	APHA 406C	01/17/95	CM	
Nitrate as N, Dissolved	<0.050	mg/L	1.0	0.050	353.2	01/17/95	BC	
Nitrite as N, Dissolved	<0.050	mg/L	1.0	0.050	353.2	01/17/95	CM	
Organic Carbon, Dissolved (DOC)	5.5	mg/L	1.0	1.0	415.1	01/23/95	BC	
Phosphorus, Dissolved as P	<0.10	mg/L	1.0	0.10	365.4	01/27/95	BC	
Solids - Filterable Residue (TDS)	900.	mg/L	1.0	10	160.1	01/19/95	JF	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values

(1) Sample Preparation on 01/25/95 by NEN
(2) Sample Preparation on 01/18/95 by JF

02/03/95

LJO/ejnejn

340 County Road #5 PO Box 720
Westbrook ME 04098
TEL 207-874-2400
FAX 207 775 4029

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-0069-6
Report Date: 02/03/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVEI
S000011	Aqueous	CLIENT	01/16/95	01/16/9!

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTE
Aluminum, Dissolved	<0.10	mg/L	1.0	0.10	200.7/6010	01/25/95	KW	
Arsenic, Dissolved	<0.025	mg/L	5.0	0.005	206.2/7060	01/25/95	KW	2,
Barium, Dissolved	0.019	mg/L	1.0	0.005	200.7/6010	01/25/95	KW	
Calcium, Dissolved	460	mg/L	20	0.050	200.7/6010	01/27/95	KW	
Chromium, Dissolved	<0.015	mg/L	1.0	0.015	200.7/6010	01/25/95	KW	
Chromium, Hexavalent	<0.015	mg/L	1.0	0.015	6010	01/18/95	KW	
Chromium, Trivalent	<0.015	mg/L	1.0	0.015	Calculation	01/31/95	GB	
Iron, Dissolved	6.8	mg/L	1.0	0.025	200.7/6010	01/27/95	KW	
Lead, Dissolved	<0.050	mg/L	10	0.005	239.2/7421	01/26/95	KW	2,
Magnesium, Dissolved	360	mg/L	20	0.050	200.7/6010	01/27/95	KW	
Manganese, Dissolved	40	mg/L	20	0.005	200.7/6010	01/27/95	KW	
Potassium, Dissolved	32	mg/L	1.0	0.50	200.7/6010	01/27/95	KW	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values

(1) Sample Preparation on 01/24/95 by WD using 3010
(2) Sample Preparation on 01/23/95 by WD using 3020
(3) The laboratory's Practical Quantitation Level could not be achieved for this parameter due to sample composition, matrix effects, sample volume, or quantity used for analysis.
(4) Sample Preparation on 01/17/95 by GFB using 7195

02/03/95

LJO/ejnejn/kaw
LA24IA1

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-0069-6
Report Date: 02/03/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
S000011	Aqueous	CLIENT	01/16/95	01/16/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTE
Silicon, Dissolved	11	mg/L	5.0	0.10	200.7/6010	01/30/95	KW	
Sodium, Dissolved	2000	mg/L	100	0.10	200.7/6010	01/27/95	KW	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample specific reporting limits. Sample-specific limits are indicated by results annotated with '<' value

(1) Sample Preparation on 01/27/95 by WD using 3010
(2) Sample Preparation on 01/24/95 by WD using 3010

02/03/95

LJO/ejnejn/kaw
LA24IA1

PACE INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-0069-6
Report Date: 02/03/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
S000011	Aqueous	CLIENT	01/16/95	01/16/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTE
Bicarbonate as HCO3	94.	mg/L	1.0	20	APHA 406C	01/17/95	CM	
Bromide	4.5	mg/L	1.0	2.0	320.1	01/23/95	NN	
Carbonate, as CO3	<20	mg/L	1.0	20	APHA 406C	01/17/95	CM	
Nitrate as N, Dissolved	0.14	mg/L	1.0	0.050	353.2	01/17/95	BC	
Nitrite as N, Dissolved	<0.050	mg/L	1.0	0.050	353.2	01/17/95	CM	
Organic Carbon, Dissolved (DOC)	32	mg/L	1.0	1.0	415.1	01/23/95	BC	
Phosphorus, Dissolved as P	0.20	mg/L	1.0	0.10	365.4	01/27/95	BC	1
Solids - Filterable Residue (TDS)	9700.	mg/L	10	10	160.1	01/23/95	JF	2

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values

(1) Sample Preparation on 01/25/95 by NEN
(2) Sample Preparation on 01/20/95 by JF

02/03/95

LJO/ejnejn

Respectfully submitted,
PACE, INC.

Laura J. O'Meara
Supervisor, Client Services

PACE, Inc.
Maine Laboratory
Quality Control Report

Duplicate and Matrix Spike/Matrix Spike Duplicate Results

		DUPLICATE RESULTS						MATRIX SPIKE/MATRIX SPIKE DUPLICATE RESULTS									
			Sample Measurements						Concentration or Quantity				Matrix Spike Recovery (%)				
Parameter	PACE Sample No.	Units	Rep 1	Rep 2	Mean Conc	RPD (%)	Acceptance Range for RPD (%)	Units	Sample Only	Spike Added	Sample +Spike Dup 1	Sample +Spike Dup 2	Sample +Spike Dup 1	Sample +Spike Dup 2	Acceptance Range (%)	RPD (%)	Acceptance Range (%)
Alkalinity	WL0069-1	mg/L	<20.0	<20.0	<20 0	NC	0-20	mg/L	<20.0	114	135	NA	118	NA	75-125	NA	0-20
Bromide	WL0069-1	mg/L	<2.00	<2.00	<2.00	NC	0-20	mg/L	<2.00	10.0	<2.00	NA	0 *	NA	75-125	NA	0-20
Nitrate+Nitrite	WL0069-1	mg/L	0.169	0 202	0 186	18	0-20	mg/L	0.169	1.20	1.35	NA	98.4	NA	75-125	NA	0-20
Nitrate - N	See Nitrate+Nitrite, Nitrite																
Nitrite - N	WL0069-1	mg/L	<0.050	<0 050	<0.050	NC	0-20	mg/L	<0.050	0.500	0.515	NA	103	NA	75-125	NA	0-20
Phosphate,Total	WL0069-1	mg/L	<0.100	0.226	0.163	NC	0-20	mg/L	<0 100	1.25	0.900	NA	72.0 *	NA	75-125	NA	0-20
TDS	WL0069-1	mg/L	138	158	148	14	0-20	Matrix Spike / Matrix Spike Duplicate not applicable to this parameter.									
DOC	WL0069-1	mg/L	5.74	5.90	5.82	2.7	0-20	mg/L	~~5.17~~ 5.74	40.0	45.7	NA	~~101~~ 99.9	NA	75-125	NA	0-20

RPD = Relative percent difference, which is the absolute value of the difference between two replicate results divided by the mean concentration then multiplied by 100%.

NC = Relative percent difference cannot be calculated for sample results less than the PQL.

Qualify circled results
MDusey
1/16/95

NA = Not applicable.

DATA QUALITY COMMENTS:
Results of all quality control measurements are within the laboratory or contract specified acceptance range except as noted. The laboratory does not use the sample duplicate and matrix spike acceptance ranges as acceptance criteria for a specific analysis. Sample duplicate and matrix spike data are used to evaluate method performance in the environmental sample matrix only. Please refer to LCS data for assessment of quality control for each parameter.

* Matrix spike recovery is outside the laboratory's specified acceptance range indicating potential sample matrix interference and potential bias of reported value for this parameter.

Client: Olin Chemicals, Work Order: WL0069 03-Feb-95

PACE, Inc.
Maine Laboratory
Quality Control Report

Duplicate and Matrix Spike/Matrix Spike Duplicate Results

		DUPLICATE RESULTS						*MATRIX SPIKE/MATRIX SPIKE DUPLICATE RESULTS*									
			Sample Measurement						Concentration or Quantity				Matrix Spike Recovery (%)				
Parameter	PACE Sample No.	Units	Rep 1	Rep 2	Mean Conc	RPD (%)	Acceptance Range for RPD (%)	Units	Sample Only	Spike Added	Sample +Spike Dup 1	Sample +Spike Dup 2	Sample +Spike Dup 1	Sample +Spike Dup 2	Acceptance Range (%)	RPD (%)	Acceptance Range (%)
Aluminum	WL0069-1	mg/L	0.395	0.418	0.407	5.7	0-20	mg/L	0.395	2.00	2.53	NA	107	NA	75-125	NA	0-20
	WL0069-5							mg/L	<0.100	2.00	2.09	NA	105	NA	75-125	NA	0-20
	WL0069-6	mg/L	<0.100	<0.100	<0.100	NC	0-20	mg/L	<0.100	2.00	1.98	NA	99.0	NA	75-125	NA	0-20
Arsenic	WL0069-1	mg/L	<0.005	<0.005	<0.005	NC	0-20	mg/L	<0.005	0.040	0.041	NA	103	NA	75-125	NA	0-20
Barium	WL0069-1	mg/L	0.031	0.032	0.032	3.2	0-20	mg/L	0.031	2.00	2.10	NA	103	NA	75-125	NA	0-20
	WL0069-5							mg/L	0.057	2.00	2.19	NA	107	NA	75-125	NA	0-20
	WL0069-6	mg/L	0.019	0.018	0.019	5.4	0-20	mg/L	0.019	2.00	1.99	NA	98.6	NA	75-125	NA	0-20
Calcium	WL0069-1	mg/L	10.0	9.92	10.0	0.8	0-20	mg/L	10.0	2.00	11.8	NA	~~90.0~~	NA	75-125	NA	0-20
	WL0069-5							mg/L	71.0	2.00	72.0	NA	50.0 ~	NA	75-125	NA	0-20
	WL0069-6	mg/L	460	457	459	0.7	0-20	mg/L	460	2.00	463	NA	150 ~	NA	75-125	NA	0-20
Chromium	WL0069-1	mg/L	<0.015	<0.015	<0.015	NC	0-20	mg/L	<0.015	0.200	0.216	NA	108	NA	75-125	NA	0-20
	WL0069-5							mg/L	<0.015	0.200	0.213	NA	106	NA	75-125	NA	0-20
	WL0069-6	mg/L	<0.015	<0.015	<0.015	NC	0-20	mg/L	<0.015	0.200	0.199	NA	99.5	NA	75-125	NA	0-20
Chromium, Hexavalent	WL0069-1	mg/L	<0.015	<0.015	<0.015	NC	0-20	mg/L	<0.015	2.50	2.43	NA	97.2	NA	75-125	NA	0-20
Chromium, Trivalent	See Chromium and Hexavalent Chromium																
Iron	WL0069-1	mg/L	0.102	0.069	0.086	39	0-20	mg/L	0.102	1.00	1.13	NA	103	NA	75-125	NA	0-20
	WL0069-5							mg/L	44.7	1.00	44.5	NA	0 ~	NA	75-125	NA	0-20
	WL0069-6	mg/L	6.78	6.73	6.76	0.7	0-20	mg/L	6.78	1.00	7.78	NA	~~100~~	NA	75-125	NA	0-20
Lead	WL0069-1	mg/L	<0.005	<0.005	<0.005	NC	0-20	mg/L	<0.005	0.020	0.021	NA	105	NA	75-125	NA	0-20
Magnesium	WL0069-1	mg/L	2.42	2.40	2.41	0.8	0-20	mg/L	2.42	4.00	6.44	NA	101	NA	75-125	NA	0-20
	WL0069-5							mg/L	21.3	4.00	25.2	NA	97.5	NA	75-125	NA	0-20
	WL0069-6	mg/L	350 ~~40.0~~	344 ~~37.9~~	350 ~~39.0~~	3.4 ~~5.4~~	0-20	mg/L	350 ~~40.0~~	4.00	353 ~~39.8~~	NA	0 ~	NA	75-125	NA	0-20
Manganese	WL0069-1	mg/L	0.018	0.011	0.014	48.3	0-20	mg/L	0.018	0.500	0.536	NA	104	NA	75-125	NA	0-20
	WL0069-5							mg/L	2.08	0.500	2.65	NA	114	NA	75-125	NA	0-20
	WL0069-6	mg/L	~~386~~ 40.0	~~344~~ 37.9	~~350~~ 39.0	~~3.4~~ 5.4	0-20	mg/L	~~356~~ 40.0	0.500	~~353~~ 39.8	NA	0 ~	NA	75-125	NA	0-20

~ Note - Section [illegible]

Client: Olin Chemicals, Work Order: WL0069

03-Feb-95

PACE, Inc.
Maine Laboratory
Quality Control Report

Duplicate and Matrix Spike/Matrix Spike Duplicate Results

			DUPLICATE RESULTS					*MATRIX SPIKE/MATRIX SPIKE DUPLICATE RESULTS*									
			Sample Measurement						Concentration or Quantity				Matrix Spike Recovery (%)				
Parameter	PACE Sample No.	Units	Rep 1	Rep 2	Mean Conc	RPD (%)	Acceptance Range for RPD (%)	Units	Sample Only	Spike Added	Sample +Spike Dup 1	Sample +Spike Dup 2	Sample +Spike Dup 1	Sample +Spike Dup 2	Acceptance Range (%)	RPD (%)	Acceptance Range (%)
Potassium	WL0069-1	mg/L	1.33	1.61	1.47	19	0-20	mg/L	1.33	20.0	22.3	NA	105	NA	75-125	NA	0-20
	WL0069-5							mg/L	7.65	20.0	27.4	NA	99	NA	75-125	NA	0-20
	WL0069-6	mg/L	31.9	32.5	32.2	1.9	0-20	mg/L	31.9	20.0	54.8	NA	115	NA	75-125	NA	0-20
Sodium	WL0069-1	mg/L	34.0	34.9	34.5	2.6	0-20	mg/L	34.0	6.00	42.6	NA	143 ~	NA	75-125	NA	0-20
	WL0069-5							mg/L	124	6.00	123	NA	0 ~	NA	75-125	NA	0-20
	WL0069-6	mg/L	2040	2020	2030	1.0	0-20	mg/L	2040	6.00	2020	NA	0 ~	NA	75-125	NA	0-20
Silicon	WL0069-1	mg/L	3.52	3.77	3.65	6.9	0-20	mg/L	3.52	5.00	8.27	NA	95.0	NA	75-125	NA	0-20

RPD = Relative percent difference, which is the absolute value of the difference between two duplicate results divided by the mean concentration then multiplied by 100%.

NA = Not applicable.

NC = Relative percent difference cannot be calculated for sample results less than the PQL.

*Because of the large uncertainty (i.e., 33% or greater) associated with measurements made near the detection level, the acceptance range for relative percent difference for duplicate measurements at such low concentrations is 0-100%.

DATA QUALITY COMMENTS:
Results of all quality control measurements are within the laboratory or contract specified acceptance range except as noted. The laboratory does not use the sample duplicate and matrix spike acceptance ranges as acceptance criteria for a specific analysis. Sample duplicate and matrix spike data are used to evaluate method performance in the environmental sample matrix only. Please refer to LCS data for assessment of quality control for each parameter.

~ Matrix spike recovery is outside the laboratory specified acceptance range. The spike concentration for this parameter is significantly below the sample concentration and cannot be distinguished from the sample's analytical signal.

34	0069-6	AS	5.00x	01/25/95	12:35

<-As-->

Burns	06.21	12.35
Mean	9.280	
CV %	46.78	
Sample value	46.40	
Spike added	20.00	
Spike recovery, %	46.40 ***	

35	CCV	CCV	1.00x	01/25/95	12:40

<-As-->

Burns	29.86	31.26
Mean	30.560	
CV %	3.24	
Sample value	30.56	102%

ARGOS MODEL S4 Version 1.30

post-digestion analytical spike out of criteria

M. Osrey 1/15/96

Sample value 1.45 <

43	0095-10	AS		1.00x	01/26/95	18:19

<-Pb--------------------------------------->

Burns	23.48	23.94
Mean	23.710	
CV %	1.37	
Sample value	23.71	
Spike added	20.00	
Spike recovery, %	111.42	

ARGOS MODEL S4 Version 1.30
TJA S-H 22/CTF-188 (Lead - Concentration Mode - 2 Burns)
Run: TJ 9502602 Analyst: KEW Page 2

Concentrations

POS	SAMPLE ID	CODE	CLIENT ID	DILUTION	DATE	TIME
44	0069-6	S		10.00x	01/26/95	18:23

<-Pb--------------------------------------->

Burns	-00.16	-00.03
Mean	-0.095	
CV %	96.76	< 50 I-7
Sample value	4.90U	

45	0069-6	AS		10.00x	01/26/95	18:28

<-Pb--------------------------------------->

Burns	16.22	15.11
Mean	15.665	
CV %	5.01	
Sample value	156.65	
Spike added	20.00	
Spike recovery, %	78.32 ***	

post-digestion analytical spike out of criteria
KDuse 1/15/95

46	0085-1	S		100.00x	01/26/95	18:33

<-Pb--------------------------------------->

Burns	00.04	00.28
Mean	0.160	
CV %	106.07	
Sample value	49.00U	< 500 I-7

47	0085-1	AS		100.00x	01/26/95	18:38

<-Pb--------------------------------------->

Burns	20.34	19.69
Mean	20.015	
CV %	2.30	
Sample value	2001.50	
Spike added	20.00	

PACE, Inc.
Maine Laboratory
Quality Control Report

Method Blank and Laboratory Control Sample Results

Parameter	Date of Prep	Date of Analysis	*METHOD BLANK RESULTS* Units	Concentration Measured in Blank	Acceptance Range	Practical Quantitation Level*	*LABORATORY CONTROL SAMPLE RESULTS* Units	True Value	Measured Value	Percent Recovered	Acceptance Range (%)	Acceptance Range (mg/kg)
Aluminum	24-Jan-95	25-Jan-95	mg/L	< 0.100	< 0.100	0.100	mg/L	10.0	10.3	103	80-120	
	31-Jan-95	31-Jan-95	mg/L	< 0.100	< 0.100	0.100	mg/L	10.0	10.4	104	80-120	
Arsenic	23-Jan-95	24-Jan-95	mg/L	< 0.005	< 0.005	0.005	mg/L	0.025	0.025	100	80-120	
	31-Jan-95	01-Feb-95	mg/L	< 0.005	< 0.005	0.005	mg/L	0.025	0.025	100	80-120	
Barium	24-Jan-95	25-Jan-95	mg/L	< 0.005	< 0.005	0.005	mg/L	10.0	10.4	104	80-120	
	31-Jan-95	31-Jan-95	mg/L	< 0.005	< 0.005	0.005	mg/L	10.0	10.1	101	80-120	
Calcium	24-Jan-95	27-Jan-95	mg/L	< 0.050	< 0.100	0.050	mg/L	25.0	24.8	99.2	80-120	
	31-Jan-95	31-Jan-95	mg/L	< 0.050	< 0.100	0.050	mg/L	25.0	25.6	102	80-120	
Chromium	24-Jan-95	25-Jan-95	mg/L	< 0.015	< 0.015	0.015	mg/L	1.00	1.03	103	80-120	
	31-Jan-95	31-Jan-95	mg/L	< 0.015	< 0.015	0.015	mg/L	1.00	1.04	104	80-120	
Chromium, Hexavalent	17-Jan-95	18-Jan-95	mg/L	< 0.015	< 0.015	0.015	mg/L	2.50	2.33	93.2	80-120	
Chromium, Trivalent	See Chromium and Hexavalent Chromium											
Iron	24-Jan-95	25-Jan-95	mg/L	< 0.025	< 0.050	0.025	mg/L	5.00	5.51	110	80-120	
	31-Jan-95	31-Jan-95	mg/L	< 0.025	< 0.050	0.025	mg/L	5.00	5.44	109	80-120	
Lead	23-Jan-95	26-Jan-95	mg/L	< 0.005	< 0.005	0.005	mg/L	0.025	0.026	104	80-120	
	31-Jan-95	31-Jan-95	mg/L	< 0.005	< 0.005	0.005	mg/L	0.025	0.027	108	80-120	
Magnesium	24-Jan-95	25-Jan-95	mg/L	< 0.050	< 0.050	0.050	mg/L	25.0	26.3	105	80-120	
	31-Jan-95	31-Jan-95	mg/L	< 0.050	< 0.050	0.050	mg/L	25.0	26.7	107	80-120	
Manganese	24-Jan-95	25-Jan-95	mg/L	< 0.005	< 0.005	0.005	mg/L	2.50	2.58	103	80-120	
	31-Jan-95	31-Jan-95	mg/L	< 0.005	< 0.005	0.005	mg/L	2.50	2.56	102	80-120	
Potassium	24-Jan-95	27-Jan-95	mg/L	< 0.500	< 0.500	0.500	mg/L	25.0	25.5	102	80-120	
	31-Jan-95	31-Jan-95	mg/L	< 0.500	< 0.500	0.500	mg/L	25.0	24.4	97.6	80-120	
Silicon	27-Jan-95	30-Jan-95	mg/L	< 0.100	< 0.100	0.100	mg/L	5.00	4.89	97.8	80-120	
Sodium	24-Jan-95	25-Jan-95	mg/L	* 0.106	< 0.200	0.100	mg/L	25.0	26.1	104	80-120	
	31-Jan-95	31-Jan-95	mg/L	< 0.100	< 0.200	0.100	mg/L	25.0	25.3	101	80-120	

* Not associated with any samples

Field Duplicate Precision Worksheet — Smith

Project Name: Olin Chemicals **Case Number:** WL-0069
Project Numbe 00-7047-0102

Sample location	GW-64-S	GW-64-S
Sample ID number	S000018 WL-0069-1	S000019 WL-0069-4
Matrix	Aqueous	Aqueous
Units	mg/L	mg/L
	filt.	filt.

Compound	Sample oncentration	Field Duplicate Concentratio	RPD	Q
Aluminum	0.39	0.41	5.0	
Arsenic				
Barium	0.031	0.033	6.3	
Calcium	10	9.9	1.0	
Chromium				
Chromium, Hexavalent				
Chromium, Trivalent				
Iron	0.10	0.073	31.2	*
Lead				
Magnesium	2.4	2.4	0.0	
Manganese	0.018	0.010	57.1	*
Potassium	1.3	1.7	26.7	*
Silicon	3.5	8.2	80.3	*
Sodium	34	35	2.9	
Bicarbonate as HCO3				
Bromide		2.7		*
Carbonate as CO3				
Nitrate as N	0.17	0.24	34.1	*
Nitrite as N				
Total Organic Carbon	5.7	5.9	3.4	
Phosphorus as P		0.18		
Solids-Filterable Residue (TDS)	140	150	6.9	

* Indicates control limit out of criteria

Smith CQAD has established a control limit of 20 percent RPD.

FDWL0069.XLS QA Scientist M. Dusey Date 1/16/96

SMITH

APPENDIX B

Field Identification: S000018 Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Ammonia-N (mg/L as N)	0.07	0.05	42817-001	01/17/95	534	350.2/1
Chloride (mg/L)	~~60~~ U1	10	42817-005	01/17/95	628A	300.0/1
Sulfate (mg/L)	22	1.0	42817-005	01/18/95	629A	300.0/1
Ortho Phosphate (mg/L as P)	BDL	0.02	42817-005	01/17/94	184	365.2/1
Sulfide (mg/L)	BDL	1	42817-009	01/17/95	282	376.1/1

MO 1/15/95

Field Identification: S000019 Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Ammonia-N (mg/L as N)	0.07	0.05	42817-002	01/17/95	534	350.2/1
Chloride (mg/L)	~~60~~ U1	10	42817-006	01/17/95	628A	300.0/1
Sulfate (mg/L)	17	1.0	42817-006	01/18/95	629A	300.0/1
Ortho Phosphate (mg/L as P)	BDL	0.02	42817-006	01/17/94	184	365.2/1
Sulfide (mg/L)	BDL	1	42817-010	01/17/95	282	376.1/1

MO 1/15/95

Field Identification: S000020 Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Ammonia-N (mg/L as N)	7.1	0.05	42817-003	01/17/95	534	350.2/1
Chloride (mg/L)	190	10	42817-007	01/18/95	629A	300.0/1
Sulfate (mg/L)	350	10	42817-007	01/18/95	629A	300.0/1
Ortho Phosphate (mg/L as P)	BDL	0.02	42817-007	01/17/94	184	365.2/1
Sulfide (mg/L)	BDL	1	42817-011	01/17/95	282	376.1/1

Field Identification: S000011 Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Ammonia-N (mg/L as N)	98	1	42817-004	01/17/95	534	350.2/1
Chloride (mg/L)	2100	100	42817-008	01/18/95	629A	300.0/1
Sulfate (mg/L)	4700	100	42817-008	01/18/95	629A	300.0/1
Ortho Phosphate (mg/L as P)	BDL	0.02	42817-008	01/17/94	184	365.2/1
Sulfide (mg/L)	BDL	1	42817-012	01/17/95	282	376.1/1

References: 1) 40 CFR Part 136, Friday, October 26, 1984

pace INCORPORATED THE ASSURANCE OF QUALITY

REPORT OF LABORATORY ANALYSIS

TECHNICAL NARRATIVE

Laboratory Number: 42817

Samples were received in acceptable condition, with the exceptions noted on the sample receipt condition report.

All samples were prepared and analyzed within the holding times specified in the referenced methods.

Instrumentation used for analysis was calibrated and/or tuned with the appropriate frequency and to the appropriate specifications required by the referenced methods.

Blank contamination was not observed at levels affecting the analytical results.

Matrix effects, as monitored by matrix spike recovery, unusual physical properties and/or surrogate analyte recovery, were not apparent with the following exception:

> Matrix spike recovery for sulfate for laboratory number 42817-5 was 65.6%.

Accuracy and precision as monitored by laboratory control sample analyses were within laboratory acceptance limits.

P O Box 2130
1 Lafayette Road
Hampton, NH 03842
TEL 603-926-7777
FAX 603-926-7939

QUALITY CONTROL
Chloride
Method: 300.0 EPA-600/4-84-017

QC Batch: 629A **For:** 42817
Matrix: WATER

METHOD BLANK:

	Result mg/L
	< 1.00

LABORATORY CONTROL SAMPLES:

	True Value mg/L	Observed Value mg/L	Accuracy Recovery %
LCS1	25.0	~~24.380~~ 27.7	~~97.5~~ 110.8

NC = Not calculable due to result below detection limit.

Field Sample
Precision

	Rep 1	Rep 2	Ave	RPD
42817-5	60.96	64.00	62.48	4.9

Accuracy

	Rep 1	SA	SFound	%R
42817-5	60.96	50	~~106.10~~ 117.0	112.1

M Orsey 1/16/96

QUALITY CONTROL
Sulfate
Method: EPA-600 300.0

QC Batch: 629A
Matrix: WATER

METHOD BLANK:

Result mg/L
< 1.00

LABORATORY CONTROL SAMPLES:

	True Value mg/L	Observed Value mg/L	Accuracy Recovery %
LCS1	50.0	46.7	93.4

FIELD SAMPLE:

Precision Lab No.	Replicate 1 mg/L	Replicate 2 mg/L	Average mg/L	Relative Percent Difference %
42817-5	22.45	22.26	22.36	0.8

Accuracy Lab No.	Replicate 1 mg/L	Spike Added mg/L	Spike Found mg/L	Recovery %
42817-5	22.45	10	29.01	65.6

below criteria

M. Orsey
1/16/96

Field Duplicate Precision Worksheet Smith

Project Name: Olin Chemicals **Case Number:** 42817
Project Numbe 00-7047-0102

Sample location	GW-64-S	GW-64-S
Sample ID number	S000018 42817-001 -005, -009	S000019 42817-006 -006, -010
Matrix	Aqueous	Aqueous
Units	mg/L	mg/L
	filt.	filt.

Compound	Sample Concentration	Field Duplicate Concentration	RPD	Q
Chloride	61	61	0.0	
Sulfate	22	17	25.6	*
Ortho Phosphate				
Sulfide				
Ammonia-N	0.07	0.07	0.0	

* Indicates control limit out of criteria

Smith CQAD has established a control limit of 20 percent RPD.

FD0069A.XLS

QA Scientist M. Dorsey Date 1/16/96

DATA VALIDATION REPORT

FOR THE ANALYTICAL RESULTS

OF SURFACE WATER SAMPLES

COLLECTED ON FEBRUARY 2, 1995

FOR

OLIN CORPORATION
WILMINGTON, MASSACHUSETTS

SMITH PROJECT NO. 00-7047-0102

JANUARY 1996

PREPARED BY

E. Bryan Rivers

E. BRYAN RIVERS
QUALITY ASSURANCE SCIENTIST

MaryBeth Ousey

MARYBETH OUSEY
QUALITY ASSURANCE SCIENTIST

Atwood F. Davis

ATWOOD F. DAVIS, CPC
QUALITY ASSURANCE MANAGER

SMITH

ENVIRONMENTAL TECHNOLOGIES CORPORATION

Engineering • Consulting • Remediation • Construction

SMITH

DATA VALIDATION REPORT
METALS AND SELECTED ANALYTES
OLIN CORPORATION
SURFACE WATER SAMPLES

INTRODUCTION

A validation was performed on the analytical data from the surface water samples collected on February 2, 1995 at the Olin Corporation's Wilmington, Massachusetts Facility. This review is of work order number WL-0197 which contained 6 filtered surface water samples, 6 unfiltered surface water samples, 1 filtered field duplicate sample, and 1 unfiltered field duplicate sample. All samples in this report were analyzed by Pace, Incorporated Environmental Laboratories (Pace, Inc.), Westbrook, Maine, following United States Environmental Protection Agency (EPA) Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (SW-846), Methods for Chemical Analysis of Water and Wastes (MCAWW), and Standard Methods for the Examination of Water and Wastewater, 16th Edition, 1985 (SM), American Public Health Association (APHA). The individual analyses were performed using the following methods:

Analytes	Method
aluminum, barium, calcium, chromium, iron, magnesium, manganese, potassium, silicon, and sodium	200.7
hexavalent chromium	7195/6010
arsenic	206.2
lead	239.2
bicarbonate as HCO3 and carbonate as CO3	SM406C
bromide	320.1
chemical oxygen demand	410.4
nitrate as N and nitrite as N	353.2
dissolved organic carbon (DOC) and total organic carbon (TOC)	415.1
phosphorus as P	365.4
solids - filterable residue	160.1

Because the analyses were not performed according to the EPA Contract Laboratory Program (CLP) methods, the findings in this report are based upon a review of sample data and of quality control (QC) specified by the individual analytical methods and provided by the laboratory. The quality assurance review was prepared according to EPA Region I Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analysis, June 1988, where applicable.

The support documentation in Appendix A of this report summarizes the specifics of this review. Appendix A also provides the sample results as reported by the laboratory. The data summary lists all compounds that were analyzed. Analytical problems are outlined in the following Findings/Qualifiers section. Other issues which arose which did not warrant qualification are detailed in the Notes Section.

FINDINGS/QUALIFIERS

This data validation report addresses Pace, Inc. work order number WL-0197 which contained 6 filtered surface water samples, 6 unfiltered surface water samples, 1 filtered field duplicate sample, and 1 unfiltered field duplicate sample. The data were evaluated for the following parameters:

*	data completeness
*	holding times
*	data calibration verification
*	laboratory blank analysis
+	field blank analysis
*	interference check sample results
	matrix spike recoveries
	laboratory duplicates
	field duplicates
*	laboratory control sample results
	furnace atomic absorption results
+	serial dilution results
*	detection limit results
*	sample results

* All criteria were met for this parameter.

\+ All criteria were met for this parameter; however, this parameter is discussed in the Notes Section of this report.

The data summary table provided at the end of this report summarizes the validation recommendations which were based on the following information:

- Positive results and detection limits for iron for all filtered and unfiltered samples are estimated because the associated matrix spike percent recoveries (%Rs) were below criteria. (Matrix spike results are also discussed in the Notes Section.)

- Positive results for iron and bromide for filtered and unfiltered samples and positive results for aluminum, manganese, silicon, sodium, bicarbonate as HCO3, chemical oxygen demand (COD) (except sample SW-16 (unfiltered/WL-0197-17)), nitrate, and

SMITH

total organic carbon (TOC) for all unfiltered samples are estimated because laboratory duplicate precision was not met.

- The graphite furnace post-digestion analytical spike %Rs for arsenic and lead for sample SW-16 (filtered/WL-0197-8) and lead for sample SW-16 (unfiltered/WL-0197-17) were below criteria. These detection limits are estimated.

- Positive results for iron and manganese for all filtered and unfiltered samples and positive results for aluminum, bicarbonate as HCO3, nitrate, and TOC for all unfiltered samples are estimated because field duplicate precision was not met. Details are presented on the Field Duplicate Precision Worksheet provided in Appendix A.

NOTES

The following items were noted during the validation review which did not impact results or necessitate further qualification of data:

1. Matrix spike %Rs of criteria for calcium (filtered and unfiltered) and sodium (unfiltered only) were out of the associated acceptance ranges. Because the spike concentrations significantly below the sample concentrations (i.e., less than four times), no data are qualified.

2. It appears from reviewing the bromide preparation notes that the matrix spike sample associated with unfiltered bromide samples was not spiked. The preparation notes are included in Appendix A. No data are qualified.

3. Transcription errors for bromide, COD, dissolved organic carbon (DOC), and TOC are present on the Quality Control Report Form. The reviewer-corrected form is included in Appendix A.

4. A serial dilution sample was not provided by the laboratory as recommended by the MCAWW Method 200.7. Since performance of a serial dilution is not required by the method, no data are qualified.

5. There are no field blank samples associated with this order.

SUMMARY

This review has identified matrix spike %Rs, laboratory and field duplicate precision, and graphite furnace post-digestion analytical spike %Rs as areas of concern. The reported data are usable as qualified on the data summary table. For specifics relating to this review, see the attached documentation in Appendix A.

SMITH

QUALIFIER CODES

J - The associated value is an estimated quantity.

UJ - The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.

DATA SUMMARY TABLE

Site Name: Olin, Wilmington
Project Number: 00-7047-0102
Sampling Date(s): 2/2/95

Units = mg/L

Laboratory: Pace Env. Laboratories
Case/Order #: WL-0197
Field Duplicates: SW-14 and SW-14D

PQL	Sample location or description	SW-14		SW-14D		SW-11		SW-12		SW-17		SW-16		SW-15				
	Sample number	WL-0197-1		WL-0197-4		WL-0197-5		WL-0197-6		WL-0197-7		WL-0197-8		WL-0197-9				
	Sampling date	2/2/95		2/2/95		2/2/95		2./2/95		2/2/95		2/2/95		2/2/95				
	unfilt./filt.	filt.		filt.		filt.		filt.		filt.		filt.		filt.				
PQL	Comments	Field Dup. A		Field Dup. B														
0.10	Aluminum *	0.11				0.23						2.4						
0.005	Arsenic *												UJ					
0.005	Barium *	0.010		0.010		0.057		0.017		0.016		0.028		0.015				
0.050	Calcium *	19		20		31		15		25		290		30				
0.015	Chromium *											0.035						
0.016	Chromium (Hexavalent)			N/A														
0.015	Chromium (Trivalent)			N/A								0.035						
0.025	Iron *	1.3	J	0.74	J	4.3	J	0.59	J	0.38	J	0.15	J	0.12	J			
0.005	Lead *												UJ					
0.050	Magnesium *	1.9		1.9		4.8		2.1		2.6		4.8		2.9				
0.005	Manganese *	0.18	J	0.14	J	0.35	J	0.16	J	0.19	J	0.39	J	0.24	J			
0.50	Potassium *	1.0		1.1		3.0		1.4		1.6		2.4		1.8				
0.10	Silicon	2.5		2.3		9.5		2.9		4.5		6.6		4.7				
0.10	Sodium *	31		30		72		37		110		77		110				
20	Bicarbonate as HCO3	36		36		82				57				48				
2.0	Bromide					2.3	J					2.4	J					
20	Carbonate as CO3 *																	
15	Chemical Oxygen Demand	15				30						26						
0.050	Nitrate as N *	0.32		0.38		0.33		0.23		2.5		11		2.8				
0.050	Nitrite as N *																	
1.0	Dissolved Organic Carbon (DOC)	3.9		4.1		10		3.8		3.3		8.8		3.3				
0.10	Phosphorus as P *																	
10	Solids-Filterable Residue * (TDS)	170		170		410		180		390		1300		440				

N/A = Not analyzed.
* =Reported as dissolved.

Mary Beth Oursey 1/28/96

INWL0197.XLS

FINDINGS/QUALIFIERS

This data validation report addresses Pace, Inc. work order number 42964 which contained 6 filtered surface water samples, 6 unfiltered surface water samples, 1 filtered field duplicate sample, and 1 unfiltered field duplicate sample. The data were evaluated for the following parameters:

- * data completeness
- * holding times
- * data calibration verification
- * laboratory blank analysis
- \+ field blank analysis
- matrix spike recoveries
- laboratory duplicates
- field duplicates
- * laboratory control sample results
- * detection limit results
- * sample results

* All criteria were met for this parameter.
\+ All criteria were met for this parameter; however, this parameter is discussed in the Notes Section of this report.

The data summary table provided at the end of this report summarizes the validation recommendations which were based on the following information:

- The positive sulfide result for filtered sample SW-15 (42964-018) is estimated because the matrix spike percent recovery (%R) was above criteria.

- Positive ammonia results for all unfiltered samples are estimated because laboratory duplicate precision was not met.

- Positive ammonia results for all filtered are estimated because field duplicate precision was not met. Details are presented on the Field Duplicate Precision Worksheet provided in Appendix B.

NOTES

The following items were noted during the validation review which did not impact results or necessitate further qualification of data:

- There are no field blank samples associated with this order.

SMITH

SUMMARY

This review has identified a matrix spike %R and laboratory and filed duplicate precision as areas of concern. The reported data are usable as qualified on the data summary table. For specifics relating to this review, see the attached documentation in Appendix B.

SMITH

QUALIFIER CODES

J - The associated value is an estimated quantity.

UJ - The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.

DATA SUMMARY TABLE

Site Name: Olin, Wilmington
Project Number: 00-7047-0102
Sampling Date(s): 2/2/95

Liquid mg/l

Laboratory: Pace Env. Laboratories
Case/Order #: 42964
Field Duplicates: SW-14 and SW-14D

PQL	Sample location or description	SW-14		SW-14D		SW-11		SW-12		SW-17		SW-16		SW-15	
	Sample number	42964-001 -010, -019		42964-004 -013, -022		42964-005 -014, -023		42964-006 -015, -024		42964-007 -016, -025		42964-008 -017, -026		42964-009 -018, -027	
	Sampling date	2/2/95		2/2/95		2/2/95		2./2/95		2/2/95		2/2/95		2/2/95	
	unfilt. / filt.	filt.		filt.		filt.		filt.		filt.		filt.		filt.	
PQL	Comments	Field Dup. A		Field Dup. B											
1	Chloride	40		40		68		79		160		67		130	
1.0	Sulfate	28		28		200		20		140		870		160	
0.02	Orthophosphate														
1	Sulfide													2	J
0.05	Ammonia-N	0.09	J	0.12	J	35	J	0.39	J	12	J	48	J	15	J

PQL	Sample location or description	SW-14		SW-14D		SW-11		SW-12		SW-17		SW-16		SW-15	
	Sample number	42964-028 -037, -046		42964-031 -040, -049		42964-032 -041, -050		42964-033 -042, -051		42964-034 -043, -052		42964-035 -044, -053		42964-036 -045, -054	
	Sampling date	2/2/95		2/2/95		2/2/95		2./2/95		2/2/95		2/2/95		2/2/95	
	unfilt. / filt.	unfilt.		unfilt.		unfilt.		unfilt.		unfilt.		unfilt.		unfilt.	
PQL	Comments	Field Dup. A		Field Dup. B											
1	Chloride	38		38		63		85		120		70		130	
1.0	Sulfate	30		30		190		18		110		880		140	
0.02	Ortho Phosphate														
1	Sulfide							2							
0.05	Ammonia-N	0.10	J	0.10	J	31	J	0.59	J	11	J	46	J	13	J

Marybeth Dusey 1/28/96

I2WL0197.XLS

DATA SUMMARY TABLE

Site Name: Olin, Wilmington
Project Number: 00-7047-0102
Sampling Date(s): 2/2/95

Units = mg/L

Laboratory: Pace Env. Laboratories
Case/Order #: WL-0197
Field Duplicates: SW-14 and SW-14D

PQL	Sample location or description	SW-14		SW-14D		SW-11		SW-12		SW-17		SW-16		SW-15	
	Sample number	WL-0197-10		WL-0197-13		WL-0197-14		WL-0197-15		WL-0197-16		WL-0197-17		WL-0197-18	
	Sampling date	2/2/95		2/2/95		2/2/95		2/2/95		2/2/95		2/2/95		2/2/95	
	unfilt./filt.	unfilt.		unfilt.		unfilt.		unfilt.		unfilt.		unfilt.		unfilt.	
PQL	Comments	Field Dup. A		Field Dup. B											
0.10	Aluminum	0.21	J			0.53	J	0.11	J	0.45	J	3.1	J	0.94	J
0.005	Arsenic														
0.005	Barium	0.011		0.010		0.072		0.022		0.017		0.028		0.014	
0.05	Calcium	19		19		39		17		26		270		29	
0.015	Chromium											0.042			
0.015	Chromium (Hexavalent)			N/A											
0.015	Chromium (Trivalent)			N/A								0.042			
0.025	Iron	2.1	J	1.2	J	5.5	J	1.60	J	0.91	J	0.24	J	0.60	J
0.005	Lead												UJ		
0.05	Magnesium	2.1		1.9		6.0		2.5		2.7		4.6		2.8	
0.005	Manganese	0.26	J	0.16	J	0.46	J	0.30	J	0.19	J	0.38	J	0.22	J
0.5	Potassium	1.3		1.2		4.6		1.5		1.9		2.6		1.6	
0.10	Silicon	2.7	J	2.3	J	11	J	3.7	J	4.6	J	6.4	J	4.7	J
0.10	Sodium	35	J	31	J	89	J	44	J	110	J	75	J	110	J
20	Bicarbonate as HCO3	44	J	33	J	82	J			56	J			49	J
2.0	Bromide	2.3	J												
20	Carbonate as CO3														
15	Chemical Oxygen Demand	24	J			34	J	15	J			32			
0.050	Nitrate as N	0.20	J	0.4	J	0.31	J	0.21	J	2.4	J	11	J	2.8	J
0.050	Nitrite as N														
1.0	Total Organic Carbon (TOC)	6.9	J	4.5	J	10	J	4.5	J	3.7	J	10	J	4.1	J
0.10	Phosphorus as P														
10	Solids-Filterable Residue (TDS)	160		150		360		190		390		1300		440	

N/A = Not analyzed.

Marybeth Orsey

INWL0197.XLS

SMITH

DATA VALIDATION REPORT
CHLORIDE, SULFATE, ORTHOPHOSPHATE, SULFIDE, AND AMMONIA-N
OLIN CORPORATION
SURFACE WATER SAMPLES

INTRODUCTION

A data validation was performed on additional data from the surface water samples collected on February 2, 1995 (6 filtered surface water samples, 6 unfiltered surface water samples, 1 filtered field duplicate sample, and 1 unfiltered field duplicate sample) at the Olin Corporation's Wilmington, Massachusetts Facility. This review is of Pace Inc.'s Hampton, New Hampshire laboratory work order number 42964 which contained the same 6 filtered surface water samples, 6 unfiltered surface water samples, 1 filtered field duplicate sample, and 1 unfiltered field duplicate sample that were analyzed in work order WL-0197 by Pace Inc. of Westbrook, Maine. The individual analyses were performed using the following from Methods for Chemical Analysis of Water and Wastes (MCAWW):

Analytes	Methods
chloride and sulfate	300.0
orthophosphate	365.2
sulfide	376.1
ammonia-N	350.2

The findings in this report are based upon a review of sample data and of quality control (QC) specified by the individual analytical methods and provided by the laboratory. The quality assurance review was prepared according to EPA Region I Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analysis, June 1988, where applicable.

The support documentation in Appendix B of this report summarizes the specifics of this review. Appendix B also provides the sample results as reported by the laboratory. The data summary lists all compounds that were analyzed. Analytical problems are outlined in the following Findings/Qualifiers section. Other issues which arose which did not warrant qualification are detailed in the Notes Section.

SMITH

APPENDIX A

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-0197-1
Report Date: 02/24/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
SW-14	Aqueous	T. EBNER	02/02/95	02/02/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Dissolved	0.11	mg/L	1.0	0.10	200.7/6010	02/20/95	KW	1
Arsenic, Dissolved	<0.005	mg/L	1.0	0.005	206.2/7060	02/15/95	KW	2
Barium, Dissolved	0.010	mg/L	1.0	0.005	200.7/6010	02/20/95	KW	1
Calcium, Dissolved	19.	mg/L	1.0	0.050	200.7/6010	02/20/95	KW	1
Chromium, Dissolved	<0.015	mg/L	1.0	0.015	200.7/6010	02/20/95	KW	1
Chromium, Hexavalent Dissolved	<0.015	mg/L	1.0	0.015	6010	02/03/95	KW	3
Chromium, Trivalent Dissolved	<0.015	mg/L	1.0	0.015	Calculation	02/23/95	DN	
Iron, Dissolved	1.3	mg/L	1.0	0.025	200.7/6010	02/20/95	KW	1
Lead, Dissolved	<0.005	mg/L	1.0	0.005	239.2/7421	02/16/95	KW	2
Magnesium, Dissolved	1.9	mg/L	1.0	0.050	200.7/6010	02/20/95	KW	1
Manganese, Dissolved	0.18	mg/L	1.0	0.005	200.7/6010	02/20/95	KW	1
Potassium, Dissolved	1.0	mg/L	1.0	0.50	200.7/6010	02/20/95	KW	1
Silicon, Dissolved	2.5	mg/L	1.0	0.10	200.7/6010	02/20/95	KW	1
Sodium, Dissolved	31.	mg/L	1.0	0.10	200.7/6010	02/20/95	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 02/15/95 by WD using 3010
(2) Sample Preparation on 02/15/95 by WD using 3020
(3) Sample Preparation on 02/02/95 by GFB using 7195

02/24/95

LJO/ejngbp(dw)
LB15ICW1
CC: OLIN(TN)
ATTN:STEVE MORROW
RICK SACKS-BCM

ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-0197-1
Report Date: 02/24/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
SW-14	Aqueous	T. EBNER	02/02/95	02/02/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Bicarbonate,Dissolved as HCO3	36.	mg/L	1.0	20	APHA 406C	02/09/95	CM	
Bromide, Dissolved	<2.0	mg/L	1.0	2.0	320.1	02/18/95	NN	1
Carbonate, Dissolved as CaCO3	<20	mg/L	1.0	20	APHA 406C	02/09/95	CM	
Chemical Oxygen Demand, Dissolved	15.	mg/L	1.0	15	410.4	02/07/95	LT	
Nitrate as N, Dissolved	0.32	mg/L	1.0	0.050	353.2	02/17/95	BC	
Nitrite as N, Dissolved	<0.050	mg/L	1.0	0.050	353.2	02/03/95	BC	
Organic Carbon, Dissolved (DOC)	3.9	mg/L	1.0	1.0	415.1	02/13/95	BC	
Phosphorus, Dissolved as P	<0.10	mg/L	1.0	0.10	365.4	02/15/95	BC	2
Solids-Filt Residue, Dissolved	170.	mg/L	1.0	10	160.1	02/06/95	JF	3

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values

(1) Sample Preparation on 02/17/95 by NEN
(2) Sample Preparation on 02/14/95 by NEN
(3) Sample Preparation on 02/03/95 by JF

02/24/95

LJO/ejngbp(dw)/pph

CC: OLIN(TN)
ATTN:STEVE MORROW
RICK SACKS-BCM

340 County Road #5 PO Box 720
Westbrook ME 04098
TEL: 207-874-2400
FAX 207 775 4029

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-0197-2
Report Date: 02/24/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
SW-14 MS	Aqueous	T. EBNER	02/02/95	02/02/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Dissolved	2.22	mg/L	1.0	0.10	200.7/6010	02/20/95	KW	1
Arsenic, Dissolved	0.040	mg/L	2.0	0.005	206.2/7060	02/15/95	KW	2
Barium, Dissolved	2.04	mg/L	1.0	0.005	200.7/6010	02/20/95	KW	1
Calcium, Dissolved	21.8	mg/L	1.0	0.050	200.7/6010	02/20/95	KW	1
Chromium, Dissolved	0.217	mg/L	1.0	0.015	200.7/6010	02/20/95	KW	1
Chromium, Hexavalent Dissolved	4.79	mg/L	2.0	0.015	6010	02/03/95	KW	3
Chromium, Trivalent Dissolved	Not Appl.	mg/L	1.0	0.015	Calculation	02/23/95	DN	4
Iron, Dissolved	1.96	mg/L	1.0	0.025	200.7/6010	02/20/95	KW	:
Lead, Dissolved	0.022	mg/L	1.0	0.005	239.2/7421	02/16/95	KW	2
Magnesium, Dissolved	6.35	mg/L	1.0	0.050	200.7/6010	02/20/95	KW	1
Manganese, Dissolved	0.665	mg/L	1.0	0.005	200.7/6010	02/20/95	KW	1
Potassium, Dissolved	21.5	mg/L	1.0	0.50	200.7/6010	02/20/95	KW	1
Silicon, Dissolved	4.76	mg/L	1.0	0.10	200.7/6010	02/20/95	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values

(1) Sample Preparation on 02/15/95 by WD using 3010
(2) Sample Preparation on 02/15/95 by WD using 3020
(3) Sample Preparation on 02/02/95 by GFB using 7195
(4) This is a calculation and is not applicable to a matrix spike.

02/24/95

LJO/ejnejn
LB15ICW1
CC: OLIN(TN)
ATTN:STEVE MORROW
RICK SACKS-BCM

340 County Road #5 PO Box 720
Westbrook ME 04098
TEL 207-874-2400
FAX 207-775-4029

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : [illegible]-0197-2
Report Date: 02/24/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
SW-14 MS	Aqueous	T. EBNER	02/02/95	02/02/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Sodium, Dissolved	36.6	mg/L	1.0	0.10	200.7/6010	02/20/95	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values

(1) Sample Preparation on 02/15/95 by WD using 3010

02/24/95

LJO/ejnejn
LB15ICW1
CC: OLIN(TN)
ATTN:STEVE MORROW
RICK SACKS-BOM

[illegible] County Road #5 PO Box 720
Westbrook ME 04098
TEL 207-874-2400
FAX 207 775 4029

REPORT OF LABORATORY ANALYSIS

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

Lab Number : WL-0197-2
Report Date: 02/24/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
SW-14 MS	Aqueous	T. EBNER	02/02/95	02/02/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTE:
Bicarbonate,Dissolved as HCO3	125	mg/L	1.0	20	APHA 406C	02/09/95	CM	
Bromide, Dissolved	12.5	mg/L	1.0	2.0	320.1	02/18/95	NN	:
Carbonate, Dissolved as CaCO3	35.1	mg/L	1.0	20	APHA 406C	02/09/95	CM	
Chemical Oxygen Demand, Dissolved	85.0	mg/L	1.0	15	410.4	02/07/95	LT	
Nitrate as N, Dissolved	Not Appl.	mg/L	1.0	0.050	353.2	02/17/95	BC	:
Nitrite as N, Dissolved	0.467	mg/L	1.0	^.050	353.2	02/03/95	BC	
Organic Carbon, Dissolved (DOC)	40.8	mg/L	1.0	1.0	415.1	02/13/95	BC	
Phosphorus, Dissolved as P	1.05	mg/L	1.0	0.10	365.4	02/15/95	BC	
Solids-Filt Residue, Dissolved	Not Appl.	mg/L	1.0	10	160.1	02/06/95	JF	4,.

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' value:

(1) Sample Preparation on 02/17/95 by NEN
(2) NA=This is a calculation and is not applicable to a matrix spike.
(3) Sample Preparation on 02/14/95 by NEN
(4) Sample Preparation on 02/03/95 by JF
(5) NA=Matrix spike analysis is not applicable for this parameter.

02/24/95

LJO/ejngbp(dw)/pph

CC: OLIN(TN)
ATTN:STEVE MORROW
RICK SACKS-BCM

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-0197-3
Report Date: 02/24/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
SW-14 DUP	Aqueous	T. EBNER	02/02/95	02/02/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Dissolved	<0.100	mg/L	1.0	0.10	200.7/6010	02/20/95	KW	[illegible]
Arsenic, Dissolved	<0.005	mg/L	1.0	0.005	206.2/7060	02/15/95	KW	[illegible]
Barium, Dissolved	0.010	mg/L	1.0	0.005	200.7/6010	02/20/95	KW	[illegible]
Calcium, Dissolved	19.8	mg/L	1.0	0.050	200.7/6010	02/20/95	KW	1
Chromium, Dissolved	<0.015	mg/L	1.0	0.015	200.7/6010	02/20/95	KW	1
Chromium, Hexavalent Dissolved	<0.015	mg/L	1.0	0.015	6010	02/03/95	KW	[illegible]
Chromium, Trivalent Dissolved	<0.015	mg/L	1.0	0.015	Calculation	02/23/95	DN	
Iron, Dissolved	0.932	mg/L	1.0	0.025	200.7/6010	02/20/95	KW	1
Lead, Dissolved	<0.005	mg/L	1.0	0.005	239.2/7421	02/16/95	KW	[illegible]
Magnesium, Dissolved	1.94	mg/L	1.0	0.050	200.7/6010	02/20/95	KW	1
Manganese, Dissolved	0.159	mg/L	1.0	0.005	200.7/6010	02/20/95	KW	1
Potassium, Dissolved	1.25	mg/L	1.0	0.50	200.7/6010	02/20/95	KW	1
Silicon, Dissolved	2.24	mg/L	1.0	0.10	200.7/6010	02/20/95	KW	1
Sodium, Dissolved	30.6	mg/L	1.0	0.10	200.7/6010	02/20/95	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values

(1) Sample Preparation on 02/15/95 by WD using 3010
(2) Sample Preparation on 02/15/95 by WD using 3020
(3) Sample Preparation on 02/02/95 by GFB using 7195

02/24/95

LJO/ejnejn
LB15ICW1
CC: OLIN(TN)
ATTN:STEVE MORROW
RICK SACKS-BCM

REPORT OF LABORATORY ANALYSIS

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

Lab Number : WL-0197-3
Report Date: 02/24/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
SW-14 DUP	Aqueous	T. EBNER	02/02/95	02/02/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Bicarbonate,Dissolved as HCO3	35.6	mg/L	1.0	20	APHA 406C	02/09/95	CM	
Bromide, Dissolved	2.81	mg/L	1.0	2.0	320.1	02/18/95	NN	1
Carbonate, Dissolved as CaCO3	<20.0	mg/L	1.0	20	APHA 406C	02/09/95	CM	
Chemical Oxygen Demand, Dissolved	<15.0	mg/L	1.0	15	410.4	02/07/95	LT	
Nitrate as N, Dissolved	0.371	mg/L	1.0	0.050	353.2	02/17/95	BC	
Nitrite as N, Dissolved	<0.050	mg/L	1.0	0.050	353.2	02/03/95	BC	
Organic Carbon, Dissolved (DOC)	3.69	mg/L	1.0	1.0	415.1	02/13/95	BC	
Phosphorus, Dissolved as P	<0.100	mg/L	1.0	0.10	365.4	02/15/95	BC	2
Solids-Filt Residue, Dissolved	177	mg/L	1.0	10	160.1	02/06/95	JF	3

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values

(1) Sample Preparation on 02/17/95 by NEN
(2) Sample Preparation on 02/14/95 by NEN
(3) Sample Preparation on 02/03/95 by JF

02/24/95

LJO/ejngbp(dw)/pph

CC: OLIN(TN)
ATTN:STEVE MORROW
RICK SACKS-BCM

TEL 207-874-2400

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-0197-4
Report Date: 02/24/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
SW-14D	Aqueous	T. EBNER	02/02/95	02/02/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Dissolved	<0.10	mg/L	1.0	0.10	200.7/6010	02/20/95	KW	1
Arsenic, Dissolved	<0.005	mg/L	1.0	0.005	206.2/7060	02/16/95	KW	2
Barium, Dissolved	0.010	mg/L	1.0	0.005	200.7/6010	02/20/95	KW	1
Calcium, Dissolved	20.	mg/L	1.0	0.050	200.7/6010	02/20/95	KW	1
Chromium, Dissolved	<0.015	mg/L	1.0	0.015	200.7/6010	02/20/95	KW	1
Iron, Dissolved	0.74	mg/L	1.0	0.025	200.7/6010	02/20/95	KW	1
Lead, Dissolved	<0.005	mg/L	1.0	0.005	239.2/7421	02/16/95	KW	2
Magnesium, Dissolved	1.9	mg/L	1.0	0.050	200.7/6010	02/20/95	KW	1
Manganese, Dissolved	0.14	mg/L	1.0	0.005	200.7/6010	02/20/95	KW	1
Potassium, Dissolved	1.1	mg/L	1.0	0.50	200.7/6010	02/20/95	KW	1
Silicon, Dissolved	2.3	mg/L	1.0	0.10	200.7/6010	02/20/95	KW	1
Sodium, Dissolved	30.	mg/L	1.0	0.10	200.7/6010	02/20/95	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values

(1) Sample Preparation on 02/15/95 by WD using 3010
(2) Sample Preparation on 02/15/95 by WD using 3020

02/24/95

LJO/ejngbp(dw)
LB15ICW1
CC: OLIN(TN)
ATTN:STEVE MORROW
RICK SACKS-BOM

REPORT OF LABORATORY ANALYSIS

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-0197-4
Report Date: 02/24/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
SW-14D	Aqueous	T. EBNER	02/02/95	02/02/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Bicarbonate,Dissolved as HCO3	36.	mg/L	1.0	20	APHA 406C	02/09/95	CM	
Bromide, Dissolved	<2.0	mg/L	1.0	2.0	320.1	02/18/95	NN	1
Carbonate, Dissolved as CaCO3	<20	mg/L	1.0	20	APHA 406C	02/09/95	CM	
Chemical Oxygen Demand, Dissolved	<15	mg/L	1.0	15	410.4	02/07/95	LT	
Nitrate as N, Dissolved	0.38	mg/L	1.0	0.050	353.2	02/17/95	BC	
Nitrite as N, Dissolved	<0.050	mg/L	1.0	0.050	353.2	02/03/95	BC	
Organic Carbon, Dissolved (DOC)	4.1	mg/L	1.0	1.0	415.1	02/13/95	BC	
Phosphorus, Dissolved as P	<0.10	mg/L	1.0	0.10	365.4	02/15/95	BC	2
Solids-Filt Residue, Dissolved	170.	mg/L	1.0	10	160.1	02/06/95	JF	3

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 02/17/95 by NEN
(2) Sample Preparation on 02/14/95 by NEN
(3) Sample Preparation on 02/03/95 by JF

02/24/95

LJO/ejngbp(dw)/pph

CC: OLIN(TN)
ATTN:STEVE MORROW
RICK SACKS-BCM

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-0197-5
Report Date: 02/24/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
SW-11	Aqueous	T. EBNER	02/02/95	02/02/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Dissolved	0.23	mg/L	1.0	0.10	200.7/6010	02/20/95	KW	1
Arsenic, Dissolved	<0.005	mg/L	1.0	0.005	206.2/7060	02/16/95	KW	2
Barium, Dissolved	0.057	mg/L	1.0	0.005	200.7/6010	02/20/95	KW	1
Calcium, Dissolved	31.	mg/L	1.0	0.050	200.7/6010	02/20/95	KW	1
Chromium, Dissolved	<0.015	mg/L	1.0	0.015	200.7/6010	02/20/95	KW	1
Chromium, Hexavalent Dissolved	<0.015	mg/L	1.0	0.015	6010	02/03/95	KW	3
Chromium, Trivalent Dissolved	<0.015	mg/L	1.0	0.015	Calculation	02/23/95	DN	
Iron, Dissolved	4.3	mg/L	1.0	0.025	200.7/6010	02/20/95	KW	1
Lead, Dissolved	<0.005	mg/L	1.0	0.005	239.2/7421	02/16/95	KW	2
Magnesium, Dissolved	4.8	mg/L	1.0	0.050	200.7/6010	02/20/95	KW	1
Manganese, Dissolved	0.35	mg/L	1.0	0.005	200.7/6010	02/20/95	KW	1
Potassium, Dissolved	3.0	mg/L	1.0	0.50	200.7/6010	02/20/95	KW	1
Silicon, Dissolved	9.5	mg/L	5.0	0.10	200.7/6010	02/20/95	KW	1
Sodium, Dissolved	72.	mg/L	1.0	0.10	200.7/6010	02/20/95	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 02/15/95 by WD using 3010
(2) Sample Preparation on 02/15/95 by WD using 3020
(3) Sample Preparation on 02/02/95 by GFB using 7195

02/24/95

LJO/ejngbp(dw)
LB15ICW1
CC: OLIN(TN)
ATTN:STEVE MORROW
RICK SACKS-BCM

ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-0197-5
Report Date: 02/24/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
SW-11	Aqueous	T. EBNER	02/02/95	02/02/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Bicarbonate,Dissolved as HCO3	82.	mg/L	1.0	20	APHA 406C	02/09/95	CM	
Bromide, Dissolved	2.3	mg/L	1.0	2.0	320.1	02/18/95	NN	1
Carbonate, Dissolved as CaCO3	<20	mg/L	1.0	20	APHA 406C	02/09/95	CM	
Chemical Oxygen Demand, Dissolved	30.	mg/L	1.0	15	410.4	02/07/95	LT	
Nitrate as N, Dissolved	0.33	mg/L	1.0	0.050	353.2	02/17/95	BC	
Nitrite as N, Dissolved	<0.050	mg/L	1.0	0.050	353.2	02/03/95	BC	
Organic Carbon, Dissolved (DOC)	10	mg/L	1.0	1.0	415.1	02/13/95	BC	
Phosphorus, Dissolved as P	<0.10	mg/L	1.0	0.10	365.4	02/15/95	BC	
Solids-Filt Residue, Dissolved	410.	mg/L	1.0	10	160.1	02/06/95	JF	3

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values

(1) Sample Preparation on 02/17/95 by NEN
(2) Sample Preparation on 02/14/95 by NEN
(3) Sample Preparation on 02/03/95 by JF

02/24/95

LJO/ejngbp(dw)/pph

CC: OLIN(TN)
ATTN:STEVE MORROW
RICK SACKS-BCM

pace INCORPORATED ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WI-0197-6
Report Date: 02/24/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
SW-12	Aqueous	T. EBNER	02/02/95	02/02/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Dissolved	<0.10	mg/L	1.0	0.10	200.7/6010	02/20/95	KW	1
Arsenic, Dissolved	<0.005	mg/L	1.0	0.005	206.2/7060	02/16/95	KW	2
Barium, Dissolved	0.017	mg/L	1.0	0.005	200.7/6010	02/20/95	KW	1
Calcium, Dissolved	15.	mg/L	1.0	0.050	200.7/6010	02/20/95	KW	1
Chromium, Dissolved	<0.015	mg/L	1.0	0.015	200.7/6010	02/20/95	KW	1
Chromium, Hexavalent Dissolved	<0.015	mg/L	1.0	0.015	6010	02/03/95	KW	3
Chromium, Trivalent Dissolved	<0.015	mg/L	1.0	0.015	Calculation	02/23/95	DN	
Iron, Dissolved	0.59	mg/L	1.0	0.025	200.7/6010	02/20/95	KW	1
Lead, Dissolved	<0.005	mg/L	1.0	0.005	239.2/7421	02/16/95	KW	2
Magnesium, Dissolved	2.1	mg/L	1.0	0.050	200.7/6010	02/20/95	KW	1
Manganese, Dissolved	0.16	mg/L	1.0	0.005	200.7/6010	02/20/95	KW	1
Potassium, Dissolved	1.4	mg/L	1.0	0.50	200.7/6010	02/20/95	KW	1
Silicon, Dissolved	2.9	mg/L	1.0	0.10	200.7/6010	02/20/95	KW	1
Sodium, Dissolved	37.	mg/L	1.0	0.10	200.7/6010	02/20/95	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values

(1) Sample Preparation on 02/15/95 by WD using 3010
(2) Sample Preparation on 02/15/95 by WD using 3020
(3) Sample Preparation on 02/02/95 by GFB using 7195

02/24/95

LJO/ejngbp(dw)
LB15ICW1
CC: OLIN(TN)
ATTN:STEVE MORROW
RICK SACKS-BCM

REPORT OF LABORATORY ANALYSIS

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-0197-6
Report Date: 02/24/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
SW-12	Aqueous	T. EBNER	02/02/95	02/02/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Bicarbonate,Dissolved as HCO3	<20	mg/L	1.0	20	APHA 406C	02/09/95	CM	
Bromide, Dissolved	<2.0	mg/L	1.0	2.0	320.1	02/18/95	NN	1
Carbonate, Dissolved as CaCO3	<20	mg/L	1.0	20	APHA 406C	02/09/95	CM	
Chemical Oxygen Demand, Dissolved	<15	mg/L	1.0	15	410.4	02/07/95	LT	
Nitrate as N, Dissolved	0.23	mg/L	1.0	0.050	353.2	02/17/95	BC	
Nitrite as N, Dissolved	<0.050	mg/L	1.0	0.050	353.2	02/03/95	BC	
Organic Carbon, Dissolved (DOC)	3.8	mg/L	1.0	1.0	415.1	02/13/95	BC	
Phosphorus, Dissolved as P	<0.10	mg/L	1.0	0.10	365.4	02/15/95	BC	2
Solids-Filt Residue, Dissolved	180.	mg/L	1.0	10	160.1	02/06/95	JF	3

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values

(1) Sample Preparation on 02/17/95 by NEN
(2) Sample Preparation on 02/14/95 by NEN
(3) Sample Preparation on 02/03/95 by JF

02/24/95

LJO/ejngbp(dw)/pph

CC: OLIN(TN)
ATTN:STEVE MORROW
RICK SACKS-BCM

pace INCORPORATED ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-0197-7
Report Date: 02/24/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
SW-17	Aqueous	T. EBNER	02/02/95	02/02/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Dissolved	<0.10	mg/L	1.0	0.10	200.7/6010	02/20/95	KW	1
Arsenic, Dissolved	<0.005	mg/L	1.0	0.005	206.2/7060	02/16/95	KW	2
Barium, Dissolved	0.016	mg/L	1.0	0.005	200.7/6010	02/20/95	KW	1
Calcium, Dissolved	25.	mg/L	1.0	0.050	200.7/6010	02/20/95	KW	1
Chromium, Dissolved	<0.015	mg/L	1.0	0.015	200.7/6010	02/20/95	KW	1
Chromium, Hexavalent Dissolved	<0.015	mg/L	1.0	0.015	6010	02/03/95	KW	3
Chromium, Trivalent Dissolved	<0.015	mg/L	1.0	0.015	Calculation	02/23/95	DN	
Iron, Dissolved	0.38	mg/L	1.0	0.025	200.7/6010	02/20/95	KW	1
Lead, Dissolved	<0.005	mg/L	1.0	0.005	239.2/7421	02/16/95	KW	2
Magnesium, Dissolved	2.6	mg/L	1.0	0.050	200.7/6010	02/20/95	KW	1
Manganese, Dissolved	0.19	mg/L	1.0	0.005	200.7/6010	02/20/95	KW	1
Potassium, Dissolved	1.6	mg/L	1.0	0.50	200.7/6010	02/20/95	KW	1
Silicon, Dissolved	4.5	mg/L	1.0	0.10	200.7/6010	02/20/95	KW	1
Sodium, Dissolved	110.	mg/L	2.0	0.10	200.7/6010	02/20/95	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values

(1) Sample Preparation on 02/15/95 by WD using 3010
(2) Sample Preparation on 02/15/95 by WD using 3020
(3) Sample Preparation on 02/02/95 by GFB using 7195

02/24/95

LJO/ejngbp(dw)
LB15ICW1
CC: OLIN(TN)
ATTN:STEVE MORROW
RICK SACKS-BCM

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-0197-7
Report Date: 02/24/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
SW-17	Aqueous	T. EBNER	02/02/95	02/02/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Bicarbonate,Dissolved as HCO3	57.	mg/L	1.0	20	APHA 406C	02/09/95	CM	
Bromide, Dissolved	<2.0	mg/L	1.0	2.0	320.1	02/18/95	NN	1
Carbonate, Dissolved as CaCO3	<20	mg/L	1.0	20	APHA 406C	02/09/95	CM	
Chemical Oxygen Demand, Dissolved	<15	mg/L	1.0	15	410.4	02/07/95	LT	
Nitrate as N, Dissolved	2.5	mg/L	10	0.050	353.2	02/17/95	BC	
Nitrite as N, Dissolved	<0.050	mg/L	1.0	0.050	353.2	02/03/95	BC	
Organic Carbon, Dissolved (DOC)	3.3	mg/L	1.0	1.0	415.1	02/13/95	BC	
Phosphorus, Dissolved as P	<0.10	mg/L	1.0	0.10	365.4	02/15/95	BC	
Solids-Filt Residue, Dissolved	390.	mg/L	1.0	10	160.1	02/06/95	JF	3

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values
(1) Sample Preparation on 02/17/95 by NEN
(2) Sample Preparation on 02/14/95 by NEN
(3) Sample Preparation on 02/03/95 by JF

02/24/95

LJO/ejngbp(dw)/pph

CC: OLIN(TN)
ATTN:STEVE MORROW
RICK SACKS-BCM

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-0197-8
Report Date: 02/24/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
SW-16	Aqueous	T. EBNER	02/02/95	02/02/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Dissolved	2.4	mg/L	1.0	0.10	200.7/6010	02/20/95	KW	1
Arsenic, Dissolved	<0.005	mg/L	1.0	0.005	206.2/7060	02/16/95	KW	2
Barium, Dissolved	0.028	mg/L	1.0	0.005	200.7/6010	02/20/95	KW	1
Calcium, Dissolved	290.	mg/L	5.0	0.050	200.7/6010	02/20/95	KW	1
Chromium, Dissolved	0.035	mg/L	1.0	0.015	200.7/6010	02/20/95	KW	1
Chromium, Hexavalent Dissolved	<0.015	mg/L	1.0	0.015	6010	02/03/95	KW	3
Chromium, Trivalent Dissolved	0.035	mg/L	1.0	0.015	Calculation	02/23/95	DN	
Iron, Dissolved	0.15	mg/L	1.0	0.025	200.7/6010	02/20/95	KW	1
Lead, Dissolved	<0.005	mg/L	1.0	0.005	239.2/7421	02/16/95	KW	2
Magnesium, Dissolved	4.8	mg/L	1.0	0.050	200.7/6010	02/20/95	KW	1
Manganese, Dissolved	0.39	mg/L	1.0	0.005	200.7/6010	02/20/95	KW	1
Potassium, Dissolved	2.4	mg/L	1.0	0.50	200.7/6010	02/20/95	KW	1
Silicon, Dissolved	6.6	mg/L	2.0	0.10	200.7/6010	02/20/95	KW	1
Sodium, Dissolved	77.	mg/L	1.0	0.10	200.7/6010	02/20/95	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values
(1) Sample Preparation on 02/15/95 by WD using 3010
(2) Sample Preparation on 02/15/95 by WD using 3020
(3) Sample Preparation on 02/02/95 by GFB using 7195

02/24/95

LJO/ejngbp(dw)
LB15ICW1
CC: OLIN(TN)
ATTN:STEVE MORROW
RICK SACKS-BCM

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-0197-8
Report Date: 02/24/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
SW-16	Aqueous	T. EBNER	02/02/95	02/02/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Bicarbonate,Dissolved as HCO3	<20	mg/L	1.0	20	APHA 406C	02/09/95	CM	
Bromide, Dissolved	2.4	mg/L	1.0	2.0	320.1	02/18/95	NN	1
Carbonate, Dissolved as CaCO3	<20	mg/L	1.0	20	APHA 406C	02/09/95	CM	
Chemical Oxygen Demand, Dissolved	26.	mg/L	1.0	15	410.4	02/07/95	LT	
Nitrate as N, Dissolved	11	mg/L	10	0.050	353.2	02/17/95	BC	
Nitrite as N, Dissolved	<0.050	mg/L	1.0	0.050	353.2	02/03/95	BC	
Organic Carbon, Dissolved (DOC)	8.8	mg/L	1.0	1.0	415.1	02/13/95	BC	
Phosphorus, Dissolved as P	<0.10	mg/L	1.0	0.10	365.4	02/15/95	BC	2
Solids-Filt Residue, Dissolved	1300.	mg/L	1.0	10	160.1	02/06/95	JF	3

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 02/17/95 by NEN
(2) Sample Preparation on 02/14/95 by NEN
(3) Sample Preparation on 02/03/95 by JF

02/24/95

LJO/ejngbp(dw)/pph

CC: OLIN(TN)
ATTN:STEVE MORROW
RICK SACKS-BCM

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-0197-9
Report Date: 02/24/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIV
SW-15	Aqueous	T. EBNER	02/02/95	02/02/

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NO
Aluminum, Dissolved	<0.10	mg/L	1.0	0.10	200.7/6010	02/20/95	KW	
Arsenic, Dissolved	<0.005	mg/L	1.0	0.005	206.2/7060	02/16/95	KW	
Barium, Dissolved	0.015	mg/L	1.0	0.005	200.7/6010	02/20/95	KW	
Calcium, Dissolved	30.	mg/L	1.0	0.050	200.7/6010	02/20/95	KW	
Chromium, Dissolved	<0.015	mg/L	1.0	0.015	200.7/6010	02/20/95	KW	
Chromium, Hexavalent Dissolved	<0.015	mg/L	1.0	0.015	6010	02/03/95	KW	
Chromium, Trivalent Dissolved	<0.015	mg/L	1.0	0.015	Calculation	02/23/95	DN	
Iron, Dissolved	0.12	mg/L	1.0	0.025	200.7/6010	02/20/95	KW	s
Lead, Dissolved	<0.005	mg/L	1.0	0.005	239.2/7421	02/17/95	KW	
Magnesium, Dissolved	2.9	mg/L	1.0	0.050	200.7/6010	02/20/95	KW	
Manganese, Dissolved	0.24	mg/L	1.0	0.005	200.7/6010	02/20/95	KW	
Potassium, Dissolved	1.8	mg/L	1.0	0.50	200.7/6010	02/20/95	KW	
Silicon, Dissolved	4.7	mg/L	1.0	0.10	200.7/6010	02/20/95	KW	
Sodium, Dissolved	110.	mg/L	2.0	0.10	200.7/6010	02/20/95	KW	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sa
specific reporting limits. Sample-specific limits are indicated by results annotated with '<'
(1) Sample Preparation on 02/15/95 by WD using 3010
(2) Sample Preparation on 02/15/95 by WD using 3020
(3) Sample Preparation on 02/02/95 by GFB using 7195

02/24/95

LJO/ejngbp(dw)
LB15ICW1
CC: OLIN(TN)
ATTN:STEVE MORROW
RICK SACKS-BCM

ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-0197-9
Report Date: 02/24/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
SW-15	Aqueous	T. EBNER	02/02/95	02/02/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Bicarbonate,Dissolved as HCO3	48.	mg/L	1.0	20	APHA 406C	02/09/95	CM	
Bromide, Dissolved	<2.0	mg/L	1.0	2.0	320.1	02/18/95	NN	1
Carbonate, Dissolved as CaCO3	<20	mg/L	1.0	20	APHA 406C	02/09/95	CM	
Chemical Oxygen Demand, Dissolved	<15	mg/L	1.0	15	410.4	02/07/95	LT	
Nitrate as N, Dissolved	2.8	mg/L	10	0.050	353.2	02/17/95	BC	
Nitrite as N, Dissolved	<0.050	mg/L	1.0	0.050	353.2	02/03/95	BC	
Organic Carbon, Dissolved (DOC)	3.3	mg/L	1.0	1.0	415.1	02/13/95	BC	
Phosphorus, Dissolved as P	<0.10	mg/L	1.0	0.10	365.4	02/15/95	BC	2
Solids-Filt Residue, Dissolved	440.	mg/L	1.0	10	160.1	02/06/95	JF	3

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 02/17/95 by NEN
(2) Sample Preparation on 02/14/95 by NEN
(3) Sample Preparation on 02/03/95 by JF

'/24/95

/ejngbp(dw)/pph

XLIN(TN)
ATTN:STEVE MORROW
UCK SACKS-BCM

EL 207-874-2400

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-0197-10
Report Date: 02/24/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
SW-14	Aqueous	T. EBNER	02/02/95	02/02/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Total	0.21	mg/L	1.0	0.10	200.7/6010	02/20/95	KW	1
Arsenic, Total	<0.005	mg/L	1.0	0.005	206.2/7060	02/16/95	KW	2
Barium, Total	0.011	mg/L	1.0	0.005	200.7/6010	02/20/95	KW	1
Calcium, Total	19.	mg/L	1.0	0.050	200.7/6010	02/20/95	KW	1
Chromium, Hexavalent	<0.015	mg/L	1.0	0.015	6010	02/03/95	KW	3
Chromium, Total	<0.015	mg/L	1.0	0.015	200.7/6010	02/20/95	KW	1
Chromium, Trivalent	<0.015	mg/L	1.0	0.015	Calculation	02/23/95	DN	
Iron, Total	2.1	mg/L	1.0	0.025	200.7/6010	02/20/95	KW	1
Lead, Total	<0.005	mg/L	1.0	0.005	239.2/7421	02/17/95	KW	2
Magnesium, Total	2.1	mg/L	1.0	0.050	200.7/6010	02/20/95	KW	1
Manganese, Total	0.26	mg/L	1.0	0.005	200.7/6010	02/20/95	KW	1
Potassium, Total	1.3	mg/L	1.0	0.50	200.7/6010	02/20/95	KW	1
Silicon, Total	2.7	mg/L	1.0	0.10	200.7/6010	02/20/95	KW	1
Sodium, Total	35.	mg/L	1.0	0.10	200.7/6010	02/20/95	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample specific reporting limits. Sample-specific limits are indicated by results annotated with '<' value

(1) Sample Preparation on 02/15/95 by WD using 3010
(2) Sample Preparation on 02/15/95 by WD using 3020
(3) Sample Preparation on 02/02/95 by GFB using 7195

02/24/95

LJO/ejngbp (dw)
LB15ICW1
CC: OLIN (TN)
ATTN: STEVE MORROW
RICK SACKS-BCM

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-0197-10
Report Date: 02/24/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
SW-14	Aqueous	T. EBNER	02/02/95	02/02/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Bicarbonate as HCO3	44.	mg/L	1.0	20	APHA 406C	02/09/95	CM	
Bromide	2.3	mg/L	1.0	2.0	320.1	02/18/95	NN	1
Carbonate, as CO3	<20	mg/L	1.0	20	APHA 406C	02/09/95	CM	
Chemical Oxygen Demand	24.	mg/L	1.0	15	410.4	02/07/95	LT	
Nitrate as N	0.20	mg/L	1.0	0.050	353.2	02/17/95	BC	
Nitrite as N	<0.050	mg/L	1.0	0.050	353.2	02/03/95	BC	
Phosphorus, Total as P	<0.10	mg/L	1.0	0.10	365.4	02/16/95	BC	2
Solids - Filterable Residue (TDS)	160.	mg/L	1.0	10	160.1	02/06/95	JF	:
Total Organic Carbon (TOC)	6.9	mg/L	1.0	1.0	415.1	02/13/95	BC	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values
(1) Sample Preparation on 02/17/95 by NEN
(2) Sample Preparation on 02/15/95 by BAC
(3) Sample Preparation on 02/03/95 by JF

02/24/95

JO/ejnbac/gbp(dw)

OLIN(TN)
ATTN:STEVE MORROW
X SACKS-BCM

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-0197-11
Report Date: 02/24/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
SW-14 MS	Aqueous	T. EBNER	02/02/95	02/02/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Total	2.21	mg/L	1.0	0.10	200.7/6010	02/20/95	KW	1
Arsenic, Total	0.039	mg/L	2.0	0.005	206.2/7060	02/16/95	KW	2
Barium, Total	2.08	mg/L	1.0	0.005	200.7/6010	02/20/95	KW	1
Calcium, Total	21.5	mg/L	1.0	0.050	200.7/6010	02/20/95	KW	1
Chromium, Hexavalent	4.37	mg/L	2.0	0.015	6010	02/03/95	KW	3
Chromium, Total	0.224	mg/L	1.0	0.015	200.7/6010	02/20/95	KW	1
Chromium, Trivalent	Not Appl.	mg/L	1.0	0.015	Calculation	02/23/95	DN	4
Iron, Total	2.32	mg/L	1.0	0.025	200.7/6010	02/20/95	KW	1
Lead, Total	0.021	mg/L	1.0	0.005	239.2/7421	02/17/95	KW	2
Magnesium, Total	6.23	mg/L	1.0	0.050	200.7/6010	02/20/95	KW	1
Manganese, Total	0.689	mg/L	1.0	0.005	200.7/6010	02/20/95	KW	1
Potassium, Total	20.7	mg/L	1.0	0.50	200.7/6010	02/20/95	KW	1
Silicon, Total	4.84	mg/L	1.0	0.10	200.7/6010	02/20/95	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values

(1) Sample Preparation on 02/15/95 by WD using 3010
(2) Sample Preparation on 02/15/95 by WD using 3020
(3) Sample Preparation on 02/02/95 by GFB using 7195
(4) This is a calculation and is not applicable to a matrix spike.

02/24/95

LJO/ejnejn
LB15ICW1
CC: OLIN(TN)
ATTN:STEVE MORROW
RICK SACKS-BCM

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-0197-11
Report Date: 02/24/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
SW-14 MS	Aqueous	T. EBNER	02/02/95	02/02/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Sodium, Total	36.6	mg/L	1.0	0.10	200.7/6010	02/20/95	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values
(1) Sample Preparation on 02/15/95 by WD using 3010

02/24/95

LJO/ejnejn
LB15ICW1
CC: OLIN(TN)
ATTN:STEVE MORROW
RICK SACKS-BCM

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-0197-11
Report Date: 02/24/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
SW-14 MS	Aqueous	T. EBNER	02/02/95	02/02/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Bicarbonate as HCO3	129	mg/L	1.0	20	APHA 406C	02/09/95	CM	
Bromide	<2.00	mg/L	1.0	2.0	320.1	02/18/95	NN	1
Carbonate, as CO3	31.0	mg/L	1.0	20	APHA 406C	02/09/95	CM	
Chemical Oxygen Demand	85.0	mg/L	1.0	15	410.4	02/07/95	LT	
Nitrate as N	Not Appl.	mg/L	1.0	0.050	353.2	02/17/95	BC	2
Nitrite as N	0.465	mg/L	1.0	0.050	353.2	02/03/95	BC	
Phosphorus, Total as P	1.09	mg/L	1.0	0.10	365.4	02/16/95	BC	3
Solids - Filterable Residue (TDS)	Not Appl.	mg/L	1.0	10	160.1	02/08/95	JF	4,5
Total Organic Carbon (TOC)	41.3	mg/L	1.0	1.0	415.1	02/13/95	BC	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values

(1) Sample Preparation on 02/17/95 by NEN
(2) NA=This is a calculation and is not applicable to a matrix spike.
(3) Sample Preparation on 02/15/95 by BAC
(4) Sample Preparation on 02/06/95 by JF
(5) NA=Matrix spike analysis is not applicable for this parameter.

02/24/95

LJO/ejnbac/gbp(dw)

CC: OLIN(TN)
ATTN:STEVE MORROW
RICK SACKS-BCM

TEL 207-874-2400

ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-0197-12
Report Date: 02/24/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
SW-14 DUP	Aqueous	T. EBNER	02/02/95	02/02/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Total	<0.100	mg/L	1.0	0.10	200.7/6010	02/20/95	KW	1
Arsenic, Total	<0.005	mg/L	1.0	0.005	206.2/7060	02/16/95	KW	2
Barium, Total	0.009	mg/L	1.0	0.005	200.7/6010	02/20/95	KW	1
Calcium, Total	18.6	mg/L	1.0	0.050	200.7/6010	02/20/95	KW	1
Chromium, Hexavalent	<0.015	mg/L	1.0	0.015	6010	02/03/95	KW	3
Chromium, Total	<0.015	mg/L	1.0	0.015	200.7/6010	02/20/95	KW	1
Chromium, Trivalent	<0.015	mg/L	1.0	0.015	Calculation	02/23/95	DN	
Iron, Total	1.12	mg/L	1.0	0.025	200.7/6010	02/20/95	KW	1
Lead, Total	<0.005	mg/L	1.0	0.005	239.2/7421	02/17/95	KW	2
Magnesium, Total	1.79	mg/L	1.0	0.050	200.7/6010	02/20/95	KW	1
Manganese, Total	0.151	mg/L	1.0	0.005	200.7/6010	02/20/95	KW	1
Potassium, Total	1.15	mg/L	1.0	0.50	200.7/6010	02/20/95	KW	1
Silicon, Total	2.16	mg/L	1.0	0.10	200.7/6010	02/20/95	KW	1
Sodium, Total	28.2	mg/L	1.0	0.10	200.7/6010	02/20/95	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 02/15/95 by WD using 3010
(2) Sample Preparation on 02/15/95 by WD using 3020
(3) Sample Preparation on 02/02/95 by GFB using 7195

02/24/95

LJO/ejnejn
LB15ICW1
CC: OLIN(TN)
ATTN:STEVE MORROW
RICK SACKS-BCM

REPORT OF LABORATORY ANALYSIS

pace INCORPORATED ENVIRONMENTAL LABORATORIES

Lab Number	: WL-0197-12
Report Date:	02/24/95
PO No.	: SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
SW-14 DUP	Aqueous	T. EBNER	02/02/95	02/02/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Bicarbonate as HCO3	35.1	mg/L	1.0	20	APHA 406C	02/09/95	CM	
Bromide	3.12	mg/L	1.0	2.0	320.1	02/18/95	NN	1
Carbonate, as CO3	<20.0	mg/L	1.0	20	APHA 406C	02/09/95	CM	
Chemical Oxygen Demand	<15.0	mg/L	1.0	15	410.4	02/07/95	LT	
Nitrate as N	0.394	mg/L	1.0	0.050	353.2	02/17/95	BC	
Nitrite as N	<0.050	mg/L	1.0	0.050	353.2	02/03/95	BC	
Phosphorus, Total as P	0.121	mg/L	1.0	0.10	365.4	02/16/95	BC	2
Solids - Filterable Residue (TDS)	147	mg/L	1.0	10	160.1	02/08/95	JF&	3
Total Organic Carbon (TOC)	3.87	mg/L	1.0	1.0	415.1	02/13/95	BC	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values

(1) Sample Preparation on 02/17/95 by NEN
(2) Sample Preparation on 02/15/95 by BAC
(3) Sample Preparation on 02/06/95 by JF

02/24/95

LJO/ejnbac/gbp(dw)

CC: OLIN(TN)
ATTN:STEVE MORROW
RICK SACKS-BCM

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-0197-13
Report Date: 02/24/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
SW-14D	Aqueous	T. EBNER	02/02/95	02/02/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Total	<0.10	mg/L	1.0	0.10	200.7/6010	02/20/95	KW	1
Arsenic, Total	<0.005	mg/L	1.0	0.005	206.2/7060	02/16/95	KW	2
Barium, Total	0.010	mg/L	1.0	0.005	200.7/6010	02/20/95	KW	1
Calcium, Total	19.	mg/L	1.0	0.050	200.7/6010	02/20/95	KW	1
Chromium, Total	<0.015	mg/L	1.0	0.015	200.7/6010	02/20/95	KW	1
Iron, Total	1.2	mg/L	1.0	0.025	200.7/6010	02/20/95	KW	1
Lead, Total	<0.005	mg/L	1.0	0.005	239.2/7421	02/17/95	KW	2
Magnesium, Total	1.9	mg/L	1.0	0.050	200.7/6010	02/20/95	KW	[illegible]
Manganese, Total	0.16	mg/L	1.0	0.005	200.7/6010	02/20/95	KW	1
Potassium, Total	1.2	mg/L	1.0	0.50	200.7/6010	02/20/95	KW	1
Silicon, Total	2.3	mg/L	1.0	0.10	200.7/6010	02/20/95	KW	1
Sodium, Total	31.	mg/L	1.0	0.10	200.7/6010	02/20/95	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values

(1) Sample Preparation on 02/15/95 by WD using 3010

(2) Sample Preparation on 02/15/95 by WD using 3020

02/24/95

LJO/ejngbp(dw)
LB15ICW1
CC: OLIN(TN)
ATTN:STEVE MORROW
RICK SACKS-BOM

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-0197-13
Report Date: 02/24/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
SW-14D	Aqueous	T. EBNER	02/02/95	02/02/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Bicarbonate as HCO3	33.	mg/L	1.0	20	APHA 406C	02/09/95	CM	
Bromide	<2.0	mg/L	1.0	2.0	320.1	02/18/95	NN	1
Carbonate, as CO3	<20	mg/L	1.0	20	APHA 406C	02/09/95	CM	
Chemical Oxygen Demand	<15	mg/L	1.0	15	410.4	02/07/95	LT	
Nitrate as N	0.40	mg/L	1.0	0.050	353.2	02/17/95	BC	
Nitrite as N	<0.050	mg/L	1.0	0.050	353.2	02/03/95	BC	
Phosphorus, Total as P	<0.10	mg/L	1.0	0.10	365.4	02/16/95	BC	2
Solids - Filterable Residue (TDS)	150.	mg/L	1.0	10	160.1	02/08/95	JF	3
Total Organic Carbon (TOC)	4.5	mg/L	1.0	1.0	415.1	02/13/95	BC	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values
(1) Sample Preparation on 02/17/95 by NEN
(2) Sample Preparation on 02/15/95 by BAC
(3) Sample Preparation on 02/06/95 by JF

02/24/95

LJO/ejnbac/gbp(dw)

CC: OLIN(TN)
ATTN:STEVE MORROW
RICK SACKS-BCM

ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-0197-14
Report Date: 02/24/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
SW-11	Aqueous	T. EBNER	02/02/95	02/02/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Total	0.53	mg/L	1.0	0.10	200.7/6010	02/20/95	KW	1
Arsenic, Total	<0.005	mg/L	1.0	0.005	206.2/7060	02/16/95	KW	2
Barium, Total	0.072	mg/L	1.0	0.005	200.7/6010	02/20/95	KW	1
Calcium, Total	39.	mg/L	1.0	0.050	200.7/6010	02/20/95	KW	1
Chromium, Hexavalent	<0.015	mg/L	1.0	0.015	6010	02/03/95	KW	3
Chromium, Total	<0.015	mg/L	1.0	0.015	200.7/6010	02/20/95	KW	1
Chromium, Trivalent	<0.015	mg/L	1.0	0.015	Calculation	02/23/95	DN	
Iron, Total	5.5	mg/L	1.0	0.025	200.7/6010	02/20/95	KW	1
Lead, Total	<0.005	mg/L	1.0	0.005	239.2/7421	02/17/95	KW	2
Magnesium, Total	6.0	mg/L	1.0	0.050	200.7/6010	02/20/95	KW	1
Manganese, Total	0.46	mg/L	1.0	0.005	200.7/6010	02/20/95	KW	1
Potassium, Total	4.6	mg/L	1.0	0.50	200.7/6010	02/20/95	KW	1
Silicon, Total	11.	mg/L	5.0	0.10	200.7/6010	02/20/95	KW	1
Sodium, Total	89.	mg/L	1.0	0.10	200.7/6010	02/20/95	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values
(1) Sample Preparation on 02/15/95 by WD using 3010
(2) Sample Preparation on 02/15/95 by WD using 3020
(3) Sample Preparation on 02/02/95 by GFB using 7195

02/24/95

LJO/ejnjbb(dw)
LB15ICW1
CC: OLIN(TN)
ATTN:STEVE MORROW
RICK SACKS-BOM

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-0197-14
Report Date: 02/24/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
SW-11	Aqueous	T. EBNER	02/02/95	02/02/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Bicarbonate as HCO3	82.	mg/L	1.0	20	APHA 406C	02/09/95	CM	
Bromide	<2.0	mg/L	1.0	2.0	320.1	02/18/95	NN	1
Carbonate, as CO3	<20	mg/L	1.0	20	APHA 406C	02/09/95	CM	
Chemical Oxygen Demand	34.	mg/L	1.0	15	410.4	02/07/95	LT	
Nitrate as N	0.31	mg/L	1.0	0.050	353.2	02/17/95	BC	
Nitrite as N	<0.050	mg/L	1.0	0.050	353.2	02/03/95	BC	
Phosphorus, Total as P	<0.10	mg/L	1.0	0.10	365.4	02/16/95	BC	2
Solids - Filterable Residue (TDS)	360.	mg/L	1.0	10	160.1	02/08/95	JF	3
Total Organic Carbon (TOC)	10	mg/L	1.0	1.0	415.1	02/13/95	BC	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 02/17/95 by NEN
(2) Sample Preparation on 02/15/95 by BAC
(3) Sample Preparation on 02/06/95 by JF

02/24/95

LJO/ejnbac/gbp(dw)

CC: OLIN(TN)
ATTN:STEVE MORROW
RICK SACKS-BCM

ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-0197-15
Report Date: 02/24/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
SW-12	Aqueous	T. EBNER	02/02/95	02/02/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Total	0.11	mg/L	1.0	0.10	200.7/6010	02/20/95	KW	1
Arsenic, Total	<0.005	mg/L	1.0	0.005	206.2/7060	02/16/95	KW	2
Barium, Total	0.022	mg/L	1.0	0.005	200.7/6010	02/20/95	KW	1
Calcium, Total	17.	mg/L	1.0	0.050	200.7/6010	02/20/95	KW	1
Chromium, Hexavalent	<0.015	mg/L	1.0	0.015	6010	02/03/95	KW	3
Chromium, Total	<0.015	mg/L	1.0	0.015	200.7/6010	02/20/95	KW	1
Chromium, Trivalent	<0.015	mg/L	1.0	0.015	Calculation	02/23/95	DN	
Iron, Total	1.6	mg/L	1.0	0.025	200.7/6010	02/20/95	KW	:
Lead, Total	<0.005	mg/L	1.0	0.005	239.2/7421	02/17/95	KW	2
Magnesium, Total	2.5	mg/L	1.0	0.050	200.7/6010	02/20/95	KW	1
Manganese, Total	0.30	mg/L	1.0	0.005	200.7/6010	02/20/95	KW	1
Potassium, Total	1.5	mg/L	1.0	0.50	200.7/6010	02/20/95	KW	1
Silicon, Total	3.7	mg/L	1.0	0.10	200.7/6010	02/20/95	KW	1
Sodium, Total	44.	mg/L	1.0	0.10	200.7/6010	02/20/95	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values

(1) Sample Preparation on 02/15/95 by WD using 3010
(2) Sample Preparation on 02/15/95 by WD using 3020
(3) Sample Preparation on 02/02/95 by GFB using 7195

02/24/95

LJO/ejnjbb(dw)
LB15ICW1
CC: OLIN(TN)
ATTN:STEVE MORROW
RICK SACKS-BCM

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-0197-15
Report Date: 02/24/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
SW-12	Aqueous	T. EBNER	02/02/95	02/02/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Bicarbonate as HCO3	<20	mg/L	1.0	20	APHA 406C	02/09/95	CM	
Bromide	<2.0	mg/L	1.0	2.0	320.1	02/18/95	NN	1
Carbonate, as CO3	<20	mg/L	1.0	20	APHA 406C	02/09/95	CM	
Chemical Oxygen Demand	15.	mg/L	1.0	15	410.4	02/07/95	LT	
Nitrate as N	0.21	mg/L	1.0	0.050	353.2	02/17/95	BC	
Nitrite as N	<0.050	mg/L	1.0	0.050	353.2	02/03/95	BC	
Phosphorus, Total as P	<0.10	mg/L	1.0	0.10	365.4	02/16/95	BC	2
Solids - Filterable Residue (TDS)	190.	mg/L	1.0	10	160.1	02/08/95	JF	J 3
Total Organic Carbon (TOC)	4.5	mg/L	1.0	1.0	415.1	02/13/95	BC	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values
(1) Sample Preparation on 02/17/95 by NEN
(2) Sample Preparation on 02/15/95 by BAC
(3) Sample Preparation on 02/06/95 by JF

02/24/95

LJO/ejnbac/gbp(dw)

CC: OLIN(TN)
ATTN:STEVE MORROW
RICK SACKS-BCM

REPORT OF LABORATORY ANALYSIS

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-0197-16
Report Date: 02/24/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
SW-17	Aqueous	T. EBNER	02/02/95	02/02/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Total	0.45	mg/L	1.0	0.10	200.7/6010	02/20/95	KW	1
Arsenic, Total	<0.005	mg/L	1.0	0.005	206.2/7060	02/16/95	KW	2
Barium, Total	0.017	mg/L	1.0	0.005	200.7/6010	02/20/95	KW	1
Calcium, Total	26.	mg/L	1.0	0.050	200.7/6010	02/20/95	KW	1
Chromium, Hexavalent	<0.015	mg/L	1.0	0.015	6010	02/03/95	KW	3
Chromium, Total	<0.015	mg/L	1.0	0.015	200.7/6010	02/20/95	KW	1
Chromium, Trivalent	<0.015	mg/L	1.0	0.015	Calculation	02/23/95	DN	
Iron, Total	0.91	mg/L	1.0	0.025	200.7/6010	02/20/95	KW	
Lead, Total	<0.005	mg/L	1.0	0.005	239.2/7421	02/17/95	KW	2
Magnesium, Total	2.7	mg/L	1.0	0.050	200.7/6010	02/20/95	KW	1
Manganese, Total	0.19	mg/L	1.0	0.005	200.7/6010	02/20/95	KW	1
Potassium, Total	1.9	mg/L	1.0	0.50	200.7/6010	02/20/95	KW	1
Silicon, Total	4.6	mg/L	1.0	0.10	200.7/6010	02/20/95	KW	1
Sodium, Total	110.	mg/L	2.0	0.10	200.7/6010	02/20/95	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values
(1) Sample Preparation on 02/15/95 by WD using 3010
(2) Sample Preparation on 02/15/95 by WD using 3020
(3) Sample Preparation on 02/02/95 by GFB using 7195

02/24/95

LJO/ejnjbb(dw)
LB15ICW1
CC: OLIN(TN)
ATTN:STEVE MORROW
RICK SACKS-BCM

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-0197-16
Report Date: 02/24/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
SW-17	Aqueous	T. EBNER	02/02/95	02/02/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Bicarbonate as HCO3	56.	mg/L	1.0	20	APHA 406C	02/09/95	CM	
Bromide	<2.0	mg/L	1.0	2.0	320.1	02/18/95	NN	1
Carbonate, as CO3	<20	mg/L	1.0	20	APHA 406C	02/09/95	CM	
Chemical Oxygen Demand	<15	mg/L	1.0	15	410.4	02/08/95	CM	
Nitrate as N	2.4	mg/L	10	0.050	353.2	02/17/95	BC	
Nitrite as N	<0.050	mg/L	1.0	0.050	353.2	02/03/95	BC	
Phosphorus, Total as P	<0.10	mg/L	1.0	0.10	365.4	02/16/95	BC	2
Solids - Filterable Residue (TDS)	390.	mg/L	1.0	10	160.1	02/08/95	JF	3
Total Organic Carbon (TOC)	3.7	mg/L	1.0	1.0	415.1	02/13/95	BC	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values

(1) Sample Preparation on 02/17/95 by NEN
(2) Sample Preparation on 02/15/95 by BAC
(3) Sample Preparation on 02/06/95 by JF

02/24/95

LJO/ejnbac/gbp(dw)

CC: OLIN(TN)
ATTN:STEVE MORROW
RICK SACKS-BCM

TEL 207-874 2400

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-0197-17
Report Date: 02/24/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
SW-16	Aqueous	T. EBNER	02/02/95	02/02/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Total	3.1	mg/L	1.0	0.10	200.7/6010	02/20/95	KW	1
Arsenic, Total	<0.005	mg/L	1.0	0.005	206.2/7060	02/16/95	KW	2
Barium, Total	0.028	mg/L	1.0	0.005	200.7/6010	02/20/95	KW	1
Calcium, Total	270.	mg/L	5.0	0.050	200.7/6010	02/20/95	KW	1
Chromium, Hexavalent	<0.015	mg/L	1.0	0.015	6010	02/03/95	KW	3
Chromium, Total	0.042	mg/L	1.0	0.015	200.7/6010	02/20/95	KW	1
Chromium, Trivalent	0.042	mg/L	1.0	0.015	Calculation	02/23/95	DN	
Iron, Total	0.24	mg/L	1.0	0.025	200.7/6010	02/20/95	KW	.
Lead, Total	<0.005	mg/L	1.0	0.005	239.2/7421	02/17/95	KW	2
Magnesium, Total	4.6	mg/L	1.0	0.050	200.7/6010	02/20/95	KW	1
Manganese, Total	0.38	mg/L	1.0	0.005	200.7/6010	02/20/95	KW	1
Potassium, Total	2.6	mg/L	1.0	0.50	200.7/6010	02/20/95	KW	1
Silicon, Total	6.4	mg/L	2.0	0.10	200.7/6010	02/20/95	KW	1
Sodium, Total	75.	mg/L	1.0	0.10	200.7/6010	02/20/95	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values
(1) Sample Preparation on 02/15/95 by WD using 3010
(2) Sample Preparation on 02/15/95 by WD using 3020
(3) Sample Preparation on 02/02/95 by GFB using 7195

02/24/95

LJO/ejnjbb(dw)
LB15ICW1
CC: OLIN(TN)
ATTN:STEVE MORROW
RICK SACKS-BCM

pace INCORPORATED ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-0197-17
Report Date: 02/24/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
SW-16	Aqueous	T. EBNER	02/02/95	02/02/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Bicarbonate as HCO3	<20	mg/L	1.0	20	APHA 406C	02/09/95	CM	
Bromide	<2.0	mg/L	1.0	2.0	320.1	02/18/95	NN	1
Carbonate, as CO3	<20	mg/L	1.0	20	APHA 406C	02/09/95	CM	
Chemical Oxygen Demand	32.	mg/L	1.0	15	410.4	02/08/95	CM	
Nitrate as N	11	mg/L	10	0.050	353.2	02/17/95	BC	
Nitrite as N	<0.050	mg/L	1.0	0.050	353.2	02/03/95	BC	
Phosphorus, Total as P	<0.10	mg/L	1.0	0.10	365.4	02/16/95	BC	2
Solids - Filterable Residue (TDS)	1300.	mg/L	1.0	10	160.1	02/08/95	JF	1 3
Total Organic Carbon (TOC)	10	mg/L	1.0	1.0	415.1	02/13/95	BC	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values

(1) Sample Preparation on 02/17/95 by NEN
(2) Sample Preparation on 02/15/95 by BAC
(3) Sample Preparation on 02/06/95 by JF

02/24/95

LJO/ejnbac/gbp(dw)

CC: OLIN(TN)
ATTN:STEVE MORROW
RICK SACKS-BCM

pace
INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-0197-18
Report Date: 02/24/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
SW-15	Aqueous	T. EBNER	02/02/95	02/02/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Total	0.94	mg/L	1.0	0.10	200.7/6010	02/20/95	KW	1
Arsenic, Total	<0.005	mg/L	1.0	0.005	206.2/7060	02/16/95	KW	2
Barium, Total	0.014	mg/L	1.0	0.005	200.7/6010	02/20/95	KW	1
Calcium, Total	29.	mg/L	1.0	0.050	200.7/6010	02/20/95	KW	1
Chromium, Hexavalent	<0.015	mg/L	1.0	0.015	6010	02/03/95	KW	3
Chromium, Total	<0.015	mg/L	1.0	0.015	200.7/6010	02/20/95	KW	1
Chromium, Trivalent	<0.015	mg/L	1.0	0.015	Calculation	02/23/95	DN	
Iron, Total	0.60	mg/L	1.0	0.025	200.7/6010	02/20/95	KW	1
Lead, Total	<0.005	mg/L	1.0	0.005	239.2/7421	02/17/95	KW	2
Magnesium, Total	2.8	mg/L	1.0	0.050	200.7/6010	02/20/95	KW	1
Manganese, Total	0.22	mg/L	1.0	0.005	200.7/6010	02/20/95	KW	1
Potassium, Total	1.6	mg/L	1.0	0.50	200.7/6010	02/20/95	KW	1
Silicon, Total	4.7	mg/L	1.0	0.10	200.7/6010	02/20/95	KW	1
Sodium, Total	110.	mg/L	2.0	0.10	200.7/6010	02/20/95	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 02/15/95 by WD using 3010
(2) Sample Preparation on 02/15/95 by WD using 3020
(3) Sample Preparation on 02/02/95 by GFB using 7195

02/24/95

LJO/ejnjbb(dw)
LB15ICW1
CC: OLIN(TN)
ATTN:STEVE MORROW
RICK SACKS-BCM

ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-0197-18
Report Date: 02/24/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
SW-15	Aqueous	T. FENER	02/02/95	02/02/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Bicarbonate as HCO3	49.	mg/L	1.0	20	APHA 406C	02/09/95	CM	
Bromide	<2.0	mg/L	1.0	2.0	320.1	02/18/95	NN	1
Carbonate, as CO3	<20	mg/L	1.0	20	APHA 406C	02/09/95	CM	
Chemical Oxygen Demand	<15	mg/L	1.0	15	410.4	02/08/95	CM	
Nitrate as N	2.8	mg/L	10	0.050	353.2	02/17/95	BC	
Nitrite as N	<0.050	mg/L	1.0	0.050	353.2	02/03/95	BC	
Phosphorus, Total as P	<0.10	mg/L	1.0	0.10	365.4	02/16/95	BC	2
Solids - Filterable Residue (TDS)	440.	mg/L	1.0	10	160.1	02/08/95	JF	3
Total Organic Carbon (TOC)	4.1	mg/L	1.0	1.0	415.1	02/13/95	BC	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values

(1) Sample Preparation on 02/17/95 by NEN
(2) Sample Preparation on 02/15/95 by BAC
(3) Sample Preparation on 02/06/95 by JF

02/24/95

LJO/ejnbac/gbp(dw)

CC: OLIN(TN)
ATTN:STEVE MORROW
RICK SACKS-BCM

Respectfully submitted,
PACE, INC.

Laura J. O'Meara

Laura J. O'Meara
Supervisor, Client Services

Client: Olin Chemicals, Work Order: WL0197

24-Feb-95

No positive results for Carbonate; No data qual.

PACE, Inc.
Maine Laboratory
Quality Control Report

Duplicate and Matrix Spike/Matrix Spike Duplicate Results

Parameter	PACE Sample No.	Units	Sample Measurements Rep 1	Sample Measurements Rep 2	Mean Conc	RPD (%)	Acceptance Range for RPD (%)	Units	Concentration or Quantity Sample Only	Spike Added	Sample +Spike Dup 1	Sample +Spike Dup 2	Matrix Spike Recovery (%) Sample +Spike Dup 1	Sample +Spike Dup 2	Acceptance Range (%)	RPD (%)	Acceptance Range (%)
	DUPLICATE RESULTS							MATRIX SPIKE/MATRIX SPIKE DUPLICATE RESULTS									
Alkalinity	WL0197-1	mg/L	36.3	35.6	36.0	1.9	0-20	mg/L	36.3	114	162	NA	110	NA	75-125	NA	0-20
	WL0197-10	mg/L	43.8	35.1	39.5	22 #	0-20	mg/L	43.8	114	161	NA	103	NA	75-125	NA	0-20
Bromide	WL0197-1	mg/L	<2.00	2.81	2.41	NC	0-20	mg/L	<2.00	10.0	12.5	NA	125	NA	75-125	NA	0-20
	WL0197-10	mg/L	2.34	3.12	2.73	29 #	0-20	mg/L	~~<2.00~~ 2.3	10.0	<2.00	NA	* 0.0	NA	75-125	NA	0-20
COD	WL0197-1	mg/L	15.0	<15.0	15.0	NC	0-20	mg/L	~~11.3~~ 15	75.0	85.0	NA	93.3 ~~98.5~~	NA	75-125	NA	0-20
	WL0197-10	mg/L	23.5	<15.0	19.3	NC	0-20	mg/L	~~17.6~~ 23.5	75.0	85.0	NA	82 ~~89.9~~	NA	75-125	NA	0-20
	WL0197-17	mg/L	32.0	32.0	32.0	0.0	0-20	mg/L	~~24.0~~ 32	75.0	93.0	NA	81.3 ~~92.0~~	NA	75-125	NA	0-20
Nitrate+Nitrite	WL0197-1	mg/L	0.322	0.371	0.347	14	0-20	mg/L	0.322	1.20	1.56	NA	103	NA	75-125	NA	0-20
	WL0197-10	mg/L	0.196	0.394	0.295	67 &	0-20	mg/L	0.196	1.20	1.32	NA	93.7	NA	75-125	NA	0-20
Nitrate - N	See Nitrate + Nitrite and Nitrite.																
Nitrite - N	WL0197-1	mg/L	<0.050	<0.050	<0.050	NC	0-20	mg/L	<0.050	0.500	0.467	NA	93.4	NA	75-125	NA	0-20
	WL0197-10	mg/L	<0.050	<0.050	<0.050	NC	0-20	mg/L	<0.050	0.500	0.465	NA	93.0	NA	75-125	NA	0-20
Phosphate,Total	WL0197-1	mg/L	<0.100	<0.100	<0.100	NC	0-20	mg/L	<0.100	1.25	1.05	NA	84.0	NA	75-125	NA	0-20
	WL0197-10	mg/L	<0.100	<0.121	0.111	NC	0-20	mg/L	<0.100	1.25	1.09	NA	87.2	NA	75-125	NA	0-20
TDS	WL0197-1	mg/L	165	177	171	7.0	0-20	MS/MSD NOT APPICABLE FOR THIS PARAMETER.									
	WL0197-3	mg/L	177	178	178	0.6	0-20	MS/MSD NOT APPICABLE FOR THIS PARAMETER.									
	WL0197-10	mg/L	163	147	155	10	0-20	MS/MSD NOT APPICABLE FOR THIS PARAMETER.									
	WL0197-12	mg/L	147	150	149	2.0	0-20	MS/MSD NOT APPICABLE FOR THIS PARAMETER.									
DOC	WL0197-1	mg/L	3.87	3.69	3.78	4.8	0-20	mg/L	~~3.46~~ 3.87	40.0	40.8	NA	92.6 ~~93.5~~	NA	75-125	NA	0-20
TOC	WL0197-10	mg/L	6.92	3.87	5.4	57 &	0-20	mg/L	~~6.23~~ 6.92	40.0	41.3	NA	86 ~~87.7~~	NA	75-125	NA	0-20

RPD = Relative percent difference, which is the absolute value of the difference between two replicate results divided by the mean concentration then multiplied by 100%.

NC = Relative percent difference cannot be calculated for sample results less than the PQL.

NA = Not applicable.

MDusey 1/16/96

* It does not appear that this sample was spiked. See Appendix

000194

PACE, Inc.
Maine Laboratory
Quality Control Report

Duplicate and Matrix Spike/Matrix Spike Duplicate Results

DUPLICATE RESULTS — *MATRIX SPIKE/MATRIX SPIKE DUPLICATE RESULTS*

Parameter	PACE Sample No.	Units	Sample Measurement Rep 1	Sample Measurement Rep 2	Mean Conc	RPD (%)	Acceptance Range for RPD (%)	Units	Concentration or Quantity: Sample Only	Spike Added	Sample +Spike Dup 1	Sample +Spike Dup 2	Matrix Spike Recovery (%): Sample +Spike Dup 1	Sample +Spike Dup 2	Acceptance Range (%)	RPD (%)	Acceptance Range (%)
Aluminum	WL0197-1	mg/L	0.108	<0.100	0.104	NC	0-20	mg/L	0.108	2.00	2.22	NA	106	NA	75-125	NA	0-20
	WL0197-10	mg/L	0.206	<0.100	0.153	NC	0-20	mg/L	0.206	2.00	2.21	NA	100	NA	75-125	NA	0-20
Arsenic	WL0197-1	mg/L	<0.005	<0.005	<0.005	NC	0-20	mg/L	<0.005	0.040	0.040	NA	100	NA	75-125	NA	0-20
	WL0197-10	mg/L	<0.005	<0.005	<0.005	NC	0-20	mg/L	<0.005	0.040	0.039	NA	97.5	NA	75-125	NA	0-20
Barium	WL0197-1	mg/L	0.010	0.010	0.010	0.0	0-20	mg/L	0.010	2.00	2.04	NA	102	NA	75-125	NA	0-20
	WL0197-10	mg/L	0.011	0.009	0.010	20	0-20	mg/L	0.011	2.00	2.08	NA	103	NA	75-125	NA	0-20
Calcium	WL0197-1	mg/L	19.0	19.8	19.4	4.1	0-20	mg/L	19.0	2.00	21.8	NA	140	NA	75-125	NA	0-20
	WL0197-10	mg/L	18.9	18.6	18.8	1.6	0-20	mg/L	18.9	2.00	21.5	NA	130	NA	75-125	NA	0-20
Chromium	WL0197-1	mg/L	<0.015	<0.015	<0.015	NC	0-20	mg/L	<0.015	0.200	0.217	NA	109	NA	75-125	NA	0-20
	WL0197-10	mg/L	<0.015	<0.015	<0.015	NC	0-20	mg/L	<0.015	0.200	0.224	NA	112	NA	75-125	NA	0-20
Chromium, Hexavalent	WL0197-1	mg/L	<0.015	<0.015	<0.015	NC	0-20	mg/L	<0.015	5.00	4.79	NA	95.8	NA	75-125	NA	0-20
	WL0197-10	mg/L	<0.015	<0.015	<0.015	NC	0-20	mg/L	<0.015	5.00	4.37	NA	87.4	NA	75-125	NA	0-20
Chromium, Trivalent	See Chromium and Hexavalent Chromium																
Iron	WL0197-1	mg/L	1.30	0.932	1.12	33 &	0-20	mg/L	1.30	1.00	1.96	NA	66.0	NA	75-125	NA	0-20
	WL0197-10	mg/L	2.06	1.12	1.59	59 &	0-20	mg/L	2.06	1.00	2.32	NA	26.0	NA	75-125	NA	0-20
Lead	WL0197-1	mg/L	<0.005	<0.005	<0.005	NC	0-20	mg/L	<0.005	0.020	0.022	NA	110	NA	75-125	NA	0-20
	WL0197-10	mg/L	<0.005	<0.005	<0.005	NC	0-20	mg/L	<0.005	0.020	0.021	NA	105	NA	75-125	NA	0-20
Magnesium	WL0197-1	mg/L	1.88	1.94	1.91	3.1	0-20	mg/L	1.88	4.00	6.35	NA	112	NA	75-125	NA	0-20
	WL0197-10	mg/L	2.09	1.79	1.94	15	0-20	mg/L	2.09	4.00	6.23	NA	104	NA	75-125	NA	0-20
Manganese	WL0197-1	mg/L	0.180	0.159	0.170	12	0-20	mg/L	0.180	0.500	0.665	NA	97.0	NA	75-125	NA	0-20
	WL0197-10	mg/L	0.259	0.151	0.205	53 &	0-20	mg/L	0.259	0.500	0.689	NA	86.0	NA	75-125	NA	0-20
Potassium	WL0197-1	mg/L	1.04	1.25	1.15	~~18~~	0-20	mg/L	1.04	20.0	21.5	NA	102	NA	75-125	NA	0-20
	WL0197-10	mg/L	1.35	1.15	1.25	16	0-20	mg/L	1.35	20.0	20.7	NA	96.8	NA	75-125	NA	0-20
Silicon	WL0197-1	mg/L	2.48	2.24	2.36	10	0-20	mg/L	2.48	2.46	4.76	NA	92.7	NA	75-125	NA	0-20
	WL0197-10	mg/L	2.71	2.16	2.44	23 &	0-20	mg/L	2.71	2.46	4.84	NA	86.6	NA	75-125	NA	0-20
Sodium	WL0197-1	mg/L	31.1	30.6	30.9	[illegible]	0-20	mg/L	31.1	6.00	36.6	NA	91.7	NA	75-125	NA	0-20
	WL0197-10	mg/L	35.0	28.2	31.6	22 &	0-20	mg/L	35.0	6.00	36.6	NA	26.7	NA	75-125	NA	0-20

WP. 1/16/96 outside acceptance range ... the remaining circled

20 PROJECT Bromide EPA 320.1 (titrimetric)

Notebook No. 3

Continued From Page 20

Br^- Stock Std: 082994CSG 1.4900gm/L ≅ 1.0 mg/ml as Br^- PPL = 2.8 mg/L 005220
Br^- Std A: (1.0 ml × 1.0 mg/ml)/.40 L = 2.5 mg/L ✓
Br^- Std B: (5.0 ml × 1.0 mg/ml)/.40 L = 12.5 mg/L ✓
Spike + CCV Stock Std: Br^- Stock Std 082994CSG
Spike: (1.0 ml × 1.0 mg/ml)/.10 L = 10.0 mg/L ✓
CCV: (1.0 ml × 1.0 mg/ml)/.10 L = 10.0 mg/L ✓
STS (.0075N): 021795NEN

$$[I^-] = \frac{N(\Delta ml - Blank)}{Sample\ Vol} \qquad N = .0075$$

I^- Determination

Client	Sample ID	Site ID	Sample Vol (ml)	Δml STS	$[I^-]$
	ICB		100.0	0.29	0
	Std A (ICV)		100.0	0.32	$2.25 \cdot 10^{-6}$ ✓
	Std B (ICV)		100.0	0.32	$2.25 \cdot 10^{-6}$ ✓
Olin-Cameron	WL0185-1		100.0	0.94	$4.875 \cdot 10^{-5}$ ✓
	WL0185-2		100.0	1.98	$1.2675 \cdot 10^{-4}$ ✓
	WL0185-3		100.0	0.77	$3.60 \cdot 10^{-5}$ ✓
	WL0185-4		100.0	0.55	$1.95 \cdot 10^{-5}$ ✓
	WL0195-1		100.0	0.45	$1.20 \cdot 10^{-5}$ ✓
	WL0195-2		100.0	0.50	$1.575 \cdot 10^{-5}$ ✓
	WL0195-3		100.0	0.85	$4.20 \cdot 10^{-5}$ ✓
Spike	WL0195-4		100.0	0.42	$9.75 \cdot 10^{-6}$ ✓
Dup	WL0195-5		100.0	0.49	$1.50 \cdot 10^{-5}$ ✓
Olin-Cameron	WL0197-1		100.0	0.42	$9.75 \cdot 10^{-6}$ ✓
Spike	WL0197-2		100.0	0.49	$1.50 \cdot 10^{-5}$ ✓
Dup	WL0197-3		100.0	0.45	$1.20 \cdot 10^{-5}$ ✓
Olin-Cameron	WL0197-4		100.0	0.52	$1.725 \cdot 10^{-5}$ ✓
	WL0197-5		100.0	1.16	$6.525 \cdot 10^{-5}$ ✓
	WL0197-6		100.0	0.55	$1.95 \cdot 10^{-5}$ ✓
	WL0197-7		100.0	0.68	$2.175 \cdot 10^{-5}$ ✓
	WL0197-8		100.0	0.91	$4.65 \cdot 10^{-5}$ ✓
	WL0197-9		100.0	0.60	$2.325 \cdot 10^{-5}$ ✓

Continued on Page 21

Read and Understood By

Nancy E. Moffle — Signed — 2-18-95 — Date
[signature] — Signed — 2-22-95 — Date

PROJECT Bromide EPA 320.1 (titrimetric)

$Ca(OCl)_2$:	021895NEN	HCl 25% :	011895NEN
Molybdate Sol'n :	021895NEN	H_2SO_4 25% :	021995NEN
Na Acetate Sol'n :	021795NEN	CaO :	ALDRICH LOT # 05304DG
Br_2 water :	021795NEN	KI :	BAKER LOT # H26705
Na Formate Sol'n :	021795NEN		

$$[I^-] = \frac{N(\Delta ml - Blank)}{Sample\ Vol} \quad N = .0075$$

I^- Determination

Client	Sample ID	Site ID	Sample Vol (ml)	Δml STS	$[I^-]$
Olin-Cameron	WLC197-10		100.0	0.50	$1.575 \cdot 10^{-5}$
"	WLC197-11		100.0	0.65	$2.70 \cdot 10^{-5}$
	CCV		100.0	0.52	$1.725 \cdot 10^{-5}$
	CCV		100.0	0.49	$1.50 \cdot 10^{-5}$
Olin-Cameron	WL0197-12		100.0	0.64	$2.625 \cdot 10^{-5}$
	WL0197-13		100.0	0.65	$2.70 \cdot 10^{-5}$
	WL0197-14		100.0	1.24	$7.125 \cdot 10^{-5}$
	WL0197-15		100.0	0.51	$1.65 \cdot 10^{-6}$
	WL0197-16		100.0	0.62	$2.475 \cdot 10^{-5}$
	WL0197-17		100.0	0.99	$5.25 \cdot 10^{-5}$
	WL0197-18		100.0	0.63	$2.55 \cdot 10^{-5}$
	WL0254-1		100.0	0.59	$2.25 \cdot 10^{-5}$
	CCV		100.0	0.56	$2.025 \cdot 10^{-5}$

* It does not appear that the analyst spiked this sample the result from the raw data was 1.40.

Continued on Page 22

Read and Understood By

Nancy E. Moffitt — Signed — 2-18-95 — Date

[illegible signature] — Signed — 2-22-95 — Date

114 197-8	AS		1.00x	02/16/95	01:12

	<-As----------------------------------->	
Burns	16.89	16.63
Mean	16.760	
CV %	1.10	
Sample value	16.76	
Spike added	20.00	
Spike recovery, %	83.80 ***	

ARGOS MODEL S4 Version 1.30

000115

result estimated due
to low pdas %R
M Dursey 1/16/95

Sample value 21.12
Spike added 20.00
Spike recovery, % 105.60

---

66 197-8 S LB15GFW1 OLIN 1.00x 02/16/95 23:34

000153

<-Pb------------------------------------>

Burns	00.32	00.39
Mean	0.355	
CV %	13.94	
Sample value	0.97U	

---

67 197-8 AS 1.00x 02/16/95 23:39

<-Pb------------------------------------>

Burns	16.55	15.88
Mean	16.215	
CV %	2.92	
Sample value	16.22	
Spike added	20.00	
Spike recovery, %	81.07 ***	

result est. due
to low pda s %R
MOusey 1/16/95

---

68 CCV CCV 1.00x 02/16/95 23:44

<-Pb------------------------------------>

Burns	31.71	31.36
Mean	31.535	
CV %	0.78	
Sample value	31.53 105%	

---

69 CCB CCB 1.00x 02/16/95 23:49

<-Pb------------------------------------>

Burns	00.06	00.01
Mean	0.035	
CV %	101.02	
Sample value	0.97U	

---

70 SO AZ 1.00x 02/16/95 23:54

<-Pb------------------------------------>

Burns	-00.15	-00.18
Mean	-0.165	
CV %	12.86	
Sample value	0.97U	

ARCOS MODEL S4 Version 1.30

Sample value 0.97U

95	197-16	AS		1.00x	02/17/95	01:58

000163

<-Pb-->

Burns	20.04	19.19
Mean	19.615	
CV %	3.06	
Sample value	19.61	
Spike added	20.00	
Spike recovery, %	98.07	

96	197-17	S	LB15GFW1 OLIN	1.00x	02/17/95	02:02

<-Pb-->

Burns	00.30	00.29
Mean	0.295	
CV %	2.40	
Sample value	0.97U	

97	197-17	AS		1.00x	02/17/95	02:07

<-Pb-->

Burns	14.61	14.12
Mean	14.365	
CV %	2.41	
Sample value	14.36	
Spike added	20.00	
Spike recovery, %	71.82 ***	

below limit
MOursey 1/16/96

98	197-18	S	LB15GFW1 OLIN	1.00x	02/17/95	02:12

<-Pb-->

Burns	00.70	00.53
Mean	0.615	
CV %	19.55	
Sample value	0.97U	

ARCOS MODEL S4 Version 1.30

TJA S-H 22/CTF-188 (Lead - Concentration Mode - 2 Burns)
Run: TJ 9504701 Analyst: LAW Page 8

Concentrations

POS	SAMPLE ID	CODE	CLIENT ID	DILUTION	DATE	TIME
99	197-18	AS		1.00x	02/17/95	02:17

<-Pb-->

Burns	19.86	19.34
Mean	19.600	

Field Duplicate Precision Worksheet Smith

Project Name: Olin Chemicals
Project Numbe 00-7047-0102

Case Number: WL-0197

Sample location	SW-14	SW-14D
Sample ID number	WL-0197-10	WL-0197-13
Matrix	Aqueous	Aqueous
Units	mg/L	mg/L
	filt.	filt.

Compound	Sample Concentration	Field Duplicate Concentration	RPD	Q	
Aluminum	0.1			*	- Do not qualify DL=0.10
Arsenic					
Barium	0.010	0.01	0.0		
Calcium	19	20	5.1		
Chromium					
Chromium, Hexavalent					
Chromium, Trivalent					
Iron	1.30	0.74	54.9	*	
Lead					
Magnesium	1.9	1.9	0.0		
Manganese	0.18	0.140	25.0	*	
Potassium	1	1.1	9.5		
Silicon	2.5	2.3	8.3		
Sodium	31	30	3.3		
Bicarbonate as HCO3	36	36	0.0		
Bromide					
Carbonate as CO3					
Chemical Oxygen Demand	15				→ DL=15 Do not qualify
Nitrate as N	0.32	0.38	17.1		
Nitrite as N					
Total Organic Carbon	3.9	4.1	5.0		
Phosphorus as P					
Solids-Filterable Residue (TDS)	170	170	0.0		

* Indicates control limit out of criteria

Smith CQAD has established a control limit of 20 percent RPD.

FD0197.XLS

QA Scientist MOrusy

Date 1/16/95

Field Duplicate Precision Worksheet — Smith

Project Name: Olin Chemicals
Project Numbe 00-7047-0102

Case Number: WL-0197

Sample location	SW-14	SW-14D
Sample ID number	WL-0197-10	WL-0197-13
Matrix	Aqueous	Aqueous
Units	mg/L	mg/L
	unfilt.	unfilt.

Compound	Sample Concentration	Field Duplicate Concentration	RPD	Q
Aluminum	0.21			*
Arsenic				
Barium	0.011	0.01	9.5	
Calcium	19	19	0.0	
Chromium				
Chromium, Hexavalent				
Chromium, Trivalent				
Iron	2.10	1.2	54.5	*
Lead				
Magnesium	2.1	1.9	10.0	
Manganese	0.26	0.160	47.6	*
Potassium	1.3	1.2	8.0	
Silicon	2.7	2.3	16.0	
Sodium	35	31	12.1	
Bicarbonate as HCO3	44	33	28.6	*
Bromide	2.3			* → DL = 2. Do no Qualify
Carbonate as CO3				
Chemical Oxygen Demand	24			*
Nitrate as N	0.2	0.4	66.7	*
Nitrite as N				
Total Organic Carbon		4.5		*
Phosphorus as P				
Solids-Filterable Residue (TDS)	160	150	6.5	

* Indicates control limit out of criteria

Smith CQAD has established a control limit of 20 percent RPD.

FD0197-1.XLS

QA Scientist [signature] Date 1/16/96

SMITH

APPENDIX B

Field Identification: SW-14 FILTERED Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Chloride, dissolved (mg/L)	40	1	42964-001	02/06/95	630A	300.0/1
Sulfate, dissolved (mg/L)	28	1.0	42964-001	02/06/95	630A	300.0/1
Ortho Phosphate, dissolved (mg/L as P)	BDL	0.02	42964-001	02/03/95	187	365.2/1
Sulfide, dissolved (mg/L)	BDL	1	42964-010	02/06/95	284	376.1/1
Ammonia-N, dissolved (mg/L as N)	0.09	0.05	42964-019	02/07/95	539	350.2/1

Field Identification: SW-14 DUP FILTERED Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Chloride, dissolved (mg/L)	40	1	42964-002	02/06/95	630A	300.0/1
Sulfate, dissolved (mg/L)	29	1.0	42964-002	02/06/95	630A	300.0/1
Ortho Phosphate, dissolved (mg/L as P)	BDL	0.02	42964-002	02/03/95	187	365.2/1
Sulfide, dissolved (mg/L)	BDL	1	42964-011	02/06/95	284	376.1/1
Ammonia-N, dissolved (mg/L as N)	0.10	0.05	42964-020	02/07/95	539	350.2/1

Field Identification: SW-14 MS FILTERED Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Chloride, dissolved (mg/L)	45	1	42964-003	02/06/95	630A	300.0/1
Sulfate, dissolved (mg/L)	38	1.0	42964-003	02/06/95	630A	300.0/1
Ortho Phosphate, dissolved (mg/L as P)	0.47	0.02	42964-003	02/03/95	187	365.2/1
Sulfide, dissolved (mg/L)	45	1	42964-012	02/06/95	284	376.1/1
Ammonia-N, dissolved (mg/L as N)	1.1	0.05	42964-021	02/07/95	539	350.2/1

Field Identification: SW-14D FILTERED Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Chloride, dissolved (mg/L)	40	1	42964-004	02/06/95	630A	300.0/1
Sulfate, dissolved (mg/L)	28	1.0	42964-004	02/06/95	630A	300.0/1
Ortho Phosphate, dissolved (mg/L as P)	BDL	0.02	42964-004	02/03/95	187	365.2/1
Sulfide, dissolved (mg/L)	BDL	1	42964-013	02/06/95	284	376.1/1
Ammonia-N, dissolved (mg/L as N)	0.12	0.05	42964-022	02/07/95	539	350.2/1

Field Identification: SW-11 FILTERED

Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Chloride, dissolved (mg/L)	66	5	42964-005	02/06/95	630A	300.0/1
Sulfate, dissolved (mg/L)	200	5.0	42964-005	02/06/95	630A	300.0/1
Ortho Phosphate, dissolved (mg/L as P)	BDL	0.02	42964-005	02/03/95	187	365.2/1
Sulfide, dissolved (mg/L)	BDL	1	42964-014	02/06/95	284	376.1/1
Ammonia-N, dissolved (mg/L as N)	35	1	42964-023	02/07/95	539	350.2/1

Field Identification: SW-12 FILTERED

Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Chloride, dissolved (mg/L)	79	2	42964-006	02/06/95	630A	300.0/1
Sulfate, dissolved (mg/L)	20	2.0	42964-006	02/06/95	630A	300.0/1
Ortho Phosphate, dissolved (mg/L as P)	BDL	0.02	42964-006	02/03/95	187	365.2/1
Sulfide, dissolved (mg/L)	BDL	1	42964-015	02/06/95	284	376.1/1
Ammonia-N, dissolved (mg/L as N)	0.39	0.05	42964-024	02/07/95	539	350.2/1

Field Identification: SW-17 FILTERED

Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Chloride, dissolved (mg/L)	160	5	42964-007	02/06/95	630A	300.0/1
Sulfate, dissolved (mg/L)	140	5.0	42964-007	02/06/95	630A	300.0/1
Ortho Phosphate, dissolved (mg/L as P)	BDL	0.02	42964-007	02/03/95	187	365.2/1
Sulfide, dissolved (mg/L)	BDL	1	42964-016	02/06/95	284	376.1/1
Ammonia-N, dissolved (mg/L as N)	12	0.1	42964-025	02/07/95	539	350.2/1

Field Identification: SW-16 FILTERED

Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Chloride, dissolved (mg/L)	67	5	42964-008	02/06/95	630A	300.0/1
Sulfate, dissolved (mg/L)	870	10	42964-008	02/07/95	631A	300.0/1
Ortho Phosphate, dissolved (mg/L as P)	BDL	0.02	42964-008	02/03/95	187	365.2/1
Sulfide, dissolved (mg/L)	BDL	1	42964-017	02/06/95	284	376.1/1
Ammonia-N, dissolved (mg/L as N)	48	0.5	42964-026	02/07/95	539	350.2/1

Field Identification: SW-15 FILTERED   Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Chloride, dissolved (mg/L)	130	5	42964-009	02/07/95	631A	300.0/1
Sulfate, dissolved (mg/L)	160	2.0	42964-009	02/06/95	630A	300.0/1
Ortho Phosphate, dissolved (mg/L as P)	BDL	0.02	42964-009	02/03/95	187	365.2/1
Sulfide, dissolved (mg/L)	2	1	42964-018	02/06/95	284	376.1/1
Ammonia-N, dissolved (mg/L as N)	15	0.1	42964-027	02/07/95	539	350.2/1

Field Identification: SW-14 UNFILTERED   Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Chloride (mg/L)	38	2	42964-028	02/06/95	630A	300.0/1
Sulfate (mg/L)	30	2.0	42964-028	02/06/95	630A	300.0/1
Ortho Phosphate (mg/L as P)	BDL	0.02	42964-028	02/03/95	187	365.2/1
Sulfide (mg/L)	BDL	1	42964-037	02/06/95	285	376.1/1
Ammonia-N (mg/L as N)	0.10	0.05	42964-046	02/07/95	539	350.2/1

Field Identification: SW-14 DUP UNFILTERED   Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Chloride (mg/L)	37	2	42964-029	02/06/95	630A	300.0/1
Sulfate (mg/L)	27	2.0	42964-029	02/06/95	630A	300.0/1
Ortho Phosphate (mg/L as P)	BDL	0.02	42964-029	02/03/95	187	365.2/1
Sulfide (mg/L)	BDL	1	42964-038	02/06/95	285	376.1/1
Ammonia-N (mg/L as N)	0.16	0.05	42964-047	02/07/95	539	350.2/1

Field Identification: SW-14 MS UNFILTERED   Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Chloride (mg/L)	48	2	42964-030	02/06/95	630A	300.0/1
Sulfate (mg/L)	46	2.0	42964-030	02/06/95	630A	300.0/1
Ortho Phosphate (mg/L as P)	0.47	0.02	42964-030	02/03/95	187	365.2/1
Sulfide (mg/L)	39	1	42964-039	02/06/95	285	376.1/1
Ammonia-N (mg/L as N)	1.0	0.05	42964-048	02/07/95	539	350.2/1

pace INCORPORATED
THE ASSURANCE OF QUALITY

Field Identification: SW-14D UNFILTERED　　　Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Chloride (mg/L)	38	2	42964-031	02/07/95	631A	300.0/1
Sulfate (mg/L)	30	2.0	42964-031	02/07/95	631A	300.0/1
Ortho Phosphate (mg/L as P)	BDL	0.02	42964-031	02/03/95	187	365.2/1
Sulfide (mg/L)	BDL	1	42964-040	02/06/95	285	376.1/1
Ammonia-N (mg/L as N)	0.10	0.05	42964-049	02/07/95	539	350.2/1

Field Identification: SW-11 UNFILTERED　　　Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Chloride (mg/L)	63	5	42964-032	02/07/95	631A	300.0/1
Sulfate (mg/L)	190	5.0	42964-032	02/07/95	631A	300.0/1
Ortho Phosphate (mg/L as P)	BDL	0.02	42964-032	02/03/95	187	365.2/1
Sulfide (mg/L)	BDL	1	42964-041	02/06/95	285	376.1/1
Ammonia-N (mg/L as N)	31	0.5	42964-050	02/07/95	539	350.2/1

Field Identification: SW-12 UNFILTERED　　　Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Chloride (mg/L)	85	2	42964-033	02/07/95	631A	300.0/1
Sulfate (mg/L)	18	2.0	42964-033	02/07/95	631A	300.0/1
Ortho Phosphate (mg/L as P)	BDL	0.02	42964-033	02/03/95	187	365.2/1
Sulfide (mg/L)	2	1	42964-042	02/06/95	285	376.1/1
Ammonia-N (mg/L as N)	0.59	0.05	42964-051	02/07/95	539	350.2/1

Field Identification: SW-17 UNFILTERED　　　Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Chloride (mg/L)	120	5	42964-034	02/07/95	631A	300.0/1
Sulfate (mg/L)	110	5.0	42964-034	02/07/95	631A	300.0/1
Ortho Phosphate (mg/L as P)	BDL	0.02	42964-034	02/03/95	187	365.2/1
Sulfide (mg/L)	BDL	1	42964-043	02/06/95	285	376.1/1
Ammonia-N (mg/L as N)	11	0.5	42964-052	02/08/95	540	350.2/1

Field Identification: SW-16 UNFILTERED Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Chloride (mg/L)	70	10	42964-035	02/07/95	631A	300.0/1
Sulfate (mg/L)	880	10	42964-035	02/07/95	631A	300.0/1
Ortho Phosphate (mg/L as P)	BDL	0.02	42964-035	02/03/95	187	365.2/1
Sulfide (mg/L)	BDL	1	42964-044	02/06/95	285	376.1/1
Ammonia-N (mg/L as N)	46	0.5	42964-053	02/08/95	540	350.2/1

Field Identification: SW-15 UNFILTERED Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Chloride (mg/L)	130	5	42964-036	02/07/95	631A	300.0/1
Sulfate (mg/L)	140	5.0	42964-036	02/07/95	631A	300.0/1
Ortho Phosphate (mg/L as P)	BDL	0.02	42964-036	02/03/95	187	365.2/1
Sulfide (mg/L)	BDL	1	42964-045	02/06/95	285	376.1/1
Ammonia-N (mg/L as N)	13	0.5	42964-054	02/08/95	540	350.2/1

References: 1) 40 CFR Part 136, Friday, October 26, 1984

REPORT OF LABORATORY ANALYSIS

TECHNICAL NARRATIVE

Laboratory Number: 42964

Samples were received in acceptable condition, with the exceptions noted on the sample receipt condition report.

All samples were prepared and analyzed within the holding times specified in the referenced methods.

Instrumentation used for analysis was calibrated and/or tuned with the appropriate frequency and to the appropriate specifications required by the referenced methods.

Blank contamination was not observed at levels affecting the analytical results.

Matrix effects, as monitored by matrix spike recovery, unusual physical properties and/or surrogate analyte recovery, were not apparent.

Accuracy and precision as monitored by laboratory control sample analyses were within laboratory acceptance limits.

Laboratory sample numbers 42964-1 through -27 represent data on client filtered samples. Samples 42964-28 through -54 represent data on unfiltered samples.

P O Box 2130
1 Lafayette Road
Hampton NH 03842
TEL 603-926-7777
800-992-0724
FAX 603 926-7939

Field Duplicate Precision Worksheet — Smith

Project Name: Olin Chemicals
Project Numbe 00-7047-0102
Case Number: 42964

Sample location	SW-14	SW-14D
Sample ID number	42964-001, -101, -019	42964-004, -113, -022
Matrix	Aqueous	Aqueous
Units	mg/L	mg/L
	filt.	filt.

Compound	Sample Concentration	Field Duplicate Concentration	RPD	Q
Chloride	40	40	0.0	
Sulfate	28	28	0.0	
Ortho Phosphate				
Sulfide				
Ammonia-N	0.09	0.12	28.6	*

Sample location	SW-14	SW-14D
Sample ID number	42964-001, -101, -019	42964-004, -113, -022
Matrix	Aqueous	Aqueous
Units	mg/L	mg/L
	unfilt.	unfilt.

Compound	Sample Concentration	Field Duplicate Concentration	RPD	Q
Chloride	38	38	0.0	
Sulfate	30	30	0.0	
Ortho Phosphate				
Sulfide				
Ammonia-N	0.10	0.10	0.0	

* Indicates control limit out of criteria

Smith CQAD has established a control limit of 20 percent RPD.

FD0197A.XLS

QA Scientist M. Ousey Date 1/16/96

DATA VALIDATION REPORT

OCTOBER, 1995 MONITORING EVENT

WORK ORDER NUMBER WL-1595

FOR

OLIN CORPORATION
WILMINGTON, MASSACHUSETTS

SMITH ENVIRONMENTAL TECHNOLOGIES CORPORATION
PROJECT NO. 00-7074-0102

PREPARED FOR

OLIN CORPORATION

JUNE, 1996

SMITH

Engineering · Consulting · Remediation · Construction

SMITH
ENVIRONMENTAL TECHNOLOGIES CORPORATION

DATA REVIEW COVER SHEET

Date: June 25, 1996
Subject: Data Validation of the October 1995 Sampling Event at the Olin Corporation's Wilmington, MA Facility
Smith Env. Tech. Corp. Project No. 00-7074-0102

Data validation was performed on selected analytical results from the October 1995 sampling event at Olin Corporation's Wilmington, Massachusetts Facility. Samples collected during these events were analyzed by Katahdin Analytical Services' Westbrook, Maine and New Hampshire facilities. The laboratory work order numbers reviewed were WL-1612, WL-1595, WL-1622, WL-1628 (surface water samples only), and WL-1644.

The data validation guidelines that were used for the reviews are referenced in the individual reports. The data validation reports address all issues detailed in the appropriate data validation guidelines.

The following Smith Environmental Technologies Corporation Quality Assurance (QA) Department personnel contributed to the preparation of the data review reports:

Atwood F. Davis, CPC, QA Director — Atwood F. Davis

Martin B. Kudlesky, CPC, Senior QA Scientist — Martin B. Kudlesky

Danielle M. Leauby, QA Scientist — Danielle M. Leauby

Marybeth Ousey, QA Scientist — Marybeth Ousey

E. Bryan Rivers, QA Scientist — E. Bryan Rivers

A copy of this cover sheet with appropriate signatures must accompany all listed reports.

One Plymouth Meeting • Plymouth Meeting, PA 19462 • (610) 825-3800 • fax (610) 834-8236

SMITH

DATA VALIDATION REPORT
METALS AND SELECTED ANALYTES
OLIN CORPORATION
GROUNDWATER SAMPLES

INTRODUCTION

A data validation was performed on the analytical data from the 6 groundwater samples collected on October 12, 1995 at the Olin Corporation's Wilmington, Massachusetts Facility. This review is of work order number WL-1595 which contained 6 unfiltered groundwater samples, 1 unfiltered field duplicate, 1 unfiltered field blank, 6 filtered groundwater samples, 1 filtered field duplicate, and 1 filtered field blank. All samples in this report were analyzed by Katahdin Analytical Services, Inc. (formerly PACE Incorporated Environmental Laboratories), Westbrook, Maine, following United States Environmental Protection Agency (EPA) Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (SW-846), Methods for Chemical Analysis of Water and Wastes (MCAWW), and Standard Methods for the Examination of Water and Wastewater, 16th Edition, 1985 (SM), American Public Health Association (APHA). The individual analyses were performed using the following methods:

Analytes	Methods
aluminum, antimony, arsenic, barium, beryllium, cadmium, calcium, chromium, cobalt, copper, iron, lead, magnesium, manganese, nickel, potassium, selenium, silicon, silver, sodium, thallium, vanadium, and zinc	200.7
mercury	245.1
hexavalent chromium*	7195/6010
bicarbonate as HCO3 and carbonate as CO3*	SM406C
nitrate as N and nitrite as N*	353.2
dissolved organic carbon (DOC)*	415.1
phosphorus as P *	365.4
solids - filterable residue (TDS)*	160.1

*Analyses performed on filtered samples only.

Because the analyses were not performed according to the EPA Contract Laboratory Program (CLP) methods, the findings in this report are based upon a review of sample data and of quality control (QC) specified by the individual analytical methods and provided by the laboratory. The quality assurance review was prepared according to EPA

Region I Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analysis (data validation guidelines), June 1988, where applicable.

The support documentation in Appendix A of this report summarizes the specifics of this review. Appendix A also provides the sample results as reported by the laboratory. The data summary table lists all analytes that were analyzed. Analytical problems are outlined in the following Findings/Qualifiers section. Other issues which arose which did not warrant qualification are detailed in the Notes Section.

FINDINGS/QUALIFIERS

This data validation report addresses Pace, Inc. work order number WL-1595 which contained 6 filtered groundwater samples, 1 filtered field duplicate, 6 unfiltered groundwater samples, and 1 unfiltered duplicate. The data were evaluated for the following parameters:

* data completeness
* holding times
data calibration verification
CRDL standard
* laboratory blank analysis
field blank analysis
* interference check sample results
matrix spike recoveries
\+ laboratory duplicates
field duplicates
* laboratory control sample results
\+ serial dilution results
detection limit results
sample results

* All criteria were met for this parameter.
\+ All criteria were met for this parameter; however, this parameter is discussed in the Notes Section of this report.

The data summary table provided at the end of this report summarizes the validation recommendations which were based on the following information:

1. The zinc result for sample GW-80S (WL-1595-11) and the nitrate result for sample GW-65BR (WL-1595-19) are negated due to field blank contamination. The reported results were changed to reflect adjusted detection limits.

SMITH

2. Standards for certain metals were analyzed at the contract required detection limit (CRDL) as required by the Contract Laboratory Program (CLP). Although the analyses associated with this data were not CLP analyses, this standard represents system performance at or near the concentration of the CRDL. It was the reviewer's professional judgment to qualify data which were out of the criteria specified in the Region I data validation guidelines.

   - The following filtered hexavalent chromium results are estimated due to low CRDL standard percent recoveries (%Rs): GW-80S (WL-1595-11), GW-80D (WL-1595-12), GW-80BR (WL-1595-13), GW-81D (WL-1595-16), GW-300 (WL-1595-17), GW-81D (WL-1595-18), GW-65BR (WL-1595-19), and GW-81BR (WL-1595-20).

   - Due to the estimated hexavalent chromium results, all detected limits for trivalent chromium are also estimated.

3. Due to high recoveries of the initial standards below 1.0 ppm, all results for phosphorus as P are estimated. Additionally, these values are also called into question because several sample results and QC results for phosphorus as P exhibited negative concentrations with absolute values above the practical quantitation limit (PQL). A bias for these results could not be determined. Copies of the raw data are included in Appendix A of this report.

4. All results for phosphorus as P are estimated due to a low matrix spike recovery.

5. Results for manganese and potassium for unfiltered field duplicate samples GW-81D (WL-1595-6) and GW-81D (WL-1595-8) are estimated due to poor field duplicate precision results. Details are provided on the Field Duplicate Precision Worksheet in Appendix A of this report.

6. Results for iron and potassium for filtered field duplicate samples GW-81D (WL-1595-16) and GW-81D (WL-1595-18) are estimated due to poor field duplicate precision results. Details are provided on the Field Duplicate Precision Worksheet in Appendix A of this report.

7. The nitrite results of record were analyzed at Katahdin's Maine facility on 10/13/95 within holding times. To determine the nitrate concentrations for the samples nitrate plus nitrite was analyzed on 10/24/95 at Katahdin's New Hampshire facility. This analysis was performed within holding times. However, nitrite which was run as part of these analyses to obtain the nitrate results (by subtracting nitrite from nitrate plus nitrite) was analyzed out of holding times. Therefore, the laboratory evaluated the differences between the results from the two facilities and chose the most appropriate analyses to determine the nitrate results-of-record. However, the nitrite results-of-

record (from Katahdin's Maine facility) for samples GW-80S (WL-1595-11), GW-80D (WL-1595-12), and GW-80BR (WL-1595-13) were reported at concentrations greater than the nitrate plus nitrite results which were below the PQL. Due to the inconsistencies between the Maine facility's and the New Hampshire facility's results, all nitrite and nitrate results for the samples listed above are estimated.

8. Several filtered analytical results were reported at higher concentrations than their associated unfiltered results. Smith Environmental Technologies Corporation has established a relative percent difference (RPD) criteria to evaluate the precision of these results (see the spreadsheet included in Appendix A of this report). Due to RPDs which exceeded the expected precision, the following filtered and unfiltered sample results are estimated:

   - the iron results for unfiltered sample GW-81D (WL-1595-8) and filtered sample GW-81D (WL-1595-18)
   - the arsenic results for unfiltered sample GW-65BR (WL-1595-9) and filtered sample GW-65BR (WL-1595-19)

9. The detection limits for phosphorus as P are estimated in samples GW-300 filtered (WL-1595-17), GW-65BR filtered (WL-1595-19), and GW-81BR filtered (WL-1595-20) because the PQL could not be achieved. As a result, the phosphorus as P results were analyzed at dilutions, and the detection limits of these results were elevated by the laboratory to reflect the dilution factors as indicated on the Report of Analysis Forms included in Appendix A. A specific explanation was not provided by the laboratory.

NOTES

The following items were noted during the validation review which did not impact results or necessitate further qualification of data:

1. Several QC results were reported in the raw data that were not provided on the Method Blank and Laboratory Control Sample Results Form for alkalinity, nitrite, nitrate, total phosphate, dissolved organic carbon, and TDS. In instances where it was difficult to determine which QC results in the raw data were associated with order WL-1595, all QC information provided in the raw data were reviewed.

2. A serial dilution sample was not provided by the laboratory as recommended by the MCAWW Method 200.7. Since performance of a serial dilution is not required by the method, no data are qualified.

SMITH

3. The %Rs for several initial and continuing calibration verifications could not be verified because sufficient information was not provided by the laboratory.

4. The laboratory duplicate sample GW-80BR filtered (WL-1595-15) reported the wrong result for carbonate dissolved as CaCO3 on the Report of Analysis Form. The reviewer-corrected form is included in Appendix A. No data are qualified.

5. Several ICP analyte results which were acceptable results were reanalyzed with unacceptable ICP analyte results. The laboratory's logic for choosing the results of record for those samples is included in Appendix A.

SUMMARY

This review has identified field blank contamination, CRDL standards %Rs, calibration standard recoveries, negative concentrations with absolute values above the PQL, a matrix spike %R, field duplicate results, unfiltered versus filtered sample results, and elevated detection limits for non-detect sample results as areas of concern. The reported data are usable as qualified on the data summary table. For specifics relating to this review, see the attached documentation in Appendix A.

SMITH

QUALIFIER CODES

U - The material was analyzed for, but not detected above the level of the associated value.

J - The associated value is an estimated quantity.

UJ - The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.

DATA SUMMARY TABLE

Site Name: Wilmington Ma.
Project Number: 00-7047-0102
Sampling Date(s): 10/12/95

Liquid mg/l

Laboratory: Pace Env. Laboratories
Case/Order #: WL-1595
Field Duplicates: 1595-6, 1595-8 / 1595-16, 1595-18

PQL	Sample location or description	GW-80S	GW-80D	GW-80BR	GW-81D Field Rep	GW-300	GW-81D	GW-65BR	GW-81BR		
	Sample number	WL-1595-1	WL-1595-2	WL-1595-3	WL-1595-6	WL-1595-7	WL-1595-8	WL-1595-9	WL-1595-10		
	Sampling date	10/12/95	10/12/95	10/12/95	10/12/95	10/12/95	10/12/95	10/12/95	10/12/95		
	unfilt./filt.	unfilt.	unfilt.	unfilt.	unfilt.	unfilt.	unfilt.	unfilt.	unfilt.		
PQL	Comments				Field Dup B		Field Dup A				
0.10	Aluminum	17	0.13		1.1		1.0	0.20	0.27		
0.005	Antimony	0.006									
0.005	Arsenic	0.054	0.023	0.012				UJ			
0.005	Barium	0.25	0.041	0.068	0.014		0.014	0.21	0.068		
0.005	Beryllium										
0.01	Cadmium										
0.050	Calcium	74	86	170	22	0.052	20	25	37		
0.015	Chromium	0.068									
0.03	Cobalt										
0.025	Copper	0.080									
0.005	Iron	100	45	29	0.035		0.043 J	0.12	0.63		
0.005	Lead	0.40							0.011		
0.05	Magnesium	6.4	11	20	0.13		0.12	0.50	4.2		
0.005	Manganese	2.4	7.0	11	0.012 J		0.008 J	0.007	0.078		
0.20	Mercury	0.58									
0.04	Nickel										
0.50	Potassium	8.2	7.6	5.9	0.96 J		0.56 J	370	18		
0.005	Selenium										
0.1	Silicon	47	18	18	3.0		2.8	16	7.2		
0.015	Silver										
0.100	Sodium	10	51	56	2.4		2.3	120	42		
0.010	Thallium			0.012							
0.03	Vanadium	0.074									
0.025	Zinc	0.39							0.033		

WL1595I.XLS

*=Reported as dissolved.

E. Butler Rivest 6/19/96

DATA SUMMARY TABLE

Site Name: Wilmington Ma.
Project Number: 00-7047-0102
Sampling Date(s): 10/12/95

Liquid mg/l

Laboratory: Pace Env. Laboratories
Case/Order #: WL-1595
Field Duplicates: 1595-6, 1595-8 / 1595-16, 1595-18

PQL	Sample location or description	GW-80S	GW-80D	GW-80BR	GW-81D Field Rep	GW-300	GW-81D	GW-65BR	GW-81BR		
	Sample number	WL-1595-11	WL-1595-12	WL-1595-13	WL-1595-16	WL-1595-17	WL-1595-18	WL-1595-19	WL-1595-20		
	Sampling date	10/12/95	10/12/95	10/12/95	10/12/95	10/12/95	10/12/95	10/12/95	10/12/95		
	unfilt./filt.	filt.	filt.	filt.	filt.	filt.	filt.	filt.	filt.		
	Comments				Field Dup B		Field Dup A				
0.10	Aluminum *	0.60			0.97		0.82	0.14	0.12		
0.005	Antimony*										
0.005	Arsenic *	0.022	0.014	0.010			0.005	0.007 J			
0.005	Barium *	0.080	0.026	0.061	0.012		0.010	0.19	0.039		
0.005	Beryllium*										
0.01	Cadmium*										
0.050	Calcium *	59	58	140	20	0.074	18	22	18		
0.015	Chromium *										
0.015	Chromium, Hexavalent*	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ		
0.015	Chromium, Trivalent*	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ		
0.03	Colbalt*										
0.025	Copper*										
0.020	Iron*	64	29	26	UJ		0.062 J	0.038	0.19		
0.005	Lead*	0.030									
0.05	Magnesium*	3.3	7.4	19	0.10		0.077	0.070	2.9		
0.01	Manganese*	1.7	4.6	9.8					0.023		
0.20	Mercury*										
0.04	Nickel*										
0.5	Potassium*	5.5	4.7	5.5	0.96 J		UJ	330	15		
0.005	Selenium*			0.005				0.005			
0.100	Silicon*	13	11	16	2.7	0.11	2.4	14	6.1		
0.015	Silver*										
0.10	Sodium*	8.0	33	50	2.1		1.8	89	38		
0.01	Thallium*										
0.025	Vanadium*										

WL1595I.XLS

DATA SUMMARY TABLE

Site Name	Wilmington Ma.	Laboratory	Pace Env. Laboratories
Project Number	00-7047-0102	Case/Order #	WL-1595
Sampling Date(s)	10/12/95	Field Duplicates	1595-6, 1595-8 / 1595-16, 1595-18

Liquid mg/l

	Sample location or description	GW-80S		GW-80D		GW-80BR		GW-81D Field Rep		GW-300		GW-81D		GW-65BR		GW-81BR					
	Sample number	WL-1595-11		WL-1595-12		WL-1595-13		WL-1595-16		WL-1595-17		WL-1595-18		WL-1595-19		WL-1595-20					
0.025	Zinc*	0.036	U							0.051											
20	Bicarbonate as HCO3*	240		270		380										50					
20	Carbonate as CO3*							25				25		120							
0.05	Nitrate as N *		UJ		UJ		UJ	1.6		0.08		1.7		0.14	U	0.81					
0.050	Nitrite as N *	0.14	J	0.10	J	0.070	J	0.45				0.43				0.14					
1.0	Diss. Organic Carbon*	63		60		95								3.3		1.1					
0.10	Phosphorus as P *		UJ	0.27	J	0.23	J		UJ		UJ		UJ		UJ		UJ				
10	Solids-Filterable* Residue (TDS)	320		490		1000		65				63		970		280					

*=Reported as dissolved.

E. Bryfun Rivers 6/19/96

SMITH

DATA VALIDATION REPORT
CHLORIDE, SULFATE, BROMIDE, ORTHOPHOSPHATE, SULFIDE, VISCOSITY, AND AMMONIA-N
OLIN CORPORATION
GROUNDWATER SAMPLES

INTRODUCTION

A data validation was performed on the analytical data from the 6 groundwater sampling locations, 1 groundwater field duplicate sample, and 1 field rinse blank sampled on October 12, 1995 at the Olin Corporation's Wilmington, Massachusetts Facility. This review is of work order number WL-1595 which contained 6 filtered groundwater samples, 6 unfiltered groundwater samples, 1 filtered groundwater field duplicate sample, 1 unfiltered groundwater field duplicate sample, 1 filtered field rinse blank, and 1 unfiltered field rinse blank. All samples in this report were analyzed by Katahdin Analytical Services, Inc. (formerly PACE Incorporated Environmental Laboratories), Westbrook, Maine, following *"Methods for Chemical Analysis of Water and Wastes"* (MCAWW) and *"American Society for Testing and Materials"* (ASTM), Philadelphia, Pennsylvania 1985. The individual analyses were performed using the following from MCAWW and ASTM methods:

Analytes	Methods
bromide and sulfate	300.0
chloride	325.1
orthophosphate	365.2
sulfide	376.1
viscosity	D3245-85
ammonia-N	350.2

The findings in this report are based upon a review of sample data and of quality control (QC) specified by the individual analytical methods and provided by the laboratory. The quality assurance review was prepared according to EPA Region I Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analysis, June 1988, where applicable.

SMITH

The support documentation in Appendix B of this report summarizes the specifics of this review. Appendix B also provides the sample results as reported by the laboratory. The data summary lists all compounds that were analyzed. Analytical problems are outlined in the following Findings/Qualifiers section. Other issues which arose which did not warrant qualification are detailed in the Notes Section.

FINDINGS/QUALIFIERS

This data validation report addresses Pace, Inc. work order number WL-1595 which contained 6 filtered groundwater samples, 6 unfiltered groundwater samples, 1 filtered groundwater field duplicate sample, 1 unfiltered groundwater field duplicate sample, 1 filtered field rinse blank, and 1 unfiltered field rinse blank. The data were evaluated for the following parameters:

* data completeness
* holding times
data calibration verification
\+ laboratory blank analysis
* field blank analysis
matrix spike recoveries
* laboratory duplicates
* field duplicates
* laboratory control sample results
detection limit results
sample results

* All criteria were met for this parameter.
\+ All criteria were met for this parameter; however, this parameter is discussed in the Notes Section of this report.

The data summary table provided at the end of this report summarizes the validation recommendations which were based on the following information:

1. The 1.0 milligram per liter (mg/L) standard for bromide and sulfate has experimental values of 1.5 mg/L for bromide and 0.9 mg/L for sulfate. Due to the slightly high recovery of the 1.0 mg/L for bromide the positive result for bromide in sample GW-80S (WL1595-11) is biased high.

SMITH

2. The raw data for samples GW-300 (WL1595-17) and GW-65BR (WL1595-19) cannot support the reporting limit (RL) of 1.0 mg/L for bromide. The laboratory reported bromide in samples WL1595-17 and WL1595-19 as non-detected at 1.0 mg/L. Therefore, due to concentrations on the quantitation reports above the reporting limits, the reporting limit for bromide in samples WL1595-17 and WL1595-19 are biased low.

3. This order contain one set of field designated matrix spike and matrix spike duplicate (MS/MSD) samples consisting of samples GW-80BR (WL1595-13MS) and GW-80BR (WL1595-13MSD). For this order sample GW-64S (WL1612-1) was also provided as a matrix spike (MS) and a laboratory duplicate (LD) for the sulfate results for 1:5 reanalysis of sample GW65BR (WL1595-19).

   The filtered and unfiltered matrix spike samples GW-80BR (WL1595-3MS and WL1595-13MS) exhibited high recoveries for ammonia. Due to the high %R, the positive results for ammonia in unfiltered and filtered samples GW-80BR (WL1595-3) and GW-80BR (WL1595-13), respectively, are estimated.

   Sample GW-80D (WL1595-12) exhibited a concentration for chloride four times the spike concentration; therefore, a matrix spike analysis is not required. However, the laboratory analyzed the matrix spike for chloride. The %R is acceptable. Therefore there is no impact on the chloride results for the matrix spike analysis.

   The laboratory also analyzed batch quality control (QC) which consisted of a method blank and a laboratory control sample (LCS) for each parameter in this case except viscosity. There is no batch QC required for viscosity. The method blanks and the LCSs for all other parameters are acceptable. No data are qualified due to batch QC criteria.

NOTES

The following items were noted during the validation review which did not impact results or necessitate further qualification of data:

1. The 1.0 milligram per liter (mg/L) standard for bromide and sulfate analyzed on 10/17/95 has experimental values of 2.3 mg/L for bromide and 2.7 mg/L for sulfate. The 1:5 reanalysis sample dilution for sulfate of sample GW-65BR (WL1595-19) is the only sample associated with this initial calibration.

Bromide is reported from the undiluted analysis run under the 10/13/95 initial calibration. Sulfate is detected at high enough concentration not to be effected by the low level standard. Therefore, no data are qualified due to the high recovery of the low level standard.

2. The raw data provided for bromide and sulfate on the quantitation reports exhibited peak heights and not peak areas. There is not enough information available to reproduce the laboratory's reported concentrations. More information was requested from the laboratory. The laboratory gave an explanation in a letter from Mr. Richard Wellman dated 6/7/96. The laboratory no longer has the software/analytical system capabilities to supply the information used to calibrate the system or quantitate the samples. The reviewer verified the validity of the sample results based on the information provided (peak heights). The results were within the same order of magnitude. The data are acceptable except where mentioned in the Findings/Qualifiers Section of this report.

3. The concentrations exhibited on the quantitation reports for the initial calibration blank (ICB) and the continuing calibration blanks (CCBs) analyzed under the 10/13/95 and 10/17/95 initial calibrations are not an accurate representation of bromide and sulfate in the blanks. It is apparent with review of the ion chromatogram that there are no peaks present in the ICB or CCBs for bromide and sulfate. Therefore, no data are qualified due to blank contamination.

4. There were transcription errors on the laboratory reporting form for samples GW-80BR DUP (WL1595-13DUP) and GW-81D (WL1595-18) for ortho-phosphate and sulfate, respectively. The reviewer-corrected forms are included in Appendix B. No data are qualified.

5. The calibration for the ammonia analysis for this order could not be verified due to lack of information provided by the laboratory. More information was requested by the reviewer. The laboratory gave a brief explanation in a letter from Mr. Richard Wellman dated 6/7/96 is included in Appendix B. Based on review of the data and the letter supplied by the laboratory the ammonia data are acceptable.

SMITH

6. In filtered and unfiltered samples GW-80S (WL1595-11 and WL1595-1), GW-80D (WL1595-12 and WL1595-2), GW-80BR (WL1595-13 and WL1595-3), and GW-300 (10/12/95 Field Blank) the filtered ammonia results were reported as higher concentrations than the unfiltered results. In these instances the relative percent differences (RPDs) between the filtered and the unfiltered results were within normal expected precision. The reviewer concludes that these results are not statistically different. Review of the remaining samples where the unfiltered results were higher than the filtered revealed the same approximate RPDs. The reviewer concludes that all ammonia present is in a dissolved form. No results are qualified.

SUMMARY

This review has identified high recovery for the low concentration initial calibration standard, poor precision results for ammonia, biased high results, and biased low reporting limits as areas of concern. The reported data are usable as qualified on the data summary table. For specifics relating to this review, see the attached documentation in Appendix B.

QUALIFIER CODES AND FOOTNOTES

J - The associated value is an estimated quantity.

UJ - The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.

---

1 - The reported quantitated value may be biased high. The actual value is expected to be lower.

2 - The reporting limit may be biased low. The actual reporting limit is expected to be higher.

DATA SUMMARY TABLE

Site Name	Wilmington, MA	Laboratory	Pace Env. Laboratories
Project Number	00-7074-0102	Case/Order #	45663/WL1595
Sampling Date(s)	October 12, 1995	Field Duplicates	WL1595-18 and WL1595-16

Liquid mg/l

PQL	Sample location or description	GW-80S WL1595-11		GW-80D WL1595-12		GW-80BR WL1595-13		GW-81D WL1595-18		Field Rep WL1595-16		GW-65BR WL1595-19		GW-81BR WL1595-20		GW-300 WL1595-17	
	Sample number	45663-001 -010,-020,-030		45663-002 -011,-021,-031		45663-003 -012,-022,-032		45663-006 -015,-025,-035		45663-007 -016,-026,-036		45663-008 -018,-028,-038		45663-009 019,-029,-039		45663-017 -027,-017,-037	
	Sampling date	10/12/95		10/12/95		10/12/95		10/12/95		10/12/95		10/12/95		10/12/95		10/12/95	
	unfilt. / filt.	filt.		filt.		filt.		filt.		filt.		filt.		filt.		filt.	
PQL	Comments							Field Dup A		Field Dup B						Field Blank	
0.02	Ortho-phosphate	0.16		0.29		0.12		0.03		0.03		0.03					
1	Chloride	15		100		210		2		2		27		45			
1	Sulfate	5		2		4		7		6		200		55		2	
1	Bromide	1	J1	2		3							UJ2				UJ2
0.05	Ammonia-N	0.22		0.32		2.9	J	0.20		0.21		0.37		0.09		0.07	
1	Sulfide	6															
	Viscosity	3.0		3.5		3.0		3.0		2.5		3.2		3.0		NA	

D Leauby 6/19/96

WL1595W.XLS

DATA SUMMARY TABLE

Site Name	Wilmington, MA	Laboratory	Pace Env. Laboratories
Project Number	00-7074-0102	Case/Order #	45663/WL1595
Sampling Date(s)	October 12, 1995	Field Duplicates	WL1595-8 and WL1595-6

Liquid mg/l

PQL	Sample location or description	GW-80S WL1595-1	GW-80D WL1595-2	GW-80BR WL1595-3	GW-81D WL1595-8	Field Rep WL1595-6	GW-300 WL1595-7	GW-65BR WL1595-9	GW-81BR WL1595-10		
	Sample number	45663-040	45663-041	45663-042	45663-045	45663-046	45663-047	45663-048	45663-049		
	Sampling date	10/12/95	10/12/95	10/12/95	10/12/95	10/12/95	10/12/95	10/12/95	10/12/95		
	unfilt. / filt.	unfilt.	unfilt.	unfilt.	unfilt.	unfilt.	unfilt.	unfilt.	unfilt.		
PQL	Comments				Field Dup A	Field Dup B	Field Blank				
0.05	Ammonia-N	0.20	0.27	2.8 J	0.30	0.21		0.47	0.13		

The PQL for ammonia varies for the filtered and the unfiltered samples. The highest PQL is documented on the data table.

6/19/96

SMITH

APPENDIX A

pace INCORPORATED ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1595-
Report Date: 11/16/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-80S (UNFILT)	Aqueous	T. EBNER	10/12/95	10/12/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Total	17.	mg/L	1.0	0.10	200.7/6010	10/28/95	KW	1
Antimony, Total	0.006	mg/L	1.0	0.005	200.7/6010	10/24/95	KW	1
Arsenic, Total	0.054	mg/L	1.0	0.005	200.7/6010	10/26/95	KW	1
Barium, Total	0.25	mg/L	1.0	0.005	200.7/6010	10/24/95	KW	1
Beryllium, Total	<0.005	mg/L	1.0	0.005	200.7/6010	10/24/95	KW	1
Cadmium, Total	<0.010	mg/L	1.0	0.010	200.7/6010	10/24/95	KW	1
Calcium, Total	74.	mg/L	1.0	0.050	200.7/6010	10/28/95	KW	1
Chromium, Total	0.068	mg/L	1.0	0.015	200.7/6010	10/24/95	KW	1
Cobalt, Total	<0.030	mg/L	1.0	0.030	200.7/6010	10/24/95	KW	1
Copper, Total	0.080	mg/L	1.0	0.025	200.7/6010	10/24/95	KW	1
Iron, Total	100.	mg/L	10	0.025	200.7/6010	10/28/95	KW	1
Lead, Total	0.40	mg/L	1.0	0.005	200.7/6010	10/26/95	KW	1
Magnesium, Total	6.4	mg/L	1.0	0.050	200.7/6010	10/28/95	KW	1
Manganese, Total	2.4	mg/L	1.0	0.005	200.7/6010	10/26/95	KW	1
Mercury, Total	0.58	µg/L	1.0	0.20	245.1	10/26/95	JF	2

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/17/95 by VM using 3010
(2) Sample Preparation on 10/25/95 by JAF using 245.1

11/16/95

LJO/ejnjbb(dw)
LJ17ICW1
CC: OLIN-TN
ATTN:STEVE MORROW
SMITH/BCM-RICK SACKS
PTI/CHRIS SELLSTONE

PACE INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1595-1
Report Date: 11/16/95
PO No. : SB-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-80S (UNFILT)	Aqueous	T. EBNER	10/12/95	10/12/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Nickel, Total	<0.040	mg/L	1.0	0.040	200.7/6010	10/24/95	KW	1
Potassium, Total	8.2	mg/L	1.0	0.50	200.7/6010	10/18/95	KW	1
Selenium, Total	<0.005	mg/L	1.0	0.005	200.7/6010	10/24/95	KW	1
Silicon, Total	47.	mg/L	10	0.10	200.7/6010	10/18/95	KW	1
Silver, Total	<0.015	mg/L	1.0	0.015	200.7/6010	10/24/95	KW	1
Sodium, Total	10.	mg/L	1.0	0.10	200.7/6010	10/18/95	KW	1
Thallium, Total	<0.010	mg/L	1.0	0.010	200.7/6010	10/24/95	KW	1
Vanadium, Total	0.074	mg/L	1.0	0.025	200.7/6010	10/24/95	KW	1
Zinc, Total	0.39	mg/L	1.0	0.025	200.7/6010	10/24/95	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/17/95 by VM using 3010

11/16/95

LJO/ejnjbb(dw)
LJ17ICW1
CC: OLIN-TN
ATTN:STEVE MORROW
SMITH/BCM-RICK SACKS
PTI/CHRIS SELLSTONE

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1595-2
Report Date: 11/16/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-80D (UNFILT)	Aqueous	T. EBNER	10/12/95	10/12/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Total	0.13	mg/L	1.0	0.10	200.7/6010	10/28/95	KW	1
Antimony, Total	<0.005	mg/L	1.0	0.005	200.7/6010	10/24/95	KW	1
Arsenic, Total	0.023	mg/L	1.0	0.005	200.7/6010	10/26/95	KW	1
Barium, Total	0.041	mg/L	1.0	0.005	200.7/6010	10/24/95	KW	1
Beryllium, Total	<0.005	mg/L	1.0	0.005	200.7/6010	10/24/95	KW	1
Cadmium, Total	<0.010	mg/L	1.0	0.010	200.7/6010	10/24/95	KW	1
Calcium, Total	86.	mg/L	1.0	0.050	200.7/6010	10/28/95	KW	1
Chromium, Total	<0.015	mg/L	1.0	0.015	200.7/6010	10/24/95	KW	1
Cobalt, Total	<0.030	mg/L	1.0	0.030	200.7/6010	10/24/95	KW	1
Copper, Total	<0.025	mg/L	1.0	0.025	200.7/6010	10/24/95	KW	1
Iron, Total	45	mg/L	5.0	0.025	200.7/6010	10/30/95	KW	1
Lead, Total	<0.005	mg/L	1.0	0.005	200.7/6010	10/26/95	KW	1
Magnesium, Total	11.	mg/L	1.0	0.050	200.7/6010	10/28/95	KW	1
Manganese, Total	7.0	mg/L	1.0	0.005	200.7/6010	10/26/95	KW	1
Mercury, Total	<0.20	µg/L	1.0	0.20	245.1	10/26/95	JF	2

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/17/95 by VM using 3010
(2) Sample Preparation on 10/25/95 by JAF using 245.1

11/16/95

LJO/ejnjbb(dw)
LJ17ICW1
CC: OLIN-TN
ATTN:STEVE MORROW
SMITH/BCM-RICK SACKS
PTI/CHRIS SELLSTONE

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1595-2
Report Date: 11/16/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-80D (UNFILT)	Aqueous	T. EBNER	10/12/95	10/12/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Nickel, Total	<0.040	mg/L	1.0	0.040	200.7/6010	10/24/95	KW	1
Potassium, Total	7.6	mg/L	1.0	0.50	200.7/6010	10/18/95	KW	1
Selenium, Total	<0.005	mg/L	1.0	0.005	200.7/6010	10/24/95	KW	1
Silicon, Total	18.	mg/L	5.0	0.10	200.7/6010	10/18/95	KW	1
Silver, Total	<0.015	mg/L	1.0	0.015	200.7/6010	10/24/95	KW	1
Sodium, Total	51.	mg/L	1.0	0.10	200.7/6010	10/18/95	KW	1
Thallium, Total	<0.010	mg/L	1.0	0.010	200.7/6010	10/24/95	KW	1
Vanadium, Total	<0.025	mg/L	1.0	0.025	200.7/6010	10/24/95	KW	1
Zinc, Total	<0.025	mg/L	1.0	0.025	200.7/6010	10/24/95	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/17/95 by VM using 3010

11/16/95

LJO/ejnjbb(dw)
LJ17ICW1
CC: OLIN-TN
ATTN:STEVE MORROW
SMITH/BCM-RICK SACKS
PTI/CHRIS SELLSTONE

PACE INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1595-3
Report Date: 11/16/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-80BR (UNFILT)	Aqueous	T. EBNER	10/12/95	10/12/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Total	<0.10	mg/L	1.0	0.10	200.7/6010	10/28/95	KW	1
Antimony, Total	<0.005	mg/L	1.0	0.005	200.7/6010	10/24/95	KW	1
Arsenic, Total	0.012	mg/L	1.0	0.005	200.7/6010	10/26/95	KW	1
Barium, Total	0.068	mg/L	1.0	0.005	200.7/6010	10/24/95	KW	1
Beryllium, Total	<0.005	mg/L	1.0	0.005	200.7/6010	10/24/95	KW	1
Cadmium, Total	<0.010	mg/L	1.0	0.010	200.7/6010	10/24/95	KW	1
Calcium, Total	170	mg/L	5.0	0.050	200.7/6010	10/30/95	KW	1
Chromium, Total	<0.015	mg/L	1.0	0.015	200.7/6010	10/24/95	KW	1
Cobalt, Total	<0.030	mg/L	1.0	0.030	200.7/6010	10/24/95	KW	1
Copper, Total	<0.025	mg/L	1.0	0.025	200.7/6010	10/24/95	KW	1
Iron, Total	29	mg/L	5.0	0.025	200.7/6010	10/30/95	KW	1
Lead, Total	<0.005	mg/L	1.0	0.005	200.7/6010	10/26/95	KW	1
Magnesium, Total	20	mg/L	1.0	0.050	200.7/6010	10/28/95	KW	1
Manganese, Total	11.	mg/L	2.0	0.005	200.7/6010	10/26/95	KW	1
Mercury, Total	<0.20	µg/L	1.0	0.20	245.1	10/26/95	JF	2

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/17/95 by VM using 3010
(2) Sample Preparation on 10/25/95 by JAF using 245.1

11/16/95

LJO/ejnjbb(dw)
LJ17ICW1
CC: OLIN-TN
ATTN:STEVE MORROW
SMITH/BCM-RICK SACKS
PTI/CHRIS SELLSTONE

ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1595-3
Report Date: 11/16/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-80BR (UNFILT)	Aqueous	T. EBNER	10/12/95	10/12/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Nickel, Total	<0.040	mg/L	1.0	0.040	200.7/6010	10/24/95	KW	1
Potassium, Total	5.9	mg/L	1.0	0.50	200.7/6010	10/18/95	KW	1
Selenium, Total	<0.005	mg/L	1.0	0.005	200.7/6010	10/24/95	KW	1
Silicon, Total	18.	mg/L	5.0	0.10	200.7/6010	10/18/95	KW	1
Silver, Total	<0.015	mg/L	1.0	0.015	200.7/6010	10/24/95	KW	1
Sodium, Total	56.	mg/L	1.0	0.10	200.7/6010	10/18/95	KW	1
Thallium, Total	0.012	mg/L	1.0	0.010	200.7/6010	10/24/95	KW	1
Vanadium, Total	<0.025	mg/L	1.0	0.025	200.7/6010	10/24/95	KW	1
Zinc, Total	<0.025	mg/L	1.0	0.025	200.7/6010	10/24/95	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/17/95 by VM using 3010

11/16/95

LJO/ejnjbb(dw)
LJ17ICW1
CC: OLIN-TN
ATTN:STEVE MORROW
SMITH/BCM-RICK SACKS
PTI/CHRIS SELLSTONE

REPORT OF LABORATORY ANALYSIS

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

Lab Number : WL-1595-4
Report Date: 11/16/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-80BR (UNFILT/MS)	Aqueous	T. EBNER	10/12/95	10/12/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Total	1.97	mg/L	2.0	0.10	200.7/6010	10/28/95	KW	1
Antimony, Total	0.497	mg/L	2.0	0.005	200.7/6010	10/24/95	KW	1
Arsenic, Total	2.04	mg/L	2.0	0.005	200.7/6010	10/26/95	KW	1
Barium, Total	2.00	mg/L	2.0	0.005	200.7/6010	10/24/95	KW	1
Beryllium, Total	0.049	mg/L	2.0	0.005	200.7/6010	10/24/95	KW	1
Cadmium, Total	0.049	mg/L	2.0	0.010	200.7/6010	10/24/95	KW	1
Calcium, Total	163.	mg/L	2.0	0.050	200.7/6010	10/28/95	KW	1
Chromium, Total	0.186	mg/L	2.0	0.015	200.7/6010	10/24/95	KW	1
Cobalt, Total	0.514	mg/L	2.0	0.030	200.7/6010	10/24/95	KW	1
Copper, Total	0.244	mg/L	2.0	0.025	200.7/6010	10/24/95	KW	1
Iron, Total	29.5	mg/L	2.0	0.025	200.7/6010	10/28/95	KW	1
Lead, Total	0.492	mg/L	2.0	0.005	200.7/6010	10/26/95	KW	1
Magnesium, Total	24.7	mg/L	2.0	0.050	200.7/6010	10/28/95	KW	1
Manganese, Total	10.6	mg/L	2.0	0.005	200.7/6010	10/26/95	KW	1
Mercury, Total	2.23	µg/L	1.0	0.20	245.1	10/26/95	JF	2

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/17/95 by VM using 3010
(2) Sample Preparation on 10/25/95 by JAF using 245.1

11/16/95

LJO/ejnjbb(dw)
LJ17ICW1
CC: OLIN-TN
ATTN:STEVE MORROW
SMITH/BCM-RICK SACKS
PTI/CHRIS SELLSTONE

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1595-4
Report Date: 11/16/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-80BR (UNFILT/MS)	Aqueous	T. EBNER	10/12/95	10/12/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Nickel, Total	0.501	mg/L	2.0	0.040	200.7/6010	10/24/95	KW	1
Potassium, Total	29.5	mg/L	1.0	0.50	200.7/6010	10/18/95	KW	1
Selenium, Total	1.96	mg/L	2.0	0.005	200.7/6010	10/24/95	KW	1
Silicon, Total	19.3	mg/L	5.0	0.10	200.7/6010	10/18/95	KW	1
Silver, Total	0.047	mg/L	2.0	0.015	200.7/6010	10/24/95	KW	1
Sodium, Total	61.4	mg/L	1.0	0.10	200.7/6010	10/18/95	KW	1
Thallium, Total	1.95	mg/L	2.0	0.010	200.7/6010	10/24/95	KW	1
Vanadium, Total	0.516	mg/L	2.0	0.025	200.7/6010	10/24/95	KW	1
Zinc, Total	0.503	mg/L	2.0	0.025	200.7/6010	10/24/95	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/17/95 by VM using 3010

11/16/95

LJO/ejnjbb(dw)
LJ17ICW1
CC: OLIN-TN
ATTN:STEVE MORROW
SMITH/BCM-RICK SACKS
PTI/CHRIS SELLSTONE

REPORT OF LABORATORY ANALYSIS

pace INCORPORATED ENVIRONMENTAL LABORATORIES

Lab Number : WL-1595-5
Report Date: 11/16/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-80BR (UNFILT/DUP)	Aqueous	T. EBNER	10/12/95	10/12/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Total	<0.10	mg/L	1.0	0.10	200.7/6010	10/28/95	KW	1
Antimony, Total	<0.005	mg/L	1.0	0.005	200.7/6010	10/24/95	KW	1
Arsenic, Total	0.012	mg/L	1.0	0.005	200.7/6010	10/26/95	KW	1
Barium, Total	0.063	mg/L	1.0	0.005	200.7/6010	10/24/95	KW	1
Beryllium, Total	<0.005	mg/L	1.0	0.005	200.7/6010	10/24/95	KW	1
Cadmium, Total	<0.010	mg/L	1.0	0.010	200.7/6010	10/24/95	KW	1
Calcium, Total	156.	mg/L	5.0	0.050	200.7/6010	10/30/95	KW	1
Chromium, Total	<0.015	mg/L	1.0	0.015	200.7/6010	10/24/95	KW	1
Cobalt, Total	<0.030	mg/L	1.0	0.030	200.7/6010	10/24/95	KW	1
Copper, Total	<0.025	mg/L	1.0	0.025	200.7/6010	10/24/95	KW	1
Iron, Total	27.1	mg/L	5.0	0.025	200.7/6010	10/30/95	KW	1
Lead, Total	<0.005	mg/L	1.0	0.005	200.7/6010	10/26/95	KW	1
Magnesium, Total	19.8	mg/L	1.0	0.050	200.7/6010	10/28/95	KW	1
Manganese, Total	9.51	mg/L	2.0	0.005	200.7/6010	10/27/95	KW	1
Mercury, Total	<0.20	µg/L	1.0	0.20	245.1	10/26/95	JF	2

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/17/95 by VM using 3010
(2) Sample Preparation on 10/25/95 by JAF using 245.1

11/16/95

LJO/ejnjbb(dw)
LJ17ICW1
CC: OLIN-TN
ATTN:STEVE MORROW
SMITH/BCM-RICK SACKS
PTI/CHRIS SELLSTONE

REPORT OF LABORATORY ANALYSIS

pace INCORPORATED ENVIRONMENTAL LABORATORIES

Lab Number : WL-1595-5
Report Date: 11/16/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-80BR (UNFILT/DUP)	Aqueous	T. EBNER	10/12/95	10/12/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Nickel, Total	<0.040	mg/L	1.0	0.040	200.7/6010	10/24/95	KW	1
Potassium, Total	5.92	mg/L	1.0	0.50	200.7/6010	10/18/95	KW	1
Selenium, Total	<0.005	mg/L	1.0	0.005	200.7/6010	10/24/95	KW	1
Silicon, Total	16.1	mg/L	5.0	0.10	200.7/6010	10/18/95	KW	1
Silver, Total	<0.015	mg/L	1.0	0.015	200.7/6010	10/24/95	KW	1
Sodium, Total	52.4	mg/L	1.0	0.10	200.7/6010	10/18/95	KW	1
Thallium, Total	0.015	mg/L	1.0	0.010	200.7/6010	10/24/95	KW	1
Vanadium, Total	<0.025	mg/L	1.0	0.025	200.7/6010	10/24/95	KW	1
Zinc, Total	<0.025	mg/L	1.0	0.025	200.7/6010	10/24/95	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/17/95 by VM using 3010

11/16/95

LJO/ejnjbb(dw)
LJ17ICW1
CC: OLIN-TN
ATTN:STEVE MORROW
SMITH/BCM-RICK SACKS
PTI/CHRIS SELLSTONE

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1595-6
Report Date: 11/16/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
FIELD REP (UNFILT)	Aqueous	T. EBNER	10/12/95	10/12/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Total	1.1	mg/L	1.0	0.10	200.7/6010	10/28/95	KW	1
Antimony, Total	<0.005	mg/L	1.0	0.005	200.7/6010	10/24/95	KW	1
Arsenic, Total	<0.005	mg/L	1.0	0.005	200.7/6010	10/26/95	KW	1
Barium, Total	0.014	mg/L	1.0	0.005	200.7/6010	10/24/95	KW	1
Beryllium, Total	<0.005	mg/L	1.0	0.005	200.7/6010	10/24/95	KW	1
Cadmium, Total	<0.010	mg/L	1.0	0.010	200.7/6010	10/24/95	KW	1
Calcium, Total	22.	mg/L	1.0	0.050	200.7/6010	10/28/95	KW	1
Chromium, Total	<0.015	mg/L	1.0	0.015	200.7/6010	10/24/95	KW	1
Cobalt, Total	<0.030	mg/L	1.0	0.030	200.7/6010	10/24/95	KW	1
Copper, Total	<0.025	mg/L	1.0	0.025	200.7/6010	10/24/95	KW	1
Iron, Total	0.035	mg/L	1.0	0.025	200.7/6010	10/28/95	KW	1
Lead, Total	<0.005	mg/L	1.0	0.005	200.7/6010	10/26/95	KW	1
Magnesium, Total	0.13	mg/L	1.0	0.050	200.7/6010	10/28/95	KW	1
Manganese, Total	0.012	mg/L	1.0	0.005	200.7/6010	10/24/95	KW	1
Mercury, Total	<0.20	µg/L	1.0	0.20	245.1	10/26/95	JF	2

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/17/95 by VM using 3010
(2) Sample Preparation on 10/25/95 by JAF using 245.1

11/16/95

LJO/ejnjbb(dw)
LJ17ICW1
CC: OLIN-TN
ATTN:STEVE MORROW
SMITH/BCM-RICK SACKS
PTI/CHRIS SELLSTONE

REPORT OF LABORATORY ANALYSIS

pace INCORPORATED ENVIRONMENTAL LABORATORIES

Lab Number : WL-1595-6
Report Date: 11/16/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
FIELD REP (UNFILT)	Aqueous	T. EBNER	10/12/95	10/12/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Nickel, Total	<0.040	mg/L	1.0	0.040	200.7/6010	10/24/95	KW	1
Potassium, Total	0.96	mg/L	1.0	0.50	200.7/6010	10/18/95	KW	1
Selenium, Total	<0.005	mg/L	1.0	0.005	200.7/6010	10/24/95	KW	1
Silicon, Total	3.0	mg/L	1.0	0.10	200.7/6010	10/18/95	KW	1
Silver, Total	<0.015	mg/L	1.0	0.015	200.7/6010	10/24/95	KW	1
Sodium, Total	2.4	mg/L	1.0	0.10	200.7/6010	10/18/95	KW	1
Thallium, Total	<0.010	mg/L	1.0	0.010	200.7/6010	10/24/95	KW	1
Vanadium, Total	<0.025	mg/L	1.0	0.025	200.7/6010	10/24/95	KW	1
Zinc, Total	<0.025	mg/L	1.0	0.025	200.7/6010	10/24/95	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/17/95 by VM using 3010

11/16/95

LJO/ejnjbb(dw)
LJ17ICW1
CC: OLIN-TN
ATTN:STEVE MORROW
SMITH/BCM-RICK SACKS
PTI/CHRIS SELLSTONE

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1595-7
Report Date: 11/16/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-300 (UNFILT)	Aqueous	T. EBNER	10/12/95	10/12/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Total	<0.10	mg/L	1.0	0.10	200.7/6010	10/28/95	KW	1
Antimony, Total	<0.005	mg/L	1.0	0.005	200.7/6010	10/24/95	KW	1
Arsenic, Total	<0.005	mg/L	1.0	0.005	200.7/6010	10/26/95	KW	1
Barium, Total	<0.005	mg/L	1.0	0.005	200.7/6010	10/24/95	KW	1
Beryllium, Total	<0.005	mg/L	1.0	0.005	200.7/6010	10/24/95	KW	1
Cadmium, Total	<0.010	mg/L	1.0	0.010	200.7/6010	10/24/95	KW	1
Calcium, Total	0.052	mg/L	1.0	0.050	200.7/6010	10/28/95	KW	1
Chromium, Total	<0.015	mg/L	1.0	0.015	200.7/6010	10/24/95	KW	1
Cobalt, Total	<0.030	mg/L	1.0	0.030	200.7/6010	10/24/95	KW	1
Copper, Total	<0.025	mg/L	1.0	0.025	200.7/6010	10/24/95	KW	1
Iron, Total	<0.025	mg/L	1.0	0.025	200.7/6010	10/28/95	KW	1
Lead, Total	<0.005	mg/L	1.0	0.005	200.7/6010	10/26/95	KW	1
Magnesium, Total	<0.050	mg/L	1.0	0.050	200.7/6010	10/28/95	KW	1
Manganese, Total	<0.005	mg/L	1.0	0.005	200.7/6010	10/24/95	KW	1
Mercury, Total	<0.20	µg/L	1.0	0.20	245.1	10/26/95	JF	2

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values
(1) Sample Preparation on 10/17/95 by VM using 3010
(2) Sample Preparation on 10/25/95 by JAF using 245.1

11/16/95

LJO/ejnjbb(dw)
LJ17ICW1
CC: OLIN-TN
ATTN:STEVE MORROW
SMITH/BCM-RICK SACKS
PTI/CHRIS SELLSTONE

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1595-7
Report Date: 11/16/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
GW-300 (UNFILT)	Aqueous	T. EBNER	10/12/95	10/12/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Nickel, Total	<0.040	mg/L	1.0	0.040	200.7/6010	10/24/95	KW	1
Potassium, Total	<0.50	mg/L	1.0	0.50	200.7/6010	10/18/95	KW	1
Selenium, Total	<0.005	mg/L	1.0	0.005	200.7/6010	10/24/95	KW	1
Silicon, Total	<0.10	mg/L	1.0	0.10	200.7/6010	10/18/95	KW	1
Silver, Total	<0.015	mg/L	1.0	0.015	200.7/6010	10/24/95	KW	1
Sodium, Total	<0.10	mg/L	1.0	0.10	200.7/6010	10/18/95	KW	1
Thallium, Total	<0.010	mg/L	1.0	0.010	200.7/6010	10/24/95	KW	1
Vanadium, Total	<0.025	mg/L	1.0	0.025	200.7/6010	10/24/95	KW	1
Zinc, Total	<0.025	mg/L	1.0	0.025	200.7/6010	10/24/95	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/17/95 by VM using 3010

11/16/95

LJO/ejnjbb(dw)
LJ17ICW1
CC: OLIN-TN
ATTN:STEVE MORROW
SMITH/BCM-RICK SACKS
PTI/CHRIS SELLSTONE

pace INCORPORATED ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1595-8
Report Date: 11/16/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
GW-81D (UNFILT)	Aqueous	T. EBNER	10/12/95	10/12/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Total	1.0	mg/L	1.0	0.10	200.7/6010	10/28/95	KW	1
Antimony, Total	<0.005	mg/L	1.0	0.005	200.7/6010	10/24/95	KW	1
Arsenic, Total	<0.005	mg/L	1.0	0.005	200.7/6010	10/26/95	KW	1
Barium, Total	0.014	mg/L	1.0	0.005	200.7/6010	10/24/95	KW	1
Beryllium, Total	<0.005	mg/L	1.0	0.005	200.7/6010	10/24/95	KW	1
Cadmium, Total	<0.010	mg/L	1.0	0.010	200.7/6010	10/24/95	KW	1
Calcium, Total	20.	mg/L	1.0	0.050	200.7/6010	10/28/95	KW	1
Chromium, Total	<0.015	mg/L	1.0	0.015	200.7/6010	10/24/95	KW	1
Cobalt, Total	<0.030	mg/L	1.0	0.030	200.7/6010	10/24/95	KW	1
Copper, Total	<0.025	mg/L	1.0	0.025	200.7/6010	10/24/95	KW	1
Iron, Total	0.043	mg/L	1.0	0.025	200.7/6010	10/28/95	KW	1
Lead, Total	<0.005	mg/L	1.0	0.005	200.7/6010	10/26/95	KW	1
Magnesium, Total	0.12	mg/L	1.0	0.050	200.7/6010	10/28/95	KW	1
Manganese, Total	0.008	mg/L	1.0	0.005	200.7/6010	10/24/95	KW	1
Mercury, Total	<0.20	µg/L	1.0	0.20	245.1	10/26/95	JF	2

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/17/95 by VM using 3010
(2) Sample Preparation on 10/25/95 by JAF using 245.1

11/16/95

LJO/ejnjbb(dw)
LJ17ICW1
CC: OLIN-TN
ATTN:STEVE MORROW
SMITH/BCM-RICK SACKS
PTI/CHRIS SELLSTONE

REPORT OF LABORATORY ANALYSIS

pace INCORPORATED ENVIRONMENTAL LABORATORIES

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1595-8
Report Date: 11/16/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-81D (UNFILT)	Aqueous	T. EBNER	10/12/95	10/12/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Nickel, Total	<0.040	mg/L	1.0	0.040	200.7/6010	10/24/95	KW	1
Potassium, Total	0.56	mg/L	1.0	0.50	200.7/6010	10/18/95	KW	1
Selenium, Total	<0.005	mg/L	1.0	0.005	200.7/6010	10/24/95	KW	1
Silicon, Total	2.8	mg/L	1.0	0.10	200.7/6010	10/18/95	KW	1
Silver, Total	<0.015	mg/L	1.0	0.015	200.7/6010	10/24/95	KW	1
Sodium, Total	2.3	mg/L	1.0	0.10	200.7/6010	10/18/95	KW	1
Thallium, Total	<0.010	mg/L	1.0	0.010	200.7/6010	10/24/95	KW	1
Vanadium, Total	<0.025	mg/L	1.0	0.025	200.7/6010	10/24/95	KW	1
Zinc, Total	<0.025	mg/L	1.0	0.025	200.7/6010	10/24/95	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/17/95 by VM using 3010

11/16/95

LJO/ejnjbb(dw)
LJ17ICW1
CC: OLIN-TN
ATTN:STEVE MORROW
SMITH/BCM-RICK SACKS
PTI/CHRIS SELLSTONE

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1595-9
Report Date: 11/16/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
GW-65BR (UNFILT)	Aqueous	T. EBNER	10/12/95	10/12/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Total	0.20	mg/L	1.0	0.10	200.7/6010	10/24/95	KW	1
Antimony, Total	<0.005	mg/L	1.0	0.005	200.7/6010	10/24/95	KW	1
Arsenic, Total	<0.005	mg/L	1.0	0.005	200.7/6010	10/26/95	KW	1
Barium, Total	0.21	mg/L	1.0	0.005	200.7/6010	10/24/95	KW	1
Beryllium, Total	<0.005	mg/L	1.0	0.005	200.7/6010	10/24/95	KW	1
Cadmium, Total	<0.010	mg/L	1.0	0.010	200.7/6010	10/24/95	KW	1
Calcium, Total	25.	mg/L	1.0	0.050	200.7/6010	10/28/95	KW	1
Chromium, Total	<0.015	mg/L	1.0	0.015	200.7/6010	10/30/95	KW	1
Cobalt, Total	<0.030	mg/L	1.0	0.030	200.7/6010	10/24/95	KW	1
Copper, Total	<0.025	mg/L	1.0	0.025	200.7/6010	10/24/95	KW	1
Iron, Total	0.12	mg/L	1.0	0.025	200.7/6010	10/24/95	KW	1
Lead, Total	<0.005	mg/L	1.0	0.005	200.7/6010	10/26/95	KW	1
Magnesium, Total	0.50	mg/L	1.0	0.050	200.7/6010	10/28/95	KW	1
Manganese, Total	0.007	mg/L	1.0	0.005	200.7/6010	10/24/95	KW	1
Mercury, Total	<0.20	µg/L	1.0	0.20	245.1	10/26/95	JF	2

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/17/95 by VM using 3010
(2) Sample Preparation on 10/25/95 by JAF using 245.1

11/16/95

LJO/ejnjbb(dw)
LJ17ICW1
CC: OLIN-TN
ATTN:STEVE MORROW
SMITH/BCM-RICK SACKS
PTI/CHRIS SELLSTONE

Pace Incorporated
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1595-9
Report Date: 11/16/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-65BR (UNFILT)	Aqueous	T. EBNER	10/12/95	10/12/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Nickel, Total	<0.040	mg/L	1.0	0.040	200.7/6010	10/24/95	KW	1
Potassium, Total	370.	mg/L	10	0.50	200.7/6010	10/18/95	KW	1
Selenium, Total	<0.005	mg/L	1.0	0.005	200.7/6010	10/24/95	KW	1
Silicon, Total	16.	mg/L	5.0	0.10	200.7/6010	10/18/95	KW	1
Silver, Total	<0.015	mg/L	1.0	0.015	200.7/6010	10/24/95	KW	1
Sodium, Total	120.	mg/L	10	0.10	200.7/6010	10/18/95	KW	1
Thallium, Total	<0.010	mg/L	1.0	0.010	200.7/6010	10/24/95	KW	1
Vanadium, Total	<0.025	mg/L	1.0	0.025	200.7/6010	10/24/95	KW	1
Zinc, Total	<0.025	mg/L	1.0	0.025	200.7/6010	10/24/95	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/17/95 by VM using 3010

11/16/95

LJO/ejnjbb(dw)
LJ17ICW1
CC: OLIN-TN
ATTN:STEVE MORROW
SMITH/BCM-RICK SACKS
PTI/CHRIS SELLSTONE

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1595-10
Report Date: 11/16/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-81BR (UNFILT)	Aqueous	T. EBNER	10/12/95	10/12/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Total	0.27	mg/L	1.0	0.10	200.7/6010	10/24/95	KW	1
Antimony, Total	<0.005	mg/L	1.0	0.005	200.7/6010	10/24/95	KW	1
Arsenic, Total	<0.005	mg/L	1.0	0.005	200.7/6010	10/26/95	KW	1
Barium, Total	0.068	mg/L	1.0	0.005	200.7/6010	10/24/95	KW	1
Beryllium, Total	<0.005	mg/L	1.0	0.005	200.7/6010	10/24/95	KW	1
Cadmium, Total	<0.010	mg/L	1.0	0.010	200.7/6010	10/24/95	KW	1
Calcium, Total	37.	mg/L	1.0	0.050	200.7/6010	10/28/95	KW	1
Chromium, Total	<0.015	mg/L	1.0	0.015	200.7/6010	10/30/95	KW	1
Cobalt, Total	<0.030	mg/L	1.0	0.030	200.7/6010	10/24/95	KW	1
Copper, Total	<0.025	mg/L	1.0	0.025	200.7/6010	10/24/95	KW	1
Iron, Total	0.63	mg/L	1.0	0.025	200.7/6010	10/24/95	KW	1
Lead, Total	0.011	mg/L	1.0	0.005	200.7/6010	10/26/95	KW	1
Magnesium, Total	4.2	mg/L	1.0	0.050	200.7/6010	10/28/95	KW	1
Manganese, Total	0.078	mg/L	1.0	0.005	200.7/6010	10/24/95	KW	1
Mercury, Total	<0.20	µg/L	1.0	0.20	245.1	10/26/95	JF	2

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/17/95 by VM using 3010
(2) Sample Preparation on 10/25/95 by JAF using 245.1

11/16/95

LJO/ejnjbb(dw)
LJ17ICW1
CC: OLIN-TN
ATTN:STEVE MORROW
SMITH/BCM-RICK SACKS
PTI/CHRIS SELLSTONE

pace INCORPORATED ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1595-10
Report Date: 11/16/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-81BR (UNFILT)	Aqueous	T. EBNER	10/12/95	10/12/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Nickel, Total	<0.040	mg/L	1.0	0.040	200.7/6010	10/24/95	KW	1
Potassium, Total	18.	mg/L	1.0	0.50	200.7/6010	10/18/95	KW	1
Selenium, Total	<0.005	mg/L	1.0	0.005	200.7/6010	10/24/95	KW	1
Silicon, Total	7.2	mg/L	5.0	0.10	200.7/6010	10/18/95	KW	1
Silver, Total	<0.015	mg/L	1.0	0.015	200.7/6010	10/24/95	KW	1
Sodium, Total	42.	mg/L	1.0	0.10	200.7/6010	10/18/95	KW	1
Thallium, Total	<0.010	mg/L	1.0	0.010	200.7/6010	10/24/95	KW	1
Vanadium, Total	<0.025	mg/L	1.0	0.025	200.7/6010	10/24/95	KW	1
Zinc, Total	0.033	mg/L	1.0	0.025	200.7/6010	10/24/95	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/17/95 by VM using 3010

11/16/95

LJO/ejnjbb(dw)
LJ17ICW1
CC: OLIN-TN
ATTN:STEVE MORROW
SMITH/BCM-RICK SACKS
PTI/CHRIS SELLSTONE

REPORT OF LABORATORY ANALYSIS

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

Lab Number : WL-1595-11
Report Date: 11/16/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-80S (FILT)	Aqueous	T. EBNER	10/12/95	10/12/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Dissolved	0.60	mg/L	1.0	0.10	200.7/6010	10/24/95	KW	1
Antimony, Dissolved	<0.005	mg/L	1.0	0.005	200.7/6010	10/24/95	KW	1
Arsenic, Dissolved	0.022	mg/L	1.0	0.005	200.7/6010	10/26/95	KW	1
Barium, Dissolved	0.080	mg/L	1.0	0.005	200.7/6010	10/24/95	KW	1
Beryllium, Dissolved	<0.005	mg/L	1.0	0.005	200.7/6010	10/24/95	KW	1
Cadmium, Dissolved	<0.010	mg/L	1.0	0.010	200.7/6010	10/24/95	KW	1
Calcium, Dissolved	59.	mg/L	1.0	0.050	200.7/6010	10/28/95	KW	1
Chromium, Dissolved	<0.015	mg/L	1.0	0.015	200.7/6010	10/26/95	KW	1
Chromium, Hexavalent Dissolved	<0.015	mg/L	1.0	0.015	6010	10/20/95	KW	2
Chromium, Trivalent Dissolved	<0.015	mg/L	1.0	0.015	Calculation	11/07/95	DN	
Cobalt, Dissolved	<0.030	mg/L	1.0	0.030	200.7/6010	10/24/95	KW	1
Copper, Dissolved	<0.025	mg/L	1.0	0.025	200.7/6010	10/24/95	KW	1
Iron, Dissolved	64.	mg/L	1.0	0.025	200.7/6010	10/24/95	KW	1
Lead, Dissolved	0.030	mg/L	1.0	0.005	200.7/6010	10/26/95	KW	1
Magnesium, Dissolved	3.3	mg/L	1.0	0.050	200.7/6010	10/28/95	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/17/95 by VM using 3010
(2) Sample Preparation on 10/12/95 by GFB using 7195

11/16/95

LJO/ejnjbb(dw)
LJ17ICW1
CC: OLIN-TN
ATTN:STEVE MORROW
SMITH/BCM-RICK SACKS
PTI/CHRIS SELLSTONE

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1595-11
Report Date: 11/16/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-80S (FILT)	Aqueous	T. EBNER	10/12/95	10/12/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Manganese, Dissolved	1.7	mg/L	1.0	0.005	200.7/6010	10/24/95	KW	1
Mercury, Dissolved	<0.20	µg/L	1.0	0.20	245.1	10/26/95	JF	2
Nickel, Dissolved	<0.040	mg/L	1.0	0.040	200.7/6010	10/24/95	KW	1
Potassium, Dissolved	5.5	mg/L	1.0	0.50	200.7/6010	10/18/95	KW	1
Selenium, Dissolved	<0.005	mg/L	1.0	0.005	200.7/6010	10/24/95	KW	1
Silicon, Dissolved	13.	mg/L	5.0	0.10	200.7/6010	10/18/95	KW	1
Silver, Dissolved	<0.015	mg/L	1.0	0.015	200.7/6010	10/24/95	KW	1
Sodium, Dissolved	8.0	mg/L	1.0	0.10	200.7/6010	10/18/95	KW	1
Thallium, Dissolved	<0.010	mg/L	1.0	0.010	200.7/6010	10/24/95	KW	1
Vanadium, Dissolved	<0.025	mg/L	1.0	0.025	200.7/6010	10/24/95	KW	1
Zinc, Dissolved	0.036	mg/L	1.0	0.025	200.7/6010	10/24/95	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/17/95 by VM using 3010
(2) Sample Preparation on 10/25/95 by JAF using 245.1

11/16/95

LJO/ejnjbb(dw)
LJ17ICW1
CC: OLIN-TN
ATTN:STEVE MORROW
SMITH/BCM-RICK SACKS
PTI/CHRIS SELLSTONE

PO Box 720 - 340 County Road #5
Westbrook, ME 04098
TEL: 207-874-2400

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1595-11
Report Date: 11/16/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-80S (FILT)	Aqueous	T. EBNER	10/12/95	10/12/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Bicarbonate,Dissolved as HCO3	240.	mg/L	1.0	20	APHA 406C	10/17/95	CM	
Carbonate, Dissolved as CaCO3	<20	mg/L	1.0	20	APHA 406C	10/17/95	CM	
Nitrate as N, Dissolved	<0.05	mg/L	1.0	0.05	353.2/1	10/24/95	NH	
Nitrite as N, Dissolved	0.14	mg/L	1.0	0.050	353.2	10/13/95	CM	
Organic Carbon, Dissolved (DOC)	63.	mg/L	1.0	1.0	415.1	10/17/95	LT	
Phosphorus, Dissolved as P	<0.10	mg/L	1.0	0.10	365.4	10/26/95	CM	1
Solids-Filt Residue, Dissolved	320.	mg/L	2.0	10	160.1	10/17/95	JF	2

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/26/95 by CLM
(2) Sample Preparation on 10/16/95 by JF

11/16/95

LJO/ejnjbb(dw)

CC: OLIN-TN
ATTN:STEVE MORROW
SMITH/BCM-RICK SACKS
PTI/CHRIS SELLSTONE

ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1595-12
Report Date: 11/16/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-80D (FILT)	Aqueous	T. EBNER	10/12/95	10/12/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Dissolved	<0.10	mg/L	1.0	0.10	200.7/6010	10/24/95	KW	1
Antimony, Dissolved	<0.005	mg/L	1.0	0.005	200.7/6010	10/24/95	KW	1
Arsenic, Dissolved	0.014	mg/L	1.0	0.005	200.7/6010	10/26/95	KW	1
Barium, Dissolved	0.026	mg/L	1.0	0.005	200.7/6010	10/24/95	KW	1
Beryllium, Dissolved	<0.005	mg/L	1.0	0.005	200.7/6010	10/24/95	KW	1
Cadmium, Dissolved	<0.010	mg/L	1.0	0.010	200.7/6010	10/24/95	KW	1
Calcium, Dissolved	58.	mg/L	1.0	0.050	200.7/6010	10/28/95	KW	1
Chromium, Dissolved	<0.015	mg/L	1.0	0.015	200.7/6010	10/26/95	KW	1
Chromium, Hexavalent Dissolved	<0.015	mg/L	1.0	0.015	6010	10/20/95	KW	2
Chromium, Trivalent Dissolved	<0.015	mg/L	1.0	0.015	Calculation	11/07/95	DN	
Cobalt, Dissolved	<0.030	mg/L	1.0	0.030	200.7/6010	10/24/95	KW	1
Copper, Dissolved	<0.025	mg/L	1.0	0.025	200.7/6010	10/24/95	KW	1
Iron, Dissolved	29.	mg/L	1.0	0.025	200.7/6010	10/24/95	KW	1
Lead, Dissolved	<0.005	mg/L	1.0	0.005	200.7/6010	10/26/95	KW	1
Magnesium, Dissolved	7.4	mg/L	1.0	0.050	200.7/6010	10/28/95	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/17/95 by VM using 3010
(2) Sample Preparation on 10/12/95 by GFB using 7195

11/16/95

LJO/ejnjbb(dw)
LJ17ICW1
CC: OLIN-TN
ATTN:STEVE MORROW
SMITH/BCM-RICK SACKS
PTI/CHRIS SELLSTONE

P O Box 720 - 340 County Road #5
Westbrook, ME 04098
TEL: 207-874-2400

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1595-12
Report Date: 11/16/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-80D (FILT)	Aqueous	T. EBNER	10/12/95	10/12/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Manganese, Dissolved	4.6	mg/L	1.0	0.005	200.7/6010	10/26/95	KW	1
Mercury, Dissolved	<0.20	µg/L	1.0	0.20	245.1	10/26/95	JF	2
Nickel, Dissolved	<0.040	mg/L	1.0	0.040	200.7/6010	10/24/95	KW	1
Potassium, Dissolved	4.7	mg/L	1.0	0.50	200.7/6010	10/18/95	KW	1
Selenium, Dissolved	<0.005	mg/L	1.0	0.005	200.7/6010	10/24/95	KW	1
Silicon, Dissolved	11.	mg/L	5.0	0.10	200.7/6010	10/18/95	KW	1
Silver, Dissolved	<0.015	mg/L	1.0	0.015	200.7/6010	10/24/95	KW	1
Sodium, Dissolved	33.	mg/L	1.0	0.10	200.7/6010	10/18/95	KW	1
Thallium, Dissolved	<0.010	mg/L	1.0	0.010	200.7/6010	10/24/95	KW	1
Vanadium, Dissolved	<0.025	mg/L	1.0	0.025	200.7/6010	10/24/95	KW	1
Zinc, Dissolved	<0.025	mg/L	1.0	0.025	200.7/6010	10/24/95	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

(1) Sample Preparation on 10/17/95 by VM using 3010
(2) Sample Preparation on 10/25/95 by JAF using 245.1

11/16/95

LJO/ejnjbb(dw)
LJ171CW1
CC: OLIN-TN
ATTN:STEVE MORROW
SMITH/BCM-RICK SACKS
PTI/CHRIS SELLSTONE

ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1595-12
Report Date: 11/16/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-80D (FILT)	Aqueous	T. EBNER	10/12/95	10/12/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Bicarbonate,Dissolved as HCO3	270.	mg/L	1.0	20	APHA 406C	10/17/95	CM	
Carbonate, Dissolved as CaCO3	<20	mg/L	1.0	20	APHA 406C	10/17/95	CM	
Nitrate as N, Dissolved	<0.05	mg/L	1.0	0.05	353.2/1	10/24/95	NH	
Nitrite as N, Dissolved	0.10	mg/L	1.0	0.050	353.2	10/13/95	CM	
Organic Carbon, Dissolved (DOC)	60.	mg/L	1.0	1.0	415.1	10/17/95	LT	
Phosphorus, Dissolved as P	0.27	mg/L	1.0	0.10	365.4	10/26/95	CM	1
Solids-Filt Residue, Dissolved	490.	mg/L	2.0	10	160.1	10/17/95	JF	2

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/26/95 by CLM
(2) Sample Preparation on 10/16/95 by JF

11/16/95

LJO/ejnjbb(dw)

CC: OLIN-TN
ATTN:STEVE MORROW
SMITH/BCM-RICK SACKS
PTI/CHRIS SELLSTONE

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1595-13
Report Date: 11/16/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-80BR (FILT)	Aqueous	T. EBNER	10/12/95	10/12/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Dissolved	<0.10	mg/L	1.0	0.10	200.7/6010	10/24/95	KW	1
Antimony, Dissolved	<0.005	mg/L	1.0	0.005	200.7/6010	10/24/95	KW	1
Arsenic, Dissolved	0.010	mg/L	1.0	0.005	200.7/6010	10/26/95	KW	1
Barium, Dissolved	0.061	mg/L	1.0	0.005	200.7/6010	10/24/95	KW	1
Beryllium, Dissolved	<0.005	mg/L	1.0	0.005	200.7/6010	10/24/95	KW	1
Cadmium, Dissolved	<0.010	mg/L	1.0	0.010	200.7/6010	10/24/95	KW	1
Calcium, Dissolved	140	mg/L	2.0	0.050	200.7/6010	10/30/95	KW	1
Chromium, Dissolved	<0.015	mg/L	1.0	0.015	200.7/6010	10/26/95	KW	1
Chromium, Hexavalent Dissolved	<0.015	mg/L	1.0	0.015	6010	10/20/95	KW	2
Chromium, Trivalent Dissolved	<0.015	mg/L	1.0	0.015	Calculation	11/07/95	DN	
Cobalt, Dissolved	<0.030	mg/L	1.0	0.030	200.7/6010	10/24/95	KW	1
Copper, Dissolved	<0.025	mg/L	1.0	0.025	200.7/6010	10/24/95	KW	1
Iron, Dissolved	26.	mg/L	1.0	0.025	200.7/6010	10/24/95	KW	1
Lead, Dissolved	<0.005	mg/L	1.0	0.005	200.7/6010	10/26/95	KW	1
Magnesium, Dissolved	19.	mg/L	1.0	0.050	200.7/6010	10/28/95	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/17/95 by VM using 3010
(2) Sample Preparation on 10/12/95 by GFB using 7195

11/16/95

LJO/ejnjbb(dw)
LJ17ICW1
CC: OLIN-TN
ATTN:STEVE MORROW
SMITH/BCM-RICK SACKS
PTI/CHRIS SELLSTONE

REPORT OF LABORATORY ANALYSIS

pace INCORPORATED ENVIRONMENTAL LABORATORIES

Lab Number : WL-1595-13
Report Date: 11/16/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-80BR (FILT)	Aqueous	T. EBNER	10/12/95	10/12/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Manganese, Dissolved	9.8	mg/L	1.0	0.005	200.7/6010	10/26/95	KW	1
Mercury, Dissolved	<0.20	µg/L	1.0	0.20	245.1	10/26/95	JP	2
Nickel, Dissolved	<0.040	mg/L	1.0	0.040	200.7/6010	10/24/95	KW	1
Potassium, Dissolved	5.5	mg/L	1.0	0.50	200.7/6010	10/18/95	KW	1
Selenium, Dissolved	0.005	mg/L	1.0	0.005	200.7/6010	10/24/95	KW	1
Silicon, Dissolved	16.	mg/L	5.0	0.10	200.7/6010	10/18/95	KW	1
Silver, Dissolved	<0.015	mg/L	1.0	0.015	200.7/6010	10/24/95	KW	1
Sodium, Dissolved	50.	mg/L	1.0	0.10	200.7/6010	10/18/95	KW	1
Thallium, Dissolved	<0.010	mg/L	1.0	0.010	200.7/6010	10/24/95	KW	1
Vanadium, Dissolved	<0.025	mg/L	1.0	0.025	200.7/6010	10/24/95	KW	1
Zinc, Dissolved	<0.025	mg/L	1.0	0.025	200.7/6010	10/24/95	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/17/95 by VM using 3010
(2) Sample Preparation on 10/25/95 by JAF using 245.1

11/16/95

LJO/ejnjbb(dw)
LJ17ICW1
CC: OLIN-TN
ATTN:STEVE MORROW
SMITH/BCM-RICK SACKS
PTI/CHRIS SELLSTONE

REPORT OF LABORATORY ANALYSIS

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

Lab Number : WL-1595-13
Report Date: 11/16/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
GW-80BR (FILT)	Aqueous	T. EBNER	10/12/95	10/12/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Bicarbonate,Dissolved as HCO3	380.	mg/L	1.0	20	APHA 406C	10/17/95	CM	
Carbonate, Dissolved as CaCO3	<20	mg/L	1.0	20	APHA 406C	10/17/95	CM	
Nitrate as N, Dissolved	<0.05	mg/L	1.0	0.05	353.2/1	10/24/95	NH	
Nitrite as N, Dissolved	0.070	mg/L	1.0	0.050	353.2	10/13/95	CM	
Organic Carbon, Dissolved (DOC)	95.	mg/L	1.0	1.0	415.1	10/17/95	LT	
Phosphorus, Dissolved as P	0.23	mg/L	1.0	0.10	365.4	10/26/95	CM	1
Solids-Filt Residue, Dissolved	1000.	mg/L	1.0	10	160.1	10/17/95	JF	2

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/26/95 by CLM
(2) Sample Preparation on 10/16/95 by JF

11/16/95

LJO/ejnjbb(dw)

CC: OLIN-TN
ATTN:STEVE MORROW
SMITH/BCM-RICK SACKS
PTI/CHRIS SELLSTONE

PO Box 720 - 340 County Road #5
Westbrook, ME 04098
TEL: 207-874-2400

ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1595-14
Report Date: 11/16/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-80BR (FILT/MS)	Aqueous	T. EBNER	10/12/95	10/12/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Dissolved	2.13	mg/L	2.0	0.10	200.7/6010	10/24/95	KW	1
Antimony, Dissolved	0.525	mg/L	2.0	0.005	200.7/6010	10/24/95	KW	1
Arsenic, Dissolved	2.17	mg/L	2.0	0.005	200.7/6010	10/26/95	KW	1
Barium, Dissolved	2.15	mg/L	2.0	0.005	200.7/6010	10/24/95	KW	1
Beryllium, Dissolved	0.051	mg/L	2.0	0.005	200.7/6010	10/24/95	KW	1
Cadmium, Dissolved	0.050	mg/L	2.0	0.010	200.7/6010	10/24/95	KW	1
Calcium, Dissolved	175.	mg/L	2.0	0.050	200.7/6010	10/28/95	KW	1
Chromium, Dissolved	0.204	mg/L	2.0	0.015	200.7/6010	10/26/95	KW	1
Chromium, Hexavalent Dissolved	<0.030	mg/L	2.0	0.015	6010	10/20/95	KW	2,3
Chromium, Trivalent Dissolved	Not Appl.	mg/L	1.0	0.015	Calculation	11/07/95	DN	4
Cobalt, Dissolved	0.544	mg/L	2.0	0.030	200.7/6010	10/24/95	KW	1
Copper, Dissolved	0.253	mg/L	2.0	0.025	200.7/6010	10/24/95	KW	1
Iron, Dissolved	30.3	mg/L	2.0	0.025	200.7/6010	10/24/95	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/17/95 by VM using 3010
(2) Sample Preparation on 10/12/95 by GFB using 7195
(3) The laboratory's Practical Quantitation Level could not be achieved for this parameter due to sample composition, matrix effects, sample volume, or quantity used for analysis.
(4) This is a calculation and is not applicable to a matrix spike.

11/16/95

REVISED DATA
RESUBMITTED BY LABORATORY
INSERTED BY E. Bey... 6/13/96
SIGNATURE DATE

LJO/ejnjbb(dw)
LJ17ICW1
CC: OLIN-TN
ATTN:STEVE MORROW
SMITH/BCM-RICK SACKS
PTI/CHRIS SELLSTONE

ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1595-14
Report Date: 11/16/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-80BR (FILT/MS)	Aqueous	T. EBNER	10/12/95	10/12/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Lead, Dissolved	0.517	mg/L	2.0	0.005	200.7/6010	10/26/95	KW	1
Magnesium, Dissolved	26.0	mg/L	2.0	0.050	200.7/6010	10/28/95	KW	1
Manganese, Dissolved	11.4	mg/L	2.0	0.005	200.7/6010	10/26/95	KW	1
Mercury, Dissolved	1.12	µg/L	1.0	0.20	245.1	10/26/95	JF	2
Nickel, Dissolved	0.527	mg/L	2.0	0.040	200.7/6010	10/24/95	KW	1
Potassium, Dissolved	31.4	mg/L	1.0	0.50	200.7/6010	10/18/95	KW	1
Selenium, Dissolved	2.07	mg/L	2.0	0.005	200.7/6010	10/24/95	KW	1
Silicon, Dissolved	20.7	mg/L	5.0	0.10	200.7/6010	10/18/95	KW	1
Silver, Dissolved	0.051	mg/L	2.0	0.015	200.7/6010	10/24/95	KW	1
Sodium, Dissolved	64.0	mg/L	1.0	0.10	200.7/6010	10/18/95	KW	1
Thallium, Dissolved	2.06	mg/L	2.0	0.010	200.7/6010	10/24/95	KW	1
Vanadium, Dissolved	0.544	mg/L	2.0	0.025	200.7/6010	10/24/95	KW	1
Zinc, Dissolved	0.535	mg/L	2.0	0.025	200.7/6010	10/24/95	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/17/95 by VM using 3010
(2) Sample Preparation on 10/25/95 by JAF using 245.1

REVISED DATA
RESUBMITTED BY LABORATORY
INSERTED BY E. Bayley Rivers 6/17/96
SIGNATURE DATE

11/16/95

LJO/ejnjbb(dw)
LJ17ICW1
CC: OLIN-TN
ATTN:STEVE MORROW
SMITH/BCM-RICK SACKS
PTI/CHRIS SELLSTONE

P.O. Box 720 - 340 County Road #5
Westbrook, ME 04098
TEL: 207-874-2400
FAX: 207-775-4029

ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1595-14
Report Date: 11/16/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-80BR (FILT/MS)	Aqueous	T. EBNER	10/12/95	10/12/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Bicarbonate,Dissolved as HCO3	360.	mg/L	1.0	20	APHA 406C	10/17/95	CM	1
Carbonate, Dissolved as CaCO3	<20.0	mg/L	1.0	20	APHA 406C	10/17/95	CM	1
Nitrate as N, Dissolved	Not Appl.	mg/L	1.0	0.05	353.2/1	10/24/95	NH	2
Nitrite as N, Dissolved	0.068	mg/L	1.0	0.050	353.2	10/13/95	CM	1
Organic Carbon, Dissolved (DOC)	122.	mg/L	1.0	1.0	415.1	10/17/95	LT	
Phosphorus, Dissolved as P	0.825	mg/L	1.0	0.10	365.4	10/26/95	CM	3
Solids-Filt Residue, Dissolved	Not Appl.	mg/L	1.0	10	160.1	10/17/95	JF	4,5

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Please refer to cover letter\ case narrative for additional information concerning this sample result.
(2) This is a calculation and is not applicable to a matrix spike.
(3) Sample Preparation on 10/26/95 by CLM
(4) Sample Preparation on 10/16/95 by JF
(5) Matrix spike analysis is not applicable for this parameter.

REVISED DATA
RESUBMITTED BY LABORATORY
INSERTED BY E. Bepurhier SIGNATURE 6/17/96 DATE

11/16/95

LJO/ejnjbb(dw)/pph

CC: OLIN-TN
ATTN:STEVE MORROW
SMITH/BCM-RICK SACKS
PTI/CHRIS SELLSTONE

ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1595-15
Report Date: 11/16/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-80BR (FILT/DUP)	Aqueous	T. EBNER	10/12/95	10/12/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Dissolved	<0.10	mg/L	1.0	0.10	200.7/6010	10/24/95	KW	1
Antimony, Dissolved	<0.005	mg/L	1.0	0.005	200.7/6010	10/24/95	KW	1
Arsenic, Dissolved	0.011	mg/L	1.0	0.005	200.7/6010	10/26/95	KW	1
Barium, Dissolved	0.069	mg/L	1.0	0.005	200.7/6010	10/24/95	KW	1
Beryllium, Dissolved	<0.005	mg/L	1.0	0.005	200.7/6010	10/24/95	KW	1
Cadmium, Dissolved	<0.010	mg/L	1.0	0.010	200.7/6010	10/24/95	KW	1
Calcium, Dissolved	153.	mg/L	5.0	0.050	200.7/6010	10/30/95	KW	1
Chromium, Dissolved	<0.015	mg/L	1.0	0.015	200.7/6010	10/26/95	KW	1
Chromium, Hexavalent Dissolved	<0.015	mg/L	1.0	0.015	6010	10/20/95	KW	2
Chromium, Trivalent Dissolved	<0.015	mg/L	1.0	0.015	Calculation	11/07/95	DN	
Cobalt, Dissolved	<0.030	mg/L	1.0	0.030	200.7/6010	10/24/95	KW	1
Copper, Dissolved	<0.025	mg/L	1.0	0.025	200.7/6010	10/24/95	KW	1
Iron, Dissolved	29.2	mg/L	1.0	0.025	200.7/6010	10/24/95	KW	1
Lead, Dissolved	<0.005	mg/L	1.0	0.005	200.7/6010	10/26/95	KW	1
Magnesium, Dissolved	20.6	mg/L	1.0	0.050	200.7/6010	10/28/95	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/17/95 by VM using 3010
(2) Sample Preparation on 10/12/95 by GFB using 7195

11/16/95

RESUBMITTED BY [illegible]
INSERTED BY E. Byron Rowley 6/13/96
SIGNATURE DATE

LJO/ejnjbb(dw)
LJ17ICW1
CC: OLIN-TN
ATTN:STEVE MORROW
SMITH/BCM-RICK SACKS
PTI/CHRIS SELLSTONE

P.O. Box 720 · 340 County Road #5
Westbrook, ME 04098
TEL: 207-874-2400
FAX: 207 775-4029

ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1595-15
Report Date: 11/16/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-80BR (FILT/DUP)	Aqueous	T. EBNER	10/12/95	10/12/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Manganese, Dissolved	10.7	mg/L	2.0	0.005	200.7/6010	10/26/95	KW	1
Mercury, Dissolved	<0.20	µg/L	1.0	0.20	245.1	10/26/95	JF	2
Nickel, Dissolved	<0.040	mg/L	1.0	0.040	200.7/6010	10/24/95	KW	1
Potassium, Dissolved	5.96	mg/L	1.0	0.50	200.7/6010	10/18/95	KW	1
Selenium, Dissolved	<0.005	mg/L	1.0	0.005	200.7/6010	10/24/95	KW	1
Silicon, Dissolved	17.0	mg/L	5.0	0.10	200.7/6010	10/18/95	KW	1
Silver, Dissolved	<0.015	mg/L	1.0	0.015	200.7/6010	10/24/95	KW	1
Sodium, Dissolved	53.9	mg/L	1.0	0.10	200.7/6010	10/18/95	KW	1
Thallium, Dissolved	0.011	mg/L	1.0	0.010	200.7/6010	10/24/95	KW	1
Vanadium, Dissolved	<0.025	mg/L	1.0	0.025	200.7/6010	10/24/95	KW	1
Zinc, Dissolved	<0.025	mg/L	1.0	0.025	200.7/6010	10/24/95	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/17/95 by VM using 3010
(2) Sample Preparation on 10/25/95 by JAF using 245.1

REVISED DATA
RESUBMITTED BY LABORATORY
INSERTED BY C. Byers Davis 6/13/96
SIGNATURE DATE

11/16/95

LJO/ejnjbb(dw)
LJ17ICW1
CC: OLIN-TN
ATTN:STEVE MORROW
SMITH/BCM-RICK SACKS
PTI/CHRIS SELLSTONE

REPORT OF LABORATORY ANALYSIS

PACE ENVIRONMENTAL LABORATORIES

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1595-15
Report Date: 11/16/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-80BR (FILT/DUP)	Aqueous	T. EBNER	10/12/95	10/12/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Bicarbonate, Dissolved as HCO3	EBR 6/17/96 376	mg/L	1.0	20	APHA 406C	10/17/95	CM	
Carbonate, Dissolved as CaCO3	< 20.0	mg/L	1.0	20	APHA 406C	10/17/95	CM	
Nitrate as N, Dissolved	<0.05	mg/L	1.0	0.05	353.2/1	10/25/95	NH	
Nitrite as N, Dissolved	0.069	mg/L	1.0	0.050	353.2	10/13/95	CM	
Organic Carbon, Dissolved (DOC)	91.2	mg/L	1.0	1.0	415.1	10/17/95	LT	
Phosphorus, Dissolved as P	2.60	mg/L	10	0.10	365.4	10/26/95	CM	1
Solids-Filt Residue, Dissolved	1020	mg/L	1.0	10	160.1	10/17/95	JF	2

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/26/95 by CLM
(2) Sample Preparation on 10/16/95 by JF

RESUBMITTED BY LABORATORY
INSERTED BY E. Bryan Rivas SIGNATURE 6/17/96 DATE

11/16/95

LJO/ejnjbb(dw)/pph

CC: OLIN-TN
ATTN:STEVE MORROW
SMITH/BCM-RICK SACKS
PTI/CHRIS SELLSTONE

E. Bryan Rivas 6/17/96

P.O. Box 720 · 340 County Road #5
Westbrook, ME 04098
TEL: 207-874-2400
FAX: 207-775-4029

pace INCORPORATED ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1595-16
Report Date: 11/16/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
FIELD REP (FILT)	Aqueous	T. EBNER	10/12/95	10/12/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Dissolved	0.97	mg/L	1.0	0.10	200.7/6010	10/24/95	KW	1
Antimony, Dissolved	<0.005	mg/L	1.0	0.005	200.7/6010	10/24/95	KW	1
Arsenic, Dissolved	<0.005	mg/L	1.0	0.005	200.7/6010	10/26/95	KW	1
Barium, Dissolved	0.012	mg/L	1.0	0.005	200.7/6010	10/24/95	KW	1
Beryllium, Dissolved	<0.005	mg/L	1.0	0.005	200.7/6010	10/24/95	KW	1
Cadmium, Dissolved	<0.010	mg/L	1.0	0.010	200.7/6010	10/24/95	KW	1
Calcium, Dissolved	20.	mg/L	1.0	0.050	200.7/6010	10/28/95	KW	1
Chromium, Dissolved	<0.015	mg/L	1.0	0.015	200.7/6010	10/26/95	KW	1
Chromium, Hexavalent Dissolved	<0.015	mg/L	1.0	0.015	6010	10/20/95	KW	2
Chromium, Trivalent Dissolved	<0.015	mg/L	1.0	0.015	Calculation	11/07/95	DN	
Cobalt, Dissolved	<0.030	mg/L	1.0	0.030	200.7/6010	10/24/95	KW	1
Copper, Dissolved	<0.025	mg/L	1.0	0.025	200.7/6010	10/24/95	KW	1
Iron, Dissolved	<0.025	mg/L	1.0	0.025	200.7/6010	10/24/95	KW	1
Lead, Dissolved	<0.005	mg/L	1.0	0.005	200.7/6010	10/26/95	KW	1
Magnesium, Dissolved	0.10	mg/L	1.0	0.050	200.7/6010	10/28/95	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values
(1) Sample Preparation on 10/17/95 by VM using 3010
(2) Sample Preparation on 10/12/95 by GFB using 7195

RESUBMITTED BY LABORATORY
INSERTED BY E. Byrne Rines 4/1/96
SIGNATURE DATE

11/16/95

LJO/ejnjbb(dw)
LJ17ICW1
CC: OLIN-TN
ATTN:STEVE MORROW
SMITH/BCM-RICK SACKS
PTI/CHRIS SELLSTONE

PO Box 720 - 340 County Road #5
Westbrook, ME 04098
TEL: 207-874-2400
FAX: 207-775-4029

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1595-16
Report Date: 11/16/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
FIELD REP (FILT)	Aqueous	T. EBNER	10/12/95	10/12/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Manganese, Dissolved	<0.005	mg/L	1.0	0.005	200.7/6010	10/24/95	KW	1
Mercury, Dissolved	<0.20	µg/L	1.0	0.20	245.1	10/26/95	JP	2
Nickel, Dissolved	<0.040	mg/L	1.0	0.040	200.7/6010	10/24/95	KW	1
Potassium, Dissolved	0.96	mg/L	1.0	0.50	200.7/6010	10/18/95	KW	1
Selenium, Dissolved	<0.005	mg/L	1.0	0.005	200.7/6010	10/24/95	KW	1
Silicon, Dissolved	2.7	mg/L	1.0	0.10	200.7/6010	10/18/95	KW	1
Silver, Dissolved	<0.015	mg/L	1.0	0.015	200.7/6010	10/24/95	KW	1
Sodium, Dissolved	2.1	mg/L	1.0	0.10	200.7/6010	10/18/95	KW	1
Thallium, Dissolved	<0.010	mg/L	1.0	0.010	200.7/6010	10/24/95	KW	1
Vanadium, Dissolved	<0.025	mg/L	1.0	0.025	200.7/6010	10/24/95	KW	1
Zinc, Dissolved	<0.025	mg/L	1.0	0.025	200.7/6010	10/24/95	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values
(1) Sample Preparation on 10/17/95 by VM using 3010
(2) Sample Preparation on 10/25/95 by JAF using 245.1

REVISED DATA
RESUBMITTED BY LABORATORY
INSERTED BY E. Byron Rice 6/13/96
SIGNATURE DATE

11/16/95

LJO/ejnjbb(dw)
LJ17ICW1
CC: OLIN-TN
ATTN:STEVE MORROW
SMITH/BCM-RICK SACKS
PTI/CHRIS SELLSTONE

ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

LIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1595-16
Report Date: 11/16/95
PO No. : SB-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
FIELD REP (FILT)	Aqueous	T. EBNER	10/12/95	10/12/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Bicarbonate, Dissolved as HCO3	<20	mg/L	1.0	20	APHA 406C	10/17/95	CM	
Carbonate, Dissolved as CaCO3	25.	mg/L	1.0	20	APHA 406C	10/17/95	CM	
Nitrate as N, Dissolved	1.6	mg/L	1.0	0.05	353.2/1	10/24/95	NH	
Nitrite as N, Dissolved	0.45	mg/L	1.0	0.050	353.2	10/13/95	CM	
Organic Carbon, Dissolved (DOC)	<1.0	mg/L	1.0	1.0	415.1	10/17/95	LT	
Phosphorus, Dissolved as P	<0.10	mg/L	1.0	0.10	365.4	10/26/95	CM	1
Solids-Filt Residue, Dissolved	65.	mg/L	1.0	10	160.1	10/17/95	JP	2

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/26/95 by CLM
(2) Sample Preparation on 10/16/95 by JF

RESUBMITTED BY LABORATORY
INSERTED BY: E. Bynum [signature] SIGNATURE 6/13/96 DATE

11/16/95

LJO/ejnjbb(dw)

CC: OLIN-TN
ATTN:STEVE MORROW
SMITH/BCM-RICK SACKS
PTI/CHRIS SELLSTONE

P.O. Box 720 - 340 County Road #5
Westbrook, ME 04098
TEL: 207-874-2400

pace INCORPORATED ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1595-17
Report Date: 11/16/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
GW-300 (FILT)	Aqueous	T. EBNER	10/12/95	10/12/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Dissolved	<0.10	mg/L	1.0	0.10	200.7/6010	10/24/95	KW	1
Antimony, Dissolved	<0.005	mg/L	1.0	0.005	200.7/6010	10/24/95	KW	1
Arsenic, Dissolved	<0.005	mg/L	1.0	0.005	200.7/6010	10/26/95	KW	1
Barium, Dissolved	<0.005	mg/L	1.0	0.005	200.7/6010	10/24/95	KW	1
Beryllium, Dissolved	<0.005	mg/L	1.0	0.005	200.7/6010	10/24/95	KW	1
Cadmium, Dissolved	<0.010	mg/L	1.0	0.010	200.7/6010	10/24/95	KW	1
Calcium, Dissolved	0.074	mg/L	1.0	0.050	200.7/6010	10/28/95	KW	1
Chromium, Dissolved	<0.015	mg/L	1.0	0.015	200.7/6010	10/26/95	KW	1
Chromium, Hexavalent Dissolved	<0.015	mg/L	1.0	0.015	6010	10/20/95	KW	2
Chromium, Trivalent Dissolved	<0.015	mg/L	1.0	0.015	Calculation	11/07/95	DN	
Cobalt, Dissolved	<0.030	mg/L	1.0	0.030	200.7/6010	10/24/95	KW	1
Copper, Dissolved	<0.025	mg/L	1.0	0.025	200.7/6010	10/24/95	KW	1
Iron, Dissolved	<0.025	mg/L	1.0	0.025	200.7/6010	10/24/95	KW	1
Lead, Dissolved	<0.005	mg/L	1.0	0.005	200.7/6010	10/26/95	KW	1
Magnesium, Dissolved	<0.050	mg/L	1.0	0.050	200.7/6010	10/28/95	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/17/95 by VM using 3010
(2) Sample Preparation on 10/12/95 by GFB using 7195

11/16/95

LJO/ejnjbb(dw)
LJ17ICW1
CC: OLIN-TN
ATTN:STEVE MORROW
SMITH/BCM-RICK SACKS
PTI/CHRIS SELLSTONE

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1595-17
Report Date: 11/16/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-300 (FILT)	Aqueous	T. EBNER	10/12/95	10/12/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Manganese, Dissolved	<0.005	mg/L	1.0	0.005	200.7/6010	10/24/95	KW	1
Mercury, Dissolved	<0.20	µg/L	1.0	0.20	245.1	10/26/95	JF	2
Nickel, Dissolved	<0.040	mg/L	1.0	0.040	200.7/6010	10/24/95	KW	1
Potassium, Dissolved	<0.50	mg/L	1.0	0.50	200.7/6010	10/18/95	KW	1
Selenium, Dissolved	<0.005	mg/L	1.0	0.005	200.7/6010	10/24/95	KW	1
Silicon, Dissolved	0.11	mg/L	1.0	0.10	200.7/6010	10/18/95	KW	1
Silver, Dissolved	<0.015	mg/L	1.0	0.015	200.7/6010	10/24/95	KW	1
Sodium, Dissolved	<0.10	mg/L	1.0	0.10	200.7/6010	10/18/95	KW	1
Thallium, Dissolved	<0.010	mg/L	1.0	0.010	200.7/6010	10/24/95	KW	1
Vanadium, Dissolved	<0.025	mg/L	1.0	0.025	200.7/6010	10/24/95	KW	1
Zinc, Dissolved	0.051	mg/L	1.0	0.025	200.7/6010	10/24/95	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/17/95 by VM using 3010
(2) Sample Preparation on 10/25/95 by JAF using 245.1

11/16/95

LJO/ejnjbb(dw)
LJ17ICW1
CC: OLIN-TN
ATTN:STEVE MORROW
SMITH/BCM-RICK SACKS
PTI/CHRIS SELLSTONE

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1595-17
Report Date: 11/16/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-300 (FILT)	Aqueous	T. EBNER	10/12/95	10/12/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Bicarbonate,Dissolved as HCO3	<20	mg/L	1.0	20	APHA 406C	10/17/95	CM	
Carbonate, Dissolved as CaCO3	<20	mg/L	1.0	20	APHA 406C	10/17/95	CM	
Nitrate as N, Dissolved	0.08	mg/L	1.0	0.05	353.2/1	10/24/95	NH	
Nitrite as N, Dissolved	<0.050	mg/L	1.0	0.050	353.2	10/13/95	CM	
Organic Carbon, Dissolved (DOC)	<1.0	mg/L	1.0	1.0	415.1	10/17/95	LT	
Phosphorus, Dissolved as P	<1.0	mg/L	10	0.10	365.4	10/26/95	CM	1,2
Solids-Filt Residue, Dissolved	<10	mg/L	1.0	10	160.1	10/17/95	JF	3

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/26/95 by CLM
(2) The laboratory's Practical Quantitation Level could not be achieved for this parameter due to sample composition, matrix effects, sample volume, or quantity used for analysis.
(3) Sample Preparation on 10/16/95 by JF

11/16/95

LJO/ejnjbb(dw)

CC: OLIN-TN
ATTN:STEVE MORROW
SMITH/BCM-RICK SACKS
PTI/CHRIS SELLSTONE

PACE INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1595-18
Report Date: 11/16/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-81D (FILT)	Aqueous	T. EBNER	10/12/95	10/12/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Dissolved	0.82	mg/L	1.0	0.10	200.7/6010	10/24/95	KW	1
Antimony, Dissolved	<0.005	mg/L	1.0	0.005	200.7/6010	10/24/95	KW	1
Arsenic, Dissolved	0.005	mg/L	1.0	0.005	200.7/6010	10/26/95	KW	1
Barium, Dissolved	0.010	mg/L	1.0	0.005	200.7/6010	10/24/95	KW	1
Beryllium, Dissolved	<0.005	mg/L	1.0	0.005	200.7/6010	10/24/95	KW	1
Cadmium, Dissolved	<0.010	mg/L	1.0	0.010	200.7/6010	10/24/95	KW	1
Calcium, Dissolved	18.	mg/L	1.0	0.050	200.7/6010	10/28/95	KW	1
Chromium, Dissolved	<0.015	mg/L	1.0	0.015	200.7/6010	10/26/95	KW	1
Chromium, Hexavalent Dissolved	<0.015	mg/L	1.0	0.015	6010	10/20/95	KW	2
Chromium, Trivalent Dissolved	<0.015	mg/L	1.0	0.015	Calculation	11/07/95	DN	
Cobalt, Dissolved	<0.030	mg/L	1.0	0.030	200.7/6010	10/24/95	KW	1
Copper, Dissolved	<0.025	mg/L	1.0	0.025	200.7/6010	10/24/95	KW	1
Iron, Dissolved	0.062	mg/L	1.0	0.025	200.7/6010	10/24/95	KW	1
Lead, Dissolved	<0.005	mg/L	1.0	0.005	200.7/6010	10/26/95	KW	1
Magnesium, Dissolved	0.077	mg/L	1.0	0.050	200.7/6010	10/28/95	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/17/95 by VM using 3010
(2) Sample Preparation on 10/12/95 by GFB using 7195

REVISED DATA
RESUBMITTED BY LABORATORY
INSERTED BY E. Bynum Rivera 6/13/96
SIGNATURE DATE

11/16/95

LJO/ejnjbb(dw)
LJ17ICW1
CC: OLIN-TN
ATTN:STEVE MORROW
SMITH/BCM-RICK SACKS
PTI/CHRIS SELLSTONE

ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1595-18
Report Date: 11/16/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-81D (FILT)	Aqueous	T. EBNER	10/12/95	10/12/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Manganese, Dissolved	<0.005	mg/L	1.0	0.005	200.7/6010	10/24/95	KW	1
Mercury, Dissolved	<0.20	µg/L	1.0	0.20	245.1	10/26/95	JF	2
Nickel, Dissolved	<0.040	mg/L	1.0	0.040	200.7/6010	10/24/95	KW	1
Potassium, Dissolved	<0.50	mg/L	1.0	0.50	200.7/6010	10/18/95	KW	1
Selenium, Dissolved	<0.005	mg/L	1.0	0.005	200.7/6010	10/24/95	KW	1
Silicon, Dissolved	2.4	mg/L	1.0	0.10	200.7/6010	10/18/95	KW	1
Silver, Dissolved	<0.015	mg/L	1.0	0.015	200.7/6010	10/24/95	KW	1
Sodium, Dissolved	1.8	mg/L	1.0	0.10	200.7/6010	10/18/95	KW	1
Thallium, Dissolved	<0.010	mg/L	1.0	0.010	200.7/6010	10/24/95	KW	1
Vanadium, Dissolved	<0.025	mg/L	1.0	0.025	200.7/6010	10/24/95	KW	1
Zinc, Dissolved	<0.025	mg/L	1.0	0.025	200.7/6010	10/24/95	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values

(1) Sample Preparation on 10/17/95 by VM using 3010

(2) Sample Preparation on 10/25/95 by JAF using 245.1

REVISED DATA
RESUBMITTED BY LABORATORY
INSERTED BY E. Beyer [signature] 6/3/96
SIGNATURE DATE

11/16/95

LJO/ejnjbb(dw)
LJ17ICW1
CC: OLIN-TN
ATTN:STEVE MORROW
SMITH/BCM-RICK SACKS
PTI/CHRIS SELLSTONE

ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1595-18
Report Date: 11/16/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-81D (FILT)	Aqueous	T. EBNER	10/12/95	10/12/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Bicarbonate, Dissolved as HCO3	<20	mg/L	1.0	20	APHA 406C	10/17/95	CM	
Carbonate, Dissolved as CaCO3	25	mg/L	1.0	20	APHA 406C	10/17/95	CM	
Nitrate as N, Dissolved	1.7	mg/L	1.0	0.05	353.2/1	10/24/95	NH	
Nitrite as N, Dissolved	0.43	mg/L	1.0	0.050	353.2	10/13/95	CM	
Organic Carbon, Dissolved (DOC)	<1.0	mg/L	1.0	1.0	415.1	10/17/95	LT	
Phosphorus, Dissolved as P	<0.10	mg/L	1.0	0.10	365.4	10/26/95	CM	1
Solids-Filt Residue, Dissolved	63.	mg/L	1.0	10	160.1	10/17/95	JF	2

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/26/95 by CLM
(2) Sample Preparation on 10/16/95 by JF

REVISED DATA
RESUBMITTED BY LABORATORY
INSERTED BY E. Bryan Russell 6/1
SIGNATURE

11/16/95

LJO/ejnjbb(dw)

CC: OLIN-TN
ATTN:STEVE MORROW
SMITH/BCM-RICK SACKS
PTI/CHRIS SELLSTONE

P.O. Box 720 - 340 County Road #5
Westbrook, ME 04098
TEL: 207-874-2400
FAX: 207-775-4029

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1595-19
Report Date: 11/16/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-65BR (FILT)	Aqueous	T. EBNER	10/12/95	10/12/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Dissolved	0.14	mg/L	1.0	0.10	200.7/6010	10/24/95	KW	1
Antimony, Dissolved	<0.005	mg/L	1.0	0.005	200.7/6010	10/24/95	KW	1
Arsenic, Dissolved	0.007	mg/L	1.0	0.005	200.7/6010	10/26/95	KW	1
Barium, Dissolved	0.19	mg/L	1.0	0.005	200.7/6010	10/24/95	KW	1
Beryllium, Dissolved	<0.005	mg/L	1.0	0.005	200.7/6010	10/24/95	KW	1
Cadmium, Dissolved	<0.010	mg/L	1.0	0.010	200.7/6010	10/24/95	KW	1
Calcium, Dissolved	22.	mg/L	1.0	0.050	200.7/6010	10/28/95	KW	1
Chromium, Dissolved	<0.015	mg/L	1.0	0.015	200.7/6010	10/26/95	KW	1
Chromium, Hexavalent Dissolved	<0.015	mg/L	1.0	0.015	6010	10/20/95	KW	2
Chromium, Trivalent Dissolved	<0.015	mg/L	1.0	0.015	Calculation	11/07/95	DN	
Cobalt, Dissolved	<0.030	mg/L	1.0	0.030	200.7/6010	10/24/95	KW	1
Copper, Dissolved	<0.025	mg/L	1.0	0.025	200.7/6010	10/24/95	KW	1
Iron, Dissolved	0.038	mg/L	1.0	0.025	200.7/6010	10/24/95	KW	1
Lead, Dissolved	<0.005	mg/L	1.0	0.005	200.7/6010	10/26/95	KW	1
Magnesium, Dissolved	0.070	mg/L	1.0	0.050	200.7/6010	10/24/95	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/17/95 by VM using 3010
(2) Sample Preparation on 10/12/95 by GFB using 7195

11/16/95

LJO/ejnjbb(dw)
LJ17ICW1
CC: OLIN-TN
ATTN:STEVE MORROW
SMITH/BCM-RICK SACKS
PTI/CHRIS SELLSTONE

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1595-19
Report Date: 11/16/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-65BR (FILT)	Aqueous	T. EBNER	10/12/95	10/12/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Manganese, Dissolved	<0.005	mg/L	1.0	0.005	200.7/6010	10/24/95	KW	1
Mercury, Dissolved	<0.20	µg/L	1.0	0.20	245.1	10/26/95	JF	2
Nickel, Dissolved	<0.040	mg/L	1.0	0.040	200.7/6010	10/24/95	KW	1
Potassium, Dissolved	330.	mg/L	10	0.50	200.7/6010	10/18/95	KW	1
Selenium, Dissolved	0.005	mg/L	1.0	0.005	200.7/6010	10/24/95	KW	1
Silicon, Dissolved	14.	mg/L	5.0	0.10	200.7/6010	10/18/95	KW	1
Silver, Dissolved	<0.015	mg/L	1.0	0.015	200.7/6010	10/24/95	KW	1
Sodium, Dissolved	89.	mg/L	1.0	0.10	200.7/6010	10/18/95	KW	1
Thallium, Dissolved	<0.010	mg/L	1.0	0.010	200.7/6010	10/24/95	KW	1
Vanadium, Dissolved	<0.025	mg/L	1.0	0.025	200.7/6010	10/24/95	KW	1
Zinc, Dissolved	<0.025	mg/L	1.0	0.025	200.7/6010	10/24/95	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/17/95 by VM using 3010
(2) Sample Preparation on 10/25/95 by JAF using 245.1

11/16/95

LJO/ejnjbb(dw)
LJ17ICW1
CC: OLIN-TN
ATTN:STEVE MORROW
SMITH/BCM-RICK SACKS
PTI/CHRIS SELLSTONE

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1595-19
Report Date: 11/16/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
GW-65BR (FILT)	Aqueous	T. EBNER	10/12/95	10/12/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Bicarbonate,Dissolved as HCO3	<20	mg/L	1.0	20	APHA 406C	10/17/95	CM	
Carbonate, Dissolved as CaCO3	120	mg/L	1.0	20	APHA 406C	10/17/95	CM	
Nitrate as N, Dissolved	0.14	mg/L	1.0	0.05	353.2/1	10/24/95	NH	
Nitrite as N, Dissolved	<0.050	mg/L	1.0	0.050	353.2	10/13/95	CM	
Organic Carbon, Dissolved (DOC)	3.3	mg/L	1.0	1.0	415.1	10/17/95	LT	
Phosphorus, Dissolved as P	<1.0	mg/L	10	0.10	365.4	10/26/95	CM	1,2
Solids-Filt Residue, Dissolved	970.	mg/L	1.0	10	160.1	10/17/95	JF	3

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/26/95 by CLM
(2) The laboratory's Practical Quantitation Level could not be achieved for this parameter due to sample composition, matrix effects, sample volume, or quantity used for analysis.
(3) Sample Preparation on 10/16/95 by JF

11/16/95

LJO/ejnjbb(dw)

CC: OLIN-TN
ATTN:STEVE MORROW
SMITH/BOM-RICK SACKS
PTI/CHRIS SELLSTONE

pace INCORPORATED ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1595-20
Report Date: 11/16/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-81BR (FILT)	Aqueous	T. EBNER	10/12/95	10/12/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Dissolved	0.12	mg/L	1.0	0.10	200.7/6010	10/24/95	KW	1
Antimony, Dissolved	<0.005	mg/L	1.0	0.005	200.7/6010	10/24/95	KW	1
Arsenic, Dissolved	<0.005	mg/L	1.0	0.005	200.7/6010	10/26/95	KW	1
Barium, Dissolved	0.039	mg/L	1.0	0.005	200.7/6010	10/24/95	KW	1
Beryllium, Dissolved	<0.005	mg/L	1.0	0.005	200.7/6010	10/24/95	KW	1
Cadmium, Dissolved	<0.010	mg/L	1.0	0.010	200.7/6010	10/24/95	KW	1
Calcium, Dissolved	18.	mg/L	1.0	0.050	200.7/6010	10/28/95	KW	1
Chromium, Dissolved	<0.015	mg/L	1.0	0.015	200.7/6010	10/26/95	KW	1
Chromium, Hexavalent Dissolved	<0.015	mg/L	1.0	0.015	6010	10/20/95	KW	2
Chromium, Trivalent Dissolved	<0.015	mg/L	1.0	0.015	Calculation	11/07/95	DN	
Cobalt, Dissolved	<0.030	mg/L	1.0	0.030	200.7/6010	10/24/95	KW	1
Copper, Dissolved	<0.025	mg/L	1.0	0.025	200.7/6010	10/24/95	KW	1
Iron, Dissolved	0.19	mg/L	1.0	0.025	200.7/6010	10/24/95	KW	1
Lead, Dissolved	<0.005	mg/L	1.0	0.005	200.7/6010	10/26/95	KW	1
Magnesium, Dissolved	2.9	mg/L	1.0	0.050	200.7/6010	10/24/95	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

(1) Sample Preparation on 10/17/95 by VM using 3010

(2) Sample Preparation on 10/12/95 by GFB using 7195

11/16/95

LJO/ejnjbb(dw)
LJ17ICW1
CC: OLIN-TN
ATTN:STEVE MORROW
SMITH/BCM-RICK SACKS
PTI/CHRIS SELLSTONE

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1595-20
Report Date: 11/16/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-81BR (FILT)	Aqueous	T. EBNER	10/12/95	10/12/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Manganese, Dissolved	0.023	mg/L	1.0	0.005	200.7/6010	10/24/95	KW	1
Mercury, Dissolved	<0.20	µg/L	1.0	0.20	245.1	10/26/95	JF	2
Nickel, Dissolved	<0.040	mg/L	1.0	0.040	200.7/6010	10/24/95	KW	1
Potassium, Dissolved	15.	mg/L	1.0	0.50	200.7/6010	10/18/95	KW	1
Selenium, Dissolved	<0.005	mg/L	1.0	0.005	200.7/6010	10/24/95	KW	1
Silicon, Dissolved	6.1	mg/L	5.0	0.10	200.7/6010	10/18/95	KW	1
Silver, Dissolved	<0.015	mg/L	1.0	0.015	200.7/6010	10/24/95	KW	1
Sodium, Dissolved	38.	mg/L	1.0	0.10	200.7/6010	10/18/95	KW	1
Thallium, Dissolved	<0.010	mg/L	1.0	0.010	200.7/6010	10/24/95	KW	1
Vanadium, Dissolved	<0.025	mg/L	1.0	0.025	200.7/6010	10/24/95	KW	1
Zinc, Dissolved	<0.025	mg/L	1.0	0.025	200.7/6010	10/24/95	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/17/95 by VM using 3010
(2) Sample Preparation on 10/25/95 by JAF using 245.1

11/16/95

LJO/ejnjbb(dw)
LJ17ICW1
CC: OLIN-TN
ATTN:STEVE MORROW
SMITH/BCM-RICK SACKS
PTI/CHRIS SELLSTONE

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1595-20
Report Date: 11/16/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-81BR (FILT)	Aqueous	T. EBNER	10/12/95	10/12/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Bicarbonate,Dissolved as HCO3	50.	mg/L	1.0	20	APHA 406C	10/25/95	CM	
Carbonate, Dissolved as CaCO3	<20	mg/L	1.0	20	APHA 406C	10/25/95	CM	
Nitrate as N, Dissolved	0.81	mg/L	1.0	0.05	353.2/1	10/24/95	NH	
Nitrite as N, Dissolved	0.14	mg/L	1.0	0.050	353.2	10/13/95	CM	
Organic Carbon, Dissolved (DOC)	1.1	mg/L	1.0	1.0	415.1	10/17/95	LT	
Phosphorus, Dissolved as P	<1.0	mg/L	10	0.10	365.4	10/26/95	CM	1,2
Solids-Filt Residue, Dissolved	280.	mg/L	4.0	10	160.1	10/17/95	JF	3

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/26/95 by CLM
(2) The laboratory's Practical Quantitation Level could not be achieved for this parameter due to sample composition, matrix effects, sample volume, or quantity used for analysis.
(3) Sample Preparation on 10/16/95 by JF

11/16/95

LJO/ejnjbb(dw)

CC: OLIN-TN
ATTN:STEVE MORROW
SMITH/BCM-RICK SACKS
PTI/CHRIS SELLSTONE

```
CRI               rep   1  Cr267.7   conc    0.0187 mg/L
                  rep   2  Cr267.7   conc    0.0085 mg/L
                  rep   3  Cr267.7   conc    0.0169 mg/L
CRI
10/20/95 10:11
    Cr267.7       av     0.0147 mg/L  73.5% *  sd    0.00546 %cv   37.13

10/20/95 10:12
PBW 101295        rep   1  Cr267.7   conc    0.0073 mg/L
                  rep   2  Cr267.7   conc   -0.0056 mg/L
                  rep   3  Cr267.7   conc   -0.0024 mg/L          window edge
PBW 101295
10/20/95 10:12
    Cr267.7       av    -0.0001 mg/L  <        sd    0.00700 %cv 9095.6

10/20/95 10:14
LCSW 1/2          rep   1  Cr267.7   conc    1.1947 mg/L
                  rep   2  Cr267.7   conc    1.2079 mg/L
                  rep   3  Cr267.7   conc    1.1717 mg/L
LCSW 1/2
10/20/95 10:14
    Cr267.7       av     1.1914 mg/L  X2=      sd    0.01830 %cv    1.54
                                      2.38 ✓

10/20/95 10:15
1595-1            rep   1  Cr267.7   conc    0.0129 mg/L
                  rep   2  Cr267.7   conc    0.0053 mg/L
                  rep   3  Cr267.7   conc    0.0027 mg/L
1595-1
10/20/95 10:16
    Cr267.7       av     0.0070 mg/L  <        sd    0.00530 %cv   76.22

10/20/95 10:17
1595-2            rep   1  Cr267.7   conc   -0.0008 mg/L
                  rep   2  Cr267.7   conc    0.0057 mg/L
                  rep   3  Cr267.7   conc    0.0078 mg/L
1595-2
10/20/95 10:17
    Cr267.7       av     0.0042 mg/L  <        sd    0.00446 %cv  105.51

10/20/95 10:19
1595-3            rep   1  Cr267.7   conc    0.0001 mg/L
                  rep   2  Cr267.7   conc    0.0055 mg/L
                  rep   3  Cr267.7   conc    0.0012 mg/L
1595-3
10/20/95 10:19
    Cr267.7       av     0.0023 mg/L  <        sd    0.00287 %cv  124.71

10/20/95 10:20
1595-4 1/2        rep   1  Cr267.7   conc    0.0082 mg/L
                  rep   2  Cr267.7   conc    0.0029 mg/L
                  rep   3  Cr267.7   conc    0.0174 mg/L
1595-4 1/2
10/20/95 10:21
    Cr267.7       av     0.0095 mg/L  <        sd    0.00734 %cv   77.50

10/20/95 10:22
CCV               rep   1  Cr267.7   conc    0.9925 mg/L
                  rep   2  Cr267.7   conc    0.9592 mg/L
                  rep   3  Cr267.7   conc    0.9670 mg/L
CCV
10/20/95 10:22
    Cr267.7       av     0.9729 mg/L  97.3%    sd    0.01745 %cv    1.79

10/20/95 10:24
```

Raw data for Cr+6 results

– All samples are cross reference by x10

E. Bryan Rivers 6/12/9[illegible]

0000093

* Cr-result associated with samples
1595-[illegible]

```
10/30/95 09:32
CRI              rep   1  Cr267.7    conc     0.0103 mg/L
                 rep   2  Cr267.7    conc     0.0172 mg/L
                 rep   3  Cr267.7    conc     0.0166 mg/L
CRI
10/30/95 09:32
   Cr267.7       av     0.0147 mg/L 73.5%  sd     0.00383 %cv   26.03

10/30/95 09:34
1595-9           rep   1  Cr267.7    conc    -0.0013 mg/L
                 rep   2  Cr267.7    conc     0.0041 mg/L
                 rep   3  Cr267.7    conc     0.0006 mg/L
1595-9
10/30/95 09:34
   Cr267.7       av     0.0011 mg/L <        sd     0.00270 %cv  240.71

10/30/95 09:36
1595-10          rep   1  Cr267.7    conc    -0.0016 mg/L
                 rep   2  Cr267.7    conc     0.0054 mg/L
                 rep   3  Cr267.7    conc     0.0010 mg/L
1595-10
10/30/95 09:36
   Cr267.7       av     0.0016 mg/L <        sd     0.00353 %cv  221.14

10/30/95 09:38
CCV              rep   1  Cr267.7    conc     0.9769 mg/L
                 rep   2  Cr267.7    conc     1.0046 mg/L
                 rep   3  Cr267.7    conc     0.9965 mg/L
CCV
10/30/95 09:38
   Cr267.7       av     0.9893 mg/L 98.9%  sd     0.01405 %cv    1.42

10/30/95 09:39
CCB              rep   1  Cr267.7    conc     0.0070 mg/L
                 rep   2  Cr267.7    conc     0.0044 mg/L
                 rep   3  Cr267.7    conc     0.0019 mg/L
CCB
10/30/95 09:40
   Cr267.7       av     0.0044 mg/L <        sd     0.00253 %cv   57.04

10/30/95 09:41
ICSA             rep   1  Cr267.7    conc    -0.0028 mg/L
                 rep   2  Cr267.7    conc     0.0039 mg/L
                 rep   3  Cr267.7    conc    -0.0017 mg/L          window edge
ICSA
10/30/95 09:41
   Cr267.7       av    -0.0002 mg/L          sd     0.00359 %cv 1962.7

10/30/95 09:43
ICSAB            rep   1  Cr267.7    conc     0.4618 mg/L
                 rep   2  Cr267.7    conc     0.4395 mg/L
ICSAB            rep   3  Cr267.7    conc     0.4430 mg/L
10/30/95 09:43
   Cr267.7       av     0.4481 mg/L 89.6%  sd     0.01201 %cv    2.68

10/30/95 09:44
Throw away       rep   1  Cr267.7    conc    -0.0054 mg/L
                 rep   2  Cr267.7    conc    -0.0058 mg/L
                 rep   3  Cr267.7    conc    -0.0030 mg/L
Throw away
10/30/95 09:45
   Cr267.7       av    -0.0047 mg/L          sd     0.00152 %cv   32.08
```

Raw data for Cr+6 results

- All samples are cross referenced by X10

E. Bryan Rivers 6/12/9[illegible]

* Cr-results associated with samples 1595-19 + 1595-20 due to low CRDL Standard

Page no. 00001
10/26/95

TECHNICON TRAACS 800 SYSTEM 1-ANALYSIS REPORT FORM

DESCRIPTION	RUN INFORMATION	LIMS ID	TEST #1
Date of Run	10-26-95		1.000
Time of Run	16:59		1.000
Operator	CLM		1.000
Comment	SAMPLE RUN W/O		1.000
	DILUTION LOOP		1.000
	PQL: 0.10 mg/L		1.000
	EPA #365.4		1.000
AN1 ChemName	TPO4		1.000
AN1 Units	mg/L		1.000
Peak1	Cup:1 -> PRIM	5.00 PPM	2.953
Peak2	Cup:1 -> CALB	5.00 PPM	(5.005/5.0)10² = 100%
Peak3	Cup:2 -> CALB	3.00 PPM	(2.788/3.0)10² = 93% ✓
Peak4	Cup:3 -> CALB	2.00 PPM	(1.957/2.0)10² = 98% ✓
Peak5	Cup:4 -> CALB	1.00 PPM	(1.185/1.0) = 119% ✓
Peak6	Cup:5 -> CALB	0.50 PPM	(0.731/0.5)10² = 146% ✗*
Peak7	Cup:6 -> CALB	0.10 PPM	(0.345/.1)10² = 345% ✗*
Peak8	Cup:1 -> HIGH	5.00 PPM	4.771
Peak9	Cup:4 -> LOW	1.00 PPM	1.182
Peak10	Cup:4 -> LOW	1.00 PPM	1.193
Peak11	Cup:7 -> ISMP	RINSE	1.330
Peak12	Cup:8 -> ISMP	ICV	(1.343/1.25)10² = 107% ✓
Peak13	Cup:9 -> ISMP	RINSE	0.355
Peak14	Cup:9 -> ISMP	RINSE	0.138
Peak15	Cup:10 -> ISMP	ICB	-.015 <0.10 ✓
Peak16	Cup:10 -> ISMP	ICB	-.018 <0.10 ✓

TP102695

Checked
[illegible] 11.5.95

r = 0.9970 ✓

— negative concentration above the PQL

* High % R for calibration standard
all result < 1.00ppm are estimated

E. Byron Rivers 6/12/96

0000415

Page no. 00002
10/26/95

TECHNICON TRAACS 800 SYSTEM I-ANALYSIS REPORT FORM

DESCRIPTION	RUN INFORMATION	LIMS ID		TEST #1	
Peak17	Cup:11 -> SAMP	WL1595-11		0.081	<0.10
Peak18	Cup:12 -> SAMP	WL1595-12		0.268	
Peak19	Cup:13 -> SAMP	WL1595-13		0.230	
Peak20	Cup:14 -> SAMP	WL1595-14	x10	2.233	
Peak21	Cup:15 -> SAMP	WL1595-15	x10	2.596	
Peak22	Cup:16 -> SAMP	WL1595-16		-.033	<0.10
Peak23	Cup:17 -> SAMP	WL1595-17	x10	-1.205	<0.10
Peak24	Cup:18 -> SAMP	WL1595-18		-.159	<0.10
Peak25	Cup:19 -> SAMP	WL1595-19	x10	-1.821	<0.10
Peak26	Cup:20 -> SAMP	WL1595-20	x10	-1.936	<0.10
Peak27	Cup:21 -> SAMP	WL1595-14SPIKE		0.825	– 0.23/1.25 (10²) = 48% *
Peak28	Cup:22 -> ISMP	RINSE		0.927	
Peak29	Cup:23 -> ISMP	CCV		(1.161/1.25)10² = 93% ✓	
Peak30	Cup:24 -> ISMP	RINSE		0.074	
Peak31	Cup:24 -> ISMP	RINSE		-.107	
Peak32	Cup:25 -> ISMP	CCB		-.235	<0.10 ✓
Peak33	Cup:25 -> ISMP	CCB		-.238	<0.10 ✓
Peak34	Cup:26 -> SAMP	WL1612-1		-.252	<0.10
Peak35	Cup:27 -> SAMP	WL1612-2		-.239	<0.10
Peak36	Cup:28 -> SAMP	WL1612-3		-.296	<0.10
Peak37	Cup:29 -> SAMP	WL1612-4	X10	-3.466	<0.10
Peak38	Cup:30 -> SAMP	WL1612-5		-.366	<0.10
Peak39	Cup:31 -> SAMP	WL1612-6		-.407	<0.10
Peak40	Cup:32 -> SAMP	WL1612-7		-.416	<0.10
Peak41	Cup:33 -> SAMP	WL1628-10		-.439	<0.10

– Negative concentrations above the PQL

* All phosphate results are estimated due to low matrix spike %R

E. Bufan Rivera 6/12/96

0000416

10/26/95

T E C H N I C O N TRAACS 800 SYSTEM 1-ANALYSIS REPORT FORM

DESCRIPTION	RUN INFORMATION	LIMS ID	TEST 01
Peak42	Cup:34 -> SAMP	WL1628-11	-.436 <0.10
Peak43	Cup:35 -> SAMP	WL1612-7DUP	-.482 <0.10
Peak44	Cup:36 -> SAMP	WL1612-6SPIKE	0.240
Peak45	Cup:37 -> ISMP	RINSE	0.714
Peak46	Cup:38 -> ISMP	CCV	(1.018 / 1.25) 10^2 = 81% ✓ *
Peak47	Cup:39 -> ISMP	RINSE	-.166
Peak48	Cup:39 -> ISMP	RINSE	-.329
Peak49	Cup:40 -> ISMP	CCB	-.446 <0.10
Peak50	Cup:40 -> ISMP	CCB	-.450 <0.10
Peak51	Cup:2 -> GAIN	3.00 PPM	2.788

Negative concentration above the PQL

* not associated with concern samples

E. Bryan Rivers 6/12/96

Client: Olin Chemicals, Work Order: WL1595 11/15/95

PACE, Inc.
Maine Laboratory
Quality Control Report

Duplicate and Matrix Spike/Matrix Spike Duplicate Results

		DUPLICATE RESULTS						MATRIX SPIKE/MATRIX SPIKE DUPLICATE RESULTS									
			Sample Measurements						Concentration or Quantity				Matrix Spike Recovery (%)				
Parameter	PACE Sample No	Units	Rep 1	Rep 2	Mean Conc	RPD (%)	Acceptance Range for RPD (%)	Units	Sample Only	Spike Added	Sample +Spike Dup 1	Sample +Spike Dup 2	Sample +Spike Dup 1	Sample +Spike Dup 2	Acceptance Range (%)	RPD (%)	Acceptance Range (%)
Alkalinity	WL1595-13	mg/L	379	376	378	0.79	0-20										
Nitrate+Nitrite	WL1595-13	mg/L	<0.05	<0.05	<0.05	NC	0-20	mg/L	<0.05	0.500	0.57	NA	114	NA	75-125	NA	0-20
Nitrate - N	See Nitrate+Nitrite, Nitrite																
Nitrite - N	WL1595-13	mg/L	0.070	0.068	0.069	2.9	0-20										
Phosphate,Total	WL1595-13	mg/L	0.230	2.60	1.42	167 &	0-20	mg/L	0.230	1.25	0.825	NA	47.6 *	NA	75-125	NA	0-20
TDS	WL1595-13	mg/L	1010	1020	1015	1.0	0-20	MS/MSD Not Applicable for this Parameter									
DOC	WL1595-13	mg/L	94.6	91.2	92.9	3.7	0-20	mg/L	85.2	40.0	122	NA	92.0	NA	75-125	NA	0-20

RPD = Relative percent difference, which is the absolute value of the difference between two replicate results divided by the mean concentration then multiplied by 100%.

NA = Not applicable.

NC = Relative percent difference cannot be calculated for sample results less than the PQL.

DATA QUALITY COMMENTS:
Results of all quality control measurements are within the laboratory or contract specified acceptance range except as noted. The laboratory does not use the sample duplicate and matrix spike acceptance ranges as acceptance criteria for a specific analysis. Sample duplicate and matrix spike data are used to evaluate method performance in the environmental sample matrix only. Please refer to LCS data for assessment of quality control for each parameter.

* Matrix spike recovery is outside the laboratory's specified acceptance range indicating potential sample matrix interference and potential bias of reported value for this parameter.

& Precision of replicate analysis as measured by RPD is outside the laboratory's acceptance range for this parameter. Sample homogeneity may be a factor.

FORM3WC.XLS

* All phosphate results are estimated due to [illegible]

[illegible] 6/2/91

00000358

================ METTLER DL25 Titrator date 10-17-95 ================

0.02N H_2SO_4

SERIES INPUT
METHOD 1

SAMPLE NO	RESULT	IDENT	WEIGHT	
1	1.6309	0	1.0000	<5.0 ✓
2	1.6640	0	1.0000	<5.0 ✓
3	126.73	125.1	1.0000	$(126.73/125)10^2 = 101\%$ ✓
4	126.12	125.2	1.0000	$(126.12/125)10^2 = 101\%$ ✓
5	238.72	1564.1	1.0000	
6	241.54	595.11	1.0000	
7	269.11	595.12	1.0000	
8	379.32	13	1.0000	
9	359.56	14	1.0000	
10	376.20	15	1.0000	
11	48.709	16	1.0000	
12	1.8961	17	1.0000	
13	48.133	18	1.0000	
14	512.85	19	1.0000	
15	581.36	19	1.0000	$[581.36 - (512.85)(\frac{45}{50}) / 125] \cdot 10^2 = 96\%$ ✓
16	126.19	125.3	1.0000	$(126.19/125)10^2 = 101\%$ ✓
17	.03812	595.2	1.0000	rerun
18	44.538	1612.1	1.0000	
19	89.780	1612.2	1.0000	
20	92.759	3	1.0000	
21	64.212	4	1.0000	
22	429.95	5	1.0000	
23	28.747	6	1.0000	
24	92.101	7	1.0000	
26	157.15	20	1.0000	
27	127.01	125.4	1.0000	$(127.01/125)10^2 = 102\%$ ✓

Checked pH 10.25.95

BICARBONATE AND CARBONATE IN WATER

SAMPLE NO	pH	Total Alkalinity (mg/L CaCO3)	HCO3 Alkalinity (mg/L CaCO3)	CO3 Alkalinity (mg/L CaCO3)
WL1564-1	6.47 ✓	238.72 ✓	238.6528	0.06575
WL1595-11	6.36 ✓	241.54 ✓	241.4867	0.05212
WL1595-12	6.53 ✓	269.11 ✓	269.0228	0.08549
WL1595-13	6.41 ✓	379.32 ✓	379.2262	0.09248
WL1595-14	6.75 ✓	359.56 ✓	359.3690	0.18822
WL1595-15	6.44 ✓	376.20 ✓	376.1024	0.09626
WL1595-16	10.40 ✓	48.71 ✓	10.7811	25.39740
WL1595-17	5.47 ✓	1.90 ✓	1.8959	0.00005
WL1595-18	10.41 ✓	48.13 ✓	10.2513	24.94062
WL1595-19	11.89 ✓	512.85 ✓	1.6545 ✓	121.28046 ✓
~~WL1595-20~~	~~7.88~~	~~0.04~~	~~0.0002~~	~~0.00008~~ On 10 17 95
WL1612-1	7.54 ✓	44.54 ✓	44.3757	0.14497
WL1612-2	6.01 ✓	89.78 ✓	89.7708	0.00867
WL1612-3	5.97 ✓	92.76 ✓	92.7503	0.00819
WL1612-4	6.04 ✓	64.21 ✓	64.2048	0.00666
WL1612-5	~~6.48~~	429.95 ✓	429.8265	0.12202
WL1612-6	~~5.80~~	28.75 ✓	28.7450	0.00170
WL1612-7	5.79 ✓	92.10 ✓	92.0954	0.00534

HCO3- mg CaCO3/L = T - (5 * 1/log pH - 10)

The value on the Report of Laboratory Analysis form should be <20 for sample WL1595-15

E. Bryan Reeves 6/12/96

0000362

NO2/NO3 MGB 10/25/95

===

QuikChem AE Postrun Report for Tray 95102404.RS
Method: 2-CH NO2/NO3 0.05-10ppm

Concentrations determined from Full Chord

This report prepared on 10/25/95 at 11:13 am.
This tray was run on 10/24/95 at 02:01 pm.
Operator: MGB Tray Template: Default

NO2/NO3/NOX BATCH 772,773,774,775,776
INSTRUMENT ID: LA01 PACE NE, INC.

===

— Page 1 of report for tray 95102404.RS --

Cup#	Sample ID	1 NO3 & NO2 mg/L	2 NO2 mg/L	NO3-N mg/L	
101	ICV 0.5 MG/L NO3	0.497	-0.001<	0.497	99.4%
102	ICV 0.5 MG/L NO2	0.524	0.515	0.009	104.8%
103	ICB/MB B-772	-0.006<	0.000<	-0.006	
104	45757-1	0.008<	0.002<	0.008	
105	45757-2	0.081	0.068	0.013	
106	45757-3	0.054	0.027<	0.027	
107	45757-4	0.022<	0.007<	0.022	
108	45757-5	0.025<	0.012<	0.013	
109	45757-6	4.960	0.003<	4.960	
110	45757-7	7.130>	0.005<	7.130	
111	45757-8	-0.154<	0.077	-0.231	
112	45757-9	0.030	-0.001<	0.030	
113	45757-10	0.029	0.000<	0.029	
114	CCV 1.0 MG/L NO3	0.958	0.000<	0.958	95.8%
115	CCV 1.0 MG/L NO2	1.074	1.023	0.051	102.4%
116	CCB	-0.015<	-0.002<	-0.015	
117	45757-11	-0.028<	0.067	-0.095	
118	45757-12	0.220	0.002<	0.220	
119	45757-13	0.019<	-0.002<	0.019	
120	45757-14	0.021<	0.001<	0.021	
121	45757-15	0.019<	0.001<	0.019	
122	45757-16	1.187	0.001<	1.187	
123	45757-17	0.042	-0.003<	0.042	
124	45757-18	0.216	0.016<	0.200	
125	45757-19	0.038	0.069	-0.031	
126	CCV 1.0 MG/L NO2	1.071	1.007	0.064	107.1%
127	CCV 1.0 MG/L NO3	0.947	-0.001<	0.947	94.7%
128	CCB	-0.015<	-0.002<	-0.015	
129	45757-20	0.007<	0.045<	-0.037	

* Nitrite results higher than NO3 + NO2

> Concentration was significantly greater than the high standard's concentration.
< Concentration was significantly less than the lowest non-zero standard's concentration.
< If the sample was diluted, its diluted concentration is less than the lowest non-zero standard's.

Report for tray 95102404.RS continued on next page . . .

E. Byers Rivers 6/18/96

NO_2 / NO_3 MGB 10/25/95

Cup#	Sample ID	1 NO3 & NO2 mg/L	2 NO2 mg/L	NO3-N mg/L	
130	45757-22	0.021<	0.040<	-0.018	Spk Dup
131	45757-23	0.029	0.031<	-0.002	
132	MBLANK 0773	0.003<	0.000<	0.003	
133	LCS 0.5 MG/L NO2	0.532	0.510	0.022	106.2%
134	LCS 0.5 MG/L NO3	0.487	-0.003<	0.487	97% Report
*135	45757-21	0.021<	0.032<	-0.011	-21 on Batch 772
136	45757-24	2.043	0.205	1.839	
137	45757-25	0.084	0.002<	0.084	
138	45757-26	2.093	0.243	1.850	
139	CCV 1.0 MG/L NO2	1.064	1.007	0.057	106.4%
140	CCV 1.0 MG/L NO3	1.002	0.003<	1.002	100.2%
141	CCB	-0.007<	0.003<	-0.007	
142	45757-27	0.137	0.003<	0.137	
143	45757-28	0.940	0.044<	0.896	
144	45757-29	0.254	0.004<	0.254	
145	45757-30	0.012<	0.063	-0.051	
146	45757-31	0.043	0.027<	0.016	
147	45757-32	0.388	0.002<	0.388	
148	45757-33	0.084	0.009<	0.084	
149	45757-34	2.083	0.014<	2.069	
150	CCV 1.0 MG/L NO2	1.055	1.011	0.044	105.5%
151	CCV 1.0 MG/L NO3	0.963	0.003<	0.963	96.3%
152	CCB	-0.011<	0.004<	-0.011	
153	45757-35	0.121	0.067	0.055	
154	45757-36	0.137	0.003<	0.137	
155	45757-37	1.612	0.156	1.455	
156	45757-38	1.554	0.000<	1.554	
157	45757-39	2.741	0.137	2.604	
158	CCV 1.0 MG/L NO3	0.658	0.002<	0.658	65.8%
159	CCV 1.0 MG/L NO2	0.954	1.009	-0.055	
160	CCB	-0.001<	-0.001<	-0.001	

> Concentration was significantly greater than the high standard's concentration.
< Concentration was significantly less than the lowest non-zero standard's concentration.
< If the sample was diluted, its diluted concentration is less than the lowest non-zero standard's.

--------- End of Report for Tray 95102404.RS -----------

* Nitrite results higher than $NO_3 + NO_2$

E. Byron Rivers 6/18/96

0000438

Field Duplicate Precision Worksheet — Smith

Project Name: Olin Chemicals
Project Number: 00-7047-0102
Case Number: WL-1595

Sample location	GW-81D	GW-81D
Sample ID number	WL-1595-6	WL-1595-8
Matrix	Aqueous	Aqueous
Units	mg/L	mg/L
	unfilt.	unfilt.

Compound	Sample Concentration	Field Duplicate Concentration	RPD	Q
Aluminum	1.1	1	9.5	
Antimony				
Arsenic				
Barium	0.014	0.014	0.0	
Beryllium				
Cadmium				
Calcium	22	20	9.5	
Chromium				
Chromium, Hexavalent				
Chromium, Trivalent				
Colbalt				
Copper				
Iron	0.035	0.043	20.5	within criteria ±1
Lead				
Magnesium	0.13	0.12	8.0	
Manganese	0.012	0.008	40.0	*
Mercury				
Nickel				
Potassium	0.96	0.56	52.6	*
Selenium				
Silicon	3.0	2.8	6.9	
Silver				
Sodium	2.4	2.3	4.3	
Thallium				
Vanadium				
Zinc				
Bicarbonate as HCO3	N/A	N/A		
Carbonate as CO3	N/A	N/A		
Nitrate as N	N/A	N/A		
Nitrite as N	N/A	N/A		
Diss. Organic Carbon	N/A	N/A		
Phosphorus as P	N/A	N/A		
Solids-Filterable Residue (TDS)	N/A	N/A		

* Indicates control limit out of criteria.

Smith CQAD has established a control limit of ~~20 percent~~ 30 EBR RPD.

FD1595U.XLS

QA Scientist E. Bryan Rivers Date 6/17/96

Field Duplicate Precision Worksheet — Smith

Project Name: Olin Chemicals
Project Number: 00-7047-0102

Case Number: WL-1595

Sample location	GW-81D	GW-81D
Sample ID number	WL-1595-16	WL-1595-18
Matrix	Aqueous	Aqueous
Units	mg/L	mg/L
	filt.	filt.

Compound	Sample Concentration	Field Duplicate Concentration	RPD	Q
Aluminum	0.97	0.82	16.8	
Antimony				
Arsenic		0.005		
Barium	0.012	0.01	18.2	
Beryllium				
Cadmium				
Calcium	20	18	10.5	
Chromium				
Chromium, Hexavalent				
Chromium, Trivalent				
Colbalt				
Copper				
Iron		0.062	~~85.1~~	*
Lead				
Magnesium	0.1	0.077	26.0	
Manganese				
Mercury				
Nickel				
Potassium	0.96			
Selenium				
Silicon	2.7	2.4	11.8	
Silver				
Sodium	2.1	1.8	15.4	
Thallium				
Vanadium				
Zinc				
Bicarbonate as HCO3				
Carbonate as CO3	25	25	0.0	
Nitrate as N	1.6	1.7	6.1	
Nitrite as N	0.45	0.43	4.5	
Diss. Organic Carbon				
Phosphorus as P				
Solids-Filterable Residue (TDS)	65	63	3.1	

ND value for is close enough to be within criteria (found in raw data)

EBR 6/18/96

EBR 6/20/96

ND value found is not close enough to fall within crit

Estimate fe d K

* Indicates control limit out of criteria.

Smith CQAD has established a control limit of ~~20~~ 30 EBR percent RPD.

FD1595F.XLS

QA Scientist E. Bryan Rivers Date 6/17/96

	GW-80BR	unfilt	filt	RPD		
OK	Se	ND	0.005			
	GW-81D	unfilt	filt	RPD	Smith Env. Technologies Corporation established	
OK	As	ND	0.005		criteria:	
	Fe	0.043	0.062	36	-	If sample values are greater than 100 the maximum
						acceptance RPD is 30 percent.
	GW-65BR	unfilt	filt	RPD	-	If sample values are less than 100 the maximum
	As	ND*	0.007	~~38~~		acceptance RPD is 50 percent.
	Se	ND	0.005			

*When non-detected result is not detected near detection limit, the results for both filt & unfilt are estimated.

Se results and As for GW-81D are detected in the filtered samples at the PQL. Therefore, these data were not qualified based on the unfilt vs filt analyses.

E. Bryan Rivers 6/19/96

SMITH
ENVIRONMENTAL TECHNOLOGIES CORPORATION

To:	Richard Wellman
Company:	Katahdin
Phone:	
Fax:	207-775-4029

From:	E. Bryan Rivers/Marybeth Ousey
Division/Office:	Plymouth Meeting, PA
Phone:	610-825-3800 X616
Fax:	610-834-8236

Date:	June 5, 1996
Pages including this cover page:	3

Comments:

SMITH ENVIRONMENTAL CORPORATE QUALITY ASSURANCE DEPARTMENT
DATA VALIDATION INQUIRY

To: Richard Wellman, Pace, Inc.
cc: Bruce Cushing, Project Manager, SMTH
DATA VALIDATION REPORT

Pace Laboratories Case No.: WL-1595 and WL-1612
Project Name: Semi-Annual Groundwater Monitoring - Wilmington, MA

June 5, 1996

Dear Mr. Wellman:

The following questions pertain the metals' data for WL-1595 and WL-1612:

1 Lead does not appear to be standardized for the ICP run on 10/26/95 (Run ID 951026A, page 255). In particular, see pages 255 and 265. Selenium and antimony do not appear to be standardized for the ICP run on 10/24/95 (Run ID 951024B, page 141). In particular, see pages 141 and 151.

2 Several ICP runs only have one initial standard provided, or two initial standards that are the same concentrations. Therefore, I cannot determine the laboratory's basis for sample dilution (i.e., whether or not a sample exceeds the initial calibration range).

3 The result from ICP Run ID 951024B on page 212 was reported at concentration which exceeded the instrument initial calibration range specified on page 152 for manganese sample WL-1595-11.

4. The report of analysis forms for pages 33, 36, 40, and 45 are not readable. Please resubmit these pages again.

5. The following nitrate as nitrogen (NO3-N) results on the report of analysis forms do not agree with the raw data supplied: samples WL1595-16, WL1595-18, and WL1595-20 for case order WL1595 and samples WL-1612-5 and WL-1612-7 for case WL-1612.

6. The following analytical results could not be verified from the raw data supplied due either to poor copy quality or pages that were cut off at the bottom: potassium for sample WL-1612-1, iron and sodium for sample WL-1612-4, and sodium for sample WL-1612-13. Please provide **only** the necessary pages.

Please call me with any questions that you may have regarding these questions.

Thank you,
E. Bryan Rivers
Quality Assurance Scientist

SMITH ENVIRONMENTAL CORPORATE QUALITY ASSURANCE DEPARTMENT
DATA VALIDATION INQUIRY

To: Richard Wellman, Päce, Inc.
cc: Bruce Cushing, Project Manager, SMTH
DATA VALIDATION REPORT

Pace Laboratories Case No.: WL-1612
Project Name: Semi-Annual Groundwater Monitoring - Wilmington, MA

June 5, 1996

Dear Mr Wellman:

The following questions pertain the metals' data for WL-1612:

1. Lead does not appear to be standardized for the ICP run on 10/27/95 (Run ID 95102773, page 87). In particular, see pages 96 and 106

2. Several ICP runs only have one initial standard provided, or two initial standards that are the same concentrations. Therefore, I cannot determine the laboratory's basis for sample dilution (i.e., whether or not a sample exceeds the initial calibration range). For example, the only initial standard provided for the sodium run on 10/19/95 (Run ID LJ18KNa, page 31) is at a concentration of 50. Several samples exceed 50; however, only certain of these samples were run at dilutions. What is the basis for the required dilutions of samples WL-1612-2, -5, -7, -9, -12, and -14?

3. The following results from Run ID 951101A, page 187 were reported at concentrations which exceed the instrument initial calibration range specified on pages 194 and 220: calcium and iron for sample WL-1612-2 (page 211), iron for sample WL-1612-3 (page 212), calcium and magnesium for sample WL-1612-5 (page 214), calcium and iron for sample WL-1612-7 (page 216), calcium and iron for sample WL-1612-9 (page 220), magnesium for sample WL-1312-12 (page 223), calcium, iron, and magnesium for sample WL-1612-14. Please explain the basis for reporting these concentrations when they exceed the curves specified on pages 194 and 220.

4. For some samples, analytes with acceptable and reported results were reanalyzed in later runs, resulting in differing values (often higher) than the reported analytes. For example, the iron and magnesium results for sample WL-1612-8 were repoted from ICP Run ID 1612ACFM, page 82, and they were rerun during ICP Run ID 951101A, page 217. The reanalyses resulted in higher concentrations of these analytes. Please describe the laboratory's bases for rerunning and reporting such results.

5. The barium result for sample WL-1612-13 from the ICP Run ID95102773, page 169 was not reported. Instead, the result from the ICP Run ID 951101C page 280 was reported. Please explain.

Please call me with any questions that you may have regarding these questions.

Thank you,
Marybeth Ousey
Quality Assurance Scientist

Katahdin

RECEIVED JUN 6 1996

MEMORANDUM

To: Marybeth Ousey, Smith Environmental ~~Technologies~~ Corp.
From: George Brewer, Metals Section Supervisor
Date: 06/05/96
Subject: PACE Work Order No. WL1612

We are providing the following responses to the questions about Work Order WL1612 presented in your fax of 06/05/96. The section numbers below refer to the question numbers in your fax.

1) This run was performed on the Thermo Jarrell Ash Trace ICP. This instrument employs a unique background correction technique to provide improved detection limits for lead, selenium, and antimony. For these elements, signal and background are measured simultaneously by monitoring each analytical wavelength in two spectral orders. The analytical channels for the two orders are standardized independently. After standardization, the weighted means of the analytical results for the two orders of each wavelength are reported. In the standardization report on page 87, standardization information for the 220.3 nm lead wavelength in the first order is identified by "2203/1", and that for the second order is identified by "2203/2". The wavelength identified as "Pb2203" is a "dummy" channel where the weighted mean results of the two orders are reported. Therefore, the "Pb2203" channel is listed on the standarization report as "NOT STANDARDIZED". The same convention is followed for the 196.0 nm selenium wavelength and the 206.8 nm antimony wavelength.

2) Two ICP spectrometers were used to produce data for Work Order WL1612. For runs performed using the Perkin Elmer Plasma II, the linear reporting range is twice the concentration of the initial calibration standard. This is verified by quarterly analysis of a linear range standard at that concentration (recoveries for the linear range standard must be within +/- 5% of the true values). For the run in your example, sodium was calibrated at 50 mg/L and results up to 100 mg/L were reported. Samples with sodium concentrations greater than 100 mg/L were diluted and reanalyzed in a later run.

For runs performed using the TJA Trace ICP, the instrument was calibrated at 500 mg/L for Al, Ca, and Mg; at 200 mg/L for Fe; and at 2.0 mg/L for all other elements. Results have been

340 County Road No. 5
P.O. Box 720 Westbrook, ME 04098

210 West Road No. 5, Portsmouth, NH 03801
Tel (603) 431-5777 Fax (603) 436-3356

Katahdin
ANALYTICAL SERVICES

reported up to these concentration from this instrument.

3) The standardization reports on pages 194 and 200 of the data package list the slope and y-intercept for each line, but not the concentrations of the calibration standards. The calibration concentrations for the TJA Trace ICP are listed in "2" above. Results have been reported up to 500 mg/L for Al, Ca, and Mg and up to 200 mg/L for Fe. Samples with measured concentrations exceeding these linear ranges were diluted and reanalyzed.

4) Metals are frequently analyzed in more than one analytical run. We attempt to report the first successful analysis for each metal. In your example, iron and magnesium were successfully analyzed in sample WL1612-8 during run 1612ACFM on 10/30/95, and these results were reported. The sample was analyzed for trace metals using another instrument during run 951101A on 11/01/95. It was necessary to calibrate and analyze for iron and magnesium during run 951101A because these metals are common spectral interferents (i.e. they interfere with the determination of some trace metals), and the instrument uses the measured iron and magnesium concentrations to perform interelement correction of trace metal results. We note that the relative percent difference (RPD) for iron results obtained for sample WL1612-8 in the two runs was only 3.5%, and that the RPD for the magnesium results was only 5.3%. These figures are well within method requirements for precision of duplicate analyses (+/- 20% RPD).

5) In run 95102773, the barium recovery (114%) for the continuing calibration verification standard analyzed after sample WL1612-13 exceeded the method limits of 90% - 110% (refer to page 177 of the data package). Therefore, the barium result obtained from this run for sample WL1612-13 was rejected, and the sample was successfully reanalyzed for barium in run 951101C.

I hope this provides the information that you need. Please call me if you have further questions.

RECEIVED
JUN 6 1996

340 County Road No. 5
P.O. Box 720 Westbrook, ME 04098
Tel. (207) 874-2400 Fax (207) 775-4029

210 West Road No. 5, Portsmouth, NH 03801
Tel. (603) 431-5777 Fax (603) 436-3356

Katahdin
ANALYTICAL SERVICES

FAX TRANSMISSION

Date: 6/5/96 Time: 1420

To: Danielle / Mary Beth Ousey

From: Rick Wellman

FAX No: 610-834-8236 or 610 825 9204

Number of Pages (Including This Cover): 4

Comments: X-REF & TDS PAGES

From: Katahdin Analytical Services, Inc.
340 County Road No. 5
P.O. Box 720
Westbrook, ME 04098
Tel: (207) 874-2400 Fax: (207) 775-4029

RECEIVED
JUN 6 1996

Cross reference WL1612-1 NOx results
WL1595

WL1612-1	45757-029
-2	-030
-3	-031
-4	-032
-5	-033
-6	-034
-7	-035
WL1595-11	-019
-12	-020
-13	-021
-14	-022
-15	-023
-16	-024
-17	-025
-18	-026
-19	-027
-20	-028

RW 6/5/96

Katahdin
ANALYTICAL SERVICES

FAX TRANSMISSION

Date: 6/10/96 Time: 1640

To: Mary-Beth Ousey

From: Rick Wellman

FAX No: 610 834 8236

Number of Pages (Including This Cover):

Comments:

Tabulation of results reported for NO_3 NO_2 in question.

From: Katahdin Analytical Services, Inc.
340 County Road No. 5
P.O. Box 720
Westbrook, ME 04098
Tel: (207) 874-2400 Fax: (207) 775-4029

[illegible]	Maine		New Hampshire		
out of holdtime	NO_3	NO_2	$NO_3 + NO_2$	NO_2	NO
WL1612-5 45757-033	<0.05	0.051	0.084	[redacted]	[redacted]
WL1612-7 45757-035	<0.05	0.074	<0.05	[redacted]	[redacted]
WL1595-16 45757-024	1.6	0.45	2.0	[redacted]	[redacted]
WL1595-18 -026	1.7	0.43	2.1	0.24	[illegible]9
WL1595-20 -028	0.81	0.14	0.94	<0.05	0.9

)lw^1

Katahdin
ANALYTICAL SERVICES

RECEIVED
JUN 11 1996

FAX TRANSMISSION

Date: 06/11/96 Time:

To: E. Brian Rivers / Marybeth Ousey
Smith Environmental Technologies Corp.

From: George Brewer, Metals Section Supv. (Ext. 118)

FAX No: 610-834-8236

Number of Pages (Including This Cover): 19

Comments: Please call if you have any questions regarding this fax.

From: Katahdin Analytical Services, Inc.
340 County Road No. 5
P.O. Box 720
Westbrook, ME 04098
Tel: (207) 874-2400 Fax: (207) 775-4029

Katahdin
Analytical Services

RECEIVED
JUN 11 1996

MEMORANDUM

To: E. Brian Rivers, Smith Environmental Technologies Corp.
From: George Brewer, Metals Section Supervisor, Katahdin Analytical Services, Inc.
Date: 06/11/96
Subject: Response to your inquiry of 06/05/96 (Inquiry No. MET2) regarding metals data for WL-1595 and WL-1612

We are providing the following responses to the questions about Work Orders WL-1595 and WL-1612 presented in your fax of 06/05/96. The section numbers below refer to the question numbers in your fax.

1) These runs were performed on the Thermo Jarrell Ash Trace ICP. This instrument employs a unique background correction technique to provide improved detection limits for lead, selenium, and antimony. For these elements, signal and background are measured simultaneously by monitoring each analytical wavelength in two spectral orders. The analytical channels for the two orders are standardized independently. After standardization, the weighted means of the analytical results for the two orders of each wavelength are reported. In the standardization report on page 87, standardization information for the 220.3 nm lead wavelength in the first order is identified by "2203/1", and that for the second order is identified by "2203/2". The wavelength identified as "Pb2203" is a "dummy" channel where the weighted mean results of the two orders are reported. Therefore, the "Pb2203" channel is listed on the standarization report as "NOT STANDARDIZED". The same convention is followed for the 196.0 nm selenium wavelength and the 206.8 nm antimony wavelength.

2) Two ICP spectrometers were used to produce data for these work orders. For runs performed using the Perkin Elmer Plasma II, the linear reporting range is twice the concentration of the initial calibration standard. This is verified by quarterly analysis of a linear range standard at that concentration (recoveries for the linear range standard must be within +/- 5% of the true values).

For runs performed using the TJA Trace ICP, the instrument was calibrated at 500 mg/L for Al, Ca, and Mg; at 200 mg/L for Fe; and at 2.0 mg/L for all other elements. Results have been reported up to these concentration from this instrument.

Katahdin
ANALYTICAL SERVICES

3) The reported manganese concentration for sample WL-1595-11 is 1.7 mg/L. This analysis was performed using the TJA Trace ICP. As noted in "2" above, the manganese concentration of the initial calibration standard was 2.0 mg/L, and manganese results up to that concentration have been reported from this run.

4) Report of analysis forms for PACE Sample Nos. WM-1595-14, -15, -16, and -18 are being faxed along with this memo.

5) Your question about nitrate nitrogen has been answered by Richard Wellman in a separate memo.

6) The raw data you requested are being faxed along with this memo. Please note that my copy of the data package is not paginated. I hope that this causes no inconvenience.

I hope this provides the information that you need. Please call me if you have further questions.

RECEIVED
JUN 11 1996

340 County Road No. 5
P.O. Box 720 Westbrook, ME 04098
Tel. (207) 874-2400 Fax (207) 775-4029

210 West Road No. 5, Portsmouth, NH 03801
Tel: (603) 431-57?? Fax (603) 436-3356

PACE INCORPORATED
ENVIRONMENTAL LABORATORIES

1 of 2

Maine

CHAIN-OF-CUSTODY RECORD
Analytical Request

Client: Olin
Address: Eames St
Wilmington MASS.
Phone: 508-658-6121

Report To: Rick Sacks
Bill To: Olin
P.O. # / Billing Reference:
Project Name / No. 7074-0102

Pace Client No.
Pace Project Manager
Pace Project No.
*Requested Due Date:

Sampled By (PRINT): Russell Mehalick / Tim Ebner
Sampler Signature: Russell Mehalick / Tim Ebner
Date Sampled: 10/12/95

ITEM NO.	SAMPLE DESCRIPTION	TIME	MATRIX	PACE NO.	NO. OF CONTAINERS	UNPRESERVED	H_2SO_4	HNO_3	VOA w/HCL	Amber	VOA w/HCL	metals (ICP)	SVOA + Pest	TCL VOA + TMP		REMARKS
1	GW80S	1105	AQ	1	6			1	2	3		✓	✓	✓		unfiltered
2	GW80D	0925	AQ	2	6			1	2	3		✓	✓	✓	one voa w/headspace	
3	GW80BR	1025	AQ	3/4/5 ms/msd	18			3	6	9		✓	✓	✓		ms/msd
4	Field Rep.	1212	AQ	6	6			1	2	3		✓	✓	✓		
5	GW300	1348	AQ	7	6			1	2	3		✓	✓	✓		
6	GW81D	1212	AQ	8	6			1	2	3		✓	✓	✓		
7	GW65BR	1415	AQ	9	6			1	2	3		✓	✓	✓		
8	GW81BR	1510	AQ	10	5			1	2	2		✓	✓	✓		Limited Sample Volume

COOLER NOS.	BAILERS	SHIPMENT METHOD OUT/DATE	RETURNED DATE

ITEM NUMBER	RELINQUISHED BY / AFFILIATION	ACCEPTED BY / AFFILIATION	DATE	TIME
	Russell Mehalick BCM/Smith	[signature]	10/12/95	

Additional Comments

Shipped VIA Eastern Connection
Airbill # 1064690
All organics cancelled by client due to incorrect sampling technique. 10-17-95 SMB.

SEE REVERSE SIDE FOR INSTRUCTIONS

ORIGINAL

249120

pace INCORPORATED
VIRONMENTAL LABORATORIES

Pg 2 of 2 Maine Lab

CHAIN-OF-CUSTODY RECORD
Analytical Request

Client: Olin
Address: Wilmington MASS
Phone: 508-658-6121

Report To: Rick Sacks
Bill To: Olin
P.O. # / Billing Reference
Project Name / No. 7074-0102

Pace Client No.
Pace Project Manager
Pace Project No.
*Requested Due Date:

Sampled By (PRINT): Russell Mehalick / Tim Ebner
Sampler Signature: Russell Mehalick
Date Sampled: 10/12/95

ITEM NO.	SAMPLE DESCRIPTION	TIME	MATRIX	PACE NO.	NO. OF CONTAINERS	UNPRESERVED	H_2SO_4	HNO_3	VOA w/ H_2SO_4			ANALYSES REQUEST	REMARKS
1	GW80S	1105		11	3	1		1	1				Filtered
2	GW80D	0925		12	3	1		1	1				
3	GW80BR	1025		13/14/15	9	3		3	3				MS/MSD
4	Field Rep	1212		16	3	1		1	1				
5	GW300	1348		17	3	1		1	1				
6	GW81D	1212		18	3	1		1	1				
7	GW65BR	1415		19	3	1		1	1				
8	GW81BR	1510		20	3	1		1	1				

COOLER NOS.	BAILERS	SHIPMENT METHOD OUT DATE	RETURNED DATE

ITEM NUMBER	RELINQUISHED BY / AFFILIATION	ACCEPTED BY / AFFILIATION	DATE	TIME
	Russell Mehalick BCM/smith	[illegible signature]	1820	

Additional Comments

* all organics cancelled by client due to incorrect sampling technique for organics.
10-17-95 JMB.

ORIGINAL

SEE REVERSE SIDE FOR INSTRUCTIONS

SMITH

APPENDIX B

Field Identification: GW-80S (FILT)   Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Viscosity, dissolved (cpoise)	3.0		45663-001	10/16/95		D3245-85
Chloride, dissolved (mg/L)	15	1	45663-010	10/16/95	763	325.1/1
Sulfate, dissolved (mg/L)	5	1	45663-010	10/13/95	666A	300.0/1
Bromide, dissolved (mg/L)	1	1	45663-010	10/13/95	666A	300.0/1
Ortho Phosphate, dissolved (mg/L as P)	0.16	0.02	45663-010	10/13/95	201	365.2/1
Ammonia-N, dissolved (mg/L as N)	0.22	0.005	45663-020	10/13/95	582	350.2/1
Sulfide, dissolved (mg/L)	6	1	45663-030	10/13/95	310	376.1/1

→ 10X concentrated better RL for Ammonia

Field Identification: GW-80D (FILT)   Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Viscosity, dissolved (cpoise)	3.5		45663-002	10/16/95		D3245-85
Chloride, dissolved (mg/L)	100	1	45663-011	10/16/95	763	325.1/1
Sulfate, dissolved (mg/L)	2	1	45663-011	10/13/95	666A	300.0/1
Bromide, dissolved (mg/L)	2	1	45663-011	10/13/95	666A	300.0/1
Ortho Phosphate, dissolved (mg/L as P)	0.29	0.02	45663-011	10/13/95	201	365.2/1
Ammonia-N, dissolved (mg/L as N)	0.32	0.01	45663-021	10/13/95	582	350.2/1
Sulfide, dissolved (mg/L)	BDL	1	45663-031	10/13/95	310	376.1/1

→ 5X concentrated better RL for Ammonia

Field Identification: GW-80BR (FILT)   Matrix: WATER

DML 1/16/96

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Viscosity, dissolved (cpoise)	3.0		45663-003	10/16/95		D3245-85
Chloride, dissolved (mg/L)	210	1	45663-012	10/16/95	763	325.1/1
Sulfate, dissolved (mg/L)	4	1	45663-012	10/13/95	666A	300.0/1
Bromide, dissolved (mg/L)	3	1	45663-012	10/13/95	666A	300.0/1
Ortho Phosphate, dissolved (mg/L as P)	0.12	0.02	45663-012	10/13/95	201	365.2/1
Ammonia-N, dissolved (mg/L as N)	2.9	0.05	45663-022	10/13/95	582	350.2/1
Sulfide, dissolved (mg/L)	BDL	1	45663-032	10/13/95	310	376.1/1

pace INCORPORATED THE ASSURANCE OF QUALITY

Field Identification: GW-80BR (FILT/DUP) Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Viscosity, dissolved (cpoise)	3.0		45663-004	10/16/95		D3245-85
Chloride, dissolved (mg/L)	210	1	45663-013	10/16/95	763	325.1/1
Sulfate, dissolved (mg/L)	4	1	45663-013	10/13/95	666A	300.0/1
Bromide, dissolved (mg/L)	3	1	45663-013	10/13/95	666A	300.0/1
Ortho Phosphate, dissolved (mg/L as P)	~~0.09~~ 0.10	0.02	45663-013	10/13/95	201	365.2/1
Ammonia-N, dissolved (mg/L as N)	3.3	0.05	45663-023	10/13/95	582	350.2/1
Sulfide, dissolved (mg/L)	BDL	1	45663-033	10/13/95	310	376.1/1

0.10 QC summary form

DMC [illegible]

Field Identification: GW-80BR (FILT/MS) Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Chloride, dissolved (mg/L)	260	1	45663-014	10/16/95	763	325.1/1
Sulfate, dissolved (mg/L)	13	1	45663-014	10/13/95	666A	300.0/1
Bromide, dissolved (mg/L)	11	1	45663-014	10/13/95	666A	300.0/1
Ortho Phosphate, dissolved (mg/L as P)	0.56	0.02	45663-014	10/13/95	201	365.2/1
Ammonia-N, dissolved (mg/L as N)	5.5	0.05	45663-024	10/13/95	582	350.2/1
Sulfide, dissolved (mg/L)	41	1	45663-034	10/13/95	310	376.1/1

Field Identification: GW-81D (FILT) Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Viscosity, dissolved (cpoise)	3.0		45663-006	10/16/95		D3245-85
Chloride, dissolved (mg/L)	2	1	45663-015	10/16/95	763	325.1/1
Sulfate, dissolved (mg/L)	7 ~~6~~	1	45663-015	10/13/95	666A	300.0/1
Bromide, dissolved (mg/L)	BDL	1	45663-015	10/13/95	666A	300.0/1
Ortho Phosphate, dissolved (mg/L as P)	0.03	0.02	45663-015	10/13/95	201	365.2/1
Ammonia-N, dissolved (mg/L as N)	0.20	0.05	45663-025	10/13/95	582	350.2/1
Sulfide, dissolved (mg/L)	BDL	1	45663-035	10/13/95	310	376.1/1

[illegible] DMC [illegible]

pace INCORPORATED THE ASSURANCE OF QUALITY

Field Identification: FIELD REP (FILT) Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Viscosity, dissolved (cpoise)	2.5		45663-007	10/16/95		D3245-85
Chloride, dissolved (mg/L)	2	1	45663-016	10/16/95	763	325.1/1
Sulfate, dissolved (mg/L)	6	1	45663-016	10/13/95	666A	300.0/1
Bromide, dissolved (mg/L)	BDL	1	45663-016	10/13/95	666A	300.0/1
Ortho Phosphate, dissolved (mg/L as P)	0.03	0.02	45663-016	10/13/95	201	365.2/1
Ammonia-N, dissolved (mg/L as N)	0.21	0.05	45663-026	10/13/95	582	350.2/1
Sulfide, dissolved (mg/L)	BDL	1	45663-036	10/13/95	310	376.1/1

Field Identification: GW-65BR (FILT) Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Viscosity, dissolved (cpoise)	3.2		45663-008	10/16/95		D3245-85
Chloride, dissolved (mg/L)	27	1	45663-018	10/16/95	763	325.1/1
Sulfate, dissolved (mg/L)	200	5	45663-018	10/17/95	667A	300.0/1
Bromide, dissolved (mg/L)	BDL	1	45663-018	10/13/95	666A	300.0/1
Ortho Phosphate, dissolved (mg/L as P)	0.03	0.02	45663-018	10/13/95	201	365.2/1
Ammonia-N, dissolved (mg/L as N)	0.37	0.05	45663-028	10/13/95	582	350.2/1
Sulfide, dissolved (mg/L)	BDL	1	45663-038	10/13/95	310	376.1/1

Field Identification: GW-81BR (FILT) Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Viscosity, dissolved (cpoise)	3.0		45663-009	10/16/95		D3245-85
Chloride, dissolved (mg/L)	45	1	45663-019	10/16/95	763	325.1/1
Sulfate, dissolved (mg/L)	55	1	45663-019	10/13/95	666A	300.0/1
Bromide, dissolved (mg/L)	BDL	1	45663-019	10/13/95	666A	300.0/1
Ortho Phosphate, dissolved (mg/L as P)	BDL	0.02	45663-019	10/13/95	201	365.2/1
Ammonia-N, dissolved (mg/L as N)	0.09	0.05	45663-029	10/13/95	582	350.2/1
Sulfide, dissolved (mg/L)	BDL	1	45663-039	10/13/95	310	376.1/1

Field Identification: GW-300 (FILT)		Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Chloride, dissolved (mg/L)	BDL	1	45663-017	10/16/95	763	325.1/1
Sulfate, dissolved (mg/L)	2	1	45663-017	10/13/95	666A	300.0/1
Bromide, dissolved (mg/L)	BDL	1	45663-017	10/13/95	666A	300.0/1
Ortho Phosphate, dissolved (mg/L as P)	BDL	0.02	45663-017	10/13/95	201	365.2/1
Ammonia-N, dissolved (mg/L as N)	0.07	0.05	45663-027	10/13/95	582	350.2/1
Sulfide, dissolved (mg/L)	BDL	1	45663-037	10/13/95	310	376.1/1

Field Identification: GW-80S (UNFILT)		Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Ammonia-N (mg/L as N)	0.20	0.005	45663-040	10/13/95	582	350.2/1

10x concentrated

Field Identification: GW-80D (UNFILT)		Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Ammonia-N (mg/L as N)	0.27	0.01	45663-041	10/13/95	582	350.2/1

5x concentrated

Field Identification: GW-80BR (UNFILT)		Matrix: WATER

DML [illegible]

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Ammonia-N (mg/L as N)	2.8	0.05	45663-042	10/16/95	583	350.2/1

Field Identification: GW-80BR (UNFILT/DUP)		Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Ammonia-N (mg/L as N)	3.0	0.05	45663-043	10/16/95	583	350.2/1

pace. INCORPORATED THE ASSURANCE OF QUALITY

Field Identification: GW-808R (UNFILT/MS)   Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Ammonia-N (mg/L as N)	4.6	0.05	45663-044	10/16/95	583	350.2/1

Field Identification: GW-810 (UNFILT)   Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Ammonia-N (mg/L as N)	0.30	0.05	45663-045	10/13/95	582	350.2/1

Field Identification: FIELD REP (UNFILT)   Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Ammonia-N (mg/L as N)	0.21	0.05	45663-046	10/13/95	582	350.2/1

Field Identification: GW-300 (UNFILT)   Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Ammonia-N (mg/L as N)	BDL	0.05	45663-047	10/13/95	582	350.2/1

Field Identification: GW-658R (UNFILT)   Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Ammonia-N (mg/L as N)	0.47	0.05	45663-048	10/16/95	583	350.2/1

Field Identification: GW-818R (UNFILT)   Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Ammonia-N (mg/L as N)	0.13	0.05	45663-049	10/16/95	583	350.2/1

References: 1) 40 CFR Part 136, Friday, October 26, 1984

pace INCORPORATED THE ASSURANCE OF QUALITY

Laboratory: Pace Incorporated 504 DML 6/12/96
Analysis Date: 10/~~17~~/95 10/13/95

	HEIGHT x	CONC. y	XY	X2	Y2
	8172	**1**	8172	66781584	1
	36269	**5**	181345	1315440361	25
6	**75057**	**10**	750570	5633553249	100
	151452	**20**	3029040	22937708304	400
	327867	**40**	13114680	1.07497E+11	1600
	912233	**100**	91223300	8.32169E+11	10000
SUMS	1511050	176	108307107	9.69619E+11	12126
	XY	265944800			

r **0.999012493**

slope **0.0001086**
INTERCEPT **1.9792486**

	x'	y'	x'	y'
ICV/CCS	416067	47.170865		1.979248583
ICB/MB	-491	1.925918		1.979248583
45663-10	33087	5.5730328		1.979248583
45663-11	3413	2.3499557		1.979248583
45663-12	19895	4.1401679		1.979248583
45663-13	19620	4.1102984		1.979248583
45663-14MS	85364	11.251162		1.979248583
45633-15	45476	6.9186789		1.979248583
45663-16	42018	6.5430841		1.979248583
45663-17	2719	2.274576		1.979248583
45663-18	963527	106.63389		1.979248583
45663-19	489205	55.114837		1.979248583
CCV	150589	18.335653		1.979248583
CCB	1570	2.149776		1.979248583
		1.9792486		1.979248583
		1.9792486		1.979248583
		1.9792486		1.979248583
		1.9792486		1.979248583
		1.9792486		1.979248583
		1.9792486		1.979248583
		1.9792486		1.979248583
		1.9792486		1.979248583
		1.9792486		1.979248583
		1.9792486		1.979248583
		1.9792486		
		1.9792486		

Laboratory: Pace Incorporated

Analysis Date: 10/17/95

504

	HEIGHT x	CONC. y	XY	X2	Y2
	7235	**1**	7235	52345225	1
	27830	**5**	139150	774508900	25
6	**60907**	**10**	609070	3709662649	100
	118187	**20**	2363740	13968166969	400
	258786	**40**	10351440	66970193796	1600
	696272	**100**	69627200	4.84795E+11	10000
SUMS	1169217	176	83097835	5.7027E+11	12126
	XY	205782192			

r **0.99939171**

slope **0.0001425**

INTERCEPT **1.5614346**

	x'	y'	x'	y'
ICV/CCS	327906	48.293079		1.561434579
ICB/MB	-287	1.5205327		1.561434579
CCV	116862	18.216066		1.561434579
CCB	376	1.6150204		1.561434579
45663-18 X5	266563	39.550759		1.561434579
CCV	114700	17.907947		1.561434579
CCB	-183	1.5353543		1.561434579
		1.5614346		1.561434579
		1.5614346		1.561434579
		1.5614346		1.561434579
		1.5614346		1.561434579
		1.5614346		1.561434579
		1.5614346		1.561434579
		1.5614346		1.561434579
		1.5614346		1.561434579
		1.5614346		1.561434579
		1.5614346		1.561434579
		1.5614346		1.561434579
		1.5614346		1.561434579
		1.5614346		1.561434579
		1.5614346		1.561434579
		1.5614346		1.561434579
		1.5614346		1.561434579
		1.5614346		1.561434579
		1.5614346		
		1.5614346		

CALIBRATION CURVE/INFROMATION
Pace Incorporated
Results from 10/16/95

peak heights

Method 300.1	Concentration (in ng/uL)						AVE-6POINTS	SD-6POINTS	%RSD-6POINTS
	1	5	10	20.0	40.0	100.0			
sulfate	8172	36269	75057	151452	327867	912233	7970.5175	679.189527	8.52127264
bromide	8852	42867	91801	187119	407732	984233	9332.846667	605.2753539	6.485431247

RF	Concentration (in ng/uL)						AVE-5POINTS	SD-5POINTS	%RSD-5POINTS
	1	5	10	20	40	100			
sulfate	8172	7253.8	7505.7	7572.6	8196.675	9122.33	7930.221	751.2951867	9.47382408
bromide	8852	8573.4	9180.1	9355.95	10193.3	9842.33	9429.016	623.3648711	6.611133878

5-Point %RSD calcualted from 5-100ng/uL stds.

Calcualted Conc. (based on the Ave. RF of the 1ng-100ng stds)

Method 300.1	Concentration (in ng/uL)					
concentration	1	5	10	20	40	100
sulfate	1.025278472	4.550394626	9.416828957	19.00152656	41.13497022	114.4509124
bromide	0.948478028	4.593132356	9.836334323	20.04950972	43.68784944	105.4590346

%Recoveries (comparing the known conc. to the calculated conc.)

	Concentration (in ng/uL)					
concentration	1	5	10	20	40	100
sulfate	102.5278472	91.00789252	94.16828957	95.00763282	102.8374255	114.4509124
bromide	94.84780278	91.86264712	98.36334323	100.2475486	109.2196236	105.4590346

CALIBRATION CURVE/INFORMATION

Pace Incorporated

Results from 10/17/95

peak heights

Method 300.1	Concentration (in ng/uL)						AVE-6POINTS	SD-6POINTS	%RSD-6POINTS
	1	5	10	20.0	40.0	100.0			
sulfate	9448	40368	86984	175137	387589	979896	9077.589167	676.3050535	7.450271665
bromide	7235	27830	60907	118187	258786	696272	6372.236667	639.6975875	10.03882343

RF	Concentration (in ng/uL)						AVE-5POINTS	SD-5POINTS	%RSD-5POINTS
	1	5	10	20	40	100			
sulfate	9448	8073.6	8698.4	8756.85	9689.725	9798.96	9003.507	728.4053824	8.090240641
bromide	7235	5566	6090.7	5909.35	6469.65	6962.72	6199.684	536.85015	8.659314732

5-Point %RSD calcualted from 5-100ng/uL stds.

Calcualted Conc. (based on the Ave. RF of the 1ng-100ng stds)

Method 300.1	Concentration (in ng/uL)					
concentration	1	5	10	20	40	100
sulfate	1.040804979	4.446995701	9.582279877	19.29333844	42.6973498	107.9467226
bromide	1.135394113	4.3673833	9.55818[illegible]344	18.54717679	40.61148597	109.2665004

%Recoveries (comparing the known conc. to the calculated conc.)

concentration	Concentration (in ng/uL) 1	5	10	20	40	100
sulfate	104.0804979	88.93991402	95.82279877	96.46669219	106.7433745	107.9467226
bromide	113.5394113	87.34766599	95.58182344	92.73588395	101.5287149	109.2665004

Analysis: ortho-phosphorus
Laboratory: Pace Incorporated
Initial Cal. Date **2/1/95** Analysis Date: **10/13/95**

	ABS. x	CONC. y	XY	X2	Y2
	0.001	**0**	0	0.000001	0
	0.017	**0.025**	0.000425	0.000289	0.000625
7	**0.035**	**0.05**	0.00175	0.001225	0.0025
	0.07	**0.1**	0.007	0.0049	0.01
	0.18	**0.25**	0.045	0.0324	0.0625
	0.376	**0.5**	0.188	0.141376	0.25
	0.571	**0.75**	0.42825	0.326041	0.5625
SUMS	1.25	1.675	0.670425	0.506232	0.888125
	XY	2.09375			

r 0.999841759

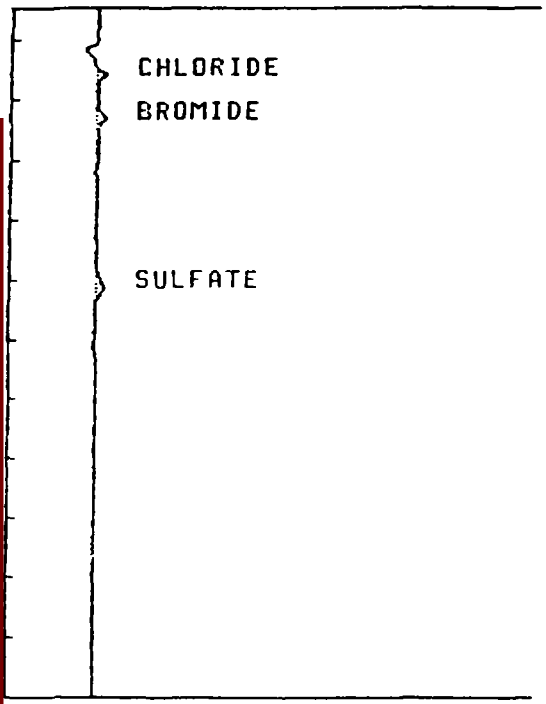
slope **1.3119951**
INTERCEPT **0.0050009**

	x'	y'	x'	y'
MBLANK	0.002	0.007625		0.005000873
LCSA	0.347	0.460263		0.005000873
45663-12	0.087	0.119144		0.005000873
45663-12D	0.069	0.095529		0.005000873
45663-12SPK	0.423	0.559975		0.005000873
45663-10	0.116	0.157192		0.005000873
45663-11	0.22	0.29364		0.005000873
45663-13	0.069	0.095529		0.005000873
45663-14	0.423	0.559975		0.005000873
45663-15	0.016	0.025993		0.005000873
45663-16	0.017	0.027305		0.005000873
45663-17	0.007	0.014185		0.005000873
45663-18	0.015	0.024681		0.005000873
45663-19	0.006	0.012873		0.005000873
		0.005001		0.005000873

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802
INJECTION VOLUME~~: 20uL~~ COLUMN: IONPAC AS4A 4mm #26328
Sample Name : 1 PPM Report No :332.00

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 1/ 1



Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_13.SEQ
Method File : /DATA/DIONEX/METHOD/IC555.MTH
Result File : /DATA/DIONEX/RESULT/IC0525200.RES

Run Time : 12.03 Minutes Injected on 1548 13Oct1995
Report Time : 1601 13Oct1995
Run Status : RunStatusOK
EndOffBaseline

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

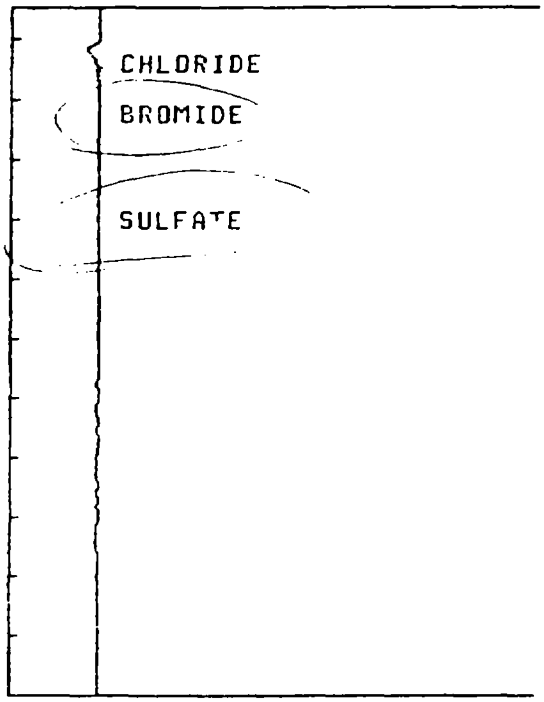
Pk#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	1.55	1.57	7.25E-06	9040	PV	.1559	CHLORIDE
2	2.27	2.33	1.28E-05	8852	VV	1.4762	BROMIDE
3	5.09	5.00	7.08E-06	8172	VV	.8975	SULFATE

Bromide responded better than 1.0PPM Std.

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0 n
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802 µ
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : ICB/MS Report No :339.00

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 8/ 8



Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_13.SEQ
Method File : /DATA/DIONEX/METHOD/IC555.MTH
Result File : /DATA/DIONEX/RESULT/IC0525207.RES

Run Time : 12.03 Minutes Injected on 1736 13Oct1995
Report Time : 1748 13Oct1995
Run Status : RunStatusOK
EndOffBaseline

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	1.52	1.57	7.00E-06	-2560	PV	.5530	CHLORIDE
2	2.36	2.33	9.81E-06	-214	PP	1.1735	BROMIDE NR
3	4.11	#5.00	5.94E-06	-491	PV	1.4673	SULFATE

Mom 10/16/95

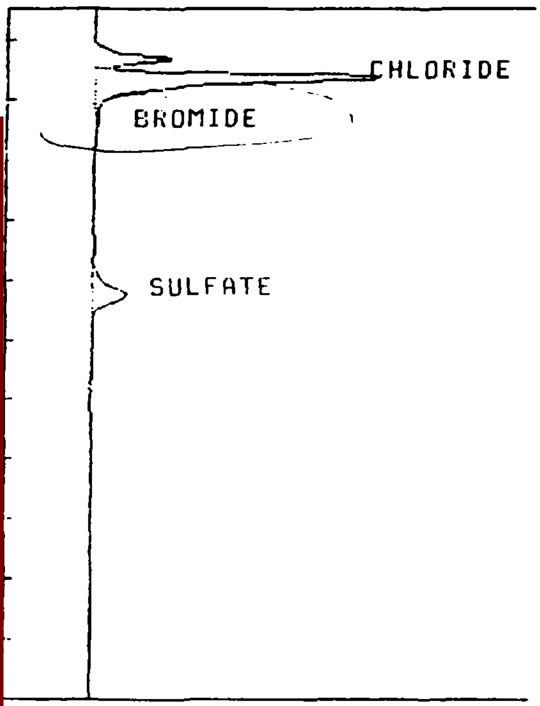
negative heights - positive concentratio
no apparent peak
Bromide not reported @ <1.0
Sulfate not reported @ <1.0

DNL [illegible]

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0 n
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802 µ
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : 45-663-10 Rerun Report No :340.01

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 9/ 9



Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_13.SEQ
Method File : /DATA/DIONEX/METHOD/IC555.MTH
Result File : /DATA/DIONEX/RESULT/IC0525208.RES

Run Time : 12.03 Minutes Injected on 1749 13Oct1995
Report Time : 0822 16Oct1995
Run Status : RunStatusOK
EndOffBaseline
SpecialInteg

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	1.58	1.57	7.00E-06	318411	VV	17.6231	CHLORIDE
2	2.37	2.34	9.81E-06	2642	FF	~~1.3850~~	~~BROMIDE~~
3	5.19	#5.01	5.94E-06	33087	VV	5.3594	SULFATE

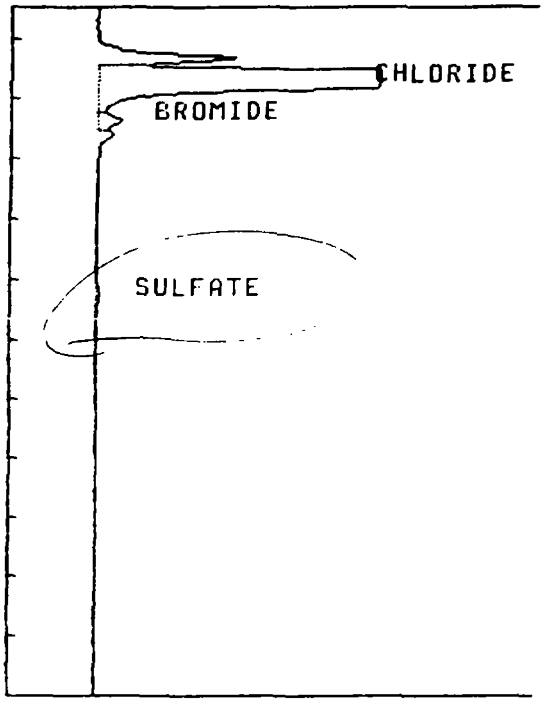
MM 10/16/95

Bromide is an apparent peak
positive concentration-biased high
due to low std.
[illegible] RL due to RPD data

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0 n
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802 µ
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : 45663-11 Report No :341.00

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 10/ 10



Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_13.SEQ
Method File : /DATA/DIONEX/METHOD/IC555.MTH
Result File : /DATA/DIONEX/RESULT/IC0525209.RES

Run Time : 12.03 Minutes Injected on 1802 13Oct1995
Report Time : 1814 13Oct1995
Run Status : EndOffBaseline
SignalOverload

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	1.68	1.57	7.00E-06	993210	GV	86.0669	CHLORIDE
2	2.33	2.33	9.81E-06	24402	~~VV~~	3.7730	BROMIDE
3	5.21	#5.01	5.94E-06	3413	PV	1.8598	SULFATE

Reintegrate

MCM 10/16/95

Reintegrate Br due to tailing CL

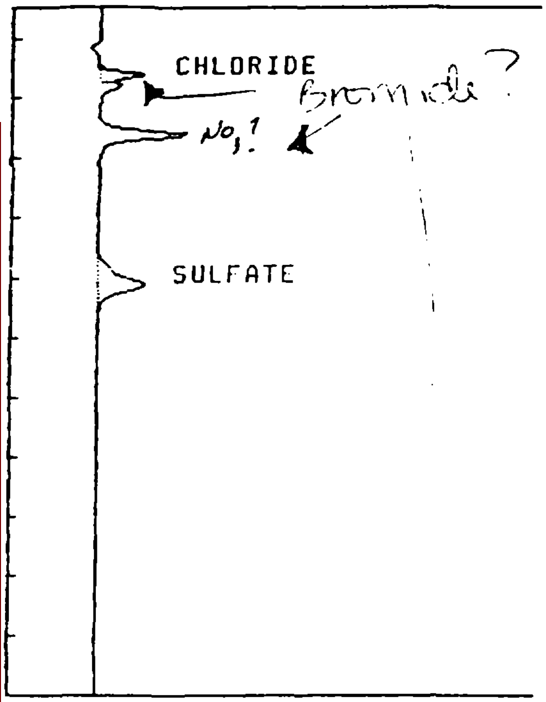
sulfate - no apparent peak
positive concentration

DMB 10/16/95

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0 n
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802 µ
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : 45663-15 Report No :345.00

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 14/ 14



Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_13.SEQ
Method File : /DATA/DIONEX/METHOD/IC555.MTH
Result File : /DATA/DIONEX/RESULT/IC0525213.RES

Run Time : 12.03 Minutes Injected on 1853 13Oct1995
Report Time : 1905 13Oct1995
Run Status : RunStatusOK
EndOffBaseline

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	1.56	1.57	7.00E-06	43446	PV	1.9829	CHLORIDE
2	5.06	#5.01	5.94E-06	45476	PP	6.5059	SULFATE

rounds to 7
lab reported 6
Mbs 10/16/95
Terror

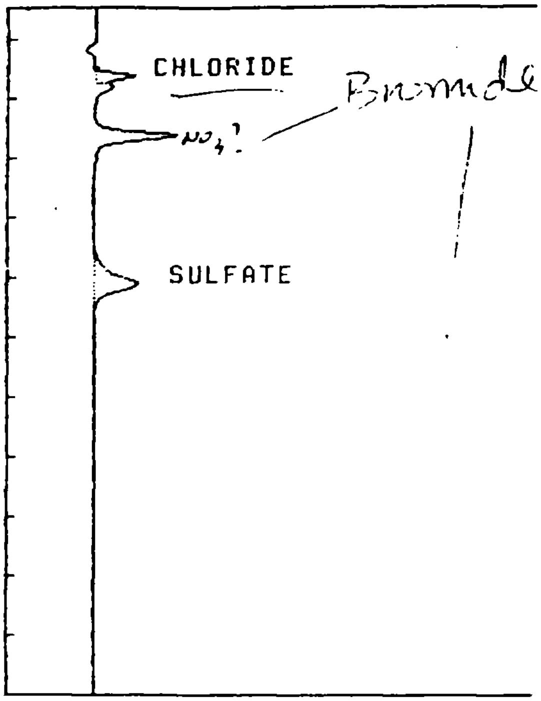
DMK
6/10/96

R3 - see original response
from Mr Richard Wellman.

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0 n
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802 µ
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : 45663-16 Report No :346.00

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 15/ 15



Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_13.SEQ
Method File : /DATA/DIONEX/METHOD/IC555.MTH
Result File : /DATA/DIONEX/RESULT/IC0525214.RES

Run Time : 12.03 Minutes Injected on 1906 13Oct1995
Report Time : 1918 13Oct1995
Run Status : RunStatusOK
EndOffBaseline

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	1.56	1.57	7.00E-06	38622	PV	~~1.7914~~	~~CHLORIDE~~
2	5.05	*5.01	5.94E-06	42018	PV	6.2033	SULFATE

MAMG 10/16/95

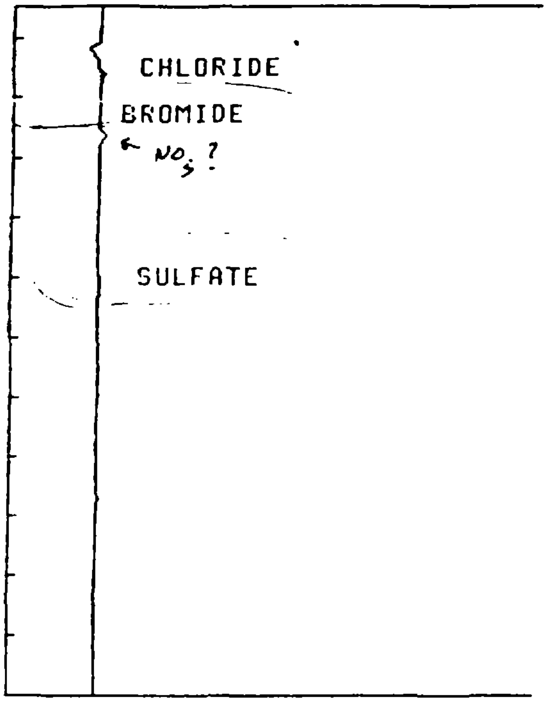
No sci inquiry response
from Mr. Richard Stillman

DMG 10/16

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0 n
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802 μ
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : 45663-17 Report No :347.00

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 16/ 16



Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_13.SEQ
Method File : /DATA/DIONEX/METHOD/IC555.MTH
Result File : /DATA/DIONEX/RESULT/IC0525215.RES

Run Time : 12.03 Minutes Injected on 1919 13Oct1995
Report Time : 1931 13Oct1995
Run Status : RunStatusOK
EndOffBaseline

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	1.58	1.57	7.00E-06	5121	PP	.5913	CHLORIDE
2	2.35	2.33	9.81E-06	-459	PP	1.1934	BROMIDE NP
3	5.07	#5.01	5.94E-06	2719	PV	1.6984	SULFATE

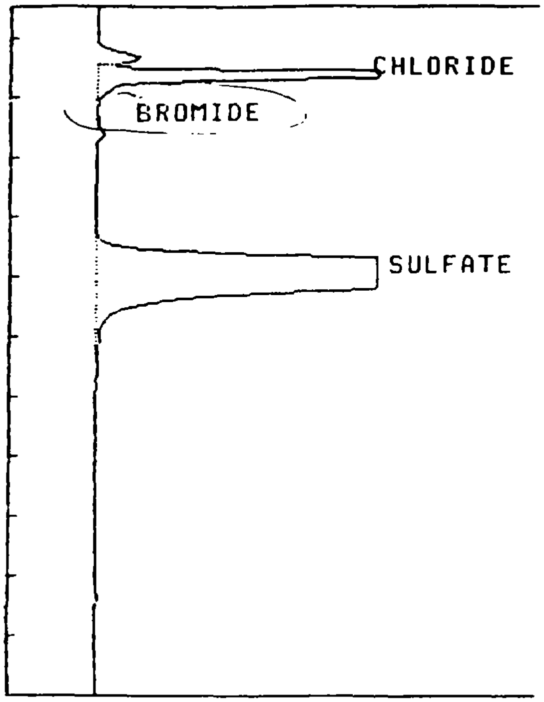
MLB 10/16/95

negative height positive concentration above Reporting limit
no apparent peak
bromide not reported @ <1.0
sulfate no apparent peak - positive conc.

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0 n
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802 µ
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : 45663-18 Report No :348.00

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 17/ 17



Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_13.SEQ
Method File : /DATA/DIONEX/METHOD/IC555.MTH
Result File : /DATA/DIONEX/RESULT/IC0525216.RES

Run Time : 12.03 Minutes Injected on 1932 13Oct1995
Report Time : 1944 13Oct1995
Run Status : EndOffBaseline
SignalOverload

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	1.55	1.57	7.00E-06	877798	VV	~~29.1053~~	~~CHLORIDE~~
2	2.31	2.33	9.81E-06	977	VV	1.2485	BROMIDE
3	4.89	#5.01	5.94E-06	963527	GV	150.9097	SULFATE ← Dilute

MG 10/16/95

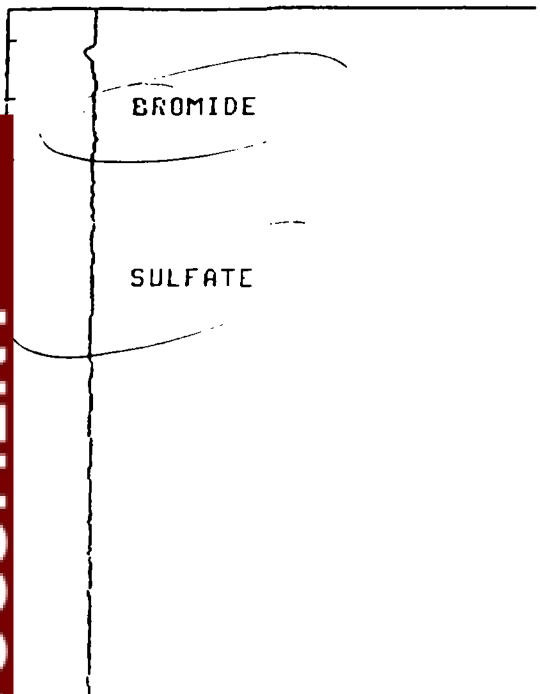
positive height - positive none above reporting limit
Bromide not reported @ <1.0

SMG 10/16

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0 n
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802 µ
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : CCB Report No :351.00

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 20/ 20



Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_13.SEQ
Method File : /DATA/DIONEX/METHOD/IC555.MTH
Result File : /DATA/DIONEX/RESULT/IC0525219.RES

Run Time : 12.03 Minutes Injected on 2010 13Oct1995
Report Time : 2023 13Oct1995
Run Status : RunStatusOK
EndOffBaseline

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	2.21	2.33	9.81E-06	532	PV	1.2039	BROMIDE NR
2	5.07	#5.01	5.94E-06	1570	PV	1.5630	SULFATE NR

MCB
10/16/95

Positive low level positive concentrations
no apparent peaks
Bromide not reported @ <1.0
Sulfate not reported @ <1.0

[illegible]

PACE INC. NE-NH LAB
QUALITY CONTROL
Sulfide
Method: EPA-600 376.1 / SW846 9030

QC Batch: 310
Matrix: WATER

METHOD BLANK:

	Result mg/L
	19.38

LABORATORY CONTROL SAMPLES:

	True Value mg/L	Observed Value mg/L	Accuracy Recovery %
LCS1	36.24	36.76~~3~~	101.4

FIELD SAMPLE:

Precision

Lab No.	Replicate 1 mg/L	Replicate 2 mg/L	Average mg/L	Relative Percent Difference %
45663-32	< 1.00	< 1.00	NC	NC

Accuracy

Lab No.	Replicate 1 mg/L	Spike Added mg/L	Spike Found mg/L	Recovery %
45663-32	< 1.00	36.2422	41.08	113.4

NC = Not calculable due to result below detection limit.

pace. INCORPORATED THE ASSURANCE OF QUALITY

pace. INCORPORATED
ENVIRONMENTAL LABORATORIES

PACE Hampton

pg 1 of 2

249118

CHAIN-OF-CUSTODY RECORD
Analytical Request

Client: Olin
Address: Eames St
Wilmington Mass.
Phone: 508-658-6121

Report To: Rick Sacks
Bill To: Olin
P.O. # / Billing Reference:
Project Name / No. 7074-0102

Pace Client No.
Pace Project Manager
Pace Project No.
*Requested Due Date:

Sampled By (PRINT): Russell Mehnlick, Tim Ebner
Sampler Signature: Russell Mehnlick, Tim Ebner
Date Sampled: 10/12/95

ITEM NO.	SAMPLE DESCRIPTION	TIME	MATRIX	PACE NO.	NO. OF CONTAINERS	UNPRESERVED	H_2SO_4	HNO_3	VOA	Zn Acetate/NaOH	Viscosity	3 Anions SO4 Cl-	Dissolved NH3	Sulfide	REMARKS
1	GW80S	1105	AQ	4	4	2	1			1	1-✓	10	20	✓-30	Filtered
2	GW80D	0925	AQ	4	4	2	1			1	2-✓	11	21	✓-31	Filtered
3	GW80BR	1025	AQ		12	6	3			3	3,4,5 ✓	12,13,14	22,23,24	✓-32,33,34	MS/MSD Filtered
4	GW81D	1212	AQ		4	2	1			1	6 ✓	15	25	✓ 35	Filtered
5	Field Rep	1212	AQ	4	4	2	1			1	7 ✓	16	26	✓-36	Filtered
6	GW300	1348	AQ		3	1	1			1		17	27	✓-37	Filtered
7	GW65BR	1415	AQ		4	2	1			1	8 ✓	18	28	✓-38	Filtered
8	GW81BR	1510	AQ		4	2	1			1	9 ✓	19	29	✓-39	Filtered

COOLER NOS.	BAILERS	SHIPMENT METHOD OUT DATE	RETURNED DATE	ITEM NUMBER	RELINQUISHED BY / AFFILIATION	ACCEPTED BY / AFFILIATION	DATE	TIME
					Russell Mehnlick BCM/Smith	K. Lawson / Pace NH	10/12/95	1710

Additional Comments

SEE REVERSE SIDE FOR INSTRUCTIONS

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

Pg 2 of 2

PACE Hampton

249119

CHAIN-OF-CUSTODY RECORD
Analytical Request

Client: Olin
Address: Wilmington Mass

Phone: 508 658-6121

Report To: Rick Sacks
Bill To: Olin
P.O. # / Billing Reference:
Project Name / No. 7074-0102

Pace Client No.
Pace Project Manager
Pace Project No.
*Requested Due Date:

Sampled By (PRINT): Russell Mehalick, Tim Ebner
Sampler Signature: Russell Mehalick, Tim Ebner
Date Sampled: 10/12/95

ITEM NO.	SAMPLE DESCRIPTION	TIME	MATRIX	PACE NO.	NO. OF CONTAINERS	UNPRESERVED	H_2SO_4	HNO_3	VOA		ANALYSES REQUEST: Total TKN	REMARKS
1	GW 80S	1105	AQ		1		1				✓-40	unfiltered
2	GW 80D	0925	AQ		1		1				✓-41	
3	GW 80BR	1025	AQ		3		3				✓-42,43+44	ms/msD
4	GW 81D	1212	AQ		1		1				✓-45	
5	Field Rep.	1212	AQ		1		1				✓-46	
6	GW 300	1348	AQ		1		1				✓-47	
7	GW 65BR	1415	AQ		1		1				✓-48	
8	GW 81BR	1510	AQ		1		1				✓-49	

Final Page

COOLER NOS.	BAILERS	SHIPMENT METHOD OUT DATE	RETURNED DATE

Additional Comments

ITEM NUMBER	RELINQUISHED BY / AFFILIATION	ACCEPTED BY / AFFILIATION	DATE	TIME
	Russell Mehalick BCM/Smith	H Lawson / PACE NH	10/12/95	1710

SEE REVERSE SIDE FOR INSTRUCTIONS

9010009

Katahdin
ANALYTICAL SERVICES

6/7/96

Ms. Danielle Leauby
Smith BCM
By FAX

Dear Danielle:

In response to questions raised on the phone I am providing the following:

Bromide and sulfate linear regression - It would appear that the data provided in the package was determined from peak area and only peak height is available from the raw chromatograms. This data system is no longer available to us. The data cannot be corrected.

Bromide chromatograms from WL1595 (Hampton 45663-15,16) not integrated for an apparent bromide peak - The laboratory believes that there is no issue with the choice of peaks for bromide quantitation.

Lachat analyses - The Lachat is calibrated by using a point to point method. Results for the analyte are reported in concentration units. No raw absorbance was reported in the package that would allow comparison of sample results to the calibration data. Results from the Lachat are accepted by the laboratory based on the performance of ICVs, CCVs and LCSs.

Please call if you have further questions.

Sincerely,

Richard L. Wellman

Richard L. Wellman
Client Services Manager

RECEIVED
JUN 10 1996

310 County Road No. 5
P.O. Box 720, Westbrook, ME 04093

310 West Road No. 5, Portsmouth, NH

DATA VALIDATION REPORT

OCTOBER, 1995 MONITORING EVENT

WORK ORDER NUMBER WL-1612

FOR

OLIN CORPORATION
WILMINGTON, MASSACHUSETTS

SMITH ENVIRONMENTAL TECHNOLOGIES CORPORATION
PROJECT NO. 00-7074-0102

PREPARED FOR

OLIN CORPORATION

JUNE, 1996

SMITH

Engineering • Consulting • Remediation • Construction

SMITH
ENVIRONMENTAL TECHNOLOGIES CORPORATION

DATA REVIEW COVER SHEET

Date: June 25, 1996
Subject: Data Validation of the October 1995 Sampling Event at the Olin Corporation's Wilmington, MA Facility
Smith Env. Tech. Corp. Project No. 00-7074-0102

Data validation was performed on selected analytical results from the October 1995 sampling event at Olin Corporation's Wilmington, Massachusetts Facility. Samples collected during these events were analyzed by Katahdin Analytical Services' Westbrook, Maine and New Hampshire facilities. The laboratory work order numbers reviewed were WL-1612, WL-1595, WL-1622, WL-1628 (surface water samples only), and WL-1644.

The data validation guidelines that were used for the reviews are referenced in the individual reports. The data validation reports address all issues detailed in the appropriate data validation guidelines.

The following Smith Environmental Technologies Corporation Quality Assurance (QA) Department personnel contributed to the preparation of the data review reports:

Atwood F. Davis, CPC, QA Director — Atwood F. Davis

Martin B. Kudlesky, CPC, Senior QA Scientist — Martin B. Kudlesky

Danielle M. Leauby, QA Scientist — Danielle M. Leauby

Marybeth Ousey, QA Scientist — Marybeth Ousey

E. Bryan Rivers, QA Scientist — E. Bryan Rivers

A copy of this cover sheet with appropriate signatures must accompany all listed reports.

DATA VALIDATION REPORT
METALS AND SELECTED ANALYTES
OLIN CORPORATION
GROUNDWATER SAMPLES

INTRODUCTION

A data validation was performed on the analytical data from the 7 groundwater sampling locations sampled on October 16, 1995 at the Olin Corporation's Wilmington, Massachusetts Facility. This review is of work order number WL-1612 which contained 7 filtered groundwater samples and 7 unfiltered groundwater samples. All samples in this report were analyzed by Katahdin Analytical Services, Inc. (formerly PACE Incorporated Environmental Laboratories), Westbrook, Maine, following United States Environmental Protection Agency (EPA) Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (SW-846), Methods for Chemical Analysis of Water and Wastes (MCAWW), and Standard Methods for the Examination of Water and Wastewater, 16th Edition, 1985 (SM), American Public Health Association (APHA). The individual analyses were performed using the following methods:

Analytes	Methods
aluminum, arsenic, barium, calcium, chromium, iron, lead, magnesium, manganese, potassium, silicon, and sodium	200.7
hexavalent chromium*	7195/6010
bicarbonate as HCO3 and carbonate as CO3*	SM406C
nitrate as N and nitrite as N*	353.2
dissolved organic carbon (DOC)*	415.1
phosphorus as P *	365.4
solids - filterable residue (TDS)*	160.1

*Analyses were performed on filtered samples only.

Because the analyses were not performed according to the EPA Contract Laboratory Program (CLP) methods, the findings in this report are based upon a review of sample data and of quality control (QC) specified by the individual analytical methods and provided by the laboratory. The quality assurance review was prepared according to EPA Region I Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analysis (data validation guidelines), June 1988, where applicable.

SMITH

The support documentation in Appendix A of this report summarizes the specifics of this review. Appendix A also provides the sample results as reported by the laboratory. The data summary table lists all analytes that were analyzed. Analytical problems are outlined in the following Findings/Qualifiers Section. Other issues which were identified which did not warrant qualification are detailed in the Notes Section.

FINDINGS/QUALIFIERS

This data validation report addresses Pace, Inc. work order number WL-1612 which contained 7 filtered groundwater samples and 7 unfiltered groundwater samples. The data were evaluated for the following parameters:

* data completeness
* holding times
data calibration verification
CRDL standard
* laboratory blank analysis
\+ field blank analysis
* interference check sample results
matrix spike recoveries
\+ laboratory duplicates
\+ field duplicates
* laboratory control sample results
\+ serial dilution results
detection limit results
sample results

* All criteria were met for this parameter.
\+ All criteria were met for this parameter; however, this parameter is discussed in the Notes Section of this report.

The data summary table provided at the end of this report summarizes the validation recommendations which were based on the following information:

1. Standards for certain metals were analyzed at the contract required detection limit (CRDL) as required by CLP methodologies. Although the analyses associated with this data were not CLP analyses, this standard represents system performance at or near the concentration of the CRDL. It was the reviewer's professional judgment to

qualify data which were out of the CRDL standard criteria specified in the Region I data validation guidelines. As a result, the following data are qualified:

- The percent recovery (%R) was high for the CRDL standard associated with all lead results. Therefore, the positive lead result for sample GW-62BR unfiltered (WL-1612-12) is estimated and may be biased high. Because the recovery was high, the non-detect results were not estimated.

- The %R was high for the CRDL standard associated with the manganese results for samples GW-62D filtered (WL-1612-4), GW-58S filtered (WL-1612-6), GW-64-S filtered (WL-1612-8), GW-62D unfiltered (WL-1612-11), and GW-58S unfiltered (WL-1612-13). Therefore, these positive manganese results are estimated and may be biased high.

2. Due to low recoveries of the nitrite initial standards, all nitrite results below 0.20 ppm are estimated and may be biased low. All nitrite results are effected.

   These nitrite results of record were analyzed at Katahdin's Maine facility on 10/17/95 within holding times. To determine the nitrate concentration for the samples nitrate plus nitrite was analyzed on 10/25/95 at Katahdin's New Hampshire facility. This analysis was performed within holding times. However, nitrite which was run as part of these analyses to obtain the nitrate results (by subtracting nitrite from nitrate plus nitrite) was analyzed out of holding times. Therefore, the laboratory evaluated the differences between the results from the different facilities and chose the most appropriate analyses to determine the nitrate results. Due to the estimated nitrite results, all nitrate results are also estimated; however, a bias could not be determined.

3. Due to high recoveries of the initial standards below 1.0 ppm, all non-detect results for phosphorus as P are estimated. Additionally, these values are also estimated because several sample results and QC results for phosphorus as P exhibited negative concentrations with absolute values above the practical quantitation limit (PQL). A bias for these results could not be determined. Copies of the raw data are included in Appendix A of this report.

4. All positive dissolved organic carbon results are estimated and may be biased high due to high matrix spike recoveries.

5. The phosphorus as P detection limit for sample GW-62D filtered (WL-1612-4) is estimated because PQL could not be achieved. As a result, the phosphorus non-detect result for sample WL-1612-4 was analyzed at a dilution, and the detection limit of this result was elevated by the laboratory to reflect the dilution factor as indicated on the Report of Analysis Forms included in Appendix A. A specific explanation was not provided by the laboratory.

SMITH

NOTES

The following items were noted during the validation review which did not impact results or necessitate further qualification of data:

1. There were transcription errors on the aqueous laboratory control sample and preparation blank QC reporting forms. The reviewer-corrected forms are included in Appendix A. No data are qualified.

2. There were no field blank samples or field duplicate samples associated with this order.

3. A serial dilution sample was not provided by the laboratory as recommended by the MCAWW Method 200.7. Since performance of a serial dilution is not required by the method, no data are qualified.

4. The %Rs for several initial and continuing calibration verifications could not be verified because sufficient information was not provided by the laboratory.

5. Several QC results were reported in the raw data that were not provided on the Method Blank and Laboratory Control Sample Results Form for alkalinity, nitrite, nitrate, total phosphate, dissolved organic carbon, and TDS. Because it was difficult to determine which QC results in the raw data were associated with order WL-1612, all QC information provided in the raw data was applied to the data review.

6. For order WL-1612 matrix spike samples were only provided for alkalinity, dissolved organic carbon, and phosphorus as P, and laboratory duplicate samples were only provided for alkalinity, dissolved organic carbon, phosphorus as P, and TDS. These results were within criteria except for the results discussed in the Findings/Qualifiers Section of this report.

   There were no matrix spike or laboratory duplicate samples associated with this order for the metals' analyses. The matrix spike or laboratory duplicate samples associated with the metals' batch was analyzed with order WL-1613. This order contained samples from the same facility as order WL-1612; however, the samples from WL-1613 were analyzed for aluminum and chromium only. The results for these matrix spike or laboratory duplicate samples were acceptable; however, no impact could be determined for the remaining metals based on the matrix spike or laboratory duplicate analyses.

7. Several ICP analyte results which were acceptable results were reanalyzed with unacceptable ICP analyte results. The laboratory's logic for choosing the results of record for those samples is included in Appendix A.

8. Several filtered analytical results were reported at higher concentrations than their associated unfiltered results. In these instances, the relative percent differences (RPDs) between the filtered and unfiltered were within normally expected precision (see the spreadsheet included in Appendix A of this report) The reviewer concludes that these results are not statistically different,and that these results are present in a dissolved form. No results are qualified.

SUMMARY

This review has identified CRDL standard %Rs, initial standard recoveries, negative concentrations with absolute values above the PQL, a matrix spike %R, and elevated detection limits for non-detect sample results as areas of concern. The reported data are usable as qualified on the data summary table. For specifics relating to this review, see the attached documentation in Appendix A.

SMITH

QUALIFIER CODES

J - The associated value is an estimated quantity.

UJ - The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.

DATA SUMMARY TABLE

Site Name: Olin: Wilmington, MA

Project Number: 00-7074-0102

Sampling Date(s): 10/16/95

Liquid mg/l

Laboratory: Pace/Katahdin

Case/Order #: WL-1612

Field Duplicates: N/A

PQL	Sample location or description	GW-64S		GW-64D		GW-62S		GW-62D		GW-62BR		GW-58S		GW-58D	
	Sample number	WL-1612-1		WL-1612-2		WL-1612-3		WL-1612-4		WL-1612-5		WL-1612-6		WL-1612-7	
	Sampling date	10/16/95		10/16/95		10/16/95		10/16/95		10/16/95		10/16/95		10/16/95	
	unfilt./filt.	filt.		filt.		filt.		filt.		filt.		filt.		filt.	
PQL	Comments														
0.10	Aluminum *	0.28												0.55	
0.005	Arsenic *			0.014		0.028								0.007	
0.005	Barium *	0.014		0.093		0.025		0.018		0.016		0.021		0.009	
0.050	Calcium *	14		110		37		38		440		11		240	
0.015	Chromium *													0.023	
0.015	Chromium, Hexavalent*														
0.015	Chromium, Trivalent*													0.023	
0.025	Iron *	1.4		70		20		0.11		6.2		0.036		77	
0.005	Lead *														
0.050	Magnesium *	2.8		31		5.7		12		320		1.9		85	
0.005	Manganese *	0.34		2.2		4.8		1.6	J	42		0.16	J	30	
0.50	Potassium *	2.2		11		10		2.2		34		2.6		28	
0.10	Silicon	5.3		8.8		6.9		4.6		11		4.7		12	
0.10	Sodium *	47		210		31		46		1900		76		1100	
20	Bicarbonate as HCO3*	44		90		93		64		430		29		92	
20	Carbonate as CO3*														
0.05	Nitrate as N *	0.25	J		UJ		UJ	0.39	J		UJ	2.1	J		UJ
0.050	Nitrite as N *		UJ	0.11	J	0.11	J		UJ	0.051	J		UJ	0.074	J
1.0	Diss. Organic Carbon	15	J	7.4	J	6.6	J	2.3	J	26	J	1.6	J	47	J
0.10	Phosphorus as P *		UJ		UJ		UJ		UJ		UJ		UJ		UJ
10	Solids-Filterable Residue (TDS)	220		1300		260		370		8000		260		4500	

*=Reported as dissolved.

N/A = Analyte not analyzed.

WL1612I.XLS

Maryberth Ouelley 6/12/96

DATA SUMMARY TABLE

Site Name: Olin, Wilmington
Project Number:
Sampling Date(s): 10/16/95

Liquid mg/l

Laboratory: Pace Env. Laboratories
Case/Order #: WL-1612
Field Duplicates: N/A

PQL	Sample location or description	GW-64S		GW-64D		GW-62S		GW-62D		GW-62BR		GW-58S		GW-58D	
	Sample number	WL-1612-8		WL-1612-9		WL-1612-10		WL-1612-11		WL-1612-12		WL-1612-13		WL-1612-14	
	Sampling date	10/16/95		10/16/95		10/16/95		10/16/95		10/16/95		10/16/95		10/16/95	
	unfilt./filt.	unfilt.		unfilt.		unfilt.		unfilt.		unfilt.		unfilt.		unfilt.	
PQL	Comments														
0.10	Aluminum	0.41												0.63	
0.005	Arsenic			0.014		0.025				0.005				0.008	
0.005	Barium	0.014		0.076		0.024		0.023		0.019		0.025		0.009	
0.050	Calcium	14		120		35		46		470		11		250	
0.015	Chromium													0.023	
0.015	Chromium, Hexavalent	N/A		N/A		N/A		N/A		N/A		N/A		N/A	
0.015	Chromium, Trivalent	N/A		N/A		N/A		N/A		N/A		N/A		N/A	
0.025	Iron	1.4		65		17		0.081		6.4		0.040		75	
0.005	Lead									0.007	J				
0.050	Magnesium	2.6		33		5.3		14		350		1.8		89	
0.005	Manganese	0.34	J	2.6		5.0		1.7	J	45		0.17	J	31	
0.50	Potassium	2.4		12		9.8		3.0		38		2.9		27	
0.10	Silicon	5.5		8.9		6.5		4.8		12		4.7		12	
0.10	Sodium	46		220		30		54		2100		78		1100	
20	Bicarbonate as HCO3	N/A		N/A		N/A		N/A		N/A		N/A		N/A	
20	Carbonate as CO3	N/A		N/A		N/A		N/A		N/A		N/A		N/A	
0.05	Nitrate as N *	N/A		N/A		N/A		N/A		N/A		N/A		N/A	
0.050	Nitrite as N *	N/A		N/A		N/A		N/A		N/A		N/A		N/A	
1.0	Diss. Organic Carbon	N/A		N/A		N/A		N/A		N/A		N/A		N/A	
0.10	Phosphorus as P *	N/A		N/A		N/A		N/A		N/A		N/A		N/A	
10	Solids-Filterable Residue (TDS)	N/A		N/A		N/A		N/A		N/A		N/A		N/A	

*=Reported as dissolved.
N/A = Analyte not analyzed.

WL1612I.XLS

Mary Beth Deuser 6/–/96

SMITH

DATA VALIDATION REPORT
CHLORIDE, SULFATE, BROMIDE, ORTHOPHOSPHATE, SULFIDE, VISCOSITY, AND AMMONIA-N
OLIN CORPORATION
GROUNDWATER SAMPLES

INTRODUCTION

A data validation was performed on the analytical data from the 7 groundwater sampling locations sampled on October 16, 1995 at the Olin Corporation's Wilmington, Massachusetts Facility. This review is of work order number WL-1612 which contained 7 filtered groundwater samples and 7 unfiltered groundwater samples. All samples in this report were analyzed by Katahdin Analytical Services, Inc. (formerly PACE Incorporated Environmental Laboratories), Westbrook, Maine, following *"Methods for Chemical Analysis of Water and Wastes"* (MCAWW) and *"American Society for Testing and Materials"* (ASTM), Philadelphia, Pennsylvania 1985. The individual analyses were performed using the following from MCAWW and ASTM methods:

Analytes	Methods
bromide and sulfate	300.0
chloride	325.1
orthophosphate	365.2
sulfide	376.1
viscosity	D3245-85
ammonia-N	350.2

The findings in this report are based upon a review of sample data and of quality control (QC) specified by the individual analytical methods and provided by the laboratory. The quality assurance review was prepared according to EPA Region I Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analysis, June 1988, where applicable.

The support documentation in Appendix B of this report summarizes the specifics of this review. Appendix B also provides the sample results as reported by the laboratory. The data summary lists all compounds that were analyzed. Analytical problems are outlined in the following Findings/Qualifiers section. Other issues which arose which did not warrant qualification are detailed in the Notes Section.

SMITH

FINDINGS/QUALIFIERS

This data validation report addresses Pace, Inc. work order number WL-1612 which contained 7 filtered groundwater samples and 7 unfiltered groundwater samples. The data were evaluated for the following parameters:

- * data completeness
- * holding times
- data calibration verification
- + laboratory blank analysis
- + field blank analysis
- + matrix spike recoveries
- + laboratory duplicates
- + field duplicates
- * laboratory control sample results
- detection limit results
- sample results

* All criteria were met for this parameter.
+ All criteria were met for this parameter; however, this parameter is discussed in the Notes Section of this report.

The data summary table provided at the end of this report summarizes the validation recommendations which were based on the following information:

1. The 1.0 milligram per liter (mg/L) standard for bromide and sulfate has experimental values of 2.3 mg/L for bromide and 2.7 mg/L for sulfate. Due to the high recovery of the 1.0 mg/L for bromide and sulfate the positive result for bromide in sample GW-64D (WL1612-2) is biased high.

2. Due to interference from the presence of chloride in the undiluted analysis and due to a 1:100 reanalysis sample dilution, the reporting limit for bromide is elevated to 100 mg/L.

SMITH

3. The raw data for samples GW-62S (WL1612-3) and GW-62D (WL1612-4) cannot support the reporting limit (RL) of 1.0 mg/L for sulfate and bromide. The laboratory reported bromide in samples WL1612-3 and WL1612-4 as non-detected at 1.0 mg/L. There are positive results reported for sulfate in samples WL1612-3 and WL1612-4. Therefore, due to concentrations on the quantitation reports above the reporting limits, the reporting limit for bromide in samples WL1612-3 and WL1612-4 are biased low.

NOTES

The following items were noted during the validation review which did not impact results or necessitate further qualification of data:

1. The raw data provided for bromide and sulfate on the quantitation reports exhibited peak heights and not peak areas. There is not enough information available to reproduce the laboratory's reported concentrations. More information was requested from the laboratory. The laboratory gave an explanation in a letter from Mr. Richard Wellman dated 6/7/96. The laboratory no longer has the software/analytical system capabilities to supply the information used to calibrate the system or quantitate the samples. The reviewer verified the validity of the sample results based on the information provided (peak heights). The results were within the same order of magnitude. The data are acceptable except where mentioned in the Findings/Qualifiers Section of this report.

2. The concentrations exhibited on the quantitation reports for the initial calibration blank (ICB) and the continuing calibration blanks (CCBs) are not an accurate representation of bromide and sulfate in the blanks. It is apparent with review of the ion chromatogram that there are no peaks present in the ICB or CCBs for bromide and sulfate. Therefore, no data are qualified due blank contamination.

3. There are no field duplicate or field blank samples associated with this order.

4. There were transcription errors on the aqueous laboratory control sample for ortho-phosphate reporting form. The reviewer-corrected forms are included in Appendix B. No data are qualified.

SMITH

5. This order did not contain a field designated set samples for matrix spike and matrix spike duplicate (MS/MSD) analyses. The laboratory chose samples to analyze a matrix spike (MS) and a laboratory duplicate (LD) analysis. For this order sample GW-64S (WL1612-1) was used as a MS and a LD for sulfate, bromide, and ortho-phosphate. For chloride and ammonia analyses a sample not associated with this case was used for a MS and a LD analysis. The laboratory analyzed batch quality control (QC) which consisted of a method blank and a laboratory control sample (LCS) for sulfide. There is no batch QC required for viscosity. The matrix spike, laboratory duplicate, LCS and other related batch QC results were within criteria. No data are qualified due to QC criteria.

6. The calibration for the ammonia analysis for this order could not be verified due to lack of information provided by the laboratory. More information was requested by the reviewer. The laboratory gave a brief explanation in a letter from Mr. Richard Wellman dated 6/7/96 is included in Appendix B. Based on review of the data and the letter supplied by the laboratory the ammonia data are acceptable.

7. In samples GW-64S (WL1612-1 and WL1612-8), GW-62D (WL1612-4 and WL1612-11), GW-62BR (WL1612-5 and WL1612-12), and GW-58S (WL1612-6 and WL1612-13) the filtered ammonia results were reported as higher concentrations than the unfiltered results. In these instances the relative percent differences (RPDs) between the filtered and the unfiltered results were within normal expected precision. The reviewer concludes that these results are not statistically different. Review of the remaining samples where the unfiltered results were higher than the filtered revealed the same approximate RPDs. The reviewer concludes that all ammonia present is in a dissolved form. No results are qualified.

SUMMARY

This review has identified high recovery for the low concentration initial calibration standard, elevated reporting limits due sample dilution, biased high results, and biased low reporting limits as areas of concern. The reported data are usable as qualified on the data summary table. For specifics relating to this review, see the attached documentation in Appendix B.

SMITH

QUALIFIER CODES AND FOOTNOTES

U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is the sample reporting limit.

J - The associated value is an estimated quantity.

UJ - The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.

---

1 - The reported quantitated value may be biased high. The actual value is expected to be lower.

2 - The reporting limit may be biased low. The actual reporting limit is expected to be higher.

3 - Denotes that the reporting limit has been elevated due to interference or sample dilution.

DATA SUMMARY TABLE

Site Name	Wilmington, MA
Project Number	00-7074-0102
Sampling Date(s)	October 16, 1995

Liquid mg/l

Laboratory	Pace Env. Laboratories
Case/Order #	45683/WL1612
Field Duplicates	

PQL	Sample location or description	GW-64S WL1612-1		GW-64D WL1612-2		GW-62S WL1612-3		GW-62D WL1612-4		GW-62BR WL1612-5		GW-58S WL1612-6		GW-58D WL1612-7	
	Sample number	45683-001 -008, -015		45683-002 -009, -016		45683-003 -010,-017,-022		45683-004 -011,-018,-023		45683-005 -012,-019,-024		45683-006 -013,-020,-025		45683-007 014,-021,-026	
	Sampling date	10/16/95		10/16/95		10/16/95		10/16/95		10/16/95		10/16/95		10/16/95	
	unfilt. / filt.	filt.		filt.		filt.		filt.		filt.		filt.		filt.	
PQL	Comments														
0.02	Ortho-phosphorus	0.04													
1.0	Chloride	78		230		50		83		1700		110		970	
1.0	Sulfate	13		710		57		100		4400		35		3600	
1.0	Bromide			2	J1		UJ2		UJ2	100	U3			8	
0.05	Ammonia-N	0.37		15		2.2		3.0		100		0.86		480	
1	Sulfide			3											
	Viscosity					3.0		3.0		3.0		3.0		3.0	

Dheauby 6/12/96

WL1612W.XLS

DATA SUMMARY TABLE

Site Name	Wilmington, MA		Laboratory	Pace Env. Laboratories
Project Number	00-7074-0102	Liquid mg/l	Case/Order #	45683/WL1612
Sampling Date(s)	October 16, 1995		Field Duplicates	

PQL	Sample location or description	GW-64S WL1612-8	GW-64D WL1612-9	GW-62S WL1612-10	GW-62D WL1612-11	GW-62BR WL1612-12	GW-58S WL1612-13	GW-58D WL1612-14			
	Sample number	45683-027	45683-028	45683-029	45683-030	45683-031	45683-032	45683-033			
	Sampling date	10/16/95	10/16/95	10/16/95	10/16/95	10/16/95	10/16/95	10/16/95			
	unfilt. / filt.	unfilt.	unfilt.	unfilt.	unfilt.	unfilt.	unfilt.	unfilt.			
PQL	Comments										
0.05	Ammonia-N	0.35	16	2.3	2.7	96	0.82	570			

Dheauby 6/12/96

WL1612W.XLS

SMITH

APPENDIX A

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1612-1
Report Date: 11/16/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
GW-64S (FILT)	Aqueous	R. MEHALICK	10/16/95	10/16/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Dissolved	0.28	mg/L	1.0	0.10	200.7/6010	11/01/95	KW	1
Arsenic, Dissolved	<0.005	mg/l	1.0	0.005	200.7/6010	11/01/95	KW	1
Barium, Dissolved	0.014	mg/L	1.0	0.005	200.7/6010	10/27/95	KW	1
Calcium, Dissolved	14.	mg/L	1.0	0.050	200.7/6010	10/30/95	KW	1
Chromium, Dissolved	<0.015	mg/L	1.0	0.015	200.7/6010	10/27/95	KW	1
Chromium, Hexavalent Dissolved	<0.015	mg/L	1.0	0.015	6010	10/21/95	KW	2
Chromium, Trivalent Dissolved	<0.015	mg/L	1.0	0.015	Calculation	11/14/95	DN	
Iron, Dissolved	1.4	mg/L	1.0	0.025	200.7/6010	10/30/95	KW	1
Lead, Dissolved	<0.005	mg/L	1.0	0.005	200.7/6010	10/27/95	KW	1
Magnesium, Dissolved	2.8	mg/L	1.0	0.050	200.7/6010	10/30/95	KW	1
Manganese, Dissolved	0.34	mg/L	1.0	0.005	200.7/6010	10/27/95	KW	1
Potassium, Dissolved	2.2	mg/L	1.0	0.50	200.7/6010	10/19/95	KW	1
Silicon, Dissolved	5.3	mg/L	2.0	0.10	200.7/6010	10/19/95	KW	1
Sodium, Dissolved	47	mg/L	1.0	0.10	200.7/6010	10/19/95	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/18/95 by VM using 3010
(2) Sample Preparation on 10/16/95 by GFB using 7195

11/16/95

LJO/ejnjbb(dw)/kew
LJ18ICW1
CC: OLIN-TN STEVE MORROW
SMITH ENG R. SACKS
PTI-CHRIS SELLSTONE

P.O. Box 720 - 340 County Road #5
Westbrook, ME 04098
TEL: 207-874-2400

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1612-1
Report Date: 11/16/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
GW-64S (FILT)	Aqueous	R. MEHALICK	10/16/95	10/16/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Bicarbonate,Dissolved as HCO3	44.	mg/L	1.0	20	APHA 406C	10/17/95	CM	
Carbonate, Dissolved as CaCO3	<20	mg/L	1.0	20	APHA 406C	10/17/95	CM	
Nitrate as N, Dissolved	0.25	mg/L	1.0	0.05	353.2/1	10/24/95	NH	
Nitrite as N, Dissolved	<0.050	mg/L	1.0	0.050	353.2	10/17/95	CM	
Organic Carbon, Dissolved (DOC)	15.	mg/L	1.0	1.0	415.1	10/31/95	LT	
Phosphorus, Dissolved as P	<0.10	mg/L	1.0	0.10	365.4	10/26/95	CM	1
Solids-Filt Residue, Dissolved	220.	mg/L	1.0	10	160.1	10/19/95	JF	2

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/26/95 by CLM
(2) Sample Preparation on 10/18/95 by JF

11/16/95

LJO/ejnjbb(dw)

CC: OLIN-TN STEVE MORROW
SMITH ENG R. SACKS
PTI-CHRIS SELLSTONE

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1612-2
Report Date: 11/16/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-64D (FILT)	Aqueous	R. MEHALICK	10/16/95	10/16/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Dissolved	<0.10	mg/L	1.0	0.10	200.7/6010	11/01/95	KW	1
Arsenic, Dissolved	0.014	mg/l	1.0	0.005	200.7/6010	11/01/95	KW	1
Barium, Dissolved	0.093	mg/L	1.0	0.005	200.7/6010	10/27/95	KW	1
Calcium, Dissolved	110	mg/L	1.0	0.050	200.7/6010	11/01/95	KW	1
Chromium, Dissolved	<0.015	mg/L	1.0	0.015	200.7/6010	10/27/95	KW	1
Chromium, Hexavalent Dissolved	<0.015	mg/L	1.0	0.015	6010	10/21/95	KW	2
Chromium, Trivalent Dissolved	<0.015	mg/L	1.0	0.015	Calculation	11/14/95	DN	
Iron, Dissolved	70	mg/L	1.0	0.025	200.7/6010	11/01/95	KW	1
Lead, Dissolved	<0.005	mg/L	1.0	0.005	200.7/6010	10/27/95	KW	1
Magnesium, Dissolved	31.	mg/L	1.0	0.050	200.7/6010	10/30/95	KW	1
Manganese, Dissolved	2.2	mg/L	1.0	0.005	200.7/6010	10/30/95	KW	1
Potassium, Dissolved	11	mg/L	1.0	0.50	200.7/6010	10/19/95	KW	1
Silicon, Dissolved	8.8	mg/L	2.0	0.10	200.7/6010	10/19/95	KW	1
Sodium, Dissolved	210	mg/L	5.0	0.10	200.7/6010	10/20/95	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/18/95 by VM using 3010
(2) Sample Preparation on 10/16/95 by GFB using 7195

11/16/95

LJO/ejnjbb(dw)/kew
LJ18ICW1
CC: OLIN-TN STEVE MORROW
SMITH ENG R. SACKS
PTI-CHRIS SELLSTONE

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1612-2
Report Date: 11/16/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
GW-64D (FILT)	Aqueous	R. MEHALICK	10/16/95	10/16/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Bicarbonate,Dissolved as HCO3	90.	mg/L	1.0	20	APHA 406C	10/17/95	CM	
Carbonate, Dissolved as CaCO3	<20	mg/L	1.0	20	APHA 406C	10/17/95	CM	
Nitrate as N, Dissolved	<0.05	mg/L	1.0	0.05	353.2/1	10/24/95	NH	
Nitrite as N, Dissolved	0.11	mg/L	1.0	0.050	353.2	10/17/95	CM	
Organic Carbon, Dissolved (DOC)	7.4	mg/L	1.0	1.0	415.1	10/31/95	LT	
Phosphorus, Dissolved as P	<0.10	mg/L	1.0	0.10	365.4	10/26/95	CM	1
Solids-Filt Residue, Dissolved	1300.	mg/L	1.0	10	160.1	10/19/95	JF	2

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/26/95 by CLM
(2) Sample Preparation on 10/18/95 by JF

11/16/95

LJO/ejnjbb(dw)

CC: OLIN-TN STEVE MORROW
SMITH ENG R. SACKS
PTI-CHRIS SELLSTONE

pace
INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1612-3
Report Date: 11/16/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-62S (FILT)	Aqueous	R. MEHALICK	10/16/95	10/16/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Dissolved	<0.10	mg/L	1.0	0.10	200.7/6010	11/01/95	KW	1
Arsenic, Dissolved	0.028	mg/l	1.0	0.005	200.7/6010	11/01/95	KW	1
Barium, Dissolved	0.025	mg/L	1.0	0.005	200.7/6010	10/27/95	KW	1
Calcium, Dissolved	37.	mg/L	1.0	0.050	200.7/6010	10/30/95	KW	1
Chromium, Dissolved	<0.015	mg/L	1.0	0.015	200.7/6010	10/27/95	KW	1
Chromium, Hexavalent Dissolved	<0.015	mg/L	1.0	0.015	6010	10/21/95	KW	2
Chromium, Trivalent Dissolved	<0.015	mg/L	1.0	0.015	Calculation	11/14/95	DN	
Iron, Dissolved	20	mg/L	1.0	0.025	200.7/6010	11/01/95	KW	1
Lead, Dissolved	<0.005	mg/L	1.0	0.005	200.7/6010	10/27/95	KW	1
Magnesium, Dissolved	5.7	mg/L	1.0	0.050	200.7/6010	10/30/95	KW	1
Manganese, Dissolved	4.8	mg/L	1.0	0.005	200.7/6010	10/30/95	KW	1
Potassium, Dissolved	10	mg/L	1.0	0.50	200.7/6010	10/19/95	KW	1
Silicon, Dissolved	6.9	mg/L	2.0	0.10	200.7/6010	10/19/95	KW	1
Sodium, Dissolved	31	mg/L	1.0	0.10	200.7/6010	10/19/95	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/18/95 by VM using 3010
(2) Sample Preparation on 10/16/95 by GFB using 7195

11/16/95

LJO/ejnjbb(dw)/kew
LJ18ICW1
CC: OLIN-TN STEVE MORROW
SMITH ENG R. SACKS
PTI-CHRIS SELLSTONE

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1612-3
Report Date: 11/16/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-62S (FILT)	Aqueous	R. MEHALICK	10/16/95	10/16/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Bicarbonate,Dissolved as HCO3	93.	mg/L	1.0	20	APHA 406C	10/17/95	CM	
Carbonate, Dissolved as CaCO3	<20	mg/L	1.0	20	APHA 406C	10/17/95	CM	
Nitrate as N, Dissolved	<0.05	mg/L	1.0	0.05	353.2/1	10/24/95	NH	
Nitrite as N, Dissolved	0.11	mg/L	1.0	0.050	353.2	10/17/95	CM	
Organic Carbon, Dissolved (DOC)	6.6	mg/L	1.0	1.0	415.1	10/31/95	LT	
Phosphorus, Dissolved as P	<0.10	mg/L	1.0	0.10	365.4	10/26/95	CM	1
Solids-Filt Residue, Dissolved	260.	mg/L	1.0	10	160.1	10/19/95	JF	2

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/26/95 by CLM
(2) Sample Preparation on 10/18/95 by JF

11/16/95

LJO/ejnjbb(dw)

CC: OLIN-TN STEVE MORROW
SMITH ENG R. SACKS
PTI-CHRIS SELLSTONE

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1612-4
Report Date: 11/16/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-62D (FILT)	Aqueous	R. MEHALICK	10/16/95	10/16/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Dissolved	<0.10	mg/L	1.0	0.10	200.7/6010	11/01/95	KW	1
Arsenic, Dissolved	<0.005	mg/l	1.0	0.005	200.7/6010	11/01/95	KW	1
Barium, Dissolved	0.018	mg/L	1.0	0.005	200.7/6010	10/27/95	KW	1
Calcium, Dissolved	38.	mg/L	1.0	0.050	200.7/6010	10/30/95	KW	1
Chromium, Dissolved	<0.015	mg/L	1.0	0.015	200.7/6010	10/27/95	KW	1
Chromium, Hexavalent Dissolved	<0.015	mg/L	1.0	0.015	6010	10/21/95	DN	2
Chromium, Trivalent Dissolved	<0.015	mg/L	1.0	0.015	Calculation	11/14/95	DN	
Iron, Dissolved	0.11	mg/L	1.0	0.025	200.7/6010	10/30/95	KW	1
Lead, Dissolved	<0.005	mg/L	1.0	0.005	200.7/6010	10/27/95	KW	1
Magnesium, Dissolved	12.	mg/L	1.0	0.050	200.7/6010	10/30/95	KW	1
Manganese, Dissolved	1.6	mg/L	1.0	0.005	200.7/6010	10/27/95	KW	1
Potassium, Dissolved	2.2	mg/L	1.0	0.50	200.7/6010	10/20/95	KW	1
Silicon, Dissolved	4.6	mg/L	1.0	0.10	200.7/6010	10/19/95	KW	1
Sodium, Dissolved	46	mg/L	1.0	0.10	200.7/6010	10/19/95	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/18/95 by VM using 3010
(2) Sample Preparation on 10/16/95 by GFB using 7195

11/16/95

LJO/ejnjbb(dw)/kew
LJ18ICW1
CC: OLIN-TN STEVE MORROW
SMITH ENG R. SACKS
PTI-CHRIS SELLSTONE

ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1612-4
Report Date: 11/16/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
GW-62D (FILT)	Aqueous	R. MEHALICK	10/16/95	10/16/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Bicarbonate,Dissolved as HCO3	64.	mg/L	1.0	20	APHA 406C	10/17/95	CM	
Carbonate, Dissolved as CaCO3	<20	mg/L	1.0	20	APHA 406C	10/17/95	CM	
Nitrate as N, Dissolved	0.39	mg/L	1.0	0.05	353.2/1	10/24/95	NH	
Nitrite as N, Dissolved	<0.050	mg/L	1.0	0.050	353.2	10/17/95	CM	
Organic Carbon, Dissolved (DOC)	2.3	mg/L	1.0	1.0	415.1	10/31/95	LT	
Phosphorus, Dissolved as P	<1.0	mg/L	10	0.10	365.4	10/26/95	CM	1,2
Solids-Filt Residue, Dissolved	370.	mg/L	1.0	10	160.1	10/19/95	JF	3

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

(1) Sample Preparation on 10/26/95 by CLM

(2) The laboratory's Practical Quantitation Level could not be achieved for this parameter due to sample composition, matrix effects, sample volume, or quantity used for analysis.

(3) Sample Preparation on 10/18/95 by JF

11/16/95

LJO/ejnjbb(dw)

CC: OLIN-TN STEVE MORROW
SMITH ENG R. SACKS
PTI-CHRIS SELLSTONE

P.O. Box 720 - 340 County Road #5
Westbrook, ME 04098
TEL: 207-874-2400

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1612-5
Report Date: 11/16/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-62BR (FILT)	Aqueous	R. MEHALICK	10/16/95	10/16/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Dissolved	<0.10	mg/L	1.0	0.10	200.7/6010	11/01/95	KW	1
Arsenic, Dissolved	<0.005	mg/l	1.0	0.005	200.7/6010	11/01/95	KW	1
Barium, Dissolved	0.016	mg/L	1.0	0.005	200.7/6010	10/27/95	KW	1
Calcium, Dissolved	440	mg/L	1.0	0.050	200.7/6010	11/01/95	KW	1
Chromium, Dissolved	<0.015	mg/L	1.0	0.015	200.7/6010	10/27/95	KW	1
Chromium, Hexavalent Dissolved	<0.015	mg/L	1.0	0.015	6010	10/21/95	DN	2
Chromium, Trivalent Dissolved	<0.015	mg/L	1.0	0.015	Calculation	11/14/95	DN	
Iron, Dissolved	6.2	mg/L	1.0	0.025	200.7/6010	10/30/95	KW	1
Lead, Dissolved	<0.005	mg/L	1.0	0.005	200.7/6010	10/27/95	KW	1
Magnesium, Dissolved	320	mg/L	1.0	0.050	200.7/6010	11/01/95	KW	1
Manganese, Dissolved	42	mg/L	5.0	0.005	200.7/6010	10/30/95	KW	1
Potassium, Dissolved	34	mg/L	1.0	0.50	200.7/6010	10/19/95	KW	1
Silicon, Dissolved	11	mg/L	~~5.0~~	0.10	200.7/6010	10/19/95	KW	1
Sodium, Dissolved	1900	mg/L	50	0.10	200.7/6010	10/20/95	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/18/95 by VM using 3010
(2) Sample Preparation on 10/16/95 by GFB using 7195

3.0

11/16/95

LJO/ejnjbb(dw)/kew
LJ18ICW1
CC: OLIN-TN STEVE MORROW
SMITH ENG R. SACKS
PTI-CHRIS SELLSTONE

ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1612-5
Report Date: 11/16/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-62BR (FILT)	Aqueous	R. MEHALICK	10/16/95	10/16/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Bicarbonate,Dissolved as HCO3	430.	mg/L	1.0	20	APHA 406C	10/17/95	CM	
Carbonate, Dissolved as CaCO3	<20	mg/L	1.0	20	APHA 406C	10/17/95	CM	
Nitrate as N, Dissolved	<0.05	mg/L	1.0	0.05	353.2/1	10/24/95	NH	
Nitrite as N, Dissolved	0.051	mg/L	1.0	0.050	353.2	10/17/95	CM	
Organic Carbon, Dissolved (DOC)	26.	mg/L	1.0	1.0	415.1	11/03/95	LT	
Phosphorus, Dissolved as P	<0.10	mg/L	1.0	0.10	365.4	10/26/95	CM	1
Solids-Filt Residue, Dissolved	8000.	mg/L	5.0	10	160.1	10/20/95	JF	2

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/26/95 by CLM
(2) Sample Preparation on 10/19/95 by JF

11/16/95

LJO/ejnjbb(dw)

CC: OLIN-TN STEVE MORROW
SMITH ENG R. SACKS
PTI-CHRIS SELLSTONE

P.O. Box 720 - 340 County Road #5
Westbrook, ME 04098
TEL: 207-874-2400

PACE INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1612-6
Report Date: 11/16/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-58S (FILT)	Aqueous	R. MEHALICK	10/16/95	10/16/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Dissolved	<0.10	mg/L	1.0	0.10	200.7/6010	11/01/95	KW	1
Arsenic, Dissolved	<0.005	mg/l	1.0	0.005	200.7/6010	11/01/95	KW	1
Barium, Dissolved	0.021	mg/L	1.0	0.005	200.7/6010	10/27/95	KW	1
Calcium, Dissolved	11.	mg/L	1.0	0.050	200.7/6010	10/30/95	KW	1
Chromium, Dissolved	<0.015	mg/L	1.0	0.015	200.7/6010	10/27/95	KW	1
Chromium, Hexavalent Dissolved	<0.015	mg/L	1.0	0.015	6010	10/21/95	DN	2
Chromium, Trivalent Dissolved	<0.015	mg/L	1.0	0.015	Calculation	11/14/95	DN	
Iron, Dissolved	0.036	mg/L	1.0	0.025	200.7/6010	10/30/95	KW	1
Lead, Dissolved	<0.005	mg/L	1.0	0.005	200.7/6010	10/27/95	KW	1
Magnesium, Dissolved	1.9	mg/L	1.0	0.050	200.7/6010	10/30/95	KW	1
Manganese, Dissolved	0.16	mg/L	1.0	0.005	200.7/6010	10/27/95	KW	1
Potassium, Dissolved	2.6	mg/L	1.0	0.50	200.7/6010	10/19/95	KW	1
Silicon, Dissolved	4.7	mg/L	1.0	0.10	200.7/6010	10/19/95	KW	1
Sodium, Dissolved	76	mg/L	1.0	0.10	200.7/6010	10/19/95	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/18/95 by VM using 3010
(2) Sample Preparation on 10/16/95 by GFB using 7195

11/16/95

LJO/ejnjbb(dw)/kew
LJ18ICW1
CC: OLIN-TN STEVE MORROW
SMITH ENG R. SACKS
PTI-CHRIS SELLSTONE

REPORT OF LABORATORY ANALYSIS

pace INCORPORATED ENVIRONMENTAL LABORATORIES

Lab Number : WL-1612-6
Report Date: 11/16/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-58S (FILT)	Aqueous	R. MEHALICK	10/16/95	10/16/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Bicarbonate,Dissolved as HCO3	29.	mg/L	1.0	20	APHA 406C	10/17/95	CM	
Carbonate, Dissolved as CaCO3	<20	mg/L	1.0	20	APHA 406C	10/17/95	CM	
Nitrate as N, Dissolved	2.1	mg/L	1.0	0.05	353.2/1	10/24/95	NH	
Nitrite as N, Dissolved	<0.050	mg/L	1.0	0.050	353.2	10/17/95	CM	
Organic Carbon, Dissolved (DOC)	1.6	mg/L	1.0	1.0	415.1	11/03/95	LT	
Phosphorus, Dissolved as P	<0.10	mg/L	1.0	0.10	365.4	10/26/95	CM	1
Solids-Filt Residue, Dissolved	260.	mg/L	1.0	10	160.1	10/19/95	JF	2

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/26/95 by CLM
(2) Sample Preparation on 10/18/95 by JF

11/16/95

LJO/ejnjbb(dw)

CC: OLIN-TN STEVE MORROW
SMITH ENG R. SACKS
PTI-CHRIS SELLSTONE

ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1612-7
Report Date: 11/16/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-58D (FILT)	Aqueous	R. MEHALICK	10/16/95	10/16/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Dissolved	0.55	mg/L	1.0	0.10	200.7/6010	11/01/95	KW	1
Arsenic, Dissolved	0.007	mg/l	1.0	0.005	200.7/6010	11/01/95	KW	1
Barium, Dissolved	0.009	mg/L	1.0	0.005	200.7/6010	10/27/95	KW	1
Calcium, Dissolved	240	mg/L	1.0	0.050	200.7/6010	11/01/95	KW	1
Chromium, Dissolved	0.023	mg/L	1.0	0.015	200.7/6010	10/27/95	KW	1
Chromium, Hexavalent Dissolved	<0.015	mg/L	1.0	0.015	6010	10/21/95	KW	2
Chromium, Trivalent Dissolved	0.023	mg/L	1.0	0.015	Calculation	11/14/95	DN	
Iron, Dissolved	77	mg/L	1.0	0.025	200.7/6010	11/01/95	KW	1
Lead, Dissolved	<0.005	mg/L	1.0	0.005	200.7/6010	10/27/95	KW	1
Magnesium, Dissolved	85.	mg/L	1.0	0.050	200.7/6010	10/30/95	KW	1
Manganese, Dissolved	30	mg/L	5.0	0.005	200.7/6010	10/30/95	KW	1
Potassium, Dissolved	28	mg/L	1.0	0.50	200.7/6010	10/16/95	KW	1
Silicon, Dissolved	12	mg/L	3.0	0.10	200.7/6010	10/19/95	KW	1
Sodium, Dissolved	1100	mg/L	20	0.10	200.7/6010	10/20/95	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/18/95 by VM using 3010
(2) Sample Preparation on 10/16/95 by GFB using 7195

11/16/95

LJO/ejnjbb(dw)/kew
LJ18ICW1
CC: OLIN-TN STEVE MORROW
SMITH ENG R. SACKS
PTI-CHRIS SELLSTONE

ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1612-7
Report Date: 11/16/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-58D (FILT)	Aqueous	R. MEHALICK	10/16/95	10/16/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Bicarbonate,Dissolved as HCO3	92.	mg/L	1.0	20	APHA 406C	10/17/95	CM	
Carbonate, Dissolved as CaCO3	<20	mg/L	1.0	20	APHA 406C	10/17/95	CM	
Nitrate as N, Dissolved	<0.05	mg/L	1.0	0.05	353.2/1	10/24/95	NH	
Nitrite as N, Dissolved	0.074	mg/L	1.0	0.050	353.2	10/17/95	CM	
Organic Carbon, Dissolved (DOC)	47.	mg/L	1.0	1.0	415.1	11/03/95	LT	
Phosphorus, Dissolved as P	<0.10	mg/L	1.0	0.10	365.4	10/26/95	CM	1
Solids-Filt Residue, Dissolved	4500.	mg/L	4.0	10	160.1	10/19/95	JF	2

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/26/95 by CLM
(2) Sample Preparation on 10/18/95 by JF

11/16/95

LJO/ejnjbb(dw)

CC: OLIN-TN STEVE MORROW
SMITH ENG R. SACKS
PTI-CHRIS SELLSTONE

ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1612-8
Report Date: 11/16/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-64S (UNFILT)	Aqueous	R. MEHALICK	10/16/95	10/16/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Total	0.41	mg/L	1.0	0.10	200.7/6010	11/01/95	KW	1
Arsenic, Total	<0.005	mg/L	1.0	0.005	200.7/6010	11/01/95	KW	1
Barium, Total	0.014	mg/L	1.0	0.005	200.7/6010	10/27/95	KW	1
Calcium, Total	14.	mg/L	1.0	0.050	200.7/6010	10/30/95	KW	1
Chromium, Total	<0.015	mg/L	1.0	0.015	200.7/6010	10/27/95	KW	1
Iron, Total	1.4	mg/L	1.0	0.025	200.7/6010	10/30/95	KW	1
Lead, Total	<0.005	mg/L	1.0	0.005	200.7/6010	10/27/95	KW	1
Magnesium, Total	2.6	mg/L	1.0	0.050	200.7/6010	10/30/95	KW	1
Manganese, Total	0.34	mg/L	1.0	0.005	200.7/6010	10/27/95	KW	1
Potassium, Total	2.4	mg/L	1.0	0.50	200.7/6010	10/19/95	KW	1
Silicon, Total	5.5	mg/L	2.0	0.10	200.7/6010	10/19/95	KW	1
Sodium, Total	46	mg/L	1.0	0.10	200.7/6010	10/19/95	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/18/95 by VM using 3010

11/16/95

LJO/ejnjbb(dw)/kew
LJ18ICW1
CC: OLIN-TN STEVE MORROW
SMITH ENG R. SACKS
PTI-CHRIS SELLSTONE

pace INCORPORATED ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1612-9
Report Date: 11/16/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-64D (UNFILT)	Aqueous	R. MEHALICK	10/16/95	10/16/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Total	<0.10	mg/L	1.0	0.10	200.7/6010	10/30/95	KW	1
Arsenic, Total	0.014	mg/L	1.0	0.005	200.7/6010	11/01/95	KW	1
Barium, Total	0.076	mg/L	1.0	0.005	200.7/6010	10/27/95	KW	1
Calcium, Total	120	mg/L	1.0	0.050	200.7/6010	11/01/95	GB	1
Chromium, Total	<0.015	mg/L	1.0	0.015	200.7/6010	10/27/95	KW	1
Iron, Total	65	mg/L	1.0	0.025	200.7/6010	11/01/95	KW	1
Lead, Total	<0.005	mg/L	1.0	0.005	200.7/6010	10/27/95	KW	1
Magnesium, Total	33.	mg/L	1.0	0.050	200.7/6010	10/30/95	KW	1
Manganese, Total	2.6	mg/L	1.0	0.005	200.7/6010	10/30/95	KW	1
Potassium, Total	12	mg/L	1.0	0.50	200.7/6010	10/19/95	KW	1
Silicon, Total	8.9	mg/L	2.0	0.10	200.7/6010	10/19/95	KW	1
Sodium, Total	220	mg/L	5.0	0.10	200.7/6010	10/20/95	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/18/95 by VM using 3010

11/16/95

LJO/ejnjbb(dw)/kew
LJ18ICW1
CC: OLIN-TN STEVE MORROW
SMITH ENG R. SACKS
PTI-CHRIS SELLSTONE

ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1612-10
Report Date: 11/16/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-62S (UNFILT)	Aqueous	R. MEHALICK	10/16/95	10/16/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Total	<0.10	mg/L	1.0	0.10	200.7/6010	10/30/95	KW	1
Arsenic, Total	0.025	mg/L	1.0	0.005	200.7/6010	11/01/95	KW	1
Barium, Total	0.024	mg/L	1.0	0.005	200.7/6010	10/27/95	KW	1
Calcium, Total	35.	mg/L	1.0	0.050	200.7/6010	10/30/95	KW	1
Chromium, Total	<0.015	mg/L	1.0	0.015	200.7/6010	10/27/95	KW	1
Iron, Total	17.	mg/L	1.0	0.025	200.7/6010	10/30/95	KW	1
Lead, Total	<0.005	mg/L	1.0	0.005	200.7/6010	10/27/95	KW	1
Magnesium, Total	5.3	mg/L	1.0	0.050	200.7/6010	10/30/95	KW	1
Manganese, Total	5.0	mg/L	1.0	0.005	200.7/6010	10/30/95	KW	1
Potassium, Total	9.8	mg/L	1.0	0.50	200.7/6010	10/19/95	KW	1
Silicon, Total	6.5	mg/L	2.0	0.10	200.7/6010	10/19/95	KW	1
Sodium, Total	30	mg/L	1.0	0.10	200.7/6010	10/19/95	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/18/95 by VM using 3010

11/16/95

LJO/ejnjbb(dw)/kew

CC: OLIN-TN STEVE MORROW
SMITH ENG R. SACKS
PTI-CHRIS SELLSTONE

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1612-11
Report Date: 11/16/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-62D (UNFILT)	Aqueous	R. MEHALICK	10/16/95	10/16/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Total	<0.10	mg/L	1.0	0.10	200.7/6010	10/30/95	KW	1
Arsenic, Total	<0.005	mg/L	1.0	0.005	200.7/6010	11/01/95	KW	1
Barium, Total	0.023	mg/L	1.0	0.005	200.7/6010	10/27/95	KW	1
Calcium, Total	46.	mg/L	1.0	0.050	200.7/6010	10/30/95	KW	1
Chromium, Total	<0.015	mg/L	1.0	0.015	200.7/6010	10/27/95	KW	1
Iron, Total	0.081	mg/L	1.0	0.025	200.7/6010	10/30/95	KW	1
Lead, Total	<0.005	mg/L	1.0	0.005	200.7/6010	10/27/95	KW	1
Magnesium, Total	14.	mg/L	1.0	0.050	200.7/6010	10/30/95	KW	1
Manganese, Total	1.7	mg/L	1.0	0.005	200.7/6010	10/27/95	KW	1
Potassium, Total	3.0	mg/L	1.0	0.50	200.7/6010	10/19/95	KW	1
Silicon, Total	4.8	mg/L	1.0	0.10	200.7/6010	10/19/95	KW	1
Sodium, Total	54	mg/L	1.0	0.10	200.7/6010	10/19/95	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/18/95 by VM using 3010

11/16/95

LJO/ejnjbb(dw)/kew
LJ18ICW1
CC: OLIN-TN STEVE MORROW
SMITH ENG R. SACKS
PTI-CHRIS SELLSTONE

ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1612-12
Report Date: 11/16/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-62BR (UNFILT)	Aqueous	R. MEHALICK	10/16/95	10/16/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Total	<0.10	mg/L	1.0	0.10	200.7/6010	10/30/95	KW	1
Arsenic, Total	0.005	mg/L	1.0	0.005	200.7/6010	11/01/95	KW	1
Barium, Total	0.019	mg/L	1.0	0.005	200.7/6010	10/27/95	KW	1
Calcium, Total	470	mg/L	1.0	0.050	200.7/6010	11/01/95	GB	1
Chromium, Total	<0.015	mg/L	1.0	0.015	200.7/6010	10/27/95	KW	1
Iron, Total	6.4	mg/L	1.0	0.025	200.7/6010	10/30/95	KW	1
Lead, Total	0.007	mg/L	1.0	0.005	200.7/6010	10/27/95	KW	1
Magnesium, Total	350	mg/L	1.0	0.050	200.7/6010	11/01/95	KW	1
Manganese, Total	45	mg/L	5.0	0.005	200.7/6010	10/30/95	KW	1
Potassium, Total	38	mg/L	1.0	0.50	200.7/6010	10/19/95	KW	1
Silicon, Total	12	mg/L	3.0	0.10	200.7/6010	10/19/95	KW	1
Sodium, Total	2100	mg/L	50	0.10	200.7/6010	10/20/95	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/18/95 by VM using 3010

11/16/95

LJO/ejnjbb(dw)/kew
LJ18ICW1
CC: OLIN-TN STEVE MORROW
SMITH ENG R. SACKS
PTI-CHRIS SELLSTONE

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1612-13
Report Date: 11/16/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-58S (UNFILT)	Aqueous	R. MEHALICK	10/16/95	10/16/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Total	<0.10	mg/L	1.0	0.10	200.7/6010	10/30/95	KW	1
Arsenic, Total	<0.005	mg/L	1.0	0.005	200.7/6010	11/01/95	KW	1
Barium, Total	0.025	mg/L	1.0	0.005	200.7/6010	11/01/95	GB	1
Calcium, Total	11.	mg/L	1.0	0.050	200.7/6010	10/30/95	KW	1
Chromium, Total	<0.015	mg/L	1.0	0.015	200.7/6010	10/27/95	KW	1
Iron, Total	0.040	mg/L	1.0	0.025	200.7/6010	10/30/95	KW	1
Lead, Total	<0.005	mg/L	1.0	0.005	200.7/6010	10/27/95	KW	1
Magnesium, Total	1.8	mg/L	1.0	0.050	200.7/6010	10/30/95	KW	1
Manganese, Total	0.17	mg/L	1.0	0.005	200.7/6010	10/27/95	KW	1
Potassium, Total	2.9	mg/L	1.0	0.50	200.7/6010	10/19/95	KW	1
Silicon, Total	4.7	mg/L	1.0	0.10	200.7/6010	10/19/95	KW	1
Sodium, Total	78	mg/L	1.0	0.10	200.7/6010	10/19/95	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/18/95 by VM using 3010

11/16/95

LJO/ejnjbb(dw)/kew
LJ18ICW1
CC: OLIN-TN STEVE MORROW
SMITH ENG R. SACKS
PTI-CHRIS SELLSTONE

PACE INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1612-14
Report Date: 11/16/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-58D (UNFILT)	Aqueous	R. MEHALICK	10/16/95	10/16/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Total	0.63	mg/L	1.0	0.10	200.7/6010	10/30/95	KW	1
Arsenic, Total	0.008	mg/L	1.0	0.005	200.7/6010	11/01/95	KW	1
Barium, Total	0.009	mg/L	1.0	0.005	200.7/6010	11/01/95	GB	1
Calcium, Total	250	mg/L	1.0	0.050	200.7/6010	11/01/95	GB	1
Chromium, Total	0.023	mg/L	1.0	0.015	200.7/6010	10/27/95	KW	1
Iron, Total	75	mg/L	1.0	0.025	200.7/6010	11/01/95	KW	1
Lead, Total	<0.005	mg/L	1.0	0.005	200.7/6010	10/27/95	KW	1
Magnesium, Total	89.	mg/L	1.0	0.050	200.7/6010	10/30/95	KW	1
Manganese, Total	31	mg/L	5.0	0.005	200.7/6010	10/30/95	KW	1
Potassium, Total	27	mg/L	1.0	0.50	200.7/6010	10/19/95	KW	1
Silicon, Total	12	mg/L	3.0	0.10	200.7/6010	10/19/95	KW	1
Sodium, Total	1100	mg/L	20	0.10	200.7/6010	10/20/95	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/18/95 by VM using 3010

11/16/95

LJO/ejnjbb(dw)/kew

CC: OLIN-TN STEVE MORROW
SMITH ENG R. SACKS
PTI-CHRIS SELLSTONE

Method: TEMPLATE Sample Name: CRI Operator: KEW
Run Time: 10/27/95 13:57:19
Comment:
Mode: CONC Corr. Factor: 1

122%

all lead associated ND results not UJ - see report for explanation

Elem	As1890	Pb2203	Se1960	Sb2068	Tl1908	Ag3280	Al3082
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Avge	.02253	.00732	.00904	.13324	.02375	.02271	Q.40318
SDev	.00065	.00031	.00169	.00094	.00205	.00029	.01693
%RSD	2.8691	4.2900	18.736	.70554	8.6141	1.2803	4.1994
#1	.02299	.00755	.00784	.13257	.02230	.02291	Q.41515
#2	.02207	.00710	.01024	.13390	.02520	.02250	Q.39121

Elem	B_2496	Ba4934	Be3130	Ca3179	Cd2265	Co2286	Cr2677
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Avge	.02311	.02267	.01222	Q.39763	.01119	.12205	.02383
SDev	.00051	.00004	.00004	.02361	.00018	.00001	.00053
%RSD	2.2126	.15896	.33162	5.9375	1.6465	.00862	2.2260
#1	.02275	.02270	.01225	Q.41433	.01132	.12204	.02346
#2	.02347	.02265	.01219	Q.38094	.01106	.12206	.02421

Elem	Cu3247	Fe2714	Mg2790	Mn2576	Mo2020	Ni2316	Sn1899
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Avge	.05944	.25958	Q.39869	.03678	.02156	.10034	.02291
SDev	.00032	.01879	.02053	.00007	.00024	.00069	.00003
%RSD	.54266	7.2376	5.1481	.18364	1.0938	.68599	.15383
#1	.05967	.27286	Q.41320	.03673	.02139	.10083	.02294
#2	.05921	.24629	Q.38417	.03683	.02173	.09985	.02289

Elem	Sr4215	Ti3349	V_2924	Zn2138	2203/1	2203/2	2068/1
Units	mg/L	mg/L	mg/L	mg/L			
Avge	.02118	.02137	.12303	.04687	.00598	.00756	.13468
SDev	.00002	.00007	.00051	.00002	.00128	.00017	.00090
%RSD	.10717	.31262	.41803	.04056	21.471	2.2504	.67052
#1	.02119	.02142	.12267	.04688	.00688	.00744	.13404
#2	.02116	.02132	.12340	.04685	.00507	.00768	.13532

Elem	2068/2	1960/1	1960/2
Units			
Avge	.13211	.00724	.00953
SDev	.00092	.00077	.00212
%RSD	.69677	10.665	22.204
#1	.13146	.00670	.00803
#2	.13276	.00779	.01102

123% R
associated samples.
-4
-6
-8
-11
-13
estimate

MO
6/5/96

Page no. 00001
10/17/95

T E C H N I C O N TRAACS 800 SYSTEM 1-ANALYSIS REPORT FORM

DESCRIPTION	RUN INFORMATION	LIMS ID	TEST #1	
Date of Run	10-17-95		1.000	
Time of Run	21:04		1.000	
Operator	CM		1.000	
Comment	SAMPLE RUN W/O		1.000	File name: N2101795
	DILUTION LOOP		1.000	
	PQL :0.050 mg/L		1.000	checked pH 10.30.95
	EPA: 353.2		1.000	
AN1 ChemName	NITRITE		1.000	
AN1 Units	mg/L		1.000	
Peak1	Cup:1 -> PRIM	2.00 PPM	1.969	
Peak2	Cup:1 -> CALB	2.00 PPM	(1.991 /2.0)10² = 100% ✓	
Peak3	Cup:2 -> CALB	1.00 PPM	(1.020 /1.0)10² = 102% ✓	R = 0.9998
Peak4	Cup:3 -> NULL	0.50 PPM	(0.402	
Peak5	Cup:4 -> CALB	0.20 PPM	(0.174 /0.2)10² = 87% ✓	
Peak6	Cup:5 -> CALB	0.05 PPM	(0.038 /0.05)10² = 76% ✓	low recovery MD 6/11/96
Peak7	Cup:1 -> HIGH	2.00 PPM	1.987	
Peak8	Cup:5 -> LOW	0.05 PPM	0.040	
Peak9	Cup:5 -> LOW	0.05 PPM	0.041	
Peak10	Cup:6 -> ISMP	ICV	(0.998 /1.0)10² = 100% ✓	
Peak11	Cup:7 -> ISMP	RINSE	0.034 <0.05	
Peak12	Cup:8 -> ISMP	ICB	0.034 ↓ ✓	
Peak13	Cup:9 -> SAMP	FILTER BLANK	0.031 <0.05 ✓	
Peak14	Cup:10 -> SAMP	WL1612-1	0.036 ↓	
Peak15	Cup:11 -> SAMP	WL1612-2	0.106	
Peak16	Cup:12 -> SAMP	WL1612-3	0.107	

Page no. 00001
10/26/95

TECHNICON TRAACS 800 SYSTEM 1-ANALYSIS REPORT FORM

DESCRIPTION	RUN INFORMATION	LIMS ID	TEST #1
Date of Run	10-26-95		1.000
Time of Run	16:59		1.000
Operator	CLM		1.000
Comment	SAMPLE RUN W/O		1.000
	DILUTION LOOP		1.000
	PQL: 0.10 mg/L		1.000
	EPA #365.4		1.000
AN1 ChemName	TPO4		1.000
AN1 Units	mg/L		1.000
Peak1	Cup:1 -> PRIM	5.00 PPM	2.953
Peak2	Cup:1 -> CALB	5.00 PPM	(5.005/5.0)10² = 100% ✓
Peak3	Cup:2 -> CALB	3.00 PPM	(2.788/3.0)10² = 93% ✓
Peak4	Cup:3 -> CALB	2.00 PPM	(1.957/2.0)10² = 98% ✓
Peak5	Cup:4 -> CALB	1.00 PPM	(1.185/1.0) = 119% ✓
Peak6	Cup:5 -> CALB	0.50 PPM	(0.731/0.5)10² = 146% ✓
Peak7	Cup:6 -> CALB	0.10 PPM	(0.345/.1)10² = 345% ✓
Peak8	Cup:1 -> HIGH	5.00 PPM	4.771
Peak9	Cup:4 -> LOW	1.00 PPM	1.182
Peak10	Cup:4 -> LOW	1.00 PPM	1.193
Peak11	Cup:7 -> ISMP	RINSE	1.330
Peak12	Cup:8 -> ISMP	ICV	(1.343/1.25)10² = 107% ✓
Peak13	Cup:9 -> ISMP	RINSE	0.355
Peak14	Cup:9 -> ISMP	RINSE	0.138
Peak15	Cup:10 -> ISMP	ICB	-.015 <0.10 ✓
Peak16	Cup:10 -> ISMP	ICB	-.018 <0.10 ✓

TP102695

Checked
11.5.95

r = 0.9970 ✓

high recoveries for STDs near PQL

MO
6/11/96

10/26/95

T E C H N I C O N TRAACS 800 SYSTEM 1-ANALYSIS REPORT FORM

DESCRIPTION	RUN INFORMATION	LIMS ID		TEST #1	
Peak17	Cup:11 -> SAMP	WL1595-11		0.081	< 0.10
Peak18	Cup:12 -> SAMP	WL1595-12		0.268	
Peak19	Cup:13 -> SAMP	WL1595-13		0.230	
Peak20	Cup:14 -> SAMP	WL1595-14	x10	2.233	
Peak21	Cup:15 -> SAMP	WL1595-15	x10	2.556	
Peak22	Cup:16 -> SAMP	WL1595-16		-.033	< 0.10
Peak23	Cup:17 -> SAMP	WL1595-17	x10	-1.205	< 0.10
Peak24	Cup:18 -> SAMP	WL1595-18		-.159	< 0.10
Peak25	Cup:19 -> SAMP	WL1595-19	x10	-1.821	< 0.10
Peak26	Cup:20 -> SAMP	WL1595-20	x10	-1.936	< 0.10
Peak27	Cup:21 -> SAMP	WL1595-14SPIKE		0.825	
Peak28	Cup:22 -> ISMP	RINSE		0.927	
Peak29	Cup:23 -> ISMP	CCV		(1.161/1.25)10² = 93% ✓	
Peak30	Cup:24 -> ISMP	RINSE		0.074	
Peak31	Cup:24 -> ISMP	RINSE		-.107	
Peak32	Cup:25 -> ISMP	CCB		-.235	< 0.10 ✓
Peak33	Cup:25 -> ISMP	CCB		-.238	< 0.10 ✓
Peak34	Cup:26 -> SAMP	WL1612-1		-.252	< 0.10
Peak35	Cup:27 -> SAMP	WL1612-2		-.239	< 0.10
Peak36	Cup:28 -> SAMP	WL1612-3		-.296	< 0.10
Peak37	Cup:29 -> SAMP	WL1612-4	x10	-3.466	< 0.10
Peak38	Cup:30 -> SAMP	WL1612-5		-.366	< 0.10
Peak39	Cup:31 -> SAMP	WL1612-6		-.407	< 0.10
Peak40	Cup:32 -> SAMP	WL1612-7		-.416	< 0.10
Peak41	Cup:33 -> SAMP	WL1628-10		-.439	< 0.10

negative [ ]s above the PQL

negative [ ]s above the PQL

MO
6/11/96

T E C H N I C O N   TRAACS 800 SYSTEM   1-ANALYSIS REPORT FORM

DESCRIPTION	RUN INFORMATION	LIMS ID	TEST #1
Peak42	Cup:34 -> SAMP	WL1628-11	-.436 < 0.10
Peak43	Cup:35 -> SAMP	WL1612-7DUP	-.482 < 0.10
Peak44	Cup:36 -> SAMP	WL1612-6SPIKE	0.240
Peak45	Cup:37 -> ISMP	RINSE	0.714
Peak46	Cup:38 -> ISMP	CCV	(1.018 / (1.25) 10^2 = 81% ✓
Peak47	Cup:39 -> ISMP	RINSE	-.166
Peak48	Cup:39 -> ISMP	RINSE	-.329
Peak49	Cup:40 -> ISMP	CCB	-.446 < 0.10 ✓
Peak50	Cup:40 -> ISMP	CCB	-.450 < 0.10
Peak51	Cup:2 -> GAIN	3.00 PPM	2.788

negative [ ] above the PQL

negative [ ] above the PQL

MO
6/11/96

Std curve	conc (mg/L)
Blank	0.498
10.0	10.05
20.0	19.91
50.0	49.48

r = 0.99998

SELFTEST
NO ERRORS

1 TOC 9.430

CAL -- 1 ML
CAL ADJ 9.937

1 TOC 40.94

2 TOC 384.8

CAL -- 200 UL
CAL ADJ 399.7

1 TOC 36.65

2 TOC 0.493

3 TOC 0.699

4 TOC 10.05

5 TOC 19.91

6 TOC 49.48

7 TOC 1.644

8 TOC 94.33

9 TOC 3.711

10 TOC 2.626 Rerun
10 CANCELLED due to interference

TIMEOUT ERROR< 100%

TOC 1.068 rerun
CANCELLED due to interference

OUT ERROR< 10

TOC 1.146

13 TOC 12.25
13 CANCELLED Rerun due to interference

TIMEOUT ERROR< 100%

Replicate	x_1	x_2	$\bar{x}$	RPD%	
WL1619-14	<1.0	<1.0	<1.0	—	
WL1612-4	2.291	2.812	2.565	21	<3xPQL

Spike Recovery: WL1619-5

$$\frac{41.11 - 2.531(900/1000)}{400(100/1000)}(10^2) = 97\%$$

1619-14

$$\frac{54.4 - (<1.0)}{400(100/1000)}(10^2) = 96\%$$

1612-4

$$\frac{57.05 - 2.291(900/1000)}{400(900/1000)}(10^2) = 137\% \text{ @ I-1}$$

TOC spike recovery is high all + results are est.

MD
6/10/96

PACE, Inc., Environmental Laboratories
Elements Section
Aqueous Laboratory Control Sample (LCSW)

Client:	OLIN CHEMICALS
Work Order:	WL1612
Prep. Date:	18-Oct-95
QC Batch ID:	LJ18ICW1

Method 3010 (HCl) Element:	Measured Conc. (mg/L)	Analysis Date	True Value (mg/L)	Calculated Recovery (%)	Control Limits (%)	Notes
Aluminum	2.04 ~~2.14~~	20-Oct-95	2.00	~~107%~~ 102%	80.0-120	
Antimony (GFAA)					MO 6/5/96	
Antimony (ICP)						
Arsenic	2.04	1-Nov-95	2.00	102%	80.0-120	
Barium	2.27	27-Oct-95	2.00	114%	80.0-120	
Beryllium						
Boron						
Cadmium						
Calcium	2.74	30-Oct-95	2.50	110%	80.0-120	
Chromium	0.208 ~~0.212~~	20-Oct-95	0.200	~~106%~~ 104%	80.0-120	
Cobalt					MO 6/5/96	
Copper						
ron	1.17	30-Oct-95	1.00	117%	80.0-120	
ead	0.538	27-Oct-95	0.500	108%	80.0-120	
Magnesium	5.56	30-Oct-95	5.00	111%	80.0-120	
Manganese	0.544	27-Oct-95	0.500	109%	80.0-120	
Molybdenum						
Nickel						
Potassium	25.5	19-Oct-95	25.0	102%	80.0-120	
Selenium						
Silver						
Sodium	7.56	19-Oct-95	7.50	101%	80.0-120	
Thallium						
Tin						
Silicon	2.36	19-Oct-95	2.46	96%	80.0-120	
Vanadium						
Zinc						
Method 3020 (HNO3) Element:	**Measured Conc. (mg/L)**	**Analysis Date**	**True Value (mg/L)**	**Calculated Recovery (%)**	**Control Limits (%)**	**Notes**
Arsenic			0.040	0%	80.0-120	
Lead			0.020	0%	80.0-120	
Selenium			0.010	0%	80.0-120	
Cadmium			0.005	0%	80.0-120	
Thallium			0.050	0%	80.0-120	

Notes:
) LCS control limits are nominal values, effective 9/15/93
) See cover letter for additional information. (if notated)
) Analysis methods are the same as the analysis methods for the prep blank.

PACE, Inc., Environmental Laboratories
Elements Section
Aqueous Preparation Blank (P B W)

Client:	OLIN CHEMICALS
Work Order:	WL1612
Prep. Date:	18-Oct-95
QC Batch ID:	LJ18ICW1

Method 3010 (HCl) Elements:	Method	Measured Conc. (mg/L)	Analysis Date	Acceptance Limit (mg/L)	Notes
Aluminum	200.7/6010	<0.100	20-Oct-95	0.100	
Antimony (GFAA)	204.2/7041				
Antimony (ICP)	200.7/6010				
Arsenic	200.7/6010	<0.005	1-Nov-95	0.005	
Barium	200.7/6010	<0.005	27-Oct-95	0.005	
Beryllium	200.7/6010				
Boron	200.7/6010				
Cadmium	200.7/6010	MO 11/5/96			
Calcium	200.7/6010	0.07 ~~<0.050~~	30-Oct-95	0.10 (PQL=0.050)	
Chromium	200.7/6010	<0.015	20-Oct-95	0.015	
Cobalt	200.7/6010				
Copper	200.7/6010				
Iron	200.7/6010	<0.025	30-Oct-95	0.050 (PQL=0.025)	
Lead	200.7/6010	<0.005	27-Oct-95	0.005	
Magnesium	200.7/6010	<0.050	30-Oct-95	0.050	
Manganese	200.7/6010	<0.005	27-Oct-95	0.005	
Molybdenum	200.7/6010				
Nickel	200.7/6010				
Potassium	200.7/6010	<0.500	19-Oct-95	0.500	
Selenium	200.7/6010				
Silver	200.7/6010				
Sodium	200.7/6010	<0.100	19-Oct-95	0.20 (PQL=0.10)	
Thallium	200.7/6010				
Tin	200.7/6010				
Silicon	200.7/6010	<0.100	19-Oct-95	0.100	
Vanadium	200.7/6010				
Zinc	200.7/6010				
Method 3020 (HNO3) Element:	**Method**	**Measured Conc. (mg/L)**	**Analysis Date**	**Acceptance Limit (mg/L)**	**Notes**
Arsenic	206.2/7060	<0.005		0.005	
Lead	239.2/7421	<0.005		0.005	
Selenium	270.2/7740	<0.005		0.005	
Silver	272.2	<0.002		0.002	
Thallium	279.2/7841	<0.005		0.005	
Cadmium	213.2/7131	<0.002		0.002	

Notes:
1) Blank acceptance limits are equivalent to PQLs unless otherwise indicated.
2) Random low level contamination is indicated for this parameter. (if notated)

Order WL-1612

GW-64S	unfilt	filt	RPD
Mg	2.6	2.8	7
Na	46	47	2

GW-64D	unfilt	filt	RPD
Ba	0.076	0.093	20
Fe	65	70	7

GW-62S	unfilt	filt	RPD
As	0.025	0.028	11
Ba	0.024	0.025	4
Ca	35	37	6
Fe	17	20	16
Mg	5.3	5.7	7
K	9.8	10	2
Si	6.5	6.9	6
Na	30	31	3

GW-62D	unfilt	filt	RPD
Fe	0.081	0.11	30

GW-58S	unfilt	filt	RPD
Mg	1.8	1.9	5

GW-58D	unfilt	filt	RPD
Fe	75	77	3
K	27	28	4

Smith Env. Technologies Corporation established criteria:

- If sample values are greater than 100 the maximum acceptance RPD is 30 percent.
- If sample values are less than 100 the maximum acceptance RPD is 50 percent.

Analysis Report   Wed 11-01-95 10:38:09 AM   page 1

Method: AS   Sample Name: PBW LJ18ICW1   Operator: KEW
Run Time: 11/01/95 10:33:11
Comment:
Mode: CONC   Corr. Factor: 1

Elem	As1890	Al3082	Ca3179	Cr2677	Fe2714	Mg2790	Mo2020
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Avge	L.00171	L.01972	.06292	L.00019	L.01593	L.00499	L.00029
SDev	.00062	.00155	.00224	.00013	.00660	.00027	.00039
%RSD	36.003	7.8622	3.5522	68.541	41.421	5.4943	136.88
#1	L.00128	L.02082	.06134	L.00028	L.02059	L.00479	L.00001
#2	L.00215	L.01863	.06450	L.00010	L.01126	L.00518	L.00056

IntStd	1	2	3	4	5	6	7
Mode	*Counts	NOTUSED	NOTUSED	NOTUSED	NOTUSED	NOTUSED	NOTUSED
Elem	Y	--	--	--	--	--	--
Wavlen	360.063	--	--	--	--	--	--
Avge	41096	--	--	--	--	--	--
SDev	883.1764	--	--	--	--	--	--
%RSD	2.149083	--	--	--	--	--	--
#1	41720	--	--	--	--	--	--
#2	40471	--	--	--	--	--	--

above IDL

Ca
-2
-5 } results are too high for qualification
-7

WMO 6/5/96

Analysis Report QC Standard Wed 11-01-95 12:13:41 PM page 1

Method: AS Sample Name: CCB Operator: KEW
Run Time: 11/01/95 12:08:43
Comment:
Mode: CONC Corr. Factor: 1

Elem	As1890	Al3082	Ca3179	Cr2677	Fe2714	Mg2790	Mo2020
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Avge	.00263	.09244	Q.05663	-.00011	.01934	Q.07141	.00167
SDev	.00015	.00392	.00250	.00011	.00184	.00076	.00052
%RSD	5.5276	4.2398	4.4146	98.478	9.4951	1.0572	31.160
#1	.00253	.08967	Q.05487	-.00003	.01804	Q.07087	.00204
#2	.00274	.09521	Q.05840	-.00018	.02064	Q.07194	.00130

IntStd	1	2	3	4	5	6	7
Mode	*Counts	NOTUSED	NOTUSED	NOTUSED	NOTUSED	NOTUSED	NOTUSED
Elem	Y	--	--	--	--	--	--
Wavlen	360.063	--	--	--	--	--	--
Avge	40180	--	--	--	--	--	--
SDev	800.4449	--	--	--	--	--	--
%RSD	1.992148	--	--	--	--	--	--
#1	40746	--	--	--	--	--	--
#2	39614	--	--	--	--	--	--

Samples analyzed:

-9 No Ca or mg associated ~~Ca+Mg out of criteria.~~

-10

-11

~~Rerun these above.~~

RR 11.7.95

-12 → mg. only

-13 No Ca or mg associated ~~Ca+~~ Mg are acceptable.

-14 "

No qual required b/c Mg result is too high.

MO 6/5/96

Analysis Report QC Standard Wed 11-01-95 10:23:03 AM page 1

Method: AS Sample Name: CRI Operator: KEW
Run Time: 11/01/95 10:18:05
Comment:
Mode: CONC Corr. Factor: 1

Elem	As1890	Al3082	Ca3179	Cr2677	Fe2714	Mg2790	Mo2020 out
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Avge	.02268	Q.37284	Q.44308	.02557	.26334	.29377	Q.19821
SDev	.00120	.00413	.00844	.00061	.00553	.00725	.00284
%RSD	5.2768	1.1070	1.9040	2.4065	2.1009	2.4673	1.4334
#1	.02353	Q.37575	Q.44904	.02600	.26725	.29889	Q.20022
#2	.02184	Q.36992	Q.43711	.02513	.25942	.28864	Q.19620

IntStd	1	2	3	4	5	6	7
Mode	*Counts	NOTUSED	NOTUSED	NOTUSED	NOTUSED	NOTUSED	NOTUSED
Elem	Y	--	--	--	--	--	--
Wavlen	360.063	--	--	--	--	--	--
Avge	40524	--	--	--	--	--	--
SDev	555.7859	--	--	--	--	--	--
%RSD	1.371498	--	--	--	--	--	--
#1	40131	--	--	--	--	--	--
#2	40917	--	--	--	--	--	--

127%R
No Cr associated
JM 6/5/96

0000205

Analysis Report QC Standard Wed 11-01-95 12:28:47 PM page 1

Method: AS Sample Name: CRI Operator: KEW
Run Time: 11/01/95 12:23:48
Comment:
Mode: CONC Corr. Factor: 1

Elem	As1890	Al3082	Ca3179	Cr2677	Fe2714	Mg2790	Mo2020
							Out
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Avge	.02226	Q.44559	Q.50103	.02568	.28996	Q.35150	Q.19917
SDev	.00097	.00968	.00940	.00072	.00288	.01004	.00265
%RSD	4.3359	2.1726	1.8758	2.8008	.99492	2.8569	1.3324
#1	.02158	Q.45244	Q.50768	.02619	.29200	Q.35860	Q.20105
#2	.02295	Q.43875	Q.49438	.02517	.28792	Q.34440	Q.19729

IntStd	1	2	3	4	5	6	7
Mode	*Counts	NOTUSED	NOTUSED	NOTUSED	NOTUSED	NOTUSED	NOTUSED
Elem	Y	--	--	--	--	--	--
Wavlen	360.063	--	--	--	--	--	--
Avge	40195	--	--	--	--	--	--
SDev	545.8864	--	--	--	--	--	--
%RSD	1.358095	--	--	--	--	--	--
#1	39809	--	--	--	--	--	--
#2	40581	--	--	--	--	--	--

dR 1290

No Cr data associated.

MO 6/5/96

0000230

Analysis Report QC Standard Fri 10-27-95 01:57:15 PM

Method: TEMPLATE Sample Name: ICSAB Operator: KEW
Run Time: 10/27/95 13:51:31
Comment:
Mode: CONC Corr. Factor: 1

high

but the levels of Al, Ca, Mg & Fe are low

Elem	As1890	Pb2203	Se1960	Sb2068	Tl1908	Ag3280	Al3082
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Avge	.54008	1.4570	.51756	.53240	.48822	.99957	502.46
SDev	.00032	.0041	.00319	.00108	.00281	.00265	1.44
%RSD	.05944	.28340	.61591	.20357	.57641	.26511	.28622
#1	.53985	1.4599	.51981	.53163	.48623	1.0014	503.48
#2	.54031	1.4541	.51531	.53316	.49021	.99770	501.44

Elem	B_2496	Ba4934	Be3130	Ca3179	Cd2265	Co2286	Cr2677
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Avge	.53828	.51437	.50219	494.38	.96703	.48939	.49425
SDev	.00084	.00078	.00077	.01	.00009	.00002	.00013
%RSD	.15603	.15250	.15277	.00267	.00914	.00469	.02721
#1	.53769	.51493	.50273	494.38	.96709	.48937	.49416
#2	.53888	.51382	.50164	494.37	.96697	.48940	.49435

Elem	Cu3247	Fe2714	Mg2790	Mn2576	Mo2020	Ni2316	Sn1899
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Avge	.52748	197.24	497.10	.50021	.51554	.93730	.50530
SDev	.00108	.28	.96	.00189	.00205	.00011	.00201
%RSD	.20434	.14042	.19265	.37787	.39836	.01184	.39721
#1	.52824	197.44	497.77	.50155	.51699	.93738	.50388
#2	.52671	197.05	496.42	.49887	.51409	.93722	.50672

Elem	Sr4215	Ti3349	V_2924	Zn2138	2203/1	2203/2	2068/1
Units	mg/L	mg/L	mg/L	mg/L			
Avge	.49545	.51322	.53283	1.0694	1.4460	1.4619	.54489
SDev	.00069	.00124	.00012	.0015	.0061	.0032	.00200
%RSD	.13853	.24207	.02323	.14473	.42092	.21547	.36626
#1	.49593	.51410	.53275	1.0705	1.4503	1.4642	.54631
#2	.49496	.51234	.53292	1.0683	1.4417	1.4597	.54348

Elem	2068/2	1960/1	1960/2
Units			
Avge	.52573	.51459	.51858
SDev	.00262	.00096	.00425
%RSD	.49887	.18735	.82014
#1	.52387	.51527	.52159
#2	.52758	.51391	.51558

Result OK based on Region I
data val. guildelines
✓
dw
6/5/96

Analysis Report QC Standard Fri 10-27-95 05:20:01 PM page 1

Method: TEMPLATE Sample Name: ICSAB Operator: KEW
Run Time: 10/27/95 17:14:18
Comment:
Mode: CONC Corr. Factor: 1

Elem	As1890	Pb2203	Se1960	Sb2068	Tl1908	Ag3280	Al3082
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Avge	.56330	1.5019	.53594	.55493	.50578	.97893	516.80
SDev	.00235	.0013	.00339	.00111	.00961	.00021	.45
%RSD	.41802	.08593	.63178	.19973	1.9009	.02103	.08780
#1	.56164	1.5028	.53834	.55572	.51258	.97878	516.48
#2	.56497	1.5010	.53355	.55415	.49898	.97907	517.12

Elem	B_2496	Ba4934	Be3130	Ca3179	Cd2265	Co2286	Cr2677
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Avge	.54670	.54922	.48971	512.08	.98469	.50303	.46390
SDev	.00119	.00038	.00116	1.10	.00371	.00083	.00159
%RSD	.21797	.07005	.23645	.21515	.37652	.16585	.34191
#1	.54755	.54895	.49053	512.85	.98731	.50362	.46502
#2	.54586	.54949	.48889	511.30	.98207	.50244	.46278

Elem	Cu3247	Fe2714	Mg2790	Mn2576	Mo2020	Ni2316	Sn1899
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Avge	.51250	189.85	501.90	.48274	.53604	.95616	.52900
SDev	.00058	.51	1.25	.00096	.00186	.00273	.00567
%RSD	.11342	.26875	.24826	.19972	.34672	.28531	1.0714
#1	.51209	190.21	502.78	.48342	.53736	.95809	.52499
#2	.51291	189.49	501.02	.48206	.53473	.95423	.53301

Elem	Sr4215	Ti3349	V_2924	Zn2138	2203/1	2203/2	2068/1
Units	mg/L	mg/L	mg/L	mg/L			
Avge	.52169	.49235	.54162	1.1144	1.4466	1.5290	.57217
SDev	.00022	.00009	.00033	.0022	.0020	.0009	.00116
%RSD	.04238	.01808	.06138	.19943	.14075	.06003	.20223
#1	.52153	.49228	.54186	1.1159	1.4480	1.5297	.57299
#2	.52184	.49241	.54139	1.1128	1.4451	1.5284	.57135

Elem	2068/2	1960/1	1960/2
Units			
Avge	.54587	.52214	.54231
SDev	.00108	.00512	.00252
%RSD	.19852	.98046	.46471
#1	.54663	.52576	.54409
#2	.54510	.51852	.54052

ICSAB high for Pb. No impact based on Region I data validation guildelines.
MO 6/5/96

	rep	1	Mg279.6	conc	24.9280 mg/L
	rep	1	Ca393.4	conc	25.5040 mg/L
	rep	2	Fe238.2	conc	5.0803 mg/L
	rep	2	Al396.2	conc	9.8357 mg/L
	rep	2	Mg279.6	conc	25.7444 mg/L
	rep	2	Ca393.4	conc	25.1845 mg/L
	rep	3	Fe238.2	conc	5.0876 mg/L
	rep	3	Al396.2	conc	9.9511 mg/L
	rep	3	Mg279.6	conc	25.5332 mg/L
	rep	3	Ca393.4	conc	25.3037 mg/L

ICV
10/30/95 14:02

Fe238.2	av	5.1051 mg/L	102%	sd	0.03688	%cv	0.72
Al396.2	av	9.9593 mg/L	99.6	sd	0.12789	%cv	1.28
Mg279.6	av	25.4035 mg/L	102	sd	0.42453	%cv	1.67
Ca393.4	av	25.3307 mg/L	101	sd	0.16150	%cv	0.64

10/30/95 14:04

ICB	rep	1	Fe238.2	conc	-0.0012 mg/L
	rep	1	Al396.2	conc	0.0347 mg/L
	rep	1	Mg279.6	conc	-0.0026 mg/L
	rep	1	Ca393.4	conc	-0.0007 mg/L
	rep	2	Fe238.2	conc	-0.0014 mg/L
	rep	2	Al396.2	conc	0.0052 mg/L
	rep	2	Mg279.6	conc	-0.0062 mg/L
	rep	2	Ca393.4	conc	-0.0030 mg/L
	rep	3	Fe238.2	conc	0.0009 mg/L
	rep	3	Al396.2	conc	-0.0056 mg/L
	rep	3	Mg279.6	conc	-0.0107 mg/L
	rep	3	Ca393.4	conc	-0.0094 mg/L

ICB
10/30/95 14:05

Fe238.2	av	-0.0006 mg/L	L	sd	0.00126	%cv	221.53
Al396.2	av	0.0114 mg/L	L ✓	sd	0.02085	%cv	182.34
Mg279.6	av	-0.0065 mg/L	L	sd	0.00405	%cv	62.52
Ca393.4	av	-0.0050 mg/L	L	sd	0.00433	%cv	86.53

10/30/95 14:07

PBW LJ18ICW1	rep	1	Fe238.2	conc	0.0141 mg/L
	rep	1	Al396.2	conc	0.0076 mg/L
	rep	1	Mg279.6	conc	-0.0092 mg/L
	rep	1	Ca393.4	conc	0.0771 mg/L
	rep	2	Fe238.2	conc	0.0196 mg/L
	rep	2	Al396.2	conc	-0.0030 mg/L
	rep	2	Mg279.6	conc	-0.0081 mg/L
	rep	2	Ca393.4	conc	0.0785 mg/L
	rep	3	Fe238.2	conc	0.0191 mg/L
	rep	3	Al396.2	conc	-0.0356 mg/L
	rep	3	Mg279.6	conc	-0.0099 mg/L
	rep	3	Ca393.4	conc	0.0761 mg/L

window edge

associated w/
-1 -6
-3 -8
-4 -10
-11
-13

all too high for qual.
MO 6/5/96

PBW LJ18ICW1
10/30/95 14:08

Fe238.2	av	0.0176 mg/L	L	sd	0.00301	%cv	17.08
Al396.2	av	-0.0103 mg/L	L uncl	sd	0.02250	%cv	218.17
Mg279.6	av	-0.0091 mg/L	L	sd	0.00092	%cv	10.14
Ca393.4	av	0.0772 mg/L	*	sd	0.00118	%cv	1.53

10/30/95 14:10

LCSW 1/2	rep	1	Fe238.2	conc	0.5610 mg/L
	rep	1	Al396.2	conc	1.0723 mg/L
	rep	1	Mg279.6	conc	2.7651 mg/L
	rep	1	Ca393.4	conc	1.3671 mg/L
	rep	2	Fe238.2	conc	0.5986 mg/L
	rep	2	Al396.2	conc	1.1043 mg/L

ENVIRONMENTAL TECHNOLOGIES CORPORATION

To:	Richard Wellman
Company:	Katahdin
Phone:	
Fax:	207-775-4029
From:	Marybeth Ousey
Division/Office:	Plymouth Meeting, PA
Phone:	610-825-3800 X616
Fax:	610-834-8236
Date:	June 5, 1996
Pages including this cover page:	3

Comments:

SMITH
ENVIRONMENTAL TECHNOLOGIES CORPORATION

To: Richard Wellman
Company: Katahdin
Phone:
Fax: 207-775-4029

From: Marybeth Ousey
Division/Office: Plymouth Meeting, PA
Phone: 610-825-3800 X616
Fax: 610-834-8236

Date: June 5, 1996
Pages including this cover page: 3

Comments:

CONFIDENTIALLY NOTICE: The documents accompanying this facsimile transmission may contain confidential information belonging to the sender. The information is intended only for the use of the individual or entity named above. If you are not the intended recipient, you are hereby notified that any use, disclosure, copying, distribution, or taking of any action in reliance on the contents of this facsimile information is STRICTLY PROHIBITED. If you have received this facsimile in error, please immediately notify us by telephone to arrange for the return of this original facsimile to us at no charge to you.

TRANSMISSION REPORT

THIS DOCUMENT (REDUCED SAMPLE ABOVE)
WAS SENT

** COUNT **
# 3

*** SEND ***

NO	REMOTE STATION I. D.	START TIME	DURATION	#PAGES	COMMENT
1	2077754029	6- 5-96 14:11	1'56"	3	
		TOTAL	0:01'56"	3	

XEROX TELECOPIER 7021

Katahdin
ANALYTICAL SERVICES

RECEIVED
JUN 6 1996

MEMORANDUM

To: Marybeth Ousey, Smith Environmental ~~Technologies~~ Corp.
From: George Brewer, Metals Section Supervisor
Date: 06/05/96
Subject: PACE Work Order No. WL1612

We are providing the following responses to the questions about Work Order WL1612 presented in your fax of 06/05/96. The section numbers below refer to the question numbers in your fax.

1) This run was performed on the Thermo Jarrell Ash Trace ICP. This instrument employs a unique background correction technique to provide improved detection limits for lead, selenium, and antimony. For these elements, signal and background are measured simultaneously by monitoring each analytical wavelength in two spectral orders. The analytical channels for the two orders are standardized independently. After standardization, the weighted means of the analytical results for the two orders of each wavelength are reported. In the standardization report on page 87, standardization information for the 220.3 nm lead wavelength in the first order is identified by "2203/1", and that for the second order is identified by "2203/2". The wavelength identified as "Pb2203" is a "dummy" channel where the weighted mean results of the two orders are reported. Therefore, the "Pb2203" channel is listed on the standarization report as "NOT STANDARDIZED". The same convention is followed for the 196.0 nm selenium wavelength and the 206.8 nm antimony wavelength.

2) Two ICP spectrometers were used to produce data for Work Order WL1612. For runs performed using the Perkin Elmer Plasma II, the linear reporting range is twice the concentration of the initial calibration standard. This is verified by quarterly analysis of a linear range standard at that concentration (recoveries for the linear range standard must be within +/- 5% of the true values). For the run in your example, sodium was calibrated at 50 mg/L and results up to 100 mg/L were reported. Samples with sodium concentrations greater than 100 mg/L were diluted and reanalyzed in a later run.

For runs performed using the TJA Trace ICP, the instrument was calibrated at 500 mg/L for Al, Ca, and Mg; at 200 mg/L for Fe; and at 2.0 mg/L for all other elements. Results have been

340 County Road No. 5
P.O. Box 540, Westbrook, ME 04098
210 West Road No. 5, Portsmouth, NH 03801
Tel (603) 431-5777 Fax (603) 436-3556

reported up to these concentration from this instrument.

3) The standardization reports on pages 194 and 200 of the data package list the slope and y-intercept for each line, but not the concentrations of the calibration standards. The calibration concentrations for the TJA Trace ICP are listed in "2" above. Results have been reported up to 500 mg/L for Al, Ca, and Mg and up to 200 mg/L for Fe. Samples with measured concentrations exceeding these linear ranges were diluted and reanalyzed.

4) Metals are frequently analyzed in more than one analytical run. We attempt to report the first successful analysis for each metal. In your example, iron and magnesium were successfully analyzed in sample WL1612-8 during run 1612ACFM on 10/30/95, and these results were reported. The sample was analyzed for trace metals using another instrument during run 951101A on 11/01/95. It was necessary to calibrate and analyze for iron and magnesium during run 951101A because these metals are common spectral interferents (i.e. they interfere with the determination of some trace metals), and the instrument uses the measured iron and magnesium concentrations to perform interelement correction of trace metal results. We note that the relative percent difference (RPD) for iron results obtained for sample WL1612-8 in the two runs was only 3.5%, and that the RPD for the magnesium results was only 5.3%. These figures are well within method requirements for precision of duplicate analyses (+/- 20% RPD).

5) In run 95102773, the barium recovery (114%) for the continuing calibration verification standard analyzed after sample WL1612-13 exceeded the method limits of 90% - 110% (refer to page 177 of the data package). Therefore, the barium result obtained from this run for sample WL1612-13 was rejected, and the sample was successfully reanalyzed for barium in run 951101C.

I hope this provides the information that you need. Please call me if you have further questions.

RECEIVED
JUN 6 1996

340 County Road No. 5
P.O. Box 720. Westbrook, ME 04098
Tel: (207) 874-2400 Fax: (207) 775-4029

210 West Road No. 5, Portsmouth, NH 03801
Tel. (603) 431-5777 Fax: (603) 436-3356

SMITH
ENVIRONMENTAL TECHNOLOGIES CORPORATION

To:	Richard Wellman
Company:	Katahdin
Phone:	
Fax:	207-775-4029
From:	E. Bryan Rivers/Marybeth Ousey
Division/Office:	Plymouth Meeting, PA
Phone:	610-825-3800 X616
Fax:	610-834-8236
Date:	June 5, 1996
Pages including this cover page:	3

Comments:

CONFIDENTIALLY NOTICE: The documents accompanying this facsimile transmission may contain confidential information belonging to the sender. The information is intended only for the use of the individual or entity named above. If you are not the intended recipient, you are hereby notified that any use, disclosure, copying, distribution, or taking of any action in reliance on the contents of this facsimile information is STRICTLY PROHIBITED. If you have received this facsimile in error, please immediately notify us by telephone to arrange for the return of this original facsimile to us at no charge to you.

SMITH ENVIRONMENTAL CORPORATE QUALITY ASSURANCE DEPARTMENT
DATA VALIDATION INQUIRY

To: Richard Wellman, Pace, Inc.
cc: Bruce Cushing, Project Manager, SMTH
DATA VALIDATION REPORT

Pace Laboratories Case No.: WL-1595 and WL-1612
Project Name: Semi-Annual Groundwater Monitoring - Wilmington, MA

June 5, 1996

Dear Mr. Wellman:

The following questions pertain the metals' data for WL-1595 and WL-1612:

1. Lead does not appear to be standardized for the ICP run on 10/26/95 (Run ID 951026A, page 255). In particular, see pages 255 and 265. Selenium and antimony do not appear to be standardized for the ICP run on 10/24/95 (Run ID 951024B, page 141). In particular, see pages 141 and 151.

2. Several ICP runs only have one initial standard provided, or two initial standards that are the same concentrations. Therefore, I cannot determine the laboratory's basis for sample dilution (i.e., whether or not a sample exceeds the initial calibration range).

3. The result from ICP Run ID 951024B on page 212 was reported at concentration which exceeded the instrument initial calibration range specified on page 152 for manganese sample WL-1595-11.

4. The report of analysis forms for pages 33, 36, 40, and 45 are not readable. Please resubmit these pages again.

5. The following nitrate as nitrogen (NO3-N) results on the report of analysis forms do not agree with the raw data supplied: samples WL1595-16, WL1595-18, and WL1595-20 for case order WL1595 and samples WL-1612-5 and WL-1612-7 for case WL-1612.

6. The following analytical results could not be verified from the raw data supplied due either to poor copy quality or pages that were cut off at the bottom: potassium for sample WL-1612-1, iron and sodium for sample WL-1612-4, and sodium for sample WL-1612-13. Please provide **only** the necessary pages.

Please call me with any questions that you may have regarding these questions.

Thank you,
E. Bryan Rivers
Quality Assurance Scientist

)Mary

Katahdin
ANALYTICAL SERVICES

RECEIVED
JUN 11 1996

FAX TRANSMISSION

Date: 06/11/96 Time:

To: E. Brian Rivers / Marybeth Ousey
Smith Environmental Technologies Corp.

From: George Brewer, Metals Section Supv. (Ext. 118)

FAX No: 610-834-8236

Number of Pages (Including This Cover): 19

Comments: Please call if you have any questions regarding this Fax.

From: Katahdin Analytical Services, Inc.
340 County Road No. 5
P.O. Box 720
Westbrook, ME 04098
Tel: (207) 874-2400 Fax: (207) 775-4029

Katahdin
ANALYTICAL SERVICES

RECEIVED
JUN 11 1996

MEMORANDUM

To: E. Brian Rivers, Smith Environmental Technologies Corp.
From: George Brewer, Metals Section Supervisor, Katahdin Analytical Services, Inc.
Date: 06/11/96
Subject: Response to your inquiry of 06/05/96 (Inquiry No. MET2) regarding metals data for WL-1595 and WL-1612

We are providing the following responses to the questions about Work Orders WL-1595 and WL-1612 presented in your fax of 06/05/96. The section numbers below refer to the question numbers in your fax.

1) These runs were performed on the Thermo Jarrell Ash Trace ICP. This instrument employs a unique background correction technique to provide improved detection limits for lead, selenium, and antimony. For these elements, signal and background are measured simultaneously by monitoring each analytical wavelength in two spectral orders. The analytical channels for the two orders are standardized independently. After standardization, the weighted means of the analytical results for the two orders of each wavelength are reported. In the standardization report on page 87, standardization information for the 220.3 nm lead wavelength in the first order is identified by "2203/1", and that for the second order is identified by "2203/2". The wavelength identified as "Pb2203" is a "dummy" channel where the weighted mean results of the two orders are reported. Therefore, the "Pb2203" channel is listed on the standarization report as "NOT STANDARDIZED". The same convention is followed for the 196.0 nm selenium wavelength and the 206.8 nm antimony wavelength.

2) Two ICP spectrometers were used to produce data for these work orders. For runs performed using the Perkin Elmer Plasma II, the linear reporting range is twice the concentration of the initial calibration standard. This is verified by quarterly analysis of a linear range standard at that concentration (recoveries for the linear range standard must be within +/- 5% of the true values).

For runs performed using the TJA Trace ICP, the instrument was calibrated at 500 mg/L for Al, Ca, and Mg; at 200 mg/L for Fe; and at 2.0 mg/L for all other elements. Results have been reported up to these concentration from this instrument.

...Road No. 5
...ox 720, Westbrook, ME 04098
...) 874-2400 Fax (207) 775-4029

210 West Road No. 5, Portsmouth, NH 03801
Tel (603) 431-5777 Fax (603) 436-3356

Katahdin
ANALYTICAL SERVICES

3) The reported manganese concentration for sample WL-1595-11 is 1.7 mg/L. This analysis was performed using the TJA Trace ICP. As noted in "2" above, the manganese concentration of the initial calibration standard was 2.0 mg/L, and manganese results up to that concentration have been reported from this run.

4) Report of analysis forms for PACE Sample Nos. WM-1595-14, -15, -16, and -18 are being faxed along with this memo.

5) Your question about nitrate nitrogen has been answered by Richard Wellman in a separate memo.

6) The raw data you requested are being faxed along with this memo. Please note that my copy of the data package is not paginated. I hope that this causes no inconvenience.

I hope this provides the information that you need. Please call me if you have further questions.

RECEIVED
JUN 11 1996

340 County Road No. 5
P.O. Box 720, Westbrook, ME 04098
Tel: (207) 874-2400 Fax: (207) 775-4029

210 West Road No. 5, Portsmouth, NH 03801
Tel: (603) 431-5277 Fax: (603) 436-3356

Katahdin
ANALYTICAL SERVICES

FAX TRANSMISSION

Date: 6/5/96 Time: 1420

To: Danielle / Mary Beth Ousey

From: Rick Wellman

FAX No: 610-834-8236 or 610 825 9204

Number of Pages (Including This Cover): 4

Comments: X-REF & TDS PAGES

From: Katahdin Analytical Services, Inc.
340 County Road No. 5
P.O. Box 720
Westbrook, ME 04098
Tel: (207) 874-2400 Fax: (207) 775-4029

RECEIVED
JUN 6 [illegible]

Cross reference WL1612-1 NOx results
WL1595

WL1612-1	45757-029
-2	-030
-3	-031
-4	-032
-5	-033
-6	-034
-7	-035
WL1595-11	-019
-12	-020
-13	-021
-14	-022
-15	-023
-16	-024
-17	-025
-18	-026
-19	-027
-20	-028

[signature] 6/5/94

Katahdin
ANALYTICAL SERVICES

FAX TRANSMISSION

Date: 6/10/96 Time: 1640

To: Mary-Beth Ousey

From: Rick Wellman

FAX No: 610 834 8236

Number of Pages (Including This Cover):

Comments:

Tabulation of results reported for NO_3 NO_2 in question.

From: Katahdin Analytical Services, Inc.
340 County Road No. 5
P.O. Box 720
Westbrook, ME 04098
Tel: (207) 874-2400 Fax: (207) 775-4029

reported	Maine		New Hampshire		
out of holdtime	NO_3	NO_2	$NO_3 + NO_2$	NO_2	NO
WL1612-5 45757-033	<0.05	0.051	0.084	[redacted]	[redacted]
WL1612-7 45757-035	<0.05	0.074	<0.05	[redacted]	[redacted]
WL1595-16 45757-024	1.6	0.45	2.0	[redacted]	[redacted]
WL1595-18 -026	1.7	0.43	2.1	0.24	[illegible]9
WL1595-20 -028	0.81	0.14	0.94	<0.05	0.9

(8) Mary

SMITH
ENVIRONMENTAL TECHNOLOGIES CORPORATION

FIELD SERVICES
1850 GRAVERS ROAD
NORRISTOWN, PA 19401
(610) 272-4208
FAX: (610) 272-5498

FACSIMILE COVER SHEET

TO: Marybeth Ousey
COMPANY:
PHONE:
FAX:

FROM: Heidi
PHONE:
FAX:

DATE: 6/6/96

PAGES (including this cover page): 3

COMMENTS:

Olin Wilmington
Chain-of-custody - page 2 of 2
for Hampton Lab
and Maine Lab

pace INCORPORATED
NV!RONMENTAL LABORATORIES

2012

298728

CHAIN-OF-CUSTODY RECORD
Analytical Request

ient: Olin	Report To: Rick [illegible]	Pace Client No.	
ldress: [illegible] St	Bill To: Olin	Pace Project Manager	
Wilmington Mass	P.O. # / Billing Reference	Pace Project No.	
ıone	Project Name / No. 7674-0102	*Requested Due Date:	

ampled By (PRINT): [illegible] / [illegible]
ampler Signature: [illegible] Date Sampled: 10/16/85

TEM NO.	SAMPLE DESCRIPTION	TIME	MATRIX	PACE NO.	NO. OF CONTAINERS	UNPRESERVED	H_2SO_4	HNO_3	VOA			ANALYSES REQUEST: [illegible]	REMARKS
1	GW64S	0826	AQ		1			1				✓	Unfiltered
2	GW64D	0946	AQ		1			1				✓	
3	GW62S	1043	AQ		1			1				✓	
4	GW62D	1200	AQ		1			1				✓	
5	GW62S2	1620	AQ		1			1				✓	
6	GW54S	1345	AQ		1			1				✓	
7	GW58D	1435	AQ		1			1				✓	
8													

COOLER NOS.	BAILERS	SHIPMENT METHOD OUT DATE	RETURNED DATE	ITEM NUMBER	RELINQUISHED BY / AFFILIATION	ACCEPTED BY / AFFILIATION	DATE	TIME
					Russell Mitchell BCM/[illegible]			

ldditional Comments

SEE REVERSE SIDE FOR INSTRUCTIONS

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

2 of 2

298726

CHAIN-OF-CUSTODY RECORD
Analytical Request

Client: Olin
Address: Eames ST
Wilmington Mass
Phone:

Report To: Rick ...
Bill To: Olin
P.O. # / Billing Reference
Project Name / No. 7074-0102

Pace Client No.
Pace Project Manager
Pace Project No.
*Requested Due Date:

Sampled By (PRINT): Russell Michalak / Tim Fisher
Sampler Signature: Russell C Michalak
Date Sampled: 10/16/95

ITEM NO.	SAMPLE DESCRIPTION	TIME	MATRIX	PACE NO.	NO. OF CONTAINERS	UNPRESERVED	H_2SO_4	HNO_3	VOA			ANALYSES REQUEST: NH3-TKN	REMARKS
1	GW64S	0935	AQ		1		1					✓	unfiltered
2	GW64D	0946	AQ		1		1					✓	
3	GW62S	1043	AQ		1		1					✓	
4	GW62D	1200	AQ		1		1					✓	
5	GW62BR	1620	AQ		1		1					✓	
6	GW58S	1545	AQ		1		1					✓	
7	GW58D	1435	AQ		1		1					✓	
8													

COOLER NOS.	BAILERS	SHIPMENT METHOD OUT DATE	RETURNED DATE

Additional Comments

ITEM NUMBER	RELINQUISHED BY / AFFILIATION	ACCEPTED BY / AFFILIATION	DATE	TIME
	Russell C Michalak BCM			

SEE REVERSE SIDE FOR INSTRUCTIONS

SMITH

APPENDIX B

Wet Chemistry Data Validation Summary

Project Name:	Olin Wilmington	**Case No./SDG:**	45683/WL1612
Project No.:	01-7074-0102	**Sampling Date(s):**	10/16/95
Project Manager:	Bruce Cushing	**Reviewed By:**	Danielle Leauby
Laboratory:	Pace, Inc (Katahdin)	**Completion Date:**	6/11/96

Compounds/Analytes Bromide, Sulfate, Chloride, Sulfide, Viscosity, Ammonia, Orthophosphates ☐ Other ______

Methods: ☒ ASTM, MCAWW ☐ Other ______

Matrix: ☐ soil/solid (mg/Kg) ☒ aqueous (~~ug/L~~ mg/L)

The following table indicates the data validation criteria examined, problems identified, and QA action.

Data Validation Criteria:	accept	FYI	qualify	comments
Holding Times	✓	✓		Br - 28 days, Cl - 28 days, SO_4 + ammonia - 28 days sulfide - 7 days ophos - 48 hrs: all met
Calibration (r and y-intercept)	✓	✓		SO_4 + Br - okay; OPhos - okay; Sulfide - NA; vis - NA Cl - Lachat can't not verify - see letter; Ammon - 2pt.
Inital Calibration Verification	✓	✓		NH_4 - 100%; sulfide - NA; Sulfide - ②; vis - NA; Cl - ②; Br + SO_4 - ②
Continuing Calibration Verification	✓	✓		NH_4 102.4% 107%; sulfide - NA; Sulfide - ③; vis - NA; Cl - 102.8% + 102%; Br + SO_4 - ③
Initial Calibration Blank	✓	✓		NH_4 <MDL; sulfide - NA; Sulfide - ②; vis - NA; Cl - ②; Br + SO_4 - ②; ⑤
Continuing Calibration Blank	✓	✓		NH_4 <MDL; sulfide - NA; Sulfide <MDL; vis - NA; Cl - <MDL + <MDL; Br - ↑MDL; SO_4 ↑MDL ⑤
Laboratory Blank	✓	✓		NH_4 <MDL; sulfide <MDL; ophos - <MDL; Vis - NA; Cl - <MDL + <MDL + <MDL; Br <MDL; SO_4 ↑MDL
Blank Spike Results /LCS	✓	✓		NH_4 89%; sulfide - 103.1%; Ophos - 97.8%; Vis - NA; Cl - 102.8% + 98.9 + 99.2%; Br - 95.8%; SO_4 - 95.4%
Field Blank		✓		NA
Matrix Spike Results	✓	✓		NH_4 - ①; sulfide - NA; OPhos 92.1%; vis - NA; Cl - ①; Br - 116.1%; SO_4 117.1%
Laboratory Duplicate Results	✓	✓		NH_4 - ①; sulfide - NA; OPhos 7.2% RPD; Vis - NA; Cl - ①; Br - NC ④ RPD; SO_4 - 3.6% RPD
Field Duplicate Results		✓		NA
Sample Result Verification		✓	✓	biased high due to low std - Br biased low RLs - Br
Other:				
Other:				

General Comments: ① matrix spike + matrix spike duplicate analysis not associated w/ this case; batch QC acceptable
② ICV = LCS + ICB = MB; ③ not provided w/ %R ④ NC = not calculable due to both results less than MDL
⑤ ICB + later CCB's above MDL for Br + for SO_4. SO_4 sample conc too high to qualify, No apparent peaks present to qualify results - Blanks acceptable

NA - Not applicable
NR - Not reviewed

QA Scientist *D Leauby* Date 6/10/96

Field Identification: GW-64S (FILT) Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Chloride, dissolved (mg/L)	78	1	45683-001	10/18/95	764	325.1/1
Sulfate, dissolved (mg/L)	13	1	45683-001	10/17/95	667A	300.0/1
Bromide, dissolved (mg/L)	BDL	1	45683-001	10/17/95	667A	300.0/1
Ortho Phosphate, dissolved (mg/L as P)	0.04	0.02	45683-001	10/17/95	202	365.2/1
Ammonia-N, dissolved (mg/L as N)	0.37	0.05	45683-008	10/18/95	584	350.2/1
Sulfide, dissolved (mg/L)	BDL	1	45683-015	10/17/95	311	376.1/1

Field Identification: GW-64D (FILT) Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Chloride, dissolved (mg/L)	230	1	45683-002	10/18/95	764	325.1/1
Sulfate, dissolved (mg/L)	710	10	45683-002	10/17/95	667A	300.0/1
Bromide, dissolved (mg/L)	2	1	45683-002	10/17/95	667A	300.0/1
Ortho Phosphate, dissolved (mg/L as P)	BDL	0.02	45683-002	10/17/95	202	365.2/1
Ammonia-N, dissolved (mg/L as N)	15	0.05	45683-009	10/18/95	584	350.2/1
Sulfide, dissolved (mg/L)	3	1	45683-016	10/17/95	311	376.1/1

Field Identification: GW-62S (FILT) Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Chloride, dissolved (mg/L)	50	1	45683-003	10/18/95	764	325.1/1
Sulfate, dissolved (mg/L)	57	1	45683-003	10/17/95	667A	300.0/1
Bromide, dissolved (mg/L)	BDL	1	45683-003	10/17/95	667A	300.0/1
Ortho Phosphate, dissolved (mg/L as P)	BDL	0.02	45683-003	10/17/95	202	365.2/1
Ammonia-N, dissolved (mg/L as N)	2.2	0.05	45683-010	10/18/95	584	350.2/1
Sulfide, dissolved (mg/L)	BDL	1	45683-017	10/17/95	311	376.1/1
Viscosity, dissolved (cpoise)	3.0		45683-022			D3245-85

pace INCORPORATED THE ASSURANCE OF QUALITY

Field Identification: GW-62D (FILT) Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Chloride, dissolved (mg/L)	83	1	45683-004	10/18/95	764	325.1/1
Sulfate, dissolved (mg/L)	100	1	45683-004	10/17/95	667A	300.0/1
Bromide, dissolved (mg/L)	BDL	1	45683-004	10/17/95	667A	300.0/1
Ortho Phosphate, dissolved (mg/L as P)	BDL	0.02	45683-004	10/17/95	202	365.2/1
Ammonia-N, dissolved (mg/L as N)	3.0	0.05	45683-011	10/18/95	584	350.2/1
Sulfide, dissolved (mg/L)	BDL	1	45683-018	10/17/95	311	376.1/1
Viscosity, dissolved (cpoise)	3.0		45683-023			D3245-85

Field Identification: GW-62BR (FILT) Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Chloride, dissolved (mg/L)	1700	10	45683-005	10/23/95	768	325.1/1
Sulfate, dissolved (mg/L)	4400	100	45683-005	10/17/95	667A	300.0/1
Bromide, dissolved (mg/L)	BDL	~~1~~ 100	45683-005	10/17/95	667A	300.0/1
Ortho Phosphate, dissolved (mg/L as P)	BDL	0.02	45683-005	10/17/95	202	365.2/1
Ammonia-N, dissolved (mg/L as N)	100	0.5	45683-012	10/18/95	584	350.2/1
Sulfide, dissolved (mg/L)	BDL	1	45683-019	10/17/95	311	376.1/1
Viscosity, dissolved (cpoise)	3.0		45683-024			D3245-85

DML 6/25/96

Field Identification: GW-58S (FILT) Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Chloride, dissolved (mg/L)	110	1	45683-006	10/18/95	764	325.1/1
Sulfate, dissolved (mg/L)	35	1	45683-006	10/17/95	667A	300.0/1
Bromide, dissolved (mg/L)	BDL	1	45683-006	10/17/95	667A	300.0/1
Ortho Phosphate, dissolved (mg/L as P)	BDL	0.02	45683-006	10/17/95	202	365.2/1
Ammonia-N, dissolved (mg/L as N)	0.86	0.05	45683-013	10/18/95	584	350.2/1
Sulfide, dissolved (mg/L)	BDL	1	45683-020	10/17/95	311	376.1/1
Viscosity, dissolved (cpoise)	3.0		45683-025			D3245-85

Field Identification: GW-58D (FILT) Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Chloride, dissolved (mg/L)	970	10	45683-007	10/23/95	768	325.1/1
Sulfate, dissolved (mg/L)	3600	100	45683-007	10/17/95	667A	300.0/1
Bromide, dissolved (mg/L)	8	1	45683-007	10/17/95	667A	300.0/1
Ortho Phosphate, dissolved (mg/L as P)	BDL	0.02	45683-007	10/17/95	202	365.2/1
Ammonia-N, dissolved (mg/L as N)	480	5	45683-014	10/18/95	584	350.2/1
Sulfide, dissolved (mg/L)	BDL	1	45683-021	10/17/95	311	376.1/1
Viscosity, dissolved (cpoise)	3.0		45683-026			D3245-85

Field Identification: GW-64S (UNFILT) Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Ammonia-N (mg/L as N)	0.35	0.05	45683-027	10/18/95	584	350.2/1

Field Identification: GW-64D (UNFILT) Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Ammonia-N (mg/L as N)	16	0.05	45683-028	10/18/95	584	350.2/1

Field Identification: GW-62S (UNFILT) Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Ammonia-N (mg/L as N)	2.3	0.05	45683-029	10/18/95	584	350.2/1

Field Identification: GW-62D (UNFILT) Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Ammonia-N (mg/L as N)	2.7	0.05	45683-030	10/18/95	584	350.2/1

Field Identification: GW-62BR (UNFILT)   Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Ammonia-N (mg/L as N)	96	0.5	45683-031	10/18/95	584	350.2/1

Field Identification: GW-58S (UNFILT)   Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Ammonia-N (mg/L as N)	0.82	0.05	45683-032	10/18/95	584	350.2/1

Field Identification: GW-58D (UNFILT)   Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Ammonia-N (mg/L as N)	570	5	45683-033	10/18/95	584	350.2/1

References: 1) 40 CFR Part 136, Friday, October 26, 1984

CALIBRATION CURVE/INFORMATION
Pace Incorporated
Results from 10/17/95

peak heights

Method 300.1	Concentration (in ng/uL)						AVE-6POINTS	SD-6POINTS	%RSD-6POINTS
	1	5	10	20.0	40.0	100.0			
sulfate	9448	40368	86984	175137	387589	979896	9077.589167	676.3050535	7.450271665
bromide	7235	27830	60907	118187	258786	696272	6372.236667	639.6975875	10.03882343

RF	Concentration (in ng/uL)						AVE-5POINTS	SD-5POINTS	%RSD-5POINTS
	1	5	10	20	40	100			
sulfate	9448	8073.6	8698.4	8756.85	9689.725	9798.96	9003.507	728.4053824	8.090240641
bromide	7235	5566	6090.7	5909.35	6469.65	6962.72	6199.684	536.85015	8.659314732

5-Point %RSD calcualted from 5-100ng/uL stds.

Calcualted Conc. (based on the Ave. RF of the 1ng-100ng stds)

Method 300.1	Concentration (in ng/uL)					
concentration	1	5	10	20	40	100
sulfate	1.040804979	4.446995701	9.582279877	19.29333844	42.6973498	107.9467226
bromide	1.135394113	4.3673833	9.558182344	18.54717679	40.61148597	109.2665004

%Recoveries (comparing the known conc. to the calculated conc.)

Concentration (in ng/uL)

concentration	1	5	10	20	40	100
sulfate	104.0804979	88.93991402	95.82279877	96.46669219	106.7433745	107.9467226
bromide	113.5394113	87.34766599	95.58182344	92.73588395	101.5287149	109.2665004

Analysis: ortho-phosphorus
Laboratory: Pace Incorporated
Initial Cal. Date **2/1/95** Analysis Date: **10/17/95**

	ABS.	CONC.			
	x	y	XY	X2	Y2
	0.001	**0**	0	0.000001	0
	0.017	**0.025**	0.000425	0.000289	0.000625
7	**0.035**	**0.05**	0.00175	0.001225	0.0025
	0.07	**0.1**	0.007	0.0049	0.01
	0.18	**0.25**	0.045	0.0324	0.0625
	0.376	**0.5**	0.188	0.141376	0.25
	0.571	**0.75**	0.42825	0.326041	0.5625
SUMS	1.25	1.675	0.670425	0.506232	0.888125
	XY	2.09375			

r 0.999841759

slope **1.3119951**
INTERCEPT **0.0050009**

	x'	y'	x'	y'
MBLANK	0.003	0.008937		0.005000873
LCSA	0.369	0.489127		0.005000873
45683-1	0.029	0.043049		0.005000873
45683-1D	0.027	0.040425		0.005000873
45683-1SPK	0.38	0.503559		0.005000873
45683-2	0.002	0.007625		0.005000873
45683-3	0.005	0.011561		0.005000873
45683-4	0.005	0.011561		0.005000873
45683-5	0.009	0.016809		0.005000873
45683-6	0.007	0.014185		0.005000873
45683-7	0.005	0.011561		0.005000873
		0.005001		0.005000873

Laboratory: Pace Incorporated SO_4

Analysis Date: 10/17/95

	HEIGHT x	CONC. y	XY	X2	Y2
	7235	**1**	7235	52345225	1
	27830	**5**	139150	774508900	25
6	**60907**	**10**	609070	3709662649	100
	118187	**20**	2363740	13968166969	400
	258786	**40**	10351440	66970193796	1600
	696272	**100**	69627200	4.84795E+11	10000
SUMS	1169217	176	83097835	5.7027E+11	12126
	XY	205782192			

r **0.99939171**

slope **0.0001425**

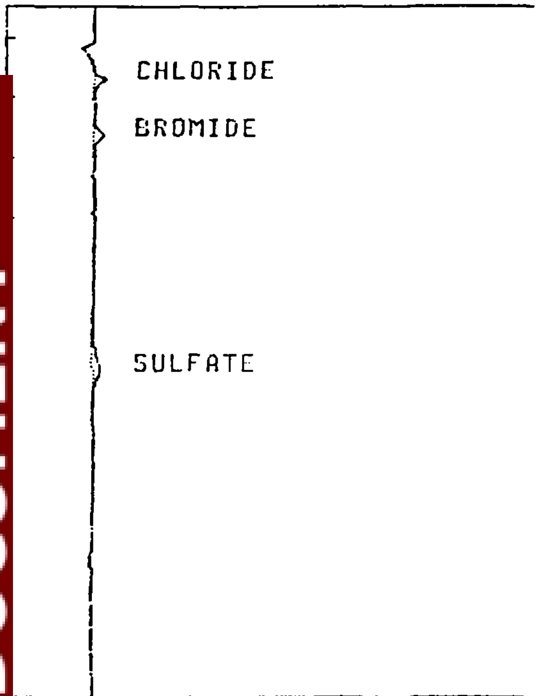
INTERCEPT **1.5614346**

	x'	y'	x'	y'
ICV/CCS	327906	48.293079		1.561434579
ICB/MB	-287	1.5205327		1.561434579
45683-1	83510	13.462893		1.561434579
45683-1D	84558	13.612249		1.561434579
45683-1SPK	147926	22.643163		1.561434579
45683-2	963095	138.81727		1.561434579
45683-2 X10	491333	71.583939		1.561434579
45683-3	386029	56.5765		1.561434579
45683-4	694607	100.55361		1.561434579
45683-5	962752	138.76839		1.561434579
45683-5MS	962199	138.68958		1.561434579
45683-5 X100	296375	43.799427		1.561434579
CCV	116862	18.216066		1.561434579
CCB	376	1.6150204		1.561434579
45683-6	232229	34.657636		1.561434579
45683-7	961439	138.58127		1.561434579
45683-7MS	961495	138.58925		1.561434579
45683-7 X100	237729	35.441471		1.561434579
CCV	114700	17.907947		1.561434579
CCB	-183	1.5353543		1.561434579
	483.503	1.6303412		1.561434579
	0.417	1.561494		1.561434579
	574.5	1.6433097		1.561434579
	271.754	1.6001637		1.561434579
	481.474	1.630052		
	0.266	1.5614725		

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0 n
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802 µ
INJECTION VOLUME: ~~20uL~~ COLUMN: IONPAC AS4A 4mm #26328
Sample Name : 1 PPM Report No :360.10

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 1/ 1



Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_17.SEQ
Method File : /DATA/DIONEX/METHOD/IC556.MTH
Result File : /DATA/DIONEX/RESULT/IC0525300.RES

Run Time : 12.03 Minutes Injected on 1217 17Oct1995
Report Time : 1004 25Oct1995
Run Status : RunStatusOK
EndOffBaseline

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	1.66	1.69	6.50E-06	10937	PV	.3382	CHLORIDE
2	2.57	2.59	1.48E-05	9448	VV	2.2922	BROMIDE
3	6.52	*6.44	7.14E-06	7235	VV	2.5652	SULFATE

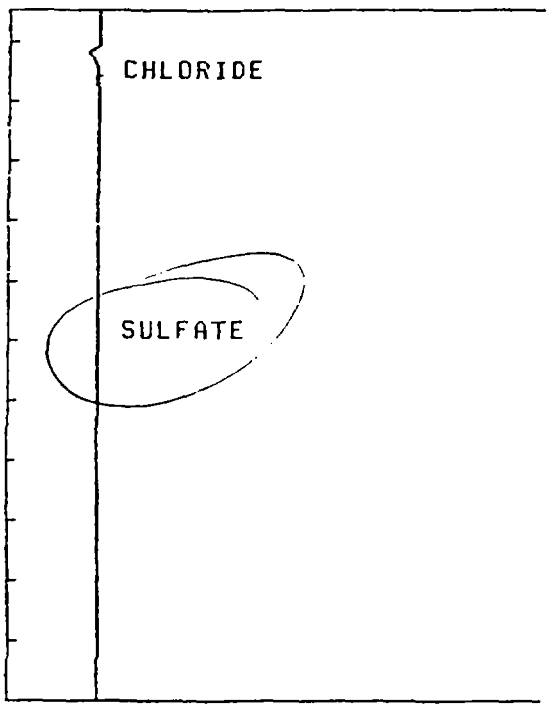
1.0PPM std respond greater than 2.0PPM std. ∴ @ low concentration the sample results will be biased high.

DML 6/10/96

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0 n
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802 µ
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : ICB/MB Report No :367.00

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 8/ 8



Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_17.SEQ
Method File : /DATA/DIONEX/METHOD/IC556.MTH
Result File : /DATA/DIONEX/RESULT/IC05253u/.RES

Run Time : 12.03 Minutes Injected on 1418 17Oct1995
Report Time : 1430 17Oct1995
Run Status : RunStatusOK
EndOffBaseline

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	1.64	1.69	4.71E-06	-2348	PP	.4730	CHLORIDE
2	6.01	#6.44	4.22E-06	-287	PP	1.0540	SULFATE

10/15/95

negative height mab
no apparent peak
⊕ concentrations

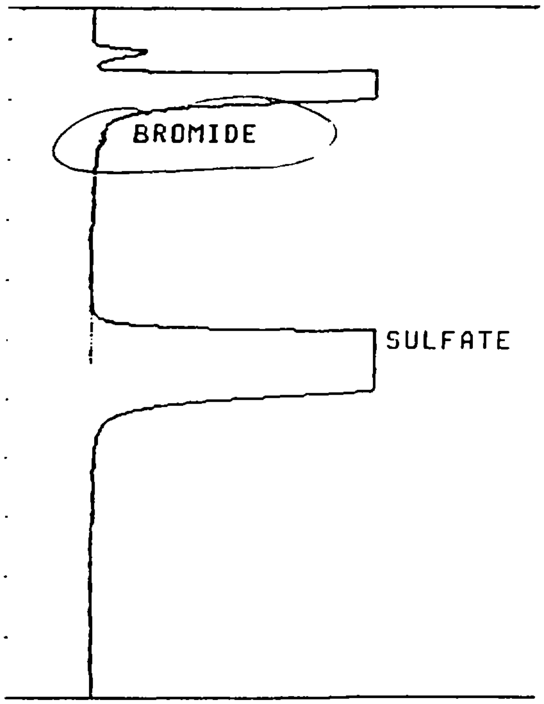
DML 6/12/96

$SO_4 \Rightarrow 1.0540 \times 5 = 5.27$

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0 n
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802 µ
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : 45683-2 Rentagrate Report No :371.11

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 12/ 12



Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_17.SEQ
Method File : /DATA/DIONEX/METHOD/IC556.MTH
Result File : /DATA/DIONEX/RESULT/IC0525311.RES

Run Time : 12.03 Minutes Injected on 1509 17Oct1995
Report Time : 1501 18Oct1995
Run Status : EndOffBaseline
SignalOverload
SpecialInteg

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	2.63	2.64	8.12E-06	3820	FF	1.5130	BROMIDE
2	6.11	#6.45	4.22E-06	963095	GV	184.4801	SULFATE

K"

MCarty
10/18/95

small peak area concentration biased high due to response of 1.0PPM Std.

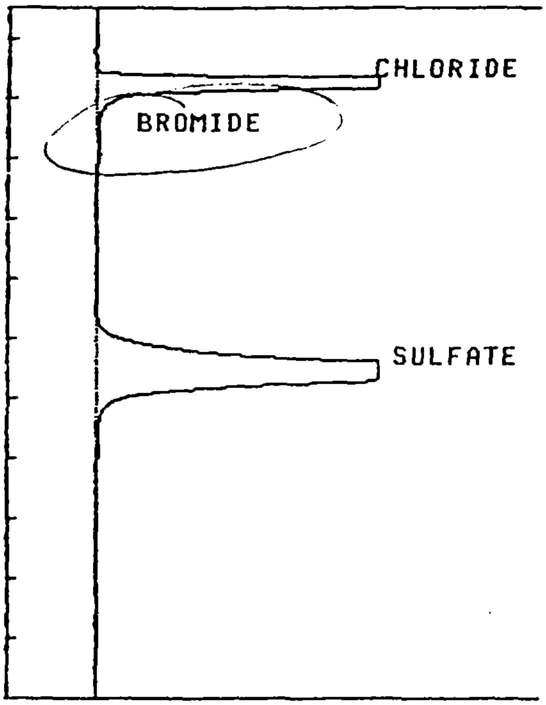
DMR 6/10/96

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0 n
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802 µ
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328

Sample Name : 45683-2L/0 Report No :372.00

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 13/ 13



Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_17.SEQ
Method File : /DATA/DIONEX/METHOD/IC556.MTH
Result File : /DATA/DIONEX/RESULT/IC0525312.RES

Run Time : 12.03 Minutes Injected on 1522 17Oct1995
Report Time : 1535 17Oct1995
Run Status : RunStatusOK
EndOffBaseline

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	1.68	1.69	4.71E-06	838970	PV	35.9664	CHLORIDE
2	2.57	2.59	8.12E-06	1177	VV	1.2778	BROMIDE nd?
3	6.48	6.44	4.22E-06	491333	VP	71.1343	SULFATE

use straight for Br.

Milors 10/18/95

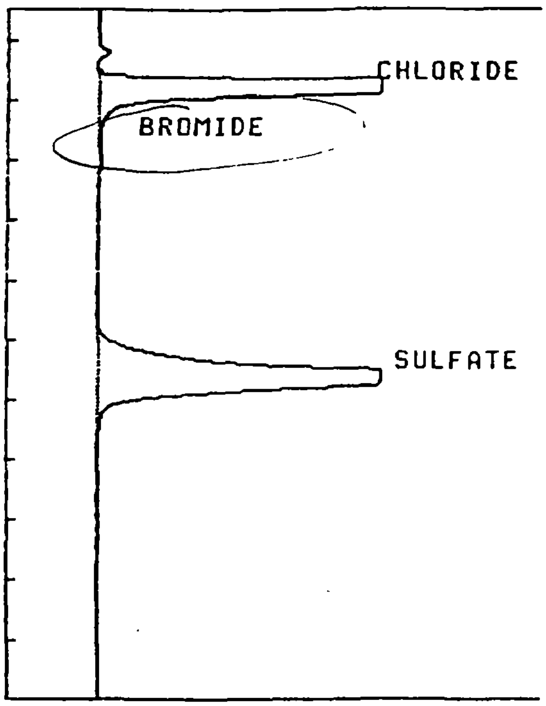
peak height significant
concentration above reporting limit
no apparent peak

~~Bromide not reported @ <1.0~~
use straight analysis for Br
DML 6/10/96

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0 n
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na_2CO_3/ 1.7mm $NaHCO_3$, 2.0 ml/min. SEE QA SOP #5802 µ
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : 45683-3 Report No :373.00

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 14/ 14



Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_17.SEQ
Method File : /DATA/DIONEX/METHOD/IC556.MTH
Result File : /DATA/DIONEX/RESULT/IC0525313.RES

Run Time : 12.03 Minutes Injected on 1535 17Oct1995
Report Time : 1557 17Oct1995
Run Status : EndOffBaseline
SignalOverload

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	1.71	1.69	4.71E-06	965940	GV	56.0701	CHLORIDE
2	2.60	2.59	8.12E-06	2710	VV	1.4613	BROMIDE NR
3	6.56	#6.45	4.22E-06	386029	PP	56.7257	SULFATE

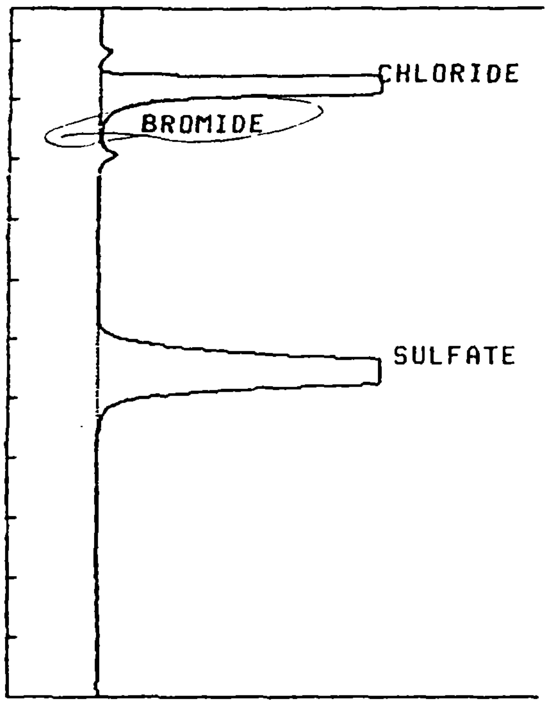
MGB 10/18/95

peak height significant
concentration above reporting limit
No apparent peak
Bromide not reported @ <1.0
DML 6/10/96

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0 n
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na_2CO_3/ 1.7mm $NaHCO_3$, 2.0 ml/min. SEE QA SOP #5802 µ
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : 45683-4 Report No :374.00

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 15/ 15



Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_17.SEQ
Method File : /DATA/DIONEX/METHOD/IC556.MTH
Result File : /DATA/DIONEX/RESULT/IC0525314.RES

Run Time : 12.03 Minutes Injected on 1548 17Oct1995
Report Time : 1608 17Oct1995
Run Status : EndOffBaseline
SignalOverload

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	1.75	1.69	4.71E-06	975305	GV	73.5521	CHLORIDE
2	2.59	2.59	8.12E-06	3362	VV	~~1.4664~~	BROMIDE NS
3	6.48	6.45	4.22E-06	694607	PV	101.2321	SULFATE

MGB 10/18/95

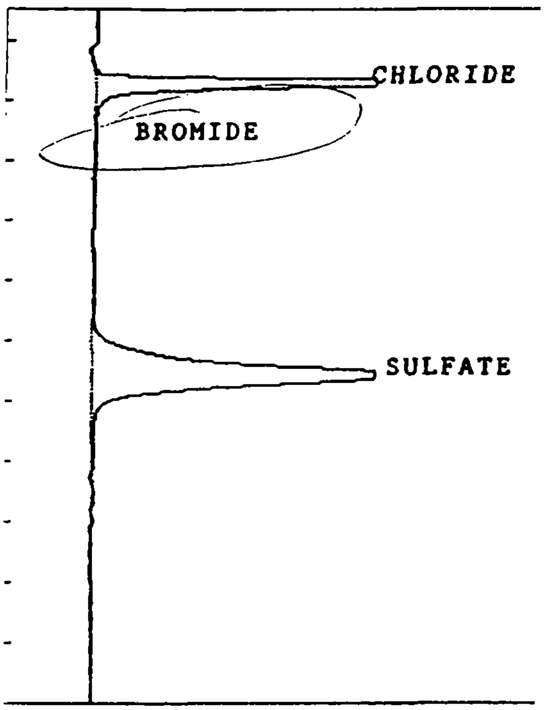
significant peak height
concentration above reporting limit
no apparent peak
Bromide not reported @ <1.0

DMC 6/10/96

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0 n
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na_2CO_3/ 1.7mm $NaHCO_3$, 2.0 ml/min. SEE QA SOP #5802 μ
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : 45683-5 L/100 **Report No :377.00**

Instrument : DIONEX **Subseq/Sample/Bottle: 1/ 18/ 18**



Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_17.SEQ
Method File : /DATA/DIONEX/METHOD/IC556.MTH
Result File : /DATA/DIONEX/RESULT/IC0525317.RES

Run Time : 12.03 Minutes Injected on 1627 17Oct1995
Report Time : 1639 17Oct1995
Run Status : RunStatusOK
EndOffBaseline

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	1.65	1.69	4.71E-06	487305	PV	19.7254	CHLORIDE
2	2.59	2.59	8.12E-06	555	VP	1.2254	BROMIDE
3	6.51	6.44	4.22E-06	296375	PP	43.5285	SULFATE

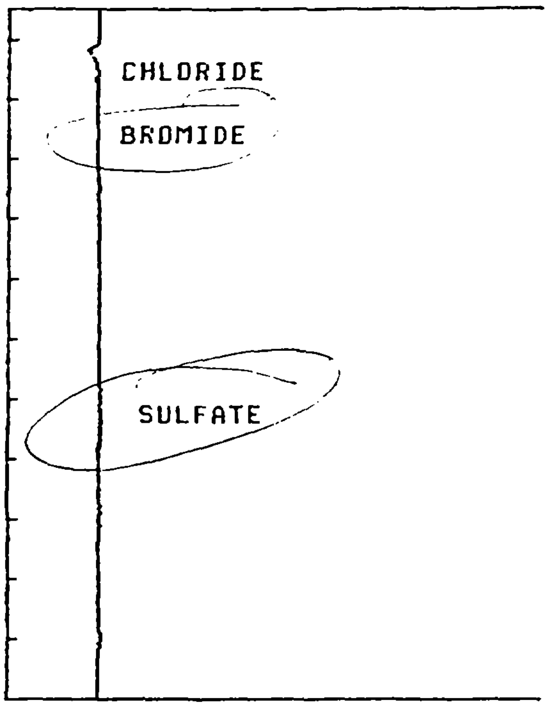
MGH 10/18/95

concentration above reporting limit
No apparent peak
Bromide not reported @<1.0
Bromide RL should be elevated to 100mg/l
due to sample. DMR 6/10/96
dilution & Interference w/straight analysis
DMR 6/10/96

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0 n
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802 µ
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : CCB Report No :379.00

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 20/ 20



Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_17.SEQ
Method File : /DATA/DIONEX/METHOD/IC556.MTH
Result File : /DATA/DIONEX/RESULT/IC0525319.RES

Run Time : 12.03 Minutes Injected on 1652 17Oct1995
Report Time : 1705 17Oct1995
Run Status : RunStatusOK
EndOffBaseline

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	1.63	1.69	4.71E-06	-1836	PP	.4400	CHLORIDE
2	2.69	2.60	8.12E-06	-58	PP	1.1737	BROMIDE NP
3	7.34	6.45	4.22E-06	376	VV	1.0822	SULFATE ND

Mas 10/18/95

contentration above reporting limit
no apparent peaks
Bromide not reported @ <1.0
sulfate @ <1.0

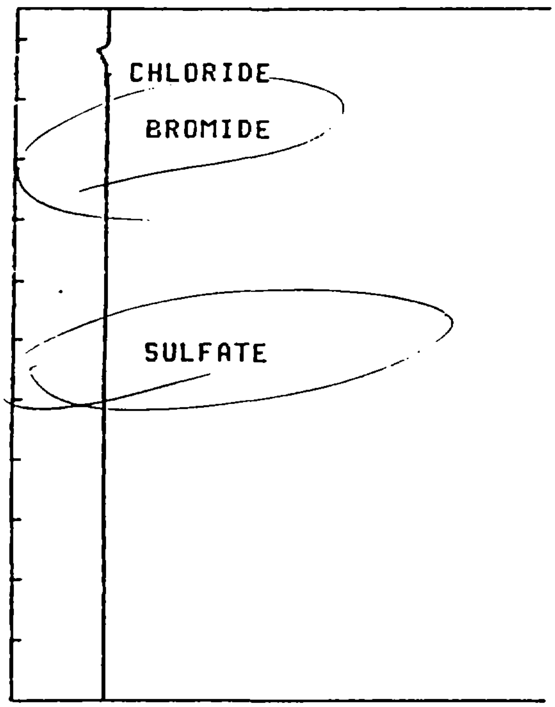
Br 1.1737x5 = 5.8685
SO4 1.0822x5 = 5.411

DML 01/10/96

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0 n
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na_2CO_3/ 1.7mm $NaHCO_3$, 2.0 ml/min. SEE QA SOP #5802 µ
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : CCB Report No :386.00

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 27/ 27



Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_17.SEQ
Method File : /DATA/DIONEX/METHOD/IC556.MTH
Result File : /DATA/DIONEX/RESULT/IC0525326.RES

Run Time : 12.03 Minutes Injected on 1822 17Oct1995
Report Time : 1835 17Oct1995
Run Status : RunStatusOK
EndOffBaseline

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	1.65	1.70	4.71E-06	-2150	PP	.4661	CHLORIDE
2	2.57	2.60	8.12E-06	-113	PP	1.1811	BROMIDE np
3	6.32	#6.47	4.22E-06	-183	PP	1.0029	SULFATE np

MRB 10/18/95

negative peak heights & positive concentrations
no apparent peak.
Bromide not reported @ <1.0
sulfate not reported @ <1.0

DML 6/10/96

Br⇒1,1811 x 5 = 5.9055
SO_4⇒1.0029 x 5 = 5.0145

PACE INC. NE-NH LAB
QUALITY CONTROL
Ortho Phosphate
Method: 365.2 EPA 600/4-84-017

QC Batch: 202
Matrix: WATER

METHOD BLANK:

	Result mg/L
	< 0.02

LABORATORY CONTROL SAMPLES:

	True Value mg/L	Observed Value mg/L	Accuracy Recovery %
LCS1	0.5	0.489	97.8

FIELD SAMPLE:

Precision Lab No.	Replicate 1 mg/L	Replicate 2 mg/L	Average mg/L	Relative Percent Difference %
45683-1	0.043	0.04	0.04	~~6.3~~ 7.2

Accuracy Lab No.	Replicate 1 mg/L	Spike Added mg/L	Spike Found mg/L	Recovery %
45683-1	0.043	0.5	0.509	92.1

DML 6/10/96

pace INCORPORATED
THE ASSURANCE OF QUALITY

230120

2012

ENVIRONMENTAL LABORATORIES

CHAIN-OF-CUSTODY RECORD
Analytical Request

Client: Olin	Report To: Rick	Pace Client No.	
Address:	Bill To: Olin	Pace Project Manager	
Wilmington, Mass	P.O. # / Billing Reference	Pace Project No.	
Phone	Project Name / No. 7	*Requested Due Date:	

Sampled By (PRINT): / Tim

Sampler Signature:

Date Sampled: 10/16/95

SAMPLE DESCRIPTION	TIME	MATRIX	PACE NO.	NO. OF CONTAINERS	UNPRESERVED	H_2SO_4	HNO_3	VOA			ANALYSES REQUEST	REMARKS
GW64S	0828	AQ		1		1					✓	Unfiltered
GW64D	0946	AQ		1		1					✓	
GW63	1043	AQ		1							✓	
GW62D	1200	AQ		1		1					✓	
GW62R	1620	AQ									✓	
GW54S	1315	AQ										
GW58D	1415	AQ		1		1					✓	

COOLER NOS.	BAILERS	SHIPMENT METHOD OUT DATE	RETURNED DATE	ITEM NUMBER	RELINQUISHED BY / AFFILIATION	ACCEPTED BY / AFFILIATION	DATE	TIME

Additional Comments

copy of COC not provided in data pkg DMc 6/10/96

SEE REVERSE SIDE FOR INSTRUCTIONS

258726

Pace ENVIRONMENTAL LABORATORIES

2 of 2

CHAIN-OF-CUSTODY RECORD
Analytical Request

Client: Olin		Report To: Rick [illegible]		Pace Client No.	
Address: [illegible] St		Bill To: Olin		Pace Project Manager	
Wilmington Mass		P.O. # / Billing Reference		Pace Project No.	
Phone		Project Name / No. 7574 [illegible]		*Requested Due Date:	

Sampled By (PRINT): Russell Mehalik / Tim Finer

Sampler Signature: Russell Mehalik

Date Sampled: 10/16/95

ITEM NO.	SAMPLE DESCRIPTION	TIME	MATRIX	PACE NO.	NO. OF CONTAINERS	UNPRESERVED	H_2SO_4	HNO_3	VOA	ANALYSES REQUEST: Ni, [illegible]	REMARKS
1	GW64S	0825	AQ		1						unfiltered
2	GW64D	0946	AQ		1	1				✓	
3	GW62S	1043	AQ		1	1				✓	
4	GW62D	12[illegible]	AQ		1	1				✓	
5	GW62BR	1620	AQ		1	1				✓	
6	GW58S	1[illegible]	AQ		1					✓	
7	GW58D	1435	AQ		1	1				✓	
8											

COOLER NOS.	BAILERS	SHIPMENT METHOD OUT DATE	SHIPMENT METHOD RETURNED DATE

ITEM NUMBER	RELINQUISHED BY / AFFILIATION	ACCEPTED BY / AFFILIATION	DATE	TIME
	Russell Mehalik / [illegible]			

Additional Comments

Copy of COC not provided in data pkg
DML
6/10/96

SEE REVERSE SIDE FOR INSTRUCTIONS

5

Katahdin
ANALYTICAL SERVICES

6/7/96

Ms. Danielle Leauby
Smith BCM
By FAX

Dear Danielle:

In response to questions raised on the phone I am providing the following:

Bromide and sulfate linear regression - It would appear that the data provided in the package was determined from peak area and only peak height is available from the raw chromatograms. This data system is no longer available to us. The data cannot be corrected.

Bromide chromatograms from WL1595 (Hampton 45663-15,16) not integrated for an apparent bromide peak - The laboratory believes that there is no issue with the choice of peaks for bromide quantitation.

Lachat analyses - The Lachat is calibrated by using a point to point method. Results for the analyte are reported in concentration units. No raw absorbance was reported in the package that would allow comparison of sample results to the calibration data. Results from the Lachat are accepted by the laboratory based on the performance of ICVs, CCVs and LCSs.

Please call if you have further questions.

Sincerely,

Richard L. Wellman

Richard L. Wellman
Client Services Manager

RECEIVED
JUN 10 1996
DLeauby

340 County Road No. 5
P.O. Box 720, Westbrook, ME 04098

210 West Road No. 5, Portsmouth, NH

DATA VALIDATION REPORT

OCTOBER, 1995 MONITORING EVENT

WORK ORDER NUMBER WL-1622

FOR

OLIN CORPORATION
WILMINGTON, MASSACHUSETTS

SMITH ENVIRONMENTAL TECHNOLOGIES CORPORATION
PROJECT NO. 00-7074-0102

PREPARED FOR

OLIN CORPORATION

JUNE, 1996

SMITH

Engineering • Consulting • Remediation • Construction

SMITH

ENVIRONMENTAL TECHNOLOGIES CORPORATION

DATA REVIEW COVER SHEET

Date: June 25, 1996

Subject: Data Validation of the October 1995 Sampling Event at the Olin Corporation's Wilmington, MA Facility
Smith Env. Tech. Corp. Project No. 00-7074-C102

Data validation was performed on selected analytical results from the October 1995 sampling event at Olin Corporation's Wilmington, Massachusetts Facility. Samples collected during these events were analyzed by Katahdin Analytical Services' Westbrook, Maine and New Hampshire facilities. The laboratory work order numbers reviewed were WL-1612, WL-1595, WL-1622, WL-1628 (surface water samples only), and WL-1644.

The data validation guidelines that were used for the reviews are referenced in the individual reports. The data validation reports address all issues detailed in the appropriate data validation guidelines.

The following Smith Environmental Technologies Corporation Quality Assurance (QA) Department personnel contributed to the preparation of the data review reports:

Atwood F. Davis, CPC, QA Director — Atwood F. Davis

Martin B. Kudlesky, CPC, Senior QA Scientist — Martin B. Kudlesky

Danielle M. Leauby, QA Scientist — Danielle M. Leauby

Marybeth Ousey, QA Scientist — Marybeth Ousey

E. Bryan Rivers, QA Scientist — E. Bryan Rivers

A copy of this cover sheet with appropriate signatures must accompany all listed reports.

One Plymouth Meeting • Plymouth Meeting, PA 19462 • (610) 825-3800 • fax (610) 834-8236

SMITH

DATA VALIDATION REPORT
METALS AND SELECTED ANALYTES
OLIN CORPORATION
GROUNDWATER SAMPLES

INTRODUCTION

A data validation was performed on the analytical data from the 12 groundwater sampling locations sampled on October 17, 1995 at the Olin Corporation's Wilmington, Massachusetts Facility. This review is of work order number WL-1622 which contained 12 unfiltered groundwater samples, 1 unfiltered field duplicate sample, 1 unfiltered field blank, 12 filtered groundwater samples, 1 filtered field duplicate sample, and 1 filtered field blank. All samples in this report were analyzed by Katahdin Analytical Services, Inc. (formerly PACE Incorporated Environmental Laboratories), Westbrook, Maine, following United States Environmental Protection Agency (EPA) Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (SW-846), Methods for Chemical Analysis of Water and Wastes (MCAWW), and Standard Methods for the Examination of Water and Wastewater, 16th Edition, 1985 (SM), American Public Health Association (APHA). The individual analyses were performed using the following methods:

Analytes	Methods
aluminum, arsenic, barium, calcium, chromium, iron, lead, magnesium, manganese, potassium, silicon, and sodium	200.7
hexavalent chromium*	7195/6010
bicarbonate as HCO3 and carbonate as CO3*	SM406C
nitrate as N and nitrite as N*	353.2
dissolved organic carbon (DOC)*	415.1
phosphorus as P *	365.4
solids - filterable residue (TDS)*	160.1

*Analyses were performed on filtered samples only.

Because the analyses were not performed according to the EPA Contract Laboratory Program (CLP) methods, the findings in this report are based upon a review of sample data and of quality control (QC) specified by the individual analytical methods and provided by the laboratory. The quality assurance review was prepared according to EPA Region I Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analysis (data validation guidelines), June 1988, where applicable.

The support documentation in Appendix A of this report summarizes the specifics of this review. Appendix A also provides the sample results as reported by the laboratory. The data summary table lists all analytes that were analyzed. Analytical problems are outlined in the following Findings/Qualifiers Section. Other issues which arose which did not warrant qualification are detailed in the Notes Section.

FINDINGS/QUALIFIERS

This data validation report addresses Katahdin's work order number WL-1622 which contained 12 unfiltered groundwater samples, 1 unfiltered field duplicate sample, 1 unfiltered field blank, 12 filtered groundwater samples, 1 filtered field duplicate sample, and 1 filtered field blank. The data were evaluated for the following parameters:

- * data completeness
- * holding times
- \+ data calibration verification
- CRDL standard
- * laboratory blank analysis
- field blank analysis
- * interference check sample results
- matrix spike recoveries
- * laboratory duplicates
- field duplicates
- laboratory control sample results
- \+ serial dilution results
- detection limit results
- * sample results

* All criteria were met for this parameter.
\+ All criteria were met for this parameter; however, this parameter is discussed in the Notes Section of this report.

The data summary table provided at the end of this report summarizes the validation recommendations which were based on the following information:

1. The following sample results are negated due to field blank contamination. The reported results have been changed to reflect adjusted detection limits.

- iron for samples GW-44S unfiltered (WL-1622-1), GW-43S unfiltered (WL-1622-8), GW-50S unfiltered (WL-1622-13), GW-40S unfiltered (WL-1622-15), GW-40D unfiltered (WL-1622-16), GW-45S filtered (WL-1622-19), GW-43S filtered (WL-1622-24), GW-50S filtered (WL-1622-29), GW-50D filtered (WL-1622-30), GW-40S filtered (WL-1622-31), and GW-40D filtered (WL-1622-32).

- nitrate for samples GW-44S filtered (WL-1622-17), GW-50S filtered (WL-1622-29), GW-50D filtered (WL-1622-30), GW-40S filtered (WL-1622-31), and GW-40D filtered (WL-1622-32).

- TDS for samples GW-44S filtered (WL-1622-17) and GW-40S filtered (WL-1622-31)

2. Standards for certain metals were analyzed at the contract required detection limit (CRDL) as required by CLP methodologies. Although the analyses associated with this data were not CLP analyses, this standard represents system performance at or near the concentration of the CRDL. It was the reviewer's professional judgment to qualify data which were out of the CRDL standard criteria specified in the Region I data validation guidelines. As a result, the following data are qualified:

   - The percent recoveries (%R) were low for the CRDL standards associated with several hexavalent chromium results. Therefore, the following results are estimated and may be biased low: GW-44S filtered (WL-1622-17), GW-45S filtered (WL-1622-19), GW-45D filtered (WL-1622-20), GW-42S filtered (WL-1622-21), GW-43S filtered (WL-1622-24), GW-43D filtered (WL-1622-27), GW-400 filtered (WL-1622-28), GW-50S filtered (WL-1622-29), GW-50D filtered (WL-1622-30), GW-40S filtered (WL-1622-31), and GW-40D filtered (WL-1622-32).

   - Due to the estimated hexavalent chromium results, the trivalent chromium positive results and detection limits for samples GW-44S filtered (WL-1622-17), GW-45S filtered (WL-1622-19), GW-45D filtered (WL-1622-20), GW-42S filtered (WL-1622-21), GW-43S filtered (WL-1622-24), GW-43D filtered (WL-1622-27), GW-400 filtered (WL-1622-28), GW-50S filtered (WL-1622-29), GW-50D filtered (WL-1622-30), GW-40S filtered (WL-1622-31), and GW-40D filtered (WL-1622-32) are also estimated because the trivalent chromium results are calculated from the hexavalent chromium results.

   - The %Rs were high for the CRDL standards associated with several chromium results. Therefore, the positive chromium result for sample GW-43S unfiltered (WL-1622-8) is estimated and may be biased high. Because the recovery was high, the non-detect results were not estimated.

   - The %Rs were high for the CRDL standards associated with several lead results. Therefore, the positive lead results for samples GW-44D unfiltered

(WL-1622-2), GW-45D unfiltered (WL-1622-4), GW-42D unfiltered (WL-1622-6), and GW-42D unfiltered (WL-1622-7) are estimated and may be biased high. Because the recovery was high, the non-detect results were not estimated.

- The %Rs were high for the CRDL standards associated with several manganese results. Therefore, the positive manganese results for the following samples are estimated and may be biased high: GW-44S unfiltered (WL-1622-1), GW-45S unfiltered (WL-1622-3), GW-42S unfiltered (WL-1622-5), GW-43S unfiltered (WL-1622-8), GW-50S unfiltered (WL-1622-13), GW-50D unfiltered (WL-1622-14), GW-44S filtered (WL-1622-17), GW-45S filtered (WL-1622-19), GW-42S filtered (WL-1622-21), GW-43S filtered (WL-1622-24), GW-50S filtered (WL-1622-29), and GW-50D filtered (WL-1622-30). Because the recovery was high, the non-detect results were not estimated.

- The %Rs were high for the CRDL standards associated with several arsenic results; however, there were no positive results for arsenic. Therefore, no data are qualified. Because the recovery was high, the non-detect results were not estimated.

3. Due to low recoveries of the nitrite initial standards, all nitrite results below 0.50 ppm are estimated and may be biased low. All nitrite sample results <u>except</u> the results for samples GW-42D filtered (WL-1622-22) and GW-42D filtered (WL-1622-23) are effected. In addition to the low initial standard recoveries, <u>all nitrite results are estimated</u> and may be biased low due to negative concentrations with absolute values above the practical quantitation limits (PQLs) of several field and laboratory quality control (QC) results.

4. The nitrite results of record were analyzed at Katahdin's Maine facility on 10/17/95 within holding times. To determine the nitrate concentration for the samples, nitrate plus nitrite was analyzed on 10/25/95 at Katahdin's New Hampshire facility. The nitrate results were determined by subtracting the nitrite results (from the Maine facility) from the nitrate plus nitrite results (from the New Hampshire facility). Due to the estimated nitrite results, all nitrate results are also estimated; however, a bias could not be determined.

5. Due to high recoveries of the initial standards below 0.1 ppm, all results for phosphorus as P are estimated. Additionally, these values are also estimated because several sample results and QC results for phosphorus as P exhibited negative concentrations with absolute values above the practical quantitation limit (PQL). A bias for these results could not be determined. Copies of the raw data are included in Appendix A of this report.

6. All phosphorus as P results are estimated and may be biased low due to a low matrix spike recovery.

7. The silicon results for samples GW-40S unfiltered (WL-1622-15), GW-40D unfiltered (WL-1622-16), GW-40S filtered (WL-1622-31), and GW-40D filtered (WL-1622-32) are estimated and may be biased low due to a low laboratory control sample recovery.

8. The detection limits for the following sample results are estimated because PQLs could not be achieved. As a result, the non-detect results for these samples were analyzed at dilutions, and the detection limits were elevated by the laboratory to reflect the dilution factors as indicated on the Report of Analysis Forms included in Appendix A. Specific explanations were not provided by the laboratory.

   - arsenic and barium for sample GW-44D unfiltered (WL-1622-2), GW-45D unfiltered (WL-1622-4), GW-42D unfiltered (WL-1622-6), and GW-42D unfiltered (WL-1622-7)
   - arsenic, barium, and lead for samples GW-43D unfiltered (WL-1622-11) and GW-42D filtered (WL-1622-23)
   - arsenic, barium, lead, and nitrite for samples GW-44D filtered (WL-1622-18) and GW-45D filtered (WL-1622-20),
   - arsenic, barium, lead, and potassium for samples GW-42D filtered (WL-1622-22) and GW-43D filtered (WL-1622-27)

9. The potassium results for the unfiltered field duplicate samples of GW-42D (WL-1622-6 and WL-1622-7) and the calcium, nitrite as N, and Phosphorus as P results for the filtered field duplicate samples of GW-42D (samples WL-1622-22 and WL-1622-23) are estimated because field duplicate precision was not met. Details are presented on the Field Duplicate Precision Worksheet provided in Appendix A.

10. Several filtered analytical results were reported at higher concentrations than their associated unfiltered results. Smith Environmental Technologies Corporation has established a relative percent difference (RPD) criteria to evaluate the precision of these results (see the spreadsheet included in Appendix A of this report). Due to RPDs which exceeded the expected precision, the following filtered and unfiltered sample results are estimated:

    - calcium, iron, and magnesium for samples GW-44D unfiltered (WL-1622-2) and GW-44D filtered (WL-1622-18).
    - aluminum, calcium, and magnesium for samples GW-45D unfiltered (WL-1622-4) and GW-45D filtered (WL-1622-20).
    - calcium and magnesium for samples GW-42D unfiltered (WL-1622-7) and GW-42D filtered (WL-1622-23).

SMITH

The reviewer concludes that these results are present in a dissolved form.

NOTES

The following items were noted during the validation review which did not impact results or necessitate further qualification of data:

1. There were transcription errors on a Quality Control Report Form and an ICP analysis summary sheet. The reviewer-corrected forms are included in Appendix A.

2. A serial dilution sample was not provided by the laboratory as recommended by the MCAWW Method 200.7. Since performance of a serial dilution is not required by the method, no data are qualified.

3. The %Rs for several initial and continuing calibration verifications could not be verified because sufficient information was not provided by the laboratory.

4. Several QC results were reported in the raw data that were not provided on the Method Blank and Laboratory Control Sample Results Form for alkalinity, nitrite, nitrate, total phosphate, dissolved organic carbon, and TDS. In instances where it was difficult to determine which QC results in the raw data were associated with order WL-1622, all QC information provided in the raw data was applied to the data review.

5. Several ICP analyte results which were acceptable results were reanalyzed with unacceptable ICP analyte results. The laboratory's logic for choosing the results of record for those samples is included in Appendix A.

6. Several silicon and potassium results were reported to significant digits which were not consistent with all other sample results. The reviewer-corrected Report of Analysis Forms are included in Appendix A and the changes are reflected on the Data Summary Table.

SMITH

SUMMARY

This review has identified field blank contamination, CRDL standard %Rs, initial standard recoveries, negative concentrations with absolute values above the PQL, a matrix spike %R, a laboratory control sample recovery, elevated detection limits for non-detect sample results, field duplicate precision, and filtered versus unfiltered sample results as areas of concern. The reported data are usable as qualified on the data summary table. For specifics relating to this review, see the attached documentation in Appendix A.

SMITH

QUALIFIER CODES

U - The analyte was analyzed for but not detected. The associated numerical value is the sample detection limit. The detected analyte was present in the associated blank(s) at a similar concentration, it is not considered to be present in the sample. The qualified detection limit has been elevated to either the sample concentration or the PQL, which ever is higher.

J - The associated value is an estimated quantity.

UJ - The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.

DATA SUMMARY TABLE

Site Name	Olin, Wilmington, MA	Laboratory	Pace Env. Laboratories
Project Number	00-7074-0102	Case/Order #	WL-1622
Sampling Date(s)	10/17/95	Field Duplicates	WL-1622-6 and -7

Liquid mg/l

PQL	Sample location or description	GW-44S	GW-44D	GW-45S	GW-45D	GW-42S	GW-42D	GW-42D Field Rep	GW-43S	GW-43D	GW-400
	Sample number	WL-1622-1	WL-1622-2	WL-1622-3	WL-1622-4	WL-1622-5	WL-1622-6	WL-1622-7	WL-1622-8	WL-1622-11	WL-1622-12
	Sampling date	10/17/95	10/17/95	10/17/95	10/17/95	10/17/95	10/17/95	10/17/95	10/17/95	10/17/95	10/17/95
	unfilt./filt.	unfilt.	unfilt.	unfilt.	unfilt.	unfilt.	unfilt.	unfilt.	unfilt.	unfilt.	unfilt.
PQL	Comments						Field Dup A	Field Dup B			Field Blank
0.10	Aluminum		990		800 J	0.39	1500	1500		440	
0.005	Arsenic		UJ		UJ		UJ	UJ		UJ	
0.005	Barium	0.006	UJ	0.034	UJ	0.032	UJ	UJ	0.074	UJ	
0.050	Calcium	5.1	360 J	15	350 J	4.5	370	370 J	49	290	
0.015	Chromium		790		560		2800	2600	0.018 J	260	
0.015	Chromium, Hexavalent	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
0.015	Chromium, Trivalent	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
0.025	Iron	0.054 U	1800 J		1200	14	1400	1400	0.079 U	600	0.053
0.005	Lead		0.10 J		0.087 J		0.17 J	0.17 J		UJ	
0.050	Magnesium	0.92	750 J	2.4	540 J	1.5	840	870 J	8.5	350	
0.005	Manganese	0.015 J	150	0.89 J	260	0.85 J	580	600	2.0 J	66	
0.50	Potassium	0.74	110	2.5	110	1.1	98 J	73 J	1.2	16	
0.10	Silicon	3.5	61	4.2	54	6.3	100	95	16	37	
0.10	Sodium	12	10000	68	8700	41	22000	21000	80	4000	0.16
20	Bicarbonate as HCO3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
20	Carbonate as CO3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
0.05	Nitrate as N *	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
0.050	Nitrite as N *	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1.0	Diss. Organic Carbon	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
0.10	Phosphorus as P *	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Solids-Filterable	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10	Residue (TDS)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*=Reported as dissolved.

N/A = Analyte not analyzed by the laboratory.

WL1622I.XLS

MaryBeth Orisen 6/20/96

DATA SUMMARY TABLE

Site Name	Olin, Wilmington, MA
Project Number	00-7074-0102
Sampling Date(s)	10/17/95
Liquid	mg/l
Laboratory	Pace Env. Laboratories
Case/Order #	WL-1622
Field Duplicates	WL-1622-6 and -7

PQL	Sample location or description	GW-50S		GW-50D		GW-40S		GW-40D	
	Sample number	WL-1622-13		WL-1622-14		WL-1622-15		WL-1622-16	
	Sampling date	10/17/95		10/17/95		10/17/95		10/17/95	
	unfilt./filt.	unfilt.		unfilt.		unfilt.		unfilt.	
	Comments								
0.10	Aluminum					0.68			
0.005	Arsenic								
0.005	Barium	0.015		0.016		0.038		0.19	
0.050	Calcium	13		330		12		190	
0.015	Chromium								
0.015	Chromium, Hexavalent	N/A		N/A		N/A		N/A	
0.015	Chromium, Trivalent	N/A		N/A		N/A		N/A	
0.025	Iron	0.10	U	0.38		0.24	U	0.16	U
0.005	Lead								
0.050	Magnesium	2.8		84		1.1		11	
0.005	Manganese	0.38	J	10	J	0.061		1.9	
0.50	Potassium	2.7		26		1.9		5.1	
0.10	Silicon	7.7		6.8		2.7	J	1.8	J
0.10	Sodium	64		1200		19		190	
20	Bicarbonate as HCO3	N/A		N/A		N/A		N/A	
20	Carbonate as CO3	N/A		N/A		N/A		N/A	
0.05	Nitrate as N *	N/A		N/A		N/A		N/A	
0.050	Nitrite as N *	N/A		N/A		N/A		N/A	
1.0	Diss. Organic Carbon	N/A		N/A		N/A		N/A	
0.10	Phosphorus as P *	N/A		N/A		N/A		N/A	
	Solids-Filterable	N/A		N/A		N/A		N/A	
10	Residue (TDS)	N/A		N/A		N/A		N/A	

*=Reported as dissolved.
N/A = Analyte not analyzed by the laboratory.

WL1622I.XLS

Nanetta Andersen 6/20/96

US EPA ARCHIVE DOCUMENT

DATA SUMMARY TABLE

Site Name	Olin, Wilmington, MA	Laboratory	Pace Env. Laboratories
Project Number	00-7074-0102	Case/Order #	WL-1622
Sampling Date(s)	10/17/95	Field Duplicates	WL-1622-22 and -23

Liquid mg/l

PQL	Sample location or description	GW-44S	GW-44D	GW-45S	GW-45D	GW-42S	GW-42D	GW-42D Field Rep	GW-43S	GW-43D	GW-400
	Sample number	WL-1622-17	WL-1622-18	WL-1622-19	WL-1622-20	WL-1622-21	WL-1622-22	WL-1622-23	WL-1622-24	WL-1622-27	WL-1622-28
	Sampling date	10/17/95	10/17/95	10/17/95	10/17/95	10/17/95	10/17/95	10/17/95	10/17/95	10/17/95	10/17/95
	unfilt./filt.	filt.	filt.	filt.	filt.	filt.	filt.	filt.	filt.	filt.	filt.
PQL	Comments						Field Dup A	Field Dup B			Field Blank
0.10	Aluminum *		1300		1100 J		1800	2000		420	
0.005	Arsenic *		UJ		UJ		UJ	UJ		UJ	
0.005	Barium *	0.005	UJ	0.034	UJ	0.031	UJ	UJ	0.065	UJ	
0.050	Calcium *	4.9	500 J	16	500 J	4.7	440 J	560 J	49	290	
0.015	Chromium *		900		680		2600	2900		320	
0.015	Chromium, Hexavalent	UJ	4.7	UJ	2.4 J	UJ	6.4	6.4	UJ	1.6 UJ	UJ
0.015	Chromium, Trivalent	UJ	900	UJ	680 J	UJ	2600	2900	UJ	320 UJ	UJ
0.025	Iron *		2500 J	0.076 U	1500	13	1600	1800	0.048 U	570	0.21
0.005	Lead *		UJ		UJ		UJ	UJ		UJ	
0.050	Magnesium *	0.86	1100 J	2.5	770 J	1.6	1100	1200 J	8.4	340	
0.005	Manganese *	0.011 J	160	0.91 J	280	0.82 J	470	550	2.0 J	66	
0.50	Potassium *		97		99		UJ	62		UJ	
0.10	Silicon	3.1	63	4.3	56	6.5	87	96	14	39	
0.10	Sodium *	12	11000	75	9300	41	19000	21000	82	4300	
20	Bicarbonate as HCO3	24	N/A		N/A		N/A	N/A	76	N/A	
20	Carbonate as CO3		N/A		N/A		N/A	N/A		N/A	
0.05	Nitrate as N *	0.13 U	5.9 J	2.0 J	7.5 J	UJ	3.9 J	3.6 J	5.6 J	2.4 J	0.13 J
0.050	Nitrite as N *	UJ	UJ	UJ	UJ	UJ	1.2 J	1.8 J	UJ	UJ	UJ
1.0	Diss. Organic Carbon	1.3	1500	1.2	430	11	2700	2500	8.1	540	
0.10	Phosphorus as P *	1.1 J	5.5 J	UJ	4.4 J	UJ	18 J	27 J	UJ	3.0 J	UJ
10	Solids-Filterable Residue (TDS)	58 U	96000	280	29000	210	73000	89000	720	23000	29

*=Reported as dissolved.

N/A = Analyte not analyzed by the laboratory.

WL1622I.XLS

MaryBeth Ouser 6/20/96

DATA SUMMARY TABLE

Site Name: Olin, Wilmington, MA

Project Number: 00-7074-0102

Sampling Date(s): 10/17/95

Liquid mg/l

Laboratory: Pace Env. Laboratories

Case/Order #: WL-1622

Field Duplicates: WL-1622-22 and -23

PQL	Sample location or description	GW-50S		GW-50D		GW-40S		GW-40D	
	Sample number	WL-1622-29		WL-1622-30		WL-1622-31		WL-1622-32	
	Sampling date	10/17/95		10/17/95		10/17/95		10/17/95	
	unfilt./filt.	filt.		filt.		filt.		filt.	
	Comments								
0.10	Aluminum *					0.50			
0.005	Arsenic *								
0.005	Barium *	0.014		0.017		0.038		0.018	
0.050	Calcium *	12		430		12		170	
0.015	Chromium *								
0.015	Chromium, Hexavalent		UJ		UJ		UJ		UJ
0.015	Chromium, Trivalent		UJ		UJ		UJ		UJ
0.025	Iron *	0.057	U	0.35	U	0.037	U	0.11	U
0.005	Lead *								
0.050	Magnesium *	2.8		100		1.1		9.7	
0.005	Manganese *	0.37	J	13	J	0.057		1.7	
0.50	Potassium *	3.1		39		1.5		4.3	
0.10	Silicon	7.4		8.1		2.6	J	1.6	J
0.10	Sodium *	66		1300		18		100	
20	Bicarbonate as HCO3	67		510				200	
20	Carbonate as CO3								
0.05	Nitrate as N *	0.63	U	0.36	U	0.32	U	0.14	U
0.050	Nitrite as N *		UJ		UJ		UJ		UJ
1.0	Diss. Organic Carbon	3.5		31		1.7		20	
0.10	Phosphorus as P *		UJ		UJ		UJ		UJ
10	Solids-Filterable Residue (TDS)	290		6000		120	U	1300	

*=Reported as dissolved.

N/A = Analyte not analyzed by the laboratory.

WL1622I.XLS

SMITH

DATA VALIDATION REPORT
CHLORIDE, SULFATE, BROMIDE, ORTHOPHOSPHATE, SULFIDE, VISCOSITY, AND AMMONIA-N
OLIN CORPORATION
GROUNDWATER SAMPLES

INTRODUCTION

A data validation was performed on the analytical data from the 12 groundwater sampling locations sampled on October 17, 1995 at the Olin Corporation's Wilmington, Massachusetts Facility. This review is of work order number WL-1622 which contained 12 filtered groundwater samples, 12 unfiltered groundwater samples, 1 filtered groundwater field duplicate sample, 1 unfiltered groundwater field duplicate sample, 1 filtered field rinse blank, and 1 unfiltered field rinse blank. All samples in this report were analyzed by Katahdin Analytical Services, Inc. (formerly PACE Incorporated Environmental Laboratories), Westbrook, Maine, following *"Methods for Chemical Analysis of Water and Wastes"* (MCAWW) and *"American Society for Testing and Materials"* (ASTM), Philadelphia, Pennsylvania 1985. The individual analyses were performed using the following from MCAWW and ASTM methods:

Analytes	Methods
bromide and sulfate *	300.0
chloride *	325.1
orthophosphate *	365.2
sulfide *	376.1
viscosity *	D3245-85
ammonia-N	350.2

* = Analyses performed on filtered samples only.

The findings in this report are based upon a review of sample data and of quality control (QC) specified by the individual analytical methods and provided by the laboratory. The quality assurance review was prepared according to EPA Region I Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analysis, June 1988, where applicable.

The support documentation in Appendix B of this report summarizes the specifics of this review. Appendix B also provides the sample results as reported by the laboratory. The data summary table lists all compounds that were analyzed. Analytical problems are outlined in the following Findings/Qualifiers Section. Other issues which were identified and did not warrant qualification are detailed in the Notes Section.

FINDINGS/QUALIFIERS

This data validation report addresses Pace, Inc. work order number WL-1622 which contained 12 filtered groundwater samples, 12 unfiltered groundwater samples, 1 filtered groundwater field duplicate sample, 1 unfiltered groundwater field duplicate sample, 1 filtered field rinse blank, and 1 unfiltered field rinse blank. The data were evaluated for the following parameters:

- * data completeness
- * holding times
- * data calibration verification
- * laboratory blank analysis
- field blank analysis
- \+ matrix spike recoveries
- * laboratory duplicates
- field duplicates
- * laboratory control sample results
- detection limit results
- sample results

* All criteria were met for this parameter.

\+ All criteria were met for this parameter; however, this parameter is discussed in the Notes Section of this report.

The data summary table provided at the end of this report summarizes the following data validation qualifications:

1. The positive results for sulfate in samples GW-44S (WL1622-17) and GW-42S (WL1622-21) are negated due to field blank contamination. The reported results have been changed to reflect adjusted quantitation limits.

2. Four initial calibrations (ICALs) were provided for the sulfate and bromide analyses. The low level 1.0 milligram per liter (mg/L) standards in each of the four ICALs have elevated experimental values for bromide and sulfate greater than 1.0 mg/L. Due to the high recovery of the 1.0 mg/L standard for sulfate, the positive result for sulfate in sample GW-400 (WL1622-28) is biased high.

   There are no apparent peaks identified for bromide in samples GW-45S (WL1622-19), GW-42S (WL1622-21), GW-40S (WL1622-32), and GW-400 (WL1622-28); therefore, there are no impacts on the reporting limits (RLs) for bromide in these samples.

3. The laboratory reported bromide in samples GW-50S (WL1622-29) and GW-43S (WL1622-24) as non-detected at 1.0 mg/L. However, the concentration on the quantitation report for sample WL1622-29 is greater than 1.0 mg/L and there is an unintegrated peak near the retention time (RT) of bromide in sample WL1622-24. No explanation was provided by the laboratory for either sample, and there was not enough information provided by the laboratory for the reviewer to make a positive identification above the RL. Therefore, due to a concentration on the quantitation report above the RL in sample WL1622-29 and the unintegrated peak in sample WL1622-24, the RLs for bromide in samples WL1622-29 and WL1622-24 are biased low.

4. The identification retention time (ID-tm) on the quantitation reports is used to correctly identify bromide and sulfate based on the calibration standards analyzed that day. Review of the raw data for the first ICAL standards indicates that the ID-tm for bromide was not updated to reflect the ICAL standard RTs. The RTs for bromide in the ICAL standards range between 2.49-2.52 minutes. The ID-tm should reflect the average RT of the six ICAL standards. For the first calibration run for the bromide and sulfate analyses, the ID-tm for bromide should be 2.50 minutes. Instead, the ID-tm on the quantitation reports indicates an ID-tm of 2.93 minutes. Bromide was identified at a RT of 2.93 minutes in sample GW-40D (WL1622-32) at a concentration of 2 mg/L. The laboratory reported bromide at 2 mg/L in sample WL1622-32. However, based on the stability of the bromide RT in the calibration standards, the identification of bromide at 2.93 minutes in sample WL1622-32 is questionable. Therefore, due to the uncertainty of the identification of bromide in the undiluted analysis of sample WL1622-32, the reviewer has chosen the 1:10 dilution of sample WL1622-32 as the result of record. The result of record for bromide in sample WL1622-32 is elevated to non-detect at 10 mg/L.

5. There are several analyses/dilutions for sample GW-43D (WL1622-27) provided in the data package due to elevated amount of sulfate in the sample. The dilutions for sample WL1622-27 were analyzed in the following order: 1:10, 1:500, 1:100, and 1:1000 dilutions. The 1:10 dilution for sample WL1622-27 was out of the linear range for sulfate; therefore, it was not considered the result-of-record. The 1:500 dilution appears to be in range; however, the laboratory did not use this analysis as the result-of-record for sample WL1622-27. The raw data for the 1:500 dilution states "RE" at a 1:100 dilution. The laboratory then reanalyzed sample WL1622-27 at a 1:100 dilution. The 1:100 dilution indicates that the sample should be diluted and rerun. Sample WL1622-27 was then reanalyzed at a 1:1000 dilution, and the laboratory reported the results for sulfate from the 1:1000 dilution.

   This 1:1000 dilution for sample WL1622-27 was analyzed under the fourth initial calibration (ICAL) for sulfate and bromide. There was no stability for the RTs of sulfate throughout the entire fourth run. The RTs for sulfate for the calibration standards and in the 1:1000 dilution of sample WL1622-27 were shifting earlier and later throughout the run. RTs that fluctuate back and forth are inherent of a system problem. The identification of sulfate may be considered questionable due to the shifting of the RT; however, the 1:10, 1:500 and the 1:100 dilutions support the identification of sulfate in sample WL1622-27. Even though the 1:100 dilution of sample WL1622-27 is out of the linear range, the amount of sulfate recovered supports the reanalysis of the sample at a 1:1000 dilution. Due to the RT shifting, the positive result for sulfate in sample WL1622-27 is estimated.

6. This case contains one set of field duplicates samples consisting of GW-42S (WL1622-22) and its field duplicate GW-42S (WL1622-23). The field duplicate samples were analyzed for both filtered and unfiltered analyses. The field duplicate samples exhibited poor reproducibility for sulfate. Due to poor field duplicate reproducibility, the positive results for sulfate in samples WL1622-22 and WL1622-23 are estimated.

7. Ammonia was analyzed for both the unfiltered and filtered samples. Ammonia in samples GW-44S (WL1622-17 and WL1622-1), GW-45S (WL1622-19 and WL1622-3), GW-42S (WL1622-21 and WL1622-5), GW-42D (WL1622-22 and WL1622-6), GW-42D DUP (WL1622-23 and WL1622-7), GW-43D (WL1622-27 and WL1622-11) and GW-50S (WL1622-29 and WL1622-13) was reported at higher concentration in the filtered samples than in the unfiltered samples. In all instances the relative

percent differences (RPDs) between the filtered and the unfiltered results were within normal expected precision, except in sample GW-44S. The reviewer concludes that the RPD results for samples GW-45S, GW-42S, GW-42D, GW-42D DUP, GW-43D, and GW-50S are not statistically different. The reviewer concludes that all ammonia present is in a dissolved form. Due to the poor RPD between the filtered and unfiltered results for sample GW-44S, the positive results for ammonia-N in the filtered and unfiltered samples are estimated, WL1622-17 and WL1622-1, respectively.

NOTES

The following items were noted during the validation review which did not impact results or necessitate further qualification of data:

1. The raw data provided for bromide and sulfate on the quantitation reports exhibited peak heights; however, peak areas were not provided. Therefore, there was not enough information provided to reproduce the laboratory's reported concentrations. More information was requested from the laboratory. The laboratory gave an explanation in a letter from Mr. Richard Wellman dated 6/7/96. The laboratory no longer has the software/analytical system capabilities to supply the information used to calibrate the system or quantitate the samples. The reviewer verified the validity of the sample results based on the information provided (peak heights). The results were within the same order of magnitude. The data are acceptable except where mentioned in the Findings/Qualifiers Section of this report.

2. There are unintegrated peaks near the RT of bromide in samples GW-42D (WL1622-22), its field duplicate sample GW-42D (WL1622-23), and GW-43D (WL1622-27). These peaks may not have been integrated due to interferences with chloride. These samples were reanalyzed at dilutions, and the RLs for bromide in samples WL1622-22, WL1622-23, and WL1622-27 are elevated by the laboratory. Based on a review of all dilutions of these samples, the reviewer accepted the elevated detection limits as reported.

   It is further noted that samples GW-44D (WL1622-18), GW-45D (WL1622-20), and GW-50D (WL1622-30) were also analyzed at dilutions and the RLs for bromide were elevated by the laboratory. Based on a review of all dilutions of these samples, the reviewer accepted the elevated detection limits as reported.

3. The quantitation reports for the initial calibration blank (ICB) and the continuing calibration blanks (CCBs) analyzed under the 10/24/95 and 10/25/95 ICALs exhibit concentrations above the RL of 1 mg/L. However, these concentrations do not reflect the ion chromatograms, which do not exhibit peaks for bromide and sulfate. The reviewer has concluded that bromide and sulfate are not present in the ICB and CCBs. Therefore, no data are qualified due to laboratory blank contamination.

4. On the field chain of custody, the laboratory's client indicated that the matrix spike and laboratory duplicate samples were to be analyzed from sampling location GW-43S. For this order, sample GW-44S (WL1622-17) was also provided as a matrix spike (MS) and a laboratory duplicate (LD) for the sulfate, bromide and ortho-phosphate analyses.

   The laboratory also analyzed batch quality control (QC) which consisted of a method blank and a laboratory control sample (LCS) for each parameter in this case except viscosity. There is no batch QC required for viscosity. The method blanks and the LCSs for all other parameters are acceptable. No data are qualified due to batch QC criteria.

5. There were transcription errors on the laboratory reporting of analyses forms, analytical sequence summary forms, and the laboratory quality control (QC) forms. The reviewer-corrected forms are included in Appendix B. No data are qualified.

6. The calibration for the ammonia analysis for this order could not be verified due to lack of information provided by the laboratory. More information was requested by the reviewer. The laboratory gave a brief explanation in a letter from Mr. Richard Wellman dated 6/7/96 is included in Appendix B. Based on review of the data and the letter supplied by the laboratory the ammonia data are acceptable.

SMITH

SUMMARY

This review has identified field blank contamination, high recovery for the low concentration initial calibration standards for bromide and sulfate, biased low reporting limits, unintegrated peaks, elevated RL due to the ID-tm, RT shifting, poor field duplicate reproducibility for sulfate, and filtered versus unfiltered ammonia results as areas of concern. The reported data are usable as qualified on the data summary table. For specifics relating to this review, see the attached documentation in Appendix B.

SMITH

QUALIFIER CODES AND FOOTNOTES

U - The analyte was analyzed for but not detected. The associated numerical value is the sample quantitation limit.

J - The associated value is an estimated quantity.

UJ - The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.

---

1 - The associated numerical value is the sample quantitation limit due to blank contamination.

2 - Denotes an elevated reporting limit due to sample dilution.

3 - The reported quantitated value may be biased high. The actual value is expected to be lower.

4 - The reporting limit may be biased low. The actual reporting limit is expected to be higher.

DATA SUMMARY TABLE

Site Name	Olin-Wilmington, MA	Laboratory	Pace Env. Laboratories
Project Number	00-7074-0102	Case/Order #	45696/WL1622
Sampling Date(s)	October 17, 1995	Field Duplicates	WL1622-22 & WL1622-23

Liquid mg/l

PQL	Sample location or description	GW-44S WL1622-17	GW-44D WL1622-18	GW-45S WL1622-19	GW-45D WL1622-20	GW-42S WL1622-21	GW-42D WL1622-22	GW-42D WL1622-23	GW-43S WL1622-24	GW-43D WL1622-27	GW-50S WL1622-29
	Sample number	45696-001 -016,-021,-037	45696-002 -017,-022,-038	45696-003 -023,-039	45696-004 -024, 040	45696-005 -018,-025,-041	45696-006 -019,-026,-042	45696-007 -020,-027,-043	45696-008 -028,-044	45696-011 -031,-047	45696-012 -033,-049
	Sampling date	10/17/95	10/17/95	10/17/95	10/17/95	10/17/95	10/17/95	10/17/95	10/17/95	10/17/95	10/17/95
	unfilt. / filt.	filt.	filt.	filt.	filt.	filt.	filt.	filt.	filt.	filt.	filt.
PQL	Comments						Field Dup A	Field Dup B			
0.02	Ortho-phosphat	0.08	0.5		0.4		0.9	1		0.26	
1	Chloride	9	13000	130	8900	85	18000	18000	93	4000	75
1	Sulfate	9 U1	28000	28	32000	6 U1	54000 J	35000 J	440	23000 J	190
1	Bromide								UJ4		UJ4
0.05	Ammonia-N	2.3 J	3400	3.6	3300	4.3	7300	7500	84	3400	53
1	Sulfide										
	Viscosity	N/A	3.5	N/A	N/A	3.0	3.5	4.0	N/A	N/A	N/A

The PQL for ammonia varies for the filtered and the unfiltered samples. The highest PQL is documented on the data table.

N/A = Not Analyzed for that parameter

Samples WL1622-18, -20,-22, -27, and -30 were analyzed at dilutions, the reporting limit for bromide has been elevated. See report for details.

Dheauby 6/25/96

WL1622W.XLS

DATA SUMMARY TABLE

Site Name	Olin-Wilmington, MA	Laboratory	Pace Env. Laboratories
Project Number	00-7074-0102	Case/Order #	45696/WL1622
Sampling Date(s)	October 17, 1995	Field Duplicates	WL1622-22 & WL1622-23

Liquid mg/l

PQL	Sample location or description	GW-50D WL1622-30		GW-40S WL1622-31		GW-40D WL1622-32		GW-400 WL1622-28	
	Sample number	45696-013 -034,-050		45696-014 -035,-051		45696-015 -036,-052		45696-032 -048,-069	
	Sampling date	10/17/95		10/17/95		10/17/95		10/17/95	
	unfilt. / filt.	filt.		filt.		filt.		filt.	
PQL	Comments							Field Blank	
0.02	ortho-phosphate					0.05			
1	Chloride	1200		24		100			
1	Sulfate	4300		42		860		1.9	J3
1	Bromide					10	U2		
0.05	Ammonia-N	900				120			
1	Sulfide					3			
	Viscosity	N/A		N/A		N/A		N/A	

The PQL for ammonia varies for the filtered and the unfiltered samples. The highest PQL is documented on the data table.
N/A = Not Analyzed for that parameter

Samples WL1622-18, -20,-22, -27, and -30 were analyzed at dilutions, the reporting limit for bromide has been elevated. See report for details.

Dheauky 6/25/96

WL1622W.XLS

DATA SUMMARY TABLE

Site Name	Olin-Wilmington, MA	Laboratory	Pace Env. Laboratories
Project Number	00-7074-0102	Liquid mg/l Case/Order #	45696/WL1622
Sampling Date(s)	October 17, 1995	Field Duplicates	WL1622-6 & WL1622-7

PQL	Sample location or description	GW-44S WL1622-1	GW-44D WL1622-2	GW-45S WL1622-3	GW-45D WL1622-4	GW-42S WL1622-5	GW-42D WL1622-6	GW-42D WL1622-7	GW-43S WL1622-8	GW-43D WL1622-11	GW-400 WL1622-12
	Sample number	45696-053	45696-054	45696-055	45696-056	45696-057	45696-058	45696-059	45696-060	45696-063	45696-064
	Sampling date	10/17/95	10/17/95	10/17/95	10/17/95	10/17/95	10/17/95	10/17/95	10/17/95	10/17/95	10/17/95
	unfilt. / filt.	unfilt.	unfilt.	unfilt.	unfilt	unfilt.	unfilt.	unfilt.	unfilt.	unfilt.	unfilt.
PQL	Comments						Field Dup A	Field Dup B			
0.05	Ammonia-N	0.12 J	4100	2.8	3900	4.0	7000	7000	85	3000	

Sheauby 6/25/96

WL1622W1.XLS

DATA SUMMARY TABLE

Site Name	Olin-Wilmington, MA	Laboratory	Pace Env. Laboratories
Project Number	00-7074-0102	Case/Order #	45696/WL1622
Sampling Date(s)	October 17, 1995	Field Duplicates	WL1622-6 & WL1622-7

Liquid mg/l

	Sample location or description	GW-50S WL1622-13		GW-50D WL1622-14		GW-40S WL1622-15		GW-40D WL1622-16								
	Sample number	45696-065		45696-066		45696-067		45696-068								
	Sampling date	10/17/95		10/17/95		10/17/95		10/17/95								
	unfilt. / filt.	unfilt.		unfilt		unfilt.		unfilt.								
PQL	Comments															
0.05	Ammonia-N	52		950				140								

Dheaukey 6/28/96

WL1622W1.XLS

SMITH

APPENDIX A

Katahdin
ANALYTICAL SERVICES

A WBE Laboratory

Lab Number	: WL-1622-1
Report Date:	12/06/95
PO No.	: SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-44S (UNFILT)	Aqueous	T. EBNER	10/17/95	10/17/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Total	<0.10	mg/L	1.0	0.10	200.7/6010	11/01/95	KW	1
Arsenic, Total	<0.005	mg/L	1.0	0.005	200.7/6010	11/01/95	KW	1
Barium, Total	0.006	mg/L	1.0	0.005	200.7/6010	11/01/95	KW	1
Calcium, Total	B5.1	mg/L	1.0	0.050	200.7/6010	11/01/95	KW	1,2
Chromium, Total	<0.015	mg/L	1.0	0.015	200.7/6010	11/01/95	KW	1
Iron, Total	0.054	mg/L	1.0	0.025	200.7/6010	11/01/95	KW	1
Lead, Total	<0.005	mg/L	1.0	0.005	200.7/6010	11/01/95	KW	1
Magnesium, Total	0.92	mg/L	1.0	0.050	200.7/6010	11/01/95	KW	1
Manganese, Total	0.015	mg/L	1.0	0.005	200.7/6010	11/01/95	KW	1
Potassium, Total	0.74	mg/L	1.0	0.50	200.7/6010	10/27/95	KW	1
Silicon, Total	3.5 ~~4~~	mg/L	10	0.2	200.7/6010	11/06/95	NH	1
Sodium, Total	12	mg/L	1.0	0.10	200.7/6010	10/27/95	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

(1) Sample Preparation on 10/20/95 by VM using 3010

(2) A result reported with a "B" qualifier indicates the analyte was detected in the laboratory method blank analyzed concurrently with the sample. The concentration of calcium in the method blank was 0.28 mg/L.

Si - transcription error
cuo 6/19/96

12/06/95

LJO/ejnejn
LJ20ICW2
CC: OLIN-TN STEVE MORROW
SMITH-R. SACKS
PTI-CHRIS SELLSTONE

340 County Road, Westbrook, ME 04092
Tel: (207) 874-2400 Fax: (207) 775-4029

One Lafayette Drive, Hampton, NH 03842

Katahdin
ANALYTICAL SERVICES

A WBE Laboratory

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1622-2
Report Date: 12/06/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-44D (UNFILT)	Aqueous	T. EBNER	10/17/95	10/17/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Total	990.	mg/L	10	0.10	200.7/6010	11/01/95	KW	1
Arsenic, Total	<2.5	mg/L	500	0.005	200.7/6010	11/06/95	KW	1,2
Barium, Total	<0.050	mg/L	10	0.005	200.7/6010	11/01/95	KW	1,2
Calcium, Total	B360	mg/L	10	0.050	200.7/6010	11/01/95	KW	1,3
Chromium, Total	790	mg/L	500	0.015	200.7/6010	11/06/95	KW	1
Iron, Total	1800.	mg/L	10	0.025	200.7/6010	11/01/95	KW	1
Lead, Total	0.10	mg/L	10	0.005	200.7/6010	11/01/95	KW	1
Magnesium, Total	750.	mg/L	10	0.050	200.7/6010	11/01/95	KW	1
Manganese, Total	150	mg/L	100	0.005	200.7/6010	11/06/95	KW	1
Potassium, Total	110.	mg/L	2.0	0.50	200.7/6010	10/27/95	KW	1
Silicon, Total	61.	mg/L	20	0.2	200.7/6010	11/06/95	NH	1
Sodium, Total	10000.	mg/L	200	0.10	200.7/6010	10/28/95	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

(1) Sample Preparation on 10/20/95 by VM using 3010

(2) The laboratory's Practical Quantitation Level could not be achieved for this parameter due to sample composition, matrix effects, sample volume, or quantity used for analysis.

(3) A result reported with a "B" qualifier indicates the analyte was detected in the laboratory method blank analyzed concurrently with the sample. The concentration of calcium in the method blank was 0.28 mg/L.

12/06/95

LJO/ejnjbb(dw)
LJ20ICW2
CC: OLIN-TN STEVE MORROW
SMITH-R. SACKS
PTI-CHRIS SELLSTONE

340 County Road, Westbrook, ME 04092
Tel (207) 874-2400 Fax: (207) 775-4029

One Lafayette Drive, Hampton, NH 03842

Katahdin
ANALYTICAL SERVICES

A WBE Laboratory

Lab Number : WL-1622-3
Report Date: 12/06/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-45S (UNFILT)	Aqueous	T. EBNER	10/17/95	10/17/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Total	<0.10	mg/L	1.0	0.10	200.7/6010	11/01/95	KW	1
Arsenic, Total	<0.005	mg/L	1.0	0.005	200.7/6010	11/01/95	KW	1
Barium, Total	0.034	mg/L	1.0	0.005	200.7/6010	11/01/95	KW	1
Calcium, Total	B15	mg/L	1.0	0.050	200.7/6010	11/01/95	KW	1,2
Chromium, Total	<0.015	mg/L	1.0	0.015	200.7/6010	11/01/95	KW	1
Iron, Total	<0.025	mg/L	1.0	0.025	200.7/6010	11/01/95	KW	1
Lead, Total	<0.005	mg/L	1.0	0.005	200.7/6010	11/01/95	KW	1
Magnesium, Total	2.4	mg/L	1.0	0.050	200.7/6010	11/01/95	KW	1
Manganese, Total	0.89	mg/L	1.0	0.005	200.7/6010	11/01/95	KW	1
Potassium, Total	2.5	mg/L	1.0	0.50	200.7/6010	10/27/95	KW	1
Silicon, Total	4.2	mg/L	1.0	0.2	200.7/6010	11/06/95	NH	1
Sodium, Total	68	mg/L	1.0	0.10	200.7/6010	10/27/95	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/20/95 by VM using 3010
(2) A result reported with a "B" qualifier indicates the analyte was detected in the laboratory method blank analyzed concurrently with the sample. The concentration of calcium in the method blank was 0.28 mg/L.

12/06/95

LJO/ejnejn
LJ20ICW2
CC: OLIN-TN STEVE MORROW
SMITH-R. SACKS
PTI-CHRIS SELLSTONE

340 County Road, Westbrook, ME 04092
Tel: (207) 874-2400 Fax: (207) 775-4029

One Lafayette Drive, Hampton, NH 03842

Katahdin
ANALYTICAL SERVICES

A WBE Laboratory

Lab Number : WL-1622-4
Report Date: 12/06/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-45D (UNFILT)	Aqueous	T. EBNER	10/17/95	10/17/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Total	800.	mg/L	10	0.10	200.7/6010	11/01/95	KW	1
Arsenic, Total	<2.5	mg/L	500	0.005	200.7/6010	11/06/95	KW	1,2
Barium, Total	<0.050	mg/L	10	0.005	200.7/6010	11/01/95	KW	1,2
Calcium, Total	B350	mg/L	10	0.050	200.7/6010	11/01/95	KW	1,3
Chromium, Total	560	mg/L	500	0.015	200.7/6010	11/06/95	KW	1
Iron, Total	1200.	mg/L	10	0.025	200.7/6010	11/01/95	KW	1
Lead, Total	0.087	mg/L	10	0.005	200.7/6010	11/01/95	KW	1
Magnesium, Total	540.	mg/L	10	0.050	200.7/6010	11/01/95	KW	1
Manganese, Total	260	mg/L	500	0.005	200.7/6010	11/06/95	KW	1
Potassium, Total	110	mg/L	2.0	0.50	200.7/6010	10/30/95	KW	1
Silicon, Total	54.	mg/L	20	0.2	200.7/6010	11/06/95	NH	1
Sodium, Total	8700	mg/L	100	0.10	200.7/6010	10/30/95	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/20/95 by VM using 3010
(2) The laboratory's Practical Quantitation Level could not be achieved for this parameter due to sample composition, matrix effects, sample volume, or quantity used for analysis.
(3) A result reported with a "B" qualifier indicates the analyte was detected in the laboratory method blank analyzed concurrently with the sample. The concentration of calcium in the method blank was 0.28 mg/L.

12/06/95

LJO/ejnjbb(dw)/kew

CC: OLIN-TN STEVE MORROW
SMITH-R. SACKS
PTI-CHRIS SELLSTONE

Katahdin ANALYTICAL SERVICES

A WBE Laboratory

Lab Number : WL-1622-5
Report Date: 12/06/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
GW-42S (UNFILT)	Aqueous	T. EBNER	10/17/95	10/17/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Total	0.39	mg/L	1.0	0.10	200.7/6010	11/01/95	KW	1
Arsenic, Total	<0.005	mg/L	1.0	0.005	200.7/6010	11/01/95	KW	1
Barium, Total	0.032	mg/L	1.0	0.005	200.7/6010	11/01/95	KW	1
Calcium, Total	B4.5	mg/L	1.0	0.050	200.7/6010	11/01/95	KW	1,2
Chromium, Total	<0.015	mg/L	1.0	0.015	200.7/6010	11/01/95	KW	1
Iron, Total	14.	mg/L	1.0	0.025	200.7/6010	11/01/95	KW	1
Lead, Total	<0.005	mg/L	1.0	0.005	200.7/6010	11/01/95	KW	1
Magnesium, Total	1.5	mg/L	1.0	0.050	200.7/6010	11/01/95	KW	1
Manganese, Total	0.85	mg/L	1.0	0.005	200.7/6010	11/01/95	KW	1
Potassium, Total	1.1	mg/L	1.0	0.50	200.7/6010	10/27/95	KW	1
Silicon, Total	6.3 ~~8~~	mg/L	10	0.2	200.7/6010	11/06/95	NH	1
Sodium, Total	41.	mg/L	1.0	0.10	200.7/6010	10/27/95	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

(1) Sample Preparation on 10/20/95 by VM using 3010

(2) A result reported with a "B" qualifier indicates the analyte was detected in the laboratory method blank analyzed concurrently with the sample. The concentration of calcium in the method blank was 0.28 mg/L.

Si - MO 6/19/96
trans. error

12/06/95

LJO/ejnjbb(dw)

CC: OLIN-TN STEVE MORROW
SMITH-R. SACKS
PTI-CHRIS SELLSTONE

340 County Road, Westbrook, ME 04092
Tel: (207) 874-2400 Fax: (207) 775-4029

One Lafayette Drive, Hampton, NH 03842

Katahdin
ANALYTICAL SERVICES

A WBE Laboratory

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1622-6
Report Date: 12/06/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-42D (UNFILT)	Aqueous	T. EBNER	10/17/95	10/17/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Total	1500.	mg/L	10	0.10	200.7/6010	11/01/95	KW	1
Arsenic, Total	<10	mg/L	2000	0.005	200.7/6010	11/06/95	KW	1,2
Barium, Total	<0.050	mg/L	10	0.005	200.7/6010	11/01/95	KW	1,2
Calcium, Total	B370	mg/L	10	0.050	200.7/6010	11/01/95	KW	1,3
Chromium, Total	2800	mg/L	2000	0.015	200.7/6010	11/06/95	KW	1
Iron, Total	1400.	mg/L	100	0.025	200.7/6010	11/01/95	KW	1
Lead, Total	0.17	mg/L	1.0	0.005	200.7/6010	11/01/95	KW	1
Magnesium, Total	840.	mg/L	10	0.050	200.7/6010	11/01/95	KW	1
Manganese, Total	580.	mg/L	500	0.005	200.7/6010	11/01/95	KW	1
Potassium, Total	98	mg/L	2.0	0.50	200.7/6010	10/27/95	KW	1
Silicon, Total	100.	mg/L	50	0.2	200.7/6010	11/06/95	NH	1
Sodium, Total	22000.	mg/L	400	0.10	200.7/6010	10/28/95	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

(1) Sample Preparation on 10/20/95 by VM using 3010

(2) The laboratory's Practical Quantitation Level could not be achieved for this parameter due to sample composition, matrix effects, sample volume, or quantity used for analysis.

(3) A result reported with a "B" qualifier indicates the analyte was detected in the laboratory method blank analyzed concurrently with the sample. The concentration of calcium in the method blank was 0.28 mg/L.

12/06/95

LJO/ejnjbb(dw)

CC: OLIN-TN STEVE MORROW
SMITH-R. SACKS
PTI-CHRIS SELLSTONE

Katahdin
ANALYTICAL SERVICES

A WBE Laboratory

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1622-7
Report Date: 12/06/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
FIELD REP 2 (UNFILT)	Aqueous	T. EBNER	10/17/95	10/17/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Total	1500.	mg/L	10	0.10	200.7/6010	11/01/95	KW	1
Arsenic, Total	<10	mg/L	2000	0.005	200.7/6010	11/06/95	KW	1,2
Barium, Total	<0.050	mg/L	10	0.005	200.7/6010	11/01/95	KW	1,2
Calcium, Total	B370	mg/L	10	0.050	200.7/6010	11/01/95	KW	1,3
Chromium, Total	2600	mg/L	2000	0.015	200.7/6010	11/06/95	KW	1
Iron, Total	1400.	mg/L	100	0.025	200.7/6010	11/01/95	KW	1
Lead, Total	0.17	mg/L	1.0	0.005	200.7/6010	11/01/95	KW	1
Magnesium, Total	870.	mg/L	10	0.050	200.7/6010	11/01/95	KW	1
Manganese, Total	600.	mg/L	500	0.005	200.7/6010	11/01/95	KW	1
Potassium, Total	73.	mg/L	10	0.50	200.7/6010	10/28/95	KW	1
Silicon, Total	~~100.~~ 95	mg/L	50	0.2	200.7/6010	11/06/95	NH	1
Sodium, Total	21000.	mg/L	400	0.10	200.7/6010	10/28/95	KW	1

MD 6/19/96

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

(1) Sample Preparation on 10/20/95 by VM using 3010

(2) The laboratory's Practical Quantitation Level could not be achieved for this parameter due to sample composition, matrix effects, sample volume, or quantity used for analysis.

(3) A result reported with a "B" qualifier indicates the analyte was detected in the laboratory method blank analyzed concurrently with the sample. The concentration of calcium in the method blank was 0.28 mg/L.

12/06/95

LJO/ejnjbb(dw)

CC: OLIN-TN STEVE MORROW
SMITH-R. SACKS
PTI-CHRIS SELLSTONE

340 County Road, Westbrook, ME 04092
Tel: (207) 874-2400 Fax: (207) 775-4029

One Lafayette Drive, Hampton, NH 03842

Katahdin
ANALYTICAL SERVICES

A WBE Laboratory

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1622-8
Report Date: 12/06/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-43S (UNFILT)	Aqueous	T. EBNER	10/17/95	10/17/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Total	<0.10	mg/L	1.0	0.10	200.7/6010	11/01/95	KW	1
Arsenic, Total	<0.005	mg/L	1.0	0.005	200.7/6010	10/30/95	KW	1
Barium, Total	0.074	mg/L	1.0	0.005	200.7/6010	11/01/95	KW	1
Calcium, Total	B49	mg/L	1.0	0.050	200.7/6010	11/01/95	KW	1,2
Chromium, Total	0.018	mg/L	1.0	0.015	200.7/6010	11/01/95	KW	1
Iron, Total	0.079	mg/L	1.0	0.025	200.7/6010	11/01/95	KW	1
Lead, Total	<0.005	mg/L	1.0	0.005	200.7/6010	11/01/95	KW	1
Magnesium, Total	8.5	mg/L	1.0	0.050	200.7/6010	10/30/95	KW	1
Manganese, Total	2.0	mg/L	2.0	0.005	200.7/6010	11/01/95	KW	1
Potassium, Total	1.2	mg/L	1.0	0.50	200.7/6010	10/27/95	KW	1
Silicon, Total	16.	mg/L	10	0.2	200.7/6010	11/06/95	NH	1
Sodium, Total	80.	mg/L	1.0	0.10	200.7/6010	10/27/95	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

(1) Sample Preparation on 10/20/95 by VM using 3010

(2) A result reported with a "B" qualifier indicates the analyte was detected in the laboratory method blank analyzed concurrently with the sample. The concentration of calcium in the method blank was 0.28 mg/L.

12/06/95

LJO/ejnjbb(dw)
LJ20ICW2
CC: OLIN-TN STEVE MORROW
SMITH-R. SACKS
PTI-CHRIS SELLSTONE

Katahdin
ANALYTICAL SERVICES

A WBE Laboratory

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1622-9
Report Date: 12/06/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-43S (UNFILT/DUP)	Aqueous	T. LBNER	10/17/95	10/17/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Total	<0.10	mg/L	1.0	0.10	200.7/6010	11/01/95	KW	1
Arsenic, Total	<0.005	mg/L	1.0	0.005	200.7/6010	10/30/95	KW	1
Barium, Total	0.075	mg/L	1.0	0.005	200.7/6010	11/01/95	KW	1
Calcium, Total	B51.1	mg/L	1.0	0.050	200.7/6010	10/30/95	KW	1,2
Chromium, Total	<0.015	mg/L	1.0	0.015	200.7/6010	11/01/95	KW	1
Iron, Total	<0.025	mg/L	1.0	0.025	200.7/6010	11/01/95	KW	1
Lead, Total	<0.005	mg/L	1.0	0.005	200.7/6010	11/01/95	KW	1
Magnesium, Total	8.85	mg/L	1.0	0.050	200.7/6010	10/30/95	KW	1
Manganese, Total	2.11	mg/L	2.0	0.005	200.7/6010	11/01/95	KW	1
Potassium, Total	1.11	mg/L	1.0	0.50	200.7/6010	10/27/95	KW	1
Silicon, Total	16.	mg/L	10	0.2	200.7/6010	11/06/95	NH	1
Sodium, Total	87.7	mg/L	1.0	0.10	200.7/6010	10/28/95	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

(1) Sample Preparation on 10/20/95 by VM using 3010

(2) A result reported with a "B" qualifier indicates the analyte was detected in the laboratory method blank analyzed concurrently with the sample. The concentration of calcium in the method blank was 0.28 mg/L.

12/06/95

LJO/ejnejn
LJ20ICW2
CC: OLIN-TN STEVE MORROW
SMITH-R. SACKS
PTI-CHRIS SELLSTONE

Katahdin
ANALYTICAL SERVICES

A WBE Laboratory

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1622-10
Report Date: 12/06/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-43S (UNFILT/MS)	Aqueous	T. EBNER	10/17/95	10/17/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Total	2.05	mg/L	1.0	0.10	200.7/6010	11/01/95	KW	1
Arsenic, Total	2.12	mg/L	2.0	0.005	200.7/6010	11/09/95	KW	2
Barium, Total	2.11	mg/L	2.0	0.005	200.7/6010	11/01/95	KW	1
Calcium, Total	B50.7	mg/L	1.0	0.050	200.7/6010	10/30/95	KW	1,3
Chromium, Total	0.209	mg/L	1.0	0.015	200.7/6010	11/01/95	KW	1
Iron, Total	0.984	mg/L	1.0	0.025	200.7/6010	11/01/95	KW	1
Lead, Total	0.501	mg/L	1.0	0.005	200.7/6010	11/01/95	KW	1
Magnesium, Total	13.4	mg/L	1.0	0.050	200.7/6010	10/30/95	KW	1
Manganese, Total	2.52	mg/L	2.0	0.005	200.7/6010	11/01/95	KW	1
Potassium, Total	24.6	mg/L	1.0	0.50	200.7/6010	10/27/95	KW	1
Silicon, Total	18.	mg/L	10	0.2	200.7/6010	11/06/95	NH	1
Sodium, Total	89.3	mg/L	1.0	0.10	200.7/6010	10/28/95	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/20/95 by VM using 3010
(2) Sample Preparation on 11/07/95 by VM using 3010
(3) A result reported with a "B" qualifier indicates the analyte was detected in the laboratory method blank analyzed concurrently with the sample. The concentration of calcium in the method blank was 0.28 mg/L.

12/06/95

LJO/ejnejn
LJ20ICW2
CC: OLIN-TN STEVE MORROW
SMITH-R. SACKS
PTI-CHRIS SELLSTONE

Katahdin
ANALYTICAL SERVICES

A WBE Laboratory

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1622-11
Report Date: 12/06/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-43D (UNFILT)	Aqueous	T. EBNER	10/17/95	10/17/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Total	440.	mg/L	20	0.10	200.7/6010	11/01/95	KW	1
Arsenic, Total	<1.0	mg/L	200	0.005	200.7/6010	11/06/95	KW	2,3
Barium, Total	<0.10	mg/L	20	0.005	200.7/6010	11/01/95	KW	1,3
Calcium, Total	B290	mg/L	20	0.050	200.7/6010	10/30/95	KW	1,4
Chromium, Total	260	mg/L	200	0.015	200.7/6010	11/06/95	KW	2
Iron, Total	600.	mg/L	20	0.025	200.7/6010	11/01/95	KW	1
Lead, Total	<0.10	mg/L	20	0.005	200.7/6010	11/01/95	KW	1,3
Magnesium, Total	350.	mg/L	20	0.050	200.7/6010	10/30/95	KW	1
Manganese, Total	66.	mg/L	100	0.005	200.7/6010	11/01/95	KW	1
Potassium, Total	16.	mg/L	10	0.50	200.7/6010	10/28/95	KW	1
Silicon, Total	37.	mg/L	10	0.2	200.7/6010	11/06/95	NH	1
Sodium, Total	4000.	mg/L	50	0.10	200.7/6010	10/28/95	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/20/95 by VM using 3010
(2) Sample Preparation on 11/03/95 by VM using 3010
(3) The laboratory's Practical Quantitation Level could not be achieved for this parameter due to sample composition, matrix effects, sample volume, or quantity used for analysis.
(4) A result reported with a "B" qualifier indicates the analyte was detected in the laboratory method blank analyzed concurrently with the sample. The concentration of calcium in the method blank was 0.28 mg/L.

12/06/95

LJO/ejnjbb(dw)
LJ20ICW2
CC: OLIN-TN STEVE MORROW
SMITH-R. SACKS
PTI-CHRIS SELLSTONE

Katahdin ANALYTICAL SERVICES

A WBE Laboratory

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1622-12
Report Date: 12/06/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-400 (UNFILT)	Aqueous	T. EBNER	10/17/95	10/17/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Total	<0.10	mg/L	1.0	0.10	200.7/6010	11/01/95	KW	1
Arsenic, Total	<0.005	mg/L	1.0	0.005	200.7/6010	10/30/95	KW	1
Barium, Total	<0.005	mg/L	1.0	0.005	200.7/6010	11/01/95	KW	1
Calcium, Total	<0.050	mg/L	1.0	0.050	200.7/6010	11/06/95	KW	2
Chromium, Total	<0.015	mg/L	1.0	0.015	200.7/6010	11/01/95	KW	1
Iron, Total	0.053	mg/L	1.0	0.025	200.7/6010	11/01/95	KW	1
Lead, Total	<0.005	mg/L	1.0	0.005	200.7/6010	11/01/95	KW	1
Magnesium, Total	<0.050	mg/L	1.0	0.050	200.7/6010	10/30/95	KW	1
Manganese, Total	<0.005	mg/L	1.0	0.005	200.7/6010	11/01/95	KW	1
Potassium, Total	<0.50	mg/L	1.0	0.50	200.7/6010	10/27/95	KW	1
Silicon, Total	<0.2	mg/L	1.0	0.2	200.7/6010	11/06/95	NH	1
Sodium, Total	0.16	mg/L	1.0	0.10	200.7/6010	10/28/95	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/20/95 by VM using 3010
(2) Sample Preparation on 11/02/95 by VM using 3010

12/06/95

LJO/ejnjbb(dw)
LJ20ICW2
CC: OLIN-TN STEVE MORROW
SMITH-R. SACKS
PTI-CHRIS SELLSTONE

340 County Road, Westbrook, ME 04092
Tel: (207) 874-2400 Fax: (207) 775-4029

One Lafayette Drive, Hampton, NH 03842

Katahdin
ANALYTICAL SERVICES

A WBE Laboratory

Lab Number	: WL-1622-13
Report Date	: 12/06/95
PO No.	: SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-50S (UNFILT)	Aqueous	T. EBNER	10/17/95	10/17/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Total	<0.10	mg/L	1.0	0.10	200.7/6010	11/01/95	KW	1
Arsenic, Total	<0.005	mg/L	1.0	0.005	200.7/6010	10/30/95	KW	1
Barium, Total	0.015	mg/L	1.0	0.005	200.7/6010	11/01/95	KW	1
Calcium, Total	B13	mg/L	1.0	0.050	200.7/6010	10/30/95	KW	1,2
Chromium, Total	<0.015	mg/L	1.0	0.015	200.7/6010	11/01/95	KW	1
Iron, Total	0.10	mg/L	1.0	0.025	200.7/6010	11/01/95	KW	1
Lead, Total	<0.005	mg/L	1.0	0.005	200.7/6010	11/01/95	KW	1
Magnesium, Total	2.8	mg/L	1.0	0.050	200.7/6010	10/30/95	KW	1
Manganese, Total	0.38	mg/L	1.0	0.005	200.7/6010	11/01/95	KW	1
Potassium, Total	2.7	mg/L	1.0	0.50	200.7/6010	10/27/95	KW	1
Silicon, Total	MO 4/15/96 7.7 ~~8~~	mg/L	10	0.2	200.7/6010	11/06/95	NH	1
Sodium, Total	64.	mg/L	1.0	0.10	200.7/6010	10/28/95	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/20/95 by VM using 3010
(2) A result reported with a "B" qualifier indicates the analyte was detected in the laboratory method blank analyzed concurrently with the sample. The concentration of calcium in the method blank was 0.28 mg/L.

12/06/95

LJO/ejnjbb(dw)
LJ20ICW2
CC: OLIN-TN STEVE MORROW
SMITH-R. SACKS
PTI-CHRIS SELLSTONE

Katahdin
ANALYTICAL SERVICES

A WBE Laboratory

Lab Number : WL-1622-14
Report Date: 12/06/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-50D (UNFILT)	Aqueous	T. EBNER	10/17/95	10/17/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Total	<0.10	mg/L	1.0	0.10	200.7/6010	11/01/95	KW	1
Arsenic, Total	<0.005	mg/L	1.0	0.005	200.7/6010	10/30/95	KW	1
Barium, Total	0.016	mg/L	1.0	0.005	200.7/6010	11/01/95	KW	1
Calcium, Total	B330	mg/L	1.0	0.050	200.7/6010	10/30/95	KW	1,2
Chromium, Total	<0.015	mg/L	1.0	0.015	200.7/6010	11/01/95	KW	1
Iron, Total	0.38	mg/L	1.0	0.025	200.7/6010	11/01/95	KW	1
Lead, Total	<0.005	mg/L	1.0	0.005	200.7/6010	11/01/95	KW	1
Magnesium, Total	84.	mg/L	1.0	0.050	200.7/6010	10/30/95	KW	1
Manganese, Total	10.	mg/L	10	0.005	200.7/6010	11/01/95	KW	1
Potassium, Total	26.	mg/L	10	0.50	200.7/6010	10/28/95	KW	1
Silicon, Total UO 6/19/96	6.8 ~~7.~~	mg/L	10	0.2	200.7/6010	11/06/95	NH	1
Sodium, Total	1200.	mg/L	50	0.10	200.7/6010	10/28/95	KW	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

(1) Sample Preparation on 10/20/95 by VM using 3010

(2) A result reported with a "B" qualifier indicates the analyte was detected in the laboratory method blank analyzed concurrently with the sample. The concentration of calcium in the method blank was 0.28 mg/L.

12/06/95

LJO/ejnjbb(dw)
LJ20ICW2
CC: OLIN-TN STEVE MORROW
SMITH-R. SACKS
PTI-CHRIS SELLSTONE

340 County Road, Westbrook, ME 04092
Tel (207) 874-2400 Fax: (207) 775-4029

One Lafayette Drive, Hampton, NH 03842

Katahdin
ANALYTICAL SERVICES
A WBE Laboratory

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1622-15
Report Date: 12/06/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-40S (UNFILT)	Aqueous	T. EBNER	10/17/95	10/17/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Total	0.68	mg/L	1.0	0.10	200.7/6010	11/30/95	EM	1
Arsenic, Total	<0.005	mg/L	1.0	0.005	200.7/6010	11/30/95	EM	1
Barium, Total	0.038	mg/L	1.0	0.005	200.7/6010	11/30/95	EM	1
Calcium, Total	B12	mg/L	1.0	0.050	200.7/6010	11/30/95	EM	1,2
Chromium, Total	<0.015	mg/L	1.0	0.015	200.7/6010	11/30/95	EM	1
Iron, Total	0.24	mg/L	1.0	0.025	200.7/6010	11/30/95	EM	1
Lead, Total	<0.005	mg/L	1.0	0.005	200.7/6010	11/30/95	EM	1
Magnesium, Total	1.1	mg/L	1.0	0.050	200.7/6010	11/30/95	EM	1
Manganese, Total	0.061	mg/L	1.0	0.005	200.7/6010	11/30/95	EM	1
Potassium, Total	1.9	mg/L	1.0	0.50	200.7/6010	12/01/95	EM	1
Silicon, Total	2.7	mg/L	1.0	0.10	200.7/6010	12/02/95	EM	1
Sodium, Total	19	mg/L	1.0	0.10	200.7/6010	12/01/95	EM	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

(1) Sample Preparation on 11/22/95 by JAF using 3010

(2) A result reported with a "B" qualifier indicates the analyte was detected in the laboratory method blank analyzed concurrently with the sample. The concentration of calcium in the method blank was 0.10 mg/L.

12/06/95

LJO/ejnejn
LK22ICW3
CC: OLIN-TN STEVE MORROW
SMITH-R. SACKS
PTI-CHRIS SELLSTONE

340 County Road, Westbrook, ME 04092
Tel: (207) 874-2400 Fax: (207) 775-4029

One Lafayette Drive, Hampton, NH 03842

Katahdin
ANALYTICAL SERVICES

A WBE Laboratory

Lab Number : WL-1622-16
Report Date: 12/06/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-40D (UNFILT)	Aqueous	T. EBNER	10/17/95	10/17/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Total	<0.10	mg/L	1.0	0.10	200.7/6010	11/30/95	EM	1
Arsenic, Total	<0.005	mg/L	1.0	0.005	200.7/6010	11/30/95	EM	1
Barium, Total	0.019	mg/L	1.0	0.005	200.7/6010	11/30/95	EM	1
Calcium, Total	B190	mg/L	1.0	0.050	200.7/6010	11/30/95	EM	1,2
Chromium, Total	<0.015	mg/L	1.0	0.015	200.7/6010	11/30/95	EM	1
Iron, Total	0.16	mg/L	1.0	0.025	200.7/6010	11/30/95	EM	1
Lead, Total	<0.005	mg/L	1.0	0.005	200.7/6010	11/30/95	EM	1
Magnesium, Total	11.	mg/L	1.0	0.050	200.7/6010	11/30/95	EM	1
Manganese, Total	1.9	mg/L	1.0	0.005	200.7/6010	11/30/95	EM	1
Potassium, Total	5.1	mg/L	1.0	0.50	200.7/6010	12/01/95	EM	1
Silicon, Total	1.8	mg/L	1.0	0.2	200.7/6010	12/02/95	EM	1
Sodium, Total	190	mg/L	5.0	0.10	200.7/6010	12/01/95	EM	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

(1) Sample Preparation on 11/22/95 by JAF using 3010

(2) A result reported with a "B" qualifier indicates the analyte was detected in the laboratory method blank analyzed concurrently with the sample. The concentration of calcium in the method blank was 0.10 mg/L.

12/06/95

LJO/ejnejn/kew
LK22ICW3
CC: OLIN-TN STEVE MORROW
SMITH-R. SACKS
PTI-CHRIS SELLSTONE

340 County Road, Westbrook, ME 04092
Tel: (207) 874-2400 Fax: (207) 775-4029

One Lafayette Drive, Hampton, NH 03842

Katahdin
ANALYTICAL SERVICES

A WBE Laboratory

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1622-17
Report Date: 12/06/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-44S (FILT)	Aqueous	T. EBNER	10/17/95	10/17/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Dissolved	<0.10	mg/L	1.0	0.10	200.7/6010	11/06/95	KW	1
Arsenic, Dissolved	<0.005	mg/l	1.0	0.005	200.7/6010	11/06/95	KW	1
Barium, Dissolved	0.005	mg/L	1.0	0.005	200.7/6010	11/06/95	KW	1
Calcium, Dissolved	4.9	mg/L	1.0	0.050	200.7/6010	11/06/95	KW	1
Chromium, Dissolved	<0.015	mg/L	1.0	0.015	200.7/6010	11/06/95	KW	1
Chromium, Hexavalent Dissolved	<0.015	mg/L	1.0	0.015	6010	10/31/95	KW	2
Chromium, Trivalent Dissolved	<0.015	mg/L	1.0	0.015	Calculation	11/20/95	DN	
Iron, Dissolved	<0.025	mg/L	1.0	0.025	200.7/6010	11/07/95	KW	1
Lead, Dissolved	<0.005	mg/L	1.0	0.005	200.7/6010	11/06/95	KW	1
Magnesium, Dissolved	0.86	mg/L	1.0	0.050	200.7/6010	11/06/95	KW	1
Manganese, Dissolved	0.011	mg/L	1.0	0.005	200.7/6010	11/06/95	KW	1
Potassium, Dissolved	<3	mg/L	1.0	3	200.7/6010	11/03/95	NH	1
Silicon, Dissolved	3.1	mg/L	1.0	0.2	200.7/6010	11/06/95	NH	1
Sodium, Dissolved	12.	mg/L	1.0	1.	200.7/6010	11/03/95	NH	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

(1) Sample Preparation on 10/23/95 by VM using 3010

(2) Sample Preparation on 10/17/95 by GFB using 7195

12/06/95

LJO/ejnjbb(dw)
LJ23ICW1
CC: OLIN-TN STEVE MORROW
SMITH-R. SACKS
PTI-CHRIS SELLSTONE

340 County Road, Westbrook, ME 04092
Tel: (207) 874-2400 Fax: (207) 775-4029

One Lafayette Drive, Hampton, NH 03842

Katahdin
ANALYTICAL SERVICES

A WBE Laboratory

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1622-17
Report Date: 12/06/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-44S (FILT)	Aqueous	T. EBNER	10/17/95	10/17/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Bicarbonate,Dissolved as HCO3	24.	mg/L	1.0	20	APHA 406C	10/24/95	CM	
Carbonate, Dissolved as CaCO3	<20	mg/L	1.0	20	APHA 406C	10/24/95	CM	
Nitrate as N, Dissolved	0.13	mg/L	1.0	0.05	353.2/1	10/24/95	NH	
Nitrite as N, Dissolved	<0.050	mg/L	1.0	0.050	353.2	10/19/95	CM	
Organic Carbon, Dissolved (DOC)	1.3	mg/L	1.0	1.0	415.1	11/03/95	LT	
Phosphorus, Dissolved as P	1.1	mg/L	10	0.10	365.4	10/26/95	CM	1
Solids-Filt Residue, Dissolved	58.	mg/L	1.0	10	160.1	10/19/95	JF	2

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/25/95 by CLM
(2) Sample Preparation on 10/18/95 by JF

12/06/95

LJO/ejnjbb(dw)

CC: OLIN-TN STEVE MORROW
SMITH-R. SACKS
PTI-CHRIS SELLSTONE

Katahdin
ANALYTICAL SERVICES

A WBE Laboratory

Lab Number : WL-1622-18
Report Date: 12/06/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-44D (FILT)	Aqueous	T. EBNER	10/17/95	10/17/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Dissolved	1300	mg/L	100	0.10	200.7/6010	11/06/95	KW	1
Arsenic, Dissolved	<2.5	mg/l	500	0.005	200.7/6010	11/06/95	KW	1,2
Barium, Dissolved	<0.50	mg/L	100	0.005	200.7/6010	11/06/95	KW	1,2
Calcium, Dissolved	500	mg/L	100	0.050	200.7/6010	11/06/95	KW	1
Chromium, Dissolved	900	mg/L	500	0.015	200.7/6010	11/06/95	KW	1
Chromium, Hexavalent Dissolved	4.7	mg/L	1.0	0.015	6010	11/03/95	KW	3
Chromium, Trivalent Dissolved	900	mg/L	1.0	0.015	Calculation	11/20/95	DN	
Iron, Dissolved	2500.	mg/L	100	0.025	200.7/6010	11/07/95	KW	1
Lead, Dissolved	<0.50	mg/L	100	0.005	200.7/6010	11/06/95	KW	1,2
Magnesium, Dissolved	1100	mg/L	100	0.050	200.7/6010	11/06/95	KW	1
Manganese, Dissolved JJO	160	mg/L	100	0.005	200.7/6010	11/06/95	KW	1
Potassium, Dissolved 6/19/96	97 ~~100.~~	mg/L	20	3	200.7/6010	11/03/95	NH	1
Silicon, Dissolved	63.	mg/L	20	0.2	200.7/6010	11/06/95	NH	1
Sodium, Dissolved	11000.	mg/L	50	1.	200.7/6010	11/06/95	NH	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

(1) Sample Preparation on 10/23/95 by VM using 3010

(2) The laboratory's Practical Quantitation Level could not be achieved for this parameter due to sample composition, matrix effects, sample volume, or quantity used for analysis.

(3) Sample Preparation on 10/17/95 by GFB using 7195

12/06/95

LJO/ejnejn
LJ23ICW1
CC: OLIN-TN STEVE MORROW
SMITH-R. SACKS
PTI-CHRIS SELLSTONE

Katahdin
ANALYTICAL SERVICES

A WBE Laboratory

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1622-18
Report Date: 12/06/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-44D (FILT)	Aqueous	T. EBNER	10/17/95	10/17/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Bicarbonate,Dissolved as HCO3	NR	mg/L	1.0	20	APHA 406C	10/24/95	CM	1
Carbonate, Dissolved as CaCO3	NR	mg/L	1.0	20	APHA 406C	10/24/95	CM	2
Nitrate as N, Dissolved	5.9	mg/L	1.0	0.5	353.2/1	10/25/95	NH	
Nitrite as N, Dissolved	<0.20	mg/L	4.0	0.050	353.2	10/19/95	CM	3
Organic Carbon, Dissolved (DOC)	1500.	mg/L	8.0	1.0	415.1	11/03/95	LT	
Phosphorus, Dissolved as P	5.5	mg/L	10	0.10	365.4	10/26/95	CM	4
Solids-Filt Residue, Dissolved	96000.	mg/L	50	10	160.1	10/20/95	JF	5

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Initial sample pH was <4.5. Bicarbonate could not be analyzed.
(2) Initial sample pH was <4.5. Carbonate could not be analyzed.
(3) The laboratory's Practical Quantitation Level could not be achieved for this parameter due to sample composition, matrix effects, sample volume, or quantity used for analysis.
(4) Sample Preparation on 10/25/95 by CLM
(5) Sample Preparation on 10/19/95 by JF

12/06/95

LJO/ejnjbb(dw)

CC: OLIN-TN STEVE MORROW
SMITH-R. SACKS
PTI-CHRIS SELLSTONE

Katahdin
ANALYTICAL SERVICES

A WBE Laboratory

Lab Number : WL-1622-19
Report Date: 12/06/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-45S (FILT)	Aqueous	T. EBNER	10/17/95	10/17/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Dissolved	<0.10	mg/L	1.0	0.10	200.7/6010	11/06/95	KW	1
Arsenic, Dissolved	<0.005	mg/L	1.0	0.005	200.7/6010	11/06/95	KW	1
Barium, Dissolved	0.034	mg/L	1.0	0.005	200.7/6010	11/06/95	KW	1
Calcium, Dissolved	16	mg/L	1.0	0.050	200.7/6010	11/06/95	KW	1
Chromium, Dissolved	<0.015	mg/L	1.0	0.015	200.7/6010	11/06/95	KW	1
Chromium, Hexavalent Dissolved	<0.015	mg/L	1.0	0.015	6010	10/31/95	KW	2
Chromium, Trivalent Dissolved	<0.015	mg/L	1.0	0.015	Calculation	11/20/95	DN	
Iron, Dissolved	0.076	mg/L	1.0	0.025	200.7/6010	11/07/95	KW	1
Lead, Dissolved	<0.005	mg/L	1.0	0.005	200.7/6010	11/06/95	KW	1
Magnesium, Dissolved	2.5	mg/L	1.0	0.050	200.7/6010	11/06/95	KW	1
Manganese, Dissolved	0.91	mg/L	1.0	0.005	200.7/6010	11/06/95	KW	1
Potassium, Dissolved	<3	mg/L	1.0	3	200.7/6010	11/03/95	NH	1
Silicon, Dissolved	4.3	mg/L	1.0	0.2	200.7/6010	11/06/95	NH	1
Sodium, Dissolved	75.	mg/L	1.0	1.	200.7/6010	11/03/95	NH	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/23/95 by VM using 3010
(2) Sample Preparation on 10/17/95 by GFB using 7195

12/06/95

LJO/ejnjbb(dw)
LJ23ICW1
CC: OLIN-TN STEVE MORROW
SMITH-R. SACKS
PTI-CHRIS SELLSTONE

340 County Road, Westbrook, ME 04092
Tel (207) 874-2400 Fax: (207) 775-4029

One Lafayette Drive, Hampton, NH 03842

Katahdin
ANALYTICAL SERVICES

A WBE Laboratory

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1622-19
Report Date: 12/06/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-45S (FILT)	Aqueous	T. EBNER	10/17/95	10/17/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Bicarbonate,Dissolved as HCO3	<20	mg/L	1.0	20	APHA 406C	10/24/95	CM	
Carbonate, Dissolved as CaCO3	<20	mg/L	1.0	20	APHA 406C	10/24/95	CM	
Nitrate as N, Dissolved	2.0	mg/L	1.0	0.05	353.2/1	10/24/95	NH	
Nitrite as N, Dissolved	<0.050	mg/L	1.0	0.050	353.2	10/19/95	CM	
Organic Carbon, Dissolved (DOC)	1.2	mg/L	1.0	1.0	415.1	11/03/95	LT	
Phosphorus, Dissolved as P	<0.10	mg/L	1.0	0.10	365.4	10/26/95	CM	1
Solids-Filt Residue, Dissolved	280.	mg/L	1.0	10	160.1	10/19/95	JF	2

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

(1) Sample Preparation on 10/25/95 by CLM

(2) Sample Preparation on 10/18/95 by JF

12/06/95

LJO/ejnjbb(dw)

CC: OLIN-TN STEVE MORROW
SMITH-R. SACKS
PTI-CHRIS SELLSTONE

340 County Road, Westbrook, ME 04092
Tel: (207) 874-2400 Fax: (207) 775-4029

One Lafayette Drive, Hampton, NH 03842

Katahdin
ANALYTICAL SERVICES

A WBE Laboratory

CLIENT: DON CAMERON OLIN CHEMICALS 51 EAMES STREET WILMINGTON, MA 01887	Lab Number : WL-1622-20 Report Date: 12/06/95 PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-45D (FILT)	Aqueous	T. EBNER	10/17/95	10/17/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Dissolved	1100	mg/L	100	0.10	200.7/6010	11/06/95	KW	1
Arsenic, Dissolved	<2.5	mg/L	500	0.005	200.7/6010	11/07/95	KW	1,2
Barium, Dissolved	<0.50	mg/L	100	0.005	200.7/6010	11/06/95	KW	1,2
Calcium, Dissolved	500.	mg/L	100	0.050	200.7/6010	11/07/95	KW	1
Chromium, Dissolved	680	mg/L	500	0.015	200.7/6010	11/06/95	KW	1
Chromium, Hexavalent Dissolved	2.4	mg/L	1.0	0.015	6010	10/31/95	KW	3
Chromium, Trivalent Dissolved	680	mg/L	1.0	0.015	Calculation	11/20/95	DN	
Iron, Dissolved	1500.	mg/L	100	0.025	200.7/6010	11/07/95	KW	1
Lead, Dissolved	<0.50	mg/L	100	0.005	200.7/6010	11/06/95	KW	1
Magnesium, Dissolved	770.	mg/L	100	0.050	200.7/6010	11/07/95	KW	1
Manganese, Dissolved LP	280	mg/L	200	0.005	200.7/6010	11/06/95	KW	1
Potassium, Dissolved 4/1/96 99	~~100.~~	mg/L	20	3	200.7/6010	11/03/95	NH	1
Silicon, Dissolved	56.	mg/L	20	0.2	200.7/6010	11/06/95	NH	1
Sodium, Dissolved	9300.	mg/L	50	1.	200.7/6010	11/06/95	NH	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

(1) Sample Preparation on 10/23/95 by VM using 3010

(2) The laboratory's Practical Quantitation Level could not be achieved for this parameter due to sample composition, matrix effects, sample volume, or quantity used for analysis.

(3) Sample Preparation on 10/17/95 by GFB using 7195

12/06/95

LJO/ejnejn
LJ23ICW1
CC: OLIN-TN STEVE MORROW
SMITH-R. SACKS
PTI-CHRIS SELLSTONE

340 County Road, Westbrook, ME 04092
Tel: (207) 874-2400 Fax: (207) 775-4029

One Lafayette Drive, Hampton, NH 03842

Katahdin
ANALYTICAL SERVICES

A WBE Laboratory

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1622-20
Report Date: 12/06/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-45D (FILT)	Aqueous	T. EBNER	10/17/95	10/17/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Bicarbonate, Dissolved as HCO3	NR	mg/L	1.0	20	APHA 406C	10/24/95	CM	1
Carbonate, Dissolved as CaCO3	NR	mg/L	1.0	20	APHA 406C	10/24/95	CM	2
Nitrate as N, Dissolved	7.5	mg/L	1.0	0.05	353.2/1	10/25/95	NH	
Nitrite as N, Dissolved	<0.20	mg/L	4.0	0.050	353.2	10/19/95	CM	3
Organic Carbon, Dissolved (DOC)	430.	mg/L	8.0	1.0	415.1	11/03/95	LT	
Phosphorus, Dissolved as P	4.4	mg/L	10	0.10	365.4	10/26/95	CM	4
Solids-Filt Residue, Dissolved	29000.	mg/L	20	10	160.1	10/23/95	JF	5

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

(1) Initial sample pH was <4.5. Bicarbonate could not be analyzed.
(2) Initial sample pH was <4.5. Carbonate could not be analyzed.
(3) The laboratory's Practical Quantitation Level could not be achieved for this parameter due to sample composition, matrix effects, sample volume, or quantity used for analysis.
(4) Sample Preparation on 10/25/95 by CLM
(5) Sample Preparation on 10/20/95 by JF

12/06/95

LJO/ejnjbb(dw)

CC: OLIN-TN STEVE MORROW
SMITH-R. SACKS
PTI-CHRIS SELLSTONE

340 County Road, Westbrook, ME 04092
Tel. (207) 874-2400 Fax: (207) 775-4029

One Lafayette Drive, Hampton, NH 03842

Katahdin
ANALYTICAL SERVICES

A WBE Laboratory

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1622-21
Report Date: 12/06/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-42S (FILT)	Aqueous	T. EBNER	10/17/95	10/17/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Dissolved	<0.10	mg/L	1.0	0.10	200.7/6010	11/07/95	GB	1
Arsenic, Dissolved	<0.005	mg/L	1.0	0.005	200.7/6010	11/07/95	KW	1
Barium, Dissolved	0.031	mg/L	1.0	0.005	200.7/6010	11/06/95	KW	1
Calcium, Dissolved	4.7	mg/L	1.0	0.050	200.7/6010	11/07/95	KW	1
Chromium, Dissolved	<0.015	mg/L	1.0	0.015	200.7/6010	11/06/95	KW	1
Chromium, Hexavalent Dissolved	<0.015	mg/L	1.0	0.015	6010	10/31/95	KW	2
Chromium, Trivalent Dissolved	<0.015	mg/L	1.0	0.015	Calculation	11/20/95	DN	
Iron, Dissolved	13.	mg/L	1.0	0.025	200.7/6010	11/07/95	KW	1
Lead, Dissolved	<0.005	mg/L	1.0	0.005	200.7/6010	11/06/95	KW	1
Magnesium, Dissolved	1.6	mg/L	1.0	0.050	200.7/6010	11/07/95	KW	1
Manganese, Dissolved	0.82	mg/L	1.0	0.005	200.7/6010	11/06/95	KW	1
Potassium, Dissolved	<3	mg/L	1.0	3	200.7/6010	11/03/95	NH	1
Silicon, Dissolved JCD 6/19/96	6.5	mg/L	10	0.2	200.7/6010	11/06/95	NH	1
Sodium, Dissolved	41.	mg/L	1.0	1.	200.7/6010	11/03/95	NH	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/23/95 by VM using 3010
(2) Sample Preparation on 10/17/95 by GFB using 7195

12/06/95

LJO/ejnjbb(dw)
LJ23ICW1
CC: OLIN-TN STEVE MORROW
SMITH-R. SACKS
PTI-CHRIS SELLSTONE

340 County Road, Westbrook, ME 04092
Tel: (207) 874-2400 Fax: (207) 775-4029

One Lafayette Drive, Hampton, NH 03842

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1622-21
Report Date: 12/06/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
GW-42S (FILT)	Aqueous	T. EBNER	10/17/95	10/17/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Bicarbonate,Dissolved as HCO3	<20	mg/L	1.0	20	APHA 406C	10/24/95	CM	
Carbonate, Dissolved as CaCO3	<20	mg/L	1.0	20	APHA 406C	10/24/95	CM	
Nitrate as N, Dissolved	<0.05	mg/L	1.0	0.05	353.2/1	10/25/95	NH	
Nitrite as N, Dissolved	<0.050	mg/L	1.0	0.050	353.2	10/19/95	CM	
Organic Carbon, Dissolved (DOC)	11.	mg/L	1.0	1.0	415.1	11/03/95	LT	
Phosphorus, Dissolved as P	<0.10	mg/L	1.0	0.10	365.4	10/26/95	CM	1
Solids-Filt Residue, Dissolved	210.	mg/L	1.0	10	160.1	10/19/95	JF	2

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/25/95 by CLM
(2) Sample Preparation on 10/18/95 by JF

12/06/95

LJO/ejnjbb(dw)

CC: OLIN-TN STEVE MORROW
SMITH-R. SACKS
PTI-CHRIS SELLSTONE

Katahdin
ANALYTICAL SERVICES

A WBE Laboratory

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1622-22
Report Date: 12/06/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-42D (FILT)	Aqueous	T. EBNER	10/17/95	10/17/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Dissolved	1800.	mg/L	200	0.10	200.7/6010	11/07/95	KW	1
Arsenic, Dissolved	<10	mg/L	2000	0.005	200.7/6010	11/07/95	KW	1,2
Barium, Dissolved	<1.0	mg/L	200	0.005	200.7/6010	11/06/95	KW	1,2
Calcium, Dissolved	440.	mg/L	200	0.050	200.7/6010	11/07/95	KW	1
Chromium, Dissolved	2600	mg/L	5000	0.015	200.7/6010	11/06/95	KW	1
Chromium, Hexavalent Dissolved	6.4	mg/L	1.0	0.015	6010	11/03/95	KW	3
Chromium, Trivalent Dissolved	2600	mg/L	1.0	0.015	Calculation	11/20/95	DN	
Iron, Dissolved	1600.	mg/L	200	0.025	200.7/6010	11/07/95	KW	1
Lead, Dissolved	<1.0	mg/L	200	0.005	200.7/6010	11/06/95	KW	1,2
Magnesium, Dissolved	1100	mg/L	200	0.050	200.7/6010	11/07/95	KW	1
Manganese, Dissolved	470	mg/L	1000	0.005	200.7/6010	11/06/95	KW	1
Potassium, Dissolved	<60.	mg/L	20	3	200.7/6010	11/03/95	NH	1,2
Silicon, Dissolved JW 6/19/96	87 ~~90.~~	mg/L	50	0.2	200.7/6010	11/06/95	NH	1
Sodium, Dissolved	19000.	mg/L	100	1.	200.7/6010	11/06/95	NH	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/23/95 by VM using 3010
(2) The laboratory's Practical Quantitation Level could not be achieved for this parameter due to sample composition, matrix effects, sample volume, or quantity used for analysis.
(3) Sample Preparation on 10/17/95 by GFB using 7195

12/06/95

LJO/ejnejn
LJ23ICW1
CC: OLIN-TN STEVE MORROW
SMITH-R. SACKS
PTI-CHRIS SELLSTONE

Katahdin
ANALYTICAL SERVICES

A WBE Laboratory

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1622-22
Report Date: 12/06/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-42D (FILT)	Aqueous	T. EBNER	10/17/95	10/17/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Bicarbonate,Dissolved as HCO3	NR	mg/L	1.0	20	APHA 406C	10/24/95	CM	1
Carbonate, Dissolved as CaCO3	NR	mg/L	1.0	20	APHA 406C	10/24/95	CM	2
Nitrate as N, Dissolved	3.9	mg/L	1.0	0.5	353.2/1	10/25/95	NH	
Nitrite as N, Dissolved	1.2	mg/L	8.0	0.050	353.2	10/19/95	CM	
Organic Carbon, Dissolved (DOC)	2700.	mg/L	20	1.0	415.1	11/03/95	LT	
Phosphorus, Dissolved as P	18.	mg/L	10	0.10	365.4	10/26/95	CM	3
Solids-Filt Residue, Dissolved	73000.	mg/L	50	10	160.1	10/20/95	JF	4

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Initial sample pH was <4.5. Bicarbonate could not be analyzed.
(2) Initial sample pH was <4.5. Carbonate could not be analyzed.
(3) Sample Preparation on 10/25/95 by CLM
(4) Sample Preparation on 10/19/95 by JF

12/06/95

LJO/ejnjbb(dw)

CC: OLIN-TN STEVE MORROW
SMITH-R. SACKS
PTI-CHRIS SELLSTONE

340 County Road, Westbrook, ME 04092
Tel: (207) 874-2400 Fax: (207) 775-4029

One Lafayette Drive, Hampton, NH 03842

Katahdin
ANALYTICAL SERVICES

A WBE Laboratory

Lab Number : WL-1622-23
Report Date: 12/06/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
FIELD REP 2 (FILT)	Aqueous	T. EBNER	10/17/95	10/17/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Dissolved	2000.	mg/L	200	0.10	200.7/6010	11/07/95	KW	1
Arsenic, Dissolved	<10	mg/L	2000	0.005	200.7/6010	11/07/95	KW	1,2
Barium, Dissolved	<1.0	mg/L	200	0.005	200.7/6010	11/06/95	KW	1,2
Calcium, Dissolved	560.	mg/L	200	0.050	200.7/6010	11/07/95	KW	1
Chromium, Dissolved	2900	mg/L	5000	0.015	200.7/6010	11/06/95	KW	1
Chromium, Hexavalent Dissolved	6.4	mg/L	1.0	0.015	6010	11/03/95	KW	3
Chromium, Trivalent Dissolved	2900	mg/L	1.0	0.015	Calculation	11/20/95	DN	
Iron, Dissolved	1800.	mg/L	200	0.025	200.7/6010	11/07/95	KW	1
Lead, Dissolved	<1.0	mg/L	200	0.005	200.7/6010	11/06/95	KW	1,2
Magnesium, Dissolved	1200.	mg/L	200	0.050	200.7/6010	11/07/95	KW	1
Manganese, Dissolved	550	mg/L	1000	0.005	200.7/6010	11/06/95	KW	1
Potassium, Dissolved ya 6/19/96	62 ~~60~~	mg/L	20	3	200.7/6010	11/03/95	NH	1
Silicon, Dissolved	96 ~~100.~~	mg/L	50	0.2	200.7/6010	11/06/95	NH	1
Sodium, Dissolved	21000.	mg/L	100	1.	200.7/6010	11/06/95	NH	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/23/95 by VM using 3010
(2) The laboratory's Practical Quantitation Level could not be achieved for this parameter due to sample composition, matrix effects, sample volume, or quantity used for analysis.
(3) Sample Preparation on 10/17/95 by GFB using 7195

12/06/95

LJO/ejnejn
LJ23ICW1
CC: OLIN-TN STEVE MORROW
SMITH-R. SACKS
PTI-CHRIS SELLSTONE

Katahdin
ANALYTICAL SERVICES

A WBE Laboratory

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1622-23
Report Date: 12/06/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
FIELD REP 2 (FILT)	Aqueous	T. EBNER	10/17/95	10/17/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Bicarbonate,Dissolved as HCO3	NR	mg/L	1.0	20	APHA 406C	10/24/95	CM	1
Carbonate, Dissolved as CaCO3	NR	mg/L	1.0	20	APHA 406C	10/24/95	CM	2
Nitrate as N, Dissolved	3.6	mg/L	1.0	0.5	353.2/1	10/25/95	NH	
Nitrite as N, Dissolved	1.8	mg/L	8.0	0.050	353.2	10/19/95	CM	
Organic Carbon, Dissolved (DOC)	2500.	mg/L	20	1.0	415.1	11/03/95	LT	
Phosphorus, Dissolved as P	27.	mg/L	10	0.10	365.4	10/26/95	CM	3
Solids-Filt Residue, Dissolved	89000.	mg/L	50	10	160.1	10/20/95	JF	4

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

(1) Initial sample pH was <4.5. Bicarbonate could not be analyzed.
(2) Initial sample pH was <4.5. Carbonate could not be analyzed.
(3) Sample Preparation on 10/25/95 by CLM
(4) Sample Preparation on 10/19/95 by JF

12/06/95

LJO/ejnjbb(dw)

CC: OLIN-TN STEVE MORROW
SMITH-R. SACKS
PTI-CHRIS SELLSTONE

Katahdin
ANALYTICAL SERVICES

A WBE Laboratory

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1622-24
Report Date: 12/06/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-43S (FILT)	Aqueous	T. EBNER	10/17/95	10/17/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Dissolved	<0.10	mg/L	1.0	0.10	200.7/6010	11/07/95	KW	1
Arsenic, Dissolved	<0.005	mg/L	1.0	0.005	200.7/6010	11/07/95	KW	1
Barium, Dissolved	0.065	mg/L	1.0	0.005	200.7/6010	11/06/95	KW	1
Calcium, Dissolved	49.	mg/L	1.0	0.050	200.7/6010	11/07/95	KW	1
Chromium, Dissolved	<0.015	mg/L	1.0	0.015	200.7/6010	11/06/95	KW	1
Chromium, Hexavalent Dissolved	<0.015	mg/L	1.0	0.015	6010	10/31/95	KW	2
Chromium, Trivalent Dissolved	<0.015	mg/L	1.0	0.015	Calculation	11/20/95	DN	
Iron, Dissolved	0.048	mg/L	1.0	0.025	200.7/6010	11/07/95	KW	1
Lead, Dissolved	<0.005	mg/L	1.0	0.005	200.7/6010	11/06/95	KW	1
Magnesium, Dissolved	8.4	mg/L	1.0	0.050	200.7/6010	11/07/95	KW	1
Manganese, Dissolved	2.0	mg/L	1.0	0.005	200.7/6010	11/06/95	KW	1
Potassium, Dissolved	<3	mg/L	1.0	3	200.7/6010	11/03/95	NH	1
Silicon, Dissolved	14.	mg/L	10	0.2	200.7/6010	11/06/95	NH	1
Sodium, Dissolved	82.	mg/L	1.0	1.	200.7/6010	11/03/95	NH	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/23/95 by VM using 3010
(2) Sample Preparation on 10/17/95 by GFB using 7195

12/06/95

LJO/ejnjbb(dw)
LJ23ICW1
CC: OLIN-TN STEVE MORROW
SMITH-R. SACKS
PTI-CHRIS SELLSTONE

Katahdin ANALYTICAL SERVICES

A WBE Laboratory

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1622-24
Report Date: 12/06/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-43S (FILT)	Aqueous	T. EBNER	10/17/95	10/17/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Bicarbonate,Dissolved as HCO3	76.	mg/L	1.0	20	APHA 406C	10/24/95	CM	
Carbonate, Dissolved as CaCO3	<20	mg/L	1.0	20	APHA 406C	10/24/95	CM	
Nitrate as N, Dissolved	5.6	mg/L	1.0	0.1	353.2/1	10/25/95	NH	
Nitrite as N, Dissolved	<0.050	mg/L	1.0	0.050	353.2	10/19/95	CM	
Organic Carbon, Dissolved (DOC)	8.1	mg/L	1.0	1.0	415.1	11/06/95	LT	
Phosphorus, Dissolved as P	<0.10	mg/L	1.0	0.10	365.4	10/26/95	CM	1
Solids-Filt Residue, Dissolved	720.	mg/L	1.0	10	160.1	10/19/95	JF	2

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/25/95 by CLM
(2) Sample Preparation on 10/18/95 by JF

12/06/95

LJO/ejnjbb(dw)

CC: OLIN-TN STEVE MORROW
SMITH-R. SACKS
PTI-CHRIS SELLSTONE

Katahdin
ANALYTICAL SERVICES

A WBE Laboratory

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1622-25
Report Date: 12/06/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-43S (FILT/DUP)	Aqueous	T. EEVER	10/17/95	10/17/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Dissolved	<0.10	mg/L	1.0	0.10	200.7/6010	11/07/95	KW	1
Arsenic, Dissolved	<0.005	mg/L	1.0	0.005	200.7/6010	11/07/95	KW	1
Barium, Dissolved	0.069	mg/L	1.0	0.005	200.7/6010	11/06/95	KW	1
Calcium, Dissolved	49.6	mg/L	1.0	0.050	200.7/6010	11/07/95	KW	1
Chromium, Dissolved	<0.015	mg/L	1.0	0.015	200.7/6010	11/06/95	KW	1
Chromium, Hexavalent Dissolved	<0.015	mg/L	1.0	0.015	6010	10/31/95	KW	2
Chromium, Trivalent Dissolved	<0.015	mg/L	1.0	0.015	Calculation	11/20/95	DN	
Iron, Dissolved	0.053	mg/L	1.0	0.025	200.7/6010	11/07/95	KW	1
Lead, Dissolved	<0.005	mg/L	1.0	0.005	200.7/6010	11/06/95	KW	1
Magnesium, Dissolved	8.62	mg/L	1.0	0.050	200.7/6010	11/07/95	KW	1
Manganese, Dissolved	2.03	mg/L	2.0	0.005	200.7/6010	11/06/95	KW	1
Potassium, Dissolved	<3	mg/L	1.0	3	200.7/6010	11/03/95	NH	1
Silicon, Dissolved	15.	mg/L	10	0.2	200.7/6010	11/06/95	NH	1
Sodium, Dissolved	87.	mg/L	1.0	1.	200.7/6010	11/03/95	NH	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/23/95 by VM using 3010
(2) Sample Preparation on 10/17/95 by GFB using 7195

12/06/95

LJO/ejnjbb(dw)
LJ23ICW1
CC: OLIN-TN STEVE MORROW
SMITH-R. SACKS
PTI-CHRIS SELLSTONE

340 County Road, Westbrook, ME 04092
Tel: (207) 874-2400 Fax: (207) 775-4029

One Lafayette Drive, Hampton, NH 03842

Katahdin
ANALYTICAL SERVICES

A WBE Laboratory

Lab Number : WL-1622-25
Report Date: 12/06/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-43S (FILT/DUP)	Aqueous	T. EBNER	10/17/95	10/17/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Bicarbonate,Dissolved as HCO3	84.5	mg/L	1.0	20	APHA 406C	10/24/95	CM	
Carbonate, Dissolved as CaCO3	<20.0	mg/L	1.0	20	APHA 406C	10/24/95	CM	
Nitrate as N, Dissolved	5.4	mg/L	1.0	0.1	353.2/1	10/25/95	NH	
Nitrite as N, Dissolved	<0.050	mg/L	1.0	0.050	353.2	10/19/95	CM	
Organic Carbon, Dissolved (DOC)	7.78	mg/L	1.0	1.0	415.1	11/06/95	LT	
Phosphorus, Dissolved as P	<0.100	mg/L	1.0	0.10	365.4	10/26/95	CM	1
Solids-Filt Residue, Dissolved	656	mg/L	1.0	10	160.1	10/19/95	JF	2

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/25/95 by CLM
(2) Sample Preparation on 10/18/95 by JF

12/06/95

LJO/ejnjbb(dw)/pph

CC: OLIN-TN STEVE MORROW
SMITH-R. SACKS
PTI-CHRIS SELLSTONE

340 County Road, Westbrook, ME 04092
Tel: (207) 874-2400 Fax: (207) 775-4029

One Lafayette Drive, Hampton, NH 03842

Katahdin
ANALYTICAL SERVICES

A WBE Laboratory

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1622-26
Report Date: 12/06/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-43S (FILT/MS)	Aqueous	T. EBNER	10/17/95	10/17/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Dissolved	2.07	mg/L	2.0	0.10	200.7/6010	11/07/95	KW	1
Arsenic, Dissolved	1.96	mg/L	2.0	0.005	200.7/6010	11/07/95	KW	1
Barium, Dissolved	1.95	mg/L	1.0	0.005	200.7/6010	11/06/95	KW	1
Calcium, Dissolved	56.3	mg/L	2.0	0.050	200.7/6010	11/07/95	KW	1
Chromium, Dissolved	0.205	mg/L	1.0	0.015	200.7/6010	11/06/95	KW	1
Chromium, Hexavalent Dissolved	2.14	mg/L	1.0	0.015	6010	10/31/95	KW	2
Chromium, Trivalent Dissolved	Not Appl.	mg/L	1.0	0.015	Calculation	11/20/95	DN	3
Iron, Dissolved	1.09	mg/L	2.0	0.025	200.7/6010	11/07/95	KW	1
Lead, Dissolved	0.525	mg/L	1.0	0.005	200.7/6010	11/06/95	KW	1
Magnesium, Dissolved	14.4	mg/L	2.0	0.050	200.7/6010	11/07/95	KW	1
Manganese, Dissolved	2.71	mg/L	2.0	0.005	200.7/6010	11/06/95	KW	1
Potassium, Dissolved	27.	mg/L	1.0	3	200.7/6010	11/03/95	NH	1
Silicon, Dissolved	19.	mg/L	10	0.2	200.7/6010	11/06/95	NH	1
Sodium, Dissolved	100.	mg/L	1.0	1.	200.7/6010	11/03/95	NH	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/23/95 by VM using 3010
(2) Sample Preparation on 10/17/95 by GFB using 7195
(3) This is a calculation and is not applicable to a matrix spike.

12/06/95

LJO/ejnjbb(dw)
LJ23ICW1
CC: OLIN-TN STEVE MORROW
SMITH-R. SACKS
PTI-CHRIS SELLSTONE

Katahdin ANALYTICAL SERVICES

A WBE Laboratory

Lab Number : WL-1622-26
Report Date: 12/06/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-43S (FILT/MS)	Aqueous	T. EBNER	10/17/95	10/17/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Bicarbonate,Dissolved as HCO3	83.5	mg/L	1.0	20	APHA 406C	10/24/95	CM	
Carbonate, Dissolved as CaCO3	<20.0	mg/L	1.0	20	APHA 406C	10/24/95	CM	
Nitrate as N, Dissolved	Not Appl.	mg/L	1.0	0.1	353.2/1	10/25/95	NH	1
Nitrite as N, Dissolved	<0.050	mg/L	1.0	0.050	353.2	10/19/95	CM	
Organic Carbon, Dissolved (DOC)	47.2	mg/L	1.0	1.0	415.1	11/06/95	LT	
Phosphorus, Dissolved as P	0.297	mg/L	1.0	0.10	365.4	11/10/95	CM	2
Solids-Filt Residue, Dissolved	Not Appl.	mg/L	1.0	10	160.1	10/19/95	JF	3,4

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) This is a calculation and is not applicable for this parameter.
(2) Sample Preparation on 11/09/95 by CLM
(3) Sample Preparation on 10/18/95 by JF
(4) Matrix spike analysis is not applicable for this parameter.

12/06/95

LJO/ejnjbb(dw)/pph

CC: OLIN-TN STEVE MORROW
SMITH-R. SACKS
PTI-CHRIS SELLSTONE

Katahdin
ANALYTICAL SERVICES

A WBE Laboratory

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1622-27
Report Date: 12/06/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-43D (FILT)	Aqueous	T. EBNER	10/17/95	10/17/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Dissolved	420.	mg/L	5.0	0.10	200.7/6010	11/07/95	KW	1
Arsenic, Dissolved	<2.5	mg/L	500	0.005	200.7/6010	11/07/95	KW	1,2
Barium, Dissolved	<0.025	mg/L	5.0	0.005	200.7/6010	11/06/95	KW	1,2
Calcium, Dissolved	290.	mg/L	5.0	0.050	200.7/6010	11/07/95	KW	1
Chromium, Dissolved	320	mg/L	500	0.015	200.7/6010	11/06/95	KW	1
Chromium, Hexavalent Dissolved	1.6	mg/L	1.0	0.015	6010	10/31/95	KW	3
Chromium, Trivalent Dissolved	320	mg/L	1.0	0.015	Calculation	11/20/95	DN	
Iron, Dissolved	570.	mg/L	5.0	0.025	200.7/6010	11/07/95	KW	1
Lead, Dissolved	<0.025	mg/L	5.0	0.005	200.7/6010	11/06/95	KW	1,2
Magnesium, Dissolved	340.	mg/L	5.0	0.050	200.7/6010	11/07/95	KW	1
Manganese, Dissolved	66.	mg/L	100	0.005	200.7/6010	11/06/95	KW	1
Potassium, Dissolved	<30.	mg/L	10	3	200.7/6010	11/03/95	NH	1,2
Silicon, Dissolved	39.	mg/L	10	0.2	200.7/6010	11/06/95	NH	1
Sodium, Dissolved	4300.	mg/L	50	1.	200.7/6010	11/06/95	NH	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/23/95 by VM using 3010
(2) The laboratory's Practical Quantitation Level could not be achieved for this parameter due to sample composition, matrix effects, sample volume, or quantity used for analysis.
(3) Sample Preparation on 10/17/95 by GFB using 7195

12/06/95

LJO/ejnejn
LJ23ICW1
CC: OLIN-TN STEVE MORROW
SMITH-R. SACKS
PTI-CHRIS SELLSTONE

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1622-27
Report Date: 12/06/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-43D (FILT)	Aqueous	T. EBNER	10/17/95	10/17/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Bicarbonate,Dissolved as HCO3	NR	mg/L	1.0	20	APHA 406C	10/24/95	CM	1
Carbonate, Dissolved as CaCO3	NR	mg/L	1.0	20	APHA 406C	10/24/95	CM	2
Nitrate as N, Dissolved	2.4	mg/L	1.0	0.5	353.2/1	10/25/95	NH	
Nitrite as N, Dissolved	<0.050	mg/L	1.0	0.050	353.2	10/19/95	CM	
Organic Carbon, Dissolved (DOC)	540.	mg/L	2.0	1.0	415.1	11/06/95	LT	
Phosphorus, Dissolved as P	3.0	mg/L	10	0.10	365.4	10/26/95	CM	3
Solids-Filt Residue, Dissolved	23000.	mg/L	20	10	160.1	10/20/95	JF	4

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Initial sample pH was <4.5. Bicarbonate could not be analyzed.
(2) Initial sample pH was <4.5. Carbonate could not be analyzed.
(3) Sample Preparation on 10/25/95 by CLM
(4) Sample Preparation on 10/19/95 by JF

12/06/95

LJO/ejnjbb(dw)

CC: OLIN-TN STEVE MORROW
SMITH-R. SACKS
PTI-CHRIS SELLSTONE

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1622-28
Report Date: 12/06/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-400 (FILT)	Aqueous	T. EBNER	10/17/95	10/17/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Dissolved	<0.10	mg/L	1.0	0.10	200.7/6010	11/07/95	KW	1
Arsenic, Dissolved	<0.005	mg/L	1.0	0.005	200.7/6010	11/07/95	KW	1
Barium, Dissolved	<0.005	mg/L	1.0	0.005	200.7/6010	11/06/95	KW	1
Calcium, Dissolved	<0.050	mg/L	1.0	0.050	200.7/6010	11/07/95	KW	1
Chromium, Dissolved	<0.015	mg/L	1.0	0.015	200.7/6010	11/06/95	KW	1
Chromium, Hexavalent Dissolved	<0.015	mg/L	1.0	0.015	6010	10/31/95	KW	2
Chromium, Trivalent Dissolved	<0.015	mg/L	1.0	0.015	Calculation	11/20/95	DN	
Iron, Dissolved	0.21	mg/L	1.0	0.025	200.7/6010	11/07/95	KW	1
Lead, Dissolved	<0.005	mg/L	1.0	0.005	200.7/6010	11/07/95	KW	1
Magnesium, Dissolved	<0.050	mg/L	1.0	0.050	200.7/6010	11/07/95	KW	1
Manganese, Dissolved	<0.005	mg/L	1.0	0.005	200.7/6010	11/06/95	KW	1
Potassium, Dissolved	<3	mg/L	1.0	3	200.7/6010	11/03/95	NH	1
Silicon, Dissolved	<0.2	mg/L	1.0	0.2	200.7/6010	11/06/95	NH	1
Sodium, Dissolved	<1.	mg/L	1.0	1.	200.7/6010	11/03/95	NH	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/23/95 by VM using 3010
(2) Sample Preparation on 10/17/95 by GFB using 7195

12/06/95

LJO/ejnejn
LJ23ICW1
CC: OLIN-TN STEVE MORROW
SMITH-R. SACKS
PTI-CHRIS SELLSTONE

340 County Road, Westbrook, ME 04092
Tel (207) 874-2400 Fax: (207) 775-4029

One Lafayette Drive, Hampton, NH 03842

Katahdin
ANALYTICAL SERVICES

A WBE Laboratory

Lab Number : WL-1622-28
Report Date: 12/06/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-400 (FILT)	Aqueous	T. EBNER	10/17/95	10/17/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Bicarbonate,Dissolved as HCO3	<20	mg/L	1.0	20	APHA 406C	10/24/95	CM	
Carbonate, Dissolved as CaCO3	<20	mg/L	1.0	20	APHA 406C	10/24/95	CM	
Nitrate as N, Dissolved	0.13	mg/L	1.0	0.05	353.2/1	10/24/95	NH	
Nitrite as N, Dissolved	<0.050	mg/L	1.0	0.050	353.2	10/19/95	CM	
Organic Carbon, Dissolved (DOC)	<1.0	mg/L	1.0	1.0	415.1	11/06/95	LT	
Phosphorus, Dissolved as P	<0.10	mg/L	1.0	0.10	365.4	10/26/95	CM	1
Solids-Filt Residue, Dissolved	29.	mg/L	1.0	10	160.1	10/19/95	JF	2

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/25/95 by CLM
(2) Sample Preparation on 10/18/95 by JF

12/06/95

LJO/ejnjbb(dw)

CC: OLIN-TN STEVE MORROW
SMITH-R. SACKS
PTI-CHRIS SELLSTONE

Katahdin
ANALYTICAL SERVICES

A WBE Laboratory

Lab Number : WL-1622-29
Report Date: 12/06/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-50S (FILT)	Aqueous	T. EBNER	10/17/95	10/17/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Dissolved	<0.10	mg/L	1.0	0.10	200.7/6010	11/07/95	KW	1
Arsenic, Dissolved	<0.005	mg/L	1.0	0.005	200.7/6010	11/07/95	KW	1
Barium, Dissolved	0.014	mg/L	1.0	0.005	200.7/6010	11/06/95	KW	1
Calcium, Dissolved	12.	mg/L	1.0	0.050	200.7/6010	11/07/95	KW	1
Chromium, Dissolved	<0.015	mg/L	1.0	0.015	200.7/6010	11/06/95	KW	1
Chromium, Hexavalent Dissolved	<0.015	mg/L	1.0	0.015	6010	10/31/95	KW	2
Chromium, Trivalent Dissolved	<0.015	mg/L	1.0	0.015	Calculation	11/20/95	DN	
Iron, Dissolved	0.057	mg/L	1.0	0.025	200.7/6010	11/07/95	KW	1
Lead, Dissolved	<0.005	mg/L	1.0	0.005	200.7/6010	11/07/95	KW	1
Magnesium, Dissolved	2.8	mg/L	1.0	0.050	200.7/6010	11/07/95	KW	1
Manganese, Dissolved	0.37	mg/L	1.0	0.005	200.7/6010	11/06/95	KW	1
Potassium, Dissolved	3.1	mg/L	1.0	3	200.7/6010	11/03/95	NH	1
Silicon, Dissolved	7.4	mg/L	10	0.2	200.7/6010	11/06/95	NH	1
Sodium, Dissolved	66.	mg/L	1.0	1.	200.7/6010	11/03/95	NH	1

ND 6/19/96

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/23/95 by VM using 3010
(2) Sample Preparation on 10/17/95 by GFB using 7195

12/06/95

LJO/ejnjbb(dw)
LJ23ICW1
CC: OLIN-TN STEVE MORROW
SMITH-R. SACKS
PTI-CHRIS SELLSTONE

Lab Number : WL-1622-29
Report Date: 12/06/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-50S (FILT)	Aqueous	T. EBNER	10/17/95	10/17/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Bicarbonate,Dissolved as HCO3	67.	mg/L	1.0	20	APHA 406C	10/24/95	CM	
Carbonate, Dissolved as CaCO3	<20	mg/L	1.0	20	APHA 406C	10/24/95	CM	
Nitrate as N, Dissolved	0.63	mg/L	1.0	0.05	353.2/1	10/25/95	NH	
Nitrite as N, Dissolved	<0.050	mg/L	1.0	0.050	353.2	10/19/95	CM	
Organic Carbon, Dissolved (DOC)	3.5	mg/L	1.0	1.0	415.1	11/06/95	LT	
Phosphorus, Dissolved as P	<0.10	mg/L	1.0	0.10	365.4	10/26/95	CM	1
Solids-Filt Residue, Dissolved	290.	mg/L	1.0	10	160.1	10/19/95	JF	2

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/25/95 by CLM
(2) Sample Preparation on 10/18/95 by JF

12/06/95

LJO/ejnjbb(dw)

CC: OLIN-TN STEVE MORROW
SMITH-R. SACKS
PTI-CHRIS SELLSTONE

Katahdin
ANALYTICAL SERVICES

A WBE Laboratory

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1622-30
Report Date: 12/06/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-50D (FILT)	Aqueous	T. EBNER	10/17/95	10/17/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Dissolved	<0.10	mg/L	1.0	0.10	200.7/6010	11/07/95	KW	1
Arsenic, Dissolved	<0.005	mg/L	1.0	0.005	200.7/6010	11/07/95	KW	1
Barium, Dissolved	0.017	mg/L	1.0	0.005	200.7/6010	11/06/95	KW	1
Calcium, Dissolved	430.	mg/L	1.0	0.050	200.7/6010	11/07/95	KW	1
Chromium, Dissolved	<0.015	mg/L	1.0	0.015	200.7/6010	11/06/95	KW	1
Chromium, Hexavalent Dissolved	<0.015	mg/L	1.0	0.015	6010	10/31/95	KW	2
Chromium, Trivalent Dissolved	<0.015	mg/L	1.0	0.015	Calculation	11/20/95	DN	
Iron, Dissolved	0.35	mg/L	1.0	0.025	200.7/6010	11/07/95	KW	1
Lead, Dissolved	<0.005	mg/L	1.0	0.005	200.7/6010	11/07/95	KW	1
Magnesium, Dissolved	100	mg/L	1.0	0.050	200.7/6010	11/07/95	KW	1
Manganese, Dissolved	13.	mg/L	20	0.005	200.7/6010	11/07/95	KW	1
Potassium, Dissolved	39.	mg/L	1.0	3	200.7/6010	11/03/95	NH	1
Silicon, Dissolved uo 6/19/96	- 8.1	mg/L	10	0.2	200.7/6010	11/06/95	NH	1
Sodium, Dissolved	1300.	mg/L	50	1.	200.7/6010	11/06/95	NH	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/23/95 by VM using 3010
(2) Sample Preparation on 10/17/95 by GFB using 7195

12/06/95

LJO/ejnejn
LJ23ICW1
CC: OLIN-TN STEVE MORROW
SMITH-R. SACKS
PTI-CHRIS SELLSTONE

340 County Road, Westbrook, ME 04092
Tel: (207) 874-2400 Fax: (207) 775-4029

One Lafayette Drive, Hampton, NH 03842

Katahdin
ANALYTICAL SERVICES

A WBE Laboratory

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1622-30
Report Date: 12/06/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-50D (FILT)	Aqueous	T. EBNER	10/17/95	10/17/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Bicarbonate,Dissolved as HCO3	510.	mg/L	1.0	20	APHA 406C	10/24/95	CM	
Carbonate, Dissolved as CaCO3	<20	mg/L	1.0	20	APHA 406C	10/24/95	CM	
Nitrate as N, Dissolved	0.36	mg/L	1.0	0.05	353.2/1	10/25/95	NH	
Nitrite as N, Dissolved	<0.050	mg/L	1.0	0.050	353.2	10/19/95	CM	
Organic Carbon, Dissolved (DOC)	31.	mg/L	1.0	1.0	415.1	11/06/95	LT	
Phosphorus, Dissolved as P	<0.10	mg/L	1.0	0.10	365.4	10/26/95	CM	1
Solids-Filt Residue, Dissolved	6000.	mg/L	5.0	10	160.1	10/20/95	JF	2

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

(1) Sample Preparation on 10/25/95 by CLM
(2) Sample Preparation on 10/19/95 by JF

12/06/95

LJO/ejnjbb(dw)

CC: OLIN-TN STEVE MORROW
SMITH-R. SACKS
PTI-CHRIS SELLSTONE

Katahdin
ANALYTICAL SERVICES

A WBE Laboratory

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1622-31
Report Date: 12/06/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-40S (FILT)	Aqueous	T. EBNER	10/17/95	10/17/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Dissolved	0.50	mg/L	1.0	0.10	200.7/6010	11/30/95	EM	1
Arsenic, Dissolved	<0.005	mg/L	1.0	0.005	200.7/6010	11/30/95	EM	1
Barium, Dissolved	0.038	mg/L	1.0	0.005	200.7/6010	11/30/95	EM	1
Calcium, Dissolved	B12	mg/L	1.0	0.050	200.7/6010	11/30/95	EM	1,2
Chromium, Dissolved	<0.015	mg/L	1.0	0.015	200.7/6010	11/30/95	EM	1
Chromium, Hexavalent Dissolved	<0.015	mg/L	1.0	0.015	6010	10/31/95	KW	3
Chromium, Trivalent Dissolved	<0.015	mg/L	1.0	0.015	Calculation	11/30/95	DN	
Iron, Dissolved	0.037	mg/L	1.0	0.025	200.7/6010	11/30/95	EM	1
Lead, Dissolved	<0.005	mg/L	1.0	0.005	200.7/6010	11/30/95	EM	1
Magnesium, Dissolved	1.1	mg/L	1.0	0.050	200.7/6010	11/30/95	EM	1
Manganese, Dissolved	0.057	mg/L	1.0	0.005	200.7/6010	11/30/95	EM	1
Potassium, Dissolved	1.5	mg/L	1.0	0.50	200.7/6010	12/01/95	EM	1
Silicon, Dissolved	2.6	mg/L	1.0	0.10	200.7/6010	12/02/95	EM	1
Sodium, Dissolved	18	mg/L	1.0	0.10	200.7/6010	12/01/95	EM	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 11/22/95 by JAF using 3010
(2) A result reported with a "B" qualifier indicates the analyte was detected in the laboratory method blank analyzed concurrently with the sample. The concentration of calcium in the method blank was 0.10 mg/L.
(3) Sample Preparation on 10/17/95 by GFB using 7195

12/06/95

LJO/ejnejn
LK22ICW3
CC: OLIN-TN STEVE MORROW
SMITH-R. SACKS
PTI-CHRIS SELLSTONE

Katahdin
ANALYTICAL SERVICES

A WBE Laboratory

Lab Number : WL-1622-31
Report Date: 12/06/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-40S (FILT)	Aqueous	T. EBNER	10/17/95	10/17/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Bicarbonate,Dissolved as HCO3	<20	mg/L	1.0	20	APHA 406C	10/24/95	CM	
Carbonate, Dissolved as CaCO3	<20	mg/L	1.0	20	APHA 406C	10/24/95	CM	
Nitrate as N, Dissolved	0.32	mg/L	1.0	0.05	353.2/1	10/25/95	NH	
Nitrite as N, Dissolved	<0.050	mg/L	1.0	0.050	353.2	10/19/95	CM	
Organic Carbon, Dissolved (DOC)	1.7	mg/L	1.0	1.0	415.1	11/06/95	LT	
Phosphorus, Dissolved as P	<0.10	mg/L	1.0	0.10	365.4	10/26/95	CM	1
Solids-Filt Residue, Dissolved	120.	mg/L	1.0	10	160.1	10/19/95	JF	2

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/25/95 by CLM
(2) Sample Preparation on 10/18/95 by JF

12/06/95

LJO/ejnjbb(dw)

CC: OLIN-TN STEVE MORROW
SMITH-R. SACKS
PTI-CHRIS SELLSTONE

Katahdin
ANALYTICAL SERVICES

A WBE Laboratory

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1622-32
Report Date: 12/06/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
GW-40D (FILT)	Aqueous	T. EBNER	10/17/95	10/17/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Dissolved	<0.10	mg/L	1.0	0.10	200.7/6010	11/30/95	EM	1
Arsenic, Dissolved	<0.005	mg/L	1.0	0.005	200.7/6010	11/30/95	EM	1
Barium, Dissolved	0.018	mg/L	1.0	0.005	200.7/6010	11/30/95	EM	1
Calcium, Dissolved	B170	mg/L	1.0	0.050	200.7/6010	11/30/95	EM	1,2
Chromium, Dissolved	<0.015	mg/L	1.0	0.015	200.7/6010	11/30/95	EM	1
Chromium, Hexavalent Dissolved	<0.015	mg/L	1.0	0.015	6010	10/31/95	KW	3
Chromium, Trivalent Dissolved	<0.015	mg/L	1.0	0.015	Calculation	11/30/95	DN	
Iron, Dissolved	0.11	mg/L	1.0	0.025	200.7/6010	11/30/95	EM	1
Lead, Dissolved	<0.005	mg/L	1.0	0.005	200.7/6010	11/30/95	EM	1
Magnesium, Dissolved	9.7	mg/L	1.0	0.050	200.7/6010	11/30/95	EM	1
Manganese, Dissolved	1.7	mg/L	1.0	0.005	200.7/6010	11/30/95	EM	1
Potassium, Dissolved	4.3	mg/L	1.0	0.50	200.7/6010	12/01/95	EM	1
Silicon, Dissolved	1.6	mg/L	1.0	0.10	200.7/6010	12/02/95	EM	1
Sodium, Dissolved	100	mg/L	5.0	0.10	200.7/6010	12/01/95	EM	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 11/22/95 by JAF using 3010
(2) A result reported with a "B" qualifier indicates the analyte was detected in the laboratory method blank analyzed concurrently with the sample. The concentration of calcium in the method blank was 0.10 mg/L.
(3) Sample Preparation on 10/17/95 by GFB using 7195

12/06/95

LJO/ejnejn
LK22ICW3
CC: OLIN-TN STEVE MORROW
SMITH-R. SACKS
PTI-CHRIS SELLSTONE

Katahdin
ANALYTICAL SERVICES

A WBE Laboratory

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1622-32
Report Date: 12/06/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-40D (FILT)	Aqueous	T. EBNER	10/17/95	10/17/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Bicarbonate,Dissolved as HCO3	200.	mg/L	1.0	20	APHA 406C	10/24/95	CM	
Carbonate, Dissolved as CaCO3	<20	mg/L	1.0	20	APHA 406C	10/24/95	CM	
Nitrate as N, Dissolved	0.14	mg/L	1.0	0.05	353.2/1	10/25/95	NH	
Nitrite as N, Dissolved	<0.050	mg/L	1.0	0.050	353.2	10/19/95	CM	
Organic Carbon, Dissolved (DOC)	20.	mg/L	1.0	1.0	415.1	11/06/95	LT	
Phosphorus, Dissolved as P	<0.10	mg/L	1.0	0.10	365.4	10/26/95	CM	1
Solids-Filt Residue, Dissolved	1300.	mg/L	1.0	10	160.1	10/19/95	JF	2

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/25/95 by CLM
(2) Sample Preparation on 10/18/95 by JF

12/06/95

LJO/ejnjbb(dw)

CC: OLIN-TN STEVE MORROW
SMITH-R. SACKS
PTI-CHRIS SELLSTONE

PACE, Inc., Environmental Laboratories
Elements Section
Aqueous Preparation Blank (P B W)

Client:Olin Chemicals —	associated w/
Work Order: WL1622	WL-1622-17 to
Prep. Date: October 23, 1995	-32
QC Batch ID: LJ23ICW1	

Method 3010 (HCl) **Elements:**	**Method**	**Measured Conc. (mg/L)**	**Analysis Date**	**Acceptance Limit (mg/L)**	**Notes**
Aluminum	200.7/6010	<0.100	6-Nov-95	0.100	
Arsenic	200.7/6010	<0.005	6-Nov-95	0.005	
Barium	200.7/6010	<0.005	6-Nov-95	0.005	
Calcium	200.7/6010	0.076	6-Nov-95	0.10 (PQL=0.050)	
Chromium	200.7/6010	<0.015	6-Nov-95	0.015	
Iron	200.7/6010	<0.025	7-Nov-95	0.050 (PQL=0.025)	
Lead	200.7/6010	<0.005	6-Nov-95	0.005	
Magnesium	200.7/6010	<0.050	6-Nov-95	0.050	
Manganese	200.7/6010	<0.005	6-Nov-95	0.005	
Potassium	200.7/6010	<3	3-Nov-95	3	
Sodium	200.7/6010	<1	3-Nov-95	1	
Silicon	200.7/6010	<0.2	3-Nov-95	0.2	

Notes:
1) Blank acceptance limits are equivalent to PQLs unless otherwise indicated.
2) Random low level contamination is indicated for this parameter. (if notated)

Ca – all positive results are too high for blank qual.
MO 6/17/96

PACE, Inc., Environmental Laboratories
Elements Section
Aqueous Preparation Blank (P B W)

Client: Olin Chemicals	
Work Order: WL1622	
Prep. Date: October, 20,1995	
QC Batch ID: LJ20ICW2	

associated w/
WL-16221 to 16

Method 3010 (HCl) Elements:	Method	Conc. (mg/L)	Analysis Date	Acceptance Limit (mg/L)	Notes
Aluminum	200.7/6010	<0.100	26-Oct-95	0.100	
Arsenic	200.7/6010	<0.005	1-Nov-95	0.005	
Barium	200.7/6010	<0.005	1-Nov-95	0.005	
Calcium	200.7/6010	0.275	1-Nov-95	0.10 (PQL=0.050)	2
Chromium	200.7/6010	<0.015	26-Oct-95	0.015	
Iron	200.7/6010	<0.025	1-Nov-95	0.050 (PQL=0.025)	
Lead	200.7/6010	<0.005	1-Nov-95	0.005	
Magnesium	200.7/6010	<0.050	1-Nov-95	0.050	
Manganese	200.7/6010	<0.005	1-Nov-95	0.005	
Potassium	200.7/6010	<0.500	27-Oct-95	0.500	
Sodium	200.7/6010	<0.100	27-Oct-95	0.20 (PQL=0.10)	
Silicon	200.7/6010	<0.2	6-Nov-95	0.2	

Notes:

1) Blank acceptance limits are equivalent to PQLs unless otherwise indicated.
2) Random low level contamination is indicated for this parameter. (if notated)

Ca - all positive results are too high for blank qual.

MO 6/17/96

PACE, Inc., Environmental Laboratories
Elements Section
Aqueous Preparation Blank (P B W)

Client: Olin Chemicals	
Work Order: WL1622	
Prep. Date: 11/22/95	
QC Batch ID: LK22ICW3	

associated w/ results from WL-11622-11

Method 3010 (HCl) Elements:	Method	Conc. (mg/L)	Analysis Date	Acceptance Limit (mg/L)	Notes
Aluminum	200.7/6010	<0.100	30-Nov-95	0.100	
Arsenic	200.7/6010	<0.005	30-Nov-95	0.005	
Barium	200.7/6010	<0.005	30-Nov-95	0.005	
Calcium	200.7/6010	0.104	30-Nov-95	0.10 (PQL=0.050)	2
Chromium	200.7/6010	<0.015	30-Nov-95	0.015	
Iron	200.7/6010	0.026	30-Nov-95	0.050 (PQL=0.025)	
Lead	200.7/6010	<0.005	30-Nov-95	0.005	
Magnesium	200.7/6010	<0.050	30-Nov-95	0.050	
Manganese	200.7/6010	<0.005	30-Nov-95	0.005	
Potassium	200.7/6010	<0.500	1-Dec-95	0.500	
Sodium	200.7/6010	0.178	1-Dec-95	0.20 (PQL=0.10)	
Silicon	200.7/6010	<0.100	2-Dec-95	0.100	

Notes:
1) Blank acceptance limits are equivalent to PQLs unless otherwise indicated.
2) Random low level contamination is indicated for this parameter. (if notated)

Ca, Fe, Na → results in sample -11 are too high for qual.
MD 6/17/96

PACE, Inc., Environmental Laboratories
Elements Section
Final Element Concentrations in Liguids (Duplicate & Spike)

Client:Olin Chemicals
Work Order:WL1622
Prep. Date:October 23, 1995
Sample Number:WL1622-24

SW846 Method 3010 (HCl)		Replicate #1	Replicate #2	RPD (%)	SPIKE			Notes
Element:	Analysis Method	Conc. (mg/L)	Conc. (mg/L)		Conc. (mg/L)	Added (mg/L)	% Rec	
Aluminum	200.7/6010	<0.100	<0.100	NC	2.07	2.00	104%	
Arsenic	200.7/6010	<0.005	<0.005	NC	1.96	2.00	98%	
Barium	200.7/6010	0.065	0.069	6%	1.95	2.00	94%	
Calcium	200.7/6010	48.6	49.6	2%	56.3	2.50	308%	2
Chromium	200.7/6010	<0.015	≤0.015	NC	0.205	0.200	103%	
Iron	200.7/6010	0.048	0.053	10%	1.09	1.00	104%	
Lead	200.7/6010	<0.005	<0.005	NC	0.525	0.500	105%	
Magnesium	200.7/6010	8.43	8.62	2%	14.4	5.00	119%	
Manganese	200.7/6010	2.00	2.03	1%	2.71	0.500	142%	2
Potassium	200.7/6010	<3	<3	NC	27	25.0	108%	
Sodium	200.7/6010	82	87	6%	100	7.50	240%	2
Silicon	200.7/6010	14	15	7%	19	2.46	203%	2

Notes: Please see duplicate and matrix spike footnote page for explanation of notations.

No qualification required due to the elevated concentrations in the sample compared to the spike amount.

MO
6/17/96

111395

Pace, Inc. - Maine
Elements Section
ICP Run Cover Sheet - TJA Trace ICAP

Run ID: 951107A Date Analyzed: 110795 Analyst: BM

Standard Name	Standard ID Code	Standard Preparation Date
Calibration Std #1	2862	110395
Calibration Std #2	2861	110295
Calibration Std #3	2863	110395
ICV (Initial Cal. Ver.)	2865	110395
CCV (Cont. Cal. Ver.)	2869	110695
ICSA (Intf. Check Soln. A)	2860	110295
ICSAB (Intf. Check Soln. AB)	2867	110395
CRI (CRDL Std. for ICP)	2868	110395

Reported Data Log

Pace Sample #	Digestion ID	Client	Analytes
PBW	RT20ICW1	-	Mn
RCW 1/2	RT20ICW1	-	Mn
4/L11641-4 1/50	RK5ICW1	[redacted]	Zn
PBW	RT23ICW1	-	Fe
CCW 1/2		-	Fe ferric
4/L11622-17		Olin	Fe
-18 1/100			Fe
-19			Al Fe
-20 1/100			Ca Fe Mg
-20 1/500			As
-21			As Ca Fe Mg
-22			Al Ca Fe Mg (1/200) As (1/2000)
-23			Al Ca Fe Mg (1/200) As (1/2000)
-24			As Al Ca Fe Mg
-25			As Al Ca Fe Mg
-26 1/2			As Al Ca Fe Mg
-27			Al Ca Fe Mg (1/5) As (1/500)
-28			Al Ca Fe Mg As Pb
-29			
-30			Al Ca Fe Mg, As Pb, Mn 1/20
-31			Al Ca Fe Mg, As Pb
-32			Ca Fe Mg, As Pb

Page 1 of 1

results not used
redigested

9990761

Analysis Report QC Standard Wed 11-01-95 06:12:04 PM page 1

Method: TEMPLATE Sample Name: CCB Operator: KEW
Run Time: 11/01/95 18:06:20
Comment:
Mode: CONC Corr. Factor: 1

Elem	As1890	Pb2203	Se1960	Sb2068	Tl1908	Ag3280	Al3082
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Avge	.00065	.00043	.00300	.00236	.00483	.00047	.09516
SDev	.00062	.00013	.00100	.00055	.00014	.00040	.00173
%RSD	95.910	29.626	33.110	23.437	2.8148	85.167	1.8228
#1	.00109	.00034	.00230	.00275	.00493	.00019	.09393
#2	.00021	.00052	.00371	.00197	.00474	.00075	.09639

Elem	B_2496	Ba4934	Be3130	Ca3179	Cd2265	Co2286	Cr2677
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Avge	.00034	.00033	.00033	Q.05017	.00022	.00071	.00728
SDev	.00044	.00000	.00003	.00002	.00010	.00024	.00014
%RSD	132.41	1.0692	9.8914	.03620	42.593	33.941	1.9168
#1	.00065	.00033	.00030	Q.05015	.00016	.00054	.00719
#2	.00002	.00033	.00035	Q.05018	.00029	.00088	.00738

Elem	Cu3247	Fe2714	Mg2790	Mn2576	Mo2020	Ni2316	Sn1899
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Avge	-.00001	.01558	Q.07656	.00210	.00141	.00004	.00131
SDev	.00014	.00123	.00006	.00000	.00036	.00010	.00089
%RSD	1171.7	7.8913	.08331	.13762	25.765	290.08	67.788
#1	-.00011	.01471	Q.07651	.00210	.00167	-.00004	.00068
#2	.00009	.01645	Q.07660	.00210	.00115	.00011	.00193

Elem	Sr4215	Ti3349	V_2924	Zn2138	2203/1	2203/2	2068/1
Units	mg/L	mg/L	mg/L	mg/L			
Avge	.00032	.00026	.00014	-.00031	.00126	-.00038	-.00066
SDev	.00000	.00008	.00006	.00011	.00217	.00128	.00098
%RSD	.10521	28.969	42.331	34.391	172.24	335.20	149.64
#1	.00032	.00021	.00009	-.00024	.00279	-.00128	.00004
#2	.00032	.00032	.00018	-.00039	-.00027	.00052	-.00135

Elem	2068/2	1960/1	1960/2
Units			
Avge	.00359	.00745	.00047
SDev	.00034	.00189	.00244
%RSD	9.3390	25.415	515.41
#1	.00383	.00879	-.00125
#2	.00335	.00611	.00220

associated with
-8 -15
-9 -16
-10
-11
-12 (mg only)
-13
-14

Mg & Ca results are too high for qual.
MO 4/17/96

MO 6/10/96

Analysis Report QC Standard Fri 11-03-95 03:25:53 PM page 1

Method: TEMPLATE Sample Name: CCB Operator: KEW
Run Time: 11/03/95 15:20:21
Comment:
Mode: CONC Corr. Factor: 1

Elem	As1890	Pb2203	Se1960	Sb2068	Tl1908	Ag3280	Al3082
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Avge	.00187	.00062	-.00002	.00119	.00417	.00095	.06858
SDev	.00114	.00054	.00006	.00005	.00038	.00045	.00488
%RSD	60.874	87.174	361.68	3.8139	9.0230	47.724	7.1108
#1	.00107	.00024	.00003	.00122	.00443	.00127	.07203
#2	.00268	.00100	-.00006	.00116	.00390	.00063	.06514

Elem	B_2496	Ba4934	Be3130	Ca3179	Cd2265	Co2286	Cr2677
				Th <0.1			
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Avge	.00079	.00028	.00019	Q.05229	.00049	.00044	.00052
SDev	.00084	.00002	.00002	.00662	.00006	.00021	.00008
%RSD	106.06	7.2657	10.646	12.668	12.690	48.069	15.675
#1	.00020	.00029	.00021	Q.05698	.00053	.00059	.00057
#2	.00139	.00026	.00018	.04761	.00044	.00029	.00046

Elem	Cu3247	Fe2714	Mg2790	Mn2576	Mo2020	Ni2316	Sn1899
			Th <0.10				
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Avge	.00065	.02266	Q.05940	.00028	.00071	.00120	.00080
SDev	.00007	.00575	.00715	.00002	.00016	.00084	.00082
%RSD	11.387	25.377	12.034	6.7931	22.840	70.157	102.74
#1	.00060	Q.02672	Q.06445	.00029	.00082	.00179	.00022
#2	.00071	.01859	Q.05435	.00027	.00059	.00060	.00138

Elem	Sr4215	Ti3349	V_2924	Zn2138	2203/1	2203/2	2068/1
Units	mg/L	mg/L	mg/L	mg/L			
Avge	.00020	.00029	.00043	.00066	.00095	.00002	.00133
SDev	.00003	.00028	.00000	.00000	.00002	.00080	.00014
%RSD	14.667	93.955	.05169	.31920	1.9691	4153.6	10.206
#1	.00023	.00049	.00043	.00066	.00094	-.00054	.00142
#2	.00018	.00010	.00043	.00066	.00096	.00058	.00123

Elem	2068/2	1960/1	1960/2
Units			
Avge	.00078	.00075	-.00074
SDev	.00000	.00103	.00042
%RSD	.01429	136.93	57.132
#1	.00078	.00149	-.00104
#2	.00078	.00002	-.00044

greater than PQL, associated w/ WL-1622-12 (result ND, no qual)
MD
6/10/96

0000402

Analysis Report QC Standard Mon 11-06-95 01:45:56 PM

Method: TEMPLATE Sample Name: CCB Operator: KEW
Run Time: 11/06/95 13:40:12
Comment:
Mode: CONC Corr. Factor: 1

ok <2xPQL

Elem	As1890	Pb2203	Se1960	Sb2068	Tl1908	Ag3280	~~Al3082~~
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Avge	.00075	.00102	.00108	.00017	.00176	.00000	Q.10833
SDev	.00085	.00057	.00168	.00119	.00187	.00032	.01063
%RSD	112.41	55.279	155.18	685.31	106.70	16696.	10.288
#1	.00015	.00062	.00227	.00102	.00308	-.00023	Q.11085
#2	.00135	.00142	-.00011	-.00067	.00043	.00023	.09582

Elem	B_2496	Ba4934	Be3130	Ca3179	Cd2265	Co2286	Cr2677
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Avge	.00094	.00021	.00052	Q.05206	.00049	.00002	-.00012
SDev	.00006	.00000	.00007	.01223	.00002	.00004	.00003
%RSD	5.9219	.93056	14.291	23.500	3.3266	215.34	24.945
#1	.00090	.00021	.00057	Q.06071	.00048	.00005	-.00014
#2	.00098	.00021	.00047	.04341	.00050	-.00001	-.00010

Elem	Cu3247	Ent Fe2714	Mg2790	Mn2576	Mo2020	Ni2316	Sn1899
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Avge	.00041	Q.09389	Q.07148	.00140	.00012	-.00003	.00192
SDev	.00003	.00008	.01249	.00003	.00047	.00071	.00025
%RSD	7.7650	.08649	17.479	2.3215	404.36	2702.5	13.017
#1	.00038	Q.09384	Q.08032	.00142	.00045	-.00053	.00210
#2	.00043	Q.09395	Q.06265	.00138	-.00022	.00047	.00175

Elem	Sr4215	Ti3349	V_2924	Zn2138	2203/1	2203/2	2068/1
Units	mg/L	mg/L	mg/L	mg/L			
Avge	.00023	.00034	.00037	.01011	-.00086	.00164	.00222
SDev	.00003	.00019	.00054	.00005	.00163	.00166	.00176
%RSD	12.974	54.987	144.91	.47465	189.73	101.62	79.264
#1	.00025	.00021	-.00001	.01014	.00029	.00046	.00098
#2	.00021	.00047	.00076	.01008	-.00201	.00281	.00347

Elem	2068/2	1960/1	1960/2
Units			
Avge	-.00114	.00093	.00087
SDev	.00267	.00517	.00006
%RSD	234.70	554.77	6.9163
#1	.00075	.00458	.00083
#2	-.00302	-.00272	.00091

associated with al
-20-21-22
(results too high for qual.)
uw 6/10/96

Method: TEMPLATE Sample Name: CCB Operator: KEW
Run Time: 11/07/95 11:47:49
Comment:
Mode: CONC Corr. Factor: 1

Elem	As1890	Pb2203	Se1960	Sb2068	Tl1908	Ag3280	Al3082
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Avge	.00201	.00103	.00019	.00076	.00456	.00113	.08298
SDev	.00121	.00076	.00087	.00059	.00224	.00054	.02024
%RSD	59.862	73.885	446.46	78.104	49.139	48.201	24.388
#1	.00287	.00157	.00081	.00117	Q.00614	.00151	.09729
#2	.00116	.00049	-.00042	.00034	.00297	.00074	.06867

Elem	B_2496	Ba4934	Be3130	Ca3179	Cd2265	Co2286	Cr2677
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Avge	.00087	.00039	.00024	.02671	.00030	.00070	.00061
SDev	.00007	.00010	.00008	.02034	.00014	.00028	.00012
%RSD	8.2297	26.516	33.284	76.156	46.342	40.227	19.263
#1	.00082	.00047	.00018	.04109	.00040	.00089	.00070
#2	.00092	.00032	.00030	.01233	.00020	.00050	.00053

Elem	Cu3247	Fe2714	Mg2790	Mn2576	Mo2020	Ni2316	Sn1899
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Avge	.00087	.01102	Q.06449	.00041	.00085	.00089	-.00064
SDev	.00008	.00107	.02389	.00017	.00021	.00014	.00005
%RSD	9.5888	9.6726	37.049	42.818	25.112	15.741	7.4321
#1	.00081	.01178	Q.08139	.00053	.00100	.00099	-.00060
#2	.00092	.01027	.04760	.00028	.00070	.00080	-.00067

Elem	Sr4215	Ti3349	V_2924	Zn2138	2203/1	2203/2	2068/1
Units	mg/L	mg/L	mg/L	mg/L			
Avge	00031	.00013	-.00014	.00362	.00458	-.00119	-.00260
SDev	.00009	.00010	.00001	.00045	.00225	.00000	.00044
%RSD	29.745	73.343	4.7556	12.384	49.033	.05020	17.047
#1	.00037	.00020	-.00014	.00394	.00616	-.00119	-.00228
#2	.00024	.00006	-.00015	.00330	.00299	-.00119	-.00291

Elem	2068/2	1960/1	1960/2
Units			
Avge	.00212	.00518	-.00261
SDev	.00065	.00351	.00046
%RSD	30.790	67.662	17.595
#1	.00258	.00766	-.00293
#2	.00166	.00270	-.00229

associated with sample -20 only (result too high for qual) UO 6/10/96

Analysis Report QC Standard Tue 11-07-95 02:17:05 PM page 1

Method: TEMPLATE Sample Name: CCB Operator: KEW
Run Time: 11/07/95 14:11:10
Comment:
Mode: CONC Corr. Factor: 1

Elem	As1890	Pb2203	Se1960	Sb2068	Tl1908	Ag3280	Al3082
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Avge	.00378	.00081	.00161	.00196	Q.00738	.00178	Q.11785
SDev	.00075	.00088	.00268	.00003	.00130	.00022	.00218
%RSD	19.719	108.27	166.30	1.5412	17.697	12.154	1.8502
#1	.00431	.00143	-.00028	.00198	Q.00830	.00193	Q.11939
#2	.00325	.00019	.00350	.00193	Q.00645	.00162	Q.11631

Elem	B_2496	Ba4934	Be3130	Ca3179	Cd2265	Co2286	Cr2677
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Avge	.00102	.00050	.00043	.02777	.00026	.00138	.00136
SDev	.00018	.00006	.00001	.00055	.00000	.00024	.00036
%RSD	17.925	12.785	2.7325	1.9761	1.3913	17.406	26.550
#1	.00089	.00054	.00042	.02815	.00026	.00155	.00161
#2	.00115	.00045	.00044	.02738	.00026	.00121	.00110

Elem	Cu3247	Fe2714	Mg2790	Mn2576	Mo2020	Ni2316	Sn1899
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Avge	.00070	.02117	Q.07168	.00048	.00110	.00076	.00068
SDev	.00030	.00133	.00490	.00005	.00076	.00014	.00084
%RSD	4[illegible].355	6.2589	6.8402	10.852	68.811	17.960	124.58
#1	.00091	.02211	Q.07515	.00051	.00164	.00085	.00008
#2	.00049	.02023	Q.06822	.00044	.00057	.00066	.00127

Elem	Sr4215	Ti3349	V_2924	Zn2138	2203/1	2203/2	2068/1
Units	mg/L	mg/L	mg/L	mg/L			
Avge	.00033	.00044	.00045	.00303	.00467	-.00156	-.00344
SDev	.00002	.00004	.00006	.00019	.00149	.00058	.00085
%RSD	4.6163	9.7681	12.385	6.3338	31.869	36.766	24.639
#1	.00034	.00041	.00049	.00290	.00573	-.00116	-.00404
#2	.00032	.00047	.00041	.00317	.00362	-.00197	-.00284

Elem	2068/2	1960/1	1960/2
Units			
Avge	.00434	.00576	-.00078
SDev	.00047	.00218	.00292
%RSD	10.813	37.933	377.23
#1	.00467	.00421	-.00284
#2	.00400	.00730	.00129

associated with
-21 to -28 7
-28 to 3~~4~~0 ~~except Al~~
MO 6/17/96
(results are too
high for qual.

0000863

Analysis Report QC Standard Tue 11-07-95 01:05:22 PM

Method: TEMPLATE Sample Name: CCB Operator: KEW
Run Time: 11/07/95 12:59:28
Comment:
Mode: CONC Corr. Factor: 1

<0.20

Elem	As1890	Pb2203	Se1960	Sb2068	Tl1908	Ag3280	Al3082
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Avge	.00186	.00038	.00131	.00127	Q.00539	.00169	Q.10924
SDev	.00033	.00005	.00011	.00092	.00085	.00101	.01562
%RSD	17.502	14.042	8.5681	72.622	15.763	59.889	14.298
#1	.00163	.00042	.00139	.00193	Q.00599	.00241	Q.12029
#2	.00209	.00034	.00123	.00062	.00479	.00097	.09820

Elem	B_2496	Ba4934	Be3130	Ca3179	Cd2265	Co2286	Cr2677
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Avge	.00094	.00048	.00041	.03423	.00039	.00139	.00098
SDev	.00104	.00015	.00006	.01470	.00026	.00079	.00081
%RSD	110.80	31.086	14.086	42.946	65.811	56.954	83.113
#1	.00167	.00059	.00045	.04462	.00057	.00195	.00155
#2	.00020	.00038	.00037	.02383	.00021	.00083	.00040

<0.10

Elem	Cu3247	Fe2714	Mg2790	Mn2576	Mo2020	Ni2316	Sn1899
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Avge	.00095	.01882	Q.07825	.00050	.00056	.00101	00061
SDev	.00082	.00907	.01369	.00024	.00048	.00095	.00130
%RSD	85.900	48.200	23.378	47.217	84.965	94.821	215.46
#1	.00153	Q.02524	Q.09147	.00067	.00090	.00168	.00153
#2	.00037	.01241	Q.06504	.00034	.00022	.00033	-.00032

Elem	Sr4215	Ti3349	V_2924	Zn2138	2203/1	2203/2	2068/1
Units	mg/L	mg/L	mg/L	mg/L			
Avge	.00036	.00043	.00032	.00273	.00458	-.00216	-.00575
SDev	.00009	.00017	.00066	.00036	.00100	.00042	.00197
%RSD	25.978	38.851	205.75	13.252	21.886	19.497	34.279
#1	.00043	.00055	.00079	.00298	.00528	-.00246	-.00715
#2	00029	.00031	-.00015	.00247	.00387	-.00186	-.00436

Elem	2068/2	1960/1	1960/2
Units			
Avge	.00445	.00657	-.00162
SDev	.00234	.00383	.00174
%RSD	52.562	58.261	107.55
#1	.00610	.00928	-.00285
#2	.00280	.00386	-.00039

associated with sample
-20
-21 to -27 (results are too high for qual.)
uco
6/10/96

Analysis Report QC Standard Tue 11-07-95 03:10:26 PM page 1

Method: TEMPLATE Sample Name: CCB Operator: KEW
Run Time: 11/07/95 15:04:30
Comment:
Mode: CONC Corr. Factor: 1

Elem	As1890	Pb2203	Se1960	Sb2068	Tl1908	Ag3280	Al3082
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Avge	.00280	.00048	.00024	.00172	.00447	.00166	Q.14231
SDev	.00063	.00013	.00178	.00161	.00282	.00078	.02993
%RSD	22.378	27.310	741.80	93.442	63.178	47.230	21.028
#1	.00325	.00039	-.00102	.00286	Q.00647	.00222	Q.16348
#2	.00236	.00057	.00150	.00058	.00247	.00111	Q.12115

Elem	B_2496	Ba4934	Be3130	Ca3179	Cd2265	Co2286	Cr2677
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Avge	.00118	.00053	.00047	.03756	.00038	.00155	.00124
SDev	.00040	.00019	.00014	.03234	.00003	.00031	.00046
%RSD	34.019	35.744	29.766	86.099	7.7004	19.868	37.219
#1	.00147	.00066	.00056	Q.06043	.00041	.00177	.00156
#2	.00090	.00039	.00037	.01469	.00036	.00134	.00091

Elem	Cu3247	Fe2714	Mg2790	Mn2576	Mo2020	Ni2316	Sn1899
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Avge	.00063	.01772	Q.08266	.00046	.00079	.00076	.00087
SDev	.00036	.01040	.03812	.00018	.00066	.00009	.00074
%RSD	56.796	58.701	46.116	39.039	84.059	11.739	84.581
#1	.00088	Q.02508	Q.10961	.00059	.00126	.00082	.00140
#2	.00037	.01037	Q.05570	.00033	.00032	.00070	.00035

Elem	Sr4215	Ti3349	V_2924	Zn2138	2203/1	2203/2	2068/1
Units	mg/L	mg/L	mg/L	mg/L			
Avge	.00038	.00028	.00001	.00252	.00670	-.00293	-.00564
SDev	.00016	.00002	.00000	.00001	.00221	.00130	.00158
%RSD	40.874	6.9853	42.931	.23156	32.976	44.314	28.085
#1	.00049	.00030	.00000	.00253	.00827	-.00385	-.00676
#2	.00027	.00027	.00001	.00252	.00514	-.00201	-.00452

Elem	2068/2	1960/1	1960/2
Units			
Avge	.00509	.00734	-.00361
SDev	.00320	.00029	.00252
%RSD	62.940	3.9453	69.737
#1	.00735	.00713	-.00539
#2	.00282	.00754	-.00183

al & Mg from
28-30 [illegible]

[illegible]

Analysis Report Thu 11-30-95 01:28:34 PM page 1

Method: TEMPLATE Sample Name: PBW LK22ICW3 Operator:
Run Time: 11/30/95 13:23:20
Comment:
Mode: CONC Corr. Factor: 1

Elem	As1890	Pb2203	Se1960	Sb2068	Tl1908	Ag3280	Al3082
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Avge	-.00272	.00218	.00119	-.00128	H.00577	-.00010	.04451
SDev	.00185	.00022	.00235	.00022	.00029	.00006	.00004
%RSD	67.921	10.095	198.12	17.082	5.0382	60.657	.08327
#1	-.00141	.00233	-.00048	-.00144	H.00597	-.00006	.04454
#2	-.00403	.00202	.00285	-.00113	H.00556	-.00015	.04449

Elem	B_2496	Ba4934	Be3130	Ca3179	Cd2265	Co2286	Cr2677
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Avge	.04889	.00087	.00028	H.10424	.00029	.00061	.00003
SDev	.00168	.00002	.00027	.00095	.00014	.00022	.00003
%RSD	3.4420	2.2353	95.093	.91087	49.288	36.054	76.309
#1	.04770	.00085	.00047	H.10357	.00039	.00045	.00005
#2	.05008	.00088	.00009	H.10492	.00019	.00076	.00002

Elem	Cu3247	Fe2714	Mg2790	Mn2576	Mo2020	Ni2316	Sn1899
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Avge	.00090	H.02619	L.02550	.00047	.00047	.00048	-.00053
SDev	.00020	.00393	.00425	.00003	.00108	.00072	.00069
%RSD	22.572	15.010	16.678	6.9569	228.74	149.14	129.45
#1	.00076	.02341	L.02851	.00050	-.00029	-.00003	-.00005
#2	.00105	H.02897	L.02249	.00045	.00124	.00099	-.00102

Elem	Sr4215	Ti3349	V_2924	Zn2138	2203/1	2203/2	2068/1
Units	mg/L	mg/L	mg/L	mg/L			
Avge	.00022	.00055	.00074	.01017	-.00241	.00385	-.00043
SDev	.00000	.00003	.00015	.00033	.00108	.00019	.00144
%RSD	.73652	4.7723	20.530	3.2088	44.843	4.9003	336.88
#1	.00022	.00057	.00085	.00994	-.00165	.00371	.00059
#2	.00022	.00053	.00063	.01040	-.00318	.00398	-.00145

Elem	2068/2	1960/1	1960/2
Units			
Avge	-.00214	-.00226	.00247
SDev	.00103	.00429	.00136
%RSD	48.118	189.86	55.282
#1	-.00287	-.00529	.00150
#2	-.00142	.00077	.00343

• Ca, Fe > PQL. "B"-flag associated data

associated w/ WL-1622-X 15,16,31,32 results are too high for qual.
MO 6/17/96

[illegible]

10/31/95 13:15
CRI rep 1 Cr267.7 conc 0.0169 mg/L
rep 2 Cr267.7 conc 0.0094 mg/L
rep 3 Cr267.7 conc 0.0105 mg/L
CRI
10/31/95 13:16
Cr267.7 av 0.0123 mg/L 61.5% sd 0.00404 %cv 32.91

> low

MO
6/17/96

10/31/95 13:17
PBW 1017 rep 1 Cr267.7 conc 0.0052 mg/L
rep 2 Cr267.7 conc 0.0022 mg/L
rep 3 Cr267.7 conc -0.0050 mg/L
PBW 1017
10/31/95 13:17
Cr267.7 av 0.0008 mg/L < sd 0.00525 %cv 663.57

10/31/95 13:19
LCSW 1017 rep 1 Cr267.7 conc 2.2375 mg/L
rep 2 Cr267.7 conc 2.2020 mg/L
rep 3 Cr267.7 conc 2.1984 mg/L
LCSW 1017
10/31/95 13:19
Cr267.7 av 2.2127 mg/L sd 0.02161 %cv 0.98 = 33.5% Ti = 2.50 %

10/31/95 13:21
GW44S rep 1 Cr267.7 conc 0.0065 mg/L
rep 2 Cr267.7 conc -0.0063 mg/L
rep 3 Cr267.7 conc 0.0042 mg/L
GW44S
10/31/95 13:21
Cr267.7 av 0.0022 mg/L < sd 0.00782 %cv 352.34 WL1622-17

10/31/95 13:22
GW44D rep 1 Cr267.7 conc 4.8009 mg/L
rep 2 Cr267.7 conc 4.7600 mg/L
rep 3 Cr267.7 conc 4.7541 mg/L
GW44D
10/31/95 13:23
Cr267.7 av 4.7717 mg/L Rerun 1/2 sd 0.02548 %cv 0.53 WL1622-18

10/31/95 13:24
GW45S rep 1 Cr267.7 conc 0.0091 mg/L
rep 2 Cr267.7 conc -0.0020 mg/L
rep 3 Cr267.7 conc 0.0109 mg/L
GW45S
10/31/95 13:24
Cr267.7 av 0.0060 mg/L < sd 0.00701 %cv 117.08 WL1622-19

10/31/95 13:26
GW45D rep 1 Cr267.7 conc 2.3689 mg/L
rep 2 Cr267.7 conc 2.3763 mg/L
rep 3 Cr267.7 conc 2.3906 mg/L
GW45D
10/31/95 13:26
Cr267.7 av 2.3786 mg/L sd 0.01102 %cv 0.46 WL1622-20

10/31/95 13:28
CCV rep 1 Cr267.7 conc 0.9713 mg/L
rep 2 Cr267.7 conc 0.9798 mg/L
rep 3 Cr267.7 conc 1.0117 mg/L
CCV
10/31/95 13:28
Cr267.7 av 0.9876 mg/L 98.8% sd 0.02128 %cv 2.16

10/31/95 13:59
Cr267.7 av -0.0113 mg/L < ✓sd 0.01613 %cv 142.48

10/31/95 14:00

ICSA	rep	1	Cr267.7	conc	0.0126 mg/L	
	rep	2	Cr267.7	conc	-0.0137 mg/L	window edge
	rep	3	Cr267.7	conc	-0.0103 mg/L	window edge

ICSA
10/31/95 14:00
Cr267 7 av -0.0038 mg/L sd 0.01430 %cv 377 90

10/31/95 14:02

ICSAB	rep	1	Cr267.7	conc	0.4596 mg/L
	rep	2	Cr267.7	conc	0.4544 mg/L
	rep	3	Cr267.7	conc	0.4724 mg/L

ICSAB
10/31/95 14:02
Cr267 7 av 0.4621 mg/L 92.4% sd 0.00926 %cv 2 00

10/31/95 14:03

Throw away	rep	1	Cr267 7	conc	0 0050 mg/L	
	rep	2	Cr267.7	conc	-0 0217 mg/L	window edge
	rep	3	Cr267 7	conc	-0.0084 mg/L	window edge

Throw away
10/31/95 14:04
Cr267 7 av -0 0084 mg/L sd 0 01333 %cv 159 28

10/31/95 14 05

CRI	rep	1	Cr267 7	conc	0.0137 mg/L
	rep	2	Cr267.7	conc	0.0103 mg/L
	rep	3	Cr267.7	conc	0 0037 mg/L

CRI
10/31/95 14:05
Cr267 7 av 0.0092 mg/L 46% sd 0.00510 %cv 55.37 > 10W

associated with all
except -18, -22, -23
qualify all associated
results < 3xCRDL (w)
(both + and ND)

wo
6/17/96

Analysis Report QC Standard Mon 11-06-95 10:03:21 AM page 1

Method: TEMPLATE Sample Name: CRI Operator: KEW
Run Time: 11/06/95 09:57:37
Comment:
Mode: CONC Corr. Factor: 1

125%R

Elem	As1890	Pb2203	Se1960	Sb2068	Tl1908	Ag3280	Al3082
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Avge	.02148	.00755	.01244	.12358	.02152	.02299	Q.53773
SDev	.00055	.00033	.00032	.00039	.00149	.00114	.11423
%RSD	2.5438	4.3686	2.6162	.31856	6.9083	4.9578	21.244
#1	.02187	.00779	.01221	.12330	.02047	.02380	Q.61851
#2	.02110	.00732	.01267	.12386	.02257	.02219	Q.45696

Elem	B_2496	Ba4934	Be3130	Ca3179	Cd2265	Co2286	Cr2677
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Avge	.02145	.02131	.01158	Q.50967	.01116	.11247	.02354
SDev	.00020	.00008	.00010	.14880	.00020	.00069	.00025
%RSD	.92122	.39491	.81806	29.196	1.8170	.61114	1.0602
#1	.02131	.02137	.01165	Q.61489	.01130	.11296	.02372
#2	.02159	.02125	.01151	Q.40445	.01102	.11199	.02337

Elem	Cu3247	Fe2714	Mg2790	Mn2576	Mo2020	Ni2316	Sn1899
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Avge	.05622	Q.33176	Q.55445	.03421	.02244	.09065	.02046
SDev	.00039	.05803	.14880	.00014	.00066	.00006	.00065
%RSD	.69189	17.490	26.837	.42099	2.9234	.06774	3.1608
#1	.05649	Q.37279	Q.65966	.03431	.02291	.09070	.02000
#2	.05594	.29073	Q.44923	.03411	.02198	.09061	.02092

Elem	Sr4215	Ti3349	V_2924	Zn2138	2203/1	2203/2	2068/1
Units	mg/L	mg/L	mg/L	mg/L			
Avge	.02024	.02082	.11580	.04850	.00532	.00832	.12566
SDev	.00011	.00026	.00044	.00024	.00016	.00041	.00225
%RSD	.54808	1.2652	.37623	.49703	3.0926	4.9391	1.7905
#1	.02032	.02100	.11611	.04867	.00544	.00861	.12725
#2	.02017	.02063	.11549	.04833	.00521	.00803	.12406

Elem	2068/2	1960/1	1960/2
Units			
Avge	.12224	.01172	.01249
SDev	.00171	.00052	.00023
%RSD	1.4027	4.4312	1.8392
#1	.12103	.01136	.01233
#2	.12346	.01209	.01266

associated w/Pb from -17 to -22, -23, -24 to -28 (all ND)
MO 6/10/96

Method: TEMPLATE Sample Name: CRI Operator: KEW
Run Time: 11/06/95 18:21:41
Comment:
Mode: CONC Corr. Factor: 1

129 130

Elem	As1890	Pb2203	Se1960	Sb2068	Tl1908	Ag3280	Al3082
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Avge	.02589	.00784	.01330	.13531	.02592	.02188	Q.46114
SDev	.00078	.00085	.00006	.00077	.00357	.00026	.00796
%RSD	3.0195	10.781	.45695	.57021	13.791	1.2114	1.7252
#1	.02533	.00844	.01325	.13476	.02339	.02169	Q.46677
#2	.02644	.00724	.01334	.13585	.02844	.02207	Q.45552

Elem	B_2496	Ba4934	Be3130	Ca3179	Cd2265	Co2286	Cr2677
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Avge	.02193	.02183	.01289	Q.39208	.01299	.13522	.02632
SDev	.00039	.00002	.00002	.00757	.00014	.00043	.00043
%RSD	1.7644	.07930	.13564	1.9309	1.1089	.31661	1.6414
#1	.02165	.02182	.01288	Q.39744	.01289	.13492	.02601
#2	.02220	.02184	.01290	Q.38673	.01309	.13553	.02662

13

Elem	Cu3247	Fe2714	Mg2790	Mn2576	Mo2020	Ni2316	Sn1899
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Avge	.05153	.28236	Q.44216	.03777	.02445	.10635	.02471
SDev	.00004	.00286	.00466	.00001	.00020	.00120	.00020
%RSD	.07796	1.0138	1.0549	.02782	.82347	1.1237	.80150
#1	.05156	.28034	Q.44545	.03778	.02459	.10551	.02485
#2	.05151	.28439	Q.43886	.03776	.02431	.10720	.02457

Elem	Sr4215	Ti3349	V_2924	Zn2138	2203/1	2203/2	2068/1
Units	mg/L	mg/L	mg/L	mg/L			
Avge	.02043	.01954	.12384	.05731	.00754	.00764	.13799
SDev	.00004	.00014	.00028	.00018	.00024	.00112	.00026
%RSD	.21037	.69558	.22810	.31872	3.2037	14.602	.18720
#1	.02039	.01945	.12364	.05718	.00771	.00843	.13781
#2	.02046	.01964	.12404	.05744	.00737	.00685	.13817

Elem	2068/2	1960/1	1960/2
Units			
Avge	.13368	.01733	.01097
SDev	.00103	.00040	.00014
%RSD	.76983	2.2933	1.2300
#1	.13295	.01705	.01107
#2	.13441	.01762	.01088

125%R

Note: only qualify results outside Region I criteria

%RSs for As, Pb, Cr & Mn were out

associated w/
-2 As, Cr, Mn
-4 As, Cr, Mn
-6 As, Cr ~~Mn~~
-7 As Cr
-11 As Cr
-17 As, Cr, Pb, Mn
-18 As, Cr, Pb, Mn
-19 As, Cr, Pb, Mn
-20 Cr Pb, Mn
-21 Cr, Mn
-22 Cr, Mn
-23 Cr Pb, Mn
-24 Cr, Mn
-25 Cr
-26 Cr Mn
-27 Cr Mn
-28 Cr, Pb, Mn
-29 Cr, Mn
-30
-31 ~~Mn~~
-32 Mn

6/10/96

Analysis Report QC Standard Wed 11-01-95 02:31:56 PM page 1

Method: TEMPLATE Sample Name: CRI Operator: KEW
Run Time: 11/01/95 14:26:12
Comment:
Mode: CONC Corr. Factor: 1

Elem	As1890	Pb2203	Se1960	Sb2068 out	Tl1908	Ag3280	Al3082
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Avge	.02309	.00818	.01131	Q.22899	.02502	.02306	Q.48672
SDev	.00154	.00073	.00054	.00154	.00258	.00058	.00787
%RSD	6.6898	8.9817	4.7415	.67136	10.292	2.5228	1.6168
#1	.02200	.00766	.01093	Q.22791	.02320	.02265	Q.48116
#2	.02418	.00870	.01169	Q.23008	.02684	.02347	Q.49228

136

Elem	B_2496 out	Ba4934	Be3130	Ca3179	Cd2265	Co2286	Cr2677
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Avge	Q.07309	.02177	.01172	Q.54609	.01099	.11539	.02643
SDev	.00052	.00044	.00020	.01255	.00008	.00264	.00079
%RSD	.70543	2.0234	1.7146	2.2974	.72291	2.2917	3.0042
#1	Q.07273	.02146	.01157	Q.53722	.01093	.11352	.02587
#2	Q.07345	.02208	.01186	Q.55496	.01105	.11726	.02699

132

Elem	Cu3247	Fe2714	Mg2790	Mn2576	Mo2020 out	Ni2316	Sn1899
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Avge	.05724	.29954	Q.40699	.03646	Q.20223	.09848	.02361
SDev	.00149	.01104	.00724	.00083	.00514	.00209	.00161
%RSD	2.5956	3.6869	1.7781	2.2736	2.5412	2.1218	6.8244
#1	.05619	.29173	Q.40188	.03588	Q.19859	.09701	.02247
#2	.05829	Q.30735	Q.41211	.03705	Q.20586	.09996	.02475

Elem	Sr4215	Ti3349	V_2924	Zn2138	2203/1	2203/2	2068/1
Units	mg/L	mg/L	mg/L	mg/L			
Avge	.02150	.02088	.11807	.04457	.00965	.00713	.22748
SDev	.00046	.00058	.00274	.00121	.00016	.00101	.00441
%RSD	2.1179	2.7585	2.3205	2.7141	1.7153	14.201	1.9387
#1	.02118	.02048	.11613	.04372	.00953	.00642	.22436
#2	.02183	.02129	.12001	.04543	.00977	.00785	.23059

Elem	2068/2	1960/1	1960/2
Units			
Avge	.22948	.01440	.00950
SDev	.00010	.00497	.00328
%RSD	.04284	34.505	34.531
#1	.22941	.01792	.00718
#2	.22955	.01089	.01182

associated with:

-1 PbCr -8 Pb,Cr ~~-16 Pb,Cr~~
-2 Pb -9 Pb,Cr
-3 PbCr -10 Pb,Cr
-4 Pb -11 Pb
-5 PbCr -12 Pb,Cr
-6 Pb -13 Pb,Cr
-7 Pb -14 Pb,Cr
~~-15 Pb,Cr~~

Note: only qual. results out of Region I criteria

WB 6/10/96

Analysis Report   QC Standard   Wed 11-01-95 07:27:23 PM   page 1

Method: TEMPLATE   Sample Name: CRI   Operator: KEW
Run Time: 11/01/95 19:21:40
Comment:
Mode: CONC   Corr. Factor: 1   150

ok 150%

Elem	As1890	Pb2203	Se1960	Sb2068	Tl1908	Ag3280	Al3082
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Avge	.02217	Q.00901	.01126	Q.23128	.02609	.02219	Q.60866
SDev	.00113	.00042	.00200	.00126	.00095	.00069	.00038
%RSD	5.0802	4.6091	17.757	.54448	3.6551	3.0905	.06212
#1	.02137	.00872	.00985	Q.23217	.02542	.02267	Q.60893
#2	.02296	Q.00931	.01267	Q.23039	.02677	.02170	Q.60840

Elem	B_2496	Ba4934	Be3130	Ca3179	Cd2265	Co2286	Cr2677
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Avge	Q.07395	.02204	.01195	Q.65681	.01166	.12048	.02813
SDev	.00086	.00007	.00004	.00094	.00010	.00027	.00002
%RSD	1.1600	.33073	.34317	.14328	.87957	.22468	.07460
#1	Q.07334	.02209	.01192	Q.65615	.01173	.12029	.02814
#2	Q.07456	.02199	.01198	Q.65748	.01159	.12067	.02811

140

Elem	Cu3247	Fe2714	Mg2790	Mn2576	Mo2020	Ni2316	Sn1899
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Avge	.05542	Q.34093	Q.51166	.03705	Q.20597	.10189	.02394
SDev	.00032	.00392	.00511	.00011	.00023	.00108	.00025
%RSD	.57429	1.1489	.99826	.29166	.11331	1.0566	1.0519
#1	.05565	Q.33816	Q.51528	.03697	Q.20581	.10113	.02376
#2	.05520	Q.34370	Q.50805	.03712	Q.20614	.10265	.02412

Elem	Sr4215	Ti3349	V_2924	Zn2138	2203/1	2203/2	2068/1
Units	mg/L	mg/L	mg/L	mg/L			
Avge	.02137	.02048	.11966	.04592	.00788	.00922	.22998
SDev	.00001	.00000	.00088	.00013	.00268	.00199	.00118
%RSD	.04163	.01961	.73456	.28513	34.014	21.552	.51373
#1	.02137	.02048	.11903	.04583	.00978	.00781	.22915
#2	.02138	.02048	.12028	.04601	.00598	.01062	.23082

Elem	2068/2	1960/1	1960/2
Units			
Avge	.23166	.01373	.00976
SDev	.00248	.00022	.00288
%RSD	1.0701	1.6334	29.546
#1	.23342	.01357	.00772
#2	.22991	.01388	.01180

123

%RSs out of criteria

associated w/

-1 all 3
-2 Pb only
-3 all 3
-4 Pb only
-5 all 3
-6 Pb only and Mn
-7 Pb & Mn
-8 Pb, all 3
-9 " "
-10 all 3
-11 Pb, Mn
-12 All 3
-13 " "
-14
~~-15~~
~~-16 Pb, Co, ? Mn~~

mw 6/10/96

0000378

Analysis Report QC Standard Tue 11-07-95 03:28:21 PM page 1

Method: TEMPLATE Sample Name: CRI Operator: KEW
Run Time: 11/07/95 15:22:26
Comment:
Mode: CONC Corr. Factor: 1

Elem	As1890	Pb2203	Se1960	Sb2068	Tl1908	Ag3280	Al3082
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Avge	.02237	.00771	.00807	.13581	.02451	.02361	Q.42342
SDev	.00158	.00003	.00060	.00345	.00158	.00131	.02348
%RSD	7.0591	.39902	7.5016	2.5365	6.4301	5.5585	5.5454
#1	.02349	.00769	.00764	.13825	.02562	.02454	Q.44002
#2	.02125	.00774	.00850	.13337	.02339	.02268	Q.40682

Elem	B_2496	Ba4934	Be3130	Ca3179	Cd2265	Co2286	Cr2677
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Avge	.02174	.02308	.01182	Q.31058	.01186	.12761	.02531
SDev	.00020	.00036	.00014	.02375	.00046	.00228	.00077
%RSD	.89984	1.5638	1.1671	7.6467	3.8931	1.7871	3.0254
#1	.02188	.02334	.01191	Q.32737	.01219	.12923	.02586
#2	.02160	.02282	.01172	.29379	.01154	.12600	.02477

Elem	Cu3247	Fe2714	Mg2790	Mn2576	Mo2020	Ni2316	Sn1899
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Avge	.05387	.24459	Q.37480	.03658	.02357	.09976	.02362
SDev	.00124	.01232	.02715	.00042	.00062	.00187	.00128
%RSD	2.3090	5.0367	7.2453	1.1390	2.6247	1.8709	5.4199
#1	.05475	.25330	Q.39400	.03687	.02400	.10108	.02453
#2	.05299	.23587	Q.35560	.03628	.02313	.09844	.02272

Elem	Sr4215	Ti3349	V_2924	Zn2138	2203/1	2203/2	2068/1
Units	mg/L	mg/L	mg/L	mg/L			
Avge	.02096	.01909	.12013	.05037	.01070	.00577	.13383
SDev	.00023	.00030	.00148	.00106	.00130	.00070	.00093
%RSD	1.1098	1.5924	1.2350	2.1001	12.110	12.095	.69131
#1	02113	.01931	.12118	.05112	.01162	.00528	.13449
#2	.02080	.01888	.11908	.04962	.00978	.00626	.13318

Elem	2068/2	1960/1	1960/2
Units			
Avge	.13648	.01409	.00475
SDev	.00470	.00235	.00026
%RSD	3.4432	16.707	5.5676
#1	.13980	.01243	.00493
#2	.13316	.01576	.00456

Pb -29 to 30
(ND)
Mn - 30
(ESTIMATE)
MO 6/17/96

Analysis Report QC Standard Tue 11-07-95 10:37:39 AM page 1

Method: TEMPLATE Sample Name: CRI Operator: KEW
Run Time: 11/07/95 10:31:44
Comment:
Mode: CONC Corr. Factor: 1

Elem	As1890	Pb2203	Se1960	Sb2068	Tl1908	Ag3280	Al3082
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Avge	.02236	.00773	.01169	.12794	.02690	.02426	Q.51435
SDev	.00003	.00091	.00186	.00052	.00462	.00077	.08234
%RSD	.11958	11.748	15.903	.40614	17.163	3.1817	16.008
#1	.02238	.00837	.01037	.12831	Q.03016	.02480	Q.57258
#2	.02235	.00709	.01300	.12757	.02363	.02371	Q.45613

Elem	B_2496	Ba4934	Be3130	Ca3179	Cd2265	Co2286	Cr2677
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Avge	.02133	.02126	.01167	Q.45392	.01111	.11554	.02388
SDev	.00022	.00009	.00003	.10615	.00022	.00019	.00044
%RSD	1.0150	.43759	.26271	23.386	2.0240	.16689	1.8291
#1	.02118	.02132	.01169	Q.52898	.01127	.11567	.02418
#2	.02148	.02119	.01165	Q.37886	.01095	.11540	.02357

Elem	Cu3247	Fe2714	Mg2790	Mn2576	Mo2020	Ni2316	Sn1899
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Avge	.05532	Q.30430	Q.52349	.03477	.02202	.09137	.02094
SDev	.00009	.03186	.10168	.00005	.00012	.00044	.00090
%RSD	.15796	10.470	19.423	.12965	.55417	.48245	4.2767
#1	.05538	Q.32683	Q.59538	.03480	.02193	.09106	.02031
#2	.05526	.28177	Q.45159	.03474	.02211	.09168	.02157

Elem	Sr1215	Ti3349	V_2924	Zn2138	2203/1	2203/2	2068/1
Units	mg/L	mg/L	mg/L	mg/L			
Avge	.02002	.02048	.11549	.04427	.01127	.00553	.12407
SDev	.00002	.00015	.00015	.00018	.00065	.00104	.00111
%RSD	.08077	.75204	.12956	.40235	5.7728	18.756	.89602
#1	.02003	.02059	.11560	.04439	.01173	.00626	.12485
#2	.02001	.02037	.11539	.04414	.01081	.00479	.12329

Elem	2068/2	1960/1	1960/2
Units			
Avge	.12957	.01721	.00860
SDev	.00022	.00550	.00007
%RSD	.17302	31.938	.84179
#1	.12972	.01332	.00855
#2	.12941	.02110	.00866

lead ~~28~~, 29 (ND), 30, ~~31~~, 32
MO 6/17/96

Analysis Report QC Standard Thu 11-30-95 01:02:08 PM page 1

Method: TEMPLATE Sample Name: CRI Operator:
Run Time: 11/30/95 12:56:55
Comment:
Mode: CONC Corr. Factor: 1

147%R

Elem	As1890	Pb2203	Se1960	Sb2068	Tl1908	Ag3280	Al3082
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Avge	.02932	.00708	.01059	.12698	.01908	.02142	.19772
SDev	.00189	.00013	.00315	.00097	.00338	.00040	.00259
%RSD	6.4598	1.8703	29.725	.76181	17.713	1.8507	1.3112
#1	Q.03066	.00718	.01282	.12766	.01669	.02170	.19955
#2	.02798	.00699	.00837	.12630	.02147	.02114	.19588

Elem	B_2496	Ba4934	Be3130	Ca3179	Cd2265	Co2286	Cr2677
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Avge	.02251	.02045	.01107	.15995	.01046	.11100	.02126
SDev	.00020	.00012	.00002	.00038	.00023	.00051	.00075
%RSD	.88123	.59809	.15074	.23507	2.1819	.46350	3.5075
#1	.02266	.02054	.01105	.16022	.01030	.11137	.02179
#2	.02237	.02037	.01108	.15968	.01062	.11064	.02074

Elem	Cu3247	Fe2714	Mg2790	Mn2576	Mo2020	Ni2316	Sn1899
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Avge	.05593	.16757	.18661	.03180	.02002	.08637	.02087
SDev	.00027	.00247	.00328	.00011	.00062	.00064	.00049
%RSD	.47745	1.4710	1.7558	.32865	3.0928	.74123	2.3341
#1	.05612	.16932	.18893	.03187	.01958	.08683	.02122
#2	.05574	.16583	.18429	.03173	.02046	.08592	.02053

Elem	Sr4215	Ti3349	V_2924	Zn2138	2203/1	2203/2	2068/1
Units	mg/L	mg/L	mg/L	mg/L			
Avge	.02018	.02086	.11059	.04193	.00622	.00694	.12638
SDev	.00002	.00024	.00010	.00002	.00340	.00150	.00164
%RSD	.07317	1.1561	.09413	.05530	54.593	21.581	1.2948
#1	.02019	.02069	.11052	.04194	.00862	.00588	.12523
#2	.02017	.02103	.11066	.04191	.00382	.00800	.12754

Elem	2068/2	1960/1	1960/2
Units			
Avge	.12686	.00782	.01149
SDev	.00222	.00504	.00216
%RSD	1.7508	64.371	18.801
#1	.12843	.01138	.01302
#2	.12529	.00426	.00997

as associated ✓
w/samples 15, 16, 31 & 32
MO
6/10/96

0001269

Method: TEMPLATE Sample Name: CRI Operator:
Run Time: 11/30/95 16:55:38
Comment:
Mode: CONC Corr. Factor: 1

Elem	As1890	Pb2203	Se1960	Sb2068	Tl1908	Ag3280	Al3082
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Avge	.02657	.00668	.01296	.13224	.01999	.02072	.27845
SDev	.00059	.00180	.00245	.00202	.00383	.00003	.00012
%RSD	2.2221	26.997	18.898	1.5304	19.144	.16268	.04425
#1	.02699	.00541	.01123	.13081	.02270	.02074	.27836
#2	.02616	.00796	.01469	.13367	.01729	.02070	.27854

B3

Elem	B_2496	Ba4934	Be3130	Ca3179	Cd2265	Co2286	Cr2677
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Avge	.02013	.02160	.01134	.17579	.01108	.11713	.02199
SDev	.00035	.00022	.00004	.00112	.00010	.00089	.00024
%RSD	1.7385	1.0376	.37770	.63655	.93688	.76044	1.1113
#1	.01988	.02144	.01131	.17500	.01101	.11650	.02216
#2	.02037	.02175	.01137	.17658	.01115	.11776	.02181

Elem	Cu3247	Fe2714	Mg2790	Mn2576	Mo2020	Ni2316	Sn1899
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Avge	.05398	.18838	.20329	.03273	.02175	.09091	.02099
SDev	.00036	.00090	.00335	.00007	.00056	.00025	.00050
%RSD	.66175	.48062	1.6487	.21540	2.5898	.27492	2.3867
#1	.05373	.18902	.20566	.03268	.02135	.09073	.02135
#2	.05424	.18774	.20092	.03278	.02215	.09109	.02064

Elem	Sr4215	Ti3349	V_2924	Zn2138	2203/1	2203/2	2068/1
Units	mg/L	mg/L	mg/L	mg/L			
Avge	.02070	.02030	.11368	.04377	.00409	.00738	.13446
SDev	.00022	.00035	.00094	.00049	.00016	.00278	.00544
%RSD	1.0595	1.7214	.82308	1.1128	3.8290	37.651	4.0455
#1	.02055	.02005	.11302	.04343	.00420	.00542	.13061
#2	.02086	.02054	.11434	.04412	.00398	.00935	.13830

Elem	2068/2	1960/1	1960/2
Units			
Avge	.13067	.00872	.01458
SDev	.00032	.00136	.00304
%RSD	.24121	15.607	20.822
#1	.13045	.00776	.01243
#2	.13090	.00969	.01673

as out of criteria
associated with 15,16,31 & 32

Page no. 00001
10/19/95

TECHNICON TRAACS 800 SYSTEM 1-ANALYSIS REPORT FORM

DESCRIPTION	RUN INFORMATION	LIMS ID	TEST #1
Date of Run	~~10-18-95~~ 10 10 95	pd 10 2 95	1.000
Time of Run	23:11		1.000
Operator	CM		1.000
Comment	SAMPLE RUN W/O		1.000
	DILUTION LOOP		1.000
	PQL :0.050 mg/L		1.000
	EPA: 353.2		1.000
AN1 ChemName	NITRITE		1.000
AN1 Units	mg/L		1.000
Peak1	Cup:1 -> PRIM	2.00 PPM	1.624
Peak2	Cup:1 -> CALB	2.00 PPM	(1.999 /2.0)10² = 100% ✓
Peak3	Cup:2 -> CALB	1.00 PPM	(0.909 /1.0)10² = 91% ✓
Peak4	Cup:3 -> CALB	0.50 PPM	(0.388 /0.5)10² = 78% ✓
Peak5	Cup:4 -> NULL	0.20 PPM	0.097
Peak6	Cup:5 -> NULL	0.05 PPM	-.045
Peak7	Cup:1 -> HIGH	2.00 PPM	1.951
Peak8	Cup:5 -> LOW	0.05 PPM	-.041
Peak9	Cup:5 -> LOW	0.05 PPM	-.042
Peak10	Cup:6 -> ISMP	ICV	(1.027 /1.0) 10² = 103% ✓
Peak11	Cup:7 -> ISMP	RINSE	-.072
Peak12	Cup:8 -> ISMP	ICB	-.070 <0.05 ✓
Peak13	Cup:9 -> SAMP	FILTER BLANK	-.069 <0.05 ✓
Peak14	Cup:10 -> SAMP	WL1620-1	-.060 <0.05
Peak15	Cup:11 -> SAMP	WL1620-2	-.097
Peak16	Cup:12 -> SAMP	WL1622-17	-.070

Filename: N2101AB

Checked pd 103095

r = 0.9999 ✓

low recovery MO 6/17/96

< -IDL

0001410

T E C H N I C O N TRAACS 800 SYSTEM I-ANALYSIS REPORT FORM

DESCRIPTION	RUN INFORMATION	LIMS ID		TEST #1	
Peak17	Cup:13 -> SAMP	WL1622-18	(x4)	0.004 <0.05	<0.20 @ I1
Peak18	Cup:14 -> SAMP	WL1622-19		-.067	<-IDL
Peak19	Cup:15 -> SAMP	WL1622-20	(x4)	-.114	<0.20 @ I1
Peak20	Cup:16 -> SAMP	WL1622-21		-.055	
Peak21	Cup:17 -> SAMP	WL1622-22	(x8)	1.220	
Peak22	Cup:18 -> SAMP	WL1622-23	(x8)	1.801	<-IDL
Peak23	Cup:19 -> SAMP	WL1622-24MW-W4		-.075 <0.05	
Peak24	Cup:20 -> SAMP	WL1622-24SPK		[(0.517 - <0.05)/0.5]10² = 103% ✓	
Peak25	Cup:21 -> ISMP	CCV		(1.011/1.0)10² = 101% ✓	
Peak26	Cup:22 -> ISMP	RINSE		-.086	
Peak27	Cup:23 -> ISMP	CCB		-.079 <0.05 ✓	
Peak28	Cup:24 -> SAMP	WL1622-25MW-B38		-.078 <0.05	
Peak29	Cup:25 -> SAMP	WL1622-26		-.080	
Peak30	Cup:26 -> SAMP	WL1622-27		-.063	<-IDL
Peak31	Cup:27 -> SAMP	WL1622-28		-.083	
Peak32	Cup:28 -> SAMP	WL1622-29		-.084	
Peak33	Cup:29 -> SAMP	WL1622-30		-.086	
Peak34	Cup:30 -> SAMP	WL1622-31		-.081	
Peak35	Cup:31 -> SAMP	WL1622-32		-.000	x̄ = <0.05 / RPD% —
Peak36	Cup:32 -> SAMP	WL1622-32DUP		0.011	
Peak37	Cup:33 -> SAMP	WL1622-32SPK		[(0.517 - <0.05)/0.5]10² = 103% ✓	
Peak38	Cup:34 -> ISMP	CCV		(1.014/1.0)10² = 101% ✓	
Peak39	Cup:35 -> ISMP	RINSE		-.093	<-IDL
Peak40	Cup:36 -> ISMP	CCB		-.082 <0.05 ✓	
Peak41	Cup:2 -> GAIN	1.00 PPM		0.909	

Page no. 00001
10/26/95

T E C H N I C O N   TRAACS 800 SYSTEM   1-ANALYSIS REPORT FORM

filename: 77102695

DESCRIPTION	RUN INFORMATION	LIMS ID	TEST #1
Date of Run	10-26-95		1.000
Time of Run	11:05		1.000
Operator	CLM		1.000
Comment	SAMPLE RUN W/O		1.000
	DILUTION LOOP		1.000
	PQL: 0.10 mg/L		1.000
	EPA #365.4		1.000
AN1 ChemName	TPO4		1.000
AN1 Units	mg/L		1.000
Peak1	Cup:1 -> PRIM	5.00 PPM	4.675
Peak2	Cup:1 -> CALB	5.00 PPM	(4.936/5.0) 10² = 99% ✓
Peak3	Cup:2 -> CALB	3.00 PPM	(2.975/3.0) 10² = 99% ✓
Peak4	Cup:3 -> CALB	2.00 PPM	(2.082/2.0) 10² = 104% ✓
Peak5	Cup:4 -> CALB	1.00 PPM	(1.103/1.0) 10² = 110% ✓
Peak6	Cup:5 -> CALB	0.50 PPM	(0.577/0.5) 10² = 115% ✓
Peak7	Cup:6 -> CALB	0.10 PPM	(0.153/0.10) 10² = 153% ✓ → high recovery
Peak8	Cup:1 -> HIGH	5.00 PPM	5.135
Peak9	Cup:4 -> LOW	1.00 PPM	1.072
Peak10	Cup:4 -> LOW	1.00 PPM	1.081
Peak11	Cup:7 -> ISMP	RINSE	1.281
Peak12	Cup:8 -> ISMP	ICV	(1.330/1.25) 10² = 106% ✓
Peak13	Cup:9 -> ISMP	RINSE	0.124
Peak14	Cup:9 -> ISMP	RINSE	0.016
Peak15	Cup:10 -> ISMP	ICB	-.070 <0.10 ✓
Peak16	Cup:10 -> ISMP	ICB	-.115 <0.10

r = 0.9998 ✓

checked
pm
11.5.95

} above - PQL

Page no. 00002
10/26/95

T E C H N I C O N   TRAACS 800 SYSTEM   I-ANALYSIS REPORT FORM

DESCRIPTION	RUN INFORMATION	LIMS ID		TEST 01	
Peak17	Cup:11 -> SAMP	WL1593-1		2.313	
Peak18	Cup:12 -> SAMP	WL1593-2		0.587	
Peak19	Cup:13 -> SAMP	WL1593-3		3.196	
Peak20	Cup:14 -> SAMP	WL1622-17	X10	1.055	
Peak21	Cup:15 -> SAMP	WL1622-18	X10	5.530	
Peak22	Cup:16 -> SAMP	WL1622-19		-.005	<0.10
Peak23	Cup:17 -> SAMP	WL1622-20	X10	4.384	
Peak24	Cup:18 -> SAMP	WL1622-21		-.016	<0.10
Peak25	Cup:19 -> SAMP	WL1622-22	X10	17.795	
Peak26	Cup:20 -> SAMP	WL1622-23	X10	27.324	
Peak27	Cup:21 -> SAMP	WL1622-17SPIKE		(1.589 - 1.055/1.25)10 = 43% ✓	matrix spike low!
Peak28	Cup:22 -> ISMP	RINSE		1.420	
Peak29	Cup:23 -> ISMP	CCV		(1.445/1.25)10² = 116% ✓	
Peak30	Cup:24 -> ISMP	RINSE		0.181	
Peak31	Cup:24 -> ISMP	RINSE		0.050	
Peak32	Cup:25 -> ISMP	CCB		-.060	<0.10 ✓
Peak33	Cup:25 -> ISMP	CCB		-.114	<0.10
Peak34	Cup:26 -> SAMP	WL1622-24		-.138	<0.10
Peak35	Cup:27 -> SAMP	WL1622-25		-.166	<0.10
Peak36	Cup:28 -> SAMP	WL1622-26		-.179	<0.10
Peak37	Cup:29 -> SAMP	WL1622-27	X10	2.962	
Peak38	Cup:30 -> SAMP	WL1622-28		-.117	<0.10
Peak39	Cup:31 -> SAMP	WL1622-29		-.190	<0.10
Peak40	Cup:32 -> SAMP	WL1622-30		-.219	<0.10
Peak41	Cup:33 -> SAMP	WL1622-31		-.258	<0.10

above - PQL

sample only - no spike added

above - PQL

MO 6/17/96

10/26/95

T E C H N I C O N TRAACS 800 SYSTEM 1-ANALYSIS REPORT FORM

DESCRIPTION	RUN INFORMATION	LIMS ID	TEST #1
Peak42	Cup:34 -> SAMP	WL1622-32	-.238 < 0.10
Peak43	Cup:35 -> SAMP	WL1628-1	-.212 < 0.10
Peak44	Cup:36 -> SAMP	WL1628-2	-.245 < 0.10
Peak45	Cup:37 -> SAMP	WL1628-3	-.241 < 0.10
Peak46	Cup:38 -> SAMP	WL1628-4	-.240 < 0.10
Peak47	Cup:39 -> SAMP	WL1628-5	-.304 < 0.10
Peak48	Cup:40 -> SAMP	WL1628-5DUP	-.335 < 0.10
Peak49	Cup:41 -> SAMP	WL1628-5SPIKE	0.752 - (<0.10)/1.25 (10²) = 60% e 51
Peak50	Cup:42 -> ISMP	RINSE	0.978
Peak51	Cup:43 -> ISMP	CCV	(1.131/1.25) 10² = 90% ✓
Peak52	Cup:44 -> ISMP	RINSE	0.048
Peak53	Cup:44 -> ISMP	RINSE	-.122
Peak54	Cup:45 -> ISMP	CCB	-.218 < 0.10 ✓
Peak55	Cup:45 -> ISMP	CCB	-.314 < 0.10 ✓
Peak56	Cup:2 -> GAIN	3.00 PPM	2.975

above - PQL

MC
6/17/96

0001423

Client: Olin Chemicals, Work Order: WL1622 11/21/95

PACE, Inc.
Maine Laboratory
Quality Control Report

Duplicate and Matrix Spike/Matrix Spike Duplicate Results

DUPLICATE RESULTS — *MATRIX SPIKE/MATRIX SPIKE DUPLICATE RESULTS*

Parameter	PACE Sample No	Units	Sample Measurements Rep 1	Sample Measurements Rep 2	Mean Conc	RPD (%)	Acceptance Range for RPD (%)	Units	Concentration or Quantity: Sample Only	Spike Added	Sample +Spike Dup 1	Sample +Spike Dup 2	Matrix Spike Recovery (%): Sample +Spike Dup 1	Sample +Spike Dup 2	Acceptance Range (%)	RPD (%)	Acceptance Range (%)
Alkalinity	WL1622-24	mg/L	76.2	84.5	80.4	10	0-20										
Nitrate+Nitrite	WL1622-24	mg/L	5.6	5.4	5.5	3.6	0-20	mg/L	5.6	2.0	7.4	NA	90.0	NA	75-125		0-20
Nitrate - N	See Nitrate+Nitrite, Nitrite																
Nitrite - N	WL1622-24	mg/L	<0.050	<0.050	<0.050	NC	0-20	mg/L	<0.050	0.500	0.517	NA	103	NA	75-125		0-20
Phosphate,Total	WL1622-24	mg/L	<0.100	<0.100	<0.100	NC	0-20	mg/L	~~<0.100~~ 1.055	1.25	~~0.297~~ 1.589	NA	~~23.8*~~ 42.7*	NA	75-125		0-20
TDS	WL1622-24	mg/L	723	656	690	9.7	0-20	MS/MSD Not Applicable for this Parameter									
DOC	WL1622-24	mg/L	8.08	7.78	7.93	3.8	0-20	mg/L	7.27	40.0	47.2	NA	99.8	NA	75-125		0-20

RPD = Relative percent difference, which is the absolute value of the difference between two replicate results divided by the mean concentration then multiplied by 100%.

17

~~postive~~ Total phosphate results are biased low

6/26/96

NC = Relative percent difference cannot be calculated for sample results less than the PQL.

NA = Not applicable.

DATA QUALITY COMMENTS:
Results of all quality control measurements are within the laboratory or contract specified acceptance range except as noted. The laboratory does not use the sample duplicate and matrix spike acceptance ranges as acceptance criteria for a specific analysis. Sample duplicate and matrix spike data are used to evaluate method performance in the environmental sample matrix only. Please refer to LCS data for assessment of quality control for each parameter.

* Matrix spike recovery is outside the laboratory's specified acceptance range indicating potential sample matrix interference and potential bias of reported value for this parameter.

NO_2 / NO_3 MGB 10/25/95

==

QuikChem AE Postrun Report for Tray 95102506.RS
Method: 2-CH NO2/NO3 0.05-10ppm

Concentrations determined from Full Chord

This report prepared on 10/25/95 at 01:59 pm.
This tray was run on 10/25/95 at 01:53 pm.
Operator: MGB Tray Template: Default

NO2/NO3/NOX BATCH 778 + MS for 772 → 776
INSTRUMENT ID: LA01 PACE NE, INC.

==

— Page 1 of report for tray 95102506.RS ——————————————————————————

Continued FROM Run # 95102505 MGB 10/25/95

Cup#	Sample ID	1 NO3 & NO2 mg/L	2 NO2 mg/L	NO3-N mg/L	
106	45768-1S	0.902	0.471	0.430	
108	45757-23 MS	0.567	0.341	0.226	
109	45757-45 L2 MS	3.708	0.483	3.225	
110	45757-55 MS	0.867	0.463	0.404	
111	45757-72 MS	0.865	0.470	0.395	
114	CCV 1.0 MG/L NO3	1.008	0.006	1.008	100.8%
115	CCV 1.0 MG/L NO2	1.046	1.010	0.036	
116	CCB	-0.005	0.002	-0.005	

> Concentration was significantly greater than the high standard's concentration.
< Concentration was significantly less than the lowest non-zero standard's concentration.
< If the sample was diluted, its diluted concentration is less than the lowest non-zero standard's.

-------- End of Report for Tray 95102506.RS -----------

MS associated W/Olin MA samples for Nitrate + Nitrite
WL-1622-24

$\frac{3.708 - 2.748}{1} * 100 = 96\%$ (OK)

No data qual.
MO
6/21/96

RECEIVED
JUL 21 1996

Lab Dup of WL1622-24

$\frac{2.72 - 2.44}{Ave(2.72, 2.44)} * 100 = 10.8$ (OK)

NO2 /NO3 MGB 10/25/95

Cup#	Sample ID	1 NO3 & NO2 mg/L	2 NO2 mg/L	NO3-N mg/L	
130	45757-22	0.021<	0.040<	-0.018	
131	45757-23	0.029	0.031<	-0.002	
132	MBLANK D773	0.003<	0.000<	0.003	
133	LCS 0.5 MG/L NO2	0.532	0.510	0.022	106.2%
134	LCS 0.5 MG/L NO3	0.487	-0.003<	0.487	97%
135	45757-21	0.021<	0.032<	-0.011	Report -21 on Batch 772
136	45757-24	2.043	0.205	1.839	
137	45757-25	0.084	0.002<	0.084	
138	45757-26	2.093	0.243	1.850	
139	CCV 1.0 MG/L NO2	1.064	1.007	0.057	106.4%
140	CCV 1.0 MG/L NO3	1.002	0.003<	1.002	100.2%
141	CCB	-0.007<	0.003<	-0.007	
142	45757-27	0.137	0.003<	0.137	
143	45757-28	0.940	0.044<	0.896	
144	45757-29	0.254	0.004<	0.254	
145	45757-30	0.012<	0.063	-0.051	
146	45757-31	0.043	0.027<	0.016	
147	45757-32	0.388	0.002<	0.388	
148	45757-33	0.084	0.009<	0.084	
149	45757-34	2.083	0.014<	2.069	
150	CCV 1.0 MG/L NO2	1.055	1.011	0.044	105.5%
151	CCV 1.0 MG/L NO3	0.963	0.003<	0.963	96.3%
152	CCB	-0.011<	0.004<	-0.011	
153	45757-35	0.121	0.067	0.055	
154	45757-36	0.137	0.003<	0.137	
155	45757-37	1.612	0.156	1.455	
156	45757-38	1.554	0.000<	1.554	
157	45757-39	2.741	0.137	2.604	
158	CCV 1.0 MG/L NO3	0.658	0.002<	0.658	65.8%
159	CCV 1.0 MG/L NO2	0.954	1.009	-0.055	
160	CCB	-0.001<	-0.001<	-0.001	

RECEIVED JUL 21 1996

> Concentration was significantly greater than the high standard's concentration.
< Concentration was significantly less than the lowest non-zero standard's concentration.
< If the sample was diluted, its diluted concentration is less than the lowest non-zero standard's.

--------- End of Report for Tray 95102404.RS -----------

CCB [ ] is neg and greater than PQL However, none of the Olin MA results associated w/ this CCB are the results of record.
JM 6/21/96

PACE, Inc., Environmental Laboratories
Elements Section
Aqueous Laboratory Control Sample (LCSW)

Client: Olin Chemicals
Work Order: WL1622
Prep. Date: 11/22/95
QC Batch ID: LK22ICW3

Method 3010 (HCl) Element:	Measured Conc. (mg/L)	Analysis Date	True Value (mg/L)	Calculated Recovery (%)	Control Limits (%)	Notes
Aluminum	2.08	30-Nov-95	2.00	104%	80.0-120	
Arsenic	1.12	30-Nov-95	1.00	112%	80.0-120	
Barium	2.02	30-Nov-95	2.00	101%	80.0-120	
Calcium	1.25	30-Nov-95	1.25	100%	80.0-120	
Chromium	0.201	30-Nov-95	0.200	101%	80.0-120	
Iron	0.940	30-Nov-95	1.00	94%	80.0-120	
Lead	0.281	30-Nov-95	0.250	112%	80.0-120	
Magnesium	2.53	30-Nov-95	2.50	101%	80.0-120	
Manganese	0.501	30-Nov-95	0.500	100%	80.0-120	
Potassium	13.0	1-Dec-95	12.5	104%	80.0-120	
Sodium	4.01	1-Dec-95	3.75	107%	80.0-120	
Silicon	0.338	2-Dec-95	0.460	73%	80.0-120	2

Notes:
1) LCS control limits are nominal values, effective 9/15/93
2) See cover letter for additional information. (if notated)
3) Analysis methods are the same as the analysis methods for the prep blank.

The Si results for samples
WL-1622-15, 16, 31 & 32 are
biased low.
MO 6/7/96

FIELD DUPLICATE ANALYSIS

Site Name	Olin, Wilmington
Project Number	00-7074-0102
Sampling Date(s)	10/16/95
Case/Order #	WL-1622

Liquid mg/l

Sample location or description	GW-42D	GW-42D Field Rep	Relative Percent Difference
Sample number	WL-1622-6	WL-1622-7	
Sampling date	10/17/95	10/17/95	
unfilt./filt.	unfilt.	unfilt.	
Comments	Field Dup A	Field Dup B	
Aluminum	1500	1500	0
Arsenic			
Barium			
Calcium	370	370	0
Chromium	2800	2600	7
Chromium, Hexavalen	N/A	N/A	
Chromium, Trivalent	N/A	N/A	
Iron	1400	1400	0
Lead	0.17	0.17	0
Magnesium	840	870	4
Manganese	580	600	3
Potassium	98	73	29 *
Silicon	100	95 ~~100~~	~~0~~ 5
Sodium	22000	21000	5
Bicarbonate as HCO3	N/A	N/A	
Carbonate as CO3	N/A	N/A	
Nitrate as N *	N/A	N/A	
Nitrite as N *	N/A	N/A	
Diss. Organic Carbon	N/A	N/A	
Phosphorus as P *	N/A	N/A	
Solids-Filterable Residue (TDS)	N/A	N/A	

* Indicates control limit out of criteria.

Smith CQAD has established a control limit of 20 percent RPD.

FIELD DUPLICATE ANALYSIS

Site Name	Olin, Wilmington
Project Number	00-7074-0102
Sampling Date(s)	10/16/95
Case/Order #	WL-1622
Liquid mg/l	

Sample location or description	GW-42D	GW-42D Field Rep	Relative Percent Difference
Sample number	WL-1622-22	WL-1622-23	
Sampling date	10/17/95	10/17/95	
unfilt./filt.	filt.	filt.	
Comments	Field Dup A	Field Dup B	
Aluminum *	1800	2000	11
Arsenic *			
Barium *			
Calcium *	440	560	24 *
Chromium *	2600	2900	11
Chromium, Hexavalen	6.4	6.4	0
Chromium, Trivalent	2600	2900	11
Iron *	1600	1800.00	12
Lead *			
Magnesium *	1100	1200	9
Manganese *	470	550	16
Potassium *		~~60~~ 62	200 * → WL-1622-22 detected at the elevated PQL. No qual required
Silicon	~~90.0~~ 87	~~100~~ 96	~~11~~ 10
Sodium *	19000	21000	10
Bicarbonate as HCO3	N/A	N/A	
Carbonate as CO3	N/A	N/A	
Nitrate as N *	3.9	3.6	8
Nitrite as N *	1.2	1.8	40 *
Diss. Organic Carbon	2700	2500	8
Phosphorus as P *	18	27	40 *
Solids-Filterable Residue (TDS)	73000	89000	20

MO
6/17/96

* Indicates control limit out of criteria.

Smith CQAD has established a control limit of 20 percent RPD.

Order WL-1622

Smith Env. Technologies Corporation established criteria:

- If sample values are greater than 100 the maximum acceptance RPD is 30 percent.
- If sample values are less than 100 the maximum acceptance RPD is 50 percent.

* Denotes a criteria outlier.

GW-44D	unfilt	filt	RPD	
Aluminum	990	1300	27	
Calcium	360	500	33	*
Chromium	790	900	13	
Iron	1800	2500	33	*
Magnesium	750	1100	38	*
Manganese	150	160	6	
Silicon	61	63	3	
Sodium	10000	11000	10	

GW-45S	unfilt	filt	RPD	
Calcium	15	16	6	
Iron		0.076		*
Magnesium	2.4	2.5	4	
Manganese	0.89	0.91	2	
Silicon	4.2	4.3	2	
Sodium	68	75	10	

> ~~RL for Fe in unfilt GW-45S = 0.025 therefore estimate~~
result negated due to blank cont. no qual. required.
LW
6/19/96

GW-45D	unfilt	filt	RPD	
Aluminum	800	1100	32	*
Calcium	350	500	35	*
Chromium	560	680	19	
Iron	1200	1500	22	
Magnesium	540	770	35	*
Manganese	260	280	7	
Silicon	54	56	4	
Sodium	8700	9300	7	

GW-42S	unfilt	filt	RPD
Calcium	4.5	4.7	4
Magnesium	1.5	1.6	6

GW-42D	unfilt	filt	RPD
Aluminum	1500	1800	18
Calcium	370	440	17
Iron	1400	1600	13
Magnesium	840	1100	27

Order WL-1622

GW-42D field dup B	unfilt	filt	RPD	
Aluminum	1500	2000	29	
Calcium	370	560	**41**	*
Chromium	2600	2900	11	
Iron	1400	1800.00	25	
Magnesium	870	1200	**32**	*

GW-43S	unfilt	filt	RPD
Sodium	80	82	2

GW-43D	unfilt	filt	RPD
Chromium	260	320	21
Silicon	37	39	5
Sodium	4000	4300	7

GW-50S	unfilt	filt	RPD
Potassium	2.7	3.1	~~14~~ 14
Sodium	64	66	3

GW-50D	unfilt	filt	RPD	
Barium	0.016	0.017	6	
Calcium	330	430	26	
Magnesium	84	100	17	
Manganese	10	13	26	
Potassium	26	39	40	
Silicon	~~7~~ 6.8	8.1	~~13~~ 17	MO 6/17/96
Sodium	1200	1300	8	

SMITH ENVIRONMENTAL CORPORATE QUALITY ASSURANCE DEPARTMENT
DATA VALIDATION INQUIRY

To: Richard Wellman, Pace, Inc.
cc: Bruce Cushing, Project Manager, SMTH
DATA VALIDATION REPORT

Pace Laboratories Case No.: WL-1628
Project Name: Semi-Annual Groundwater Monitoring - Wilmington, MA

June 11, 1996

Dear Mr Wellman:

The following questions pertain the metals' data for WL-1628:

1. Potassium and sodium data were not found in this order. Please provided page numbers of where the data for these analytes are located in the package or submit the data for data review.

2. The silicon data can not be verified with the information provided in this order. Please submit cross references or needed material to complete data review.

3. Lead does not appear to be standardized for ICP run on 11/06/95 (Run ID 951106B, page 148).

Please call me with any questions that you may have regarding these questions.

Thank you,
E. Bryan Rivers
Quality Assurance Scientist

Katahdin
ANALYTICAL SERVICES

FAX TRANSMISSION

Date: 06/14/96 Time: 13:37

To: E. Brian River
Smith Environmental Technologies Corp.

From: George Brewer, Metals Section Supv.

FAX No: 610-834-8236

Number of Pages (Including This Cover): 8

Comments:

From: Katahdin Analytical Services, Inc.
340 County Road No. 5
P.O. Box 720
Westbrook, ME 04098
Tel: (207) 874-2400 Fax: (207) 775-4029

RECEIVED
JUN 17 1996

The information contained in this facsimile transmission is privileged and confidential and intended for the use of the addressee named above. If the receiver of the following pages is not (one of) the above named recipients(s), you are hereby notified that any retention, dissemination, distribution, or copying of this facsimile is prohibited If you received this facsimile in error, please notify us immediately by telephone Thank you

Katahdin
ANALYTICAL SERVICES

M E M O R A N D U M

To: - E. Brian Rivers, Smith Environmental Technologies Corp.
From: George Brewer, Metals Section Supervisor, Katahdin Analytical Services, Inc.
Date: 06/11/96
Subject: Response to your inquiry of 06/11/96 (Inquiry No. MET1) regarding metals data for WL-1628

We are providing the following responses to the questions about Work Order WL-1628 presented in your fax of 06/11/96. The section numbers below refer to the question numbers in your fax.

1) For PACE-ME Work Orders WL-1622 and WL-1628, potassium, sodium, and silicon were analyzed by PACE's New Hampshire laboratory on 11/04/96. The samples of Work Orders WL-1622 and WL-1628 were logged in under different sample numbers at the New Hampshire laboratory, and these sample numbers appear on the raw data. I am providing a table with this memo that cross-references PACE-ME sample numbers and PACE-NH sample numbers. In that table, the column headed "CLIENT ID." lists PACE-ME sample numbers, and the column headed "PACE #" lists the corresponding PACE-NH sample numbers.

   The potassium and sodium data are located immediately following the silicon raw data in the data package. Our copy of the package is not paginated, so I can't provide you with page numbers. Please call me if you need further help in locating the potassium and sodium data.

2) As noted above, silicon was analyzed by PACE-NH. A table cross-referencing PACE-ME and PACE-NH sample numbers is being provided with this memo.

3) This run was performed on the Thermo Jarrell Ash Trace ICP. This instrument employs a unique background correction technique to provide improved detection limits for lead, selenium, and antimony. For these elements, signal and background are measured simultaneously by monitoring each analytical wavelength in two spectral orders. The analytical channels for the two orders are standardized independently. After standardization, the weighted means of the analytical results for the two orders of each wavelength are reported. In the standardization report, standardization information for the 220.3 nm lead wavelength in the first order is identified

RECEIVED
JUN 17 1996

540 County Road No. 5
P.O. Box 720, Westbrook, ME 04098
Tel (207) 874-2400 Fax (207) 775-4029

210 West Road, Portsmouth, NH 03801
Tel (603) 43[illegible] Fax (603) 436-3356

by "2203/1", and that for the second order is identified by "2203/2". The wavelength identified as "Pb2203" is a "dummy" channel where the weighted mean results of the two orders are reported. Therefore, the "Pb2203" channel is listed on the standarization report as "NOT STANDARDIZED". The same convention is followed for the 196.0 nm selenium wavelength and the 206.8 nm antimony wavelength.

I hope this provides the information that you need. Please call me if you have further questions.

RECEIVED
JUN 17 1996

340 County Road No. 5
P.O. Box 720 Westbrook, ME 04098
Tel (207) 874-2400 Fax (207) 775-4029

210 West Road No. 5, Portsmouth, NH 03801
Tel: (603) 431-5777 Fax: (603) 436-3356

SAMPLE TABLE

CLIENT ID.	MATRIX	PACE #	PARAMETERS
PBW-LJ31ICW1	DIGEST	45856-001	K, Na
LCSW-LJ31ICW1	DIGEST	45856-002	K, Na
WL1719-1	DIGEST	45856-003	K, Na
WL1646-1	DITEST	45856-004	K
WL1646-2	DIGEST	45856-005	K
PBS-LJ31ICS1	DIGEST	45856-006	K, Na
LCSS-LJ31ICS1	DIGEST	45856-007	K, Na
WL1641-1	DIGEST	45856-008	K, Na
WL1641-2	DIGEST	45856-009	K, Na
WL1641-3	DIGEST	45856-010	K, Na
WL1641-3D	DIGEST	45856-011	K, Na
WL1641-3S	DIGEST	45856-012	K, Na
PBW-LK02ICW1	DIGEST	45856-013	K, Na
LCSW-LK02ICW1	DIGEST	45856-014	K, Na
WL1641-4	DIGEST	45856-015	K, Na
WL1641-5	DIGEST	45856-016	K, Na
WL1641-5D	DIGEST	45856-017	K, Na
WL1641-5S	DIGEST	45856-018	K, Na
WL1641-6	DIGEST	45856-019	K, Na
WL1641-7	DIGEST	45856-020	K, Na
WL1641-8	DIGEST	45856-021	K, Na
WL1641-9	DIGEST	45856-022	K, Na
WL1641-10	DIGEST	45856-023	K, Na
PBW-LJ20ICW2	DIGEST	45856-024	Si
LCSW-LJ20ICW2	DIGEST	45856-025	Si

RECEIVED JUN 17 1996

pace INCORPORATED

0000004

SAMPLE TABLE
(CONTINUED)

CLIENT ID.	MATRIX	PACE #	PARAMETERS
WL1622-1	DIGEST	45856-026	Si
WL1622-2	DIGEST	45856-027	Si
WL1622-3	DIGEST	45856-028	Si
WL1622-4	DIGEST	45856-029	Si
WL1622-5	DIGEST	45856-030	Si
WL1622-6	DIGEST	45856-031	Si
WL1622-7	DIGEST	45856-032	Si
WL1622-8	DIGEST	45856-033	Si
WL1622-9	DIGEST	45856-034	Si
WL1622-10	DIGEST	45856-035	Mn, Si
WL1622-11	DIGEST	45856-036	Si
WL1622-12	DIGEST	45856-037	Si
WL1622-13	DIGEST	45856-038	Si
WL1622-14	DIGEST	45856-039	Si
WL1622-15	DIGEST	45856-040	Si
WL1622-16	DIGEST	45856-041	Si
PBW-LJ23ICW1	DIGEST	45856-042	K, Si, Na
LCSW-LJ23ICW1	DIGEST	45856-043	K, Si, Na
WL1622-17	DIGEST	45856-044	K, Si, Na
WL1622-18	DIGEST	45856-045	K, Si, Na
WL1622-19	DIGEST	45856-046	K, Si, Na
WL1622-20	DIGEST	45856-047	K, Si, Na
WL1622-21	DIGEST	45856-048	K, Si, Na
WL1622-22	DIGEST	45856-049	K, Si, Na

SAMPLE TABLE
(CONTINUED)

CLIENT ID.	MATRIX	PACE #	PARAMETERS
WL1622-23	DIGEST	45856-050	K, Si, Na
WL1622-24	DIGEST	45856-051	K, Si, Na
WL1622-25	DIGEST	45856-052	K, Si, Na
WL1622-26	DIGEST	45856-053	K, Si, Na
WL1622-27	DIGEST	45856-054	K, Si, Na
WL1622-28	DIGEST	45856-055	K, Si, Na
WL1622-29	DIGEST	45856-056	K, Si, Na
WL1622-30	DIGEST	45856-057	K, Si, Na
WL1622-31	DIGEST	45856-058	K, Si, Na
WL1622-32	DIGEST	45856-059	K, Si, Na
PBW-LJ23ICW2	DIGEST	45856-060	K, Si, Na
LCSW-LJ23ICW2	DIGEST	45856-061	K, Si, Na
WL1628-1	DIGEST	45856-062	K, Si, Na
WL1628-2	DIGEST	45856-063	K, Si, Na
WL1628-3	DIGEST	45856-064	K, Si, Na
WL1628-4	DIGEST	45856-065	K, Si, Na
WL1628-5	DIGEST	45856-066	K, Si, Na
WL1628-6	DIGEST	45856-067	K, Si, Na
WL1628-7	DIGEST	45856-068	K, Si, Na
WL1628-8	DIGEST	45856-069	K, Si, Na
WL1628-9	DIGEST	45856-070	K, Si, Na
WL1628-10	DIGEST	45856-071	K, Si, Na
WL1628-11	DIGEST	45856-072	K, Si, Na
WL1628-12	DIGEST	45856-073	K, Si, Na

RECEIVED FROM 2077754029 06.14.1996 13:39 P. 6

SAMPLE TABLE
(CONTINUED)

CLIENT ID.	MATRIX	PACE #	PARAMETERS
WL1628-13	DIGEST	45856-074	K, Si, Na
WL1628-14	DIGEST	45856-075	K, Si, Na
WL1628-15	DIGEST	45856-076	K, Si, Na
WL1628-16	DIGEST	45856-077	K, Si, Na
WL1628-17	DIGEST	45856-078	K, Si, Na
WL1628-18	DIGEST	45856-079	K, Si, Na
WL1628-19	DIGEST	45856-080	K, Si, Na
PBW-LJ23ICW3	DIGEST	45856-081	K, Si, Na
LCSW-LJ23ICW3	DIGEST	45856-082	K, Si, Na
WL1628-20	DIGEST	45856-083	K, Si, Na
WL1628-21	DIGEST	45856-084	K, Si, Na
WL1628-22	DIGEST	45856-085	K, Si, Na
WL1628-23	DIGEST	45856-086	K, Si, Na
WL1628-24	DIGEST	45856-087	K, Si, Na
WL1628-25	DIGEST	45856-088	K, Si, Na
PBS-LJ27ICS1	DIGEST	45856-089	K, Na
LCSS-LJ27ICS1	DIGEST	45856-090	K, Na
WL1673-1	DIGEST	45856-091	K, Na
WL1673-2	DIGEST	45856-092	K, Na
WL1673-3	DIGEST	45856-093	K, Na
WL1673-4	DIGEST	45856-094	K, Na
WL1673-5	DIGEST	45856-095	K, Na
PBW-LJ26ICW1	DIGEST	45856-096	Na
LCSW-LJ26ICW1	DIGEST	45856-097	Na

SAMPLE TABLE
(CONTINUED)

CLIENT ID.	MATRIX	PACE #	PARAMETERS
WL1676-2	DIGEST	45856-098	Na

RECEIVED
JUN 17 1996
pace

0000008

SMITH ENVIRONMENTAL CORPORATE QUALITY ASSURANCE DEPARTMENT
DATA VALIDATION INQUIRY

To: Richard Wellman, Pace, Inc.
cc: Bruce Cushing, Project Manager, SMTH
DATA VALIDATION REPORT

Pace Laboratories Case No.: WL-1622 and WL-1628
Project Name: Semi-Annual Groundwater Monitoring - Wilmington, MA

Raw Data ?

June 17, 1996

Dear Ms. Lil Pepin:

The following questions pertain the metals' data for WL-1622 and WL-1628:

- It appears that the nitrate results were not included in these data packages. Please provided page numbers of where the data for ~~nitrite+nitrate~~ and nitrate are located in the package or submit the data for data review.

If there is no inconvenience, we need this information as soon as possible. Please call us with any questions that you may have regarding this issue.

Thank you,
E. Bryan Rivers/Marybeth Ousey
Quality Assurance Scientist

RECEIVED
JUL 2 1 1996
6/21/96

Received inquiry response. Raw data submitted. Pages were not numbered
M Ousey
6/21/96

SMITH

APPENDIX B

Wet Chemistry Data Validation Summary

Project Name:	Olin Wilmington, MA	**Case No./SDG:**	WL1622
Project No.:	00-7074-0102	**Sampling Date(s):**	10/17/95
Project Manager:	Bruce Cushing	**Reviewed By:**	Danielle Leauby
Laboratory:	Pace Inc (Katahdin)	**Completion Date:**	6/20/96

Compounds/Analytes: Bromide, Sulfate, sulfide, Ammonia, ortho-Phosphate, Chloride, viscosity

Methods: ☒ ASTM, MCAWW ☐ Other________ ☐ Other________

Matrix: ☐ soil/solid (mg/Kg) ☒ aqueous (mg/L)

The following table indicates the data validation criteria examined, problems identified, and QA action.

Sam 10/17 SO4 + Br 10/18, 10/22, 10/24 + 10/25
CL 10/18 ; OP 10/18 ; vis 10/18
Ammonia 10/19 + 10/26 ; SULFIDE 10/18

Data Validation Criteria:	accept	FYI	qualify	comments
Holding Times	✓	✓		Br, CL, SO4, Ammonia - 28 days ; Sulfide - 7 days o-phos - 48 hrs
Calibration (r and y-intercept)	✓	✓		Sulfide + Viscosity - NA ; CL - Lachat Instr. - see letter Ammon - 2pt Cal ; SO4 - 4 int cals - ok (.995) Br - 4 int cal - OK ; OPhos - ok
Inital Calibration Verification	✓	✓		CL 102.8 ; OP - ① ; VIS - NA ; AMM - 98.2 + 93.6% ; Sulfide - 100.6 ③ ; Br 93-95% (4) ; SO4 94-[illegible].3 (4)
Continuing Calibration Verification	✓	✓		CL 100.2 - 108.3 ; OP - ① ; VIS - NA ; AMM 101.2 - 106.2 + 10[illegible].4 + ... Sulfide - ③ Br 4 runs all ok ; SO4 4 runs all okay
Initial Calibration Blank	✓	✓		CL < MDL ; OP - ① ; VIS - NA ; AMM < 0.05 + < 0.05 sulfide < 1.0 ③ Br all < 1.0 SO4 all < 1.0
Continuing Calibration Blank	✓	✓		CL < 1.0 ; OP - ① ; VIS - NA ; AMM < 0.05 + < 0.05 Sulfide ③ Br ④ SO4 ④
Laboratory Blank	✓	✓		CL < 1.0 ; OP < 0.02 ; VIS - NA ; Amm < 0.05 + < 0.05 Sulfide ③ Br < 1.0 SO4 < 1.0
Blank Spike Results /LCS	✓	✓		CL 101.9 ; OP 98.8% ; VIS - NA ; Amm 89 + 93% Sulfide ③ SO4 ⑤ Br ⑤
Field Blank		✓		CL < 1.0 ; OP < 0.02 ; VIS - NA ; Amm < 0.05 Sulfide - NA SO4 1.9 Br < 1.0
Matrix Spike Results		✓		CL 81% ; OP 103% ; VIS - NA ; AMM 112% + 100.5% ; Sulfide 110.5% Br 110%, 92.6%, other ; SO4 98.6, 91.%
Laboratory Duplicate Results	✓	✓		CL 9.4% RPD ; OP - NC ② ; VIS NA ; AMM 2.3% + 4.1% ; Sulfide - NC ② Br ② ; SO4 3.4, 7.8
Field Duplicate Results		✓	✓	CL 0% RPD ; OP 0.5% RPD ; VIS - NA ; AMM 2.7% ; Sulfide - NC ② SO4 - 42% ; Br ②
Sample Result Verification		✓	✓	CL all okay ; OP - all ok ; VIS OK ; Amm - OK ; Sulfide - OK Br elevated RL due to matrix ; SO4 - RT shifting
Other:				
Other:				

General Comments: Problem w/ RTs for Br + SO4

① ICB - used for MB + ICV used as LCS for OPhos results, Also, CCV + CCB results + %R not provided

② NC = not calculable since both results less than MDL

③ MB - used as ICB, LCS used as ICV ; CCB + CCVs not run

Unintegrated peaks w/ Br SO4 analysis @ or near RT of Br.

SO4 RT shifting throughout analysis. 4th CAL major shifting back n- forth uncertainty of results

NA - Not applicable

NR - Not reviewed

④ CCB - Br + SO4 values arg that are not true representation of what is in blank - no apparent peak present

⑤ ICV + ICB used as LCS + MB for SO4 + Br.

QA Scientist D Leauby Date 6/20/96

SAMPLE TABLE

CLIENT ID. REPORTED AS	MATRIX	PACE #	PARAMETERS
WL1622-17			
GW-44S (FILT)			
	WATER	45696-001	ORTHO-PHOSPHORUS
			CHLORIDE
			SULFATE
			BROMIDE
		45696-016	VISCOSITY
		45696-021	AMMONIA
		45696-037	SULFIDE
WL1622-18			
GW-44D (FILT)			
	WATER	45696-002	ORTHO-PHOSPHORUS
			CHLORIDE
			SULFATE
			BROMIDE
		45696-017	VISCOSITY
		45696-022	AMMONIA
		45696-038	SULFIDE
WL1622-19			
GW-45S (FILT)			
	WATER	45696-003	ORTHO-PHOSPHORUS
			CHLORIDE
			SULFATE
			BROMIDE
		45696-023	AMMONIA
		45696-039	SULFIDE
WL1622-20			
GW-45D (FILT)			
	WATER	45696-004	ORTHO-PHOSPHORUS
			CHLORIDE
			SULFATE
			BROMIDE
		45696-024	AMMONIA
		45696-040	SULFIDE
WL1622-21			
GW-42S (FILT)			
	WATER	45696-005	ORTHO-PHOSPHORUS
			CHLORIDE
			SULFATE
			BROMIDE
		45696-018	VISCOSITY
		45696-025	AMMONIA
		45696-041	SULFIDE

pace INCORPORATED THE ASSURANCE OF QUALITY

SAMPLE TABLE
(CONTINUED)

CLIENT ID. REPORTED AS	MATRIX	PACE #	PARAMETERS
WL1622-22			
GW-42D (FILT)			
	WATER	45696-006	ORTHO-PHOSPHORUS
			CHLORIDE
			SULFATE
			BROMIDE
		45696-019	VISCOSITY
		45696-026	AMMONIA
		45696-042	SULFIDE
WL1622-23			
FIELD REP 2 (FILT)			
	WATER	45696-007	ORTHO-PHOSPHORUS
			CHLORIDE
			SULFATE
			BROMIDE
		45696-020	VISCOSITY
		45696-027	AMMONIA
		45696-043	SULFIDE
WL1622-24			
GW-43S (FILT)			
	WATER	45696-008	ORTHO-PHOSPHORUS
			CHLORIDE
			SULFATE
			BROMIDE
		45696-028	AMMONIA
		45696-044	SULFIDE
WL1622-25			
GW-43S (FILT/DUP)			
	WATER	45696-009	ORTHO-PHOSPHORUS
			CHLORIDE
			SULFATE
			BROMIDE
		45696-029	AMMONIA
		45696-045	SULFIDE

SAMPLE TABLE
(CONTINUED)

CLIENT ID. / REPORTED AS	MATRIX	PACE #	PARAMETERS
WL1622-26			
GW-43S (FILT/MS)			
	WATER	45696-010	ORTHO-PHOSPHORUS
			CHLORIDE
			SULFATE
			BROMIDE
		45696-030	AMMONIA
		45696-046	SULFIDE
WL1622-27			
GW-43D (FILT)			
	WATER	45696-011	ORTHO-PHOSPHORUS
			CHLORIDE
			SULFATE
			BROMIDE
		45696-031	AMMONIA
		45696-047	SULFIDE
WL1622-29			
GW-50S (FILT)			
	WATER	45696-012	ORTHO-PHOSPHORUS
			CHLORIDE
			SULFATE
			BROMIDE
		45696-033	AMMONIA
		45696-049	SULFIDE
WL1622-30			
GW-50D (FILT)			
	WATER	45696-013	ORTHO-PHOSPHORUS
			CHLORIDE
			SULFATE
			BROMIDE
		45696-034	AMMONIA
		45696-050	SULFIDE
WL1622-31			
GW-40S (FILT)			
	WATER	45696-014	ORTHO-PHOSPHORUS
			CHLORIDE
			SULFATE
			BROMIDE
		45696-035	AMMONIA
		45696-051	SULFIDE

pace. INCORPORATED THE ASSURANCE OF QUALITY

SAMPLE TABLE
(CONTINUED)

CLIENT ID. / REPORTED AS	MATRIX	PACE #	PARAMETERS
WL1622-32			
GW-40D (FILT)			
	WATER	45696-015	ORTHO-PHOSPHORUS
			CHLORIDE
			SULFATE
			BROMIDE
		45696-036	AMMONIA
		45696-052	SULFIDE
WL1622-28			
GW-400 (FILT)			
	WATER	45696-032	AMMONIA
		45696-048	SULFIDE
		45696-069	ORTHO-PHOSPHORUS
			CHLORIDE
			SULFATE
			BROMIDE
WL1622-1			
GW-44S (UNFILT)			
	WATER	45696-053	AMMONIA
WL1622-2			
GW-44D (UNFILT)			
	WATER	45696-054	AMMONIA
WL1622-3			
GW-45S (UNFILT)			
	WATER	45696-055	AMMONIA
WL1622-4			
GW-45D (UNFILT)			
	WATER	45696-056	AMMONIA
WL1622-5			
GW-42S (UNFILT)			
	WATER	45696-057	AMMONIA
WL1622-6			
GW-42D (UNFILT)			
	WATER	45696-058	AMMONIA

SAMPLE TABLE
(CONTINUED)

CLIENT ID. REPORTED AS	MATRIX	PACE #	PARAMETERS
WL1622-7 FIELD REP 2 (UNFILT)	WATER	45696-059	AMMONIA
WL1622-8 GW-43S (UNFILT)	WATER	45696-060	AMMONIA
WL1622-9 GW-43S (UNFILT)	WATER	45696-061	AMMONIA
WL1622-10 GW-43S (UNFILT/DUP)	WATER	45696-062	AMMONIA
WL1622-11 GW-43D (UNFILT/MS)	WATER	45696-063	AMMONIA
WL1622-12 GW-400 (UNFILT)	WATER	45696-064	AMMONIA
WL1622-13 GW-50S (UNFILT)	WATER	45696-065	AMMONIA
WL1622-14 GW-50D (UNFILT)	WATER	45696-066	AMMONIA
WL1622-15 GW-40S (UNFILT)	WATER	45696-067	AMMONIA
WL1622-16 GW-40D (UNFILT)	WATER	45696-068	AMMONIA

pace. INCORPORATED THE ASSURANCE OF QUALITY

Field Identification: GW-44S (FILT) Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Chloride, dissolved (mg/L)	9	1	45696-C01	10/18/95	765	325.1/1
Sulfate, dissolved (mg/L)	9	1	45696-001	10/18/95	668A	300.0/1
Bromide, dissolved (mg/L)	BDL	1	45696-001	10/18/95	668A	300.0/1
Ortho Phosphate, dissolved (mg/L as P)	0.08	0.02	45696-001	10/18/95	203	365.2/1
Viscosity, dissolved (cpoise)	3.0		45696-016	10/18/95		D3245-85
Ammonia-N, dissolved (mg/L as N)	2.3	0.05	45696-021	10/19/95	585	350.2/1
Sulfide, dissolved (mg/L)	BDL	1	45696-037	10/18/95	312	376.1/1

Field Identification: GW-44D (FILT) Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Chloride, dissolved (mg/L)	13000	50	45696-002	10/18/95	765	325.1/1
Sulfate, dissolved (mg/L)	28000	1000	45696-002	10/18/95	668A	300.0/1
Bromide, dissolved (mg/L)	BDL	20 (+)	45696-002	10/20/95	669A	300.0/1
Ortho Phosphate, dissolved (mg/L as P)	0.5	0.1	45696-002	10/18/95	203	365.2/1
Viscosity, dissolved (cpoise)	3.5		45696-017	10/18/95		D3245-85
Ammonia-N, dissolved (mg/L as N)	3400	50	45696-022	10/19/95	585	350.2/1
Sulfide, dissolved (mg/L)	BDL	2	45696-038	10/18/95	312	376.1/1

Field Identification: GW-45S (FILT) Matrix: WATER (+) elevated due to dilution

DMK 6/25/96

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Chloride, dissolved (mg/L)	130	1	45696-003	10/18/95	765	325.1/1
Sulfate, dissolved (mg/L)	28	1	45696-003	10/18/95	668A	300.0/1
Bromide, dissolved (mg/L)	BDL	1	45696-003	10/20/95	669A	300.0/1
Ortho Phosphate, dissolved (mg/L as P)	BDL	0.02	45696-003	10/18/95	203	365.2/1
Ammonia-N, dissolved (mg/L as N)	3.6	0.05	45696-023	10/19/95	585	350.2/1
Sulfide, dissolved (mg/L)	BDL	1	45696-039	10/18/95	312	376.1/1

pace INCORPORATED THE ASSURANCE OF QUALITY

Field Identification: GW-45D (FILT) Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Chloride, dissolved (mg/L)	8900	50	45696-004	10/18/95	765	325.1/1
Sulfate, dissolved (mg/L)	32000	1000	45696-004	10/18/95	668A	300.0/1
Bromide, dissolved (mg/L)	BDL	20 +	45696-004	10/20/95	669A	300.0/1
Ortho Phosphate, dissolved (mg/L as P)	0.4	0.1	45696-004	10/18/95	203	365.2/1
Ammonia-N, dissolved (mg/L as N)	3300	10	45696-024	10/19/95	585	350.2/1
Sulfide, dissolved (mg/L)	BDL	2	45696-040	10/18/95	312	376.1/1

+ elevated due to dilution DML 6/25/96

Field Identification: GW-42S (FILT) Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Chloride, dissolved (mg/L)	85	1	45696-005	10/18/95	765	325.1/1
Sulfate, dissolved (mg/L)	6	1	45696-005	10/18/95	668A	300.0/1
Bromide, dissolved (mg/L)	BDL	1	45696-005	10/18/95	668A	300.0/1
Ortho Phosphate, dissolved (mg/L as P)	BDL	0.02	45696-005	10/18/95	203	365.2/1
Viscosity, dissolved (cpoise)	3.0		45696-018	10/18/95		D3245-85
Ammonia-N, dissolved (mg/L as N)	4.3	0.05	45696-025	10/19/95	585	350.2/1
Sulfide, dissolved (mg/L)	BDL	1	45696-041	10/18/95	312	376.1/1

Field Identification: GW-42D (FILT) Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Chloride, dissolved (mg/L)	18000	100	45696-006	10/18/95	765	325.1/1
Sulfate, dissolved (mg/L)	54000	1000	45696-006	10/18/95	668A	300.0/1
Bromide, dissolved (mg/L)	BDL	50 +	45696-006	10/24/95	670A	300.0/1
Ortho Phosphate, dissolved (mg/L as P)	0.9	0.1	45696-006	10/18/95	203	365.2/1
Viscosity, dissolved (cpoise)	3.5		45696-019	10/18/95		D3245-85
Ammonia-N, dissolved (mg/L as N)	7300	50	45696-026	10/19/95	585	350.2/1
Sulfide, dissolved (mg/L)	BDL	4	45696-042	10/18/95	312	376.1/1

+ elevated due to dilution DML 6/25/96

pace INCORPORATED THE ASSURANCE OF QUALITY

Field Identification: FIELD REP 2 (FILT) Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Chloride, dissolved (mg/L)	18000	100	45696-007	10/18/95	765	325.1/1
Sulfate, dissolved (mg/L)	35000	~~1000~~	45696-007	10/18/95	668A	300.0/1
Bromide, dissolved (mg/L)	BDL	50 +	45696-007	10/24/95	670A	300.0/1
Ortho Phosphate, dissolved (mg/L as P)	1	0.1	45696-007	10/18/95	203	365.2/1
Viscosity, dissolved (cpoise)	4.0		45696-020	10/18/95		D3245-85
Ammonia-N, dissolved (mg/L as N)	7500	50	45696-027	10/19/95	585	350.2/1
Sulfide, dissolved (mg/L)	BDL	4	45696-043	10/18/95	312	376.1/1

+ elevated due to dilution DMM 6/26/96

Field Identification: GW-43S (FILT) Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Chloride, dissolved (mg/L)	93	1	45696-008	10/18/95	765	325.1/1
Sulfate, dissolved (mg/L)	440	10	45696-008	10/18/95	668A	300.0/1
Bromide, dissolved (mg/L)	BDL	1	45696-008	10/20/95	669A	300.0/1
Ortho Phosphate, dissolved (mg/L as P)	BDL	0.02	45696-008	10/18/95	203	365.2/1
Ammonia-N, dissolved (mg/L as N)	84	0.5	45696-028	10/19/95	585	350.2/1
Sulfide, dissolved (mg/L)	BDL	1	45696-044	10/18/95	312	376.1/1

Field Identification: GW-43S (FILT/DUP) Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Chloride, dissolved (mg/L)	85	1	45696-009	10/18/95	765	325.1/1
Sulfate, dissolved (mg/L)	410	10	45696-009	10/18/95	668A	300.0/1
Bromide, dissolved (mg/L)	BDL	1	45696-009	10/20/95	669A	300.0/1
Ortho Phosphate, dissolved (mg/L as P)	BDL	0.02	45696-009	10/18/95	203	365.2/1
Ammonia-N, dissolved (mg/L as N)	93	0.5	45696-029	10/19/95	585	350.2/1
Sulfide, dissolved (mg/L)	BDL	1	45696-045	10/18/95	312	376.1/1

Field Identification: GW-43S (FILT/MS) Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Chloride, dissolved (mg/L)	130	1	45696-010	10/18/95	765	325.1/1
Sulfate, dissolved (mg/L)	530	10	45696-010	10/18/95	668A	300.0/1
Bromide, dissolved (mg/L)	9	1	45696-010	10/20/95	669A	300.0/1
Ortho Phosphate, dissolved (mg/L as P)	0.52 ~~0.51~~	0.02	45696-010	10/18/95	203	365.2/1
Ammonia-N, dissolved (mg/L as N)	95	0.5	45696-030	10/19/95	585	350.2/1
Sulfide, dissolved (mg/L)	40	1	45696-046	10/18/95	312	376.1/1

DML 6/24/96

Field Identification: GW-43D (FILT) Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Chloride, dissolved (mg/L)	4000	1000	45696-011	10/18/95	765	325.1/1
Sulfate, dissolved (mg/L)	23000	1000	45696-011	10/24/95	671A	300.0/1
Bromide, dissolved (mg/L)	BDL	20 (+)	45696-011	10/24/95	670A	300.0/1
Ortho Phosphate, dissolved (mg/L as P)	0.26	0.02	45696-011	10/18/95	203	365.2/1
Ammonia-N, dissolved (mg/L as N)	3400	10	45696-031	10/20/95	586	350.2/1
Sulfide, dissolved (mg/L)	BDL	1	45696-047	10/18/95	312	376.1/1

(+) elevated due to dilution

DML 6/25/96

Field Identification: GW-50S (FILT) Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Chloride, dissolved (mg/L)	75	1	45696-012	10/18/95	765	325.1/1
Sulfate, dissolved (mg/L)	190	5	45696-012	10/18/95	668A	300.0/1
Bromide, dissolved (mg/L)	BDL	1	45696-012	10/20/95	669A	300.0/1
Ortho Phosphate, dissolved (mg/L as P)	BDL	0.02	45696-012	10/18/95	203	365.2/1
Ammonia-N, dissolved (mg/L as N)	53	0.3	45696-033	10/19/95	585	350.2/1
Sulfide, dissolved (mg/L)	BDL	1	45696-049	10/18/95	312	376.1/1

Field Identification: GW-50D (FILT) Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Chloride, dissolved (mg/L)	1200	10	45696-013	10/18/95	765	325.1/1
Sulfate, dissolved (mg/L)	4300	100	45696-013	10/18/95	668A	300.0/1
Bromide, dissolved (mg/L)	BDL	20 (+)	45696-013	10/24/95	670A	300.0/1
Ortho Phosphate, dissolved (mg/L as P)	BDL	0.02	45696-013	10/18/95	203	365.2/1
Ammonia-N, dissolved (mg/L as N)	900	3	45696-034	10/19/95	585	350.2/1
Sulfide, dissolved (mg/L)	BDL	1	45696-050	10/18/95	312	376.1/1

(+) elevated due to dilution DML 6/25/96

pace INCORPORATED
THE ASSURANCE OF QUALITY

Field Identification: GW-40S (FILT) Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Chloride, dissolved (mg/L)	24	1	45696-014	10/18/95	765	325.1/1
Sulfate, dissolved (mg/L)	42	1	45696-014	10/18/95	668A	300.0/1
Bromide, dissolved (mg/L)	BDL	1	45696-014	10/18/95	668A	300.0/1
Ortho Phosphate, dissolved (mg/L as P)	BDL	0.02	45696-014	10/18/95	203	365.2/1
Ammonia-N, dissolved (mg/L as N)	BDL	0.05	45696-035	10/19/95	585	350.2/1
Sulfide, dissolved (mg/L)	BDL	1	45696-051	10/18/95	312	376.1/1

Field Identification: GW-40D (FILT) Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Chloride, dissolved (mg/L)	100	1	45696-015	10/18/95	765	325.1/1
Sulfate, dissolved (mg/L)	860	10	45696-015	10/18/95	668A	300.0/1
Bromide, dissolved (mg/L)	⊕ <10	~~1~~ 10	45696-015	10/18/95	668A	300.0/1
Ortho Phosphate, dissolved (mg/L as P)	0.05	0.02	45696-015	10/18/95	203	365.2/1
Ammonia-N, dissolved (mg/L as N)	120	0.5	45696-036	10/19/95	585	350.2/1
Sulfide, dissolved (mg/L)	3	1	45696-052	10/18/95	312	376.1/1

DML 6/25/96 ⊕ elevated due to dilution

Field Identification: GW-400 (FILT) Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Ammonia-N, dissolved (mg/L as N)	BDL	0.05	45696-032	10/19/95	585	350.2/1
Sulfide, dissolved (mg/L)	BDL	1	45696-048	10/18/95	312	376.1/1
Chloride, dissolved (mg/L)	BDL	1	45696-069	10/18/95	765	325.1/1
Sulfate, dissolved (mg/L)	1.9	1	45696-069	10/18/95	668A	300.0/1
Bromide, dissolved (mg/L)	BDL	1	45696-069	10/18/95	668A	300.0/1
Ortho Phosphate, dissolved (mg/L as P)	BDL	0.02	45696-069	10/18/95	203	365.2/1

Field Identification: GW-44S (UNFILT) Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Ammonia-N (mg/L as N)	0.12	0.05	45696-053	10/20/95	586	350.2/1

pace. INCORPORATED THE ASSURANCE OF QUALITY

Field Identification: GW-44D (UNFILT)   Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Ammonia-N (mg/L as N)	4100	10	45696-054	10/20/95	586	350.2/1

Field Identification: GW-45S (UNFILT)   Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Ammonia-N (mg/L as N)	2.8	0.05	45696-055	10/20/95	586	350.2/1

Field Identification: GW-45D (UNFILT)   Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Ammonia-N (mg/L as N)	3900	10	45696-056	10/20/95	586	350.2/1

Field Identification: GW-42S (UNFILT)   Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Ammonia-N (mg/L as N)	4.0	0.05	45696-057	10/20/95	586	350.2/1

Field Identification: GW-42D (UNFILT)   Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Ammonia-N (mg/L as N)	7000 ~~6900~~	50	45696-058	10/20/95	586	350.2/1

DML 6/24/96

Field Identification: FIELD REP 2 (UNFILT)   Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Ammonia-N (mg/L as N)	7000 ~~7100~~	50	45696-059	10/20/95	586	350.2/1

DML 6/24/96

pace INCORPORATED THE ASSURANCE OF QUALITY

Field Identification: GW-43S (UNFILT) Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Ammonia-N (mg/L as N)	85	0.5	45696-060	10/20/95	586	350.2/1

Field Identification: GW-43S (UNFILT/DUP) Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Ammonia-N (mg/L as N)	89	0.5	45696-061	10/20/95	586	350.2/1

Field Identification: GW-43S (UNFILT/MS) Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Ammonia-N (mg/L as N)	110	0.5	45696-062	10/20/95	586	350.2/1

Field Identification: GW-43D (UNFILT) Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Ammonia-N (mg/L as N)	3000	50	45696-063	10/20/95	586	350.2/1

Field Identification: GW-400 (UNFILT) Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Ammonia-N (mg/L as N)	BDL	0.05	45696-064	10/20/95	586	350.2/1

Field Identification: GW-50S (UNFILT) Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Ammonia-N (mg/L as N)	52	0.5	45696-065	10/20/95	586	350.2/1

pace INCORPORATED THE ASSURANCE OF QUALITY

Field Identification: GW-50D (UNFILT) Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Ammonia-N (mg/L as N)	950	5	45696-066	10/20/95	586	350.2/1

Field Identification: GW-40S (UNFILT) Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Ammonia-N (mg/L as N)	BDL	0.05	45696-067	10/20/95	586	350.2/1

Field Identification: GW-40D (UNFILT) Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Ammonia-N (mg/L as N)	140	0.5	45696-068	10/20/95	586	350.2/1

References:
1) 40 CFR Part 136, Friday, October 26, 1984
2) EPA SW 846, 3rd Edition
3) Standard Methods, 16th Edition

pace INCORPORATED THE ASSURANCE OF QUALITY

Analysis: ortho-phosphorus
Laboratory: Pace Incorporated
Initial Cal. Date **2/1/95** Analysis Date: **10/18/95**

	ABS.	CONC.			
	x	y	XY	X2	Y2
	0.001	**-0.00375**	-0.00000375	0.000001	1.40625E-05
	0.017	**0.015295**	0.000260015	0.000289	0.000233937
7	**0.035**	**0.034344**	0.00120204	0.001225	0.00117951
	0.07	**0.072442**	0.00507094	0.0049	0.005247843
	0.18	**0.186735**	0.0336123	0.0324	0.03486996
	0.376	**0.377224**	0.141836224	0.141376	0.142297946
	0.571	**0.567714**	0.324164694	0.326041	0.322299186
SUMS	1.25	1.250004	0.506142463	0.506232	0.506142445
	XY	1.562505			

r 0.999841836

slope **0.9996811**
INTERCEPT **5.752E-05**

	x'	y'		x'	y'
MBLANK	0.003	0.003057			5.75159E-05
LCSA	0.373	0.372939			5.75159E-05
45696-1	0.06	0.060038			5.75159E-05
45683-1D	0.06	0.060038			5.75159E-05
45683-1SPK	0.453	0.452913			5.75159E-05
45696-2	0.101	0.101025			5.75159E-05
45696-3	0.003	0.003057			5.75159E-05
45696-4	0.075	0.075034			5.75159E-05
45696-5	0.003	0.003057			5.75159E-05
45696-6	0.15	0.15001			5.75159E-05
45696-7	0.16	0.160006			5.75159E-05
45696-8	0.006	0.006056			5.75159E-05
45696-8D	0.001	0.001057			5.75159E-05
45696-8SPK	0.389	0.388933			5.75159E-05
45696-9	0.001	0.001057			5.75159E-05
45696-10	0.389	0.388933			5.75159E-05
45696-11	0.239	0.238981			5.75159E-05
45696-12	0.001	0.001057			5.75159E-05
45696-13	0.002	0.002057			5.75159E-05
45696-14	0.003	0.003057			5.75159E-05
45696-15	0.037	0.037046			5.75159E-05
45696-12	0.462	0.46191	X!)		5.75159E-05
45696-69	0.002	0.002057			5.75159E-05
		5.75E-05			5.75159E-05

ICAL # 1

Analysis: SO4
Laboratory: Pace Incorporated
Analysis Date: 10/18/95

	HEIGHT	CONC.			
	x	y	XY	X2	Y2
	5060	1	5060	25603600	1
	26431	5	132155	698597761	25
6	53825	10	538250	2897130625	100
	112040	20	2240800	12552961600	400
	237136	40	9485440	56233482496	1600
	682587	100	68258700	4.65925E+11	10000
SUMS	1117079	176	80660405	5.38333E+11	12126
	XY	196605904			
				r **0.998551903**	

slope **0.000145**
INTERCEPT **2.3421891**

	x'	y'			x'	y'	
ICV/CCS	316590	48.239353		45696-9	249123	38.45843	X10
ICB/MB	0	2.3421891		45696-10	952690	140.457	
45696-1	49593	9.5318605		45696-10S	951540	140.2903	
45696-1D	51190	9.7633832		45696-10	256497	39.52746	X10
45696-1SPK	103028	17.27852		45696-11	950247	140.1028	X10
45696-2	960252	141.55329	X10	45696-11S	949186	139.949	X10
45696-2S	958781	141.34004		45696-11	78600	13.73711	X500
45696-2	179583	28.376967	X1000	45696-12	951700	140.3135	
45696-3	179177	28.318108		CCV	112115	18.59589	
45696-4	103103	17.289393	X10	CCB	0	2.342189	
45696-4S	957484	141.15201	X10	45696-12S	948475	139.8459	
45696-4	204377	31.97144	X1000	45696-12	225608	35.04937	X5
CCV	108636	18.091532		45696-13	945723	139.447	
CCB	0	2.3421891		45696-13	251508	38.80419	X100
45696-5	28575	6.4848072		45696-14	237472	36.76934	
45696-6	172239	27.312282	X10	45696-15	944540	139.2755	
45696-6S	949721	140.02658	X10	45696-15S	943693	139.1527	
45696-6	355579	53.891725	X1000	45696-15	484308	72.55402	X10
45696-7	951657	140.30725	X10	45696-69	1616	2.576466	
45696-7S	948612	139.8658	X10	CCV	94793	16.08466	
45696-7	226389	35.162597	X1000	CCB	0	2.342189	
45696-8	953985	140.64474		45696-10S	264666	40.71175	X10
45696-8S	953954	140.64025		CCV	92431	15.74224	
45696-8	275898	42.340091	X10	CCB	0	2.342189	
CCV	118404	19.507633					
CCB	0	2.3421891					
45696-9	953863	140.62706					
45696-9S	952901	140.48759					

ICAC # 2

Analysis: SO4
Laboratory: Pace Incorporated
Analysis Date: 10/20/95

	HEIGHT x	CONC. y	XY	X2	Y2
	31223	**1**	31223	974875729	1
	27798	**5**	138990	772728804	25
6	**48345**	**10**	483450	2337239025	100
	107739	**20**	2154780	11607692121	400
	211494	**40**	8459760	44729712036	1600
	585250	**100**	58525000	3.42518E+11	10000
SUMS	1011849	176	69793203	4.0294E+11	12126
	XY	178085424			

r **0.997342404**

slope **0.0001727**
INTERCEPT **0.2132471**

	x'	y'		x'	y'
ICV/CCS	277270	48.090705			0.213247
ICB/MB	105	0.2313779			0.213247
45696-2	962634	166.43559	X20		0.213247
45696-2S	961454	166.23183	X20		0.213247
45696-3	170736	29.695			0.213247
45696-3S	219730	38.155014			0.213247
45696-4	961427	166.22717	X20		0.213247
45696-4S	960488	166.06503	X20		0.213247
CCV	271725	47.133225			0.213247
CCB	-501	0.1267372	X10		0.213247
45696-8	958651	165.74783	X10		0.213247
45696-8S	959000	165.80809	X1000		0.213247
45696-9	958596	165.73833			0.213247
45696-9S	958608	165.7404			0.213247
45696-10	958775	165.76924			0.213247
45696-10S	958654	165.74834			0.213247
45696-12	963959	166.66438			0.213247
45696-12S	958803	165.77407			0.213247
CCV	28801	5.1864453			0.213247
CCB	0	0.2132471			0.213247
		0.2132471			0.213247
		0.2132471			0.213247
		0.2132471			0.213247
		0.2132471	X10		0.213247
		0.2132471			
		0.2132471			
		0.2132471			
		0.2132471			

ICAL #2

Analysis: BR
Laboratory: Pace Incorporated
Analysis Date: 10/20/95

	HEIGHT	CONC.			
	x	y	XY	X2	Y2
	7685	**1**	7685	59059225	1
	36191	**5**	180955	1309788481	25
6	**75813**	**10**	758130	5747610969	100
	170092	**20**	3401840	28931288464	400
	342144	**40**	13685760	1.17063E+11	1600
	964222	**100**	96422200	9.29724E+11	10000
SUMS	1596147	176	114456570	1.08283E+12	12126
	XY	280921872			
				r 0.999045809	

slope **0.0001028**
INTERCEPT **1.9976425**

	x'	y'		x'	y'
ICV/CCS	444205	47.642501			1.997643
ICB/MB	0	1.9976425			1.997643
45696-2	0	1.9976425	X20		1.997643
45696-2S	215109	24.101445	X20		1.997643
45696-3	0	1.9976425			1.997643
45696-3S	83421	10.569675			1.997643
45696-4	184525	20.958747	X20		1.997643
45696-4S	159176	18.353978	X20		1.997643
CCV	438579	47.064394			1.997643
CCB	0	1.9976425	X10		1.997643
45696-8	0	1.9976425	X10		1.997643
45696-8S	0	1.9976425	X1000		1.997643
45696-9	0	1.9976425			1.997643
45696-9S	0	1.9976425			1.997643
45696-10	0	1.9976425			1.997643
45696-10S	0	1.9976425			1.997643
45696-12	4336	2.4431938			1.997643
45696-12S	71282	9.3223164			1.997643
CCV	463858	49.66197			1.997643
CCB	0	1.9976425			1.997643
		1.9976425			1.997643
		1.9976425			1.997643
		1.9976425			1.997643
		1.9976425	X10		1.997643
		1.9976425			
		1.9976425			
		1.9976425			
		1.9976425			

ICAL # 4

Analysis: SO4
Laboratory: Pace Incorporated
Analysis Date: 10/25/95

	HEIGHT x	CONC. y	XY	X2	Y2
	4786	**1**	4786	22905796	1
	16999	**5**	84995	288966001	25
6	**35228**	**10**	352280	1241011984	100
	72072	**20**	1441440	5194373184	400
	144027	**40**	5761080	20743776729	1600
	394397	**100**	39439700	1.55549E+11	10000
SUMS	667509	176	47084281	1.8304E+11	12126
	XY	117481584			

r 0.999345597

slope **0.0002528**
INTERCEPT **1.2040713**

	x'	y'		x'	y'
ICV/CCS	180108	46.743279			1.204071
ICB/MB	606	1.3572947			1.204071
45696-11	81347	21.772163	X1000		1.204071
CCV	82540	22.073806			1.204071
CCB	-189	1.1562838			1.204071
CCV	80462	21.548396			1.204071
CCB	400	1.3052088			1.204071
		1.2040713			1.204071
		1.2040713			1.204071
		1.2040713			1.204071
		1.2040713			1.204071
		1.2040713			1.204071
		1.2040713			1.204071
		1.2040713			1.204071
		1.2040713			1.204071
		1.2040713			1.204071
		1.2040713			1.204071
		1.2040713			1.204071
		1.2040713			1.204071
		1.2040713			1.204071
		1.2040713			1.204071
		1.2040713			1.204071
		1.2040713			1.204071
		1.2040713	X10		1.204071
		1.2040713			
		1.2040713			
		1.2040713			
		1.2040713			

ICAL#4

Analysis: Br
Laboratory: Pace Incorporated
Analysis Date: 10/25/95

	HEIGHT x	CONC. y	XY	X2	Y2
	6631	**1**	6631	43970161	1
	30941	**5**	154705	957345481	25
6	**66375**	**10**	663750	4405640625	100
	136360	**20**	2727200	18594049600	400
	279908	**40**	11196320	78348488464	1600
	775280	**100**	77528000	6.01059E+11	10000
SUMS	1295495	176	92276606	7.03409E+11	12126
	XY	228007120			
				r **0.999240744**	

slope **0.0001281**
INTERCEPT **1.674188**

	x'	y'		x'	y'
ICV/CCS	352799	46.868274			1.674188
ICB/MB	0	1.674188			1.674188
45696-11	305	1.7132589	X1000		1.674188
CCV	140532	19.67655			1.674188
CCB	-390	1.6242284			1.674188
CCV	140677	19.695125			1.674188
CCB	0	1.674188			1.674188
		1.674188			1.674188
		1.674188			1.674188
		1.674188			1.674188
		1.674188			1.674188
		1.674188			1.674188
		1.674188			1.674188
		1.674188			1.674188
		1.674188			1.674188
		1.674188			1.674188
		1.674188			1.674188
		1.674188			1.674188
		1.674188			1.674188
		1.674188			1.674188
		1.674188			1.674188
		1.674188			1.674188
		1.674188			1.674188
		1.674188	X10		1.674188
		1.674188			
		1.674188			
		1.674188			
		1.674188			

CALIBRATION CURVE

CRESSONA - SSM/Laboratories

Results from ~~8/20/95~~- 10/13/95 Dill 6/26/96

peak heights

Method 300.1	Concentration (in ng/uL)					
	1	5	10	20.0	40.0	100.0
sulfate	5060	26431	53825	112040	237136	682587
bromide	7863	39709	82620	173661	375909	979337

AVE-6POINTS	SD-6POINTS	%RSD-6POINTS
5680.828333	633.8430705	11.15758184
8656.824167	792.2954953	9.152265081

RF	Concentration (in ng/uL)					
	1	5	10	20	40	100
sulfate	5060	5286.2	5382.5	5602	5928.4	6825.87
bromide	7863	7941.8	8262	8683.05	9397.725	9793.37

AVE-5POINTS	SD-5POINTS	%RSD-5POINTS
5804.994	621.74589	10.71053458
8815.589	771.7630126	8.754525791

5-Point %RSD calcualted from 5-100ng/uL stds.

Calcualted Conc. (based on the Ave. RF of the 1ng-100ng stds)

Method 300.1	Concentration (in ng/uL)					
concentration	1	5	10	20	40	100
sulfate	0.890715174	4.652666557	9.474850645	19.72247592	41.74320822	120.1562448
bromide	0.908300763	4.587017044	9.543915691	20.06058996	43.42343021	113.1289005

%Recoveries (comparing the known conc. to the calculated conc.)

	Concentration (in ng/uL)					
concentration	1	5	10	20	40	100
sulfate	89.07151745	93.05333113	94.74850645	98.61237959	104.3580206	120.1562448
bromide	90.83007635	91.74034088	95.43915691	100.3029498	108.5585755	113.1289005

CALIBRATION CURVE
CRESSONA - SSM/Laboratories
Results from 10/20/95

peak heights

Method 300.1	Concentration (in ng/uL)						AVE-6POINTS	SD-6POINTS	%RSD-6POINTS
	1	5	10	20.0	40.0	100.0			
sulfate	31223	27798	48345	107739	211494	585250	9690.65	10553.97691	108.9088649
bromide	7685	36191	75803	170092	342144	964222	8200.653333	880.013911	10.73102197

* Due to level std use 5pts to quantitate samples - high level SO_4 hits not effected

RF	Concentration (in ng/uL)						AVE-5POINTS	SD-5POINTS	%RSD-5POINTS
	1	5	10	20	40	100			
sulfate	31223	5559.6	4834.5	5386.95	5287.35	5852.5	5384.18	374.7090948	6.959445911
bromide	7685	7238.2	7580.3	8504.6	8553.6	9642.22	8303.784	942.4760455	11.34995859

5-Point %RSD calcualted from 5-100ng/uL stds.

No qualification necessary

DMC 6/26/96

Calcualted Conc. (based on the Ave. RF of the 1ng-100ng stds)

Method 300.1	Concentration (in ng/uL)					
concentration	1	5	10	20	40	100
sulfate	3.221971694	2.86853823	4.988829439	11.11783007	21.82454221	60.39326567
bromide	0.937120457	4.413184966	9.243531816	20.74127427	41.72155389	117.5786807

%Recoveries (comparing the known conc. to the calculated conc.)

	Concentration (in ng/uL)					
concentration	1	5	10	20	40	100
sulfate	322.1971694	57.3707646	49.88829439	55.58915037	54.58135553	60.39326567
bromide	93.71204571	88.26369932	92.43531816	103.7063714	104.3038847	117.5786807

CALIBRATION CURVE
CRESSONA - SSM/Laboratories
Results from 10/24/95

peak heights

Method 300.1	Concentration (in ng/ul)								
	1	5	10	20.0	40.0	100.0	AVE-6POINTS	SD-6POINTS	%RSD-6POINTS
sulfate	6140	25726	51391	104556	225353	609122	5562.8575	465.525191	8.36845436
bromide	7825	37213	76590	159456	344767	966237	8196.824167	821.3103898	10.01986102

RF	Concentration (in ng/uL)								
	1	5	10	20	40	100	AVE-5POINTS	SD-5POINTS	%RSD-5POINTS
sulfate	6140	5145.2	5139.1	5227.8	5633.825	6091.22	5447.429	413.4780402	7.590333718
bromide	7825	7442.6	7659	7972.8	8619.175	9662.37	8271.189	895.3839859	10.82533582

5-Point %RSD calcualted from 5-100ng/uL stds.

Calcualted Conc. (based on the Ave. RF of the 1ng-100ng stds)

Method 300.1	Concentration (in ng/uL)					
concentration	1	5	10	20	40	100
sulfate	1.103749287	4.624601655	9.238237722	18.7953763	40.51029529	109.4980412
bromide	0.954638021	4.539929031	9.34386275	19.45338789	42.0610462	117.8794348

%Recoveries (comparing the known conc. to the calculated conc.)

	Concentration (in ng/uL)					
concentration	1	5	10	20	40	100
sulfate	110.3749287	92.4920331	92.38237722	93.97688149	101.2757382	109.4980412
bromide	95.46380209	90.79858063	93.4386275	97.26693946	105.1526155	117.8794348

CALIBRATION CURVE
CRESSONA - SSM/Laboratories
Results from 10/25/95

peak heights

Method 300.1	Concentration (in ng/uL)								
	1	5	10	20.0	40.0	100.0	AVE-6POINTS	SD-6POINTS	%RSD-6POINTS
sulfate	4786	16999	35228	72072	144027	394397	3809.474167	511.4074887	13.42462152
bromide	6631	30941	66375	136360	279908	775280	6837.533333	523.077645	7.650092796

RF	Concentration (in ng/uL)								
	1	5	10	20	40	100	AVE-5POINTS	SD-5POINTS	%RSD-5POINTS
sulfate	4786	3399.8	3522.8	3603.6	3600.675	3943.97	3614.169	202.0920915	5.59166136
bromide	6631	6188.2	6637.5	6818	6997.7	7752.8	6878.84	573.7734509	8.341136746

5-Point %RSD calcualted from 5-100ng/uL stds.

Calcualted Conc. (based on the Ave. RF of the 1ng-100ng stds)

Method 300.1	Concentration (in ng/uL)					
concentration	1	5	10	20	40	100
sulfate	1.256341372	4.462295649	9.247470506	18.91914654	37.80758018	103.5305616
bromide	0.969794175	4.525169896	9.707448105	19.94286439	40.93698507	113.3859189

%Recoveries (comparing the known conc. to the calculated conc.)

	Concentration (in ng/uL)					
concentration	1	5	10	20	40	100
sulfate	125.6341372	89.24591299	92.47470506	94.5957327	94.51895045	103.5305616
bromide	96.97941753	90.50339791	97.07448105	99.71432193	102.3424627	113.3859189

S04

Sulfate

PACE N.E.
REV01

+ reported results not effected

Batch 668A
Method EPA-600 375.4
Det. Limit 1
Matrix WATER

IDC Sample	# Code	ANAL Inits	PREP Date Prepared	DATE Date Analyzed	IONINIT Init Vol	IONFIN Fin Vol mls	DFM Dilut. Fact.	# LCS/SPK LCSW Level	VAL Obs Conc.	#	# Rpted Conc.	# % Rec	# % Diff
M-Blank	BW	MGB	10/18/95	10/18/95	1	1	1		0	<	1		
LCSA	LCS1	MGB	10/18/95	10/18/95	1	1	1	50	47		47	94	
45696-1	S1	MGB	10/18/95	10/18/95	1	1	1		9.04		9.04		
45696-1	SD	MGB	10/18/95	10/18/95	1	1	1		9.35		9.35		3.3714
45696-1	MS	MGB	10/18/95	10/18/95	1	1	1	10	19		19	99.6	
	MSD								ERR	###	ERR	ERR	ERR
45696-2	S2	MGB	10/18/95	10/18/95	1	1	1000		279 ~~27.8~~		~~27800~~ 27900 +		
45696-3	S3	MGB	10/18/95	10/18/95	1	1	1		28.2		28.2		
45696-4	S4	MGB	10/18/95	10/18/95	1	1	1000		32		32000		
45696-5	S5	MGB	10/18/95	10/18/95	1	1	1		6.1		6.1		
45696-6	S6	MGB	10/18/95	10/18/95	1	1	1000		54.4		54400		
45696-7	S7	MGB	10/18/95	10/18/95	1	1	1000		35.4		35400		
45696-8	S8	MGB	10/18/95	10/18/95	1	1	10		43.9		439		
45696-8	SD	MGB	10/18/95	10/18/95	1	1	10		40.6		406		7.8107
45696-8	MS	MGB	10/18/95	10/18/95	1	1	10	100	53		530	91 (*)	
45696-9	S9	MGB	10/18/95	10/18/95	1	1	10		40.6		406		
45696-10	S10	MGB	10/18/95	10/18/95	1	1	10		53		530		
	S11						500		14.2 ~~ERR~~	~~###~~	~~ERR~~ 7100 +		
45696-12	S12	MGB	10/18/95	10/18/95	1	1	5		38.3		191.5		
45696-13	S13	MGB	10/18/95	10/18/95	1	1	100		42.8 ~~42.7~~		~~4270~~ 4280 +		
45696-14	S14	MGB	10/18/95	10/18/95	1	1	1		41.6		41.6		
45696-15	S15	MGB	10/18/95	10/18/95	1	1	10		85.7		857		
45696-69	S16	MGB	10/18/95	10/18/95	1	1	1		1.9		1.9		
	S17								ERR	###	ERR		
	S18								ERR	###	ERR		
	S19								ERR	###	ERR		
	S20								ERR	###	ERR		
ICV	ICV									<	ERR	ERR	
CCV	CCV										ERR	ERR	
CCV	CCV									<	ERR	ERR	
CCV	CCV									<	ERR	ERR	

ICB

ICV

-9 is Dup of -8 for QC
-10 is spk of -8 for D... pu...
10/2/95

(*) Sample 45696-10 Spk X10 results used instead of 45696-10 results

DML 6/20/96

45696-10 X10 results is 422
If 45696-10 X10 results were used to report the MS results for 45696-8, There would be no recovery. No data qual.
DML 6/20/96

REVIEWED
10/20/95

0000032

PACE INC. NE-NH LAB
QUALITY CONTROL
Bromide by Ion Chromatography
Method: 300.0 EPA-600/4-84-017

QC Batch: 668A
Matrix: WATER

METHOD BLANK:

	Result mg/L
	< 1.00

LABORATORY CONTROL SAMPLES:

	True Value mg/L	Observed Value mg/L	Accuracy Recovery %
LCS1	50.0	~~48.000~~ 47.589	~~96.0~~ 95.2

DML 6/20/96

FIELD SAMPLE:

Precision Lab No.	Replicate 1 mg/L	Replicate 2 mg/L	Average mg/L	Relative Percent Difference %
45696-1	< 1.00	< 1.00	NC	NC

Accuracy Lab No.	Replicate 1 mg/L	Spike Added mg/L	Spike Found mg/L	Recovery %
45696-1	< 1.00	10	11.00	110.0

NC = Not calculable due to result below detection limit.

pace INCORPORATED THE ASSURANCE OF QUALITY

BP

PACE N.E.

Bromide by Ion Chromatography

Batch 669A
Method 300.0 EPA-600/4-84-017
Det. Limit 1
Matrix WATER

IDE Sample	# Code	ANAL Inits	DATE Date Analyzed	IONINIT Initial Vol	IONFIN Final Vol	DFM Dilut. Fact.	# LCS SPK LEV	VAL Obs Value	#	# Rept Conc	# % Rec	# % Diff
M-Blank	BW	CF	10/20/95	1	1	1		0	<	1		
LCSA	LCS1	CF	10/20/95	1	1	1	50	46.8		46.8	93.60	
LCSB	LCS2								<	ERR	ERR	
45696-8	S1	CF	10/20/95	1	1	1		0	<	1		
45696-9	S2	CF	10/20/95	1	1	1		0	<	1		0
45696-9	MS	CF	10/20/95	1	1	1	10	9.26		9.26	92.6 (*)	
	MSD								<	ERR	ERR	ERR
45696-2	S3	CF	10/20/95	1	1	20		0	<	20		
45696-3	S3	CF	10/20/95	1	1	1		0	<	1		
45696-4	S4	CF	10/20/95	1	1	20		0	<	20		
45696-9	S6	CF	10/20/95	1	1	1		0	<	1		
45696-10	S7	CF	10/20/95	1	1	1		9.26		9.26		
45696-12	S8	CF	10/20/95	1	1	1		0	<	1		
	S9								<	ERR		
	S10								<	ERR		
	S11								<	ERR		
	S12								<	ERR		
	S13								<	ERR		
	S14								<	ERR		
	S15								<	ERR		
	S16								<	ERR		
	S17								<	ERR		
	S18								<	ERR		
	S19								<	ERR		
	S20								<	ERR		

GW-435

unintegrated peaks

elevate DL <2
GW-505

per JW 10/21/95 - 9 is D-P of -8
- 10 is spk of -8 for QC + OISN purposes

(*) sample 45696-10 spk results used instead of 45696-10 results. 45696-10 has no peak present

DML 6/20/96

PACE INC. NE-NH LAB
QUALITY CONTROL
Bromide by Ion Chromatography
Method: 300.0 EPA-600/4-84-017

QC Batch: 670A
Matrix: WATER

METHOD BLANK:	Result mg/L
	< 1.00

LABORATORY CONTROL SAMPLES:

	True Value mg/L	Observed Value mg/L	Accuracy Recovery %
LCS1	50.0	47.29~~0~~ 6	94.6

FIELD SAMPLE:

Precision Lab No.	Replicate 1 mg/L	Replicate 2 mg/L	Average mg/L	Relative Percent Difference %
45718-19	< 1.00	< 1.00	NC	NC

Accuracy Lab No.	Replicate 1 mg/L	Spike Added mg/L	Spike Found mg/L	Recovery %
45718-19	< 1.00	10	11.30	113.0

NC = Not calculable due to result below detection limit.

Not associated w/ this case wasn't ~~data~~ evaluated by reviewer

DML 6/20/90

pace INCORPORATED THE ASSURANCE OF QUALITY

79

PACE N.E.

Bromide by Ion Chromatography

Batch 670A
Method 300.0 EPA-600/4-84-017
Det. Limit 1
Matrix WATER

IDC Sample	# Code	ANAL Inits	DATE Date Analyzed	IONINIT Initial Vol	IONFIN Final Vol	DFM Dilut. Fact.	# LCS SPK LEV	VAL Obs Value	#	# Rept Conc	# % Rec	# % Diff
M-Blank	BW	MB	10/24/95	1	1	1		0	<	1		
LCSA	LCS1	MB	10/24/95	1	1	1	50	47.29		47.29	94.58	
LCSB	LCS2								:	ERR	ERR	
* 45718-19 SQC	S1	MB	10/24/95	1	1	1		0	<	1		
45718-19D	SD	MB	10/24/95	1	1	1		0	<	1		0
451718-19S	MS	MB	10/24/95	1	1	1	10	11.3		11.3	113	
	MSD								<	ERR	ERR	ERR
45696-6 6W 42	S2	MB	10/24/95	1	1	50		0	<	50		
45696-7 FD	S3	MB	10/24/95	1	1	50		0	<	50		
45696-11 6W-43	S4	MB	10/24/95	1	1	20		0	<	20		
45696-12	S5	MB	10/24/95	1	1	20		0	<	20		
~~45718-18~~	S6	MB	10/24/95	1	1	1		0	<	1		
45718-22	S7	MB	10/24/95	1	1	1		0	<	1		
45718-23	S8	MB	10/24/95	1	1	1		0	<	1		
45718-24	S9	MB	10/24/95	1	1	1		0	<	1		
45718-25	S10	MB	10/24/95	1	1	1		0	<	1		
45718-26	S11	MB	10/24/95	1	1	1		0	<	1		
45718-27 SQC	S12	MB	10/24/95	1	1	1		0	<	1		
45718-27D	SD	MB	10/24/95	1	1	1		0	<	1		0
45718-27S	MS	MB	10/24/95	1	1	1	10	11		11	110	
45718-28	S13	MB	10/24/95	1	1	1		0	<	1		
45718-29	S14	MB	10/24/95	1	1	1		0	<	1		
45718-30	S15	MB	10/24/95	1	1	1		0	<	1		
45718-31	S16	MB	10/24/95	1	1	1		0	<	1		
45718-32	S17	MB	10/24/95	1	1	1		0	<	1		
45718-20	S18	MB	10/24/95	1	1	1		0	<	1		
45718-21	S19	MB	10/24/95	1	1	1	10	11.3		11.3	113	
45718-45	S20	MB	10/24/95	1	1	1		0	<	1		
~~45718-46~~	S21	MB	10/24/95	1	1	1	10	11		11	110	

Sent MB 10/26/95

unintegrated peak near RT of Br

-20 is dup of -19
-21 is spk of -19
QC + oise purposes.
-45 is dup of -27
-46 is spk of -27

DML 6/20/96

REVIEWED BY
M 10/26/95

0000040

PACE INC. NE-NH LAB
QUALITY CONTROL
Ortho Phosphate
Method: 365.2 EPA 600/4-84-017

QC Batch: 203
Matrix: WATER

METHOD BLANK:

	Result mg/L
	< 0.02

LABORATORY CONTROL SAMPLES:

	True Value mg/L	Observed Value mg/L	Accuracy Recovery %
LCS1	0.5	0.494	~~98.9~~ 98.8

DML 6/20/96

FIELD SAMPLE:

Precision Lab No.	Replicate 1 mg/L	Replicate 2 mg/L	Average mg/L	Relative Percent Difference %
45696-1	0.084	0.084	0.084	0.0

Accuracy Lab No.	Replicate 1 mg/L	Spike Added mg/L	Spike Found mg/L	Recovery %
45696-1	0.084	0.5	~~0.60~~ 0.599	103~~.2~~

NC = Not calculable due to result below detection limit.

DML 6/20/96

pace INCORPORATED
THE ASSURANCE OF QUALITY

PACE INC. NE-NH LAB
QUALITY CONTROL
Ortho Phosphate
Method: 365.2 EPA 600/4-84-017

QC Batch: 203
Matrix: WATER

METHOD BLANK:

	Result mg/L
	< 0.02

LABORATORY CONTROL SAMPLES:

	True Value mg/L	Observed Value mg/L	Accuracy Recovery %
LCS1	0.5	0.494	~~98.9~~ 98.8

DMC 6/20/96

FIELD SAMPLE:

Precision

Lab No.	Replicate 1 mg/L	Replicate 2 mg/L	Average mg/L	Relative Percent Difference %
45696-8	< 0.02	< 0.02	NC	NC

Accuracy

Lab No.	Replicate 1 mg/L	Spike Added mg/L	Spike Found mg/L	Recovery %
45696-8	< 0.02	0.5	~~0.52~~ 0.515	~~103.1~~ 103

NC = Not calculable due to result below detection limit.

DMC 6/20/96

pace INCORPORATED THE ASSURANCE OF QUALITY

NH3

Ammonia PACE N.E.

Batch 586
Method 350.2 EPA-600/4-84-017
Det. Limit 0.05
Matrix WATER

IDC Sample	# Code	TECH Inits	ANAL Inits	PREP Date Prepared	DATE Date Analyzed	INIT Init Vol	FIN Fin Vol mls	DFM Dilut. Fact.	# LCS SPK LEV	VAL Obs Conc.	#	# Rpted Conc.	# % Rec	# % Diff	
M-Blank	BW	MGB	MGB	10/20/95	10/20/95	100	100	1		0.013	<	0.05			
LCSA	LCS1	MGB	MGB	10/20/95	10/20/95	100	100	1	1	0.93		0.93	93.0		
45696-60	S1	MGB	MGB	10/20/95	10/20/95	100	100	10		8.53		85.3			
45696-60	SD	MGB	MGB	10/20/95	10/20/95	100	100	10		8.89		88.9		4.133	
45696-60	MS	MGB	MGB	10/20/95	10/20/95	100	100	10	20	10.54		105.4	100.5		
	MSD										<	ERR	ERR	ERR	
45696-31	S2	MGB	MGB	10/20/95	10/20/95	5	100	10		16.84		3368			
45696-54	S3	MGB	MGB	10/20/95	10/20/95	5	100	10		20.32		4064			
45696-56	S4	MGB	MGB	10/20/95	10/20/95	5	100	10		19.48		3896			
45696-58	S5	MGB	MGB	10/20/95	10/20/95	0.1	100	1		6.95		6950			→ 7000
45696-59	S6	MGB	MGB	10/20/95	10/20/95	0.1	100	1		7.05		7050			→ 7000
45696-63	S7	MGB	MGB	10/20/95	10/20/95	0.1	100	1		2.95		2950			
45696-66	S8	MGB	MGB	10/20/95	10/20/95	1	100	1		9.53		953			
45696-68	S9	MGB	MGB	10/20/95	10/20/95	10	100	1		14.32		143.2			
45696-65	S10	MGB	MGB	10/20/95	10/20/95	10	100	1		5.18		51.8			
45696-55	S11	MGB	MGB	10/20/95	10/20/95	100	100	1		2.83		2.83			
45696-53	S12	MGB	MGB	10/20/95	10/20/95	100	100	1		0.12		0.12			
45696-57	S13	MGB	MGB	10/20/95	10/20/95	100	100	1		3.95		3.95			
45696-64	S14	MGB	MGB	10/20/95	10/20/95	100	100	1		0.043	<	0.05			
45696-67	S15	MGB	MGB	10/20/95	10/20/95	100	100	1		0.048	<	0.05			
45696-21	S16	MGB	MGB	10/20/95	10/20/95	100	100	1		0.113		0.113			
45696-61	S17	MGB	MGB	10/20/95	10/20/95	100	100	10		8.89		88.9			
45696-62	S18	MGB	MGB	10/20/95	10/20/95	100	100	10		10.54		105.4			
	S19										<	ERR			
	S20										<	ERR			
											<	ERR			
ICV	ICV										<	ERR	ERR		
CCV	CCV										<	ERR	ERR		
CCV	CCV										<	ERR	ERR		
CCV	CCV										<	ERR	ERR		

-61 is Dup of -60
-62 is Spk of -60
for QC + Dist purpose

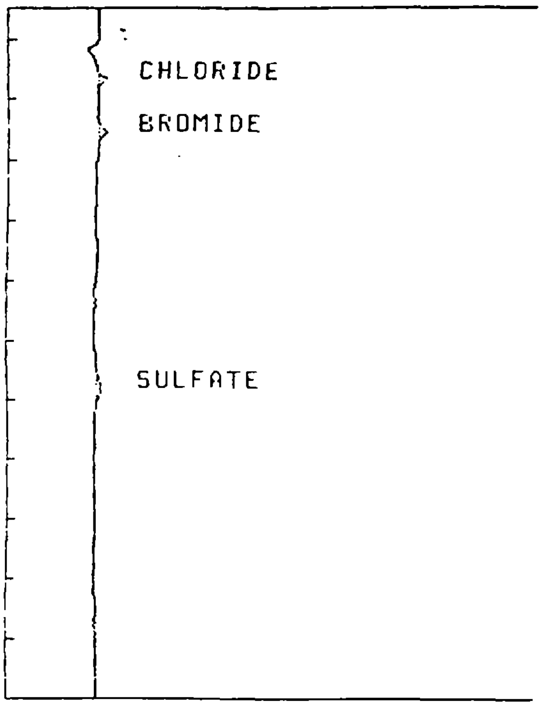
DML 6/20/96

REVIEWED BY

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0 n
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802 µ
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : 1 ppm Report No :408.00

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 1/ 1



X 1st cal

Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_18.SEQ
Method File : /DATA/DIONEX/METHOD/IC557.MTH
Result File : /DATA/DIONEX/RESULT/IC0525400.RES

Run Time : 12.00 Minutes Injected on 1604 18Oct1995
Report Time : 1616 18Oct1995
Run Status : RunStatusOK
EndOffBaseline

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	~~1.63~~	1.69	4.71E-06	9026	PP	.6706	CHLORIDE
2	2.49	2.60	8.12E-06	7863	PP	1.8716	BROMIDE
3	6.76	6.46	4.22E-06	5060	PP	1.6278	SULFATE

CF 10/19/95

RTS

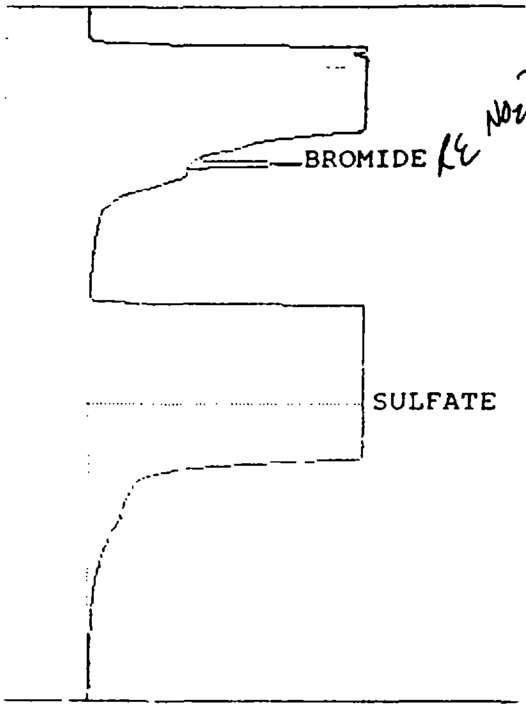
1.0 PPM responding grtr than 1.0

DML 6/20/96

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0 n
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802 µ
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : 45696-2 110 Report No :419.01

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 12/ 12



RE NO2

Sequence file: /DATA/DIONEX/SEQUENCE/IC_10_18 SEQ
Method File : /DATA/DIONEX/METHOD/IC557.MTH
Result File : /DATA/DIONEX/RESULT/IC0525411.RES

1st CAL

Run Time : 12.00 Minutes Injected on 1837 18Oct1995
Report Time : 1214 17Oct1995
Run Status : EndOffBaseline
SignalOverload
SpecialInteg

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	3.07	2.96	1.27E-05	107082	FF	1.5010	BROMIDE
2	7.10	86.65	8.75E-06	960252	GB	291.7457	SULFATE

CF 9/1(?)
10/19/95

Re for Br results

Rt SAMPLE
BR - 3.07

Rt ICAL
2.49 - 2.52
CCV 2.44

too big

Rt out for Br
So RE for Br

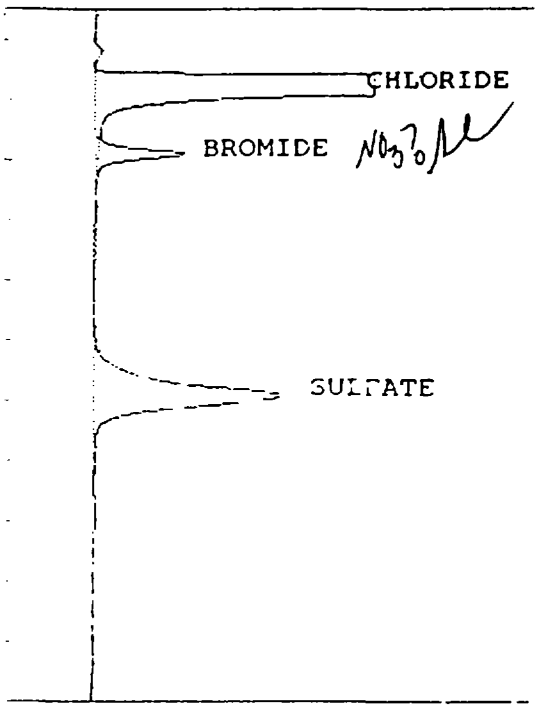
DML 6/20/96

0000098

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0 n
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802 µ
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : 45696-3 Report No :422.01

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 15/ 15



NO3 % ML

1st cal

Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_18.SEQ
Method File : /DATA/DIONEX/METHOD/IC557.MTH
Result File : /DATA/DIONEX/RESULT/IC0525414.RES

Run Time : 12.03 Minutes Injected on 1916 18Oct1995
Report Time : 1220 19Oct1995
Run Status : EndOffBaseline
SignalOverload
SpecialInteg

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	1.77	1.74	6.83E-06	960367	GV	67.1234	CHLORIDE
2	2.87	2.85	1.27E-05	83548	FF	~~10.3437~~	~~BROMIDE~~ RE
3	6.86	6.65	8.75E-06	179177	VV	28.2023	SULFATE 28

Af 10/19/95

Std Rt
Br. 2.49-2.52
ccv 2.64

Rt SAMPLE
Br 2.87

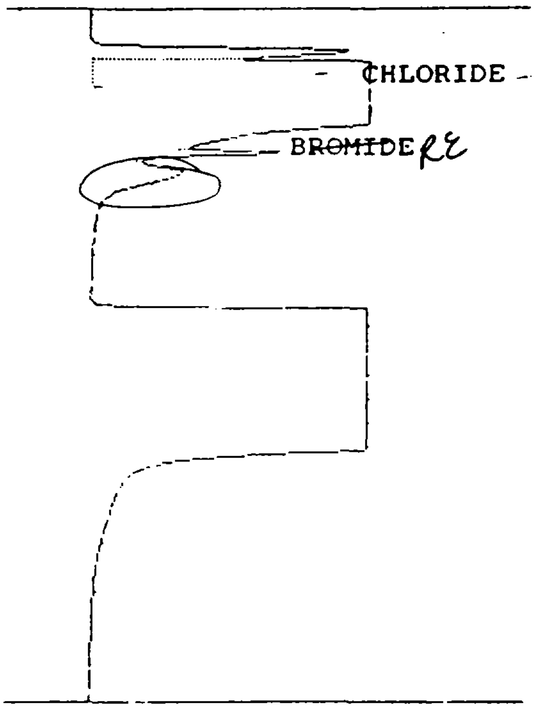
RT out ∴ RE for Br

DML
6/20/96

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0 n
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na_2CO_3/ 1.7mm $NaHCO_3$, 2.0 ml/min. SEE QA SOP #5802 µ
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : 45696-4 110 Report No :423.01

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 16/ 16



Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_18.SEQ 1st cal
Method File : /DATA/DIONEX/METHOD/IC557.MTH
Result File : /DATA/DIONEX/RESULT/IC0525415.RES

Run Time : 12.03 Minutes Injected on 1929 18Oct1995
Report Time : 1228 19Oct1995
Run Status : EndOffBaseline
NoReference
SignalOverload
SpecialInteg

Dil-Fact : 100.002 Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	1.65	1.74	6.86E-06	960026	GV	101.9517	CHLORIDE
2	2.83	2.06	1.27E-05	103103	FF	3.9722	~~BROMIDE~~

Rt SAMPLE
Br 2.83

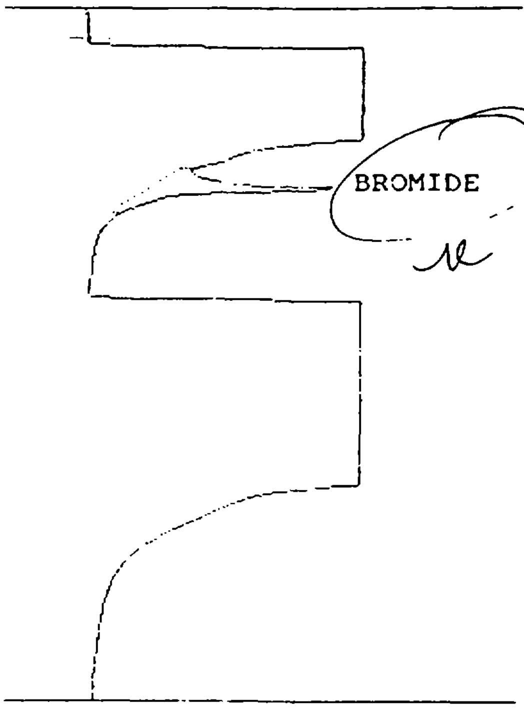
Rt stdCF 10/19/95
2.49 - 2.52
ICV 2.64
Rt out ∴ RE for Br

DML 5/26/96

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0 n
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802 µ
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : 45696-6 110 Report No :429.01

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 22/ 22



Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_18.SEQ 1st cal
Method File : /DATA/DIONEX/METHOD/IC557.MTH
Result File : /DATA/DIONEX/RESULT/IC0525421.RES

Run Time : 12.03 Minutes Injected on 2046 18Oct1995
Report Time : 1259 19Oct1995
Run Status : EndOffBaseline
NoReference
SignalOverload
SpecialInteg

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-RT	Factor	Height	Code	MG/L	Name
1	3.43	3.43	1.27E-05	172239	FF	~~[illegible]~~	~~BROMIDE~~

CF 10/19/95

RT SAMPLE RT stds
Br 3.43 2.49 - 2.52

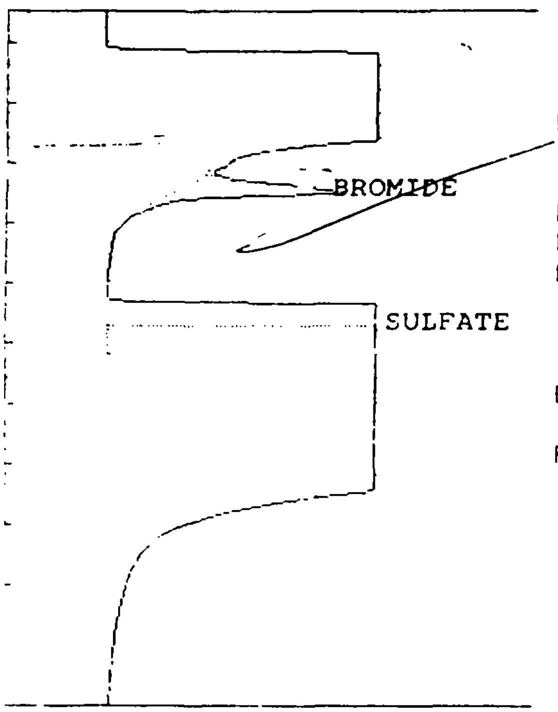
RT out ∴ RE for Br
DMM
6/20/96

GW-42D (WL-22)

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0 n
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802 µ
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : 45696-7 110 Report No :432.01

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 25/ 25



1st CAL

Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_18.SEQ
Method File : /DATA/DIONEX/METHOD/IC557.MTH
Result File : /DATA/DIONEX/RESULT/IC0525424.RES

Run Time : 12.03 Minutes Injected on 2125 18Oct1995
Report Time : 1306 19Oct1995
Run Status : EndOffBaseline
SignalOverload
SpecialInteg

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	3.47	3.42	1.27E-05	162601	FF	~~20.588~~	~~BROMIDE~~
2	5.73	F6.65	8.75E-06	951657	GV	184.8424	SULFATE

N L2D
CF 10/19/95

Rt SAMPLE
Br 3.47

Rt Stds
2.49 - 2.52

Rt out of RE for Br

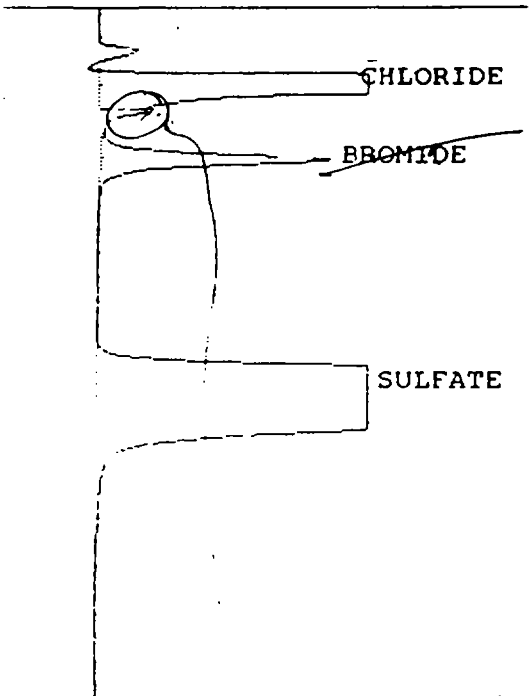
DML
6/26/96

GW-42D Field Dup (WL-23)

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0 n
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802 µ
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : 45696-8 Report No :435.01

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 28/ 28



Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_18.SEQ 1st LTR
Method File : /DATA/DIONEX/METHOD/IC957.MTH
Result File : /DATA/DIONEX/RESULT/IC0F25427.RES

Run Time : 12.03 Minutes Injected on 2203 18Oct1995
Report Time : 1311 19Oct1995
Run Status : EndOffBaseline
SignalOverload
SpecialInteg

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	1.72	1.74	6.88E-06	569766	GV	75.7036	CHLORIDE
2	3.00	3.00	1.27E-05	213673	FF	~~28.7477~~	~~BROMIDE~~
3	6.74	6.65	8.75E-06	953985	GV	157.5932	SULFATE

unintegrated peak - Br ? re CF 10/19/95

Rt SAMPLE Stds
Br 3.00 2.49 - 2.52

too big of shift i.e. RE Br.

DMC 6/20/96

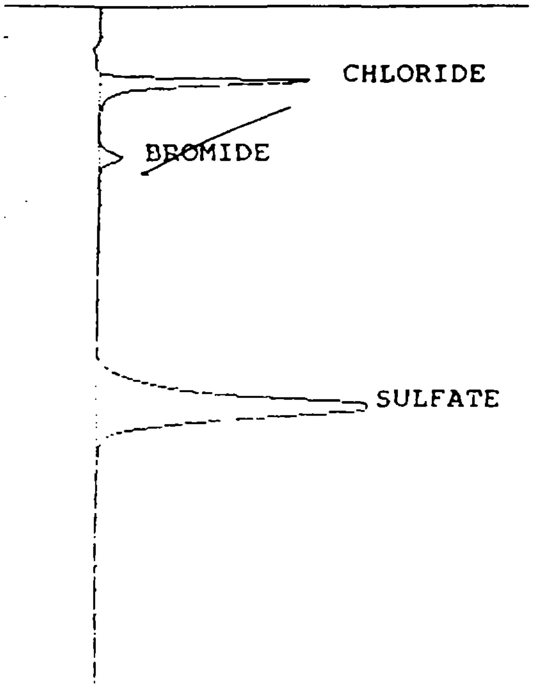
Lab used this result for Br. <1.0
Rev: UC due to unintegrated peak - identification uncertainty w/ PQL of 1.0, reviewer-based lower PQL

GW-435 (WL-1622-24)

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0 n
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802 µ
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : 45696-8-110 Report No :437.01

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 30/ 30



Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_18.SEQ
Method File : /DATA/DIONEX/METHOD/IC557.MTH
Result File : /DATA/DIONEX/RESULT/IC052542S.RES

1st cal

Run Time : 12.03 Minutes Injected on 2227 18Oct1995
Report Time : 1318 19Oct1995
Run Status : RunStatusOK
EndOffBaseline
Specialinteg

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	1.65	1.74	6.88E-06	207239	PV	8.9501	CHLORIDE
2	2.97	3.00	1.27E-05	21205	FF	~~4.1067~~	~~BROMIDE~~
3	7.09	#6.66	8.75E-06	275898	PV	43.9110	SULFATE (10) = 439

CF 10/19/95

Rt SAMPLE
Br 2.97

CCV Following Rt
Br 2.64

too big of sulf ∴ Not considered Br

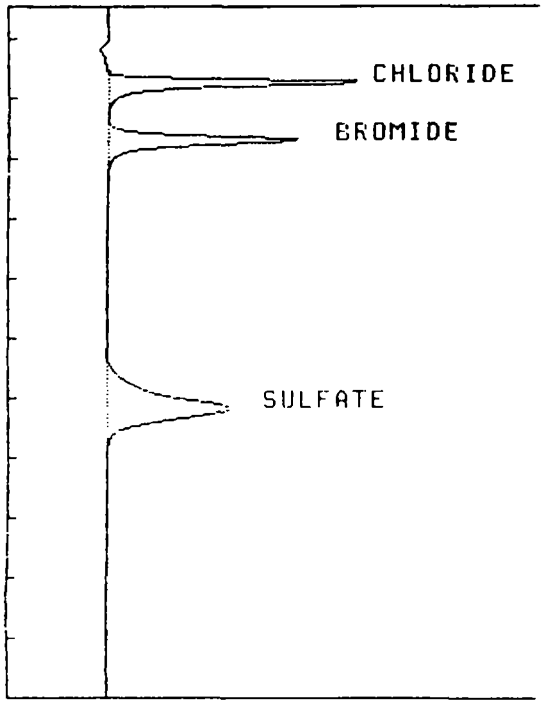
DMK 4/20/96

0000116

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0 n
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802 µ
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : CCV Anstn 1342 Report No :438.00

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 31/ 31



1st CAL

Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_18.SEQ
Method File : /DATA/DIONEX/METHOD/IC557.MTH
Result File : /DATA/DIONEX/RESULT/IC0525430.RES

Run Time : 12.03 Minutes Injected on 2242 18Oct1995
Report Time : 2254 18Oct1995
Run Status : RunStatusOK
EndOffBaseline

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-tm	Factor	Height	Code	MG/L	Name	
1	1.68	1.71	6.88E-06	247261	PV	10.2867	CHLORIDE	102
2	2.64	2.63	1.27E-05	184288	VV	19.9425	BROMIDE	100%
3	7.12	6.53	8.75E-06	118404	VV	19.9425	SULFATE	100%

RTS

CF 10/19/95

ICAL RTS
BR 2.49-2.52
SO4 6.66-6.81
16:04

CCAL RT
BR 2.64
SO4 7.12
22:42

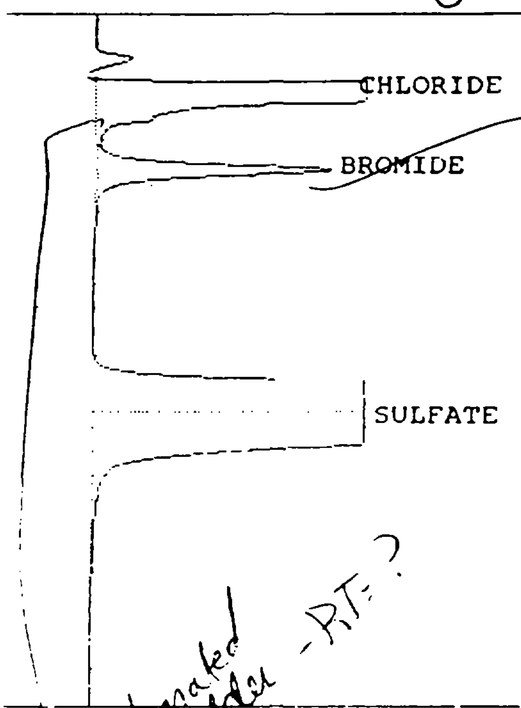
big shift 6hrs from 1st std

DMR
6/26/96

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0 n
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na_2CO_3/ 1.7mm $NaHCO_3$, 2.0 ml/min. SEE QA SOP #5802 µ
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : 45696-9 Report No :440.01

Instrument : DIONEX dup of 45696-8 Subseq/Sample/Bottle: 1/ 33/ 33



- unintegrated shoulder - RT=?

Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_18.SEQ 1st cal
Method File : /DATA/DIONEX/METHOD/IC557.MTH
Result File : /DATA/DIONEX/RESULT/IC0525432.RES

Run Time : 12.03 Minutes Injected on 2308 18Oct1995
Report Time : 1400 19Oct1995
Run Status : EndOffBaseline
SignalOverload
SpecialInteg

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	1.74	1.74	6.88E-06	953327	GV	76.0983	CHLORIDE
2	3.07	3.01	1.27E-05	222437	FF	~~29.9230~~	~~BROMIDE~~
3	7.25	#6.66	8.75E-06	953863	GV	155.0110	SULFATE

ll
cf 10/19/95

CCAL RTs
Br 2.64
23:42

SAMPLE
Br 3.07
23:08

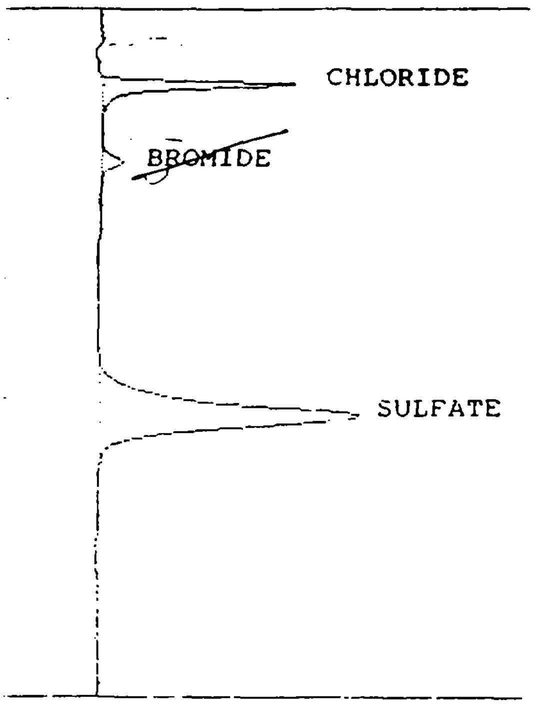
big shift ∴ not considered Br.

DML 6/20/96

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0 n
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802 µ
INJECTION VOLUME: 20uL ~~COLUMN~~: IONPAC AS4A 4mm #26328
Sample Name : 45696-9 110 dup of 45696-8 Report No :442.01

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 35/ 35



Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_18.SEQ 1st cal
Method File : /DATA/DIONEX/METHOD/IC557.MTH
Result File : /DATA/DIONEX/RESULT/IC0525434.RES

Run Time : 12.03 Minutes Injected on 2333 18Oct1995
Report Time : 1520 19Oct1995
Run Status : RunStatusOK
EndOffBaseline
SpecialInteg

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	1.71	1.75	6.88E-06	187835	PV	8.2783	CHLORIDE
2	3.03	3.01	1.27E-05	21277	FF	~~1.2865~~	~~BROMIDE~~
3	7.25	#6.67	8.75E-06	249123	PV	40.5656	SULFATE (10)=406

Cf 10/19/95

Rts Sample

Br 3.03
SO4 7.25
23:33

Rt CCV

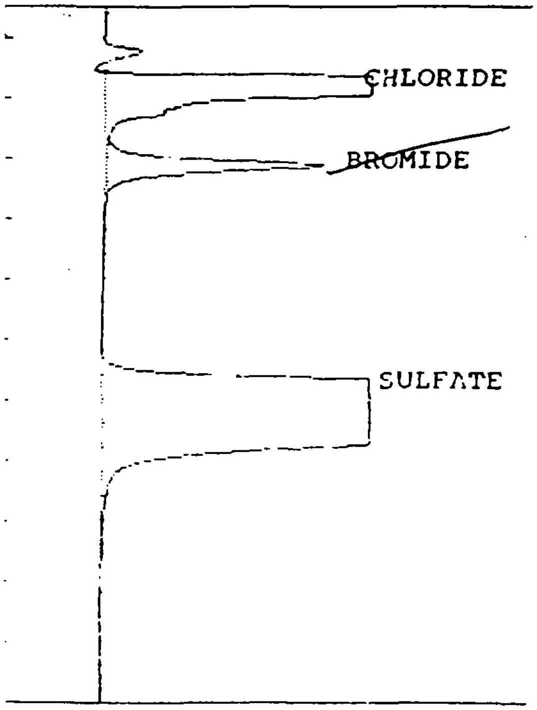
2.64 - not considerd Br too big of a shift
7.12 - SO4 shifting again (further)
22:42

DML 6/20/96

0000121

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0 n
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802 µ
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : 45696-10 MS of 45696-8 Report No :443.01
Instrument : DIONEX Subseq/Sample/Bottle: 1/ 36/ 36



1st CAL

Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_18.SEQ
Method File : /DATA/DIONEX/METHOD/IC552.MTH
Result File : /DATA/DIONEX/RESULT/IC0525435.RES

Run Time : 12.03 Minutes Injected on 2346 18Oct1995
Report Time : 1522 19Oct1995
Run Status : EndOffBaseline
SignalOverload
SpecialInteg

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

PK#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	1.75	1.75	6.89E-06	957040	GV	30.8239	CHLORIDE
2	3.10	3.01	1.27E-05	207952	FF	~~28.2196~~	~~BROMIDE~~
3	6.75	6.68	8.75E-06	953690	GV	310.7881	SULFATE

NL DF 10/19/95

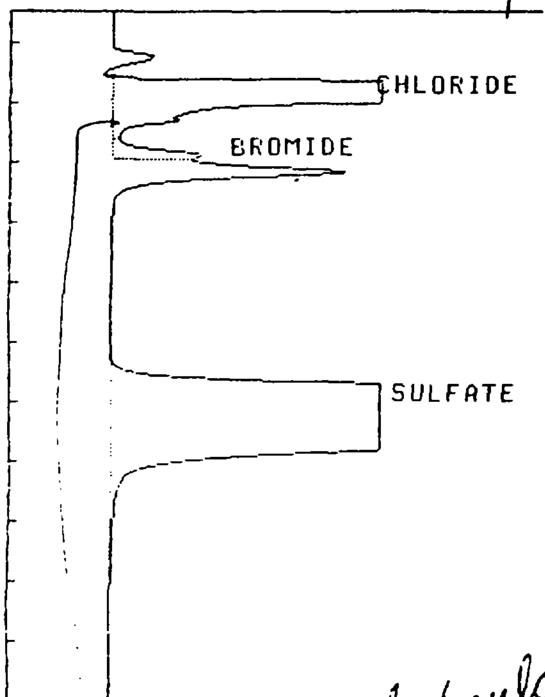
RTs SAMPLE
BR 3.10
SO4 6.75
23.46

CCV
2.64 too big of a shift to consider this Br.
7.12 - SO4 shifting back (earlier)
22.42

DJMC 6/20/96

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0 n
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802 µ
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : 45696 -10 S Report No :444.00
MS of 45696-8
Instrument : DIONEX Subseq/Sample/Bottle: 1/ 37, 37



Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_18.SEQ) 1st CAL
Method File : /DATA/DIONEX/METHOD/IC557.MTH
Result File : /DATA/DIONEX/RESULT/IC0525436.RES

Run Time : 12.00 Minutes Injected on 2359 18Oct1995
Report Time : 0011 19Oct1995
Run Status : EndOffBaseline
SignalOverload

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	1.77	1.72	6.88E-06	951694	GV	85.1881	CHLORIDE
2	2.83	2.64	1.27E-05	83795	VV	9.8817	BROMIDE 10.8 108%
3	6.92	*6.57	8.75E-06	951540	GV	319.9258	SULFATE

unintegrated shoulder - RT = ?

Rt CF 10/19/95

Rt Sample
Br 2.83

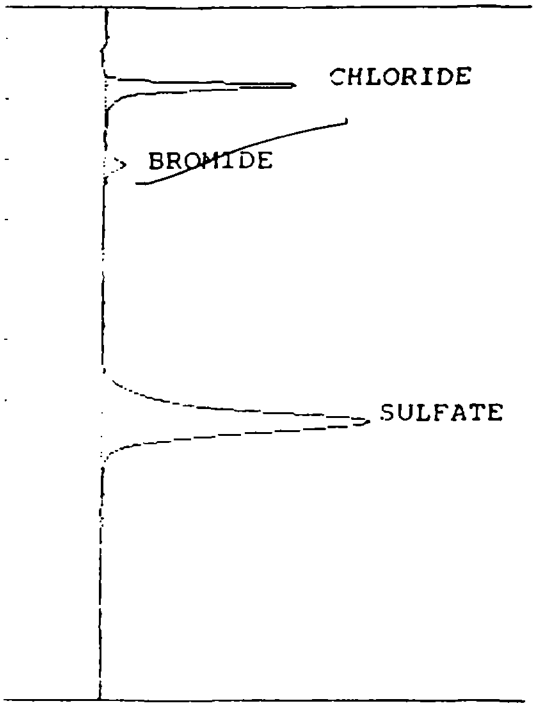
CCV
Br 2.64

Rts closer

JMC 6/20/96

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0 n
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802 µ
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : 45696-~~10~~ 110 MS of 45696-8 Report No :445.01
Instrument : DIONEX Subseq/Sample/Bottle: 1/ 38/ 38



Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_18.SEQ 1st CAC
Method File : /DATA/DIONEX/METHOD/IC557.MTH
Result File : /DATA/DIONEX/RESULT/IC0525437.RES

Run Time : 12.03 Minutes Injected on 0012 19Oct1995
Report Time : 1532 19Oct1995
Run Status : RunStatusOK
EndOffBaseline
SpecialInteg

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	1.72	1.75	6.38E-06	190301	FV	8.6252	CHLORIDE
2	3.07	3.13	1.27E-05	20510	FF	~~4.7707~~	~~BROMIDE~~
3	7.30	#6.69	8.75E-06	254497	PV	42.2547	SULFATE (10) = 422

CF 10/19/95

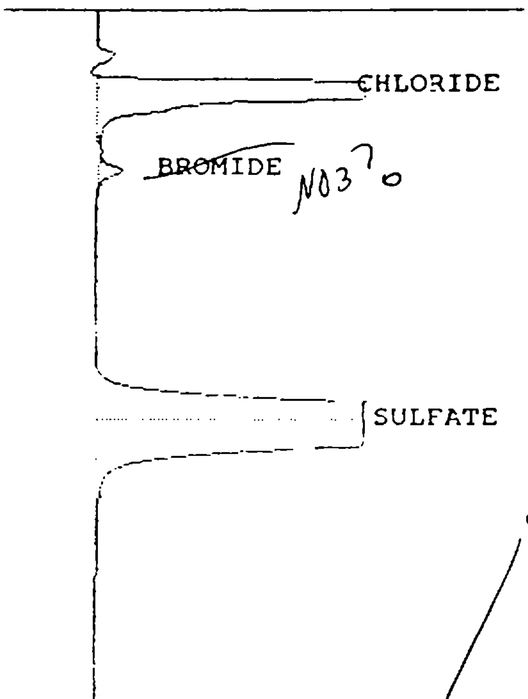
this result not used for the spk results of 45696-8. Lab used results from 45696-10 S x 10.

DML 6/20/96

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0 n
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802 μ
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : 45696-12 Report No :449.02

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 42/ 42



Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_18.SEQ 1st cric
Method File : /DATA/DIONEX/METHOD/IC557.MTH
Result File : /DATA/DIONEX/RESULT/IC0525441.RES

Run Time : 12.03 Minutes Injected on 0103 19Oct1995
Report Time : 1549 19Oct1995
Run Status : EndOffBaseline
SignalOverload
SpecialInteg

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-RT	Factor	Height	Code	MG/L	Name
1	1.78	1.75	6.88E-06	960515	GV	72.5696	CHLORIDE
2	3.13	3.13	1.27E-05	22706	FF	~~4.0317~~	~~BROMIDE~~
3	7.32	#6.71	8.75E-06	951700	VV	119.9090	SULFATE

ue

of 10/19/95

Rt to far out to be consider Br

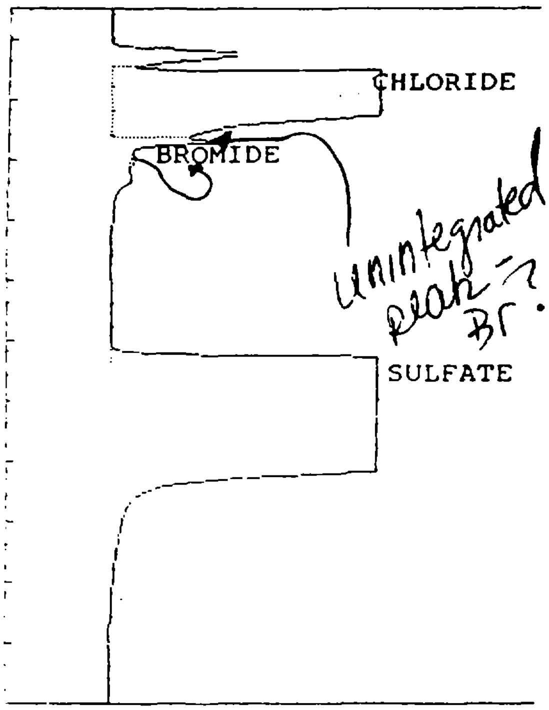
DMM 6/20/96

0000128

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0 n
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na_2CO_3/ 1.7mm $NaHCO_3$, 2.0 ml/min. SEE QA SOP #5802 μ
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : 45696-~~10~~ 110 11 Report No :446.01

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 39/ 39



unintegrated peak?? Br.

Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_18.SEQ StCAL
Method File : /DATA/DIONEX/METHOD/IC557.MTH
Result File : /DATA/DIONEX/RESULT/IC0525438.RES

Run Time : 12.03 Minutes Injected on 0025 19Oct1995
Report Time : 1538 19Oct1995
Run Status : EndOffBaseline
SignalOverload
SpecialInteg

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	1.77	1.75	6.88E-06	950916	GV	172.3796	CHLORIDE
2	2.97	2.96	1.27E-05	5176	FF	1.9918	BROMIDE 2.0 ne LPS
3	6.60	6.69	8.75E-05	950247	GV	197.3754	SULFATE

CCV RT following	CCV previous	Sample
Br 2.71	2.64	2.97

CF 10/19/95

too big of shift ∴ not consider Br.

DM 1/20/96

* cannot be used as a valid result for SO_4 - out of linear range

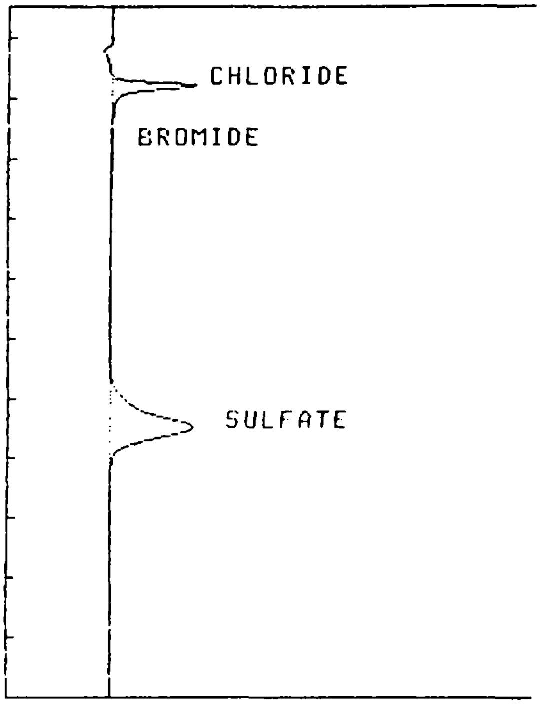
GW-43D(-24)

0000125

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0 n
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802 μ
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : 45696 - 11 L500 Report No :448.00

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 41/ 41



Sequence File: /DATA/DIONEX/SEQUENCE/IC10_18.SEQ 1st CAL
Method File : /DATA/DIONEX/METHOD/IC557 ~~MTH~~
Result File : /DATA/DIONEX/RESULT/IC0525440.RES

Run Time : 12.02 Minutes Injected on 0051 19Oct1995
Report Time : 0103 19Oct1995
Run Status : RunStatusOK
EndOffBaseline

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	1.73	1.73	6.88E-06	81054	PP	3.8617	CHLORIDE
2	2.71	2.65	1.27E-05	-434	PV	~~1.5704~~	~~BROMIDE~~
3	7.44	*6.59	8.75E-06	78600	PP	14.1711	SULFATE (500) = 7085

Rt CCV following SO4 7.42

CCV Previous 7.12

SAMPLE Rt L100 7.44

CF 10/19/95

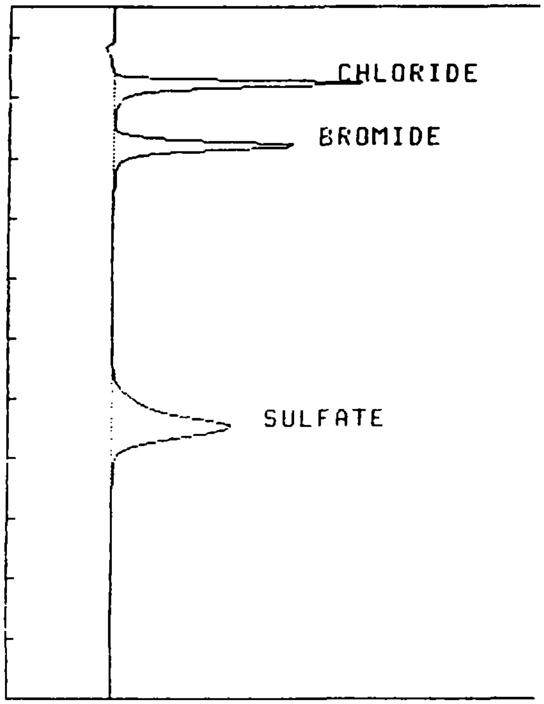
SO4 area + Rt acceptable use X500 result.

DML 6/20/96

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0 n
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802 µ
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : ccv Report No :450.00

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 43/ 43



Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_18.SEQ 1st CAL
Method File : /DATA/DIONEX/METHOD/IC557.MTH
Result File : /DATA/DIONEX/RESULT/IC05~~25442.RES~~

Run Time : 12.03 Minutes Injected on 0116 19Oct1995
Report Time : 0129 19Oct1995
Run Status : RunStatusOK
EndOffBaseline

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	1.70	1.73	6.88E-06	238193	PV	10.2023	CHLORIDE 102%
2	2.71	2.66	1.27E-05	175526	VV	19.8354	BROMIDE 99%
3	7.42	6.60	8.75E-06	112115	VV	19.9237	SULFATE 100% Rec.

CF 10/19/95

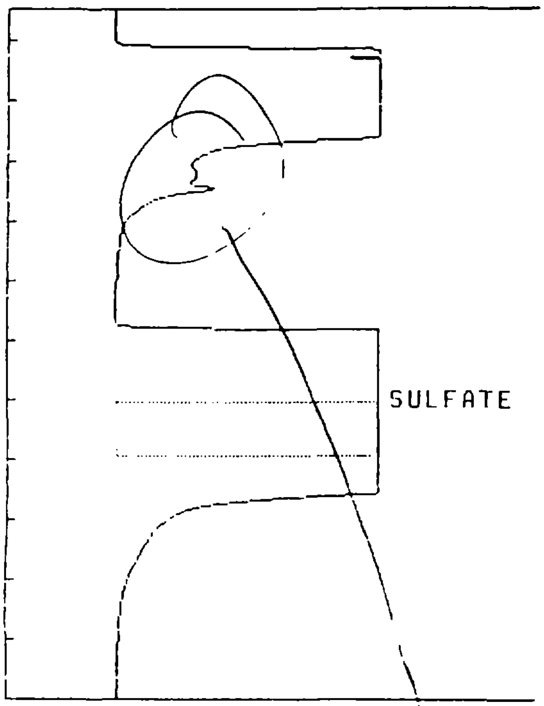
RTs

DML 6/20/96

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0 n
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802 µ
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : 45696-13 Report No :454.00

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 47/ 47



Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_18.SEQ 1st cal
Method File : /DATA/DIONEX/METHOD/IC567.MTH
Result File : /DATA/DIONEX/RESULT/IC0525446.RES

Run Time : 12.03 Minutes Injected on 0208 19Oct1995
Report Time : 0220 19Oct1995
Run Status : EndOffBaseline
SignalOverload

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	7.08	#6.62	8.75E-06	945723	GV	279.4282	SULFATE

Unintegrated peak - Re. to confirm Br.

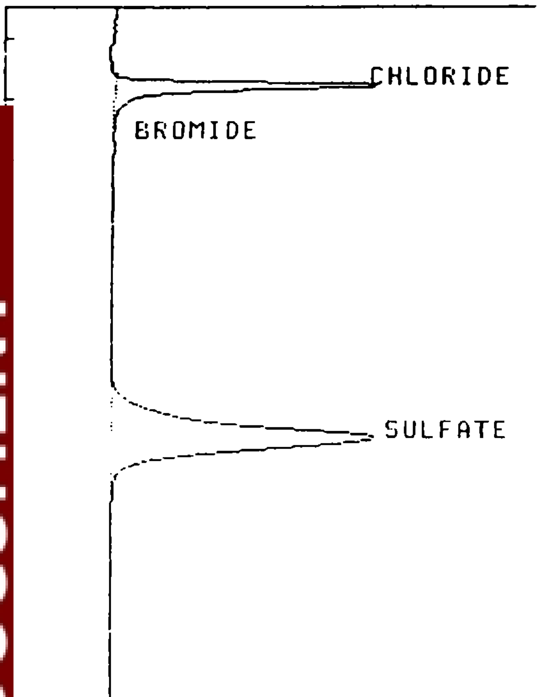
CF 10/19/95

DML 4/20/96

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0 n
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802 µ
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : 45696-13 L100 Report No :456.00

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 49/ 49



Sequence File: /DATA/DIONEX/SEQUENCE/IC_~~10~~_18.SEQ 1st CAL
Method File : /DATA/DIONEX/METHOD/IC5~~57.MTH~~
Result File : /DATA/DIONEX/RESULT/IC0525448.RES

Run Time : 12.00 Minutes Injected on 0234 19Oct1995
Report Time : 0246 19Oct1995
Run Status : RunStatusOK
EndOffBaseline

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	1.72	1.74	6.88E-06	265523	PP	11.7024	CHLORIDE
2	~~2.60~~	2.67	1.27E-05	-117	PP	~~1.5229~~	~~BROMIDE~~
3	7.58	7.64	8.75E-06	251508	PP	42.7638	SULFATE (100)=4276

CF 10/19/95

CCV Rt
SO4 7.42

SAMPLE Rt
7.58

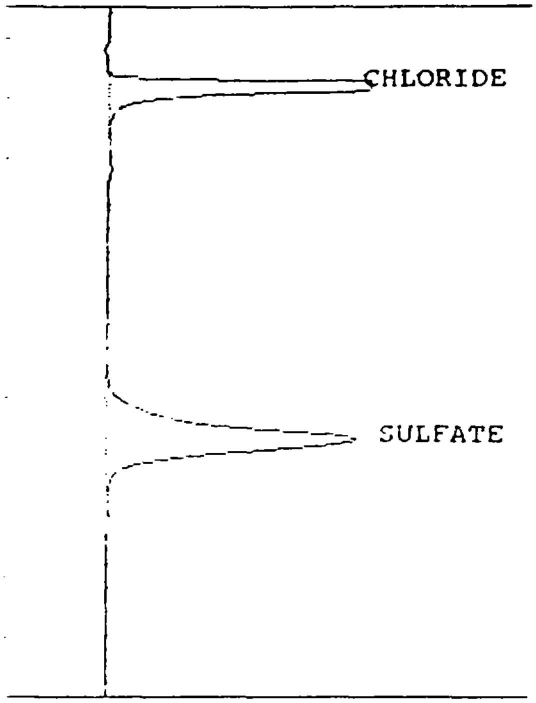
SO4 Rt shifting out again

DML
6/20/96

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0 n
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802 µ
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : 45696 - ~~15~~ 14 CA(?) 10/19/95 Report No :457.01

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 50/ 50



Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_18.SEQ 1st CAC
Method File : /DATA/DIONEX/METHOD/IC557.MTH
Result File : /DATA/DIONEX/RESULT/IC0525449.RES

Run Time : 12.05 Minutes Injected on 0246 19Oct1995
Report Time : 1556 19Oct1995
Run Status : RunStatusOK
EndOffBaseline
SpecialInteg

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	1.74	1.75	6.89E-06	592360	PV	27.5920	CHLORIDE
2	7.67	#7.67	8.75E-06	237472	FF	41.5623	SULFATE 4/2

BR BDL

DK 10/19/95

CCV Rt
SO4 7.42

Sample Rt
7.67

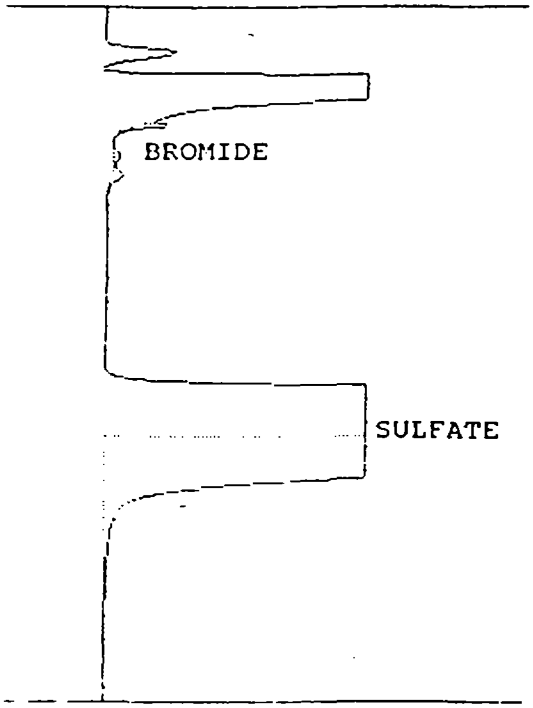
Rt shifting out again
DM
6/20/96

Br nondetect

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0 n
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na_2CO_3/ 1.7mm $NaHCO_3$, 2.0 ml/min. SEE QA SOP #5802 µ
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : 45696-15 $ E3 Report No :458.02

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 51/ 51



Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_18.SEQ 1st CAL
Method File : /DATA/DIONEX/METHOD/IC557.MTH
Result File : /DATA/DIONEX/RESULT/ICC525450.RES

Run Time : 12.03 Minutes Injected on 0259 19Oct1995
Report Time : 1610 19Oct1995
Run Status : EndOffBaseline
SignalOverload
SpecialInteg

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	2.40	6	6.00E-07	21675	FF	.0655	
2	2.93	2.93	1.27E-05	6529	FF	2.1701	BROMIDE (W) ~~247~~ 2.17
3	3.27		6.00E-07	10794	FF	.0764	
4	7.59	#7.67	8.75E-06	944540	GV	191.7500	SULFATE

QA E3 10/19/95

Rt CCV prior
Br. 2.71
0116

SAMPLE
2.93
0259

Rt CCV post
2.82

big shift for Br
due to stability of Br RTS in stds + the big
Rt shift identification DML 6/20/96
in this sample Br @ 2.93
is considered questionable
∴ use next run (10X) for Br
result.

ICAL std RTS
2.49 - 2.52
* IDtm = Identification time for Br never updated to reflect ICAL RTS that's why computer Identifying Br incorrectly.

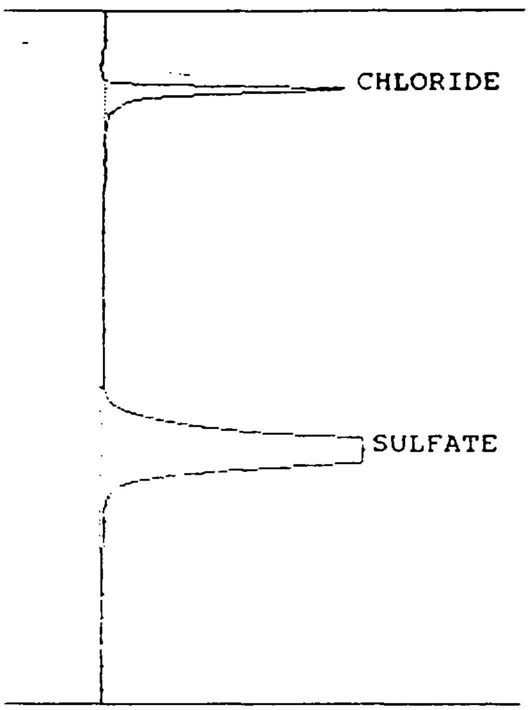
Br does not show flucuation like this (back-n-forth)
∴ reviewer considers ID of Br questionable.
use 1:10X dilution as result of record. DML 6/20/96

0000136

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0 n
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802 µ
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : 45696-15 L10 Report No :460.02

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 53/ 53



Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_18.SEQ
Method File : /DATA/DIONEX/METHOD/IC557.MTH
Result File : /DATA/DIONEX/RESULT/IC0525452.RES

1st CAC

Run Time : 12.03 Minutes Injected on 0325 19Oct1995
Report Time : 1627 19Oct1995
Run Status : RunStatusOK
EndOffBaseline
SpecialInteg

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	1.74	1.77	6.88E-05	230747	PV	10.6961	CHLORIDE
2	2.82		6.00E-07	1490	VV	.0125	
3	3.20		6.00E-07	1601	FF	.0143	
4	4.17		6.00E-07	-39	FV	.0021	
5	7.73	7.67	8.75E-06	494308	FF	85.7078	SULFATE (10) = 857

CF 10/19/95

CCV Rt		SAMPLE Rt
SO4	7.42	7.73
	0116	3:25

Rt shifting again
2h13

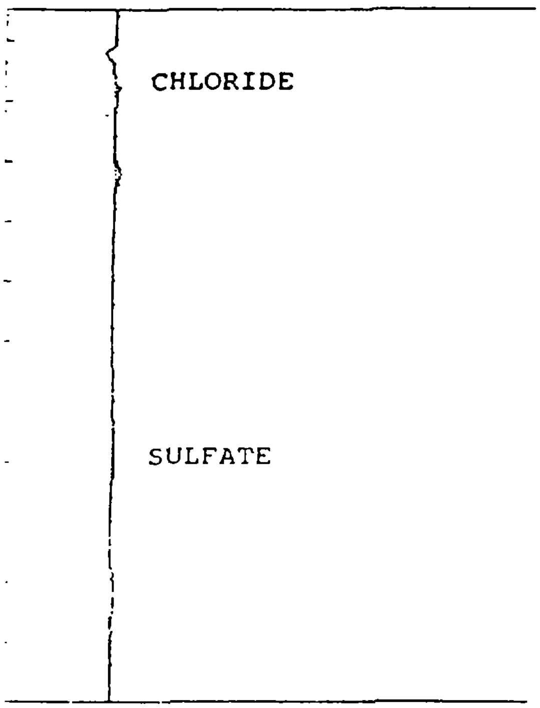
DM 6/12/96

* use this run for Br
lowest acceptable analysis
for Br ∴ report Br as <10.
Reviewer uses this as result of record for Br.

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0 n
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na_2CO_3/ 1.7mm $NaHCO_3$, 2.0 ml/min. SEE QA SOP #5802 µ
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : 45696-69 Report No : 461.01

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 54/ 54



Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_18.SEQ 1st CAL
Method File : /DATA/DIONEX/METHOD/IC95Z.MTH
Result File : /DATA/DIONEX/RESULT/IC0525453.RES

Run Time : 12.03 Minutes Injected on 0338 19Oct1995
Report Time : 1623 19Oct1995
Run Status : RunStatusOK
EndOffBaseline
SpecialInteg

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	1.75	1.75	6.98E-06	3258	PV	.7565	CHLORIDE
2	3.20		6.00E-07	4349	FF	.0356	
3	5.91		6.03E-07	455	VV	.0152	
4	7.37	7.67	8.75E-06	1616	FF	1.8614	SULFATE 1.9

BR <1

CF 10/19/95

Prior CCV Rt
SO_4 7.42
0116

SAMPLE
7.97
0:338

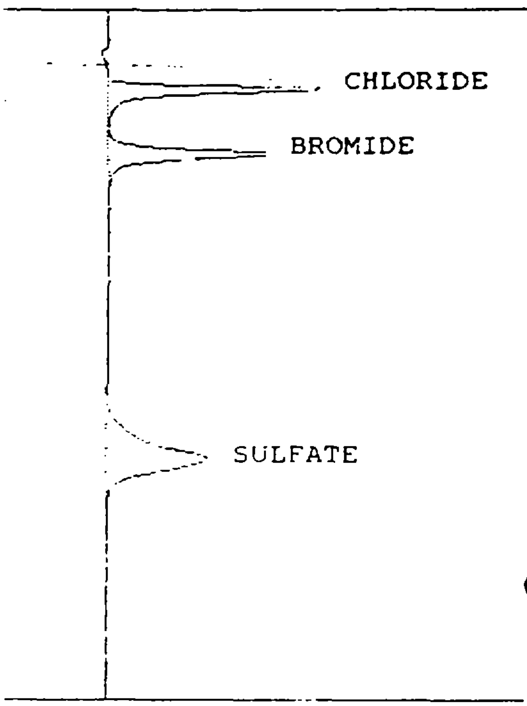
CCV following
7.93 shifting further
0351
2 hrs 15 minutes

DML 6/20/96

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0 n
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802 µ
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : CCV Report No :462.02

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 55/ 55



Sequence File: /DATA/DIONEX/SEQUENCE/IC10_18.SEQ 1st cal
Method File : /DATA/DIONEX/METHOD/IC557.MTH
Result File : /DATA/DIONEX/RESULT/IC0525454.RES

Run Time : 12.03 Minutes Injected on 0351 19Oct1995
Report Time : 1631 19Oct1995
Run Status : RunStatusOK
EndOffBaseline
SpecialInteg

Dil-Fact : 100 C0Z Sample Amt: 0.0000 Standard Amt: 1.0000

PK#	RT	ID-tm	Factor	Height	Code	MG/L	Name	
1	1.75	1.75	6.88E-06	205664	PV	9.2779	CHLORIDE	93% Rec
2	2.82	2.81	1.27E-05	152885	VV	18.1955	BROMIDE	91% Rec
3	6.04		6.00E-07	25	PV	.0021		
4	7.93	[illegible]67	8.75E-06	94795	FF	18.5203	SULFATE	93% Rec

RTS

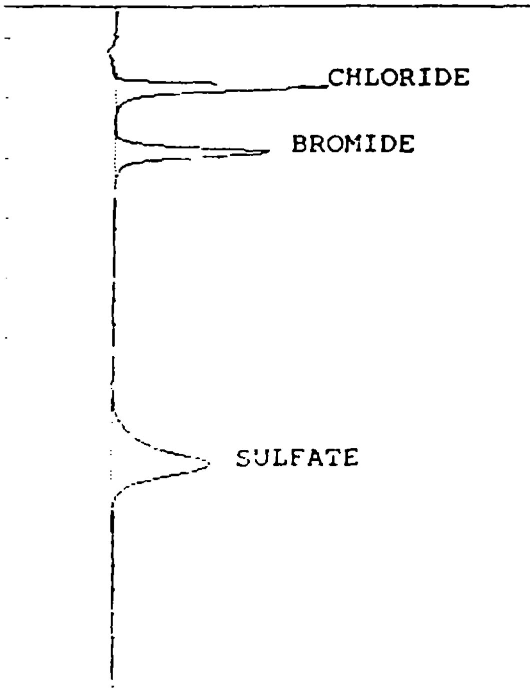
df 10/19/95

DML 6/20/96

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0 n
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na_2CO_3/ 1.7mm $NaHCO_3$, 2.0 ml/min. SEE QA SOP #5802 µ
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : CCV Report No :465.01

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 58/ 58



Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_18.SEQ 1st cal
Method File : /DATA/DIONEX/METHOD/IC557.MTH
Result File : /DATA/DIONEX/RESULT/IC0525457.RES

Run Time : 12.03 Minutes Injected on 0429 19Oct1995
Report Time : 1637 19Oct1995
Run Status : RunStatusOK
EndOffBaseline
SpecialInteg

Dil-Fact : 100.004 Sample Amt: 0.0000 Standard Amt: 1.0000

PK#	RT	ID-tw	Factor	Height	Code	MG/L	Name	
1	1.77	1.75	6.88E-06	206554	FV	9.1416	CHLORIDE	91% Rec
2	2.64	2.81	1.27E-05	150874	VV	17.7392	BROMIDE	89% Rec
3	6.14		6.00E-07	9	PP	.0016		
4	8.07	7.68	8.75E-06	92431	FF	16.3993	SULFATE	92% Rec

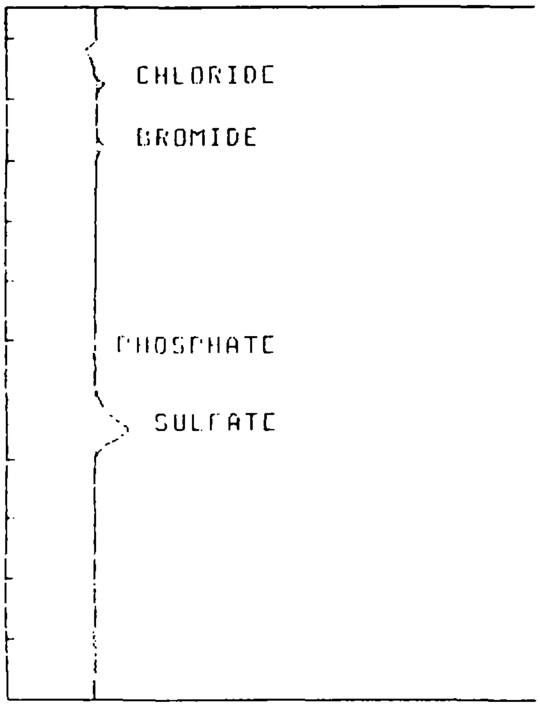
RTS

SO_4 shifting again

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : 1PPM ANSTN1345 Report No :468.00

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 1/ 1



Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_20.SEQ 2nd cAL
Method File : /DATA/DIONEX/METHOD/IC558.MTH
Result File : /DATA/DIONEX/RESULT/IC0525500.RES

Run Time : 12.03 Minutes Injected on 1240 20Oct1995
Report Time : 1255 20Oct1995
Run Status : RunStatusOK
EndOffBaseline

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	1.71	1.68	6.00E-06	8731	PV	1.0154	CHLORIDE
2	2.73	2.70	9.70E-06	7685	VP	2.3811	BROMIDE
3	6.19	5.98	8.11E-04	-110	VP	1.7977	PHOSPHATE
4	7.47	#7.36	1.02E-06	31223	PP	5.9351	SULFATE

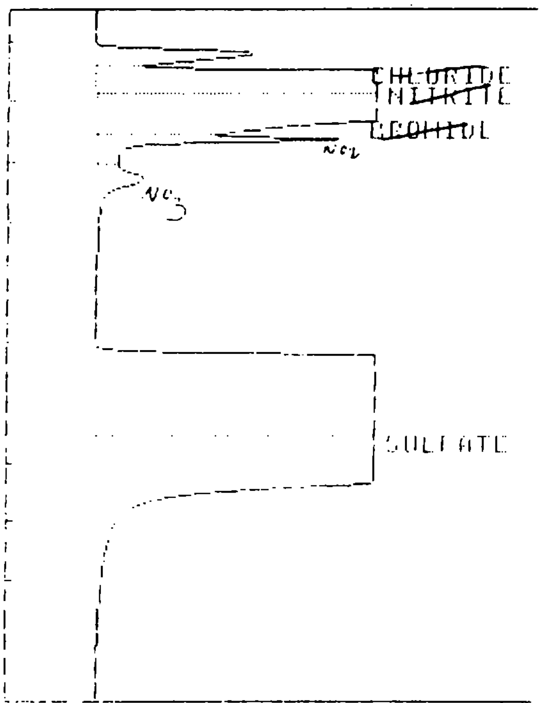
1.0PPM std responding gtr than 1.0

DML
6/20/96

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0 n
DIONEX 30uS. PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802 µ
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : 45696-2 ϕ L20 Report No :477.00

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 10/ 10



Sequence File: /DATA/DIONEX/SEQUENCE/IC10_20.SEQ 2nd cal
Method File : /DATA/DIONEX/METHOD/IC558.MTH
Result File : /DATA/DIONEX/RESULT/IC0525509.RES

Run Time : 12.03 Minutes Injected on 1456 20Oct1995
Report Time : 1508 20Oct1995
Run Status : EndOffBaseline
SignalOverload

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	1.67	1.68	6.00E-06	964111	GV	90.3564	CHLORIDE
2	2.03	1.95	1.91E-05	964049	GV	61.0150	NITRITE
3	2.57	2.71	9.70E-06	235658	VV	19.1757	BROMIDE
4	7.77	#7.38	1.02E-06	962634	GB	253.8258	SULFATE

BR BDL 20

mB
10/23/95

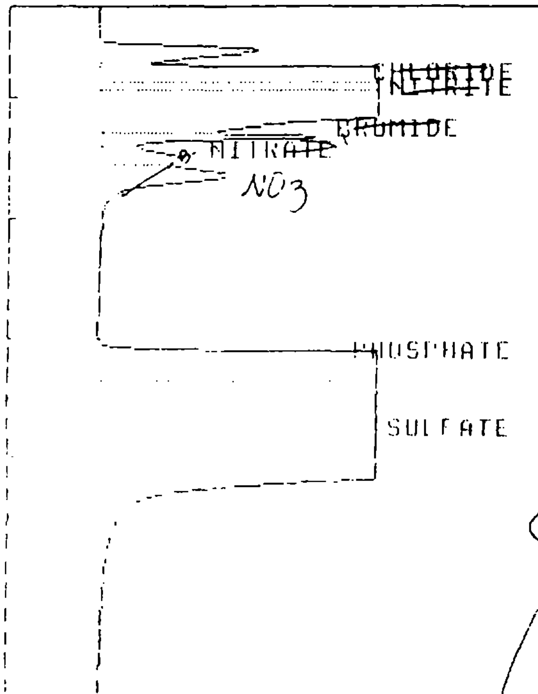
Rt ICALS	ICV	SAMPLE	
Br 2.69 - 2.74	2.70	2.57	
SO4 7.34 - 7.51	7.42	7.77	big shift - RE
	13.57	14.56	

DML
6/20/96

PACE INCORPORATED

US EPA 600 - 4/79/020. 1979 REVISED 1983. METHOD 300.0 n
DIONEX 30uS. PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3. 2.0 ml/min. SEE QA SOP #5802 µ
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : ~~45696-3~~ 45696-35 L20 Report No :478.00

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 11/ 11



Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_20.SEQ 2nd CAL
Method File : /DATA/DIONEX/METHOD/IC558.MTH
Result File : /DATA/DIONEX/RESULT/IC0525510.RES

Run Time : 12.03 Minutes Injected on 1509 20Oct1995
Report Time : 1521 20Oct1995
Run Status : EndOffBaseline
SignalOverload

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	1.65	1.68	6.00E-06	962261	GV	60.7567	CHLORIDE
2	1.91	1.95	1.91E-05	962279	GV	56.7844	NITRITE
3	2.59	2.71	9.70E-06	215109	VV	14.9361	~~BROMIDE~~ NO2
4	2.94	3.00	4.51E-05	74983	VV	4.6970	~~NITRATE~~ NO3 Br
5	6.28	5.99	8.11E-04	961697	GV	2553.1480	PHOSPHATE
6	7.59	*7.38	1.02E-06	961454	GB	304.0667	SULFATE

spike not calculated due to baseline
CF 10/23/95

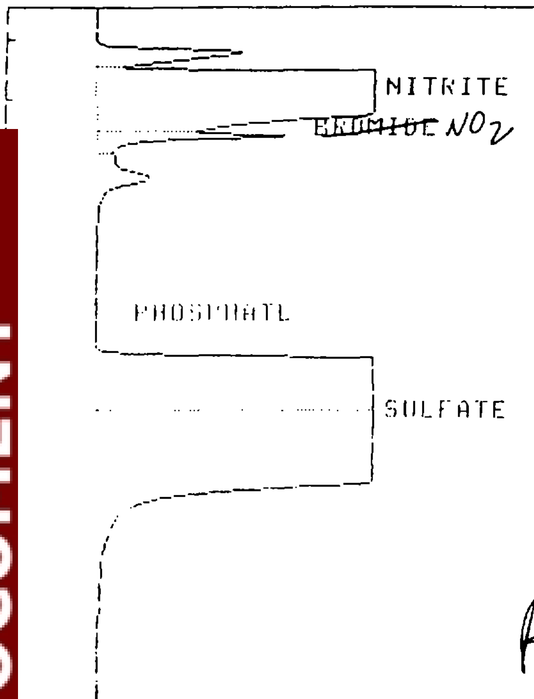
Rt
uncertainty w/ RT

DML 6/20/90

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0 n
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802 µ
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : 45696-4 L20 Report No :481.00

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 14/ 14



Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_20.SEQ 2nd cAL
Method File : /DATA/DIONEX/METHOD/IC558.MTH
Result File : /DATA/DIONEX/RESULT/IC0525513.RES

Run Time : 12.03 Minutes Injected on 1547 20Oct1995
Report Time : 1600 20Oct1995
Run Status : EndOffBaseline
SignalOverload

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	1.87	1.95	1.91E-05	962465	GV	99.6872	NITRITE
2	2.54	2.71	9.70E-06	184525	VV	14.3299	~~BROMIDE~~
3	5.62	5.99	8.11E-04	-441	FV	-23.7544	PHOSPHATE
4	7.23	#7.38	1.02E-06	961427	GV	209.2208	SULFATE

Rt questionable for Br BDL i (20) = 20
Br

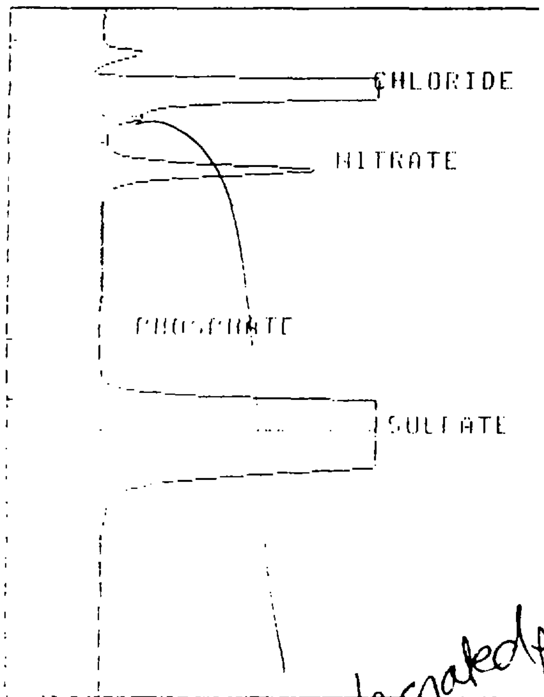
ms
10/23/95

0000157

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.0mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : 45646-8 Report No :489.00

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 22/ 22



2nd CAL

Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_20.SEQ
Method File : /DATA/DIONEX/METHOD/IC558.MTH
Result File : /DATA/DIONEX/RESULT/IC0525521.RES

Run Time : 12.03 Minutes Injected on 1730 20Oct1995
Report Time : 1745 20Oct1995
Run Status : EndOffBaseline
SignalOverload

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	1.78	1.68	6.00E-06	960874	GV	78.8208	CHLORIDE
2	3.12	2.99	4.51E-05	204427	VP	9.5158	NITRATE
3	5.90	5.99	8.11E-04	-50	PP	-24.5337	PHOSPHATE
4	7.51	#7.37	1.02E-06	956651	GV	183.7966	SULFATE

unintegrated peak - Br ?
uncertainty w/ BR reporting limit

DMc 6/20/96

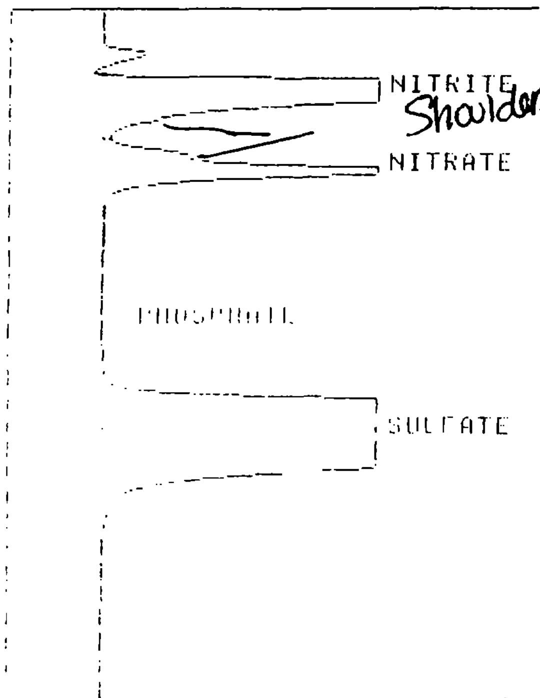
3R
BOC 1
ck 10/23/95

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983. METHOD 300.0
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328

Sample Name : 45696-85 Report No :490.00

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 23/ 23



Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_20.SEQ 2nd cAC
Method File : /DATA/DIONEX/METHOD/IC558.~~MTH~~
Result File : /DATA/DIONEX/RESULT/IC0525522.RES

Run Time : 12.03 Minutes Injected on 1743 20Oct1995
Report Time : 1755 20Oct1995
Run Status : EndOffBaseline
SignalOverload

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	1.82	1.95	1.91E-05	975475	GV	52.7628	NITRITE
2	3.12	2.99	4.51E-05	327475	VV	15.3009	NITRATE
3	5.69	5.99	8.11E-04	247	VV	-24.2551	PHOSPHATE
4	7.50	#7.37	1.02E-06	959000	GV	190.5350	SULFATE

Spike Not calculated

Spiked sample – where's Br?

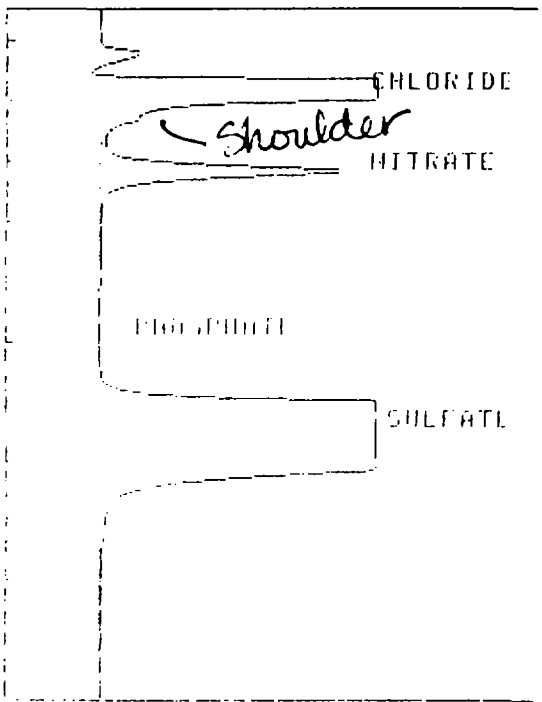
Not result of record.

DML 6/20/96

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0 n
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802 µ
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : 45696-9 Report No :491.00

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 24/ 24



Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_20.SEQ 2nd CR
Method File : /DATA/DIONEX/METHOD/IC558.MTH
Result File : /DATA/DIONEX/RESULT/IC0525523.RES

Run Time : 12.03 Minutes Injected on 1756 20Oct1995
Report Time : 1808 20Oct1995
Run Status : EndOffBaseline
SignalOverload

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	1.78	1.68	6.00E-06	958742	GV	82.7113	CHLORIDE
2	3.12	2.99	4.51E-05	231610	VV	10.3514	NITRATE
3	5.84	5.99	8.11E-04	85	PV	-24.5579	PHOSPHATE
4	7.37	#7.37	1.02E-06	958596	GV	345.8954	SULFATE

MB ic123155
Br BDL

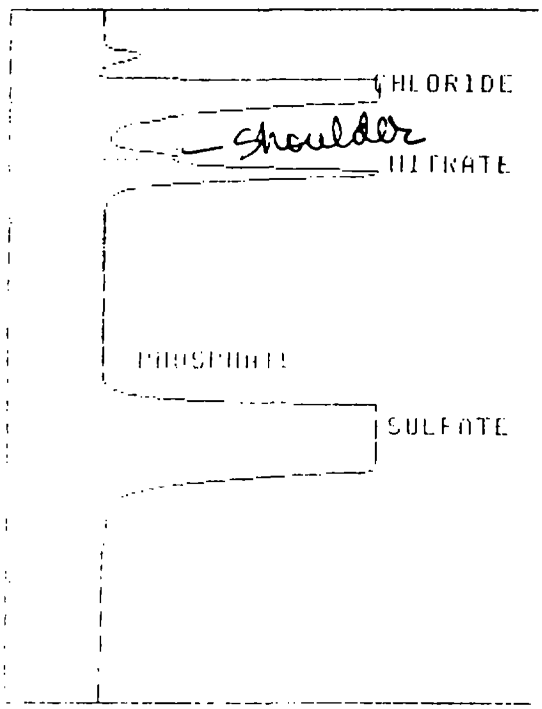
DML 6/20/96

0000163

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0 n
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802 µ
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : 45646-95 Report No :492.00

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 25/ 25



Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_20.SEQ 2nd CAC
Method File : /DATA/DIONEX/METHOD/IC558.MTH
Result File : /DATA/DIONEX/RESULT/IC0525524.RES

Run Time : 12.03 Minutes Injected on 1809 20Oct1995
Report Time : 1824 20Oct1995
Run Status : EndOffBaseline
SignalOverload

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	1.78	1.68	6.00E-06	960792	GV	82.6435	CHLORIDE
2	3.12	2.99	4.51E-05	290693	VV	12.1426	NITRATE
3	6.37	5.99	8.11E-04	1248	VV	-21.3068	PHOSPHATE
4	7.48	#7.37	1.02E-06	953608	GV	166.7296	SULFATE

Br spike not calculated due to [illegible]
mB 10/23/95

Spiked sample
where's Br?
Not a result of record.

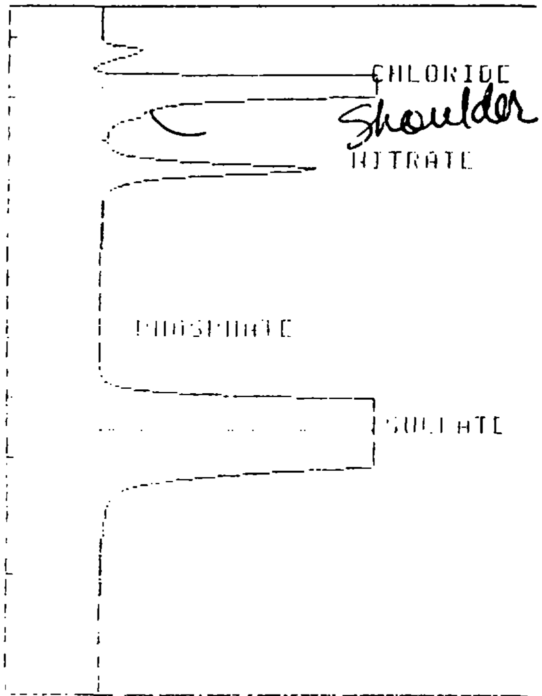
DML 6/20/96

0000164

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983. METHOD 300.0 n
DIONEX 30uS. PLOT SCALE: 200000 - 000000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802 μ
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : 45696 -10 Report No :493.00

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 26/ 26



2nd Att

Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_20.SEQ
Method File : /DATA/DIONEX/METHOD/IC558.MTH
Result File : /DATA/DIONEX/RESULT/IC0525525.RES

Run Time : 12.00 Minutes Injected on 1822 20Oct1995
Report Time : 1835 20Oct1995
Run Status : EndOffBaseline
SignalOverload

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	1.72	1.68	6.00E-06	959021	GV	81.8261	CHLORIDE
2	3.14	2.99	4.51E-05	206306	VV	9.5458	NITRATE
3	5.96	5.99	8.11E-04	-121	PP	-24.4808	PHOSPHATE
4	7.55	#7.37	1.02E-06	958775	GP	179.6995	SULFATE

>r BDL !

MB 10/23/95

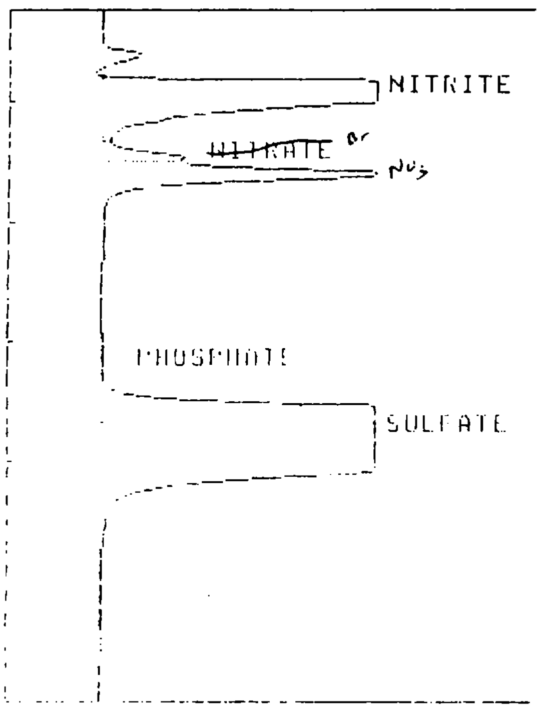
Spiked Sample wheres Br?

PMC 6/20/96

PACE INCORPORATED

US EPA 600 - 4/79/020. 1979 REVISED 1983. METHOD 300.0
DIONEX 30uS. PLOT SCALE: 200000 - 800000
1.8mm Na_2CO_3/ 1.7mm $NaHCO_3$. 2.0 ml/min. SEE QA SOP #5802
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : 45696-105 Report No : 494.00

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 27/ 27



Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_20.SEQ 2nd CAL
Method File : /DATA/DIONEX/METHOD/IC558.MTH
Result File : /DATA/DIONEX/RESULT/IC0525526.RES

Run Time : 12.03 Minutes Injected on 1835 20Oct1995
Report Time : 1847 20Oct1995
Run Status : EndOffBaseline
SignalOverload

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	1.82	1.95	1.91E-05	974951	GV	49.4694	NITRITE
2	2.67	2.99	4.51E-05	76597	VV	4.1858	NITRATE — Br ?
3	6.36	5.99	8.11E-04	1713	VV	-20.7104	PHOSPHATE
4	7.44	#7.37	1.02E-06	955654	GV	245.6602	SULFATE

Spiked sample — wheres BR?

~~Br spike not calculated~~ E3 10/23/95 MB

Br spike calculated

$842 \times 1.1 = \frac{9.26}{10}$

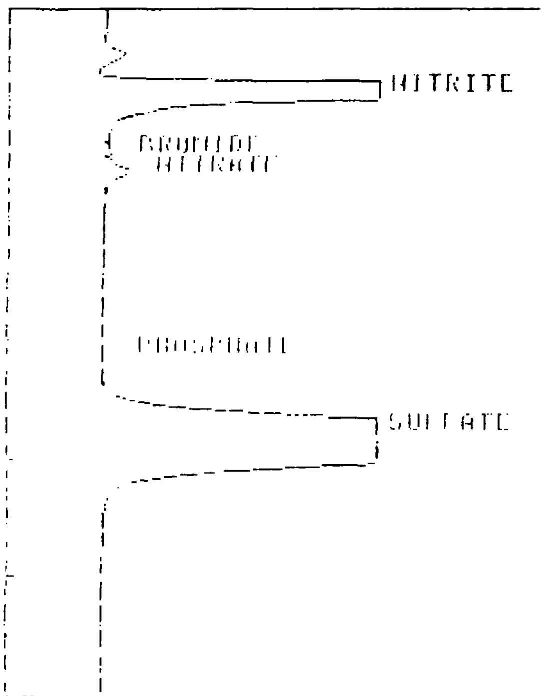
$= 926$

0000166

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0
DIONEX 30uS, PLOT SCALE: 200000 - 000000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : 45696-12 Report No :497.00

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 30/ 30



2nd cal

Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_20.SEQ
Method File : /DATA/DIONEX/METHOD/IC558.MTH
Result File : /DATA/DIONEX/RESULT/IC0525529.RES

Run Time : 12.03 Minutes Injected on 1913 20Oct1995
Report Time : 1926 20Oct1995
Run Status : EndOffBaseline
SignalOverload

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	10-tm	Factor	Height	Code	MG/L	Name
1	1.82	1.95	1.91E-05	967542	GV	41.4646	NITRITE
2	2.82	2.71	9.70E-06	4336	VV	1.8996	BROMIDE
3	3.14	3.00	4.51E-05	23885	VP	5.1613	NITRATE
4	6.19	5.99	8.11E-04	-426	PP	-22.9704	PHOSPHATE
5	7.45	#7.38	1.02E-06	965959	GP	208.6711	SULFATE

Br BDL 1

mB 10/23/95

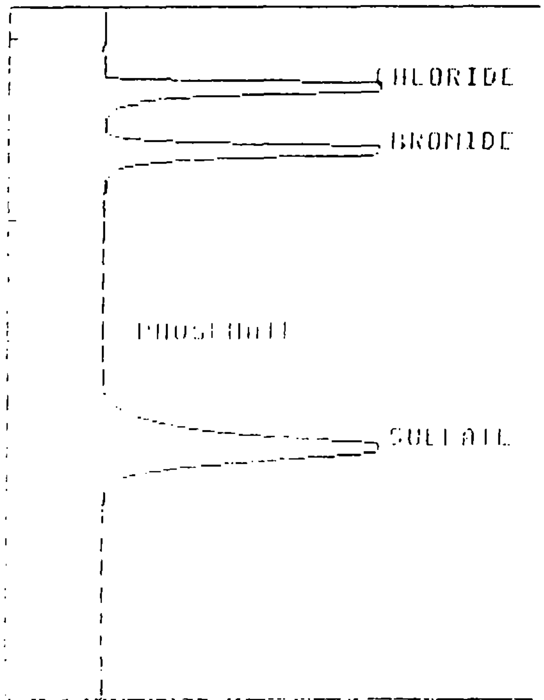
Br result < 2
according to raw data concentration
of low level stds

DML 6/21/00

PACE INCORPORATED

US EPA 600 4/79/020, 1979 REVISED 1983, METHOD 300.0 n
DIONEX 30uS. PLOT SCALE: 200000 - 000000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802 μ
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26320
Sample Name : CCV Report No :499.00

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 32/ 32



Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_20.SEQ 2nd cal
Method File : /DATA/DIONEX/METHOD/IC558.MTH
Result File : /DATA/DIONEX/RESULT/IC0525531.RES

Run Time : 12.03 Minutes Injected on 1939 20Oct1995
Report Time : 1951 20Oct1995
Run Status : RunStatusOK
EndOffBaseline

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-tm	Factor	Height	Code	MG/L	Name	
1	1.76	1.69	6.00E-06	598624	FV	22.0742	CHLORIDE	
2	2.79	2.71	9.70E-06	463858	VV	50.3602	BROMIDE	100.7%
3	5.96	6.00	8.11E-04	-151	FV	~~-24.136~~	~~PHOSPHATE~~	
4	7.73	7.30	1.02E-06	286011	FF	51.1233	SULFATE	102%

MB
10/23/95

CCV Rt
Br 2.79

ICAL
2.69-2.74

ICV
2.70

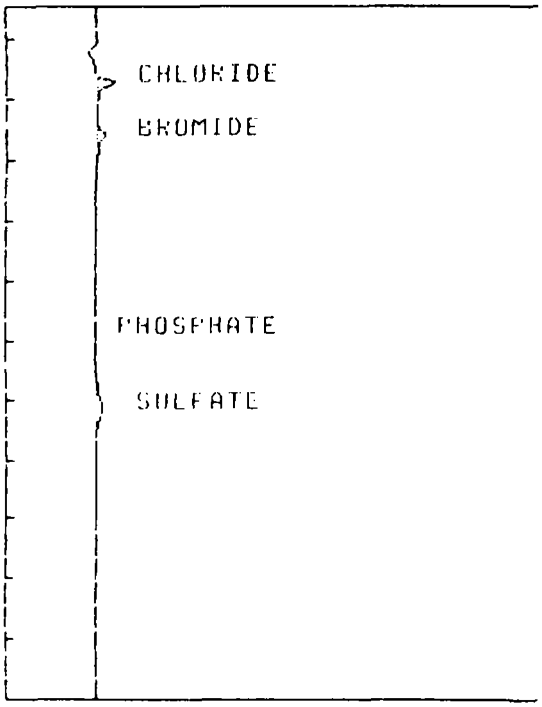
DMK 6/26/96

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0 n
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802 µ
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328

Sample Name : 1ppm CAL STD Report No :573.00

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 2/ 2



Sequence File: /DATA/DIONEX/SEQUENCE/IC10_24.SEQ 3rd CAL
Method File : /DATA/DIONEX/METHOD/IC~~560.MTH~~
Result File : /DATA/DIONEX/RESULT/IC0525601.RES

Run Time : 12.03 Minutes Injected on 1639 24Oct1995
Report Time : 1652 24Oct1995
Run Status : RunStatusOK
EndOffBaseline

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	1.68	1.73	6.00E-06	18156	PV	~~1.4066~~	~~CHLORIDE~~
2	2.54	2.59	9.70E-06	7972	VP	2.3849	BROMIDE
3	5.85	5.97	8.11E-04	-372	PP	258.4955	PHOSPHATE
4	7.10	#7.28	1.02E-06	6287	PP	1.3722	SULFATE

1.0PPM std responding better than 1.0

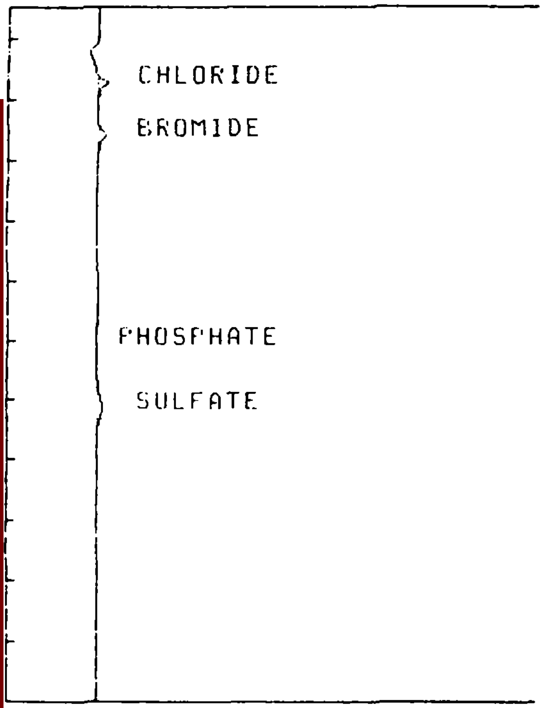
DML MB
6hoK14 10/25/95

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328

Sample Name : 10ppm CAL STD Report No :574.00

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 2/ 2



Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_24.SEQ 3d CAL
Method File : /DATA/DIONEX/METHOD/IC560.MTH
Result File : /DATA/DIONEX/RESULT/IC0525601.RES

Run Time : 12.03 Minutes Injected on 1657 24Oct1995
Report Time : 1710 24Oct1995
Run Status : RunStatusOK
EndOffBaseline

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	1.68	1.73	6.00E-06	9981	PV	1.1193	CHLORIDE
2	2.55	2.59	9.70E-06	7825	VV	2.4068	BROMIDE
3	6.03	5.97	8.11E-04	-166	PP	5.4193	PHOSPHATE
4	7.11	#7.28	1.02E-06	6140	PV	1.4431	SULFATE

1,0PPM std responding better than 1.0

DML 6/20/10

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983. METHOD 300.0

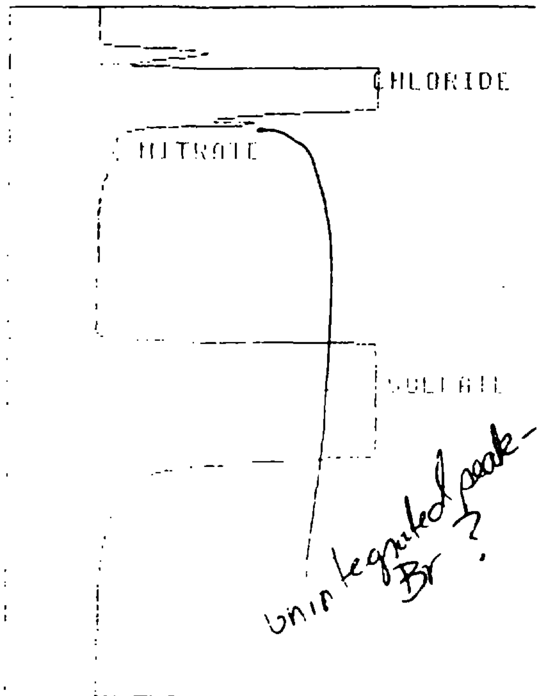
DIONEX 30uS, PLOT SCALE: 200000 - 800000

1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802

INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328

Sample Name : H5696-6 L50 Report No :582.00

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 10/ 10



unintegrated peak- Br?

Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_24.SEQ 3rd CAL
Method File : /DATA/DIONEX/METHOD/IC560.MTH
Result File : /DATA/DIONEX/RESULT/IC0525609.RES

Run Time : 12.03 Minutes Injected on 2120 24Oct1995
Report Time : 2133 24Oct1995
Run Status : EndOffBaseline
SignalOverload

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	1.81	1.72	5.29E-06	962414	GV	163.4662	CHLORIDE
2	3.00	2.87	4.51E-05	16519	VV	3.3790	NITRATE
3	6.89	#7.25	5.33E-06	951891	GV	347.7302	SULFATE

Br BDL 50

MB 10/25/95

KAL Rt		ICV
Br	2.54 - 2.60	2.61
SO4	7.02 - 7.12	7.20

is the unintegrated peak BR cant assess w/ Rt shifting

DML 6/20/96

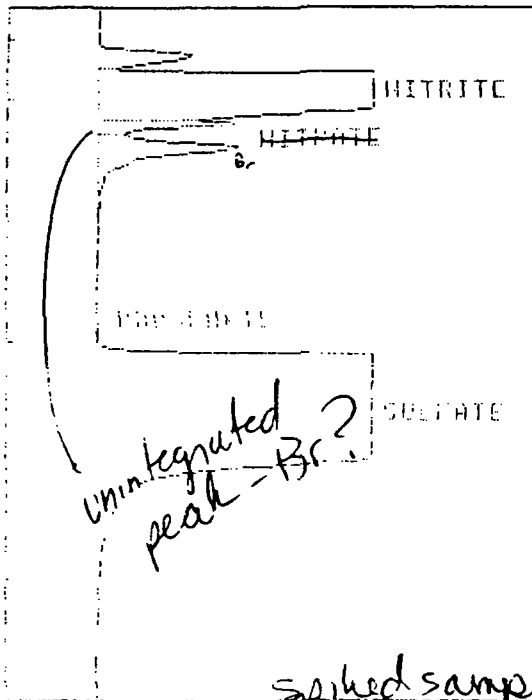
GW-42-D (WL-22)
Br reported from this run as ND.

0000180

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : 45696-65 L50 Report No :583.00

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 11/ 11



unintegrated peak - Br?

spiked sample

Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_24.SEQ 3rd cal
Method File : /DATA/DIONEX/METHOD/IC560.NJH
Result File : /DATA/DIONEX/RESULT/IC0525610.RES

Run Time : 12.03 Minutes Injected on 2133 24Oct1995
Report Time : 2146 24Oct1995
Run Status : EndOffBaseline
SignalOverload

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	1.95	1.91	1.91E-05	977835	GV	83.7656	NITRITE
2	2.74	2.57	4.51E-05	137825	VV	7.8132	NITRATE
3	5.71	5.94	3.00E-04	-778	PP	780.9595	PHOSPHATE
4	7.27	*7.25	5.33E-06	960947	GV	215.6971	SULFATE

Br spike not calculated - used for ID only

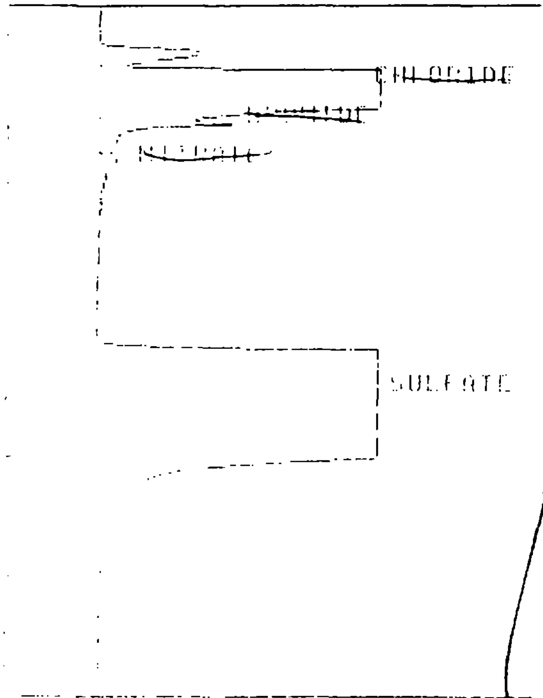
MB 10/25/95

IOR RT	ICV	SAMPLE
Br 2.54 - 2.60	2.61	lab says 2.74 is Br unintegrated peak - Br? can't asses w/shifting

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983. METHOD 300.0 n
DIONEX 30uS. PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802 μ
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : 45696-7 L50 Report No :584.00

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 12/ 12



Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_24.SEQ 3rd cAc
Method File : /DATA/DIONEX/METHOD/IC560.MTH
Result File : /DATA/DIONEX/RESULT/IC0525611.RES

Run Time : 12.03 Minutes Injected on 2146 24Oct1995
Report Time : 2158 24Oct1995
Run Status : EndOffBaseline
SignalOverload

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

PK#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	1.71	1.72	5.29E-06	960746	GV	150.7456	CHLORIDE
2	2.40	2.57	9.99E-06	128197	VV	12.5778	~~BROMIDE~~
3	2.94	2.97	4.51E-05	15313	VP	3.1869	NITRATE
4	6.94	#7.24	5.37E-06	960441	GV	293.7010	SULFATE

Bromide ISDL 50

MB
10/25/95

IS 2.40 Br-?

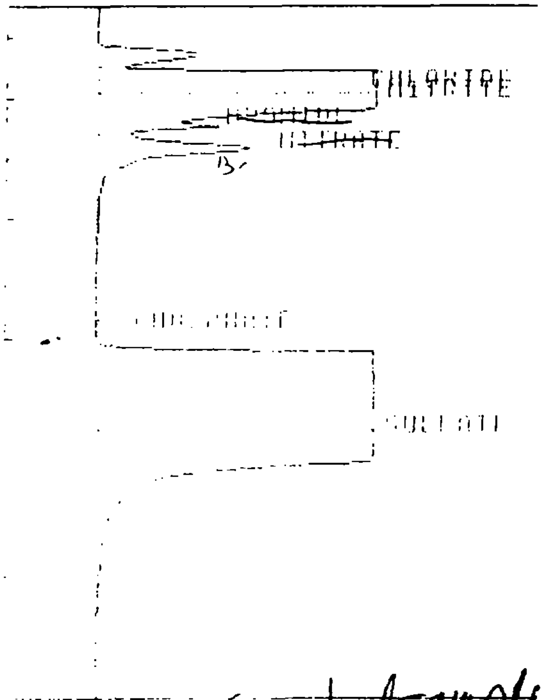
DMC 6/20/96

GW-42D(FD)
WL-1622-23

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : 415696-75 LSO Report No :585.00

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 13/ 13



Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_24.SEQ
Method File : /DATA/DIONEX/METHOD/IC530.MTH
Result File : /DATA/DIONEX/RESULT/IC0525612.RES

3rd CAL

Run Time : 12.03 Minutes Injected on 2159 24Oct1995
Report Time : 2211 24Oct1995
Run Status : EndOffBaseline
SignalOverload

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	1.78	1.72	5.29E-06	960225	GV	88.2922	CHLORIDE
2	1.95	1.91	1.91E-05	960757	VV	34.5779	NITRITE
3	2.45	[illegible]	2.98E-06	11682[illegible]	VV	9.1753	BROMIDE
4	2.77	2.87	4.51E-05	14[illegible]274	VB	5.0457	NITRATE
5	5.27	5.94	[illegible].00E-04	[illegible]	PP	353.[illegible]	PHOSPHATE
6	7.57	[illegible]	[illegible]E-06	[illegible]	GG	131.7357	SULFATE

~~Spiked sample~~ — which peak is Br.
lab indicating Br is 2.77 min

Br spk not calculated
— used for peak identification only

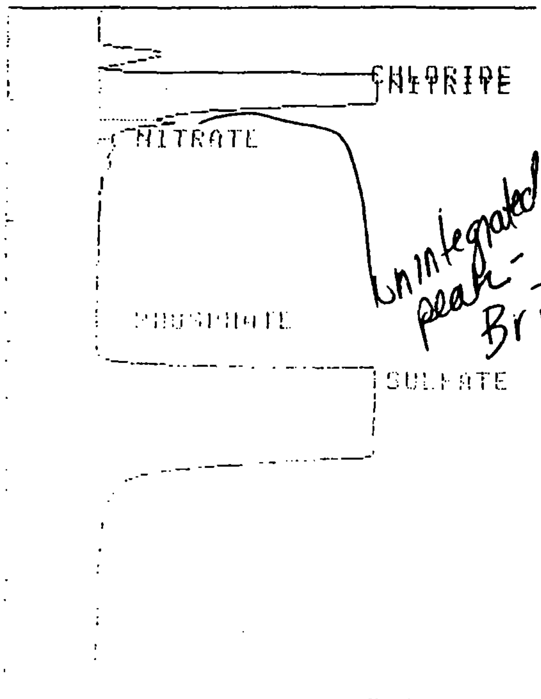
MB 10/25/95

DMC 6/26/96

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0 n
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802 µ
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : 45696-11 L20 Report No :586.00

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 14/ 14



Unintegrated peak - Br?

Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_24.SEQ 3rd CAL
Method File : /DATA/DIONEX/METHOD/IC560.MTH
Result File : /DATA/DIONEX/RESULT/IC0525613.RES

Run Time : 12.03 Minutes Injected on 2212 24Oct1995
Report Time : 2224 24Oct1995
Run Status : EndOffBaseline
SignalOverload

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	1.68	1.72	5.29E-06	959964	GV	58.5647	CHLORIDE
2	1.94	1.91	1.91E-05	959975	VV	36.1525	NITRITE
3	2.72	2.87	4.51E-05	14475	VV	2.8724	NITRATE
4	5.74	5.94	3.00E-04	-149	PP	-35.3482	PHOSPHATE
5	6.75	#7.24	5.33E-06	950037	GV	225.8563	SULFATE

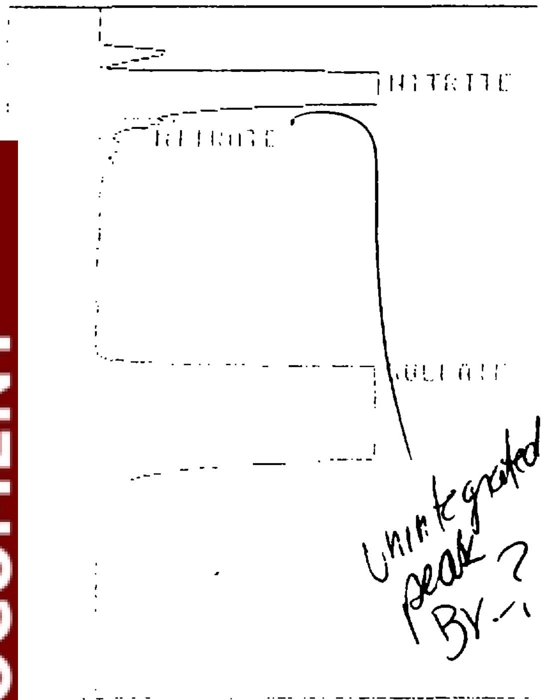
Br NP BDL20
MB 10/25/95

4 outside linear range for SO_4 DML 4/20/96
used for Br results only

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983. METHOD 300.0 n
DIONEX 30uS. PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802 µ
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : 45696-115 L 20 Report No :587.00

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 15/ 15



Unintegrated peak? Br-?

Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_24.SEQ 3rd CAC
Method File : /DATA/DIONEX/METHOD/IC550.MTH
Result File : /DATA/DIONEX/RESULT/IC0525614.RES

Run Time : 12.00 Minutes Injected on 2225 24Oct1995
Report Time : 2237 24Oct1995
Run Status : EndOffBaseline
SignalOverload

Dil-Fact : 100.00% Sample Amt: 1.0000 Standard Amt: 1.0000

Pk#	RT	10-tm	Factor	Height	Code	MG/L	Name
1	1.95	1.91	1.91E-05	960215	BV	71.5759	NITRITE
2	2.74	2.57	4.51E-05	21672	VV	7.1437	NITRATE
3	6.54	*7.24	5.35E-05	950064	B.	197.0963	SULFATE

Br spike absorbed by sample?
10/25/95
mB

Spiked sample - where's Br.?

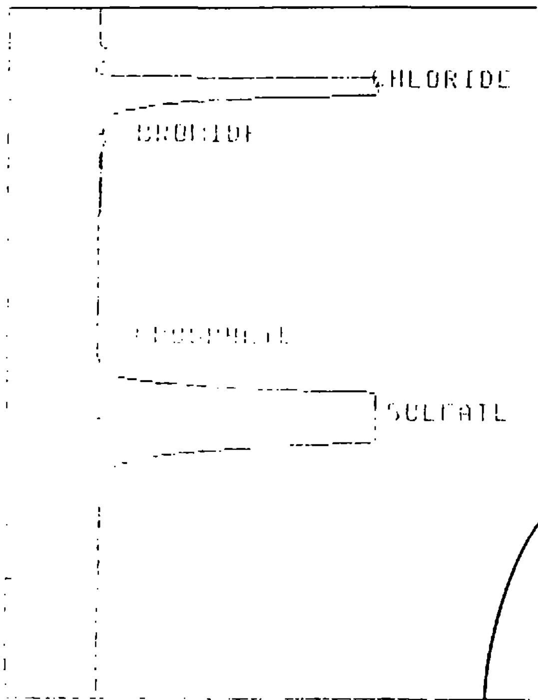
DML 6/14/96

0000185

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983. METHOD 300.0 n
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802 µ
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : 45696-13 L20 Report No :588.00

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 16/ 16



3rd CAL

Sequence File: /DATA/DIONEX/SEQUENCE/IC_20_24.SEQ
Method File : /DATA/DIONEX/METHOD/IC560.MTH
Result File : /DATA/DIONEX/RESULT/IC0525615.RES

Run Time : 12.03 Minutes Injected on 2238 24Oct1995
Report Time : 2250 24Oct1995
Run Status : EndOffBaseline
SignalOverload

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	1.75	1.72	5.29E-06	973727	GV	63.6848	CHLORIDE
2	2.67	2.57	8.98E-06	4145	VP	2.3737	~~BROMIDE~~ NP
3	6.01	5.93	3.00E-04	-274	PP	50.5406	PHOSPHATE
4	7.32	#7.24	5.35E-05	965140	VV	104.5187	SULFATE

MB
BR BDL 20
10/25/95

If 2.67 is Br then Rt shifting back again compared to previous samples & spikes.

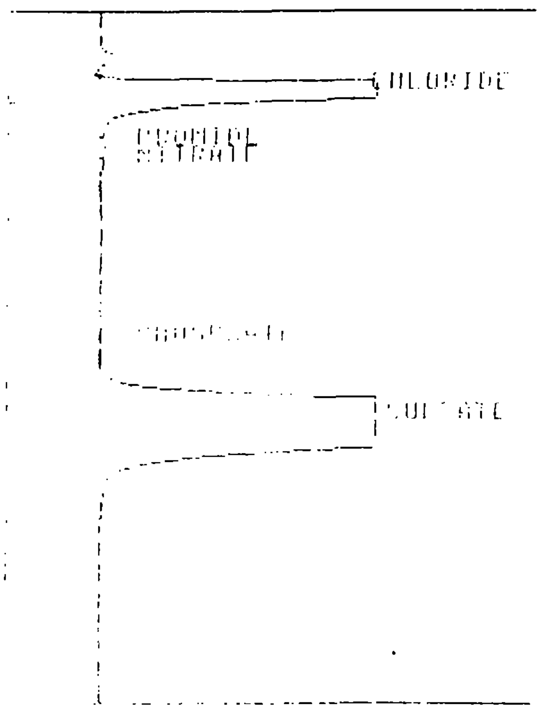
DML 6/20/96

0000186

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983. METHOD 300.0 n
DIONEX 30uS. PLOT SCALE: 200000 - 800000
1.8mm Na_2CO_3/ 1.7mm $NaHCO_3$, 2.0 ml/min. SEE QA SOP #5802 μ
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26320
Sample Name : 45696-135 L20 Report No :589.00

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 17/ 17



3rd cal

Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_24.SEQ
Method File : /DATA/DIONEX/METHOD/IC96C.MTH
Result File : /DATA/DIONEX/RESULT/IC0525616.RES

Run Time : 12.03 Minutes Injected on 2250 24Oct1995
Report Time : 2303 24Oct1995
Run Status : EndOffBaseline
SignalOverload

Dil-Fact : 100.002 Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	10-tm	Factor	Height	Code	MG/L	Name
1	1.75	1.72	5.29E-06	973005	GV	65.1359	CHLORIDE
2	2.66	2.57	8.98E-06	4736	VV	2.1212	~~BROMIDE~~ NP
3	2.96	2.87	4.51E-05	3040	VV	2.5925	NITRATE
4	5.93	5.97	7.00E-04	325	VL	111.8626	PHOSPHATE
5	7.21	#7.24	5.33E-06	959505	GV	235.5928	SULFATE

MB 10/25/95

Where's Br spiked sample

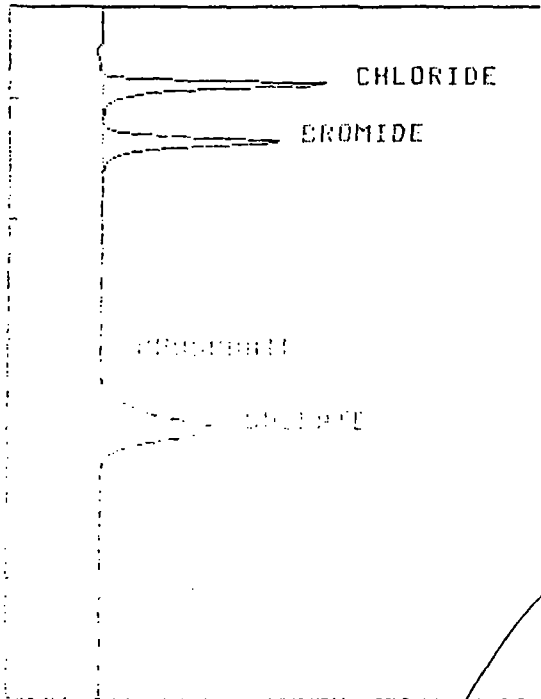
DMC 6/10/94

0000187

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0 n
DIONEX 30uS. PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802 µ
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : CCV Report No :592.00

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 20/ 20



3rd CAL

Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_24.SEQ
Method File : /DATA/DIONEX/METHOD/IC560.MTH
Result File : /DATA/DIONEX/RESULT/IC0525619.RES

Run Time : 12.03 Minutes Injected on 2329 24Oct1995
Report Time : 2341 24Oct1995
Run Status : RunStatusOK
EndOffBaseline

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	10-tm	Factor	Height	Code	MG/L	Name	
1	1.71	1.72	5.29E-06	218393	PV	9.7578	CHLORIDE	
2	2.64	2.57	8.96E-06	170312	VV	19.7012	BROMIDE	97%
3	5.21	5.94	3.00E-04	12	PP	-123.3919	PHOSPHATE	
4	7.45	7.24	5.33E-06	107769	VV	19.9191	SULFATE	99%

now Br @ 2.64

MB 10/25/95

Rt shift for ICAL

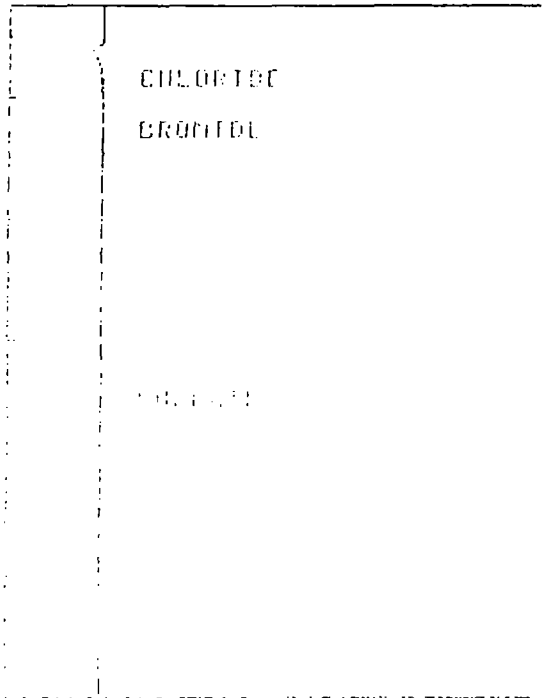
DML 4/20/96

0000188

PACE INCORPORATED

US EPA 600 - 4/79/020. 1979 REVISED 1983, METHOD 300.0
DIONEX 30uS. PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : CCB Report No :593.00

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 21/ 21



3rd CPL

Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_24.SEQ
Method File : /DATA/DIONEX/METHOD/IC5X0.MTH
Result File : /DATA/DIONEX/RESULT/IC0525620.RES

Run Time : 12.03 Minutes Injected on 2342 24Oct1995
Report Time : 2354 24Oct1995
Run Status : RunStatusOK
EndOffBaseline

Sil-Fact : 100.000 Sample Amt: 0.0000 Standard Amt: 1.0000

PK#	RT	ID-tm	Factor	Height	Code	MG/L	Name	
1	1.77	1.72	5.29E-05	-2336	FF	.9557	CHLORIDE	
2	2.63	2.57	8.98E-06	-260	FP	1.5459	BROMIDE	NP BDL
3	[illegible]	7.24	5.37E-06	156	BV	1.2160	SULFATE	NP BDL

MB

10/25/95

Rt Shift

Value not <1.0
no peaks

DMC 6/20/96

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0

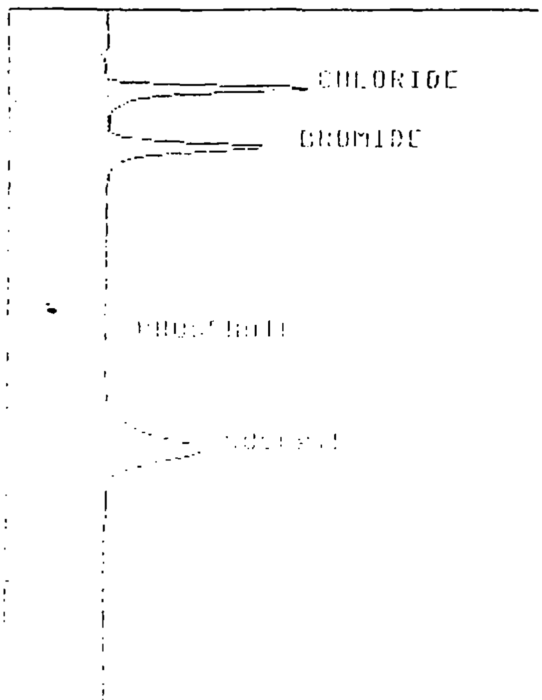
DIONEX 30uS, PLOT SCALE: 200000 - 800000

1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802

INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328

Sample Name : CCV Report No :604.00

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 32/ 32



3rd CAL

Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_24.SEQ
Method File : /DATA/DIONEX/METHOD/IC560.MTH
Result File : /DATA/DIONEX/RESULT/IC0525631.RES

Run Time : 12.05 Minutes Injected on 0203 25Oct1995
Report Time : 0216 25Oct1995
Run Status : RunStatusOK
EndOffBaseline

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	IS-tm	Factor	Height	Code	MG/L	Name	
1	1.73	1.73	5.29E-06	195812	PV	9.0646	CHLORIDE	
2	2.60	2.55	9.96E-05	152960	BF	17.9772	BROMIDE	@ 90%
3	5.55	5.96	7.03E-04	-222	FF	-96.7098	PHOSPHATE	
4	7.74	[illegible]	5.73E-06	95589	PV	[illegible]	SULFATE	92.1%

mB 10/25/95

Rt Shift again

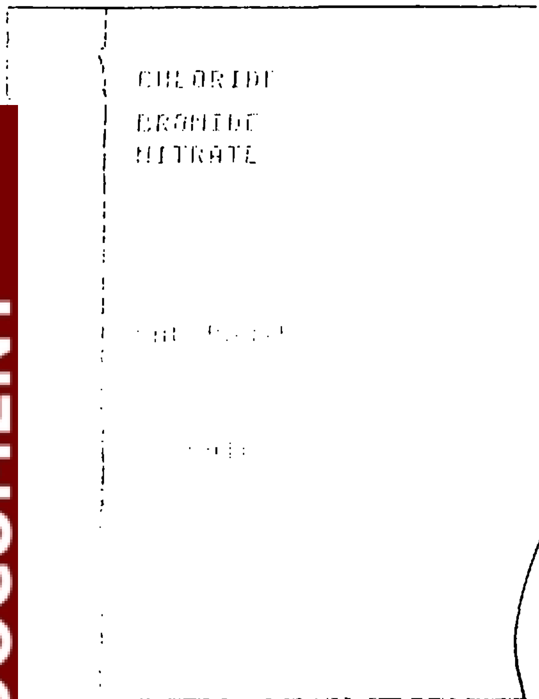
DML 6/20/96

0000190

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0 n
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802 µ
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : CCB Report No :605.00

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 33/ 33



31d CAC

Sequence File: /DATA/DIONEX/SEQUENCE/IC/IC_24.SEQ
Method File : /DATA/DIONEX/METHOD/IC560.MTH
Result File : /DATA/DIONEX/RESULT/IC0525632.RES

Run Time : 12.03 Minutes Injected on 0216 25Oct1995
Report Time : 0229 25Oct1995
Run Status : RunStatusOK
EndOffBaseline

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	1.78	1.78	5.27E-06	-1991	FV	[illegible]	CHLORIDE
2	[illegible]	2.59	[illegible]	[illegible]	VV	1.555[illegible]	BROMIDE NP
3	[illegible]	2.83	4.51E-05	-215	FF	[illegible].4724	NITRATE
4	5.9[illegible]	5.97	3.00E-04	[illegible]	FP	-117.7[illegible]	PHOSPHATE
5	[illegible]	[illegible]	5.79E-06	[illegible]	VV	1.7[illegible]6	SULFATE NP

SO4, Br - BDL
MB
10/25/95

Rt Shift again

Value not <1.0
no peak

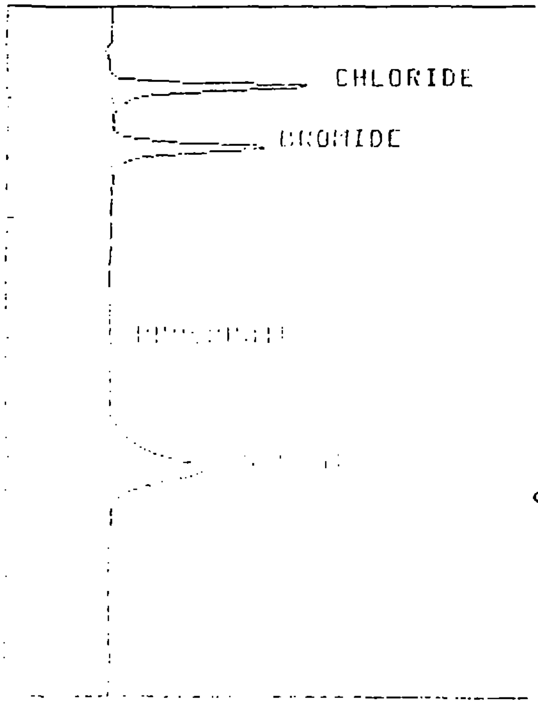
DML 6/20/96

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328

Sample Name : CCV Report No :616.10

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 44/ 44



3rd CAC

Sequence File: /DATA/DIONEX/SEQUENCE/IC10_24.SEQ
Method File : /DATA/DIONEX/METHOD/IC561.MTH
Result File : /DATA/DIONEX/RESULT/IC0525643.RES

Run Time : 12.03 Minutes Injected on 0438 25Oct1995
Report Time : 1027 25Oct1995
Run Status : RunStatusOK
EndOffBaseline

Dil-Fact : 100.000 Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	1.75	1.75	5.29E-06	175016	[illegible]	9.2122	CHLORIDE
2	2.76	2.76	3.98E-06	149416	[illegible]	10.2512	[illegible]
3	6.02	6.04	3.20E-04	-20	[illegible]	65.8915	PHOSPHATE
4	[illegible]	[illegible]	5.77E-06	91522	[illegible]	23.6412	SULFATE

91.3%

93.2%

Rt shift again

MB 10/25/95

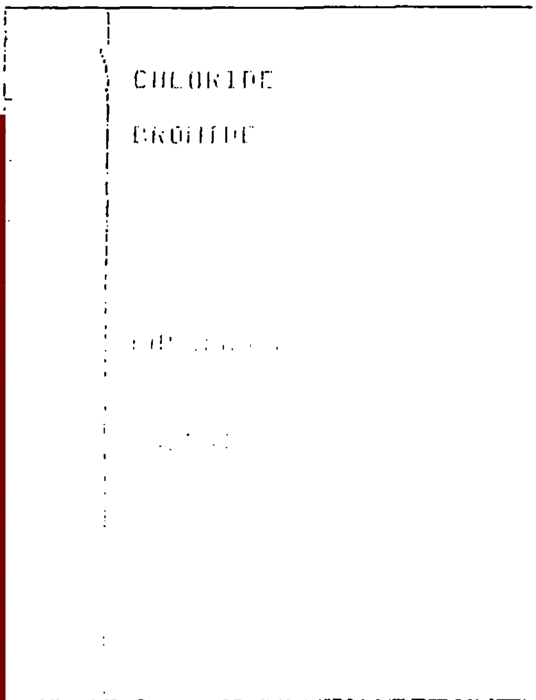
DML 6/26/96

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328

Sample Name : CCB Report No :617.10

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 45/ 45



Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_24.SEQ 3rd CAC
Method File : /DATA/DIONEX/METHOD/IC561.MTH
Result File : /DATA/DIONEX/RESULT/IC0525644.RES

Run Time : 12.03 Minutes Injected on 0451 25Oct1995
Report Time : 1028 25Oct1995
Run Status : RunStatusOK
EndOffBaseline

Cal-Fact : 100.000 Sample Amt: 1.0000 Standard Amt: 1.0000

Pk#	RT	Ex-RT	Factor	Height	Type	mg/L	Name	
1	1.79	1.75	5.29E-06	[illegible]	[illegible]	[illegible]	CHLORIDE	
2	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.5359	BROMIDE	NP
3	6.10	6.05	3.00E-04	[illegible]	[illegible]	-25.2539	PHOSPHATE	
4	[illegible]	7.37	5.33E-06	[illegible]	[illegible]	1.2401	SULFATE	NP

Br, SO4 BDL

Rt Stuff again

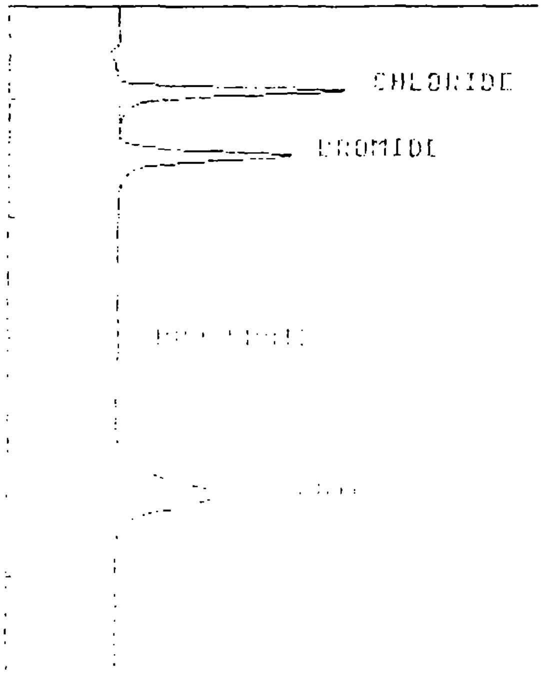
MB
.0125-145

value not < 1.0
no peaks

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983. METHOD 300.0 n
DIONEX 30uS. PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802 µ
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : CCV Report No :626.20

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 54/ 54



Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_24.SEQ 3rd cAl
Method File : /DATA/DIONEX/METHOD/IC561.MTH
Result File : /DATA/DIONEX/RESULT/IC0525653.RES

Run Time : 12.03 Minutes Injected on 0647 25Oct1995
Report Time : 1140 25Oct1995
Run Status : RunStatusOK
EndOffBaseline

Dil-Fact : 100.000 Sample Amt: [illegible] Standard Amt: 1.0000

Pk#	RT	ID-ta.	Factor	Height	Code	MG/L	Name	
1	1.81	1.74	5.29E-06	219169	PU	10.5265	CHLORIDE	
2	2.91	2.76	9.99E-06	[illegible]	UU	20.9785	BROMIDE	105%
3	6.09	6.03	3.00E-04	-195	PU	-77.5697	PHOSPHATE	
4	6.57	#5.70	5.33E-05	99974	PP	21.4[illegible]	SULFATE	107.1%

MB 10/25/95

RF Shift again

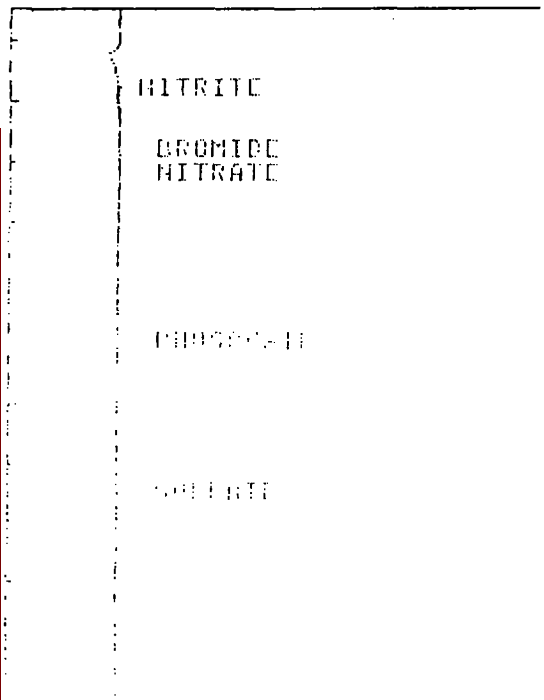
DML
6/20/96

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983,   METHOD 300.0   n
DIONEX 30uS,   PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802   µ
INJECTION VOLUME: 20uL   COLUMN: IONPAC AS4A 4mm #26328
Sample Name : CCB   Report No :627.20

Instrument : DIONEX   Subseq/Sample/Bottle: 1/ 55/ 55

3rd cAc



Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_24.SEQ
Method File : /DATA/DIONEX/METHOD/IC561.MTH
Result File : /DATA/DIONEX/RESULT/IC0525654.RES

Run Time : 12.03 Minutes   Injected on 0659 25Oct1995
Report Time : 1140 25Oct1995
Run Status : RunStatusOK
EndOffBaseline

Dil-Fact : 100.00%   Sample Amt: 0.0000   Standard Amt: 1.0000

Pk#	RT	ID-tw	Factor	Height	Code	MG/L	Name
1	1.88	1.93	1.91E-05	-2000	PP	.2870	NITRITE
2	2.96	2.76	6.99E-06	-712	PV	1.5644	BROMIDE NP
3	3.30	3.11	4.51E-05	-357	PV	2.4187	NITRATE
4	6.06	1.07	3.00E-04	-415	PV	125.1502	PHOSPHATE
5	[illegible]	[illegible]	5.35E-06	17[illegible]	PP	1.2095	SULFATE NP

Rt shifted

Br, SO4
BDL
MB 10/25/95

value not <1.0
NO peaks
DJM 6/20/96

0000195

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983. METHOD 300.0

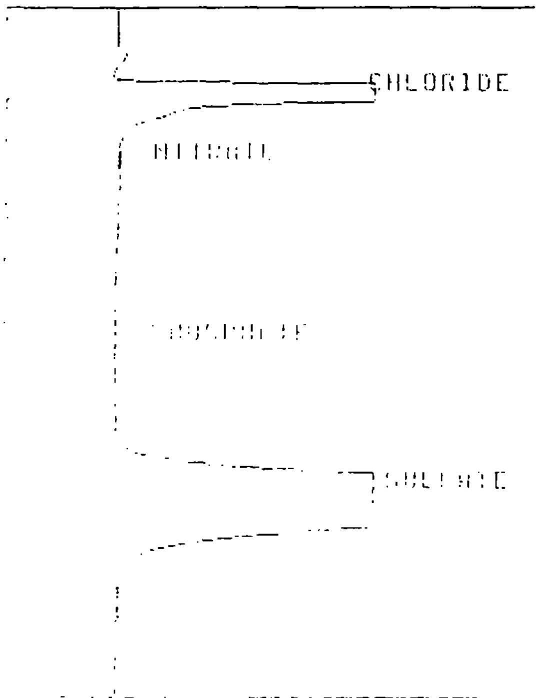
DIONEX 30uS. PLOT SCALE: 200000 - 800000

1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802

INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328

Sample Name : 45696-11 L100 ~~L100~~ Report No :630.20

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 58/ 58



Sequence File: /DATA/DIONEX/SEQUENCE/IC/10_24.SEQ 3rd cal

Method File : /DATA/DIONEX/METHOD/IC560.MTH

Result File : /DATA/DIONEX/RESULT/IC0525657.RES

Run Time : 12.03 Minutes Injected on 0738 25Oct1995

Report Time : 1146 25Oct1995

Run Status : EndOffBaseline

SignalOverload

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

PK#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	1.82	1.74	5.295E-06	894036	GV	55.7190	CHLORIDE
2	2.99	3.11	4.51E-05	3120	VV	2.5155	NITRATE
3	6.00	6.03	3.00E-04	-454	FF	227.2408	PHOSPHATE
4	8.45	*8.69	5.33E-06	947022	GV	254.0510	SULFATE

dilute + rerun

No Br present - use as valid Br run if necessary - Br <100 ?

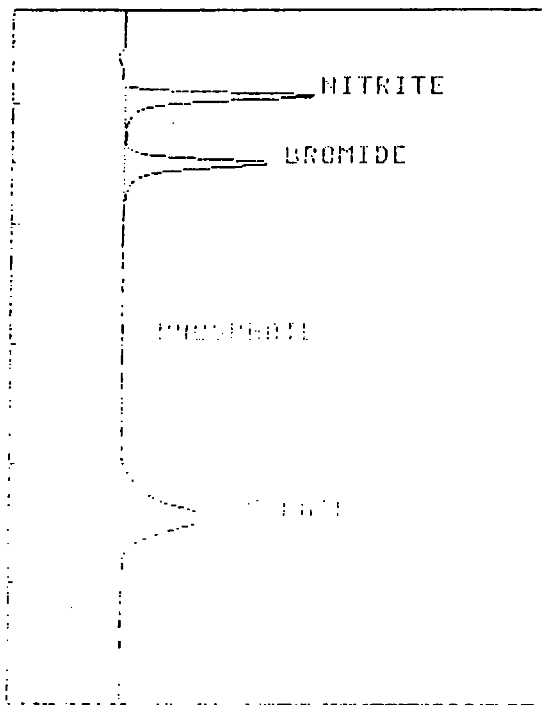
100X dilution supports 1:1000X dilution result - 4th cal

DML 6/20/96

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0 n
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802 µ
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : CCV Report No :631.30

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 59/ 59



3rd CAC

Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_24.SEQ
Method File : /DATA/DIONEX/METHOD/IC561.MTH
Result File : /DATA/DIONEX/RESULT/IC0525658.RES

Run Time : 12.03 Minutes Injected on 0751 25Oct1995
Report Time : 1154 25Oct1995
Run Status : RunStatusOK
EndOffBaseline

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	1.83	1.93	1.91E-05	184449	PV	5.2456	NITRITE
2	2.95	2.95	9.98E-06	139524	VV	15.2017	BROMIDE
3	5.92	6.03	3.09E-04	-39	PV	2.8391	PHOSPHATE
4	9.56	#9.70	5.33E-06	91592	PV	19.2572	SULFATE

91%

91.3%

Rt Shifting

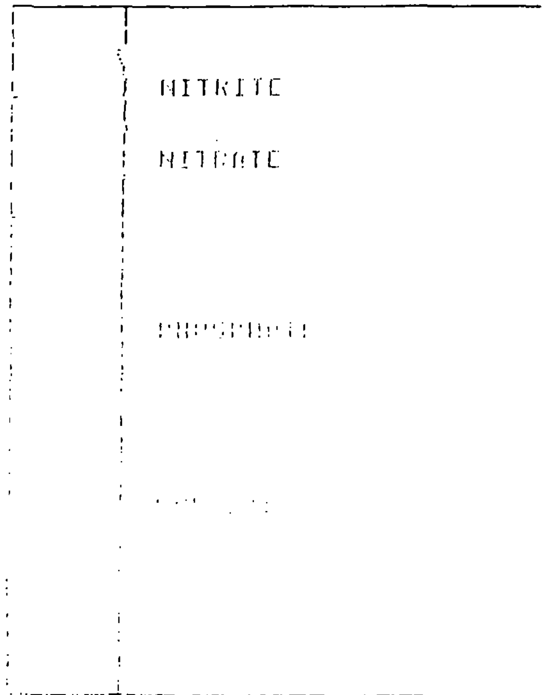
DMS 2/20/96

0000197

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0 n
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802 µ
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : C3 Report No :632.20

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 60/ 60



3rd CAL

Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_24.SEQ
Method File : /DATA/DIONEX/METHOD/IC501.MTH
Result File : /DATA/DIONEX/RESULT/IC0525659.RES

Run Time : 12.03 Minutes Injected on 0804 25Oct1995
Report Time : 1148 25Oct1995
Run Status : RunStatusOK
EndOffBaseline

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

PK#	RT	ID-ts	Factor	Height	Code	MG/L	Name
1	1.92	1.93	1.91E-05	-1726	FF	.2590	NITRITE
2	3.10	3.11	4.51E-05	-13	PP	2.4095	NITRATE
3	5.99	6.03	3.00E-04	-135	PP	-75.1557	PHOSPHATE
4	9.96	40.79	[illegible]	-40	PP	1.2151	SULFATE NP

MB 10/25/95

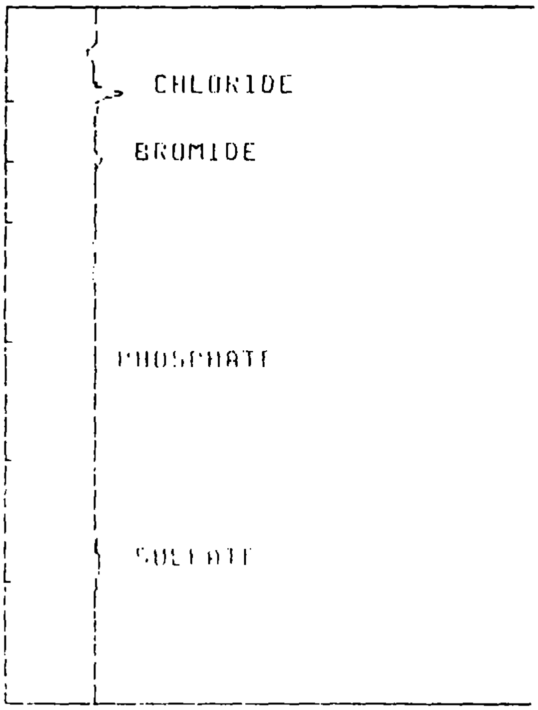
RT Shift

No peaks
PMC 6/26/96

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0 n
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802 µ
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : 1PPM Report No :633.20

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 1/ 1



4th CAL

Sequence File: /DATA/DIONEX/SEQUENCE/IC/10_25.SEQ
Method File : /DATA/DIONEX/METHOD/IC562.MTH
Result File : /DATA/DIONEX/RESULT/IC0525660.RES

Run Time : 12.03 Minutes Injected on 1046 25Oct1995
Report Time : 1656 26Oct1995
Run Status : RunStatusOK
EndOffBaseline

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	1.82	1.75	2.18E-06	25879	PV	1.4718	CHLORIDE
2	2.93	3.01	1.14E-05	6631	VV	2.2441	BROMIDE
3	6.40	6.03	2.66E-04	125	PV	158.5448	PHOSPHATE
4	9.68	#9.93	4.91E-06	4786	VV	2.3389	SULFATE

value responding grtr than 1.0 biased-low level results

DMC 6/20/96

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0

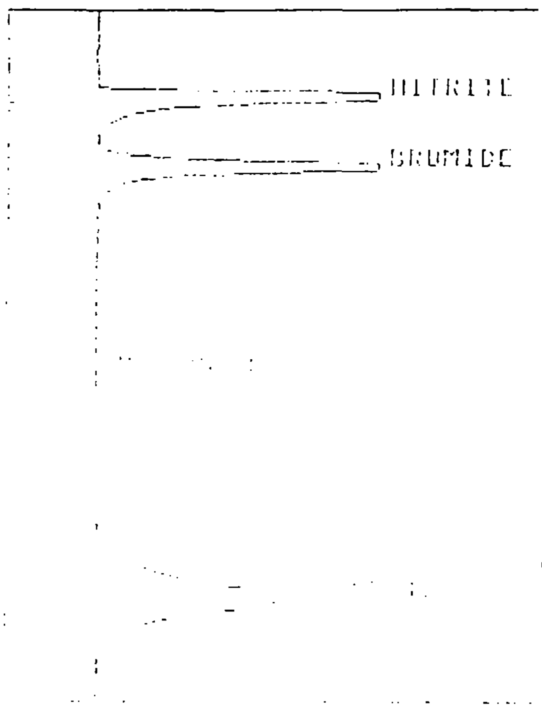
DIONEX 30uS. PLOT SCALE: 200000 - 800000

1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802

INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328

Sample Name : ICV 671A Report No :639.10

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 7/ 7



4th CAL

Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_25.SEQ
Method File : /DATA/DIONEX/METHOD/IC562.MTH
Result File : /DATA/DIONEX/RESULT/IC0525565.RES

Run Time : 12.03 Minutes Injected on 1218 25Oct1995
Report Time : 1153 26Oct1995
Run Status : RunStatusOk
EndOffBaseline

Cal-Fact : 100.00% Sample Amt: [illegible] Standard Amt: 1.0000

Pk#	RT	[illegible]	Factor	Height	Code	MG/L	Name
1	1.95	1.94	1.71E-05	444732	BV	15.3695	NITRITE
2	3.0[illegible]	[illegible]	1.14E-05	[illegible]	[illegible]	[illegible]	BROMIDE
3	[illegible]	[illegible]	[illegible]E-04	88	[illegible]	82.7149	PHOSPHATE
4	10.2[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	SULFATE

93%

44.8%

MB
10/26/95

ICAL Rts

Br 2.93 - 2.99

SO4 9.44 - 9.93

ICV

3.01

10.20

shifting

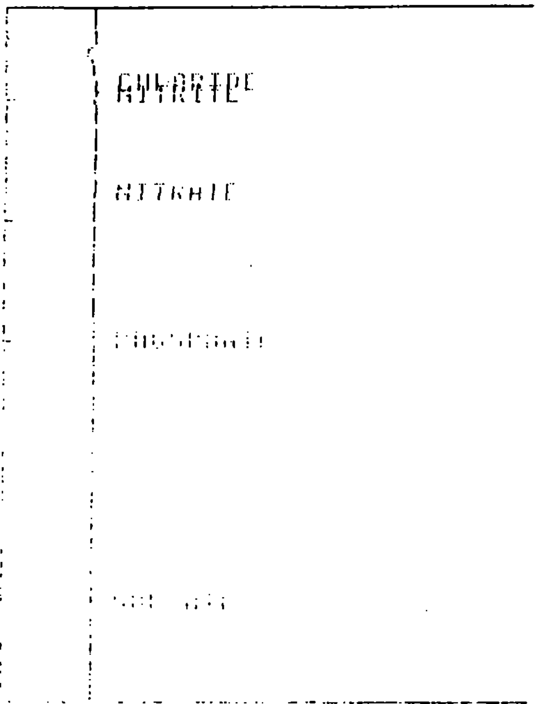
DML 6/20/96

PACE INCORPORATED

US EPA 600 - 4/79/020. 1979 REVISED 1983. METHOD 300.0 n
DIONEX 30uS. PLOT SCALE: 200000 - 000000
1.8mm Na2CO3/ 1.7mm NaHCO3. 2.0 ml/min. SEE QA SOP #5002 µ
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328

Sample Name : IC B 671A Report No :640.10

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 8/ 8



of the cal

Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_25.SEQ
Method File : /DATA/DIONEX/METHOD/IC562.MTH
Result File : /DATA/DIONEX/RESULT/IC0525667.RES

Run Time : 12.03 Minutes Injected on 1231 25Oct1995
Report Time : 1154 26Oct1995
Run Status : RunStatusOK
EndOffBaseline

Dil-Fact : 100.000 Sample Amt: 0.3000 Standard Amt: 1.0000

PK#	RT	ID-tm	Factor	Height	Code	MG L	Name
1	1.83	1.75	2.18E-06	749	PP	.4512	CHLORIDE
2	2.00	1.74	1.91E-05	-1575	PP	.2203	NITRITE
3	3.63	3.61	4.51E-05	531	PP	2.4473	NITRATE
4	[illegible]	6.03	2.66E-04	[illegible]	[illegible]	-73.5477	PHOSPHATE
5	10.47	=7.94	4.51E-06	603	PP	1.1497	SULFATE NR

mB
10/25/95

Rt Shifting

not <1.0
no peaks

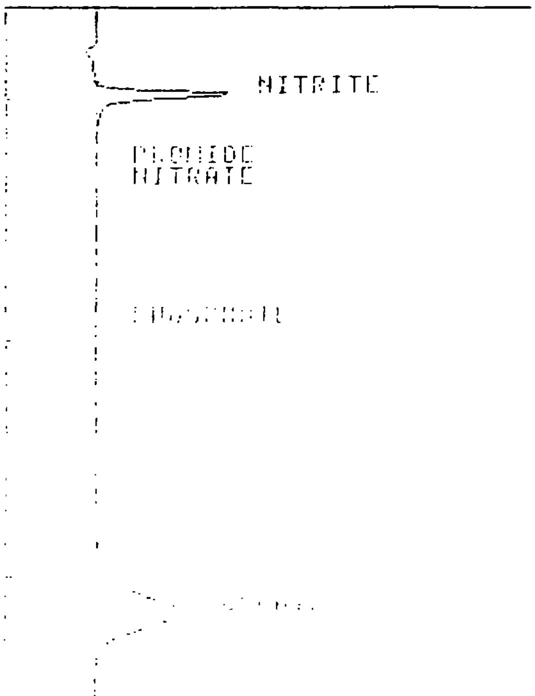
DML 6/20/96

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328

Sample Name : 45696 - 11 L1600 Report No :642.00

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 10/ 10



4th Cal

Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_25.SEQ
Method File : /DATA/DIONEX/METHOD/IC562.MTH
Result File : /DATA/DIONEX/RESULT/IC0525689.RES

Run Time : 12.05 Minutes Injected on 1257 25Oct1995
Report Time : 1309 25Oct1995
Run Status : RunStatusOK
EndOffBaseline

Dil-Fact : 100.00% Sample Amt: 1.0000 Standard Amt: 1.0000

PK#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	1.85	1.93	1.91E-05	130733	PV	3.3809	NITRITE
2	3.30	3.00	1.14E-05	305	VV	1.4620	BROMIDE NP<1000
3	3.39	3.60	4.51E-05	1135	VV	2.4382	NITRATE
4	[illegible]	6.92	2.66E-04	-34	[illegible]	-117.9592	PHOSPHATE
5	10.53	9.71	4.71E-06	81347	PV	22.5938	SULFATE

RT shift

MB 10/25/95

ICV 8.20 Sample 10.53 CCV 8.73

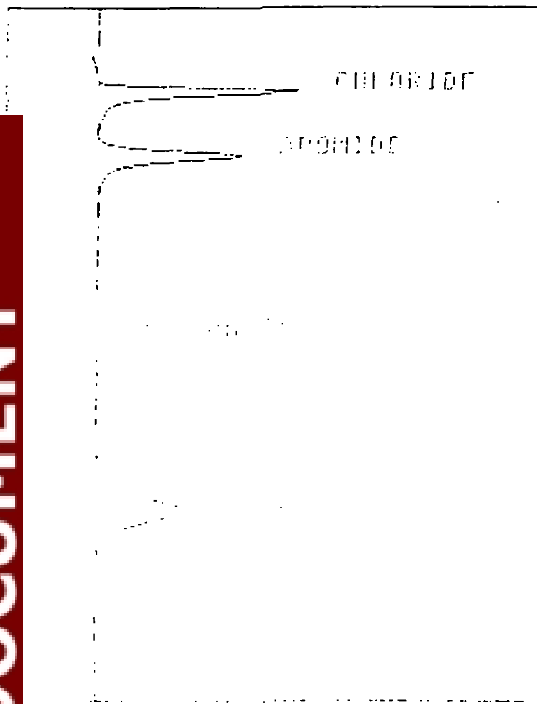
Shift out Shift in

JMC 6/24/96

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0 n
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5002 µ
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : CCV ✓ Report No :651.10

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 17/ 17



Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_25.SEQ) 4th CAL
Method File : /DATA/DIONEX/METHOD/IC5X2A.MTH
Result File : /DATA/DIONEX/RESULT/IC0F25676.RES

Run Time : 12.03 Minutes Injected on 1452 25Oct1995
Report Time : 1542 25Oct1995
Run Status : RunStatusOK
EndOffBaseline

Dil-Fact : [illegible] Sample Amt: [illegible] Standard Amt: [illegible]

Pk	RT	IDWin	Factor	Height	Code	MG/L	Name
1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	CHLORIDE
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

10.20 → 8.73
Rt Shift back

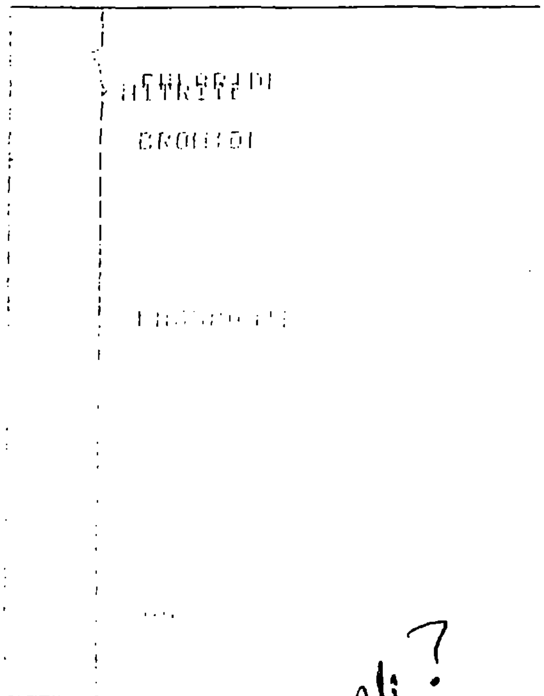
MB
10/25/95

3.01 → 2.88

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : Report No :652.00

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 18/ 18



4th CCV

Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_25.SEQ
Method File : /DATA/DIONEX/METHOD/IC562.MTH
Result File : /DATA/DIONEX/RESULT/IC0525677.RES

Run Time : 12.03 Minutes Injected on 1505 25Oct1995
Report Time : 1517 25Oct1995
Run Status : RunStatusOK
EndOffBaseline

Dil-Fact : 100.00% Sample Amt: 1.0000 Standard Amt: 1.0000

Pk#	RT	IS-rt	Factor	Height	Code	MG/L	Name
1	1.91	1.75	2.13E-06	5783	PP	.5594	CHLORIDE
2	2.57	1.94	1.51E-05	-1205	PV	[illegible]	NITRITE
3	3.80	3.02	1.14E-05	-590	PV	1.0251	BROMIDE NP
4	5.76	5.04	1.55E-04	-233	PV	-[illegible]	PHOSPHATE
5	10.55	9.75	4.41E-06	-187	PV	1.1[illegible]	SULFATE NP

mB 10/25/95

CCB or Sample?

Shifting again

No peaks not <1.0

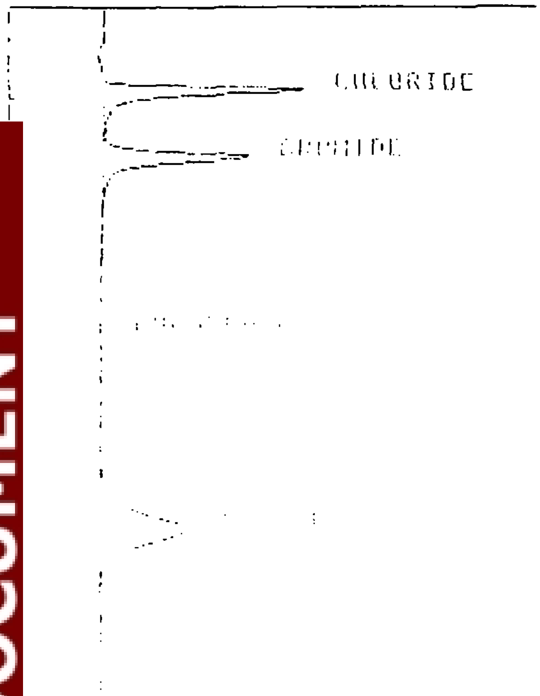
DIML 6/20/96

0000209

PACE INCORPORATED

US EPA 600 - 4/79/020. 1979 REVISED 1983. METHOD 300.0 n
DIONEX 30uS. PLOT SCALE: 200000 - 000000
1.8mm Na2CO3/ 1.7mm NaHCO3. 2.0 ml/min. SEC OA SOP #5002 μ
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : CCV2 Report No :661.10

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 27/ 27



4th CAL

Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_25.SEQ
Method File : /DATA/DIONEX/METHOD/IC562A.MTH
Result File : /DATA/DIONEX/RESULT/IC05[illegible]686.RES

Run Time : 12.02 Minutes Injected on 1701 25Oct1995
Report Time : 1026 26Oct1995
Run Status : RunStatusOK
EndOffBaseline

Dil-Fact : 100.00% Sample Amt: 0.3000 Standard Amt: 1.0000

Pk#	RT	ID-Rel. Factor	Height	Code	MG/L	Name
1	1.69	[illegible] 2.18E-05	199774	[illegible]	9.0933	CHLORIDE
2	2.91	[illegible]	[illegible]		[illegible]	BROMIDE
3	[illegible]	[illegible] 2.06E-04	4293	[illegible]	[illegible]	PHOSPHATE
4	9.1[illegible]	[illegible] 4.91E-05	[illegible]	[illegible]	[illegible]	SULFATE

95.1%

99.5%

MB 10/25/95

Shift again

	ICAL	ICV	CCV1	CCV2
SO4	9.68-9.93	10.20	8.73	9.14

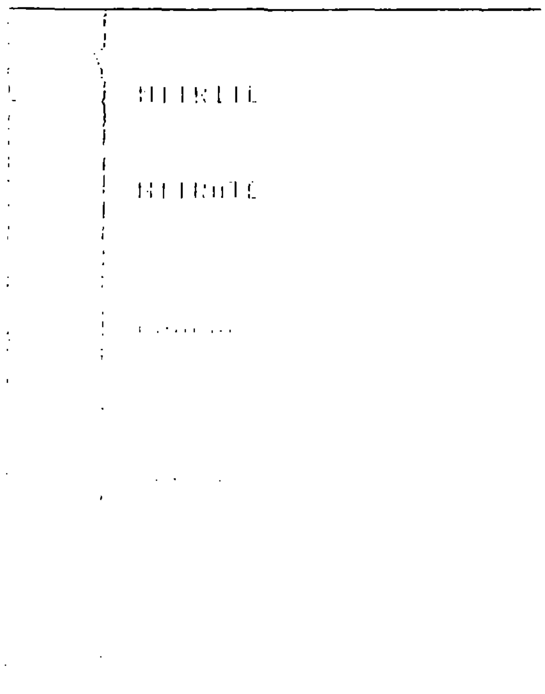
Shift out Shift in Shift out

DML 6/20/96

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0 n
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802 µ
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : CLB Report No :662.10

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 28/ 28



Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_25.SEQ 4th CAL
Method File : /DATA/DIONEX/METHOD/IC5&SA.MTH
Result File : /DATA/DIONEX/RESULT/IC0525687.RES

Run Time : 12.03 Minutes Injected on 1714 25Oct1995
Report Time : 1028 26Oct1995
Run Status : RunStatusOK
EndOffBaseline

Dil-Fact : 100.00% Sample Amt: 1.0000 Standard Amt: 1.0000

Pk#	RT	Il-th	Factor	Height	Code	MG/L	Name
1	1.98	1.94	1.91E-05	-1714	PP	.2272	NITRITE
2	[illegible]	2.11	4.51E-05	114	PP	2.4091	NITRATE
3	5.97	1.05	1.65E-04	-114	PP	259.2181	PHOSPHATE
4	8.47	8.94	[illegible]	499	PP	1.2554	SULFATE NP

mB
10/25/95

Shift again

DML 6/20/96

0000211

TECHNICAL NARRATIVE

Laboratory Number: 45696

Samples were received in acceptable condition, with the exceptions noted on the sample receipt condition report.

All samples were prepared and analyzed within the holding times specified in the referenced methods.

Instrumentation used for analysis was calibrated and/or tuned with the appropriate frequency and to the appropriate specifications required by the referenced methods.

Blank contamination was not observed at levels affecting the analytical results.

Matrix effects, as monitored by matrix spike recovery, unusual physical properties and/or surrogate analyte recovery were not apparent with the following exception:

> The detection limit for the analysis for bromide was raised for laboratory numbers 45696-2, -4, -6, 7, -11 and -13 due to matrix interference.
>
> The detection limit for the analysis for sulfide was raised for laboratory numbers 45696-38, -40, -42 and -43 due to matrix interference.

Accuracy and precision as monitored by laboratory control sample analyses were within laboratory acceptance limits.

P.O Box 2130
1 Lafayette Road
Hampton, NH 03842
TEL: 603-926-7777
800-992-0724
FAX 603-926-7939

PACE INCORPORATED
New England-ME Laboratory

Laboratory Work Order

ORDER DATE 18 OCT 95
PRINT DATE 18 OCT 95 10:02AM

ORDER NO WL-1622
Project Manager: Jon B. Boutet

REPORT TO: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

PHONE: 508/658-6121
FAX: 508/658-8766

DUE. 06 NOV

SAMPLED BY: T. EBNER   DELIVERED BY: EAST CON   DISPOSE: 30*

ITEM	LOG NUMBER	SAMPLE DESCRIPTION	SAMPLED DATE/TIME	RECEIVED	MATR
1	WL1622-1	GW-44S (UNFILT)	17 OCT 0750	17 OCT	AQ
	WL1622-2	GW-44D (UNFILT)	17 OCT 0800		
	WL1622-3	GW-45S (UNFILT)	17 OCT 0840		
	WL1622-4	GW-45D (UNFILT)	17 OCT 0950		
	WL1622-5	GW-42S (UNFILT)	17 OCT 1020		
	WL1622-6	GW-42D (UNFILT)	17 OCT 1100		
	WL1622-7	FIELD REP 2 (UNFILT)	17 OCT 1100		
	WL1622-8	GW-43S (UNFILT)	17 OCT 1125		
	WL1622-9	GW-43S (UNFILT/DUP)	17 OCT 1125		
	WL1622-10	GW-43S (UNFILT/MS)	17 OCT 1125		
	WL1622-11	GW-43D (UNFILT)	17 OCT 1200		
	WL1622-12	GW-400 (UNFILT)	17 OCT 1228		
	WL1622-13	GW-50S (UNFILT)	17 OCT 1255		
	WL1622-14	GW-50D (UNFILT)	17 OCT 1327		
	WL1622-15	GW-40S (UNFILT)	17 OCT 1435		
	WL1622-16	GW-40D (UNFILT)	17 OCT 1510		

DETERMINATION	DET CODE	METHOD
Aluminum, Total	AL,T.W	200.7/6010
Arsenic, Total	AS,T.W	200.7/6010
Barium, Total	BA,T.W	200.7/6010
Calcium, Total	CA,T.W	200.7/6010
Chromium, Total	CR,T.W	200.7/6010
Iron, Total	FE,T.W	200.7/6010
Lead, Total	PB,T.W	200.7/6010
Magnesium, Total	MG,T.W	200.7/6010
Manganese, Total	MN,T.W	200.7/6010
Sodium, Total	NA,T.W	200.7/6010
DIG CHARGE	DIG,S.W	
Nitrogen-Ammonia as N	NH3,W/DIST.W	350.1
Potassium, Total	K,T.W	200.7/6010
Silicon, Total	SI,T.W	200.7/6010

ITEM NOTES: MADEP

p-2

LABORATORY WORK ORDER CONTINUED ON PAGE 2

'ACE INCORPORATED
ew England-ME Laboratory

Laboratory Work Order

'RDER DATE 18 OCT 95
'RINT DATE 18 OCT 95 10:02AM

ORDER NO WL-1622
Project Manager: Jon B. Boute

:EPORT TO: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

PHONE: 508/658-6121
FAX: 508/658-8766

DUE: 06 NOV

;AMPLED BY: T. EBNER DELIVERED BY: EAST CON DISPOSE: 30*

:TEM	LOG NUMBER	SAMPLE DESCRIPTION	SAMPLED DATE/TIME	RECEIVED	MATI
2	WL1622-17	GW-44S (FILT)	17 OCT 0756	17 OCT	AQ
	WL1622-18	GW-44D (FILT)	17 OCT 0800		
	WL1622-19	GW-45S (FILT)	17 OCT 0840		
	WL1622-20	GW-45D (FILT)	17 OCT 0950		
	WL1622-21	GW-42S (FILT)	17 OCT 1020		
	WL1622-22	GW-42D (FILT)	17 OCT 1100		
	WL1622-23	FIELD REP 2 (FILT)	17 OCT 1100		
	WL1622-24	GW-43S (FILT)	17 OCT 1125		
	WL1622-25	GW-43S (FILT/DUP)	17 OCT 1125		
	WL1622-26	GW-43S (FILT/MS)	17 OCT 1125		
	WL1622-27	GW-43D (FILT)	17 OCT 1200		
	WL1622-28	GW-400 (FILT)	17 OCT 1228		
	WL1622-29	GW-50S (FILT)	17 OCT 1255		
	WL1622-30	GW-50D (FILT)	17 OCT 1327		
	WL1622-31	GW-40S (FILT)	17 OCT 1435		
	WL1622-32	GW-40D (FILT)	17 OCT 1510		

DETERMINATION DET CODE METHOD

ACE INCORPORATED
ew England-ME Laboratory

Laboratory Work Order

RDER DATE 18 OCT 95
RINT DATE 18 OCT 95 10:02AM

ORDER NO WL-1622
Project Manager: Jon B. Boutet

EPORT TO: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

PHONE: 508/658-6121
FAX: 508/658-8766

DUE: 06 NOV

AMPLED BY: T. EBNER   DELIVERED BY: EAST CON   DISPOSE: 30*

DETERMINATION	DET CODE	METHOD
Sulfate, Dissolved	SO4,DIS.W	375.4
~~Phosphorus, Dissolved~~	~~TPO4,DIS.W~~	365.4
Sulfide, Dissolved	~~S2,DIS.W~~	376.1
DOC	DOC.W	415.1
Carbonate, Dis as CaCO3	CARB,DIS.W	APHA 406C
Bicarbonate, Dis as HCO3	BICARB,DIS.W	APHA 406C
Phosphate Ortho, Diss	OPO4,DIS.W	365.1
~~Silicon, Dissolved~~	~~SI,D.W~~	200.7/6010
Bromide, Dissolved	BR,DIS.W	320.1
Solids-Filt Residue, Dis	TDS,DIS.W	160.1

ITEM NOTES: MADEP   P.2 0-13 6-13

RDER NOTE: WILMINGTON MADEP

3P
VOICE INSTRUCTIONS: With Report

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

Pg 1 of 4

Hampton LAB

249144

CHAIN-OF-CUSTODY RECORD
Analytical Request

Client: Olin
Address: Eames St
Wilmington Mass
Phone:

Report To: Rick Sacks
Bill To: Olin
P.O. # / Billing Reference:
Project Name / No.: 7074-0102

Pace Client No.:
Pace Project Manager:
Pace Project No.:
*Requested Due Date:

Sampled By (PRINT): Russell Mehalick / Tim Ebner
Sampler Signature: Russell Mehalick
Date Sampled: 10/17/95

ITEM NO.	SAMPLE DESCRIPTION	TIME	MATRIX	PACE NO.	NO. OF CONTAINERS	UNPRESERVED	H_2SO_4	HNO_3	VOA	Zn Acetate/NaOH	Cl, SO4, Br, COD	Viscosity	NH3	TOC	Sulfide	REMARKS
1	GW44S	0750	AQ		4	2	1			1	✓ 1	✓ 16	✓ 21		✓ 37	Filtered
2	GW44D	0800	AQ		4	2	1			1	✓ 2	✓ 17	✓ 22		✓ 38	
3	GW45S	0840	AQ		3	1	1			1	✓ 3		✓ 23		✓ 39	
4	GW45D	0930	AQ		3	1	1			1	✓ 4		✓ 24		✓ 40	
5	GW42S	1020	AQ		4	2	1			1	✓ 5	✓ 18	✓ 25		✓ 41	
6	GW42D	1100	AQ		4	2	1			1	✓ 6	✓ 19	✓ 26		✓ 42	
7	Field Rep 2	1100	AQ		4	2	1			1	✓ 7	✓ 20	✓ 27		✓ 43	
8	GW43S	1125	AQ		9	3	3			3	✓ 8,9,10		✓ 28,29,30		✓ 44,45,46	ms/msD

COOLER NOS.	BAILERS	SHIPMENT METHOD OUT DATE	RETURNED DATE

ITEM NUMBER	RELINQUISHED BY / AFFILIATION	ACCEPTED BY / AFFILIATION	DATE	TIME
	Russell Mehalick 10/17/95 BCM/Smith			
		K. Lawson / Pace NH	10/18/95	1655

Additional Comments

SEE REVERSE SIDE FOR INSTRUCTIONS

0000215

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

Pg 3 of 4

Hampton Lab

249052

CHAIN-OF-CUSTODY RECORD
Analytical Request

Client: Olin
Address: Wilmington Mass
Phone:

Report To: Rick Sacks
Bill To: Olin
P.O. # / Billing Reference:
Project Name / No. 7074-0102

Pace Client No.
Pace Project Manager
Pace Project No.
*Requested Due Date:

Sampled By (PRINT): Russell Mehalick / Tim Ebner
Sampler Signature: Russell Mehalick
Date Sampled: 10/17/95

ITEM NO.	SAMPLE DESCRIPTION	TIME	MATRIX	PACE NO.	NO. OF CONTAINERS	UNPRESERVED	H_2SO_4	HNO_3	VOA	Zn Acetate/NaOH	Cl, SO_4, Br, $O-PO_4$	NH3	Sulfide	REMARKS
1	GW43D	1200	AQ		3	1	1			1	11	31	47	Filtered
2	GW400	1225	AQ		3	1	1			1	69	32	48	
3	GW50S	1255	AQ		3	1	1			1	12	33	49	
4	GW50D	1327	AQ		3	1	1			1	13	34	50	
5	GW40S	1435	AQ		3	1	1			1	14	35	51	
6	GW40D	1510	AQ		3	1	1			1	15	36	52	
7														
8														

COOLER NOS.	BAILERS	SHIPMENT METHOD OUT DATE	RETURNED DATE	ITEM NUMBER	RELINQUISHED BY / AFFILIATION	ACCEPTED BY / AFFILIATION	DATE	TIME
					Russell Mehalick BCM/Smith	K. Lawson / Pace NH	10/18/95	1653

Additional Comments

SEE REVERSE SIDE FOR INSTRUCTIONS

000216

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

Pg 2 of 4

Hampton LAB

249145

CHAIN-OF-CUSTODY RECORD
Analytical Request

Client: Olin
Address: Wilmington Mass
Phone:

Report To: Rick Sacks
Bill To: Olin
P.O. # / Billing Reference:
Project Name / No.: 7074-0102

Pace Client No.:
Pace Project Manager:
Pace Project No.:
*Requested Due Date:

Sampled By (PRINT): Russell Mehalick / Tim Ebner
Sampler Signature: Russell Mehalick
Date Sampled: 10/17/95

ITEM NO.	SAMPLE DESCRIPTION	TIME	MATRIX	PACE NO.	NO. OF CONTAINERS	UNPRESERVED	H_2SO_4	HNO_3	VOA		ANALYSES REQUEST: NH_3	REMARKS
1	GW44S	0750	AQ		1		1				✓ 53	Unfiltered
2	GW44D	0800	AQ		1		1				✓ 54	
3	GW45S	0840	AQ		1		1				✓ 55	
4	GW45D	0950	AQ		1		1				✓ 56	
5	GW42S	1020	AQ		1		1				✓ 57	
6	GW42D	1100	AQ		1		1				✓ 58	
7	Field Rep 2	1100	AQ		1		1				✓ 59	
8	GW43S	1125	AQ		3		3				✓ 60,61,62	MS/MSD

COOLER NOS.	BAILERS	SHIPMENT METHOD OUT DATE	RETURNED DATE	ITEM NUMBER	RELINQUISHED BY / AFFILIATION	ACCEPTED BY / AFFILIATION	DATE	TIME
					Russell Mehalick BCM/Smith			
						[illegible] Pace NH	10/18/95	1655

Additional Comments

SEE REVERSE SIDE FOR INSTRUCTIONS

0000217

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

pg 4 of 4 Hampton Lab

249146

CHAIN-OF-CUSTODY RECORD
Analytical Request

Client Olin
Address Wilmington Mass
Phone

Report To: Rick Sacks
Bill To: Olin
P.O. # / Billing Reference
Project Name / No. 7074-0102

Pace Client No.
Pace Project Manager
Pace Project No.
*Requested Due Date:

Sampled By (PRINT): Russell Mehalick / Tim Ebner
Sampler Signature Russell Mehalick
Date Sampled 10/17/95

ITEM NO.	SAMPLE DESCRIPTION	TIME	MATRIX	PACE NO.	NO. OF CONTAINERS	UNPRESERVED	H_2SO_4	HNO_3	VOA		ANALYSES REQUEST: NH3	REMARKS
1	GW43D	1200	AQ		1		1				✓-63	unfiltered
2	GW400	1228	AQ		1		1				✓-64	
3	GW50S	1255	AQ		1		1				✓-65	
4	GW50D	1327	AQ		1		1				✓-66	
5	GW 40S	1435	AQ		1		1				✓-67	
6	GW 40D	1510	AQ		1		1				✓-68	
7												
8												

Final Page

(E) KLS 10/17/95

COOLER NOS.	BAILERS	SHIPMENT METHOD OUT/DATE	RETURNED DATE	ITEM NUMBER	RELINQUISHED BY / AFFILIATION	ACCEPTED BY / AFFILIATION	DATE	TIME
					Russell Mehalick / BCM/Smith	HA Lawson / Pace NH	10/17/95	1655

Additional Comments

0000218

SEE REVERSE SIDE FOR INSTRUCTIONS

Katahdin

Analytical Services

6/7/96

Ms. Danielle Leauby
Smith BCM
By FAX

Dear Danielle:

In response to questions raised on the phone I am providing the following:

Bromide and sulfate linear regression - It would appear that the data provided in the package was determined from peak area and only peak height is available from the raw chromatograms. This data system is no longer available to us. The data cannot be corrected.

Bromide chromatograms from WL1595 (Hampton 45663-15,16) not integrated for an apparent bromide peak - The laboratory believes that there is no issue with the choice of peaks for bromide quantitation.

Lachat analyses - The Lachat is calibrated by using a point to point method. Results for the analyte are reported in concentration units. No raw absorbance was reported in the package that would allow comparison of sample results to the calibration data. Results from the Lachat are accepted by the laboratory based on the performance of ICVs, CCVs and LCSs.

Please call if you have further questions.

Sincerely,

Richard L. Wellman

Richard L. Wellman
Client Services Manager

RECEIVED
JUN 10 1996
Leauby

340 County Road No. 5
P.O. Box 720, Westbrook, ME 04098
Tel (207) 874-2400 Fax (207) 775-4029

210 West Road No. 5, Portsmouth, NH 03801
Tel (603) 431-5777 Fax (603) 430-3356

DATA VALIDATION REPORT

OCTOBER, 1995 MONITORING EVENT

WORK ORDER NUMBER WL-1628

FOR

OLIN CORPORATION
WILMINGTON, MASSACHUSETTS

SMITH ENVIRONMENTAL TECHNOLOGIES CORPORATION
PROJECT NO. 00-7074-0102

PREPARED FOR

OLIN CORPORATION

JUNE, 1996

SMITH

Engineering • Consulting • Remediation • Construction

SMITH

ENVIRONMENTAL TECHNOLOGIES CORPORATION

DATA REVIEW COVER SHEET

Date: June 25, 1996

Subject: Data Validation of the October 1995 Sampling Event at the Olin Corporation's Wilmington, MA Facility
Smith Env. Tech. Corp. Project No. 00-7074-0102

Data validation was performed on selected analytical results from the October 1995 sampling event at Olin Corporation's Wilmington, Massachusetts Facility. Samples collected during these events were analyzed by Katahdin Analytical Services' Westbrook, Maine and New Hampshire facilities. The laboratory work order numbers reviewed were WL-1612, WL-1595, WL-1622, WL-1628 (surface water samples only), and WL-1644.

The data validation guidelines that were used for the reviews are referenced in the individual reports. The data validation reports address all issues detailed in the appropriate data validation guidelines.

The following Smith Environmental Technologies Corporation Quality Assurance (QA) Department personnel contributed to the preparation of the data review reports:

Atwood F. Davis, CPC, QA Director

Martin B. Kudlesky, CPC, Senior QA Scientist

Danielle M. Leauby, QA Scientist

Marybeth Ousey, QA Scientist

E. Bryan Rivers, QA Scientist

A copy of this cover sheet with appropriate signatures must accompany all listed reports.

One Plymouth Meeting • Plymouth Meeting, PA 19462 • (610) 825-3800 • fax (610) 834-8236

SMITH

DATA VALIDATION REPORT
METALS AND SELECTED ANALYTES
OLIN CORPORATION
SURFACE WATER SAMPLES

INTRODUCTION

A data validation was performed on the analytical data from the 4 surface water sampling locations sampled on October 18, 1995 at the Olin Corporation's Wilmington, Massachusetts Facility. This review is of the 4 unfiltered surface water samples, 1 unfiltered surface water field duplicate sample, 4 filtered surface water samples, and 1 filtered surface water field duplicate sample contained in work order number WL-1628. Work order number WL-1628 also contained several groundwater samples; however, they were not reviewed as part of this data validation. All samples in this report were analyzed by Katahdin Analytical Services, Inc. (formerly PACE Incorporated Environmental Laboratories), Westbrook, Maine, following United States Environmental Protection Agency (EPA) Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (SW-846), Methods for Chemical Analysis of Water and Wastes (MCAWW), and Standard Methods for the Examination of Water and Wastewater, 16th Edition, 1985 (SM), American Public Health Association (APHA). The individual analyses were performed using the following methods:

Analytes	Methods
aluminum, arsenic, barium, calcium, chromium, iron, lead, magnesium, manganese, potassium, silicon, and sodium	200.7
hexavalent chromium	7195/6010
bicarbonate as HCO3 and carbonate as CO3*	SM406C
nitrate as N and nitrite as N*	353.2
dissolved organic carbon (DOC)*	415.1
phosphorus as P *	365.4
solids - filterable residue (TDS)*	160.1

*Analyses were performed on filtered samples only.

Because the analyses were not performed according to the EPA Contract Laboratory Program (CLP) methods, the findings in this report are based upon a review of sample data and of quality control (QC) specified by the individual analytical methods and provided by the laboratory. The quality assurance review was prepared according to EPA Region I Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analysis (data validation guidelines), June 1988, where applicable.

Only surface water samples were evaluated in this review. The support documentation in Appendix A of this report summarizes the specifics of this review. Appendix A also provides the sample results as reported by the laboratory. The data summary table lists all compounds that were analyzed. Analytical problems are outlined in the following Findings/Qualifiers Section. Other issues which arose which did not warrant qualification are detailed in the Notes Section.

FINDINGS/QUALIFIERS

This data validation report addresses only the 4 unfiltered surface water samples, 1 unfiltered surface water field duplicate sample, 4 filtered surface water samples, and 1 filtered surface water field duplicate sample of the Pace, Inc. work order number WL-1628. The surface water data were evaluated for the following parameters:

* data completeness
* holding times
  data calibration verification
  CRDL standard
  laboratory blank analysis
\+ field blank analysis
* interference check sample results
  matrix spike recoveries
  laboratory duplicates
  field duplicates
* laboratory control sample results
\+ serial dilution results
  detection limit results
  sample results

* All criteria were met for this parameter.
\+ All criteria were met for this parameter; however, this parameter is discussed in the Notes Section of this report.

The data summary table provided at the end of this report summarizes the validation recommendations which were based on the following information:

1. The iron results for samples SW-14 (WL-1628-1), SW-14 (WL-1628-18), and SW-16 (WL-1628-24) are negated due to preparation blank contamination. The reported results have been changed to reflect adjusted detection limits.

2. Standards for certain metals were analyzed at the contract required detection limit (CRDL) as required by CLP methodologies. Although the analyses associated with this data were not CLP analyses, this standard represents system performance at or near the concentration of the CRDL. It was the reviewer's professional judgment to qualify data which were out of the CRDL standard criteria specified in the Region I data validation guidelines. As a result, the following data are qualified:

   - The %R was low for the CRDL standard associated with all hexavalent chromium surface water results. Therefore, all positive results and detection limits for hexavalent chromium are estimated and may be biased low.

   - Due to the estimated hexavalent chromium results, all positive results and detection limits for trivalent chromium are also estimated because the trivalent chromium results are calculated from the hexavalent chromium results.

3. Due to a low calibration standard recovery of a nitrite initial standard, all filtered and unfiltered nitrite results below 0.20 ppm are estimated and may be biased low. All nitrite sample results are effected. In addition to a low initial standard recovery, all nitrite results are estimated and may be biased low due to negative concentrations with absolute values above the PQL of several field and laboratory quality control (QC) results. Copies of the raw data are included in Appendix A of this report.

4. To determine the nitrate concentrations for the samples, nitrate plus nitrite was analyzed at Katahdin's New Hampshire facility. The laboratory duplicate reproducibility and the matrix spike %R for nitrate plus nitrite were not met. All filtered nitrate results are estimated and may be biased low. Details are provided on the Laboratory Quality Control Report included in Appendix A.

5. The nitrite results of record were analyzed at Katahdin's Maine facility. The nitrate results were determined by subtracting the nitrite results (analyzed at the Maine facility) from the nitrate plus nitrite results (analyzed at the New Hampshire facility). Due to the estimated nitrite results, all filtered and unfiltered nitrate results are also estimated; however, a bias could not be determined.

6. Due to high calibration standard recoveries of the initial standards below 0.5 ppm, all filtered and unfiltered non-detect results for phosphorus as P are estimated. Additionally, these values are also estimated because several sample results and QC results for phosphorus as P exhibited negative concentrations of calibration blanks with absolute values above the practical quantitation limit (PQL). A bias for these

results could not be determined. Copies of the raw data are included in Appendix A of this report.

7. The detection limits for the following sample results are estimated because the PQL could not be achieved. Consequently, the results for these samples were analyzed at dilutions, and the detection limits were elevated by the laboratory to reflect the dilution factor as indicated on the Report of Analysis Forms included in Appendix A. Specific explanations were not provided by the laboratory.

   - nitrite for samples SW-14 filtered (WL-1628-1), SW-12 filtered (WL-1628-2), SW-17 filtered (WL-1628-5), SW-17 Field Dup filtered (WL-1628-6), SW-14 unfiltered (WL-1628-18), SW-12 unfiltered (WL-1628-19), SW-17 unfiltered (WL-1628-22), and SW-17 Field Dup unfiltered (WL-1628-23)
   - phosphorus as P for sample SW-17 Field Dup filtered (WL-1628-6)

8. The following results are estimated and may be biased low due to low matrix spike recoveries: all results for calcium, sodium, and silicon, and the filtered results for manganese.

9. All positive results for arsenic are estimated because the laboratory duplicate results were outside acceptable limits.

10. Results for barium, magnesium, and sodium for unfiltered field duplicate samples SW-17 (WL-1628-22) and SW-17 Field Dup (WL-1628-23) are estimated due to poor field duplicate precision. Details are provided on the Field Duplicate Precision Worksheet included in Appendix A of this report.

11. The nitrate result for the filtered sample SW-12 (WL-1628-2) is estimated and may be biased high because it's result of 0.58 mg/L does not agree with the associated filtered or unfiltered laboratory duplicates or the associated unfiltered result for sample SW-12 (WL-1628-19) which are all non-detect below 0.050 mg/L. Additionally, the filtered and unfiltered matrix spike %Rs which are associated with this sampling location indicate that the nitrate results of the unspiked sample are non-detect. Details are provided on the associated Quality Control Report Form and the filtered versus unfiltered RPD spreadsheet included in Appendix A.

12. Several filtered analytical results were reported at higher concentrations than their associated unfiltered results. Smith Environmental Technologies Corporation has established a relative percent difference (RPD) criteria to evaluate the precision of these results (see the spreadsheet included in Appendix A of this report). Due to RPDs which exceeded the expected precision, the nitrate results for filtered sample SW-12 (WL-1628-2) and unfiltered sample SW-12 (WL-1628-19) are estimated.

SMITH

NOTES

The following items were noted during the validation review which did not impact results or necessitate further qualification of data:

1. There were transcription errors on the Aqueous Laboratory Control Sample forms and the Quality Control Report forms. The reviewer-corrected forms are included in Appendix A. No data are qualified.

2. Several sample results were reported to significant digits which were not consistent with all other sample results. The reviewer-corrected Report of Analysis Forms are included in Appendix A and the changes are reflected on the Data Summary Table.

3. A serial dilution sample was not provided by the laboratory as recommended by the MCAWW Method 200.7. Since performance of a serial dilution is not required by the method, no data are qualified.

4. Several %Rs for initial and continuing calibration verifications could not be verified because sufficient information was not provided by the laboratory.

5. The field blanks in this order were only associated with the groundwater samples. No data are qualified.

SUMMARY

This review has identified CRDL standard %Rs, initial standard recoveries, negative concentrations with absolute values above the PQL, blank contamination, matrix spike %Rs, laboratory and field duplicate results, and elevated detection limits for non-detect sample results as areas of concern. The reported data are usable as qualified on the data summary table. For specifics relating to this review, see the attached documentation in Appendix A.

SMITH

QUALIFIER CODES

U - The material was analyzed for, but not detected above the level of the associated value.

J - The associated value is an estimated quantity.

UJ - The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.

DATA SUMMARY TABLE

Site Name	Olin, Wilmington	Laboratory	Katahdin
Project Number	00-7074-0102	Case/Order #	WL-1628
Sampling Date(s)	10/18/95	Field Duplicates	WL-1628-6, WL-1628-23

Liquid mg/l

PQL	Sample location or description	SW-14		SW-12		SW-17		SW -17 Field Rep		SW-16	
	Sample number	WL-1628-1		WL-1628-2		WL-1628-5		WL-1628-6		WL-1628-7	
	Sampling date	10/18/95		10/18/95		10/18/96		10/18/95		10/18/95	
	unfilt./filt.	filt.		filt.		filt.		filt.		filt.	
	Comments					Dup A		Dup B			
0.10	Aluminum *			0.31		0.12		0.14			
0.005	Arsenic *			0.010	J	0.007	J	0.009	J		
0.005	Barium *	0.009		0.022		0.044		0.047		0.021	
0.050	Calcium *	9.7	J	7.9	J	110	J	120	J	290	J
0.015	Chromium *							0.017			
0.015	Chromium, Hexavalent*		UJ		UJ		UJ		UJ		UJ
0.015	Chromium, Trivalent*		UJ		UJ		UJ	0.017	J		UJ
0.025	Iron *	0.25	U	4.8		3.7		4.1			
0.005	Lead *										
0.050	Magnesium *	0.81		1.3		6.8		7.1		5.9	
0.005	Manganese *	0.013	J	0.51	J	0.75	J	0.80	J	0.42	J
0.50	Potassium *			4.7		4.4		4.6		3.8	
0.10	Silicon*	1.0	J	2.1	J	8.0	J	8.0	J	0.5	J
0.10	Sodium *	59	J	27	J	140	J	150	J	93	J
20	Bicarbonate as HCO3*	35				190		190			
20	Carbonate as CO3*										
0.050	Nitrate as N *	0.41	J	0.58	J	6.0	J	6.7	J	4.2	J
0.050	Nitrite as N *		UJ		UJ		UJ		UJ		UJ
1.0	Diss. Organic Carbon*	6.8		19		19		19		12	
0.10	Phosphorus as P *		UJ		UJ		UJ		UJ		UJ
10	Solids-Filterable* Residue (TDS)	260		180		930		860		1400	
15	COD*	29		63		56		51		37	

*=Reported as dissolved.

E. Buford Rivers 6/24/96

WL1628I.XLS

DATA SUMMARY TABLE

Site Name: Olin, Wilmington

Project Number: 00-7074-0102

Sampling Date(s): 10/18/95

Liquid mg/l

Laboratory: Katahdin

Case/Order #: WL-1628

Field Duplicates: WL-1628-6, WL-1628-23

PQL	Sample location or description	SW-14		SW-12		SW-17		SW-17 Field Rep		SW-16	
	Sample number	WL-1628-18		WL-1628-19		WL-1628-22		WL-1628-23		WL-1628-24	
	Sampling date	10/18/95		10/18/95		10/18/96		10/18/95		10/18/95	
	unfilt./filt.	unfilt.		unfilt.		unfilt.		unfilt.		unfilt.	
PQL	Comments					Dup A		Dup B			
0.10	Aluminum			0.31		0.78		0.84		0.13	
0.005	Arsenic			0.010	J						
0.005	Barium	0.010		0.020		0.032	J	0.044	J	0.019	
0.050	Calcium	11	J	7.3	J	89	J	120	J	280	J
0.015	Chromium					0.016		0.023			
0.015	Chromium, Hexavalent		UJ		UJ		UJ		UJ		UJ
0.015	Chromium, Trivalent		UJ		UJ	0.016	J	0.023	J		UJ
0.025	Iron	0.37	U	5.6		3.6		3.7		0.53	U
0.005	Lead										
0.050	Magnesium	0.91		1.2		5.3	J	7.3	J	5.9	
0.005	Manganese	0.014		0.49		0.66		0.89		0.46	
0.50	Potassium			4.8		3.5		4.3		3.5	
0.10	Silicon	1.2	J	2.1	J	6.0	J	8.0	J	0.5	J
0.10	Sodium	66	J	25	J	110	J	150	J	90	J
20	Bicarbonate as HCO3	34				190		180			
20	Carbonate as CO3										
0.050	Nitrate as N	0.70	J		UJ	7.5	J	6.9	J	4.2	J
0.050	Nitrite as N		UJ		UJ		UJ		UJ		UJ
1.0	Total Organic Carbon	6.4		21		19		18		11	
0.10	Phosphorus as P		UJ		UJ		UJ		UJ		UJ
10	Solids-Filterable Residue (TDS)	240		210		910		860		1300	
15	COD	41		72		61		62		43	

*=Reported as dissolved.

E. Bufus Rivers 6/24/91

WL1628I.XLS

SMITH

DATA VALIDATION REPORT
CHLORIDE, SULFATE, BROMIDE, ORTHOPHOSPHATE, SULFIDE, VISCOSITY, AND AMMONIA-N
OLIN CORPORATION
GROUNDWATER SAMPLES

INTRODUCTION

A data validation was performed on the analytical data from the 4 surface water sampling locations sampled on October 18, 1995 at the Olin Corporation's Wilmington, Massachusetts Facility. This review is of the 4 unfiltered surface water samples, 1 unfiltered surface water field duplicate sample, 4 filtered surface water samples, and 1 filtered surface water field duplicate sample contained in work order number WL-1628. Work order number WL-1628 also contained several groundwater samples; however, they were not reviewed as part of this data validation. All samples in this report were analyzed by Katahdin Analytical Services, Inc. (formerly PACE Incorporated Environmental Laboratories), Westbrook, Maine, following *"Methods for Chemical Analysis of Water and Wastes"* (MCAWW). The individual analyses were performed using the following from MCAWW and ASTM methods:

Analytes	Methods
bromide and sulfate	300.0
chloride	325.1
orthophosphate	365.2
sulfide	376.1
ammonia-N	350.2

The findings in this report are based upon a review of sample data and of quality control (QC) specified by the individual analytical methods and provided by the laboratory. The quality assurance review was prepared according to EPA Region I Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analysis, June 1988, where applicable.

The support documentation in Appendix B of this report summarizes the specifics of this review. Appendix B also provides the sample results as reported by the laboratory. The data summary table lists all compounds that were analyzed. Analytical problems are outlined in the following Findings/Qualifiers Section. Other issues which were identified and did not warrant qualification are detailed in the Notes Section.

SMITH

FINDINGS/QUALIFIERS

This data validation report addresses the 4 filtered surface water samples, 4 unfiltered surface water samples, 1 filtered surface water field duplicate sample, and 1 unfiltered surface water field duplicate sample contained in Pace, Inc. work order number WL-1628. The data were evaluated for the following parameters:

- * data completeness
- * holding times
- \+ data calibration verification
- \+ laboratory blank analysis
- \+ field blank analysis
- * matrix spike recoveries
- * laboratory duplicates
- field duplicates
- * laboratory control sample results
- detection limit results
- sample results

* All criteria were met for this parameter.

\+ All criteria were met for this parameter; however, this parameter is discussed in the Notes Section of this report.

The data summary table provided at the end of this report summarizes the following data validation qualifications:

1. The bromide results for the filtered and unfiltered samples SW-17 (WL1628-5 and WL1628-22), SW-17 DUP (WL1628-6 and WL1628-23), and SW-16 (WL1628-7 and WL1628-24) were each analyzed undiltued and at a 1:10 dilution. For these samples, the laboratory reported bromide as non-detected at 1.0 milligram per liter (mg/L). However, there are unintegrated peaks near the retention time of bromide in the in the undiluted analyses of these samples. In the 1:10 dilutions of these samples, there are no apparent peaks near the retention time of bromide. Therefore, due to the unintegrated peaks present in undiluted analyses of the filtered and unfiltered samples SW-17, SW-17 DUP and SW-16, it was the reviewer's professional judgment to elevate the laboratory RLs for bromide in these samples from 1 mg/L to 10 mg/L.

2. This case contains two field duplicate pairs consisting of the filtered samples SW-17 (WL1628-5) and SW-17 DUP (WL1628-6) and the unfiltered samples SW-17 (WL1628-22) and SW-17 DUP (WL1628-23). Due to poor field duplicate reproducibility, the following samples results are qualified:

   - the positive results for sulfate in the filtered samples WL1628-5 and WL1628-6 are estimated and

   - the positive result for sulfide in the unfiltered sample WL1628-22 and the reporting limit in the unfiltered sample WL1628-23 are estimated.

3. There are unfiltered and filtered results for all analytes for all samples in this case. The following results were reported at higher concentrations in the filtered samples than in the unfiltered samples:

   - ammonia in samples SW-14 (WL1628-1 and WL1628-18), SW-17 (WL1628-5 and WL1628-22), SW-17 DUP (WL1628-6 and WL1628-23), and SW-18 (WL1628-7 and WL1628-24), and

   - chloride in sample SW-12 (WL1628-2 and WL1628-19).

   The chloride relative percent difference (RPD) between the filtered and the unfiltered results was within the normal expected precision. For the abovementioned ammonia results the relative percent differences (RPDs) between the filtered and the unfiltered results were outside the normal expected precision. Therefore, due to poor reproducibility between the majority of the filtered and unfiltered ammonia results, it is the reviewer's professional judgment to estimate all positive results and reporting limits for ammonia in all samples for this case.

NOTES

The following items were noted during the validation review which did not impact results or necessitate further qualification of data:

1. The raw data provided for bromide and sulfate on the quantitation reports exhibited peak heights; however, peak areas were not provided. Therefore, there was not enough information provided to reproduce the laboratory's reported concentrations. More information was requested from the laboratory. The laboratory gave an explanation in a letter from Mr. Richard

Wellman dated 6/7/96. The laboratory no longer has the software/analytical system capabilities to supply the information used to calibrate the system or quantitate the samples. The reviewer verified the validity of the sample results based on the information provided (peak heights). The results were within the same order of magnitude. The data are acceptable except where mentioned in the Findings/Qualifiers Section of this report.

2. There were three initial calibrations provided for the sulfate and bromide analyses. The low level 1.0 mg/L standard in each of the three initial calibrations have elevated experimental values for bromide and sulfate greater than 1.0 mg/L. Since all the bromide results in the samples are non-detect, there is no qualification necessary based on the low level standard. There are no low level positive results for sulfate in the samples; therefore, there is no impact due the high recoveries of the low level standard.

3. The concentrations on the quantitation reports for the initial calibration blank (ICB) and the continuing calibration blanks (CCBs) analyzed under the three initial calibrations are above the reporting limits; however, these concentrations do not reflect the ion chromatograms, which do not exhibit peaks for bromide and sulfate. The reviewer has concluded that bromide and sulfate are not present in the ICB and CCBs. Therefore, no data are qualified due to laboratory blank contamination.

4. There were transcription errors on the laboratory reporting of analyses forms, analytical sequence summary forms, and the laboratory quality control (QC) forms. The reviewer-corrected forms are included in Appendix B. No data are qualified.

5. The calibration for the ammonia analysis for this order could not be verified due to lack of information provided by the laboratory. More information was requested by the reviewer. The laboratory gave a brief explanation in a letter from Mr. Richard Wellman dated 6/7/96 is included in Appendix B. Based on review of the data and the letter supplied by the laboratory the ammonia data are acceptable.

6. There are no field blank samples associated with surface water samples for this order.

7. On the field chain of custody, the laboratory's client indicated that the matrix spike and laboratory duplicate samples were to be analyzed from sampling location SW-12 for both the filtered and unfiltered analyses (WL1628-2 and WL1628-19). The laboratory also analyzed batch quality control (QC) which consisted of a method blank and a laboratory control sample (LCS) for each parameter in this case except viscosity. There is no batch QC required for viscosity. The method blanks and the LCSs for all other parameters are acceptable. No data are qualified due to QC criteria.

SUMMARY

This review has identified unintegrated peaks, poor field duplicate reproducibility, filtered versus unfiltered ammonia results, and high recovery for the low concentration initial calibration standards for bromide and sulfate as areas of concern. The reported data are usable as qualified on the data summary table. For specifics relating to this review, see the attached documentation in Appendix B.

SMITH

QUALIFIER CODES AND FOOTNOTES

U - The analyte was analyzed for but not detected. The associated numerical value is the sample quantitation limit.

J - The associated value is an estimated quantity.

UJ - The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.

---

1 - Denotes an elevated reporting limit due to sample dilution.

DATA SUMMARY TABLE

Site Name	Olin - Wilmington, MA
Project Number	00-7074-0102
Sampling Date(s)	October 18,1995

Liquid mg/l

Laboratory	Katahdin
Case/Order #	45718 / WL1628
Field Duplicates	WL1628-5 and WL1628-6

	Sample location or description	SW-14 WL1628-1		SW-12 WL1628-2		SW-17 WL1628-5		SW-17 WL1628-6		SW-16 WL1628-7	
	Sample number	45718-001 -018, -033		45718-002 -019,-034		45718-005 -022, -037		45718-006 -023,-038		45718-007 -024,-039	
	Sampling date	10/18/95		10/18/95		10/18/95		10/18/95		10/18/95	
	unfilt. / filt.	filt.		filt.		filt.		filt./Field Rep		filt.	
PQL	Comments					Field Dup A		Field Dup B			
0.02	Ortho-phosphate										
1	Chloride	72		37		160		160		78	
1	Sulfate	28		25		340	J	510	J	1000	
1	Bromide					10	U1	10	U1	10	U1
0.05	Ammonia-N	0.08	J		UJ	170	J	160	J	97	J
1	Sulfide										
	Viscosity										

6/25/96

WL1628W.XLS

DATA SUMMARY TABLE

Site Name	Olin - Wilmington, MA		Laboratory	Katahdin
Project Number	00-7074-0102	Liquid mg/l	Case/Order #	45718 / WL1628
Sampling Date(s)	October 18,1995		Field Duplicates	WL1628-22 & WL1628-23

PQL	Sample location or description	SW-14 WL1628-18		SW-12 WL1628-19		SW-17 WL1628-22		SW-17 WL1628-23		SW-16 WL1628-24						
	Sample number	45718-052 -060,-068		45718-053 -061,-069		45718-056 -064,-072		45718-057 -065,-073		45718-058 -066,-074						
	Sampling date	10/18/95		10/18/95		10/18/95		10/18/95		10/18/95						
	unfilt. / filt.	unfilt		unfilt.		unfilt.		unfilt./Field Rep		unfilt.						
PQL	Comments					Field Dup A		Field Dup B								
0.02	Ortho-phosphate															
1	Chloride	72		35		160		160		78						
1	Sulfate	29		25		520		540		1100						
1	Bromide					10	U1	10	U1	10	U1					
0.05	Ammonia-N		UJ	0.1	J	89	J	93	J	62	J					
1	Sulfide			2		5	J		UJ							
	Viscosity															

D Leanby 6/25/96

WL1628W.XLS

SMITH

APPENDIX A

Katahdin
ANALYTICAL SERVICES

A WBE Laboratory

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1628-1
Report Date: 12/06/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
SW-14 (FILT)	Aqueous	T. EBNER	10/18/95	10/18/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Dissolved	<0.10	mg/L	1.0	0.10	200.7/6010	11/06/95	KW	1
Arsenic, Dissolved	<0.005	mg/l	1.0	0.005	200.7/6010	11/06/95	KW	1
Barium, Dissolved	0.009	mg/L	1.0	0.005	200.7/6010	11/06/95	KW	1
Calcium, Dissolved	9.7	mg/L	1.0	0.050	200.7/6010	11/06/95	KW	1
Chromium, Dissolved	<0.015	mg/L	1.0	0.015	200.7/6010	11/06/95	KW	1
Chromium, Hexavalent Dissolved	<0.015	mg/L	1.0	0.015	6010	11/14/95	KW	2
Chromium, Trivalent Dissolved	<0.015	mg/L	1.0	0.015	Calculation	11/22/95	DN	
Iron, Dissolved	B0.25	mg/L	1.0	0.025	200.7/6010	11/06/95	KW	1,3
Lead, Dissolved	<0.005	mg/L	1.0	0.005	200.7/6010	11/06/95	KW	1
Magnesium, Dissolved	0.81	mg/L	1.0	0.050	200.7/6010	11/06/95	KW	1
Manganese, Dissolved	0.013	mg/L	1.0	0.005	200.7/6010	11/06/95	KW	1
Potassium, Dissolved	<3	mg/L	1.0	3	200.7/6010	11/03/95	NH	1
Silicon, Dissolved	1.0	mg/L	1.0	0.2	200.7/6010	11/06/95	NH	1
Sodium, Dissolved	59.	mg/L	1.0	1	200.7/6010	11/03/95	NH	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/23/95 by VM using 3010
(2) Sample Preparation on 10/18/95 by GFB using 7195
(3) A result reported with a "B" qualifier indicates the analyte was detected in the laboratory method blank analyzed concurrently with the sample. The concentration of iron in the method blank was 0.11 mg/L.

12/06/95

LJO/ejnejn
LJ23ICW2
CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

Katahdin
ANALYTICAL SERVICES

A WBE Laboratory

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1628-1
Report Date: 12/06/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
SW-14 (FILT)	Aqueous	T. EBNER	10/18/95	10/18/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Bicarbonate,Dissolved as HCO3	35	mg/L	1.0	20	APHA 406C	10/24/95	CM	
Carbonate, Dissolved as CaCO3	<20	mg/L	1.0	20	APHA 406C	10/24/95	CM	
Nitrate as N, Dissolved	0.41	mg/L	1.0	0.05	353.2/1	10/25/95	NH	
* Nitrite as N, Dissolved	<0.20	mg/L	4.0	0.050	353.2	10/19/95	LT	1
Organic Carbon, Dissolved (DOC)	6.8	mg/L	1.0	1.0	415.1	11/06/95	LT	
Phosphorus, Dissolved as P	<0.10	mg/L	1.0	0.10	365.4	10/26/95	CM	2
Solids-Filt Residue, Dissolved	260.	mg/L	1.0	10	160.1	10/23/95	JF	3

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

(1) The laboratory's Practical Quantitation Level could not be achieved for this parameter due to sample composition, matrix effects, sample volume, or quantity used for analysis.

(2) Sample Preparation on 10/25/95 by CLM

(3) Sample Preparation on 10/20/95 by JF

12/06/95

LJO/ejnjbb(dw)

CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

*Elevated detection limit for non-detect result.

E. Bryan Rivers 6/21/96

340 County Road, Westbrook, ME 04092
Tel: (207) 874-2400 Fax: (207) 775-4029

One Lafayette Drive, Hampton, NH 03842

Katahdin
ANALYTICAL SERVICES

A WBE Laboratory

Lab Number : WL-1628-2
Report Date: 12/06/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
SW-12 (FILT)	Aqueous	T. EBNER	10/18/95	10/18/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Dissolved	0.31	mg/L	1.0	0.10	200.7/6010	11/06/95	KW	1
Arsenic, Dissolved	0.010	mg/l	1.0	0.005	200.7/6010	11/06/95	KW	1
Barium, Dissolved	0.022	mg/L	1.0	0.005	200.7/6010	11/06/95	KW	1
Calcium, Dissolved	7.9	mg/L	1.0	0.050	200.7/6010	11/06/95	KW	1
Chromium, Dissolved	<0.015	mg/L	1.0	0.015	200.7/6010	11/06/95	KW	1
Chromium, Hexavalent Dissolved	<0.015	mg/L	1.0	0.015	6010	11/14/95	KW	2
Chromium, Trivalent Dissolved	<0.015	mg/L	1.0	0.015	Calculation	11/22/95	DN	
Iron, Dissolved	B4.8	mg/L	1.0	0.025	200.7/6010	11/06/95	KW	1,3
Lead, Dissolved	<0.005	mg/L	1.0	0.005	200.7/6010	11/06/95	KW	1
Magnesium, Dissolved	1.3	mg/L	1.0	0.050	200.7/6010	11/06/95	KW	1
Manganese, Dissolved	0.51	mg/L	1.0	0.005	200.7/6010	11/06/95	KW	1
Potassium, Dissolved	EBR 4.7 ~~8~~	mg/L	1.0	3	200.7/6010	11/03/95	NH	1
Silicon, Dissolved	2.1	mg/L	1.0	0.2	200.7/6010	11/06/95	NH	1
Sodium, Dissolved	27.	mg/L	1.0	1	200.7/6010	11/03/95	NH	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

(1) Sample Preparation on 10/23/95 by VM using 3010

(2) Sample Preparation on 10/18/95 by GFB using 7195

(3) A result reported with a "B" qualifier indicates the analyte was detected in the laboratory method blank analyzed concurrently with the sample. The concentration of iron in the method blank was 0.11 mg/L.

12/06/95

K transcription error
EBR 6/24/95

LJO/ejnejn
LJ23ICW2
CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

E. Byron Rivers 6/24/96

340 County Road, Westbrook, ME 04092
Tel: (207) 874-2400 Fax: (207) 775-4029

One Lafayette Drive, Hampton, NH 03842

Katahdin
ANALYTICAL SERVICES

A WBE Laboratory

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1628-2
Report Date: 12/06/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
SW-12 (FILT)	Aqueous	T. EBNER	10/18/95	10/18/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Bicarbonate,Dissolved as HCO3	<20	mg/L	1.0	20	APHA 406C	10/24/95	CM	
Carbonate, Dissolved as CaCO3	<20	mg/L	1.0	20	APHA 406C	10/24/95	CM	
Nitrate as N, Dissolved	0.58	mg/L	1.0	0.05	353.2/1	10/25/95	NH	
* Nitrite as N, Dissolved	<0.50	mg/L	10	0.050	353.2	10/19/95	LT	1
Organic Carbon, Dissolved (DOC)	19.	mg/L	1.0	1.0	415.1	11/06/95	LT	
Phosphorus, Dissolved as P	<0.10	mg/L	1.0	0.10	365.4	10/26/95	CM	2
Solids-Filt Residue, Dissolved	180.	mg/L	1.0	10	160.1	10/23/95	JF	3

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) The laboratory's Practical Quantitation Level could not be achieved for this parameter due to sample composition, matrix effects, sample volume, or quantity used for analysis.
(2) Sample Preparation on 10/25/95 by CLM
(3) Sample Preparation on 10/20/95 by JF

12/06/95

LJO/ejnjbb(dw)

CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

* Elevated detection limit for non-detect result.

E. Bryan Rivers 6/21/96

Katahdin
ANALYTICAL SERVICES

A WBE Laboratory

Lab Number : WL-1628-3
Report Date: 12/06/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
SW-12 (FILT/DUP)	Aqueous	T. EBNER	10/18/95	10/18/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Dissolved	0.281	mg/L	1.0	0.10	200.7/6010	11/06/95	KW	1
Arsenic, Dissolved	0.007	mg/l	1.0	0.005	200.7/6010	11/06/95	KW	1
Barium, Dissolved	0.020	mg/L	1.0	0.005	200.7/6010	11/06/95	KW	1
Calcium, Dissolved	7.52	mg/L	1.0	0.050	200.7/6010	11/06/95	KW	1
Chromium, Dissolved	<0.015	mg/L	1.0	0.015	200.7/6010	11/06/95	KW	1
Chromium, Hexavalent Dissolved	<0.015	mg/L	1.0	0.015	6010	11/14/95	KW	2
Chromium, Trivalent Dissolved	<0.015	mg/L	1.0	0.015	Calculation	11/22/95	DN	
Iron, Dissolved	B4.41	mg/L	1.0	0.025	200.7/6010	11/06/95	KW	1,3
Lead, Dissolved	<0.005	mg/L	1.0	0.005	200.7/6010	11/06/95	KW	1
Magnesium, Dissolved	1.27	mg/L	1.0	0.050	200.7/6010	11/06/95	KW	1
Manganese, Dissolved	0.491	mg/L	1.0	0.005	200.7/6010	11/06/95	KW	1
Potassium, Dissolved CBR	~~5~~ 4.6	mg/L	1.0	3	200.7/6010	11/03/95	NH	1
Silicon, Dissolved	2.1	mg/L	1.0	0.2	200.7/6010	11/06/95	NH	1
Sodium, Dissolved	27.	mg/L	1.0	1	200.7/6010	11/03/95	NH	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

(1) Sample Preparation on 10/23/95 by VM using 3010
(2) Sample Preparation on 10/18/95 by GFB using 7195
(3) A result reported with a "B" qualifier indicates the analyte was detected in the laboratory method blank analyzed concurrently with the sample. The concentration of iron in the method blank was 0.11 mg/L.

K - transcription error
CBR 6/24/96

12/06/95

LJO/ejnejn
LJ23ICW2
CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

E. Biyan Rivey 6/24/96

340 County Road, Westbrook, ME 04092
Tel: (207) 874-2400 Fax: (207) 775-4029

One Lafayette Drive, Hampton, NH 03842

Katahdin
ANALYTICAL SERVICES

A WBE Laboratory

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1628-3
Report Date: 12/06/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
SW-12 (FILT/DUP)	Aqueous	T. EBNER	10/18/95	10/18/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Bicarbonate,Dissolved as HCO3	<20.0	mg/L	1.0	20	APHA 406C	10/24/95	CM	
Carbonate, Dissolved as CaCO3	<20.0	mg/L	1.0	20	APHA 406C	10/24/95	CM	
Nitrate as N, Dissolved	<0.05	mg/L	1.0	0.05	353.2/1	10/25/95	NH	
Nitrite as N, Dissolved	<0.500	mg/L	10	0.050	353.2	10/19/95	LT	1
Organic Carbon, Dissolved (DOC)	18.4	mg/L	1.0	1.0	415.1	11/06/95	LT	
Phosphorus, Dissolved as P	<0.100	mg/L	1.0	0.10	365.4	10/26/95	CM	2
Solids-Filt Residue, Dissolved	189	mg/L	1.0	10	160.1	10/23/95	JF	3

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) The laboratory's Practical Quantitation Level could not be achieved for this parameter due to sample composition, matrix effects, sample volume, or quantity used for analysis.
(2) Sample Preparation on 10/25/95 by CLM
(3) Sample Preparation on 10/20/95 by JF

12/06/95

LJO/ejnjbb(dw)/pph

CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

Elevated detection limit for non-detect result.
E. Bryan Rivas 6/21/96

340 County Road, Westbrook, ME 04092
Tel: (207) 874-2400 Fax: (207) 775-4029

One Lafayette Drive, Hampton, NH 03842

Katahdin ANALYTICAL SERVICES

A WBE Laboratory

CLIENT: DON CAMERON OLIN CHEMICALS 51 EAMES STREET WILMINGTON, MA 01887	Lab Number : WL-1628-4 Report Date: 12/06/95 PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
SW-12 (FILT/MS)	Aqueous	T. EBNER	10/18/95	10/18/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Dissolved	2.02	mg/L	1.0	0.10	200.7/6010	11/06/95	KW	1
Arsenic, Dissolved	1.78	mg/l	1.0	0.005	200.7/6010	11/06/95	KW	1
Barium, Dissolved	1.75	mg/L	1.0	0.005	200.7/6010	11/06/95	KW	1
Calcium, Dissolved	8.57	mg/L	1.0	0.050	200.7/6010	11/06/95	KW	1
Chromium, Dissolved	0.171	mg/L	1.0	0.015	200.7/6010	11/06/95	KW	1
Chromium, Hexavalent Dissolved	1.99	mg/L	1.0	0.015	6010	11/14/95	KW	2
Chromium, Trivalent Dissolved	Not Appl.	mg/L	1.0	0.015	Calculation	11/22/95	DN	3
Iron, Dissolved	B4.45	mg/L	1.0	0.025	200.7/6010	11/06/95	KW	1,4
Lead, Dissolved	0.420	mg/L	1.0	0.005	200.7/6010	11/06/95	KW	1
Magnesium, Dissolved	5.51	mg/L	1.0	0.050	200.7/6010	11/06/95	KW	1
Manganese, Dissolved	0.827	mg/L	1.0	0.005	200.7/6010	11/06/95	KW	1
Potassium, Dissolved	27.	mg/L	1.0	3	200.7/6010	11/03/95	NH	1
Silicon, Dissolved	3.8	mg/L	1.0	0.2	200.7/6010	11/06/95	NH	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

(1) Sample Preparation on 10/23/95 by VM using 3010

(2) Sample Preparation on 10/18/95 by GFB using 7195

(4) A result reported with a "B" qualifier indicates the analyte was detected in the laboratory method blank analyzed concurrently with the sample. The concentration of iron in the method blank was 0.11 mg/L.

(3) This is a calculation and is not applicable to a matrix spike.

12/06/95

LJO/ejnejn
LJ23ICW2
CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

Katahdin
ANALYTICAL SERVICES

A WBE Laboratory

Lab Number : WL-1628-4
Report Date: 12/06/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
SW-12 (FILT/MS)	Aqueous	T. EBNER	10/18/95	10/18/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Sodium, Dissolved	29.	mg/L	1.0	1	200.7/6010	11/03/95	NH	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/23/95 by VM using 3010

12/06/95

LJO/ejnejn
LJ23ICW2
CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

Katahdin
ANALYTICAL SERVICES

A WBE Laboratory

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1628-4
Report Date: 12/06/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
SW-12 (FILT/MS)	Aqueous	T. EBNER	10/18/95	10/18/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Bicarbonate, Dissolved as HCO3	<20.0	mg/L	1.0	20	ALPHA 406C	10/24/95	CM	
Carbonate, Dissolved as CaCO3	<20.0	mg/L	1.0	20	APHA 406C	10/24/95	CM	
Nitrate as N, Dissolved	Not Appl.	mg/L	1.0	0.05	353.2/1	10/25/95	NH	1
Nitrite as N, Dissolved	4.52	mg/L	10	0.050	353.2	10/19/95	LT	
Organic Carbon, Dissolved (DOC)	57.5	mg/L	1.0	1.0	415.1	11/06/95	LT	
Phosphorus, Dissolved as P	0.793	mg/L	1.0	0.10	365.4	11/10/95	CM	2
Solids-Filt Residue, Dissolved	Not Appl.	mg/L	1.0	10	160.1	10/23/95	JF	3,4

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) This is a calculation and is not applicable to a matrix spike.
(2) Sample Preparation on 11/09/95 by CLM
(3) Sample Preparation on 10/20/95 by JF
(4) Matrix spike analysis is not applicable for this parameter.

12/06/95

LJO/ejnjbb(dw)/pph

CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

*Elevated detection limit for non-detect result.

E. Bryan Rivas 6/21/96

Katahdin
ANALYTICAL SERVICES

A WBE Laboratory

Lab Number : WL-1628-5
Report Date: 12/06/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
SW-17 (FILT)	Aqueous	T. EBNER	10/18/95	10/18/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Dissolved	0.12	mg/L	1.0	0.10	200.7/6010	11/06/95	KW	1
Arsenic, Dissolved	0.007	mg/l	1.0	0.005	200.7/6010	11/06/95	KW	1
Barium, Dissolved	0.044	mg/L	1.0	0.005	200.7/6010	11/06/95	KW	1
Calcium, Dissolved	110.	mg/L	1.0	0.050	200.7/6010	11/06/95	KW	1
Chromium, Dissolved	<0.015	mg/L	1.0	0.015	200.7/6010	11/06/95	KW	1
Chromium, Hexavalent Dissolved	<0.015	mg/L	1.0	0.015	6010	11/14/95	KW	2
Chromium, Trivalent Dissolved	<0.015	mg/L	1.0	0.015	Calculation	11/22/95	DN	
Iron, Dissolved	B3.7	mg/L	1.0	0.025	200.7/6010	11/06/95	KW	1,3
Lead, Dissolved	<0.005	mg/L	1.0	0.005	200.7/6010	11/06/95	KW	1
Magnesium, Dissolved	6.8	mg/L	1.0	0.050	200.7/6010	11/06/95	KW	1
Manganese, Dissolved	0.75	mg/L	1.0	0.005	200.7/6010	11/06/95	KW	1
Potassium, Dissolved	EBR ~~4~~ 4.4	mg/L	1.0	3	200.7/6010	11/04/95	NH	1
Silicon, Dissolved	8	mg/L	10	0.2	200.7/6010	11/06/95	NH	1
Sodium, Dissolved	140.	mg/L	1.0	1	200.7/6010	11/04/95	NH	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

(1) Sample Preparation on 10/23/95 by VM using 3010

(2) Sample Preparation on 10/18/95 by GFB using 7195

(3) A result reported with a "B" qualifier indicates the analyte was detected in the laboratory method blank analyzed concurrently with the sample. The concentration of iron in the method blank was 0.11 mg/L.

EBR
K - transcription error

12/06/95

LJO/ejnejn
LJ23ICW2
CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

E. Bryan Rich 6/24/96

Katahdin
ANALYTICAL SERVICES

A WBE Laboratory

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1628-5
Report Date: 12/06/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
SW-17 (FILT)	Aqueous	T. EBNER	10/18/95	10/18/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Bicarbonate,Dissolved as HCO3	190.	mg/L	1.0	20	APHA 406C	10/24/95	CM	
Carbonate, Dissolved as CaCO3	<20	mg/L	1.0	20	APHA 406C	10/24/95	CM	
Nitrate ~~as N,~~ Dissolved	6.0	mg/L	1.0	0.05	353.2/1	10/25/95	NH	
* Nitrite as N, Dissolved	<0.50	mg/L	10	0.050	353.2	10/19/95	LT	1
~~Organic Carbon, Dissolved (DOC)~~	~~19.~~	~~mg/L~~	~~1.0~~	1.0	415.1	11/06/95	LT	
Phosphorus, Dissolved as P	<0.10	mg/L	1.0	0.10	365.4	10/26/95	CM	2
Solids-Filt Residue, Dissolved	930.	mg/L	1.0	10	160.1	10/23/95	JF	3

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) The laboratory's Practical Quantitation Level could not be achieved for this parameter due to sample composition, matrix effects, sample volume, or quantity used for analysis.
(2) Sample Preparation on 10/25/95 by CLM
(3) Sample Preparation on 10/20/95 by JF

* Elevated detection limit for non-detect result.

12/06/95

LJO/ejnjbb(dw)

E. Bryan Rivers 6/21/96

CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

Katahdin
ANALYTICAL SERVICES

A WBE Laboratory

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1628-6
Report Date: 12/06/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
SW FIELD REP (FILT)	Aqueous	T. EBNER	10/18/95	10/18/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Dissolved	0.14	mg/L	1.0	0.10	200.7/6010	11/06/95	KW	1
Arsenic, Dissolved	0.009	mg/l	1.0	0.005	200.7/6010	11/06/95	KW	1
Barium, Dissolved	0.047	mg/L	1.0	0.005	200.7/6010	11/06/95	KW	1
Calcium, Dissolved	120.	mg/L	1.0	0.050	200.7/6010	11/06/95	KW	1
Chromium, Dissolved	0.017	mg/L	1.0	0.015	200.7/6010	11/06/95	KW	1
Chromium, Hexavalent Dissolved	<0.015	mg/L	1.0	0.015	6010	11/14/95	KW	2
Chromium, Trivalent Dissolved	0.017	mg/L	1.0	0.015	Calculation	11/22/95	DN	
Iron, Dissolved	B4.1	mg/L	1.0	0.025	200.7/6010	11/06/95	KW	1,3
Lead, Dissolved	<0.005	mg/L	1.0	0.005	200.7/6010	11/06/95	KW	1
Magnesium, Dissolved	7.1	mg/L	1.0	0.050	200.7/6010	11/06/95	KW	1
Manganese, Dissolved	0.80	mg/L	1.0	0.005	200.7/6010	11/06/95	KW	1
Potassium, Dissolved	EBL ~~8~~ 4.6	mg/L	1.0	3	200.7/6010	11/04/95	NH	1
Silicon, Dissolved	8	mg/L	10	0.2	200.7/6010	11/06/95	NH	1
Sodium, Dissolved	150.	mg/L	1.0	1	200.7/6010	11/04/95	NH	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

(1) Sample Preparation on 10/23/95 by VM using 3010

(2) Sample Preparation on 10/18/95 by GFB using 7195

(3) A result reported with a "B" qualifier indicates the analyte was detected in the laboratory method blank analyzed concurrently with the sample. The concentration of iron in the method blank was 0.11 mg/L.

EBL K - transcription error

12/06/95

LJO/ejnejn
LJ23ICW2
CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

E. Bryan Rivas 6/24/96

340 County Road, Westbrook, ME 04092
Tel: (207) 874-2400 Fax: (207) 775-4029

One Lafayette Drive, Hampton, NH 03842

Katahdin
ANALYTICAL SERVICES

A WBE Laboratory

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1628-6
Report Date: 12/06/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
SW FIELD REP (FILT)	Aqueous	T. EBNER	10/18/95	10/18/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Bicarbonate, Dissolved as HCO3	190.	mg/L	1.0	20	APHA 406C	10/24/95	CM	
Carbonate, Dissolved as CaCO3	<20	mg/L	1.0	20	APHA 406C	10/24/95	CM	
Nitrate as N, Dissolved	6.7	mg/L	1.0	0.1	353.2/1	10/25/95	NH	
* Nitrite as N, Dissolved	<0.50	mg/L	10	0.050	353.2	10/19/95	LT	1
Organic Carbon, Dissolved (DOC)	19.	mg/L	1.0	1.0	415.1	11/06/95	LT	
* Phosphorus, Dissolved as P	<1.0	mg/L	10	0.10	365.4	10/30/95	CM	2,1
Solids-Filt Residue, Dissolved	860.	mg/L	1.0	10	160.1	10/23/95	JF	3

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) The laboratory's Practical Quantitation Level could not be achieved for this parameter due to sample composition, matrix effects, sample volume, or quantity used for analysis.
(2) Sample Preparation on 10/27/95 by CLM
(3) Sample Preparation on 10/20/95 by JF

* Elevated detection limit for non-detect result

12/06/95

E. Bryan Rivers 6/21/96

LJO/ejnjbb (dw)

CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

Katahdin
ANALYTICAL SERVICES

A WBE Laboratory

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1628-7
Report Date: 12/06/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
SW-16 (FILT)	Aqueous	T. EBNER	10/18/95	10/18/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Dissolved	<0.10	mg/L	1.0	0.10	200.7/6010	11/06/95	KW	1
Arsenic, Dissolved	<0.005	mg/l	1.0	0.005	200.7/6010	11/06/95	KW	1
Barium, Dissolved	0.021	mg/L	1.0	0.005	200.7/6010	11/06/95	KW	1
Calcium, Dissolved	290.	mg/L	1.0	0.050	200.7/6010	11/06/95	KW	1
Chromium, Dissolved	<0.015	mg/L	1.0	0.015	200.7/6010	11/06/95	KW	1
Chromium, Hexavalent Dissolved	<0.015	mg/L	1.0	0.015	6010	11/14/95	KW	2
Chromium, Trivalent Dissolved	<0.015	mg/L	1.0	0.015	Calculation	11/22/95	DN	
Iron, Dissolved	<0.025	mg/L	1.0	0.025	200.7/6010	11/14/95	KW	1
Lead, Dissolved	<0.005	mg/L	1.0	0.005	200.7/6010	11/06/95	KW	1
Magnesium, Dissolved	5.9	mg/L	1.0	0.050	200.7/6010	11/06/95	KW	1
Manganese, Dissolved	0.42	mg/L	1.0	0.005	200.7/6010	11/06/95	KW	1
Potassium, Dissolved	EBR ~~4~~ 3.8	mg/L	1.0	3	200.7/6010	11/04/95	NH	1
Silicon, Dissolved	0.5	mg/L	1.0	0.2	200.7/6010	11/06/95	NH	1
Sodium, Dissolved	93.	mg/L	1.0	1	200.7/6010	11/04/95	NH	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/23/95 by VM using 3010
(2) Sample Preparation on 10/18/95 by GFB using 7195

EBR K - transcription error

12/06/95

E. Beyer Rivas 6/24/96

LJO/ejnejn
LJ23ICW2
CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

340 County Road, Westbrook, ME 04092
Tel: (207) 874-2400 Fax: (207) 775-4029

One Lafayette Drive, Hampton, NH 03842

Katahdin
ANALYTICAL SERVICES

A WBE Laboratory

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1628-7
Report Date: 12/06/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
SW-16 (FILT)	Aqueous	T. EBNER	10/18/95	10/18/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Bicarbonate,Dissolved as HCO3	<20	mg/L	1.0	20	APHA 406C	10/24/95	CM	
Carbonate, Dissolved as CaCO3	<20	mg/L	1.0	20	APHA 406C	10/24/95	CM	
Nitrate as N, Dissolved	4.2	mg/L	1.0	0.05	353.2/1	10/25/95	NH	
Nitrite as N, Dissolved	<0.050	mg/L	1.0	0.050	353.2	10/19/95	LT	
Organic Carbon, Dissolved (DOC)	12.	mg/L	1.0	1.0	415.1	11/06/95	LT	
Phosphorus, Dissolved as P	<0.10	mg/L	1.0	0.10	365.4	10/30/95	CM	1
Solids-Filt Residue, Dissolved	1400.	mg/L	1.0	10	160.1	10/23/95	JF	2

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/27/95 by CLM
(2) Sample Preparation on 10/20/95 by JF

12/06/95

LJO/ejnjbb(dw)

CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1628-18
Report Date: 12/06/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
SW-14 (UNFILT)	Aqueous	T. EBNER	10/18/95	10/18/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Total	<0.10	mg/L	1.0	0.10	200.7/6010	11/06/95	KW	1
Arsenic, Total	<0.005	mg/L	1.0	0.005	200.7/6010	11/06/95	KW	1
Barium, Total	0.010	mg/L	1.0	0.005	200.7/6010	11/06/95	KW	1
Calcium, Total	11.	mg/L	1.0	0.050	200.7/6010	11/06/95	KW	1
Chromium, Hexavalent	<0.015	mg/L	1.0	0.015	6010	11/14/95	KW	2
Chromium, Total	<0.015	mg/L	1.0	0.015	200.7/6010	11/06/95	KW	1
Chromium, Trivalent	<0.015	mg/L	1.0	0.015	Calculation	11/22/95	DN	
Iron, Total	0.37	mg/L	1.0	0.025	200.7/6010	11/18/95	KW	3
Lead, Total	<0.005	mg/L	1.0	0.005	200.7/6010	11/06/95	KW	1
Magnesium, Total	0.91	mg/L	1.0	0.050	200.7/6010	11/06/95	KW	1
Manganese, Total	0.014	mg/L	1.0	0.005	200.7/6010	11/06/95	KW	1
Potassium, Total	<3	mg/L	1.0	3	200.7/6010	11/04/95	NH	1
Silicon, Total	1.2	mg/L	1.0	0.2	200.7/6010	11/06/95	NH	1
Sodium, Total	66.	mg/L	1.0	1	200.7/6010	11/04/95	NH	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/23/95 by VM using 3010
(2) Sample Preparation on 10/18/95 by GFB using 7195
(3) Sample Preparation on 11/15/95 by GFB using 3010

12/06/95

LJO/ejnejn
LJ23ICW2
CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

Katahdin
ANALYTICAL SERVICES

A WBE Laboratory

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1628-19
Report Date: 12/06/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
SW-12 (UNFILT)	Aqueous	T. EB.ER	10/18/95	10/18/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Total	0.31	mg/L	1.0	0.10	200.7/6010	11/06/95	KW	1
Arsenic, Total	0.010	mg/L	1.0	0.005	200.7/6010	11/06/95	KW	1
Barium, Total	0.020	mg/L	1.0	0.005	200.7/6010	11/06/95	KW	1
Calcium, Total	7.3	mg/L	1.0	0.050	200.7/6010	11/06/95	KW	1
Chromium, Hexavalent	<0.015	mg/L	1.0	0.015	6010	11/14/95	KW	2
Chromium, Total	<0.015	mg/L	1.0	0.015	200.7/6010	11/06/95	KW	1
Chromium, Trivalent	<0.015	mg/L	1.0	0.015	Calculation	11/22/95	DN	
Iron, Total	B5.6	mg/L	1.0	0.025	200.7/6010	11/06/95	KW	1,3
Lead, Total	<0.005	mg/L	1.0	0.005	200.7/6010	11/06/95	KW	1
Magnesium, Total	1.2	mg/L	1.0	0.050	200.7/6010	11/06/95	KW	1
Manganese, Total	0.49	mg/L	1.0	0.005	200.7/6010	11/06/95	KW	1
Potassium, Total	EBR ~~5~~ 4.8	mg/L	1.0	3	200.7/6010	11/04/95	NH	1
Silicon, Total	2.1	mg/L	1.0	0.2	200.7/6010	11/06/95	NH	1
Sodium, Total	25.	mg/L	1.0	1	200.7/6010	11/04/95	NH	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/23/95 by VM using 3010
(2) Sample Preparation on 10/18/95 by GFB using 7195
(3) A result reported with a "B" qualifier indicates the analyte was detected in the laboratory method blank analyzed concurrently with the sample. The concentration of iron in the method blank was 0.11 mg/L.

EBR K- transcription error

12/06/95

E. Bryan Rivers 6/24/96

LJO/ejnejn
LJ23ICW2
CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

340 County Road, Westbrook, ME 04092
Tel: (207) 874-2400 Fax: (207) 775-4029

One Lafayette Drive, Hampton, NH 03842

Katahdin
ANALYTICAL SERVICES

A WBE Laboratory

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1628-20
Report Date: 12/06/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
SW-12 (UNFILT/DUP)	Aqueous	T. EBNER	10/18/95	10/18/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Total	0.295	mg/L	1.0	0.10	200.7/6010	11/18/95	KW	1
Arsenic, Total	0.007	mg/L	1.0	0.005	200.7/6010	11/09/95	KW	2
Barium, Total	0.017	mg/L	1.0	0.005	200.7/6010	11/07/95	GB	2
Calcium, Total	B6.60	mg/L	1.0	0.050	200.7/6010	11/09/95	KW	2,3
Chromium, Hexavalent	<0.015	mg/L	1.0	0.015	6010	11/14/95	KW	4
Chromium, Total	<0.015	mg/L	1.0	0.015	200.7/6010	11/07/95	GB	2
Chromium, Trivalent	<0.015	mg/L	1.0	0.015	Calculation	11/22/95	DN	
Iron, Total	5.65	mg/L	1.0	0.025	200.7/6010	11/18/95	KW	1
Lead, Total	<0.005	mg/L	1.0	0.005	200.7/6010	11/09/95	KW	2
Magnesium, Total	1.22	mg/L	1.0	0.050	200.7/6010	11/14/95	KW	2
Manganese, Total	B0.488	mg/L	1.0	0.005	200.7/6010	11/07/95	GB	2,5
Potassium, Total	23R ~~4~~ 4.4	mg/L	1.0	3	200.7/6010	11/04/95	NH	2

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 11/15/95 by GFB using 3010
(2) Sample Preparation on 10/23/95 by VM using 3010
(3) A result reported with a "B" qualifier indicates the analyte was detected in the laboratory method blank analyzed concurrently with the sample. The concentration of calcium in the method blank was 0.18 mg/L.
(4) Sample Preparation on 10/18/95 by GFB using 7195
(5) A result reported with a "B" qualifier indicates the analyte was detected in the laboratory method blank analyzed concurrently with the sample. The concentration of manganese in the method blank was 0.005 mg/L.

12/06/95

23R
K - transcription error

LJO/ejnejn/jbb(dw)
LK15ICW2
CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

E. Bryan Rubel 6/24/96

Katahdin
ANALYTICAL SERVICES

A WBE Laboratory

Lab Number : WL-1628-20
Report Date: 12/06/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
SW-12 (UNFILT/DUP)	Aqueous	T. ERNER	10/18/95	10/18/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Silicon, Total	B2.0	mg/L	1.0	0.2	200.7/6010	11/06/95	NH	1,2
Sodium, Total	22.	mg/L	1.0	1	200.7/6010	11/04/95	NH	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

(1) Sample Preparation on 10/23/95 by VM using 3010

(2) A result reported with a "B" qualifier indicates the analyte was detected in the laboratory method blank analyzed concurrently with the sample. The concentration of silicon in the method blank was 0.4 mg/L.

12/06/95

LJO/ejnejn/jbb(dw)
LJ23ICW3
CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

Katahdin
ANALYTICAL SERVICES

A WBE Laboratory

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1628-21
Report Date: 12/06/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
SW-12 (UNFILT/MS)	Aqueous	T. EBNER	10/18/95	10/18/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Total	2.32	mg/L	2.0	0.10	200.7/6010	11/30/95	EM	1
Arsenic, Total	1.87	mg/L	2.0	0.50	200.7/6010	11/09/95	KW	2
Barium, Total	1.71	mg/L	1.0	0.005	200.7/6010	11/07/95	GB	2
Calcium, Total	B8.01	mg/L	2.0	0.050	200.7/6010	11/09/95	KW	2,3
Chromium, Hexavalent	1.81	mg/L	1.0	0.015	6010	11/14/95	KW	4
Chromium, Total	0.199	mg/L	1.0	0.015	200.7/6010	11/07/95	GB	2
Chromium, Trivalent	Not Appl.	mg/L	1.0	0.015	Calculation	11/22/95	DN	5
Iron, Total	6.73	mg/L	2.0	0.025	200.7/6010	11/30/95	EM	1
Lead, Total	0.446	mg/L	2.0	0.005	200.7/6010	11/09/95	KW	2
Magnesium, Total	5.62	mg/L	2.0	0.050	200.7/6010	11/09/95	KW	2
Manganese, Total	B0.914	mg/L	1.0	0.005	200.7/6010	11/07/95	GB	2,6

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

(1) Sample Preparation on 11/22/95 by JAF using 3010

(2) Sample Preparation on 10/23/95 by VM using 3010

(3) A result reported with a "B" qualifier indicates the analyte was detected in the laboratory method blank analyzed concurrently with the sample. The concentration of calcium in the method blank was 0.18 mg/L.

(4) Sample Preparation on 10/18/95 by GFB using 7195

(6) A result reported with a "B" qualifier indicates the analyte was detected in the laboratory method blank analyzed concurrently with the sample. The concentration of manganese in the method blank was 0.005 mg/L.

(5) This is a calculation and is not applicable to a matrix spike.

12/06/95

LJO/ejnejn
LK22ICW3
CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

Katahdin
ANALYTICAL SERVICES

A WBE Laboratory

Lab Number : WL-1628-21
Report Date: 12/06/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
SW-12 (UNFILT/MS)	Aqueous	T. EBNER	10/18/95	10/18/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Potassium, Total	28.	mg/L	1.0	3	200.7/6010	11/04/95	NH	1
Silicon, Total	B3.9	mg/L	1.0	0.2	200.7/6010	11/06/95	NH	1,2
Sodium, Total	26.	mg/L	1.0	1	200.7/6010	11/04/95	NH	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/23/95 by VM using 3010
(2) A result reported with a "B" qualifier indicates the analyte was detected in the laboratory method blank analyzed concurrently with the sample. The concentration of silicon in the method blank was 0.4 mg/L.

12/06/95

LJO/ejnejn
LJ23ICW3
CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

Katahdin
ANALYTICAL SERVICES

A WBE Laboratory

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1628-22
Report Date: 12/06/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
SW-17 (UNFILT)	Aqueous	T. EBNER	10/18/95	10/18/95

PARAMETER		RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Total		0.78	mg/L	1.0	0.10	200.7/6010	11/18/95	KW	1
Arsenic, Total		<0.005	mg/L	1.0	0.005	200.7/6010	11/09/95	KW	2
Barium, Total		0.032	mg/L	1.0	0.005	200.7/6010	11/07/95	GB	2
Calcium, Total		B89	mg/L	1.0	0.050	200.7/6010	11/09/95	KW	2,3
Chromium, Hexavalent		<0.015	mg/L	1.0	0.015	6010	11/14/95	KW	4
Chromium, Total		0.016	mg/L	1.0	0.015	200.7/6010	11/07/95	GB	2
Chromium, Trivalent		0.016	mg/L	1.0	0.015	Calculation	11/22/95	DN	
Iron, Total		3.6	mg/L	1.0	0.025	200.7/6010	11/18/95	KW	1
Lead, Total		<0.005	mg/L	1.0	0.005	200.7/6010	11/09/95	KW	2
Magnesium, Total		5.3	mg/L	1.0	0.050	200.7/6010	11/09/95	KW	2
Manganese, Total		B0.66	mg/L	1.0	0.005	200.7/6010	11/07/95	GB	2,5
Potassium, Total	EBR	~~4~~3.5	mg/L	1.0	3	200.7/6010	11/04/95	NH	2

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

(1) Sample Preparation on 11/15/95 by GFB using 3010
(2) Sample Preparation on 10/23/95 by VM using 3010
(3) A result reported with a "B" qualifier indicates the analyte was detected in the laboratory method blank analyzed concurrently with the sample. The concentration of calcium in the method blank was 0.18 mg/L.
(4) Sample Preparation on 10/18/95 by GFB using 7195
(5) A result reported with a "B" qualifier indicates the analyte was detected in the laboratory method blank analyzed concurrently with the sample. The concentration of manganese in the method blank was 0.005 mg/L.

EBR
K - transcription error

12/06/95

E. Bryan Rivas 6/24/96

LJO/ejnejn
LK15ICW2
CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

Katahdin
ANALYTICAL SERVICES

A WBE Laboratory

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1628-22
Report Date: 12/06/95
PO No. : SB-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
SW-17 (UNFILT)	Aqueous	T. EBNER	10/18/95	10/18/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Silicon, Total	B6	mg/L	10	0.2	200.7/6010	11/06/95	NH	1,2
Sodium, Total	110.	mg/L	1.0	1	200.7/6010	11/04/95	NH	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

(1) Sample Preparation on 10/23/95 by VM using 3010

(2) A result reported with a "B" qualifier indicates the analyte was detected in the laboratory method blank analyzed concurrently with the sample. The concentration of silicon in the method blank was 0.4 mg/L.

12/06/95

LJO/ejnejn
LJ23ICW3
CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

340 County Road, Westbrook, ME 04092
Tel: (207) 874-2400 Fax: (207) 775-4029

One Lafayette Drive, Hampton, NH 03842

Katahdin
ANALYTICAL SERVICES

A WBE Laboratory

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1628-23
Report Date: 12/06/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
SW FIELD REP (UNFILT)	Aqueous	T. EBNER	10/18/95	10/18/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Total	0.84	mg/L	1.0	0.10	200.7/6010	11/18/95	KW	1
Arsenic, Total	<0.005	mg/L	1.0	0.005	200.7/6010	11/09/95	KW	2
Barium, Total	0.044	mg/L	1.0	0.005	200.7/6010	11/07/95	GB	2
Calcium, Total	B120	mg/L	1.0	0.050	200.7/6010	11/09/95	KW	2,3
Chromium, Hexavalent	<0.015	mg/L	1.0	0.015	6010	11/14/95	KW	4
Chromium, Total	0.023	mg/L	1.0	0.015	200.7/6010	11/07/95	GB	2
Chromium, Trivalent	0.023	mg/L	1.0	0.015	Calculation	11/22/95	DN	
Iron, Total	3.7	mg/L	1.0	0.025	200.7/6010	11/18/95	KW	1
Lead, Total	<0.005	mg/L	1.0	0.005	200.7/6010	11/09/95	KW	2
Magnesium, Total	7.3	mg/L	1.0	0.050	200.7/6010	11/09/95	KW	2
Manganese, Total	B0.89	mg/L	1.0	0.005	200.7/6010	11/07/95	GB	2,5
Potassium, Total	EBR 4.3	mg/L	1.0	3	200.7/6010	11/04/95	NH	2

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

(1) Sample Preparation on 11/15/95 by GFB using 3010
(2) Sample Preparation on 10/23/95 by VM using 3010
(3) A result reported with a "B" qualifier indicates the analyte was detected in the laboratory method blank analyzed concurrently with the sample. The concentration of calcium in the method blank was 0.18 mg/L.
(4) Sample Preparation on 10/18/95 by GFB using 7195
(5) A result reported with a "B" qualifier indicates the analyte was detected in the laboratory method blank analyzed concurrently with the sample. The concentration of manganese in the method blank was 0.005 mg/L.

EBR K- transcription error

12/06/95

E. Brefus Rivers 6/24/96

LJO/ejnejn
LK15ICW2
CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

Katahdin
ANALYTICAL SERVICES

A WBE Laboratory

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1628-23
Report Date: 12/06/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
SW FIELD REP (UNFILT)	Aqueous	T. EBNER	10/18/95	10/18/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Silicon, Total	B8	mg/L	10	0.2	200.7/6010	11/06/95	NH	1,2
Sodium, Total	150.	mg/L	1.0	1	200.7/6010	11/04/95	NH	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/23/95 by VM using 3010
(2) A result reported with a "B" qualifier indicates the analyte was detected in the laboratory method blank analyzed concurrently with the sample. The concentration of silicon in the method blank was 0.4 mg/L.

12/06/95

LJO/ejnejn
LJ23ICW3
CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

Katahdin
ANALYTICAL SERVICES

A WBE Laboratory

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1628-24
Report Date: 12/06/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
SW-16 (UNFILT)	Aqueous	T. EBNER	10/18/95	10/18/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Aluminum, Total	0.13	mg/L	1.0	0.10	200.7/6010	11/18/95	KW	1
Arsenic, Total	<0.005	mg/L	1.0	0.005	200.7/6010	11/09/95	KW	2
Barium, Total	0.019	mg/L	1.0	0.005	200.7/6010	11/07/95	GB	2
Calcium, Total	B280	mg/L	1.0	0.050	200.7/6010	11/09/95	KW	2,3
Chromium, Hexavalent	<0.015	mg/L	1.0	0.015	6010	11/14/95	KW	4
Chromium, Total	<0.015	mg/L	1.0	0.015	200.7/6010	11/07/95	GB	2
Chromium, Trivalent	<0.015	mg/L	1.0	0.015	Calculation	11/22/95	DN	
Iron, Total	0.53	mg/L	1.0	0.025	200.7/6010	11/18/95	KW	1
Lead, Total	<0.005	mg/L	1.0	0.005	200.7/6010	11/09/95	KW	2
Magnesium, Total	5.9	mg/L	1.0	0.050	200.7/6010	11/09/95	KW	2
Manganese, Total	B0.46	mg/L	1.0	0.005	200.7/6010	11/07/95	GB	2,5
Potassium, Total	EBR ~~4~~ 3.5	mg/L	1.0	3	200.7/6010	11/04/95	NH	2

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 11/15/95 by GFB using 3010
(2) Sample Preparation on 10/23/95 by VM using 3010
(3) A result reported with a "B" qualifier indicates the analyte was detected in the laboratory method blank analyzed concurrently with the sample. The concentration of calcium in the method blank was 0.18 mg/L.
(4) Sample Preparation on 10/18/95 by GFB using 7195
(5) A result reported with a "B" qualifier indicates the analyte was detected in the laboratory method blank analyzed concurrently with the sample. The concentration of manganese in the method blank was 0.005 mg/L.

EBR K - transcription error

12/06/95

E. Benjamin Rivers 6/24/96

LJO/ejnejn
LK15ICW2
CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

340 County Road, Westbrook, ME 04092
Tel: (207) 874-2400 Fax: (207) 775-4029

One Lafayette Drive, Hampton, NH 03842

Katahdin
ANALYTICAL SERVICES

A WBE Laboratory

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1628-24
Report Date: 12/06/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
SW-16 (UNFILT)	Aqueous	T. EBNER	10/18/95	10/18/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Silicon, Total	B0.5	mg/L	1.0	0.2	200.7/6010	11/06/95	NH	1,2
Sodium, Total	90.	mg/L	1.0	1	200.7/6010	11/04/95	NH	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/23/95 by VM using 3010
(2) A result reported with a "B" qualifier indicates the analyte was detected in the laboratory method blank analyzed concurrently with the sample. The concentration of silicon in the method blank was 0.4 mg/L.

12/06/95

LJO/ejnejn
LJ23ICW3
CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

340 County Road, Westbrook, ME 04092
Tel: (207) 874-2400 Fax: (207) 775-4029

One Lafayette Drive, Hampton, NH 03842

```
    Cr267.7     av     [illegible] mg/L        sd    [illegible] %cv [illegible]

11/14/95 09:56
CRI            rep   1  Cr267.7    conc     0.0121 mg/L
               rep   2  Cr267.7    conc     0.0068 mg/L
               rep   3  Cr267.7    conc     0.0245 mg/L
CRI
11/14/95 09:56
    Cr267.7     av     0 0145 mg/L 77.5%  sd    0.00909 %cv  62.77 *

11/14/95 09:58
PBW 1018       rep   1  Cr267.7    conc    -0.0010 mg/L
               rep   2  Cr267.7    conc    -0.0013 mg/L
               rep   3  Cr267.7    conc     0.0123 mg/L
PBW 1018
11/14/95 09:58
    Cr267.7     av     0.0033 mg/L <       sd    0.00774 %cv 232.98

11/14/95 10:00
LCS 1018       rep   1  Cr267.7    conc     2 3379 mg/L
               rep   2  Cr267.7    conc     2.3369 mg/L
               rep   3  Cr267.7    conc     2.3712 mg/L
LCS 1018
11/14/95 10:00
    Cr267 7     av     2.3487 mg/L         sd    0 01951 %cv   0.83

11/14/95 10:02
SW14F          rep   1  Cr267 7    conc    -0 0076 mg/L
               rep   2  Cr267.7    conc    -0.0010 mg/L
               rep   3  Cr267 7    conc    -0.0041 mg/L
SW14F
11/14/95 10.02
    Cr267.7     av    -0 0042 mg/L <       sd    0 00331 %cv  77.96

11/14/95 10.04
SW14U          rep   1  Cr267 7    conc    -0 0080 mg/l
               rep   2  Cr267 7    conc    -0.0046 mg/L
               rep   3  Cr267 7    conc    -0 0016 mg/L
SW14U
11/14/95 10.04
    Cr267 7     av    -0 0047 mg/L <       sd    0 00319 %cv  67 62

11/14/95 10.06
SW12F          rep   1  Cr267.7    conc    -0 0089 mg/l
               rep   2  Cr267 7    conc    -0 0044 mg/L
               rep   3  Cr267 7    conc    -0 0093 mg/L
SW12F
11/14/95 10:06
    Cr267 7     av    -0 0075 mg/L <       sd    0 00275 %cv  36.54

11/14/95 10.07
SW12Fdup       rep   1  Cr267.7    conc    -0 0003 mg/l
               rep   2  Cr267.7    conc    -0.0016 mg/L
               rep   3  Cr267 7    conc    -0 0114 mg/L            window edge
SW12Fdup
11/14/95 10.08
    Cr267 7     av    -0 0044 mg/L <       sd    0 00609 %cv 136.90

11/14/95 10:09
CCV            rep   1  Cr267.7    conc     0 9547 mg/L
               rep   2  Cr267.7    conc     0.9593 mg/L
               rep   3  Cr267.7    conc     0.9938 mg/L
CCV
11/14/95 10.10
    Cr267 7     av     0.9693 mg/L 96.9%  sd    0.02136 %cv   2.20
```

* all Cr^{+6} results are estimated may be biased low.

R. [illegible] Rivers 6/20/96

Analysis Report Tue 11-07-95 03:21:44 AM page 1

Method: TEMP2 Sample Name: PBW LJ23ICW2 Operator: GFB
Run Time: 11/07/95 03:16:34
Comment:
Mode: CONC Corr. Factor: 1

Elem	As1890	Pb2203	Se1960	Sb2068	Al3082	Ba4934	Ca3179
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Avge	L.00232	L.00402	L.00017	L.00017	L.03283	L.00094	L.02650
SDev	.00059	.00065	.00002	.00002	.00133	.00004	.00020
%RSD	25.476	16.314	10.730	10.730	4.0569	4.4639	.74923
#1	L.00190	L.00355	L.00019	L.00019	L.03189	L.00096	L.02664
#2	L.00274	L.00448	L.00016	L.00016	L.03377	L.00091	L.02636

Elem	Co2286	Cr2677	Fe2714	Mg2790	Mn2576	Mo2020	Ni2316
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Avge	L.00058	L.00094	.10451	L-.00983	L.00220	L.00069	L.00111
SDev	.00011	.00004	.00112	.00011	.00006	.00014	.00020
%RSD	19.198	4.5952	1.0684	1.0998	2.6762	19.703	18.173
#1	L.00050	L.00097	.10372	L-.00991	L.00224	L.00060	L.00125
#2	L.00066	L.00091	.10530	L-.00976	L.00216	L.00079	L.00096

Elem	V_2924	2203/1	2203/2
Units	mg/L		
Avge	L-.00026	.00675	.00231
SDev	.00026	.00047	.00077
%RSD	97.908	7.0489	33.420
#1	L-.00008	.00641	.00177
#2	L-.00044	.00708	.00286

IntStd	1	2	3	4	5	6	7
Mode	*Counts	NOTUSED	NOTUSED	NOTUSED	NOTUSED	NOTUSED	NOTUSED
Elem	Y	--	--	--	--	--	--
Wavlen	360.063	--	--	--	--	--	--
Avge	37256	--	--	--	--	--	--
SDev	55.86144	--	--	--	--	--	--
%RSD	.1499374	--	--	--	--	--	--
#1	37296	--	--	--	--	--	--
#2	37217	--	--	--	--	--	--

ok!

* Samples WL-1628-1 + WL-1628-18 + WL-1628-24
are ~~estimated~~ est negated due to
prep blank contamination

G. Bryan Rivers 6/20/96

Page no. 00001
10/19/95

Samples reported at raised PQLs due to color factor of Samples. 101995 LAT

TECHNICON TRAACS 800 SYSTEM 1-ANALYSIS REPORT FORM

DESCRIPTION	RUN INFORMATION	LIMS ID	TEST #1
Date of Run	10-19-95		1.000
Time of Run	11:26		1.000
Operator	LAT		1.000
Comment	SAMPLE RUN W/O		1.000
	DILUTION LOOP		1.000
	PQL :0.050 mg/L		1.000
	EPA: 353.2		1.000
AN1 ChemName	NITRITE		1.000
AN1 Units	mg/L		1.000
Peak1	Cup:1 -> PRIM	2.00 PPM	2.056
Peak2	Cup:1 -> CALB	2.00 PPM	(1.973 /2.0) 10² = 99% ✓
Peak3	Cup:2 -> CALB	1.00 PPM	(1.031 /1.0) 10² = 103% ✓
Peak4	Cup:3 -> CALB	0.50 PPM	(0.539 /0.5) 10² = 108% ✓
Peak5	Cup:4 -> CALB	0.20 PPM	(0.195 /0.2) 10² = 98% ✓
Peak6	Cup:5 -> CALB	0.05 PPM	(0.036 /0.05) 10² = 72% ✓
Peak7	Cup:1 -> HIGH	2.00 PPM	1.972
Peak8	Cup:5 -> LOW	0.05 PPM	0.038
Peak9	Cup:5 -> LOW	0.05 PPM	0.038
Peak10	Cup:6 -> ISMP	ICV	(0.925 /1.0) 10² = 93% ✓
Peak11	Cup:7 -> ISMP	RINSE	-.016
Peak12	Cup:8 -> ISMP	ICB	-.015 <0.05 ✓
Peak13	Cup:9 -> SAMP LL1623-18 SW14UNF 4x ✓		-.072 <0.05 * (I-7)
Peak14	Cup:10 -> SAMP LL1623-19 SW12UNF 10x ✓		-.209 <0.05 * (I-7)
Peak15	Cup:11 -> SAMP LL1623-21 SW12UNF MS 10x ✓		[(4.746 - <0.05)/0.5] /10 DF = 0.9492 x10² = 95% ✓
Peak16	Cup:12 -> SAMP LL1623-20 SW12UNF DUP 10x ✓		-.254 <0.05 * (I-7)

r = 0.9994 ✓

Low calibration standard

* <PQL

Filename: N2101995

Checked pm 10/30/95

Replicate	x_1	x_2	$\bar{x}$	RPD%

E. Burhan Rivers 6/24/96

10/19/95

T E C H N I C O N TRAACS 800 SYSTEM 1-ANALYSIS REPORT FORM

DESCRIPTION	RUN INFORMATION	LIMS ID	TEST #1
Peak17	Cup:13 -> SAMP-L1628-22	SW17UNF 10X	-.192 <0.05 * I-7
Peak18	Cup:14 -> SAMP-L1628-23	SWFIELDREPUNF 10X	-.176 <0.05 * I-7
Peak19	Cup:15 -> SAMP-L1628-24	SW16UNF	-.006
Peak20	Cup:16 -> SAMP-L1628-25	SW500UNF	-.009
Peak21	Cup:17 -> SAMP-L1628-1	SW14FIL 4X	-.084 * I-7
Peak22	Cup:18 -> SAMP-L1628-5	SW17FIL 10X	-.202 * I-7
Peak23	Cup:19 -> ISMP	CCV	(0.950 /1.0)102 = 95%
Peak24	Cup:20 -> ISMP	RINSE	-.021
Peak25	Cup:21 -> ISMP	CCB	-.019 <0.05
Peak26	Cup:22 -> SAMP-L1628-2	SW12FIL 10X	-.199 <0.05 * I-7
Peak27	Cup:23 -> SAMP-L1628-4	SW12FIL MS 10X	[(4.519 - <0.05)/0.5]/10 x102 = 90%
Peak28	Cup:24 -> SAMP-L1628-3	SW12FIL DUP 10X	-.221 <0.05 * I-7
Peak29	Cup:25 -> SAMP-L1628-6	SWFIELDDUPFIL 10X	-.155 * I-7
Peak30	Cup:26 -> SAMP-L1628-7	SW16FIL	-.007
Peak31	Cup:27 -> SAMP-L1628-8	GW500FIL	-.013
Peak32	Cup:28 -> SAMP-L1628-9	GW77SFIL	-.019
Peak33	Cup:29 -> SAMP-L1628-13	GW76SFIL	-.010
Peak34	Cup:30 -> SAMP-L1628-14	GWFIELDREPFIL	-.013
Peak35	Cup:31 -> SAMP-L1628-15	GW78SFIL	-.021
Peak36	Cup:32 -> ISMP	CCV	(0.993/1.0)102 = 99%
Peak37	Cup:33 -> ISMP	RINSE	-.015
Peak38	Cup:34 -> ISMP	CCB	-.017 <0.05
Peak39	Cup:35 -> SAMP-L1628-16	GW79SFIL	-.000 <0.05
Peak40	Cup:36 -> SAMP-L1628-17	GW50SFIL	-.019
Peak41	Cup:37 -> SAMP-L1628-10	GW42SFIL	-.019

* Greater than the PQL

F. Butler Rivers 6/24/96 0000797

Page no. 00001
10/26/95

TPO4

T E C H N I C O N   TRAACS 800 SYSTEM   1-ANALYSIS REPORT FORM

filename:
77102695

DESCRIPTION	RUN INFORMATION	LIMS ID	TEST #1	
Date of Run	10-26-95		1.000	
Time of Run	11:05		1.000	
Operator	CLM		1.000	
Comment	SAMPLE RUN W/O		1.000	
	DILUTION LOOP		1.000	
	PQL: 0.10 mg/L		1.000	
	EPA #365.4		1.000	
AN1 ChemName	TPO4		1.000	
AN1 Units	mg/L		1.000	
Peak1	Cup:1 -> PRIM	5.00 PPM	4.675	
Peak2	Cup:1 -> CALB	5.00 PPM	(4.936/5.0) 10^2 = 99% ✓	
Peak3	Cup:2 -> CALB	3.00 PPM	(2.975/3.0) 10^2 = 99% ✓	
Peak4	Cup:3 -> CALB	2.00 PPM	(2.082/2.0) 10^2 = 104% ✓	r = 0.9998 ✓
Peak5	Cup:4 -> CALB	1.00 PPM	(1.103/1.0) 10^2 = 110% ✓	
Peak6	Cup:5 -> CALB	0.50 PPM	(0.577/0.5) 10^2 = 115% ✓	
Peak7	Cup:6 -> CALB	0.10 PPM	(0.153/0.10) 10^2 = 153% ✓	high %R for Calibration standar
Peak8	Cup:1 -> HIGH	5.00 PPM	5.135	
Peak9	Cup:4 -> LOW	1.00 PPM	1.072	
Peak10	Cup:4 -> LOW	1.00 PPM	1.081	
Peak11	Cup:7 -> ISMP	RINSE	1.281	
Peak12	Cup:8 -> ISMP	ICV	(1.330/1.25) 10^2 = 106% ✓	
Peak13	Cup:9 -> ISMP	RINSE	0.124	
Peak14	Cup:9 -> ISMP	RINSE	0.016	
Peak15	Cup:10 -> ISMP	ICB	-.070 < 0.10 ✓	
Peak16	Cup:10 -> ISMP	ICB	-.115 < 0.10	< PQL

checked
[illegible]

E. Bryan Rivera 6/24/96

Page no. 00002
10/26/95

T E C H N I C O N TRAACS [illegible] 1-ANALYSIS REPORT FORM

TPO4
mg/l

DESCRIPTION	RUN INFORMATION	LIMS ID		TEST #1		
Peak17	Cup:11 -> SAMP	WL1593-1		2.313		
Peak18	Cup:12 -> SAMP	WL1593-2		0.587		
Peak19	Cup:13 -> SAMP	WL1593-3		3.196		
Peak20	Cup:14 -> SAMP	WL1622-17	X10	1.055	✓	
Peak21	Cup:15 -> SAMP	WL1622-18	X10	5.530	✓	
Peak22	Cup:16 -> SAMP	WL1622-19		-.005	<0.10 ✓	1:1
Peak23	Cup:17 -> SAMP	WL1622-20	X10	4.384	✓	
Peak24	Cup:18 -> SAMP	WL1622-21		-.016	<0.10 ✓	1:1
Peak25	Cup:19 -> SAMP	WL1622-[illegible]	X10	17.795	✓	
Peak26	Cup:20 -> SAMP	WL1622-23	X10	27.324	✓	
Peak27	Cup:21 -> SAMP	WL1622-17SPIKE		(1.589 − 1.055/1.25)10 = 43% ✓		
Peak28	Cup:22 -> ISMP	RINSE		1.420		
Peak29	Cup:23 -> ISMP	CCV		(1.445/1.25)10² = 116% ✓		
Peak30	Cup:24 -> ISMP	RINSE		0.181		
Peak31	Cup:24 -> ISMP	RINSE		0.050		
Peak32	Cup:25 -> ISMP	CCB		-.060	<0.10 ✓	> -PQL
Peak33	Cup:25 -> ISMP	CCB		-.114	<0.10	
Peak34	Cup:26 -> SAMP	WL1622-24		-.138	<0.10	> -PQL
Peak35	Cup:27 -> SAMP	WL1622-25		-.166	<0.10	
Peak36	Cup:28 -> SAMP	WL1622-26		-.179	<0.10	
Peak37	Cup:29 -> SAMP	WL1622-27	X10	2.962		
Peak38	Cup:30 -> SAMP	WL1622-28		-.117	<0.10	
Peak39	Cup:31 -> SAMP	WL1622-29		-.190	<0.10	
Peak40	Cup:32 -> SAMP	WL1622-30		-.219	<0.10	
Peak41	Cup:33 -> SAMP	WL1622-31		-.258	<0.10	

E. Beyers Rivera 6/24/96

age no. 00003
10/26/95

TPO4 mg/L

T E C H N I C O N   TRAACS 800 SYSTEM   1-ANALYSIS REPORT FORM

DESCRIPTION	RUN INFORMATION	LIMS ID	TEST #1
Peak42	Cup:34 -> SAMP	WL1622-32	-.238 < 0.10
Peak43	Cup:35 -> SAMP	WL1628-1	-.212 < 0.10
Peak44	Cup:36 -> SAMP	WL1628-2	-.245 < 0.10
Peak45	Cup:37 -> SAMP	WL1628-3	-.241 < 0.10
Peak46	Cup:38 -> SAMP	WL1628-4	-.240 < 0.10
Peak47	Cup:39 -> SAMP	WL1628-5	-.304 < 0.10
Peak48	Cup:40 -> SAMP	WL1628-5DUP	-.335 < 0.10
Peak49	Cup:41 -> SAMP	WL1628-5SPIKE	0.752 - (<0.10)/1.25 (10²) = 60% e ≤1
Peak50	Cup:42 -> ISMP	RINSE	0.978
Peak51	Cup:43 -> ISMP	CCV	(1.131/1.25)10² = 90% ✓
Peak52	Cup:44 -> ISMP	RINSE	0.048
Peak53	Cup:44 -> ISMP	RINSE	-.122
Peak54	Cup:45 -> ISMP	CCB	-.218 < 0.10 ✓
Peak55	Cup:45 -> ISMP	CCB	-.314 < 0.10 ✓
Peak56	Cup:2 -> GAIN	3.00 PPM	2.975

< PQL

Sample only

Low

< PQL

E. Bryan Rivers 6/24/96

Page no. 00001
10/30/95

TPO4

filename: TP103095

TECHNICON TRAACS 800 SYSTEM I-ANALYSIS REPORT FORM

DESCRIPTION	RUN INFORMATION	LIMS ID	TEST #1
Date of Run	10-30-95		1.000
Time of Run	09:36		1.000
Operator	CLH		1.000
Comment	SAMPLE RUN W/O		1.000
	DILUTION LOOP		1.000
	PQL: 0.10 mg/L		1.000
	EPA #365.4		1.000
AN1 ChemName	TPO4		1.000
AN1 Units	mg/L		1.000
Peak1	Cup:1 -> PRIM	5.00 PPM	4.466
Peak2	Cup:1 -> CALB	5.00 PPM	(4.859 /5.0)10² = 97% ✓
Peak3	Cup:2 -> CALB	3.00 PPM	(3.032 / 3.0)10² = 101% ✓
Peak4	Cup:3 -> CALB	2.00 PPM	(2.147 /2.0)10² = 107% ✓
Peak5	Cup:4 -> CALB	1.00 PPM	(1.121/1.0)10² = 112% ✓ r = 0.9991 ✓
Peak6	Cup:5 -> CALB	0.50 PPM	(0.585 /0.5)10² = ~~117%~~ 98 OK pk 11395
Peak7	Cup:6 -> CALB	0.10 PPM	(0.130 /0.1)10² = 130% ✓ high %R for cal STD
Peak8	Cup:1 -> HIGH	5.00 PPM	5.411
Peak9	Cup:4 -> LOW	1.00 PPM	1.148
Peak10	Cup:4 -> LOW	1.00 PPM	1.166
Peak11	Cup:7 -> ISMP	RINSE	1.365
Peak12	Cup:8 -> ISMP	ICV	(1.415 /1.25)10² = 113% ✓
Peak13	Cup:9 -> ISMP	RINSE	0.105
Peak14	Cup:9 -> ISMP	RINSE	0.010
Peak15	Cup:10 -> ISMP	ICB	-.092 <0.10 ✓
Peak16	Cup:10 -> ISMP	ICB	-.153 <0.10

checked pk 11.5.95

E. Bryan Rivers 4/24/96

0000832

TECHNICON TRAACS 800 SYSTEM 1-ANALYSIS REPORT FORM

TPO4

DESCRIPTION	RUN INFORMATION	LIMS ID		TEST #1	
Peak17	Cup:11 -> SAMP	WL1628-12		0.035	<0.10 sample only mg/L
Peak18	Cup:12 -> SAMP	WL1628-13		-.159	<0.10
Peak19	Cup:13 -> SAMP	WL1628-14		-.165	<0.10
Peak20	Cup:14 -> SAMP	WL1628-15	X10	-2.579	<0.10
Peak21	Cup:15 -> SAMP	WL1628-16	X10	-2.811	<0.10
Peak22	Cup:16 -> SAMP	WL1628-17		-.308	<0.10
Peak23	Cup:17 -> SAMP	WL1628-6	X10	-2.896	<0.10 <PQL
Peak24	Cup:18 -> SAMP	WL1628-7		-.341	<0.10
Peak25	Cup:19 -> SAMP	WL1628-8	X10	-.960	<0.10
Peak26	Cup:20 -> SAMP	WL1628-9	X10	1.250	—
Peak27	Cup:21 -> SAMP	WL1628-9SPIKE		1.004	— 1.250/1.25 NCEI/1
Peak28	Cup:22 -> ISMP	RINSE		1.218	
Peak29	Cup:23 -> ISMP	CCV		(1.451/1.25)10² = 116% ✓	
Peak30	Cup:24 -> ISMP	RINSE		0.012	
Peak31	Cup:24 -> ISMP	RINSE		-.128	
Peak32	Cup:25 -> ISMP	CCB		-.232	<0.10 ✓ <PQL
Peak33	Cup:25 -> ISMP	CCB		-.302	<0.10
Peak34	Cup:26 -> SAMP	WL1575-11		-.342	<0.10
Peak35	Cup:27 -> SAMP	WL1575-12		-.354	<0.10
Peak36	Cup:28 -> SAMP	WL1575-13		-.387	<0.10
Peak37	Cup:29 -> SAMP	WL1575-14	X10	2.520	
Peak38	Cup:30 -> SAMP	WL1575-15		-.520	<0.10
Peak39	Cup:31 -> SAMP	WL1575-16		-.436	<0.10
Peak40	Cup:32 -> SAMP	WL1576-2		-.380	<0.10
Peak41	Cup:33 -> SAMP	WL1576-3		-.460	<0.10

E. Boylan Rivers 6/24/96

TECHNICON TRAACS 800 SYSTEM 1-ANALYSIS REPORT FORM

TP04

DESCRIPTION	RUN INFORMATION	LIMS ID	TEST #1
Date of Run	11-02-95		1.000
Time of Run	12:27		1.000
Operator	CLM		1.000
Comment	SAMPLE RUN W/O		1.000
	DILUTION LOOP		1.000
	PQL: 0.10 mg/L		1.000
	EPA #365.4		1.000
ANI ChemName	TP04		1.000
ANI Units	mg/L		1.000
Peak1	Cup:1 -> PRIM	5.00 PPM	3.518
Peak2	Cup:1 -> CALB	5.00 PPM	(5.074/5.0)10² = 101% ✓
Peak3	Cup:2 -> CALB	3.00 PPM	(2.757/3.0)10² = 92% ✓
Peak4	Cup:3 -> CALB	2.00 PPM	(1.986/2.0)10² = 99% ✓
Peak5	Cup:4 -> CALB	1.00 PPM	(1.094/1.0) 10² = 109% ✓
Peak6	Cup:5 -> CALB	0.50 PPM	(0.669/0.5)10² = 134% ✓
Peak7	Cup:6 -> CALB	0.10 PPM	(0.258/0.1) = 258% ✓
Peak8	Cup:1 -> HIGH	5.00 PPM	4.826
Peak9	Cup:4 -> LOW	1.00 PPM	1.093
Peak10	Cup:4 -> LOW	1.00 PPM	1.105
Peak11	Cup:7 -> ISMP	RINSE	1.461
Peak12	Cup:8 -> ISMP	ICV	(1.403/1.25) 10² = 112% ✓
Peak13	Cup:9 -> ISMP	RINSE	0.202
Peak14	Cup:9 -> ISMP	RINSE	0.132
Peak15	Cup:10 -> ISMP	ICB	-.007 < 0.10 ✓
Peak16	Cup:10 -> ISMP	ICB	-.035 < 0.10 ✓

file name:
TP1102B

r = 0.9970 ✓

high %R
for cal STD

E. Bryan Rivers 6/24/96

11/02/95

T E C H N I C O N   TRAACS 800 SYSTEM   I-ANALYSIS REPORT FORM

TPO4

mg/L

DESCRIPTION	RUN INFORMATION	LIMS ID	TEST #1	
Peak17	Cup:11 -> SAMP	WL1628-18	-.053	<0.10
Peak18	Cup:12 -> SAMP	WL1628-19	-.053	<0.10
Peak19	Cup:13 -> SAMP	WL1628-20	-.067	<0.10
Peak20	Cup:14 -> SAMP	WL1628-21	-.054	<0.10 Sample only
Peak21	Cup:15 -> SAMP	WL1628-22	-.126	<0.10
Peak22	Cup:16 -> SAMP	WL1628-24	-.163	<0.10 <PQL
Peak23	Cup:17 -> SAMP	WL1628-25	-.212	<0.10
Peak24	Cup:18 -> SAMP	WL1641-1	5.221	
Peak25	Cup:19 -> SAMP	WL1641-2	5.887	
Peak26	Cup:20 -> SAMP	WL1641-3	4.867	
Peak27	Cup:21 -> SAMP	WL1628-24SPIKE	(1.432 - <0.10/1.25)10² = 115% ✓	
Peak28	Cup:22 -> ISMP	RINSE	1.571	
Peak29	Cup:23 -> ISMP	CCV	(1.406/1.25)10² = 112% ✓	
Peak30	Cup:24 -> ISMP	RINSE	0.336	
Peak31	Cup:24 -> ISMP	RINSE	0.112	
Peak32	Cup:25 -> ISMP	CCB	-.061	<0.10 ✓
Peak33	Cup:25 -> ISMP	CCB	-.117	<0.10
Peak34	Cup:26 -> SAMP	WL1641-4 x10	3.820	<PQL
Peak35	Cup:27 -> SAMP	WL1641-5	0.822	
Peak36	Cup:28 -> SAMP	WL1641-6	1.608	
Peak37	Cup:29 -> SAMP	WL1641-7	0.666	
Peak38	Cup:30 -> SAMP	WL1641-8	0.434	
Peak39	Cup:31 -> SAMP	WL1641-9	0.436	
Peak40	Cup:32 -> SAMP	WL1641-10	0.127	
Peak41	Cup:33 -> SAMP	WL1673-1	1.675	

E. Bryan Rivers 6/24/96

.n: 52

TP04
mg/L

ase drift correction made
arryover correction made
ain drift correction made

TP04

Init base		109	
1 CP	1 typ P	4.396 N	
(el Abs		0.15	
2 CP	1 typ C	4.770 N	/5 (10²) = 95
3 CP	2 typ C	2.945 S	/3 (10²) = 98
4 CP	3 typ C	2.123	/2 (10²) = 106
5 CP	4 typ C	1.259	/1.0 (10²) = 126
6 CP	5 typ C	0.6883	/0.5 (10²) = 138
7 CP	6 typ C	0.4402 N	/0.1 (10²) = 440
8 CP	1 typ H	8.153 P	
9 CP	4 typ L	1.151 N	
10 CP	4 typ L	1.193	
11 CP	7 typ I	1.358 N	ICV /1.25 (10²) = 109
12 CP	8 typ I	1.539	R
13 CP	9 typ I	0.4918	R
14 CP	9 typ I	0.06599	~~CCB~~ R
15 CP	10 typ I	-0.2330 N	CCB <0.10
16 CP	10 typ I	-0.2908 N	CCB
17 CP	11 typ S	-0.3873 N	1622-26
18 CP	12 typ S	0.2967 N	Spk 1622-26
19 CP	13 typ S	-0.05702	1628-4
20 CP	14 typ S	0.7933	Spike 1628-4
21 CP	15 typ S	-0.03439	1628-12
22 CP	16 typ S	0.7236	Spike 1628-12
23 CP	17 typ S	0.1170	1628-21
24 CP	18 typ S	1.210 N	Spike 1628 21
25 CP	19 typ S	0.3636	1552-1
26 CP	20 typ S	-0.04145	1628-23
27 CP	21 typ S	-0.2465 N	D
28 CP	22 typ S	0.7364	SP 1628 23
29 CP	23 typ I	1.212	CCV
30 CP	24 typ I	1.568 N	R
31 CP	25 typ I	0.2883	R
32 CP	25 typ I	-0.2887 N	R
33 CP	26 typ I	-0.6145 N	CCB
34 CP	26 typ I	-0.5814 N	CCB
35 CP	2 typ G	2.945	
Last base		240	

R = 0.9996
high %R for calibrations STD

>PQL

63.4%R

>PQL

mple statistics

nal level	cups	avg	std dev	cv
1 all	12	0.2895	0.487	168%

S statistics

nal level	cups	avg	std dev	cv
1 all	12	0.3765	0.837	222%

Anal 1: linear fit
Carryover factor: 13.80%.

art saved to file B:TP111095.CHR.

xt file B:TP111095.TXT has been saved to disk.

E. Bryan Rivers 6/24/96

NO_2 / NO_3 MGB 10/25/95

QuikChem AE Postrun Report for Tray 95102506.RS
Method: 2-CH NO2/NO3 0.05-10ppm

Concentrations determined from Full Chord

This report prepared on 10/25/95 at 01:59 pm.
This tray was run on 10/25/95 at 01:53 pm.
Operator: MGB Tray Template: Default

NO2/NO3/NOX BATCH 770 + MS for 772 → 776
INSTRUMENT ID: LA01 PACE NE, INC.

— Page 1 of report for tray 95102506.RS ————————————————

Continued FROM Run # 95102505 MGB 10/25/95

Cup#	Sample ID	1 NO3 & NO2 mg/L	2 NO2 mg/L	NO3-N mg/L	
106	45760-1S	0.902	0.471	0.430	
108	45757-23 MS	0.567	0.341	0.226	
109	45757-45 L2 MS	3.708	0.483	3.225	spike
110	45757-55 MS	0.867	0.463	0.404	
111	45757-72 MS	0.865	0.470	0.395	
114	CCV 1.0 MG/L NO3	1.006	0.006	1.000	100.8%
115	CCV 1.0 MG/L NO2	1.046	1.010	0.036	
116	CCB	-0.005	0.002	-0.005	

> Concentration was significantly greater than the high standard's concentration.
< Concentration was significantly less than the lowest non-zero standard's concentration.
< If the sample was diluted, its diluted concentration is less than the lowest non-zero standard's.

———— End of Report for Tray 95102506.RS ————

MS associated with Olin Mass. samples for $NO_3 + NO_2$ (WL-1628-4)
~~No data Qualified.~~

$$\frac{0.867 - 0.58}{1} * 100 = 29\%$$ EBR

$$\frac{0.58 - \cancel{0.32}^{ND}}{\frac{0.58 + \cancel{0.32}^{ND}}{2}} * 100 = NC$$ EBR

E. Bryan Rivas 6/21/96

RECEIVED JUL 21 1996

NO2 / NO3 MGB 10/25/95

QuikChem AE Postrun Report for Tray 95102503.RS
Method: 2-CH NO2/NO3 0.05-10ppm

Concentrations determined from Full Chord

This report prepared on 10/25/95 at 11:00 am.
This tray was run on 10/25/95 at 10:35 am.
Operator: MGB Tray Template: Default

NO2/NO3/NOX BATCH 772,773,774,775,776
INSTRUMENT ID: LA01 PACE NE, INC.

Cup#	Sample ID	1 NO3 & NO2 mg/L	2 NO2 mg/L	NO3-N mg/L	
205	LCS 0.5 MG/L NO3	0.508	0.001	0.508	101.6%
206	LCS 0.5 MG/L NO2	0.516	0.516	-0.001	103.2%
207	MBLANK 774	-0.007<	-0.001	-0.007	
210	45757-47	6.107>	0.006	6.107	~~Repeat, Air Bubbles~~ ③ Already Run 10/24 MGB 10/25/95
211	CCV 1.0 MG/L NO3	0.971	0.003	0.971	
212	CCV 1.0 MG/L NO2	1.026	1.020	0.006	
213	CCB	-0.009<	-0.001	-0.009	
214	45757-48	0.626	-0.000	0.626	
215	45757-49	0.360	0.001	0.360	
216	45757-50	0.321	0.001	0.321	
217	45757-51	0.142	0.002	0.142	
218	45757-52	0.412	0.002	0.412	
219	45757-53	0.583	0.002	0.583	Sample
220	45757-54	0.014<	0.006	0.014	Dup?
221	45757-55	0.016<	0.006	0.016	
222	45757-56	5.619>	0.005	5.619	Repeat
223	CCV 1.0 MG/L NO3	0.974	0.004	0.974	97.4%
224	CCV 1.0 MG/L NO2	1.028	1.020	0.008	102.8%
225	CCB	-0.008<	0.002	-0.008	
226	45757-57	6.158>	0.006	6.158	Repeat
227	45757-58	4.191	0.002	4.191	
228	45757-59	0.080	0.010	0.070	
229	45757-60	0.360	0.002	0.368	
230	45757-64	1.285	0.001	1.285	
231	45757-65	1.232	0.000	1.232	
232	45757-66	0.018<	0.006	0.018	
233	45757-67	2.268	0.010	2.258	
234	LCS 0.5 MG/L NO3	0.498	0.004	0.498	99.6%
235	CCV 1.0 MG/L NO3	1.012	0.004	1.012	101.2%

RECEIVED JUL 2 1 1996

> Concentration was significantly greater than the high standard's concentration.
< Concentration was significantly less than the lowest non-zero standard's concentration.
< If the sample was diluted, its diluted concentration is less than the lowest non-zero standard's.

Report for tray 95102503.RS continued on next page . . .

Client: Olin Chemicals, Work Order: WL1628 11/29/95

Out of criteria for NO_2+NO_3 Rep 1, which is the result of record does not agree w/ the lab dup or the unfilt sample & unfilt lab dup which are the same sample - bias 0.58 high.

Cannot tell which sample that the lab spiked ~~to act~~ This number may be wrong. Positive results estimated and DLs are biased low to be conservative. 6/24/96

PACE, Inc.
Maine Laboratory
Quality Control Report

Duplicate and Matrix Spike/Matrix Spike Duplicate Results

		DUPLICATE RESULTS						MATRIX SPIKE/MATRIX SPIKE DUPLICATE RESULTS									
Parameter	PACE Sample No	Units	Sample Measurements Rep 1	Sample Measurements Rep 2	Mean Conc	RPD (%)	Acceptance Range for RPD (%)	Units	Concentration or Quantity Sample Only	Spike Added	Sample +Spike Dup 1	Sample +Spike Dup 2	Matrix Spike Recovery (%) Sample +Spike Dup 1	Sample +Spike Dup 2	Acceptance Range (%)	RPD (%)	Acceptance Range (%)
Alkalinity	WL1628-2	mg/L	<20.0	<20.0	<20.0	NC	0-20										
	WL1628-10	mg/L	23.0	23.6	23.3	2.6	0-20										
	WL1628-19	mg/L	<20.0	<20.0	<20.0	NC	0-20										
COD	WL1628-2	mg/L	63.1	54.6	58.9	14.4	0-20	mg/L	47.3	75.0	118	NA	94.3	NA	75-125	NA	0-20
	WL1628-10	mg/L	41.2	34.7	38.0	17.1	0-20	mg/L	30.9	75.0	98.1	NA	89.6	NA	75-125	NA	0-20
	WL1628-19	mg/L	72.0	77.2	74.6	7.0	0-20	mg/L	54.0	75.0	128	NA	98.7	NA	75-125	NA	0-20
Nitrate+Nitrite	WL1628-2	mg/L	0.58	<0.05	0.32	NC	0-20	mg/L	0.58	1.0	0.87	NA	29.0 *	NA	75-125	NA	0-20
	WL1628-10	mg/L	<0.05	<0.05	<0.05	NC	0-20	mg/L	<0.05	1.0	0.87	NA	87.0	NA	75-125	NA	0-20
	WL1628-19	mg/L	<0.05	<0.05	<0.05	NC	0-20	mg/L	<0.05	1.0	0.87	NA	87.0	NA	75-125	NA	0-20
Nitrate - N	See Nitrate+Nitrite, Nitrite																
Nitrite - N	WL1628-2	mg/L	<0.500	<0.500	<0.500	NC	0-20	mg/L	<0.500	5.00	4.52	NA	90.4	NA	75-125	NA	0-20
	WL1628-10	mg/L	<0.050	<0.050	<0.050	NC	0-20	mg/L	<0.050	0.500	0.466	NA	93.2	NA	75-125	NA	0-20
	WL1628-19	mg/L	<0.500	<0.500	<0.500	NC	0-20	mg/L	<0.500	5.00	4.75	NA	95.0	NA	75-125	NA	0-20
Phosphate,Total	WL1628-2	mg/L	<0.100	<0.100	<0.100	NC	0-20	mg/L	<0.100	1.25	0.793	NA	63.4 *	NA	75-125	NA	0-20
	WL1628-10	mg/L	<0.100	<0.100	<0.100	NC	0-20	mg/L	<0.100	1.25	0.724	NA	57.9 *	NA	75-125	NA	0-20
	WL1628-19	mg/L	<0.100	<0.100	<0.100	NC	0-20	mg/L	<0.100	1.25	1.21	NA	96.8	NA	75-125	NA	0-20
TDS	WL1628-2	mg/L	178	189	184	6.0	0-20	MS/MSD Not Applicable for this Parameter									
	WL1628-10	mg/L	276	247	262	11.1	0-20	MS/MSD Not Applicable for this Parameter									
	WL1628-19	mg/L	210	180	195	15.4	0-20	MS/MSD Not Applicable for this Parameter									
DOC	WL1628-2	mg/L	19.3	18.4	18.9	4.8	0-20	mg/L	17.4	40.9	57.5	NA	98.0	NA	75-125	NA	0-20
	WL1628-10	mg/L	12.7	12.8	12.8	0.78	0-20	mg/L	11.4	40.9	52.9	NA	101	NA	75-125	NA	0-20
	WL1628-19	mg/L	20.5	21.2	20.9	3.4	0-20	mg/L	18.5	40.9	59.9	NA	101	NA	75-125	NA	0-20

RPD = Relative percent difference, which is the absolute value of the difference between two replicate results divided by the mean concentration then multiplied by 100%.

00000732

FORM3WC.XLS

PACE, Inc., Environmental Laboratories
Elements Section
Final Element Concentrations in Liguids (Duplicate & Spike)

Client:Olin Chemicals
Work Order:WL1628
Prep. Date:October 23, 1995
Sample Number:WL1628-2

SW846 Method 3010 (HCl)		**Replicate #1**	**Replicate #2**	**RPD (%)**	**SPIKE**			**Notes**
Element:	**Analysis Method**	**Conc. (mg/L)**	**Conc. (mg/L)**		**Conc. (mg/L)**	**Added (mg/L)**	**% Rec**	
Aluminum	200.7/6010	0.311	0.281	10%	2.02	2.00	85%	
Arsenic	200.7/6010	0.010	0.007	35%	1.78	2.00	89%	5
Barium	200.7/6010	0.022	0.020	10%	1.75	2.00	86%	
Calcium	200.7/6010	7.88	7.52	5%	8.57	2.50	28%	1
Chromium	200.7/6010	<0.015	<0.015	NC	0.171	0.200	86%	
Iron	200.7/6010	4.78	4.41	8%	4.45	1.00	-33%	2
Lead	200.7/6010	<0.005	<0.005	NC	0.420	0.500	84%	
Magnesium	200.7/6010	1.33	1.27	5%	5.51	5.00	84%	
Manganese	200.7/6010	0.514	0.491	5%	0.827	0.500	63%	1
Potassium	200.7/6010	~~5~~ 4.7	~~5~~ 4.6	~~0%~~ 2.1	27	25.0	88%	
Sodium	200.7/6010	27	~~27~~ 26	~~0%~~ 3.7	29	7.50	~~27%~~	1
Silicon	200.7/6010	2.1	2.1	0%	3.8	2.46	69%	

EBR 6/17/96

Notes: Please see duplicate and matrix spike footnote page for explanation of notations.

Fe - SA >4xs SR; therefore, no qual required

MO
6/24/96

E. Bryan Rives 6/24/96

0000073

PACE, Inc., Environmental Laboratories
Elements Section
Final Element Concentrations in Liguids (Duplicate & Spike)

Client:Olin Chemicals
Work Order:WL1628
Prep. Date:October 23, 1995
Sample Number:WL1628-19

SW846 Method 3010 (HCl)		Replicate #1	Replicate #2	RPD (%)	SPIKE			Notes
Element:	**Analysis Method**	**Conc. (mg/L)**	**Conc. (mg/L)**		**Conc. (mg/L)**	**Added (mg/L)**	**% Rec**	
Aluminum	200.7/6010	0.305	0.295	3%	2.32	2.00	103%	
Arsenic	200.7/6010	0.010	0.007	35%	1.87	2.00	106%	5
Barium	200.7/6010	0.020	0.017	16%	1.71	2.00	85%	
Calcium	200.7/6010	7.31	6.60	10%	8.01	2.50	28%	1
Chromium	200.7/6010	<0.015	<0.015	NC	0.199	0.200	100%	
Iron	200.7/6010	5.62	5.65	1%	6.73	1.00	111%	
Lead	200.7/6010	<0.005	<0.005	NC	0.446	0.500	100%	
Magnesium	200.7/6010	1.24	1.22	2%	5.62	5.00	88%	
Manganese	200.7/6010	0.485	0.488	1%	0.914	0.500	86%	
Potassium	200.7/6010	~~5~~ 4.8	~~4~~ 4.4	~~22%~~ 6.6	28	25.0	92%	5
Sodium	200.7/6010	25	22	13%	26	7.50	13%	1
Silicon	200.7/6010	2.1	2.0	5%	3.9	2.46	73%	1

Notes: Please see duplicate and matrix spike footnote page for explanation of notations.

As - Sample SW-12 (WL-1628) is estimated due to poor duplicate precision

Ca, Na and Si are estimated due to low matrix spike recoveries.

E. Bryan Rivers 6/21/96

FIELD DUPLICATE ANALYSIS

Site Name: Olin, Wilmington
Project Number: 00-7074-0102
Sampling Date(s): 10/18/95
Case/Order #: WL-1628

Liquid mg/l

Sample location or description	SW-17	SW-17 Field Dup	Relative Percent Difference
Sample number	WL-1628-5	WL-1628-6	
Sampling date	10/18/95	10/18/95	
unfilt./filt.	filt.	filt.	
Comments	Field Dup A	Field Dup B	
Aluminum	0.12	0.14	15
Arsenic	0.007	0.009	25
Barium	0.044	0.047	7
Calcium	110	120	9
Chromium		0.017	
Chromium, Hexavalent			
Chromium, Trivalent			
Iron	3.7	4.1	10
Lead			
Magnesium	6.8	7.1	4
Manganese	0.75	0.8	6
Potassium	4.4	4.6	4
Silicon	8	8	0
Sodium	140	150	7
Bicarbonate as HCO3	190	190	0
Carbonate as CO3			
Nitrate as N	6	6.7	11
Nitrite as N			
Diss. Organic Carbon	19	19	0
Phosphorus as P			
Solids-Filterable Residue (TDS)	930	860	7.8
COD	56	51	9.3

RPD ok

* Indicates control limit out of criteria.

When both samples are greater than 5x the PQL, use control limit of 30 percent RPD.
When one or both samples are less than 5x the PQL, use control limit of +/- 2x PQL.

E. Bryan Rivers 6/21/96

FDRPDF.XLS

FIELD DUPLICATE ANALYSIS

Site Name	Olin, Wilmington
Project Number	00-7074-0102
Sampling Date(s)	10/18/95
Case/Order #	WL-1628

Liquid mg/l

Sample location or description	SW-17	SW-17 Field Dup	Relative Percent Difference
Sample number	WL-1628-22	WL-1628-23	
Sampling date	10/18/95	10/18/95	
unfilt./filt.	unfilt.	unfilt.	
Comments	Field Dup A	Field Dup B	
Aluminum	0.73	0.84	14
Arsenic			
Barium	0.032	0.044	32 *
Calcium	89	120	30
Chromium	0.016	0.023	36
Chromium, Hexavalent			
Chromium, Trivalent	0.016	0.023	36
Iron	3.6	3.7	3
Lead			
Magnesium	5.3	7.3	32 *
Manganese	0.66	0.89	30
Potassium	3.5	4.3	21
Silicon	6	8	29
Sodium	110	150	31 *
Bicarbonate as HCO3	190	180	5.4
Carbonate as CO3			
Nitrate as N	7.5	6.8	9.8
Nitrite as N			
Total Organic Carbon	19	18	5.4
Phosphorus as P			
Solids-Filterable Residue (TDS)	910	860	5.6
COD	61	62	1.6

* Indicates control limit out of criteria.

When both samples are greater than 5x the PQL, use control limit of 30 percent RPD.
When one or both samples are less than 5x the PQL, use control limit of +/- 2x PQL.

E. Bryan Rivers 6/21/96

FDRPDU.XLS

Order WL-1628

SW-14	unfilt	filt	RPD
Bicarbonate	33	35	6
~~Nitrate~~	703 ~~ND~~	~~0.41~~	UO
TOC/DOC	6.4	6.8	6
TDS	240	260	8

Smith Env. Technologies Corporation established criteria:
- If sample values are greater than 100 the maximum acceptance RPD is 30 percent.
- If sample values are less than 100 the maximum acceptance RPD is 50 percent.

* Denotes a criteria outlier.

ND = non-detect

SW-12	unfilt	filt	RPD
Barium	0.02	0.022	10
Calcium	7.3	7.9	8
Magnesium	1.2	1.3	8
Manganese	0.49	0.51	4
Sodium	25	27	8
Nitrate	ND	0.58	

→ estimate both results

this result does not agree with the associated lab dups and unfilt result; therefore, it is biased high.

SW-17	unfilt	filt	RPD
Arsenic	ND	0.007	
Barium	0.032	0.044	32
Calcium	89	110	21
Iron	3.6	3.7	3
Magnesium	5.3	6.8	25
Manganese	0.66	0.75	13
Potassium	3.5	4.4	23
Silicon	6	8	29
Sodium	110	140	24
TDS	900	930	3

SW-17B	unfilt	filt	RPD
Arsenic	ND	0.009	
Barium	0.044	0.047	7
Iron	3.7	4.1	10
Potassium	4.3	4.6	7
TOC/DOC	18	19	5

SW-16	unfilt	filt	RPD
Barium	0.019	0.021	10
Calcium	280	290	4
Potassium	3.5	3.8	8
Sodium	90	93	3
TOC/DOC	11	12	9

PACE, Inc., Environmental Laboratories
Elements Section
Aqueous Laboratory Control Sample (LCSW)

Client: Olin Chemicals	
Work Order: WL1628	
Prep. Date: October 23, 1995	
QC Batch ID:LJ23ICW3	

Method 3010 (HCl) Element:	Measured Conc. (mg/L)	Analysis Date	True Value (mg/L)	Calculated Recovery (%)	Control Limits (%)	Notes
Aluminum	2.22	7-Nov-95	2.00	111%	80.0-120	
Arsenic	2.01	9-Nov-95	2.00	101%	80.0-120	
Barium	1.87	7-Nov-95	2.00	94%	80.0-120	
Calcium	2.67	9-Nov-95	2.50	107%	80.0-120	
Chromium	0.212	7-Nov-95	0.200	106%	80.0-120	
Iron	1.05	9-Nov-95	1.00	105%	80.0-120	
Lead	0.490	9-Nov-95	0.500	98%	80.0-120	
Magnesium	5.03	9-Nov-95	5.00	101%	80.0-120	
Manganese	0.548	7-Nov-95	0.500	110%	80.0-120	
Potassium	26	4-Nov-95	25.0	104%	80.0-120	
Sodium	8.0	4-Nov-95	7.50	107%	80.0-120	
Silicon	2.5	6-Nov-95	2.46	102%	80.0-120	

EBR 6/17/96

Notes:
1) LCS control limits are nominal values, effective 9/15/93
2) See cover letter for additional information. (if notated)
3) Analysis methods are the same as the analysis methods for the prep blank.

E. Bryan Riney 6/21/96

PACE, Inc., Environmental Laboratories
Elements Section
Aqueous Laboratory Control Sample (LCSW)

Client: Olin Chemicals
Work Order: WL1628
Prep. Date: October 23, 1995
QC Batch ID:LJ231CW2

ι0 (HCl)	Measured Conc. (mg/L)	Analysis Date	True Value (mg/L)	Calculated Recovery (%)	Control Limits (%)	Notes
	2.09	7-Nov-95	2.00	105%	80.0-120	
	2.03	7-Nov-95	2.00	102%	80.0-120	
	2.03	7-Nov-95	2.00	102%	80.0-120	
	2.49	7-Nov-95	2.50	100%	80.0-120	
	0.194	7-Nov-95	0.200	97%	80.0-120	
	1.05	7-Nov-95	1.00	105%	80.0-120	
	0.489	7-Nov-95	0.500	98%	80.0-120	
ı	5.14	7-Nov-95	5.00	103%	80.0-120	
:	0.496	7-Nov-95	0.500	99%	80.0-120	
	26	3-Nov-95	25.0	104%	80.0-120	
	8.0	3-Nov-95	7.50	107%	80.0-120	
	2.6	6-Nov-95	2.46	106%	80.0-120	

EBR 6/17/96

ɔntrol limits are nominal values, effective 9/15/93
ver letter for additional information. (if notated)
ɜis methods are the same as the analysis methods for the prep blank.

E. Bryan Rivers 6/21/96

SMITH

ENVIRONMENTAL TECHNOLOGIES CORPORATION

To:	Lil Pepin
Company:	Katahdin
Phone:	
Fax:	207-775-4029
From:	E. Bryan Rivers/Marybeth Ousey
Division/Office:	Plymouth Meeting, PA
Phone:	610-825-3800 X616
Fax:	610-834-8236
Date:	June 17, 1996
Pages including this cover page:	2

Comments:

SMITH ENVIRONMENTAL CORPORATE QUALITY ASSURANCE DEPARTMENT
DATA VALIDATION INQUIRY

To: Richard Wellman, Pace, Inc.
cc: Bruce Cushing, Project Manager, SMTH
DATA VALIDATION REPORT

Pace Laboratories Case No.: WL-1622 and WL-1628
Project Name: Semi-Annual Groundwater Monitoring - Wilmington, MA

Raw Data?

June 17, 1996

Dear Ms. Lil Pepin:

The following questions pertain the metals' data for WL-1622 and WL-1628:

- It appears that the nitrate results were not included in these data packages. Please provided page numbers of where the data for nitrite+nitrate and nitrate are located in the package or submit the data for data review.

If there is no inconvenience, we need this information as soon as possible. Please call us with any questions that you may have regarding this issue.

Thank you,
E. Bryan Rivers/Marybeth Ousey
Quality Assurance Scientist

Received Inquiry response. Raw data Submitted. Pages were not numbered
E. Bryan Rivers
6/21/96

RECEIVED
JUL 2 1 1996
6/21/96

ANALYTICAL SERVICES

FAX TRANSMISSION

Date: 06/14/96 Time: 13:37

To: E. Brian River

Smith Environmental Technologies Corp.

From: George Brewer, Metals Section Supv.

FAX No: 610-834-8236

Number of Pages (Including This Cover): 8

Comments:

From: Katahdin Analytical Services, Inc.
340 County Road No. 5
P.O. Box 720
Westbrook, ME 04098
Tel: (207) 874-2400 Fax: (207) 775-4029

RECEIVED
JUN 17 1996

Katahdin
ANALYTICAL SERVICES

MEMORANDUM

To: E. Brian Rivers, Smith Environmental Technologies Corp.
From: George Brewer, Metals Section Supervisor, Katahdin Analytical Services, Inc.
Date: 06/11/96
Subject: Response to your inquiry of 06/11/96 (Inquiry No. MET1) regarding metals data for WL-1628

We are providing the following responses to the questions about Work Order WL-1628 presented in your fax of 06/11/96. The section numbers below refer to the question numbers in your fax.

1) For PACE-ME Work Orders WL-1622 and WL-1628, potassium, sodium, and silicon were analyzed by PACE's New Hampshire laboratory on 11/04/96. The samples of Work Orders WL-1622 and WL-1628 were logged in under different sample numbers at the New Hampshire laboratory, and these sample numbers appear on the raw data. I am providing a table with this memo that cross-references PACE-ME sample numbers and PACE-NH sample numbers. In that table, the column headed "CLIENT ID." lists PACE-ME sample numbers, and the column headed "PACE #" lists the corresponding PACE-NH sample numbers.

   The potassium and sodium data are located immediately following the silicon raw data in the data package. Our copy of the package is not paginated, so I can't provide you with page numbers. Please call me if you need further help in locating the potassium and sodium data.

2) As noted above, silicon was analyzed by PACE-NH. A table cross-referencing PACE-ME and PACE-NH sample numbers is being provided with this memo.

3) This run was performed on the Thermo Jarrell Ash Trace ICP. This instrument employs a unique background correction technique to provide improved detection limits for lead, selenium, and antimony. For these elements, signal and background are measured simultaneously by monitoring each analytical wavelength in two spectral orders. The analytical channels for the two orders are standardized independently. After standardization, the weighted means of the analytical results for the two orders of each wavelength are reported. In the standardization report, standardization information for the 220.3 nm lead wavelength in the first order is identified

RECEIVED
JUN 17 1996

340 County Road No. 5
P.O. Box 720, Westbrook, ME 04098
Tel. (207) 874-2400 Fax (207) 775-4029

210 West Road, No. 5, Portsmouth, NH 03801
Tel: (603) 43[illegible] Fax: (603) 436-5356

Katahdin
ANALYTICAL SERVICES

by "2203/1", and that for the second order is identified by "2203/2". The wavelength identified as "Pb2203" is a "dummy" channel where the weighted mean results of the two orders are reported. Therefore, the "Pb2203" channel is listed on the standarization report as "NOT STANDARDIZED". The same convention is followed for the 196.0 nm selenium wavelength and the 206.8 nm antimony wavelength.

I hope this provides the information that you need. Please call me if you have further questions.

RECEIVED
JUN 17 1996

340 County Road No. 5
P. O. Box 720, Westbrook, ME 04098
Tel: (207) 874-2400 Fax: (207) 775-4029

210 West Road No. 5, Portsmouth, NH 03801
Tel: (603) 431-5777 Fax: (603) 436-3356

SAMPLE TABLE

CLIENT ID.	MATRIX	PACE #	PARAMETERS
PBW-LJ31ICW1	DIGEST	45856-001	K, Na
LCSW-LJ31ICW1	DIGEST	45856-002	K, Na
WL1719-1	DIGEST	45856-003	K, Na
WL1646-1	DITEST	45856-004	K
WL1646-2	DIGEST	45856-005	K
PBS-LJ31ICS1	DIGEST	45856-006	K, Na
LCSS-LJ31ICS1	DIGEST	45656-007	K, Na
WL1641-1	DIGEST	45856-008	K, Na
WL1641-2	DIGEST	45856-009	K, Na
WL1641-3	DIGEST	45856-010	K, Na
WL1641-3D	DIGEST	45856-011	K, Na
WL1641-3S	DIGEST	45856-012	K, Na
PBW-LK02ICW1	DIGEST	45856-013	K, Na
LCSW-LK02ICW1	DIGEST	45856-014	K, Na
WL1641-4	DIGEST	45856-015	K, Na
WL1641-5	DIGEST	45856-016	K, Na
WL1641-5D	DIGEST	45856-017	K, Na
WL1641-5S	DIGEST	45856-018	K, Na
WL1641-6	DIGEST	45856-019	K, Na
WL1641-7	DIGEST	45856-020	K, Na
WL1641-8	DIGEST	45856-021	K, Na
WL1641-9	DIGEST	45856-022	K, Na
WL1641-10	DIGEST	45856-023	K, Na
PBW-LJ20ICW2	DIGEST	45856-024	Si
LCSW-LJ20ICW2	DIGEST	45856-025	Si

RECEIVED JUN 17 1996

pace INCORPORATED

SAMPLE TABLE
(CONTINUED)

CLIENT ID.	MATRIX	PACE #	PARAMETERS
WL1622-1	DIGEST	45856-026	Si
WL1622-2	DIGEST	45856-027	Si
WL1622-3	DIGEST	45856-028	Si
WL1622-4	DIGEST	45856-029	Si
WL1622-5	DIGEST	45856-030	Si
WL1622-6	DIGEST	45856-031	Si
WL1622-7	DIGEST	45856-032	Si
WL1622-8	DIGEST	45856-033	Si
WL1622-9	DIGEST	45856-034	Si
WL1622-10	DIGEST	45856-035	Mn, Si
WL1622-11	DIGEST	45856-036	Si
WL1622-12	DIGEST	45856-037	Si
WL1622-13	DIGEST	45856-038	Si
WL1622-14	DIGEST	45856-039	Si
WL1622-15	DIGEST	45856-040	Si
WL1622-16	DIGEST	45856-041	Si
PBW-LJ23ICW1	DIGEST	45856-042	K, Si, Na
LCSW-LJ23ICW1	DIGEST	45856-043	K, Si, Na
WL1622-17	DIGEST	45856-044	K, Si, Na
WL1622-18	DIGEST	45856-045	K, Si, Na
WL1622-19	DIGEST	45856-046	K, Si, Na
WL1622-20	DIGEST	45856-047	K, Si, Na
WL1622-21	DIGEST	45856-048	K, Si, Na
WL1622-22	DIGEST	45856-049	K, Si, Na

RECEIVED
JUN 17 1996
pace
INCORPORATED
THE ASSURANCE OF QUALITY

SAMPLE TABLE
(CONTINUED)

CLIENT ID.	MATRIX	PACE #	PARAMETERS
WL1622-23	DIGEST	45856-050	K, Si, Na
WL1622-24	DIGEST	45856-051	K, Si, Na
WL1622-25	DIGEST	45856-052	K, Si, Na
WL1622-26	DIGEST	45856-053	K, Si, Na
WL1622-27	DIGEST	45856-054	K, Si, Na
WL1622-28	DIGEST	45856-055	K, Si, Na
WL1622-29	DIGEST	45856-056	K, Si, Na
WL1622-30	DIGEST	45856-057	K, Si, Na
WL1622-31	DIGEST	45856-058	K, Si, Na
WL1622-32	DIGEST	45856-059	K, Si, Na
PBW-LJ23ICW2	DIGEST	45856-060	K, Si, Na
LCSW-LJ23ICW2	DIGEST	45856-061	K, Si, Na
WL1628-1	DIGEST	45856-062	K, Si, Na
WL1628-2	DIGEST	45856-063	K, Si, Na
WL1628-3	DIGEST	45856-064	K, Si, Na
WL1628-4	DIGEST	45856-065	K, Si, Na
WL1628-5	DIGEST	45856-066	K, Si, Na
WL1628-6	DIGEST	45856-067	K, Si, Na
WL1628-7	DIGEST	45856-068	K, Si, Na
WL1628-8	DIGEST	45856-069	K, Si, Na
WL1628-9	DIGEST	45856-070	K, Si, Na
WL1628-10	DIGEST	45856-071	K, Si, Na
WL1628-11	DIGEST	45856-072	K, Si, Na
WL1628-12	DIGEST	45856-073	K, Si, Na

RECEIVED
JUN 17 1996
pace INCORPORATED

0000006

SAMPLE TABLE
(CONTINUED)

CLIENT ID.	MATRIX	PACE #	PARAMETERS
WL1628-13	DIGEST	45856-074	K, Si, Na
WL1628-14	DIGEST	45856-075	K, Si, Na
WL1628-15	DIGEST	45856-076	K, Si, Na
WL1628-16	DIGEST	45856-077	K, Si, Na
WL1628-17	DIGEST	45856-078	K, Si, Na
WL1628-18	DIGEST	45856-079	K, Si, Na
WL1628-19	DIGEST	45856-080	K, Si, Na
PBW-LJ23ICW3	DIGEST	45856-081	K, Si, Na
LCSW-LJ23ICW3	DIGEST	45856-082	K, Si, Na
WL1628-20	DIGEST	45856-083	K, Si, Na
WL1628-21	DIGEST	45856-084	K, Si, Na
WL1628-22	DIGEST	45856-085	K, Si, Na
WL1628-23	DIGEST	45856-086	K, Si, Na
WL1628-24	DIGEST	45856-087	K, Si, Na
WL1628-25	DIGEST	45856-088	K, Si, Na
PBS-LJ27ICS1	DIGEST	45856-089	K, Na
LCSS-LJ27ICS1	DIGEST	45856-090	K, Na
WL1673-1	DIGEST	45856-091	K, Na
WL1673-2	DIGEST	45856-092	K, Na
WL1673-3	DIGEST	45856-093	K, Na
WL1673-4	DIGEST	45856-094	K, Na
WL1673-5	DIGEST	45856-095	K, Na
PBW-LJ26ICW1	DIGEST	45856-096	Na
LCSW-LJ26ICW1	DIGEST	45856-097	Na

RECEIVED
JUN 17 1996

pace INCORPORATED

0000007

SAMPLE TABLE
(CONTINUED)

CLIENT ID.	MATRIX	PACE #	PARAMETERS
WL1676-2	DIGEST	45856-098	Na

06.14.1996 13:40 P.

SMITH

APPENDIX B

Wet Chemistry Data Validation Summary

Project Name: Olin Wilmington MA
Project No.: CC-7074-0102
Project Manager: Bruce Cushing
Laboratory: Pace Inc.

Case No./SDG: WL1628/ 45718
Sampling Date(s): 10/18/95
Reviewed By: Danelle Leauby Marybeth Cs
Completion Date: June 24, 1996

Compounds/Analytes ortho-phosphate, Cl, SO_4, Br, Ammonia-N, Sulfide ☐ Other

Methods: ☒ MCAWW, ASTM ☐ Other

Matrix: ☐ soil/solid (mg/Kg) ☒ aqueous (mg/L) surface water only

The following table indicates the data validation criteria examined, problems identified, and QA action.

Data Validation Criteria:	accept	FYI	qualify	comments
Holding Times	✓	✓		Br, Cl, SO_4, Ammonia - 28 days all met Sulfide - 7 days Ophos 48 hrs
Calibration (r and y-intercept)	✓	✓		Sulfide - NA; Cl - lachat - see letter; Ammonia - 2pt SO_4 & Br 3 cases lab CC & y int okay - see letter
Inital Calibration Verification	✓	✓		all met lab criteria for SO_4, Br, Cl, Sulfide ammonia tophos
Continuing Calibration Verification	✓	✓		② all met lab criteria
Initial Calibration Blank	✓	✓		all below MDL for all analytes
Continuing Calibration Blank	✓	✓		all below MDL for all analytes
Laboratory Blank	✓	✓		①
Blank Spike Results	✓	✓		①
Field Blank		✓		NA
Matrix Spike Results	✓	✓		met all lab criteria for all analytes
Laboratory Duplicate Results	✓	✓		met all lab criteria for all analytes
Field Duplicate Results		✓	✓	ammonia - okay; sulfate & sulfide qualified all others okay
Sample Result Verification		✓	✓	all okay except Br elevated due to matrix/dilutions; Ammonia - filtered versus unfiltered
Other:				
Other:				

General Comments:

Some samples analyzed @ 1:10 & straight. Lab reported results from 1:10 when straight analysis above upper linear calibration range for Sulfate.

① KIB used for MB, ICV used as LCS for some analytes

② Some CCV & CCB results not summarized

③ Unknown peaks in Br analyses near RT of Br

④ Low level std high %RS for Br & SO_4

NA - Not applicable

NR - Not reviewed

QA Scientist D. Leauby Date 6/24/96

Field Identification: SW-17 (FILT) Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Sulfide, dissolved (mg/L)	BDL	1	45718-005	10/20/95	313	376.1/1
Chloride, dissolved (mg/L)	160	1	45718-022	10/23/95	767	325.1/1
Sulfate, dissolved (mg/L)	340	10	45718-022	10/20/95	669A	300.0/1
Bromide, dissolved (mg/L)	BDL +	~~1~~ 10	45718-022	10/24/95	670A	300.0/1
Ortho Phosphate, dissolved (mg/L as P)	BDL	0.02	45718-022	10/19/95	204	365.2/1
Ammonia-N, dissolved (mg/L as N)	170	5	45718-037	10/21/95	588	350.2/1

Field Identification: SW FIELD REP (FILT) SW-17 DUP Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Sulfide, dissolved (mg/L)	BDL	1	45718-006	10/20/95	313	376.1/1
Chloride, dissolved (mg/L)	160	1	45718-023	10/23/95	767	325.1/1
Sulfate, dissolved (mg/L)	510	10	45718-023	10/20/95	669A	300.0/1
Bromide, dissolved (mg/L)	BDL +	~~1~~ 10	45718-023	10/24/95	670A	300.0/1
Ortho Phosphate, dissolved (mg/L as P)	BDL	0.02	45718-023	10/19/95	204	365.2/1
Ammonia-N, dissolved (mg/L as N)	160	5	45718-038	10/21/95	588	350.2/1

Field Identification: SW-16 (FILT) Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Sulfide, dissolved (mg/L)	BDL	1	45718-007	10/20/95	313	376.1/1
Chloride, dissolved (mg/L)	78	1	45718-024	10/23/95	767	325.1/1
Sulfate, dissolved (mg/L)	1000	10	45718-024	10/20/95	669A	300.0/1
Bromide, dissolved (mg/L)	BDL +	~~1~~ 10	45718-024	10/24/95	670A	300.0/1
Ortho Phosphate, dissolved (mg/L as P)	BDL	0.02	45718-024	10/19/95	204	365.2/1
Ammonia-N, dissolved (mg/L as N)	97	5	45718-039	10/21/95	588	350.2/1

+ = elevated due to dilution

Field Identification: GW-500 (FILT) * Matrix: WATER

DML 6/25/96

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Sulfide, dissolved (mg/L)	BDL	1	45718-008	10/20/95	313	376.1/1
Chloride, dissolved (mg/L)	BDL	1	45718-025	10/23/95	767	325.1/1
Sulfate, dissolved (mg/L)	2	1	45718-025	10/24/95	670A	300.0/1
Bromide, dissolved (mg/L)	BDL	1	45718-025	10/24/95	670A	300.0/1
Ortho Phosphate, dissolved (mg/L as P)	BDL	0.02	45718-025	10/19/95	204	365.2/1
Ammonia-N, dissolved (mg/L as N)	BDL	0.05	45718-040	10/21/95	588	350.2/1

* not validated

pace INCORPORATED THE ASSURANCE OF QUALITY

Field Identification: SW-14 (FILT) Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Sulfide, dissolved (mg/L)	BDL	1	45718-001	10/20/95	313	376.1/1
Chloride, dissolved (mg/L)	72	1	45718-018	10/23/95	767	325.1/1
Sulfate, dissolved (mg/L)	28	10	45718-018	10/20/95	669A	300.0/1
Bromide, dissolved (mg/L)	BDL	1	45718-018	10/24/95	670A	300.0/1
Ortho Phosphate, dissolved (mg/L as P)	BDL	0.02	45718-018	10/19/95	204	365.2/1
Ammonia-N, dissolved (mg/L as N)	0.08	0.05	45718-033	10/21/95	588	350.2/1

Field Identification: SW-12 (FILT) Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Sulfide, dissolved (mg/L)	BDL	1	45718-002	10/20/95	313	376.1/1
Chloride, dissolved (mg/L)	37	1	45718-019	10/23/95	767	325.1/1
Sulfate, dissolved (mg/L)	25	10	45718-019	10/20/95	669A	300.0/1
Bromide, dissolved (mg/L)	BDL	1	45718-019	10/24/95	670A	300.0/1
Ortho Phosphate, dissolved (mg/L as P)	BDL	0.02	45718-019	10/19/95	204	365.2/1
Ammonia-N, dissolved (mg/L as N)	BDL	0.05	45718-034	10/21/95	588	350.2/1

Field Identification: SW-12 (FILT/DUP) Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Sulfide, dissolved (mg/L)	BDL	1	45718-003	10/20/95	313	376.1/1
Chloride, dissolved (mg/L)	37	1	45718-020	10/23/95	767	325.1/1
Sulfate, dissolved (mg/L)	26	10	45718-020	10/20/95	669A	300.0/1
Bromide, dissolved (mg/L)	BDL	1	45718-020	10/24/95	670A	300.0/1
Ortho Phosphate, dissolved (mg/L as P)	BDL	0.02	45718-020	10/19/95	204	365.2/1
Ammonia-N, dissolved (mg/L as N)	0.05	0.05	45718-035	10/21/95	588	350.2/1

Field Identification: SW-12 (FILT/MS) Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Sulfide, dissolved (mg/L)	34	1	45718-004	10/20/95	313	376.1/1
Chloride, dissolved (mg/L)	88	1	45718-021	10/23/95	767	325.1/1
Sulfate, dissolved (mg/L)	140	10	45718-021	10/20/95	669A	300.0/1
Bromide, dissolved (mg/L)	11	1	45718-021	10/24/95	670A	300.0/1
Ortho Phosphate, dissolved (mg/L as P)	0.48	0.02	45718-021	10/19/95	204	365.2/1
Ammonia-N, dissolved (mg/L as N)	0.99	0.05	45718-036	10/21/95	588	350.2/1

pace. INCORPORATED THE ASSURANCE OF QUALITY

Field Identification: GW-50S (FILT) (*)   Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Sulfide, dissolved (mg/L)	BDL	1	45718-017	10/20/95	313	376.1/1
Chloride, dissolved (mg/L)	72	1	45718-032	10/23/95	767	325.1/1
Sulfate, dissolved (mg/L)	200	10	45718-032	10/20/95	669A	300.0/1
Bromide, dissolved (mg/L)	BDL	1	45718-032	10/24/95	670A	300.0/1
Ortho Phosphate, dissolved (mg/L as P)	BDL	0.02	45718-032	10/19/95	204	365.2/1
Ammonia-N, dissolved (mg/L as N)	68	0.5	45718-051	10/21/95	588	350.2/1

(*) not required to validate

Field Identification: SW-14 (UNFILT)   Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Sulfide (mg/L)	BDL	1	45718-052	10/20/95	314	376.1/1
Chloride (mg/L)	72	1	45718-060	10/23/95	767	325.1/1
Sulfate (mg/L)	29	10	45718-060	10/20/95	669A	300.0/1
Bromide (mg/L)	BDL	1	45718-060	10/24/95	671A	300.0/1
Ortho Phosphate (mg/L as P)	BDL	0.02	45718-060	10/19/95	205	365.2/1
Ammonia-N (mg/L as N)	BDL	0.05	45718-068	10/23/95	589	350.2/1

Field Identification: SW-12 (UNFILT)   Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Sulfide (mg/L)	2	1	45718-053	10/20/95	314	376.1/1
Chloride (mg/L)	35	1	45718-061	10/23/95	767	325.1/1
Sulfate (mg/L)	25	10	45718-061	10/20/95	669A	300.0/1
Bromide (mg/L)	BDL	1	45718-061	10/24/95	671A	300.0/1
Ortho Phosphate (mg/L as P)	BDL	0.02	45718-061	10/19/95	205	365.2/1
Ammonia-N (mg/L as N)	0.1	0.05	45718-069	10/23/95	589	350.2/1

Field Identification: SW-12 (UNFILT/DUP)   Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Sulfide (mg/L)	3	1	45718-054	10/20/95	314	376.1/1
Chloride (mg/L)	35	1	45718-062	10/23/95	767	325.1/1
Sulfate (mg/L)	29	10	45718-062	10/20/95	669A	300.0/1
Bromide (mg/L)	BDL	1	45718-062	10/24/95	671A	300.0/1
Ortho Phosphate (mg/L as P)	BDL	0.02	45718-062	10/19/95	205	365.2/1
Ammonia-N (mg/L as N)	0.10	0.05	45718-070	10/23/95	589	350.2/1

pace INCORPORATED THE ASSURANCE OF QUALITY

Field Identification: SW-12 (UNFILT/MS)　　Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Sulfide (mg/L)	45	1	45718-055	10/20/95	314	376.1/1
Chloride (mg/L)	85	1	45718-063	10/23/95	767	325.1/1
Sulfate (mg/L)	120	10	45718-063	10/20/95	669A	300.0/1
Bromide (mg/L)	11	1	45718-063	10/24/95	671A	300.0/1
Ortho Phosphate (mg/L as P)	0.47	0.02	45718-063	10/19/95	205	365.2/1
Ammonia-N (mg/L as N)	0.97	0.05	45718-071	10/23/95	589	350.2/1

Field Identification: SW-17 (UNFILT)　　Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Sulfide (mg/L)	5	1	45718-056	10/20/95	314	376.1/1
Chloride (mg/L)	160	1	45718-064	10/23/95	767	325.1/1
Sulfate (mg/L)	520	10	45718-064	10/20/95	669A	300.0/1
Bromide (mg/L)	BDL (+)	~~1~~ 10	45718-064	10/24/95	671A	300.0/1
Ortho Phosphate (mg/L as P)	BDL	0.02	45718-064	10/19/95	205	365.2/1
Ammonia-N (mg/L as N)	~~90~~ 89	10	45718-072	10/23/95	589	350.2/1

MO 6/19/96

Field Identification: SW FIELD REP (UNFILT) SW-17DUP　　Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Sulfide (mg/L)	BDL	1	45718-057	10/20/95	314	376.1/1
Chloride (mg/L)	160	1	45718-065	10/23/95	767	325.1/1
Sulfate (mg/L)	540	10	45718-065	10/20/95	669A	300.0/1
Bromide (mg/L)	BDL (+)	~~1~~ 10	45718-065	10/24/95	671A	300.0/1
Ortho Phosphate (mg/L as P)	BDL	0.02	45718-065	10/19/95	205	365.2/1
Ammonia-N (mg/L as N)	~~90~~ 93	10	45718-073	10/23/95	589	350.2/1

MO 6/19/96

Field Identification: SW-16 (UNFILT)　　Matrix: WATER

Parameter	Result	Reporting Limit	Lab No.	Date Analyzed	QC Batch	Method/Ref.
Sulfide (mg/L)	BDL	1	45718-058	10/20/95	314	376.1/1
Chloride (mg/L)	78	1	45718-066	10/23/95	767	325.1/1
Sulfate (mg/L)	1100	50	45718-066	10/24/95	670A	300.0/1
Bromide (mg/L)	BDL (+)	~~1~~ 10	45718-066	10/24/95	671A	300.0/1
Ortho Phosphate (mg/L as P)	BDL	0.02	45718-066	10/19/95	205	365.2/1
Ammonia-N (mg/L as N)	~~60~~ 62	10	45718-074	10/23/95	589	350.2/1

MO 6/19/96

(+) = elevated due to dilution

DML 6/25/96

pace INCORPORATED THE ASSURANCE OF QUALITY

PACE INC. NE-NH LAB
QUALITY CONTROL
Sulfate
Method: EPA-600 375.4

QC Batch: 669A For: 45718
Matrix: WATER

METHOD BLANK:

	Result mg/L
	< 1.00

LABORATORY CONTROL SAMPLES:

	True Value mg/L	Observed Value mg/L	Accuracy Recovery %
LCS1	50.0	47.530	95.1

FIELD SAMPLE:

Precision

Lab No.	Replicate 1 mg/L	Replicate 2 mg/L	Average mg/L	Relative Percent Difference %
45718-61	24.90	28.90	~~26.90~~	14.9
45718-19	24.8	25.70	25.25	3.6

Accuracy

Lab No.	Replicate 1 mg/L	Spike Added mg/L	Spike Found mg/L	Recovery %
45718-61	24.90	100	115.90	91.0
45718-19	24.8	100	138.4	113.6

* results above taken from 45718-21 S + 45718-63 S

DML 6/24/96

pace. INCORPORATED THE ASSURANCE OF QUALITY

SO4

EM 10/26/95

Sulfate

PACE N.E.
REV01

Batch ~~xxxx~~ 669A
Method EPA-600 375.4
Det. Limit 1
Matrix WATER

IDC Sample	# Code	ANAL Inits	PREP Date Prepared	DATE Date Analyzed	IONINIT Init Vol	IONFIN Fin Vol mls	DFM Dilut. Fact.	# LCS/SPK LCS# Level	VAL Obs Conc.	#	# Rptd Conc.	# % Rec	# % Diff
M-Blank	Sa	CF	10/20/95	10/20/95	1	1	1		0	<	1		
LCSA	LCS1	CF	10/20/95	10/20/95	1	1	1	50	47.53		47.53	95.06	
45718-61	S1	CF	10/20/95	10/20/95	1	1	10		2.49		24.9		
45718-61D	SD	CF	10/20/95	10/20/95	1	1	10		2.89		28.9		14.87
45718-61S	MS	CF	10/20/95	10/20/95	1	1	10	100	11.57		115.9	91	
	MSD								0	<	ERR	ERR	ERR
45718-18	S2	CF	10/20/95	10/20/95	1	1	10		2.84		28.4		
45718-19	S3	CF	10/20/95	10/20/95	1	1	10		2.48		24.8		
45718-19D	SD	CF	10/20/95	10/20/95	1	1	10		2.57		25.7		3.5644
45718-19S	MS	CF	10/20/95	10/20/95	1	1	10	100	13.84		138.4	113.6	
45718-20	S4	CF	10/20/95	10/20/95	1	1	10		2.57		25.7		
45718-21	S5	CF	10/20/95	10/20/95	1	1	10	100	13.84		138.4	113.6	
45718-22	S6	CF	10/20/95	10/20/95	1	1	10		34.37		343.7		
45718-23	S7	CF	10/20/95	10/20/95	1	1	10		50.92		509.2		
45718-24	S8	CF	10/20/95	10/20/95	1	1	10		100.9		1009		
45718-26	S9	CF	10/20/95	10/20/95	1	1	10		3.49		34.9		
45718-28	S10	CF	10/20/95	10/20/95	1	1	10		33.04		330.4		
45718-29	S11	CF	10/20/95	10/20/95	1	1	10		35.46		354.6		
45718-30	S12	CF	10/20/95	10/20/95	1	1	10		60.87		608.7		
45718-32	S13	CF	10/20/95	10/20/95	1	1	10		20.09		200.9		
45718-60	S14	CF	10/20/95	10/20/95	1	1	10		2.91		29.1		
45718-64	S15	CF	10/20/95	10/20/95	1	1	10		51.61		516.1		
45718-65	S16	CF	10/20/95	10/20/95	1	1	10		54.26		542.6		
45718-62	S17	CF	10/20/95	10/20/95	1	1	10		2.89		28.9		
45718-63	S18	CF	10/20/95	10/20/95	1	1	10	100	11.59		115.9	91	
	S19								0	<	ERR		
	S20								0	<	ERR		

SQC (45718-61 / 61D)

QC (45718-19D)

Sent MB 10/25/95

"dup"

-20 is Dup of -19
-21 is spike of -19
for QC + Disk purposes

-62 is Dup of -61
-63 is spike of -61
for QC + Disk purposes

Sample results taken from 1:10 analysis some of above sample results could be ~~reported~~ reported from the straight analysis.

REVIEWED BY
TR 10/26/95

DML 6/24/96

ICV	ICV	<	ERR	ERR
CCV	CCV	<	ERR	ERR
CCV	CCV	<	ERR	ERR
CCV	CCV	<	ERR	ERR

PACE INC. NE-NH LAB
QUALITY CONTROL
Bromide by Ion Chromatography
Method: 300.0 EPA-600/4-84-017

QC Batch: 670A For: 45718
Matrix: WATER

METHOD BLANK:

Result mg/L
< 1.00

LABORATORY CONTROL SAMPLES:

	True Value mg/L	Observed Value mg/L	Accuracy Recovery %
LCS1	50.0	47.290	94.6

FIELD SAMPLE:

Precision Lab No.	Replicate 1 mg/L	Replicate 2 mg/L	Average mg/L	Relative Percent Difference %
45718-19	< 1.00	< 1.00	~ NC	NC

Accuracy Lab No.	Replicate 1 mg/L	Spike Added mg/L	Spike Found mg/L	Recovery %
45718-19	< 1.00	10	~~11.30~~ 11.29	~~113.0~~ 112.9

NC = Not calculable due to result below detection limit.

using all sig fig shown

DMC 6/24/96

pace INCORPORATED THE ASSURANCE OF QUALITY

PACE N.E.

Bromide by Ion Chromatography

Batch 670A
Method 300.0 EPA-600/4-84-017
Det. Limit 1
Matrix WATER

IDC Sample	# Code	ANAL Inits	DATE Date Analyzed	IONINIT Initial Vol	IONFIN Final Vol	DFM Dilut. Fact.	# LCS SPK LEV	VAL Obs Value	#	# Rept Conc	# % Rec	# % Diff	
M-Blank SW-12	BW	MB	10/24/95	1	1	1		0	<	1			Cont MB 10/26/95
LCSA	LCS1	MB	10/24/95	1	1	1	50	47.29		47.29	94.58		
LCSB	LCS2									ERR	ERR		
45718-19 SQC	S1	MB	10/24/95	1	1	1		0	<	1			~~Image~~ <1 No Peak present un undil. sample
45718-19D	SD	MB	10/24/95	1	1	1		0	<	1			no peak present
451718-19S	MS	MB	10/24/95	1	1	1	10	~~11.3~~ 1.29		~~11.3~~ 1.29	~~113~~ 112.9		
	MSD								<	ERR	ERR	ERR	
45696-6	S2	MB	10/24/95	1	1	50		0	<	50			
45696-7	S3	MB	10/24/95	1	1	50		0	<	50			
45696-11	S4	MB	10/24/95	1	1	20		0	<	20			
45696-13 SW-14	S5	MB	10/24/95	1	1	20		0	<	20			
45718-18	S6	MB	10/24/95	1	1	1		0	<	1			no peak present
45718-22 17	S7	MB	10/24/95	1	1	1		0	<	1			unintegrated peak - use <10 results?
45718-23 17Dup	S8	MB	10/24/95	1	1	1		0	<	~1			
45718-24 16	S9	MB	10/24/95	1	1	1		0	<	1			
45718-25	S10	MB	10/24/95	1	1	1		0	<	1			
45718-26	S11	MB	10/24/95	1	1	1		0	<	1			
45718-27 SQC	S12	MB	10/24/95	1	1	1		0	<	1			
45718-27D	SD	MB	10/24/95	1	1	1		0	<	1		0	
45718-27S	MS	MB	10/24/95	1	1	1	10	11		11	110		DM 6/24/97
45718-28	S13	MB	10/24/95	1	1	1		0	<	1			
45718-29	S14	MB	10/24/95	1	1	1		0	<	1			
45718-30	S15	MB	10/24/95	1	1	1		0	<	1			
451718-31	S16	MB	10/24/95	1	1	1		0	<	1			
45718-32	S17	MB	10/24/95	1	1	1		0	<	1			
45718-20	S18	MB	10/24/95	1	1	1		0	<	1			
45718-21	S19	MB	10/24/95	1	1	1	10	11.3		11.3	113		
45718-45	S20	MB	10/24/95	1	1	1		0	<	1			
45718-46	S21	MB	10/24/95	1	1	1	10	11		11	110		

-20 is d-p of -19
-21 is spk of -19
QC + O.ise purposes.
-45 is d-p of -27
-46 is spk of -27

REVIEWED BY
[illegible] 10/26/95

PACE INC. NE-NH LAB
QUALITY CONTROL
Bromide by Ion Chromatography
Method: 300.0 EPA-600/4-84-017

QC Batch: 671A For: 45718
Matrix: WATER

METHOD BLANK:

	Result mg/L
	< 1.00

no peak present

LABORATORY CONTROL SAMPLES:

	True Value mg/L	Observed Value mg/L	Accuracy Recovery %
LCS1	50.0	45.400	90.8

sig fig not exercised why show them

FIELD SAMPLE:

Precision

Lab No.	Replicate 1 mg/L	Replicate 2 mg/L	Average mg/L	Relative Percent Difference %
45718-61	< 1.00	< 1.00	NC	NC

Accuracy

Lab No.	Replicate 1 mg/L	Spike Added mg/L	Spike Found mg/L	Recovery %
45718-61	< 1.00	10	10.65	106.5

NC = Not calculable due to result below detection limit.

DML 6/24/96

result taken from 3rd calibration for Br provided. 2nd cal of this sample did not recover

pace. INCORPORATED THE ASSURANCE OF QUALITY

BR

PACE N.E.

Bromide by ion Chromatography

Batch 671A
Method 300.0 EPA-600/4-84-017
Det. Limit 1
Matrix WATER

Sent

IDC Sample	# Code	ANAL Inits	DATE Date Analyzed	IONINIT Initial Vol	IONFIN Final Vol	DFM Dilut. Fact.	# LCS SPK LEV	VAL Obs Value	#	# Rept Conc	# % Rec	# % Diff
M-Blank	Ex	MB	10/24/95	1	1	1		0	<	1		
LCSA	LCS1	MS	10/24/95	1	1	1	50	45.4		45.4	90.80	
LCSB	LCS2								<	ERR	ERR	
45718-61	S1	MS	10/24/95	1	1	1		0	<	1		
45718-61D	SD	MS	10/24/95	1	1	1		0	<	1		
45718-61S	MS	MS	10/24/95	1	1	1	10	10.65		10.65	106.5	
	MSD									ERR	ERR	ERR
45718-60	S2	MS	10/24/95	1	1	1		0	<	1		
45718-64	S3	MS	10/24/95	1	1	1		0	<	1		
45718-65	S4	MS	10/24/95	1	1	1		0	<	1		
45718-66	S5	MS	10/24/95	1	1	1		0	<	1		
45718-67	S6	MS	10/24/95	1	1	1		0	<	1		
45719-62	S7	MS	10/24/95	1	1	1		0	<	1		
45719-63	S8	MS	10/24/95	1	1	1	10	10.65		10.65	106.5	
	S9									ERR		
	S10								<	ERR		
	S11								<	ERR		
	S12									ERR		
	S13									ERR		
	S14								<	ERR		
	S15								<	ERR		
	S16								<	ERR		
	S17								<	ERR		
	S18								<	ERR		
	S19								<	ERR		
	S20								<	ERR		

no peak present MB 10/25/95

No peak

(+)

No peak

unit peak - use 10X for Br ?

-62 is dupl of -61
-63 is spk of -61
for QC + Dixe purposes

(+) result taken from 10/25/95 3rd cal for Br, provided not taken from 2nd cal

REVIEWED BY
[signature] 10/26/95

[signature] 6/24/96

PACE INC. NE-NH LAB
QUALITY CONTROL
Chloride
Method: 325.1 EPA-600/4-84-017

QC Batch: 767
Matrix: WATER

METHOD BLANK:

	Result mg/L
	< 1.00

LABORATORY CONTROL SAMPLES:

	True Value mg/L	Observed Value mg/L	Accuracy Recovery %
LCS1	200.0	197.872	98.9

FIELD SAMPLE:

Precision

Lab No.	Replicate 1 mg/L	Replicate 2 mg/L	Average mg/L	Relative Percent Difference %
45718-~~18~~ ~~18~~ 19	37.38	37.38	37.38	0.0
45718-61	34.68	35.10	34.89	1.2

Accuracy

Lab No.	Replicate 1 mg/L	Spike Added mg/L	Spike Found mg/L	Recovery %
45718-19	37.38	50	88.16	101.6
4578-61	34.68	50	84.93	100.6

unfiltered MS and Lab. dup. not summar. No data qual.
MKO
6/17/96

pace INCORPORATED THE ASSURANCE OF QUALITY

PACE INC. NE-NH LAB
QUALITY CONTROL
Ortho Phosphate
Method: 365.2 EPA 600/4-84-017

QC Batch: 204
Matrix: WATER

METHOD BLANK:

Result mg/L
< 0.02

LABORATORY CONTROL SAMPLES:

	True Value mg/L	Observed Value mg/L	Accuracy Recovery %
LCS1	0.5	0.481	~~96.3~~ 96.2

FIELD SAMPLE:

Precision

Lab No.	Replicate 1 mg/L	Replicate 2 mg/L	Average mg/L	Relative Percent Difference %
~~45718-27~~ 45718-19	< 0.02	< 0.02	NC	NC

Accuracy

Lab No.	Replicate 1 mg/L	Spike Added mg/L	Spike Found mg/L	Recovery %
~~45718-27~~ 45718-19	< 0.02	0.5	~~0.48~~ 0.479	~~96.3~~ 95.8

NC = Not calculable due to result below detection limit.

DML 6/24/96

pace INCORPORATED THE ASSURANCE OF QUALITY

PACE INC. NE-NH LAB
QUALITY CONTROL
Ortho Phosphate
Method: 365.2 EPA 600/4-84-017

QC Batch: 205
Matrix: WATER

METHOD BLANK:

Result mg/L
< 0.02

LABORATORY CONTROL SAMPLES:

	True Value mg/L	Observed Value mg/L	Accuracy Recovery %
LCS1	0.5	0.464	92.9 92.8

FIELD SAMPLE:

Precision Lab No.	Replicate 1 mg/L	Replicate 2 mg/L	Average mg/L	Relative Percent Difference %
45718-61	< 0.02	< 0.02	~ NC	NC

Accuracy Lab No.	Replicate 1 mg/L	Spike Added mg/L	Spike Found mg/L	Recovery %
45718-61	< 0.02	0.5	0.472	94.4

NC = Not calculable due to result below detection limit.

DMG 12/4/96

pace. INCORPORATED THE ASSURANCE OF QUALITY

PACE INC. NE-NH LAB
QUALITY CONTROL
Sulfide
Method: EPA-600 376.1 / SW846 9030

QC Batch: 313
Matrix: WATER

METHOD BLANK:

	Result mg/L
	< 1.00

LABORATORY CONTROL SAMPLES:

	True Value mg/L	Observed Value mg/L	Accuracy Recovery %
LCS1	38.9	37.785	97.0

FIELD SAMPLE:

Precision

Lab No.	Replicate 1 mg/L	Replicate 2 mg/L	Average mg/L	Relative Percent Difference %
45718-~~10~~ 2	~~2.41~~ <1	~~2.08~~ <1	~~2.25~~ N/C	~~14.8~~ N/C

Accuracy

Lab No.	Replicate 1 mg/L	Spike Added mg/L	Spike Found mg/L	Recovery %
45718-~~10~~ 2	~~2.41~~ <1	38.9418	~~35.28~~ 33.75	~~84.4~~ 86.7

MS/MS and dup not from the Olin MA site. They were replace w/ site-spec. QC. No data qual.
MO
6/19/96

pace. INCORPORATED THE ASSURANCE OF QUALITY

PACE INC. NE-NH LAB
QUALITY CONTROL
Ammonia
Method: 350.2 EPA-600/4-84-017

QC Batch: 588
Matrix: WATER

METHOD BLANK:

	Result mg/L
	< 0.05

LABORATORY CONTROL SAMPLES:

	True Value mg/L	Observed Value mg/L	Accuracy Recovery %
LCS1	1.0	0.941	94.1

FIELD SAMPLE:

Precision

Lab No.	Replicate 1 mg/L	Replicate 2 mg/L	Average mg/L	Relative Percent Difference %
45718-~~42~~ 34	~~4.97~~ <0.05	~~4.56~~ 0.051	~~4.77~~ N/C	~~8.6~~ N/C

Accuracy

Lab No.		Replicate 1 mg/L	Spike Added mg/L	Spike Found mg/L	Recovery %
45718-~~42~~ 34	SNR	~~4.97~~ <0.05	1	~~6.12~~ 0.994	~~115.0~~ 99.4

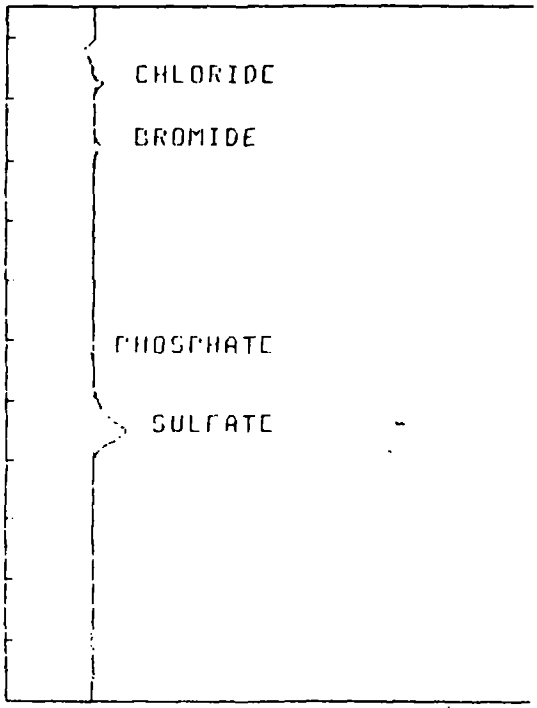
MS & lab dup. was not from the Olin MA site. No data qual.
MO
6/17/96

SNR=Spike not required. Sample greater than four times spike level.

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0 n
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802 µ
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : 1PPM ANSTN1345 Report No :468.00

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 1/ 1



1st CAC

Sequence File: /DATA/DIONEX/SEQUENCE/IC10_20.SEQ
Method File : /DATA/DIONEX/METHOD/IC5582.MTH
Result File : /DATA/DIONEX/RESULT/IC0525500.RES

Run Time : 12.03 Minutes Injected on 1240 20Oct1995
Report Time : 1255 20Oct1995
Run Status : RunStatusOK
EndOffBaseline

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	1.71	1.68	6.00E-06	8731	PV	1.0154	CHLORIDE
2	2.73	2.70	9.70E-06	7685	VP	2.3811	BROMIDE
3	6.19	5.98	8.11E-04	-110	VP	1.7922	PHOSPHATE
4	7.47	#7.36	1.02E-06	31223	PP	5.9351	SULFATE

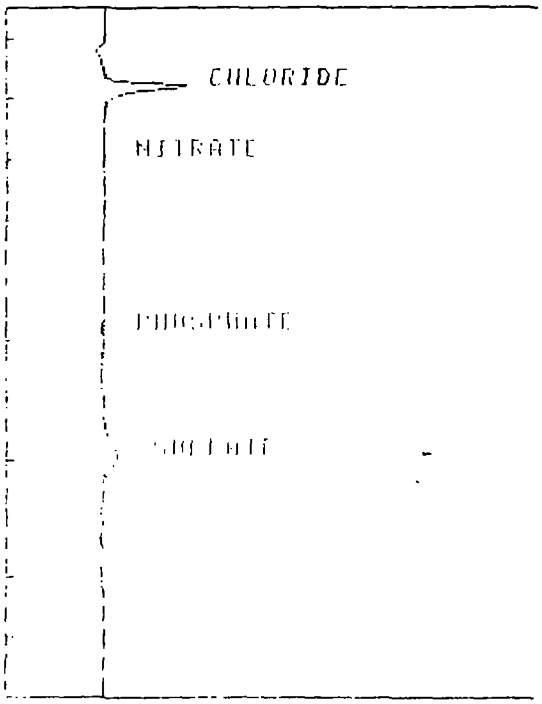
1.0PPM std responding
grtr than 1.0
biassed high low level hits

DM 6/24/96

PACE INCORPORATED

US EPA 600 4/79/020, 1979 REVISED 1983, METHOD 300.0 n
DIONEX 30uS, PLOT SCALE: 200000 - 000000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802 µ
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : 45718-19 L10 Report No :505.00

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 38 39



Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_20.SEQ 1st CAL
Method File : /DATA/DIONEX/METHOD/IC558.MTH
Result File : /DATA/DIONEX/RESULT/IC0525537.RES

Run Time : 12.00 Minutes Injected on 2056 20Oct1995
Report Time : 2108 20Oct1995
Run Status : RunStatusOK
EndOffBaseline

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	1.74	1.69	6.00E-06	81403	PP	3.9313	CHLORIDE
2	2.92	3.01	4.51E-05	-92	PP	2.4101	NITRATE
3	5.77	6.01	8.11E-04	-562	PV	-22.9866	PHOSPHATE
4	7.90	#7.40	1.02E-06	14581	PP	2.4788	SULFATE

Br BDL 10
MB
10/23/95

ICL1628-2/
SW12-filt

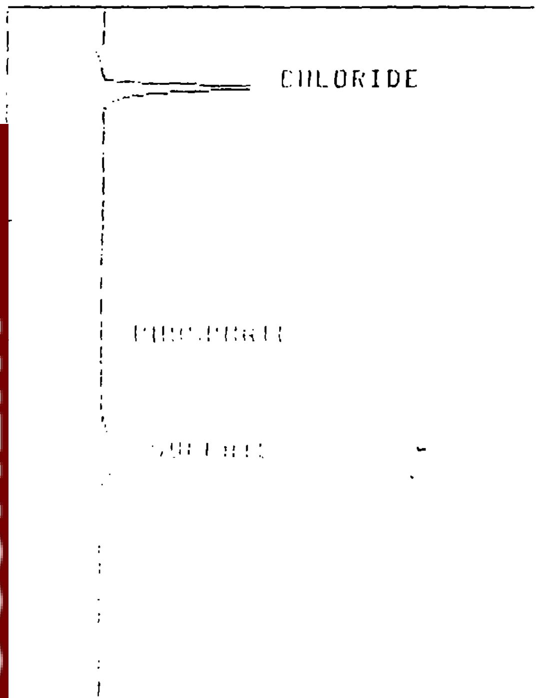
No Br peak, Br <10

DML
6/24/96

PACE INCORPORATED

US EPA 600 - 4/79/020. 1979 REVISED 1983. METHOD 300.0
DIONEX 30uS. PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : 45718-21 L10 Report No :509.03

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 42/ 42



Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_20.SEQ
Method File : /DATA/DIONEX/METHOD/IC558.MTH
Result File : /DATA/DIONEX/RESULT/IC0929941.RES

1st CAL

Run Time : 12.03 Minutes Injected on 2148 20Oct1995
Report Time : 1038 24Oct1995
Run Status : RunStatusOK
EndOffBaseline

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	1.75	1.75	6.00E-06	147102	PP	6.6318	CHLORIDE
2	5.97	6.23	8.11E-04	-99	PP	-24.2975	PHOSPHATE
3	7.92	#7.67	1.02E-06	26793	PP	4.8986	SULFATE

MB 10/24/95

WL1628-4

NO Br peak Br<10

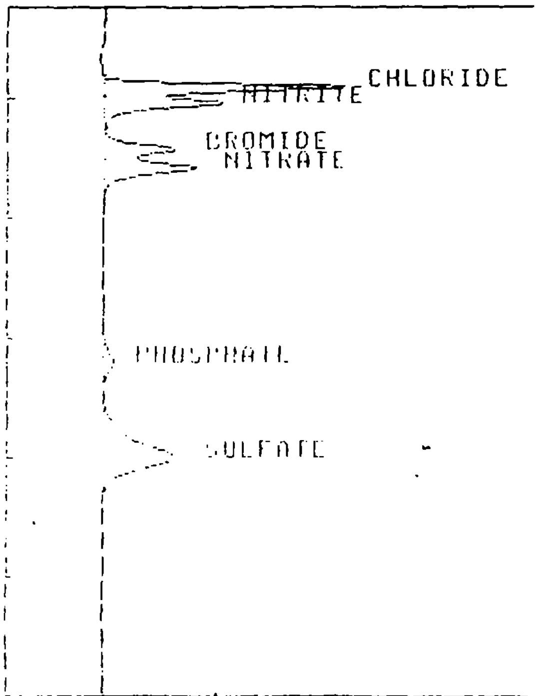
Spiked sample where Br.?

DML
6/24/96

PACE INCORPORATED

US EPA 600 - 4/79/020. 1979 REVISED 1983. METHOD 300.0 n
DIONEX 30uS. PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3. 2.0 ml/min. SEE QA SOP #5802 u
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : 45718-215 L10 Report No :510.00

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 43/ 43



1st CAL

Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_20.SEQ
Method File : /DATA/DIONEX/METHOD/IC558.MTH
Result File : /DATA/DIONEX/RESULT/IC0525542.RES

Run Time : 12.03 Minutes Injected on 2200 20Oct1995
Report Time : 2213 20Oct1995
Run Status : RunStatusOK
EndOffBaseline

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	1.76	1.69	6.00E-06	236880	PV	9.8639	CHLORIDE
2	2.02	1.97	1.91E-05	117491	VV	3.4290	NITRITE
3	2.79	2.72	9.70E-06	69630	VV	8.5926	BROMIDE x1.1 = 94.45/10 = 94.5
4	3.10	3.02	4.51E-05	91110	VP	5.1639	NITRATE
5	6.36	6.03	8.11E-04	9823	PV	-.8683	PHOSPHATE
6	7.94	#7.43	1.02E-06	68731	VV	12.5812	SULFATE x1.1 = 13.84 = 8?5

kil 8-28-4

Use this for 45718-19 MS results instead of results lab used-?
doesn't matter both acceptable
mb 10/23/95

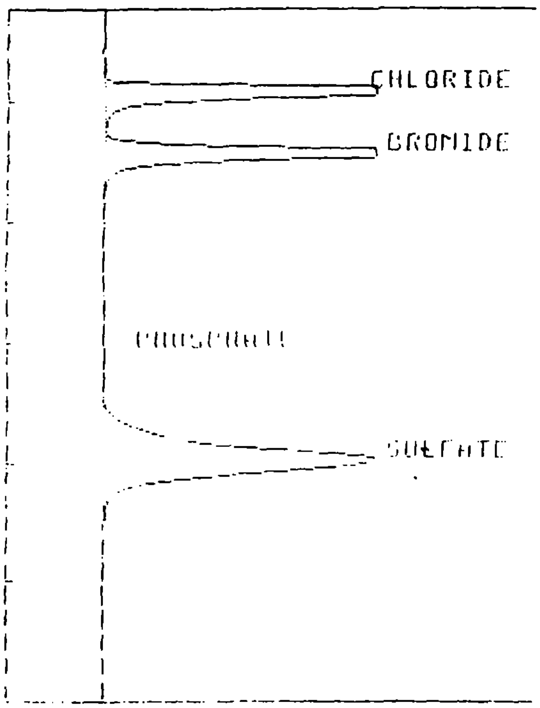
DM 5/24/96

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0 n
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802 µ
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328

Sample Name : CCV Report No :511.00

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 44/ 44



Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_20.SEQ
Method File : /DATA/DIONEX/METHOD/IC558.MTH
Result File : /DATA/DIONEX/RESULT/IC0525543.RES

1st CAL

Run Time : 12.03 Minutes Injected on 2213 20Oct1995
Report Time : 2226 20Oct1995
Run Status : RunStatusOK
EndOffBaseline

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	~~1.77~~	1.70	6.00E-06	564362	PV	25.4224	CHLORIDE
2	2.80	2.73	9.70E-06	436451	VV	47.1815	BROMIDE 94.4%
3	6.06	6.04	8.11E-04	-322	PP	-23.4571	PHOSPHATE
4	7.89	7.43	1.02E-06	263480	PV	47.8969	SULFATE 95.8%

MB 10/23/95

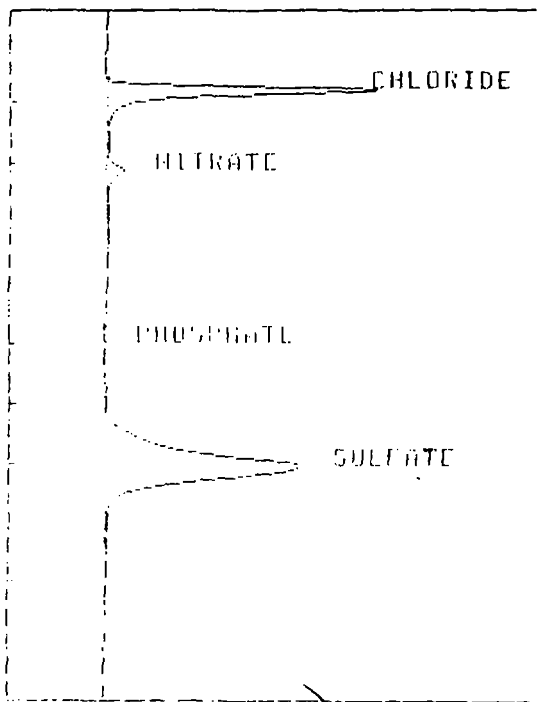
Compare RTS

DMC 6/24/96

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0 n
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802 µ
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26320
Sample Name : 45718-22 L10 Report No :513.00

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 46/ 46



1st CAL

Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_20.SEQ
Method File : /DATA/DIONEX/METHOD/IC598.MTH
Result File : /DATA/DIONEX/RESULT/IC0525545.RES

Run Time : 12.03 Minutes Injected on 2239 20Oct1995
Report Time : 2253 20Oct1995
Run Status : RunStatusOK
EndOffBaseline

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	1.76	1.70	6.00E-06	273538	PV	12.3171	CHLORIDE
2	3.08	3.02	4.51E-05	16739	VV	2.9952	NITRATE
3	5.96	6.05	8.11E-04	231	VV	-23.6451	PHOSPHATE
4	8.00	#7.44	1.02E-06	136750	VV	34.3677	SULFATE

MB 10/23/95

(LL1628-5)

No Br peak Br C10

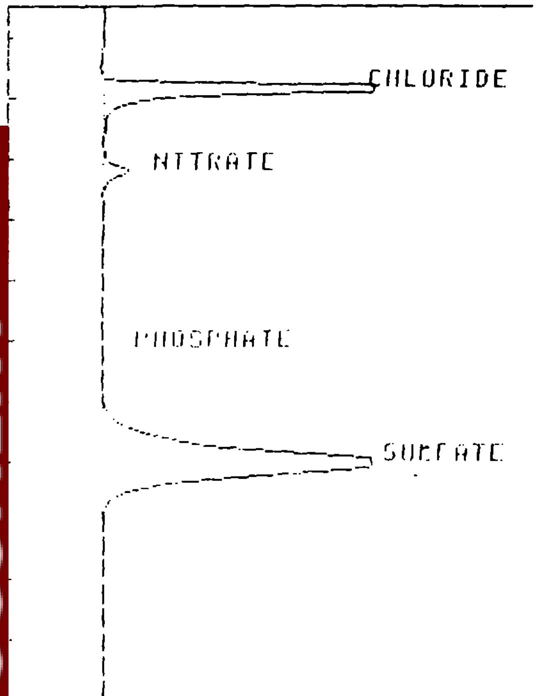
DML 6/24/96

0000052

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983. METHOD 300.0 n
DIONEX 30uS, PLOT SCALE: 200000 - 000000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802 μ
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : 45710-23 L10 Report No :515.00

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 48/ 48



Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_20.SEQ
Method File : /DATA/DIONEX/METHOD/IC558.MTH
Result File : /DATA/DIONEX/RESULT/IC0525547.RES

1st CAL

Run Time : 12.03 Minutes Injected on 2305 20Oct1995
Report Time : 2317 20Oct1995
Run Status : RunStatusOK
EndOffBaseline

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	1.78	1.70	6.00E-06	396772	PV	17.9792	CHLORIDE
2	3.14	3.03	4.51E-05	24225	VV	3.1350	NITRATE
3	6.07	6.06	8.11E-04	-548	PV	-23.6555	PHOSPHATE
4	7.96	#7.45	1.02E-06	278725	PV	50.9240	SULFATE

MB 10/23/95

10/16/95-LC

NO Br peak
Br <10-

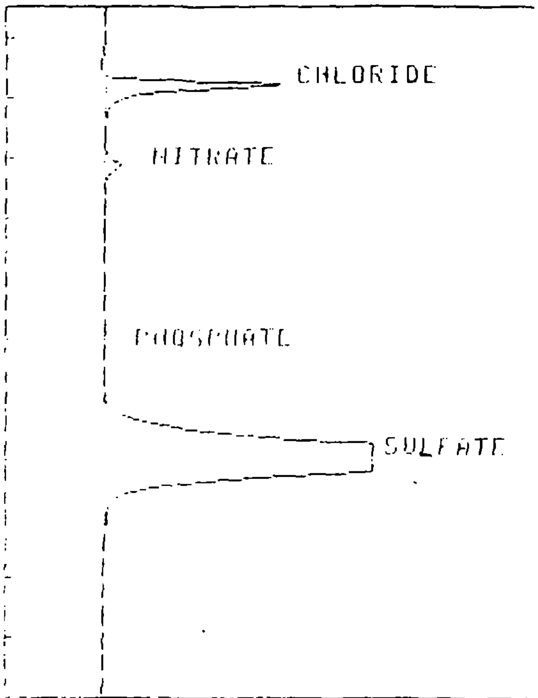
DM 6/24/96

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0 n
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na_2CO_3/ 1.7mm $NaHCO_3$, 2.0 ml/min. SEE QA SOP #5B02 µ
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328

Sample Name : 45718-24 L10 Report No :517.00

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 50/ 50



Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_20.SEQ 1st CAC
Method File : /DATA/DIONEX/METHOD/IC658.MTH
Result File : /DATA/DIONEX/RESULT/IC0525549.RES

Run Time : 12.03 Minutes Injected on 2331 20Oct1995
Report Time : 2343 20Oct1995
Run Status : RunStatusOK
EndOffBaseline

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	1.73	1.70	6.00E-06	168461	PV	8.4300	CHLORIDE
2	3.09	3.03	4.51E-05	16430	VV	2.9340	NITRATE
3	6.10	6.06	8.11E-04	-157	PV	~~-24.4213~~	PHOSPHATE
4	7.88	*7.46	1.02E-06	547721	FF	100.8966	SULFATE

mB
10/23/95

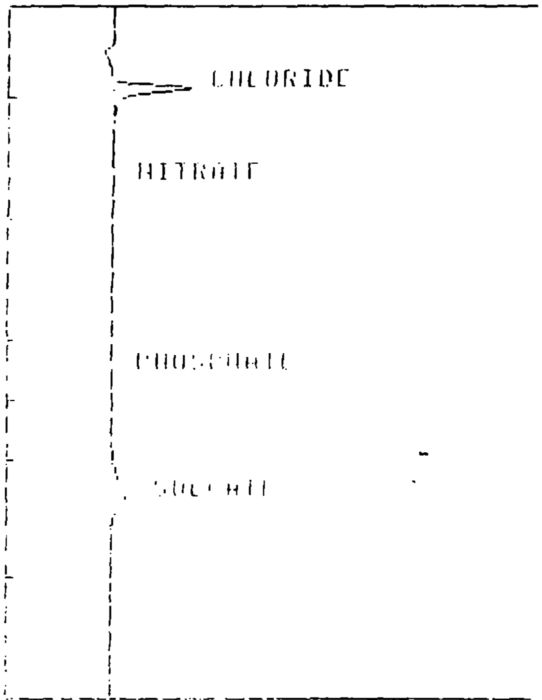
WL1023-7

No Br peak
Br <10
DMC 1/24/96

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0 n
DIONEX 30uS. PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802 µ
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : 45718-~~4~~61 L10 Report No :545.00

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 78/ 78



Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_20.SEQ 1st cal
Method File : /DATA/DIONEX/METHOD/IC558.MTH
Result File : /DATA/DIONEX/RESULT/IC0525577.RES

Run Time : 12.03 Minutes Injected on 0531 21Oct1995
Report Time : 0543 21Oct1995
Run Status : RunStatusOK
EndOffBaseline

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-tw	Factor	Height	Code	MG/L	Name
1	1.79	1.75	6.00E-06	74100	PV	3.6408	CHLORIDE
2	3.33	3.11	4.51E-05	-217	PP	2.4183	NITRATE
3	6.44	6.22	8.11E-04	49	PV	-24.3964	PHOSPHATE
4	8.59	#7.66	1.02E-06	13154	PV	2.4737	SULFATE

MB 10/24/95

No Br peak
Br < 10.

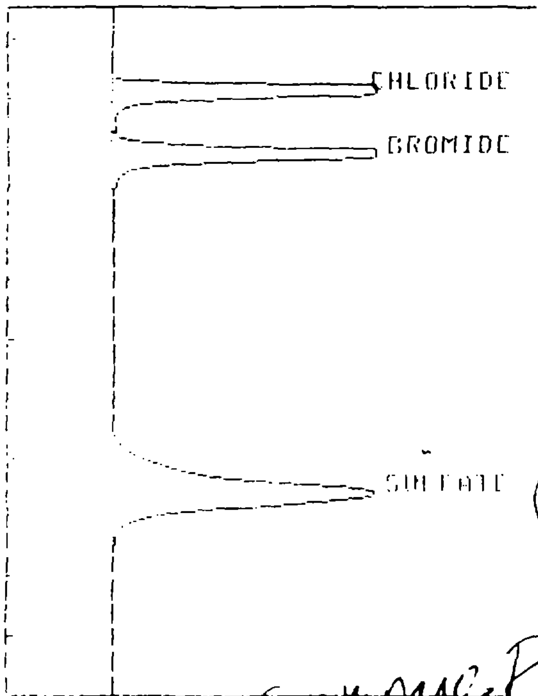
WL1628-19

DMA 6/24/96

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : CCV Report No :547.00

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 80, 80



Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_20.SEQ 1st CAL
Method File : /DATA/DIONEX/METHOD/IC558.MTH
Result File : /DATA/DIONEX/RESULT/IC0525579.RES

Run Time : 12.03 Minutes Injected on 0557 21Oct1995
Report Time : 0609 21Oct1995
Run Status : RunStatusOK
EndOffBaseline

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-tm	Factor	Height	Code	MG/L	Name	
1	1.80	1.75	6.00E-06	557092	PV	26.7366	CHLORIDE	
2	2.88	2.82	9.70E-06	450631	VV	49.9430	BROMIDE	99.8%
3	8.53	7.68	1.02E-06	255210	VV	50.2418	SULFATE	100.5%

MB
10/24/95

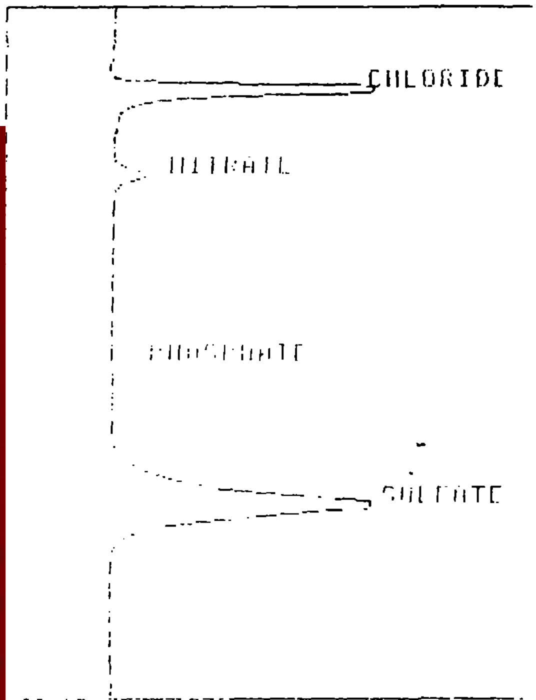
Compare RB ~~BAP~~

DM 4/24/96

PACE INCORPORATED

US EPA 600 · 4/79/020, 1979 REVISED 1983, METHOD 300.0
DIONEX 30uS, PLOT SCALE: 200000 · 000000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5002
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : 45718-64 L10 Report No :553.20

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 86/ 86



1st CAL

Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_20.SEQ
Method File : /DATA/DIONEX/METHOD/IC559.MTH
Result File : /DATA/DIONEX/RESULT/IC0525585.RES

Run Time : 12.05 Minutes Injected on 0714 210ct1995
Report Time : 0853 240ct1995
Run Status : RunStatusOK
EndOffBaseline

Dil-Fact : 100.005 Sample Amt: 0.0000 Standard Amt: 1.0000

PK#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	1.80	1.79	6.00E-06	385742	PV	18.8432	CHLORIDE
2	3.22	3.07	4.51E-05	32759	VV	3.5459	NITRATE
3	6.32	6.14	8.11E-04	56	PV	-24.5458	PHOSPHATE
4	8.69	*9.11	1.03E-05	256505	VV	51.6082	SULFATE

MB
10/24/95

No Br peak
Br L10

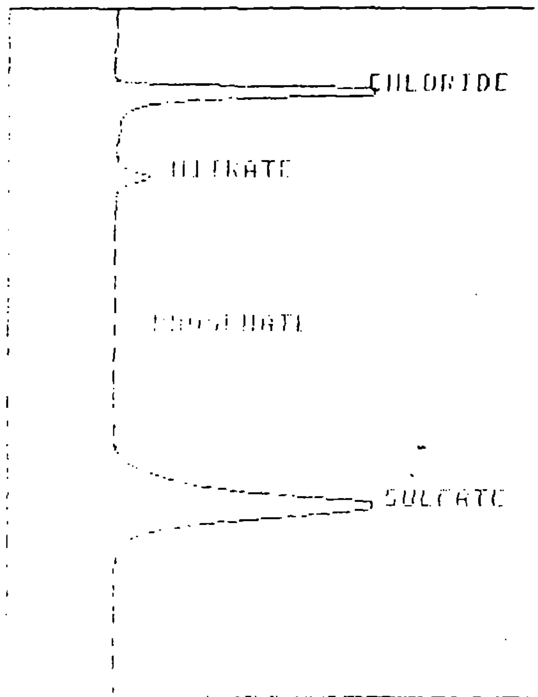
WL1628-22

DM 6/24/96

PACE INCORPORATED

US EPA 600 4/79/020, 1979 REVISED 1983, METHOD 300.0
DIONEX 30uS. PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : 45718-65 L10 Report No :555.20

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 88/ 88



Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_20.SEQ 1st CAE
Method File : /DATA/DIONEX/METHOD/IC559.MTH
Result File : /DATA/DIONEX/RESULT/IC0525587.RES

Run Time : 12.00 Minutes Injected on 0740 21Oct1995
Report Time : 0835 24Oct1995
Run Status : RunStatusOK
EndOffBaseline

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

PK#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	1.80	1.73	6.00E-06	390613	PV	18.9107	CHLORIDE
2	3.24	3.07	4.51E-05	32145	VP	3.4301	NITRATE
3	5.81	6.15	8.11E-04	-20	VV	~~-24.5568~~	~~PHOSPHATE~~
4	8.74	#9.10	1.02E-06	260730	PF	54.2657	SULFATE

MB
10/24/95

No Br peak
Bec L10

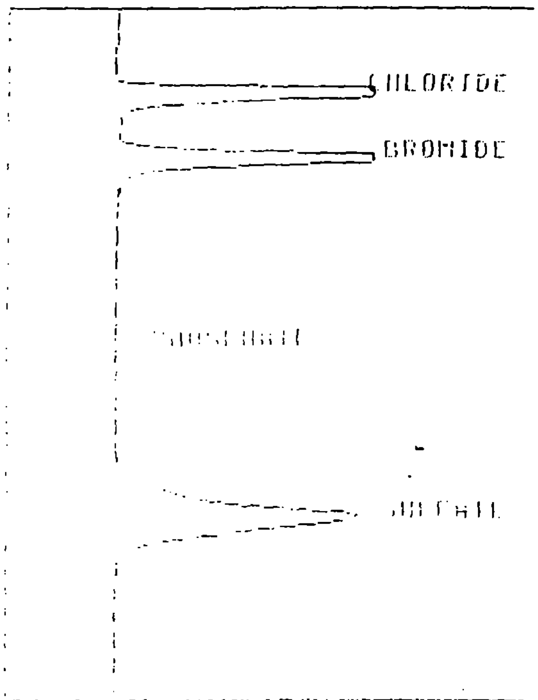
DMC 6/24/96

LL1628-23

PACE INCORPORATED

US EPA 600 4/79/020, 1979 REVISED 1983, METHOD 300.0
DIONEX 30uS. PLOT SCALE: 200000 - 000000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5002
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : 45 CCV Report No :559.20

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 92/ 92



Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_20.SEQ 1st CAL
Method File : /DATA/DIONEX/METHOD/IC559.MTH
Result File : /DATA/DIONEX/RESULT/IC0525591.RES

Run Time : 12.03 Minutes Injected on 0851 21Oct1995
Report Time : 0841 24Oct1995
Run Status : RunStatusOK
EndOffBaseline

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

PK#	RT	ID-tm	Factor	Height	Code	MG/L	Name	
1	1.81	1.72	6.00E-06	521600	PV	25.3952	CHLORIDE	
2	2.90	2.77	9.70E-06	425076	VV	47.5658	BROMIDE	95.%
3	6.04	6.12	0.11E-04	-341	PP	-23.0032	PHOSPHATE	
4	8.90	9.09	1.02E-06	271651	PV	48.0205	SULFATE	96%

MB
10/24/95

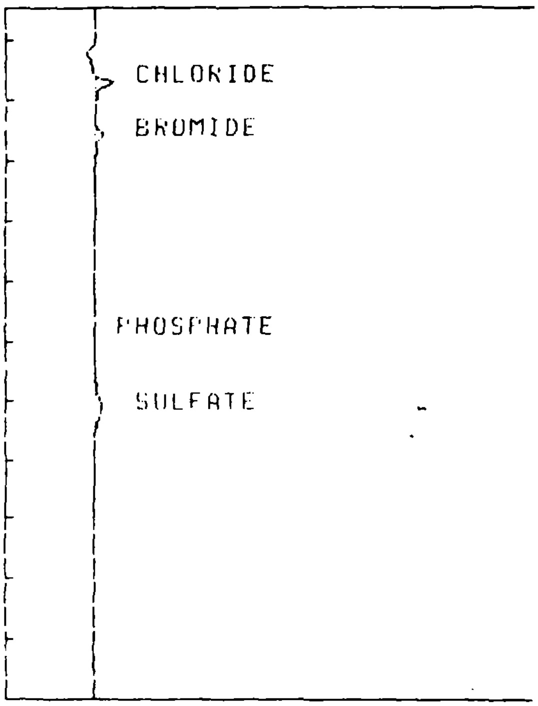
Compare RTS

DML 6/24/96

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0 n
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802 µ
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : 1ppm CAL STD Report No :573.00

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 2/ 2



2nd CAC

Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_24.SEQ
Method File : /DATA/DIONEX/METHOD/IC560.MTH
Result File : /DATA/DIONEX/RESULT/IC~~0525601.RES~~

Run Time : 12.03 Minutes Injected on 1639 24Oct1995
Report Time : 1652 24Oct1995
Run Status : RunStatusOK
EndOffBaseline

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	1.68	1.73	6.00E-06	18156	PV	1.4066	CHLORIDE
2	2.54	2.59	9.70E-06	7972	VP	2.3849	BROMIDE
3	5.85	5.97	8.11E-04	-372	PP	258.4955	PHOSPHATE
4	7.10	#7.28	1.02E-06	6287	PP	1.3722	SULFATE

1.0 PPM std responding
grtr than 1.0
biased high low level results
MB
10/25/95

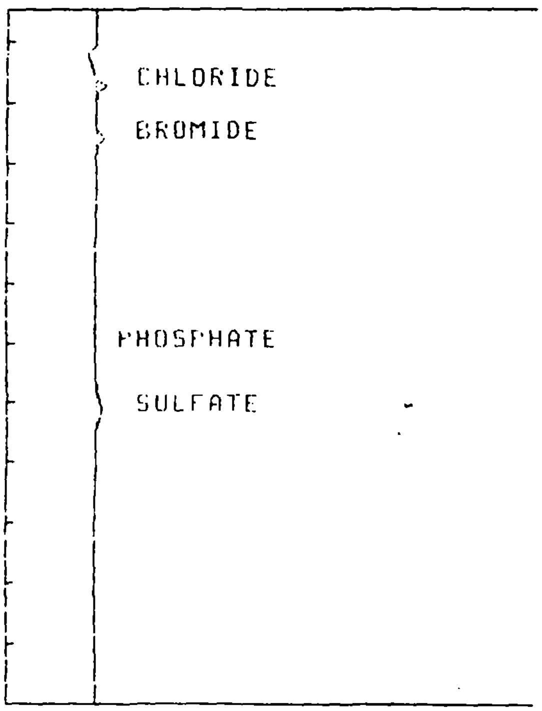
DML
6/24/96

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328

Sample Name : 1.0ppm CAL STD Report No :574.00

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 2/ 2



2nd CAL

Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_24.SEQ
Method File : /DATA/DIONEX/METHOD/IC560.MTH
Result File : /DATA/DIONEX/RESULT/~~IC0525601.RES~~

Run Time : 12.03 Minutes Injected on 1657 24Oct1995
Report Time : 1710 24Oct1995
Run Status : RunStatusOK
EndOffBaseline

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	1.68	1.73	6.00E-06	9981	PV	1.1193	CHLORIDE
2	2.55	2.59	9.70E-06	7825	VV	~~2.4068~~	~~BROMIDE~~
3	6.03	5.97	8.11E-04	-166	PP	~~5.4193~~	~~PHOSPHATE~~
4	7.11	*7.28	1.02E-06	6140	PV	1.4431	SULFATE

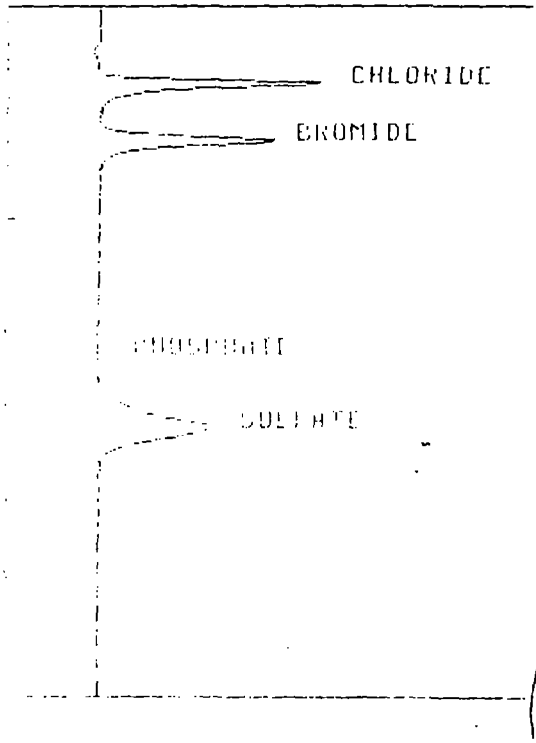
1.0 PPM std responding greater than 1.0ppm
Increased line & low level results

DML
6/24/96

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0 n
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802 µ
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : CCV Report No :592.00

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 20/ 20



2nd CAL

Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_24.SEQ
Method File : /DATA/DIONEX/METHOD/IC560.MTH
Result File : /DATA/DIONEX/RESULT/IC0525619.RES

Run Time : 12.03 Minutes Injected on 2329 24Oct1995
Report Time : 2341 24Oct1995
Run Status : RunStatus:OK
EndOffBaseline

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-ts	Factor	Height	Code	MG/L	Name
1	1.71	1.72	5.29E-06	218393	PV	9.7578	CHLORIDE
2	2.64	2.57	8.98E-06	170312	VV	19.4012	BROMIDE 97%
3	6.21	6.94	3.00E-04	12	PP	-123.5918	PHOSPHATE
4	7.45	7.24	5.33E-06	107969	VV	19.9191	SULFATE 99%

MB 10/25/95

Compare RTS

DML 6/24/96

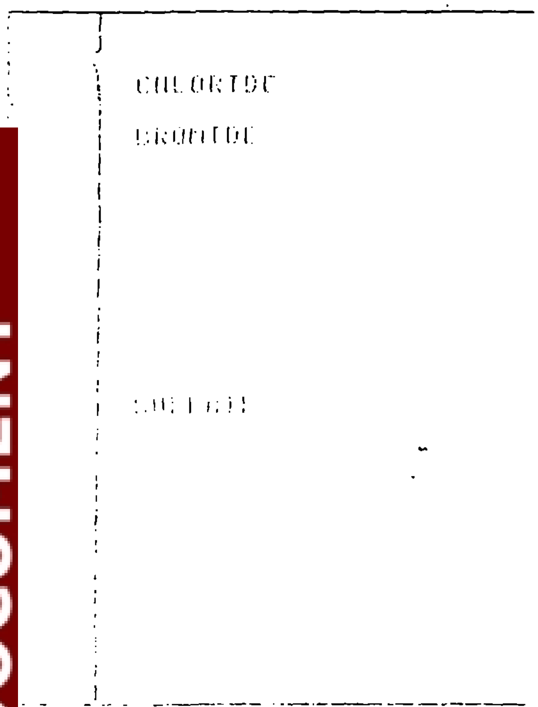
0000100

PACE INCORPORATED

US EPA 600 - 4/79/020. 1979 REVISED 1983. METHOD 300.0 n
DIONEX 30uS. PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802 µ
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328

Sample Name : CCB Report No :593.00

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 21/ 21



Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_24.SEQ
Method File : /DATA/DIONEX/METHOD/IC560.MTH
Result File : /DATA/DIONEX/RESULT/IC0525620.RES

Run Time : 12.03 Minutes Injected on 2342 24Oct1995
Report Time : 2354 24Oct1995
Run Status : RunStatusOK
EndOffBaseline

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	1.77	1.72	5.29E-06	-2336	PP	.8372	CHLORIDE
2	2.63	2.57	8.98E-06	-260	PP	1.5659	BROMIDE NP BDL
3	7.97	#7.24	5.33E-06	136	VV	1.2168	SULFATE NP BDL

MB
10/25/95

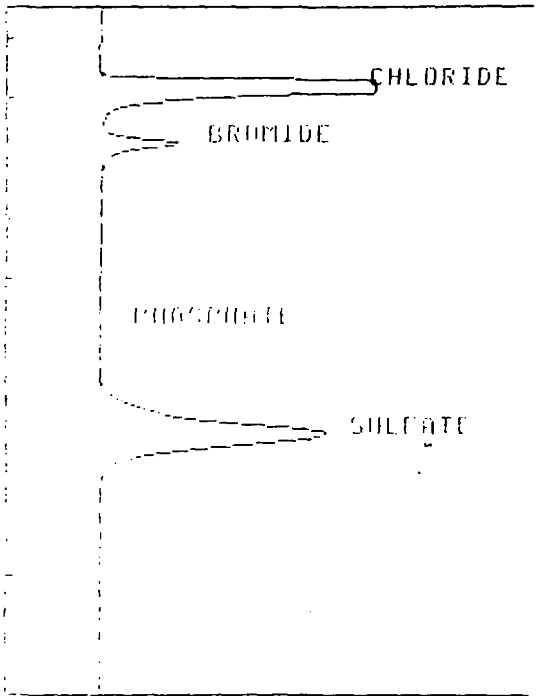
No peaks
Values not <1.0

DML
6/24/96

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983. METHOD 300.0
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : 45718-21 Report No :595.00

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 23/ 23



Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_24.SEQ 2nd CAL
Method File : /DATA/DIONEX/METHOD/IC560.MTH
Result File : /DATA/DIONEX/RESULT/IC0525622.RES

Run Time : 12.03 Minutes Injected on 0008 25Oct1995
Report Time : 0020 25Oct1995
Run Status : RunStatusOK
EndOffBaseline
SignalOverload

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	1.76	1.72	5.29E-06	910754	GV	43.3507	CHLORIDE
2	2.68	2.57	8.98E-06	75127	VV	10.2673	BROMIDE
3	5.70	5.94	3.00E-04	237	VV	204.9616	PHOSPHATE
4	7.54	#7.25	5.33E-06	215801	VV	38.7584	SULFATE

x1.1 = 11.29
113%

MB
10/25/95

Br RT checked with
CCV
ok

- x1 = spkg-19

45718-21 is 45718-19 spike
Cab used these results
instead of X10 dilution
run under 1st CAL

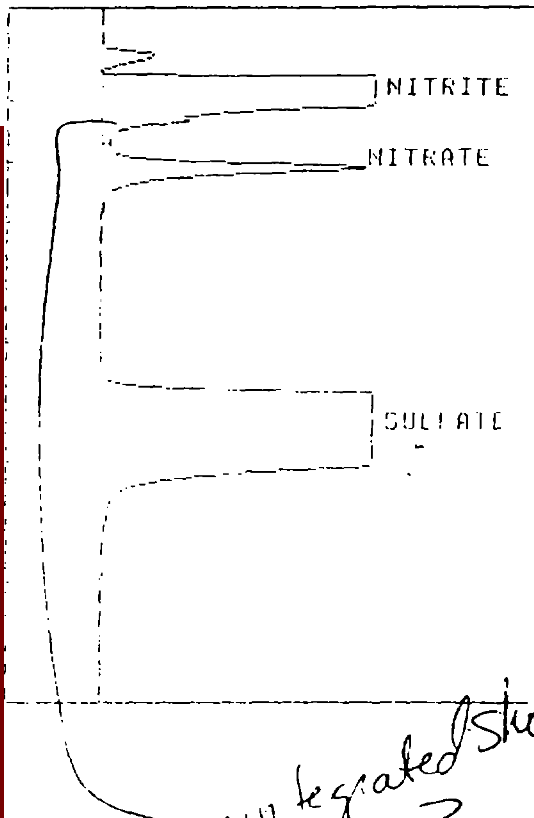
1st CAL %R = 94.5
2nd CAL %R = 113% both acceptable

DML
6/24/96

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0 n
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802 µ
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : 45718-22 Report No :596.00

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 24/ 24



Sequence File: /DATA/DIONEX/SEQUENCE/IC/10_24.SEQ
Method File : /DATA/DIONEX/METHOD/IC560.MTH
Result File : /DATA/DIONEX/RESULT/IC0525623.RES

2nd CAL

Run Time : 12.03 Minutes Injected on 0021 25Oct1995
Report Time : 0033 25Oct1995
Run Status : EndOffBaseline
SignalOverload

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	1.89	1.91	1.91E-05	957561	GV	68.3410	NITRITE
2	3.06	2.87	4.51E-05	254626	VV	10.7162	NITRATE
3	7.43	#7.25	5.33E-06	957470	GV	131.2398	SULFATE

Br BDL 1
10/24/95
MB
See spk
file IC0525650.

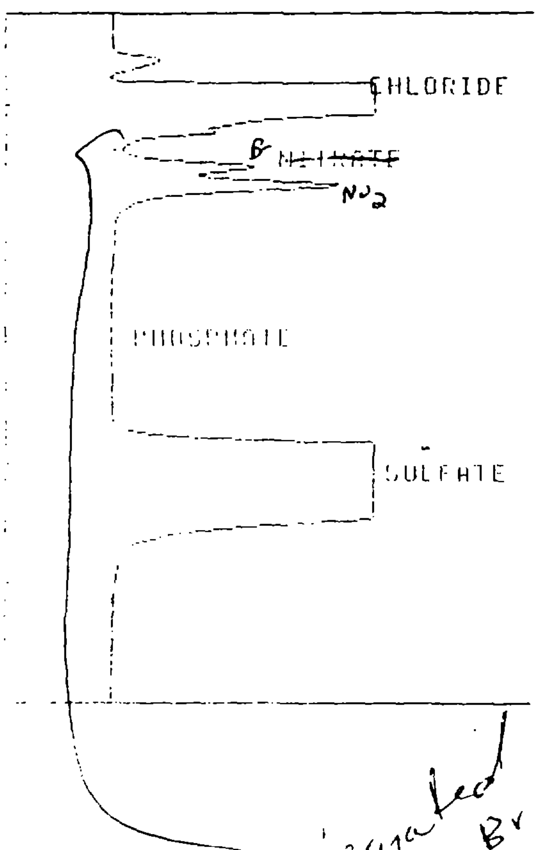
unintegrated shoulder
Br peak?
use <10 results
(WL1628-5)

DM 6/24/96

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983. METHOD 300.0 n
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802 µ
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : 45718-223 Report No :623.00

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 51/ 51



Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_24.SEQ
Method File : /DATA/DIONEX/METHOD/IC560.MTH
Result File : /DATA/DIONEX/RESULT/IC0525650.RES

2nd CAC

Run Time : 12.00 Minutes Injected on 0608 25Oct1995
Report Time : 0620 25Oct1995
Run Status : EndOffBaseline
SignalOverload

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	1.79	1.75	5.29E-06	945782	GV	117.8215	CHLORIDE
2	2.97	2.92	4.51E-05	136875	VV	6.4615	NITRATE
3	5.96	6.03	3.00E-04	85	PV	-114.1567	PHOSPHATE
4	8.26	#7.36	5.33E-06	945391	GV	366.7490	SULFATE

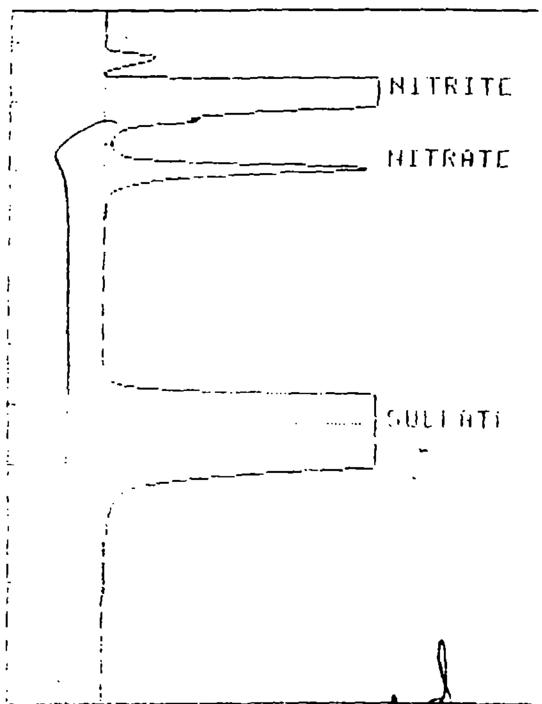
Br spike not calc.
used for ID only
MB
12/24/95

unintegrated peak near Br RT
use *10 result
see CCV RTs
(ccl 1628-S spike)

DML
6/24/96

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0 n
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802 μ
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : 41718-23 Report No :597.00
Instrument : DIONEX Subseq/Sample/Bottle: 1/ 25/ 25



Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_24.SEQ
Method File : /DATA/DIONEX/METHOD/IC560.MTH
Result File : /DATA/DIONEX/RESULT/IC0525624.RES

Run Time : 12.03 Minutes Injected on 0033 25Oct1995
Report Time : 0046 25Oct1995
Run Status : EndOffBaseline
SignalOverload

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	1.85	1.91	1.91E-05	957215	GV	66.9188	NITRITE
2	3.06	2.87	4.51E-05	254057	VV	10.6724	NITRATE
3	7.36	#7.25	5.33E-06	957038	GV	203.7019	SULFATE

unintegrated shoulder ? Br peak - ? (ICL16.28-6)

elevated DL on USE <10 results

Br BDL /

mB 10/25/95

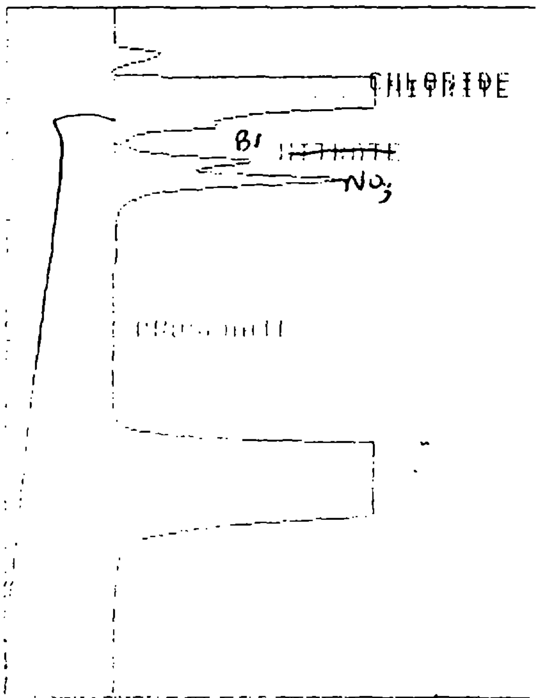
See IC0525651

DMA 6/24/96

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0 n
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802 µ
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : 45718-235 Report No :624.00

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 52/ 52



Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_24.SEQ
Method File : /DATA/DIONEX/METHOD/IC560.MTH
Result File : /DATA/DIONEX/RESULT/IC0525651.RES

End CAL

Run Time : 12.03 Minutes Injected on 0621 25Oct1995
Report Time : 0633 25Oct1995
Run Status : EndOffBaseline
NoReference
SignalOverload

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-tw	Factor	Height	Code	MG/L	Name
1	1.81	1.75	5.29E-06	945244	GV	71.2383	CHLORIDE
2	1.95	1.94	1.91E-05	954051	VV	28.4685	NITRITE
3	2.99	2.92	4.51E-05	132218	VV	6.3461	NITRATE
4	5.93	5.93	3.00E-04	-87	PV	-32.3595	~~PHOSPHATE~~

Br SPK used for ID purposes only
MB 10/25/95

unintegrated shoulder peak Br?
Use X10 results
See CCV RTS

DMC 6/24/96

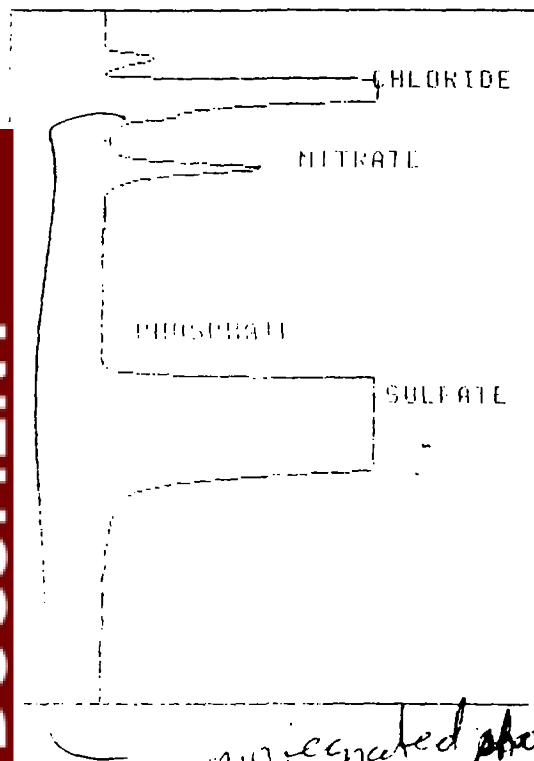
0000107

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983. METHOD 300.0 n
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802 µ
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328

Sample Name : 41718-22-24 Report No :598.00

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 26/ 26



Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_24.SEQ
Method File : /DATA/DIONEX/METHOD/IC560.MTH
Result File : /DATA/DIONEX/RESULT/IC0525625.RES

Run Time : 12.03 Minutes Injected on 0046 25Oct1995
Report Time : 0059 25Oct1995
Run Status : EndOffBaseline
SignalOverload

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

PK#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	1.73	1.72	5.29E-06	956618	GV	62.8351	CHLORIDE
2	3.04	2.87	4.51E-05	151552	VV	7.7019	NITRATE
3	5.97	5.94	3.00E-04	-44	PV	-44.7265	PHOSPHATE
4	6.96	#7.25	5.33E-06	956486	GV	171.1954	SULFATE

Kad CAC

Br BDL 1

mB 10/25/95

See also IC0525652

unintegrated shoulder peak Br.

check DL/UX 410 results

W.L 10.24-7

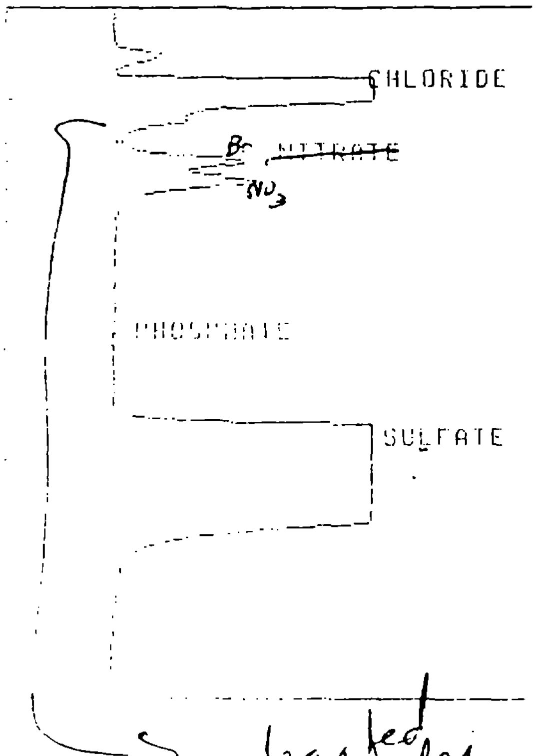
DML 6/24/96

0000108

FACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA_SOP #5802
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : 45718-345 Report No :625.00

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 53/ 53



unintegrated shoulder peak - Br?

Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_24.SEQ 2nd cite
Method File : /DATA/DIONEX/METHOD/IC580.MTH
Result File : /DATA/DIONEX/RESULT/IC0525652.RES

Run Time : 12.03 Minutes Injected on 0634 25Oct1995
Report Time : 0646 25Oct1995
Run Status : EndOffBaseline
SignalOverload

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

PK#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	1.75	1.75	5.29E-06	943999	GV	79.4073	CHLORIDE
2	2.96	2.92	4.51E-05	125414	VV	6.4198	NITRATE
3	5.93	6.04	3.00E-04	-496	FP	104.0123	PHOSPHATE
4	7.23	*7.32	5.33E-06	944305	GV	180.7167	SULFATE

MB
10/25/95

Br spike used for ID purposes only

Not even identifying same peak consistently

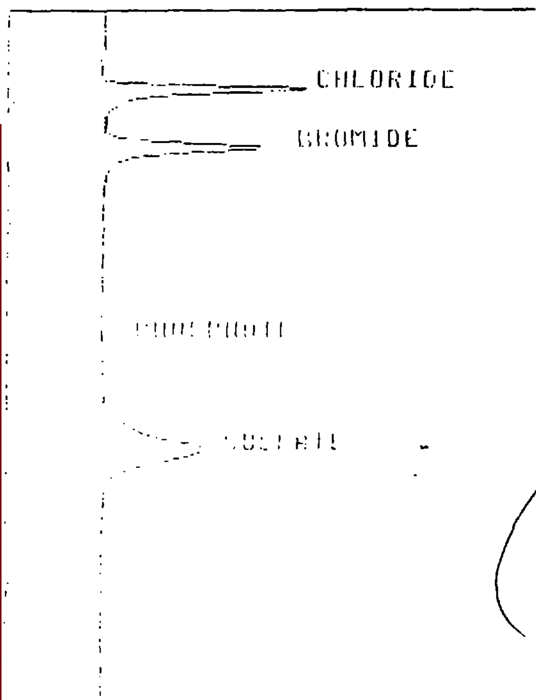
DML
6/24/96

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0 n
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802 µ
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328

Sample Name : CCV Report No :604.00

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 32/ 32



2nd cAL.

Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_24.SEQ
Method File : /DATA/DIONEX/METHOD/IC560.MTH
Result File : /DATA/DIONEX/RESULT/IC0525631.RES

Run Time : 12.05 Minutes Injected on 0203 25Oct1995
Report Time : 0216 25Oct1995
Run Status : RunStatusOK
EndOffBaseline

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-tm	Factor	Height	Code	MG/L	Name	
1	1.73	1.73	5.29E-06	195812	PV	9.0646	CHLORIDE	
2	2.68	2.58	8.98E-06	152960	VP	17.9732	BROMIDE	90%
3	5.86	5.96	3.00E-04	-222	PP	-96.7988	PHOSPHATE	
4	7.74	7.27	5.33E-06	95388	PV	18.4236	SULFATE	92.1%

mB
10/25/95

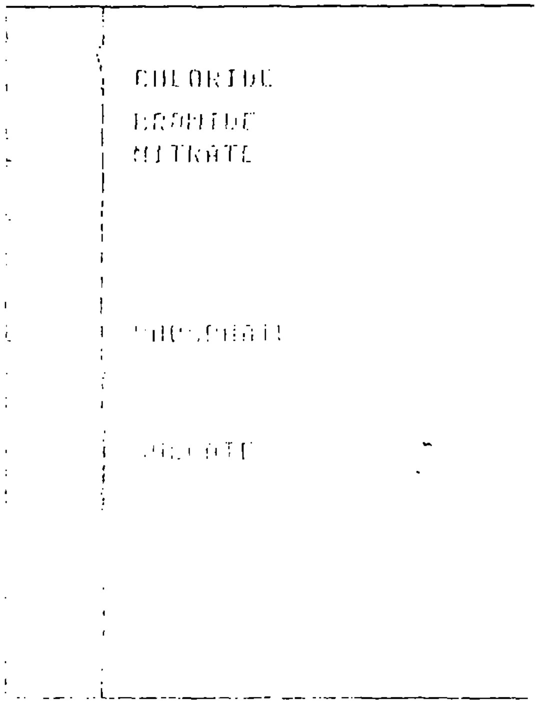
Compare RTS

DM 6/24/96

PACC INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0 n
DIONEX 30uS. PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802 µ
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : CCB Report No :605.00

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 33/ 33



Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_24.SEQ
Method File : /DATA/DIONEX/METHOD/IC560.MTH
Result File : /DATA/DIONEX/RESULT/IC0525632.RES

2nd CAe

Run Time : 12.03 Minutes Injected on 0216 25Oct1995
Report Time : 0229 25Oct1995
Run Status : RunStatusOK
EndOffBaseline

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	1.78	1.75	5.29E-06	-1951	FV	.8121	CHLORIDE
2	2.50	2.59	8.98E-06	-133	VV	1.5336	BROMIDE NP
3	3.00	2.88	4.51E-05	-215	FF	2.4124	NITRATE
4	5.97	5.97	3.00E-04	-36	FP	-117.3804	PHOSPHATE
5	7.95	*7.28	5.75E-06	776	VV	1.3026	SULFATE NP

SO4, Br - BDL
MB
10/25/95

Values not <1.0
No peak present

DML
6/24/96

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983. METHOD 300.0

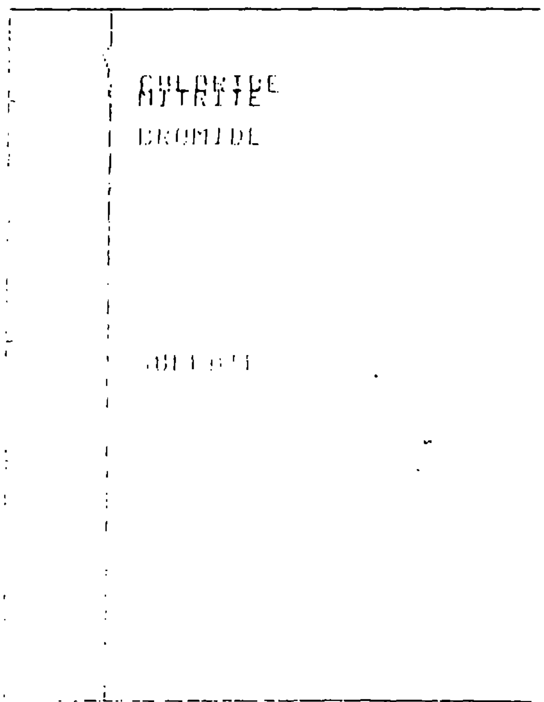
DIONEX 30uS, PLOT SCALE: 200000 - 800000

1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802

INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328

Sample Name : mB lank Report No :612.00

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 40/ 40



Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_24.SEQ 2nd CAL

Method File : /DATA/DIONEX/METHOD/IC560.MTH

Result File : /DATA/DIONEX/RESULT/IC0525639.RES

Run Time : 12.03 Minutes Injected on 0346 25Oct1995

Report Time : 0359 25Oct1995

Run Status : RunStatusOK

EndOffBaseline

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

PK#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	1.82	1.73	5.29E-06	-1403	PV	.7661	CHLORIDE
2	2.06	1.92	1.91E-05	-42	VP	.2105	NITRITE
3	2.68	2.59	8.98E-06	-117	PV	1.5050	BROMIDE NP
4	6.45	#7.29	5.33E-06	-449	PV	1.3169	SULFATE NP

BDL

Br, SO4 mB 10/25/95

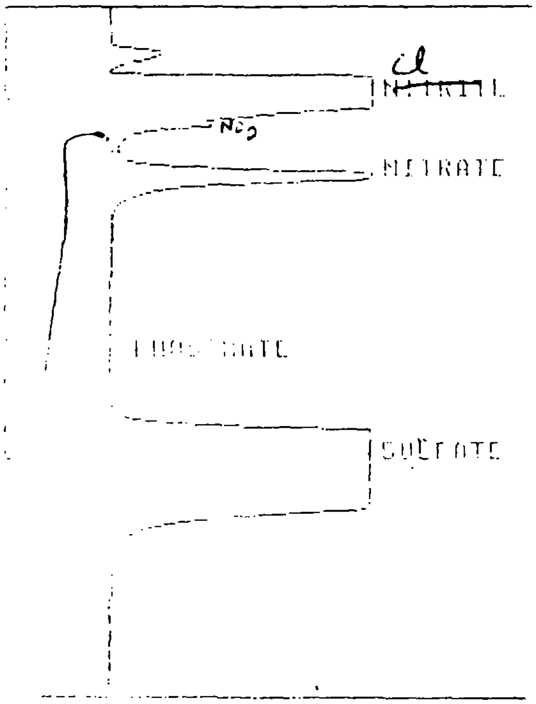
No peak present
Value not <1.0

DMC 6/24/96

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0 n
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802 μ
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : 45718-65 Report No :620.10

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 48/ 48



Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_24.SEQ 2nd CAC
Method File : /DATA/DIONEX/METHOD/IC561.MTH
Result File : /DATA/DIONEX/RESULT/IC0525647.RES

Run Time : 12.03 Minutes Injected on 0529 25Oct1995
Report Time : 1031 25Oct1995
Run Status : EndOffBaseline
SignalOverload

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	10-tm	Factor	Height	Code	MG/L	Name
1	1.93	1.94	1.91E-05	947095	GV	73.7934	NITRITE
2	3.23	3.12	4.51E-05	319546	VV	13.5049	NITRATE
3	6.25	6.06	3.00E-04	190	PV	-13.4259	PHOSPHATE
4	7.96	#7.39	5.53E-06	946925	GV	262.2902	SULFATE

Br
BBL 1
MB 10/25/95

- un integrated shoulder
peak - Br ?
Use 2/R results

(6116,78-23

DMC 6/24/96

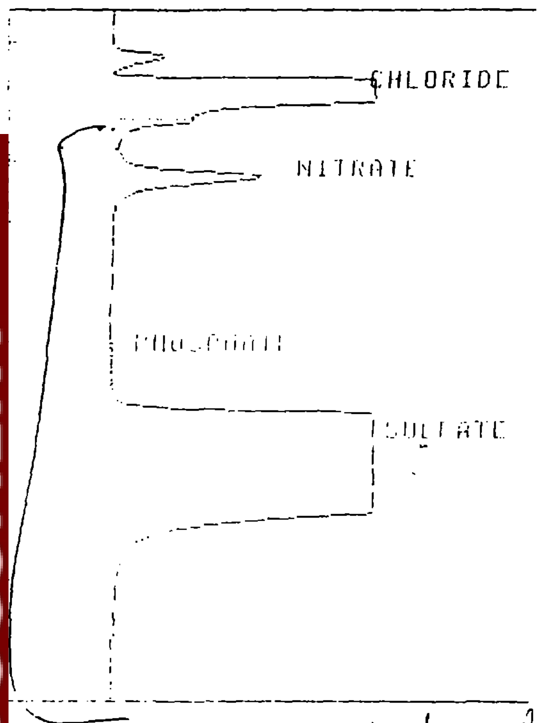
0000125

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328

Sample Name : 45718-66 Report No :621.10

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 49/ 49



Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_24.SEQ End CAC
Method File : /DATA/DIONEX/METHOD/16551.MTH
Result File : /DATA/DIONEX/RESULT/IC0525648.RES

Run Time : 12.03 Minutes Injected on 0542 25Oct1995
Report Time : 1031 25Oct1995
Run Status : EndOffBaseline
SignalOverload

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

PK#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	1.75	1.75	5.29E-06	952488	GV	93.5853	CHLORIDE
2	3.21	3.12	4.51E-05	142824	VV	7.8145	NITRATE
3	6.12	6.07	3.00E-04	-759	PV	72.9073	PHOSPHATE
4	7.54	#7.40	5.33E-06	946024	GV	207.6207	SULFATE

B-
BDL 1
ms
10/25/95

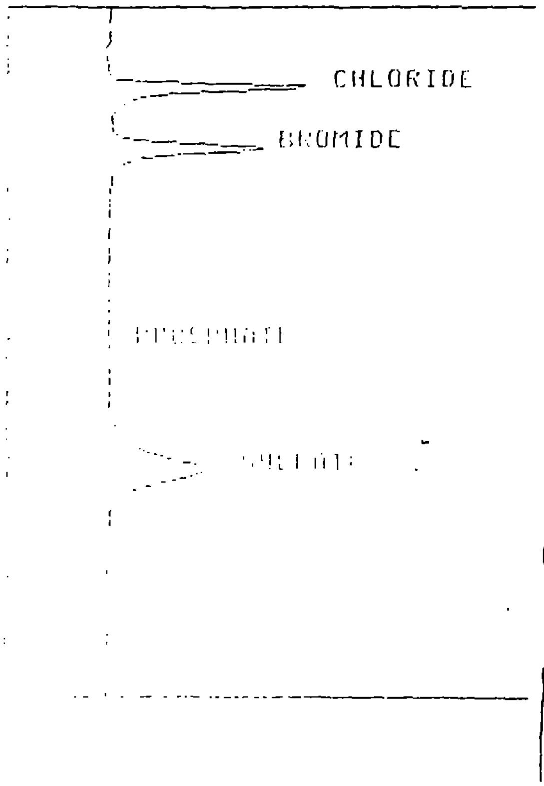
un integrated peak
or peak?
See 10X results
(IC 1628-24)

DMC 10/24/96

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0 n
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802 µ
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : CCV Report No :616.10

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 44/ 44



2nd CAC

Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_24.SEQ
Method File : /DATA/DIONEX/METHOD/IC561.MTH
Result File : /DATA/DIONEX/RESULT/IC0525643.RES

Run Time : 12.03 Minutes Injected on 0438 25Oct1995
Report Time : 1027 25Oct1995
Run Status : RunStatusOK
EndOffBaseline

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-tm	Factor	Height	Code	MG/L	Name	
1	1.75	1.75	5.29E-06	193016	PV	9.2122	CHLORIDE	
2	2.76	2.76	8.98E-06	149416	VP	18.2512	BROMIDE	91.3%
3	6.02	6.04	3.00E-04	-20	PP	66.8915	PHOSPHATE	
4	8.14	#7.37	5.33E-06	91322	PV	18.6412	SULFATE	93.2%

MB
10/25/95

compare RTS

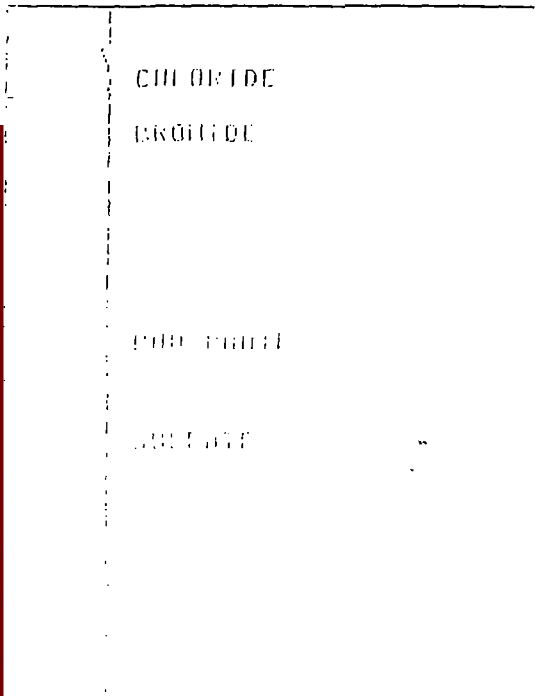
DM 6/24/96

0000129

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : CCB Report No :617.10

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 45/ 45



Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_24.SEQ
Method File : /DATA/DIONEX/METHOD/IC561.MTH
Result File : /DATA/DIONEX/RESULT/IC0525644.RES

2nd CHe

Run Time : 12.03 Minutes Injected on 0451 25Oct1995
Report Time : 1026 25Oct1995
Run Status : RunStatusOK
EndOffBaseline

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

PK#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	1.79	1.75	5.29E-06	-2024	PP	~~.6548~~	~~CHLORIDE~~
2	2.69	2.76	8.98E-06	-255	PP	4.5855	BROMIDE NP
3	6.10	6.05	3.00E-04	[illegible]	PV	~~-25.2939~~	~~PHOSPHATE~~
4	7.79	#7.37	5.33E-06	[illegible]	PP	1.2491	SULFATE NP

Br, SO4 BDL

mB 4:10125-145

values not 4.0

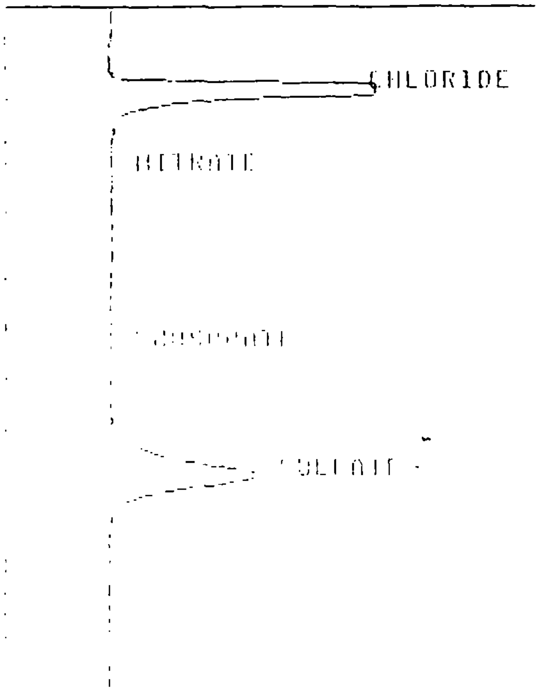
No peak present

Onil 8/24/96

PACE INCORPORATED

US EPA 600 - 4/79/020. 1979 REVISED 1983. METHOD 300.0
DIONEX 30uS. PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : 45718-63 Report No :618.10

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 46/ 46



Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_24.SEQ 2nd cAL
Method File : /DATA/DIONEX/METHOD/IC561.MTH
Result File : /DATA/DIONEX/RESULT/IC0525645.RES

Run Time : 12.03 Minutes Injected on 0504 25Oct1995
Report Time : 1029 25Oct1995
Run Status : RunStatusOK
EndOffBaseline

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

PK#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	1.79	1.75	5.29E-06	597034	PV	36.1906	CHLORIDE
2	3.13	3.12	4.51E-05	1822	VV	2.5074	NITRATE
3	6.09	6.05	3.00E-04	125	VV	-93.2447	PHOSPHATE
4	9.24	#7.38	5.33E-06	140323	VV	28.2663	SULFATE

Br BDL 1
MB
10/25/95

No peak present
45718-63 = spike of 45718-61 - ?
where's Br ?

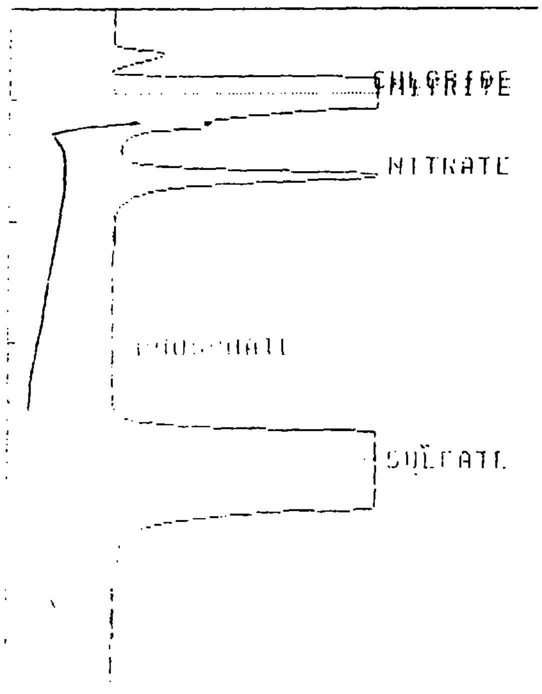
DML 6/24/96

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328

Sample Name : 4571864 Report No :619.10

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 47/ 47



Sequence File: /DATA/DIONEX/SEQUENCE/IC10_24.SEQ 2nd cal
Method File : /DATA/DIONEX/METHOD/IC561.MTH
Result File : /DATA/DIONEX/RESULT/IC0525646.RES

Run Time : 12.03 Minutes Injected on 0516 25Oct1995
Report Time : 1030 25Oct1995
Run Status : EndOffBaseline
SignalOverload

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	1.77	1.75	5.29E-06	947484	GV	63.2242	CHLORIDE
2	1.91	1.94	1.91E-05	947479	VV	35.6325	NITRITE
3	3.22	3.13	4.51E-05	230394	VV	12.2133	NITRATE
4	6.17	6.06	3.00E-04	190	VV	-25.4740	PHOSPHATE
5	8.09	#7.59	5.35E-06	947227	GB	233.9488	SULFATE

Br BDL1
MB
10/25/95

unintegrated shoulder

Use 21C results for Br

JL 1623-22

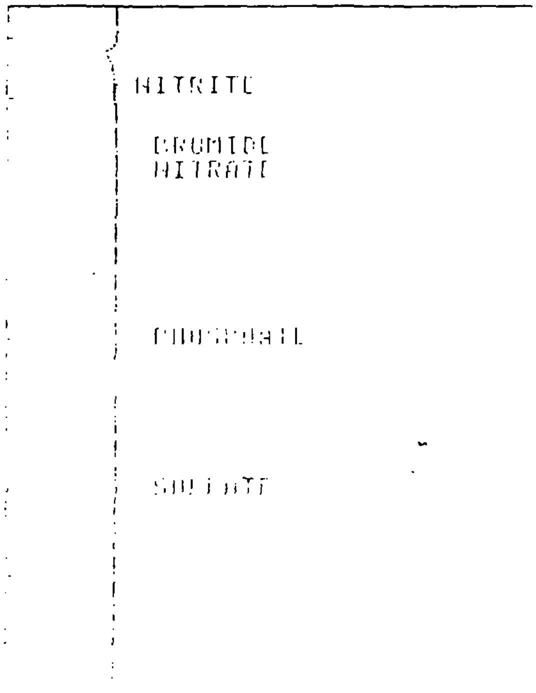
DMC 6/24/96

0000132

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na_2CO_3/ 1.7mm $NaHCO_3$, 2.0 ml/min. SEE QA SOP #5802
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : CCB Report No :627.20

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 55/ 55



Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_24.SEQ 2nd CAL
Method File : /DATA/DIONEX/METHOD/IC5X1.MTH
Result File : /DATA/DIONEX/RESULT/IC0525654.RES

Run Time : 12.03 Minutes Injected on 0659 25Oct1995
Report Time : 1140 25Oct1995
Run Status : RunStatusOK
EndOffBaseline

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

PK#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	1.88	1.93	1.91E-05	-2008	PP	.2870	NITRITE
2	2.90	2.76	8.98E-06	-712	PV	1.5644	BROMIDE NP
3	3.30	3.11	4.51E-05	-357	PV	2.4187	NITRATE
4	6.06	6.03	3.00E-04	-413	PV	125.1502	PHOSPHATE
5	8.54	#8.70	5.33E-06	134	PV	1.2005	SULFATE NP

< Br, SO4
BOL 1
mB 10/25/95

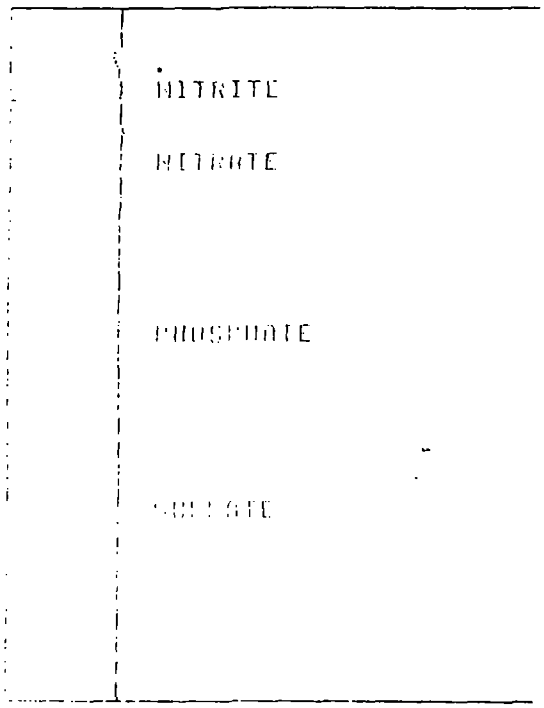
Values not < 1.0
no peaks present.

DM 1/24/96

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0
DIONEX 30uS. PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : C13 Report No :632.20

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 60/ 60



Sequence File: /DATA/DIONEX/SEQUENCE/IC/10_24.SEQ 2nd CAL
Method File : /DATA/DIONEX/METHOD/IC5A1.MTH
Result File : /DATA/DIONEX/RESULT/IC0525899.RES

Run Time : 12.03 Minutes Injected on 0804 25Oct1995
Report Time : 1148 25Oct1995
Run Status : RunStatusOK
EndOffBaseline

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

PK#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	1.92	1.93	1.91E-05	-1726	PF	.2590	NITRITE
2	3.10	3.11	4.51E-05	-13	PF	2.4085	NITRATE
3	5.99	6.03	3.00E-04	-135	PF	-75.1957	PHOSPHATE
4	8.90	#8.70	5.33E-06	-40	PF	~~1.2131~~	SULFATE ND

MB 10/25/95

- not <1.0
no peak present

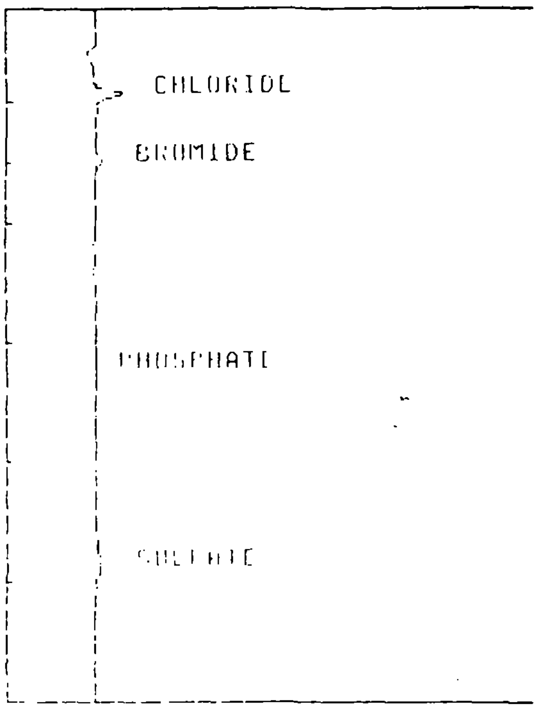
DM 6/24/96

0000139

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : 1PPM Report No :633.20

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 1/ 1



3rd CAL

Sequence File: /DATA/DIONEX/SEQUENCE/IC10_25.SEQ
Method File : /DATA/DIONEX/METHOD/IC562.MTH
Result File : /DATA/DIONEX/RESULT/IC0525660.RES

Run Time : 12.03 Minutes Injected on 1046 25Oct1995
Report Time : 1656 26Oct1995
Run Status : RunStatusOK
EndOffBaseline

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	1.82	1.75	2.18E-06	25879	PV	~~1.4718~~	~~CHLORIDE~~
2	2.93	3.01	1.14E-05	6631	VV	2.2441	BROMIDE
3	6.40	6.03	2.66E-04	125	PV	158.5448	PHOSPHATE
4	9.68	#9.93	4.91E-06	4786	VV	2.3389	SULFATE

10 ppm std responding
gtr-than 10.0.
low level lots Based high

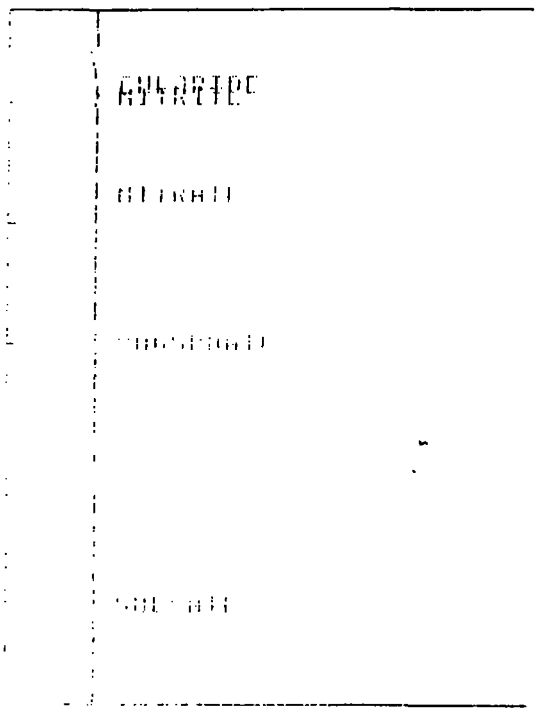
DMC
6/24/96

PACE INCORPORATED

US EPA 600 4/79/020. 1979 REVISED 1983. METHOD 300.0 n
DIONEX 30uS. PLOT SCALE: 200000 - 000000
1.8mm Na2CO3/ 1.7mm NaHCO3. 2.0 ml/min. SEE QA SOP #5002 μ
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328

Sample Name : ICB 671A Report No :640.10

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 8/ 8



Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_25.SEQ 3rd cal
Method File : /DATA/DIONEX/METHOD/IC562.MTH
Result File : /DATA/DIONEX/RESULT/IC0525667.RES

Run Time : 12.03 Minutes Injected on 1231 25Oct1995
Report Time : 1154 26Oct1995
Run Status : RunStatusOK
EndOffBaseline

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-tw	Factor	Height	Code	MG/L	Name
1	1.83	1.75	2.18E-06	749	PP	.4822	CHLORIDE
2	2.00	1.94	1.91E-05	-1536	PP	.2203	NITRITE
3	3.63	3.61	4.51E-05	301	PV	2.4473	NITRATE
4	6.07	6.03	2.66E-04	272	VV	~~-73.3479~~	~~PHOSPHATE~~
5	10.47	#? 94	4.91E-06	665	PP	1.1495	SULFATE NF

mB 10/25/95

Value not < 1.0
no peak present

DMC 4/24/96

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0

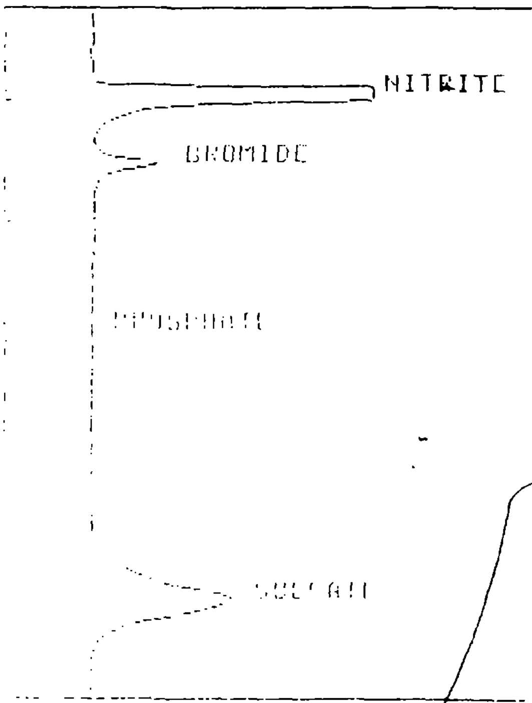
DIONEX 30uS, PLOT SCALE: 200000 - 800000

1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802

INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328

Sample Name : 45718-63 = 45718-61 spk Report No :641.00

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 9/ 9



Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_25.SEQ 3rd cal

Method File : /DATA/DIONEX/METHOD/IC56?.MTH

Result File : /DATA/DIONEX/RESULT/IC0525660.RES

Run Time : 12.03 Minutes Injected on 1244 25Oct1995

Report Time : 1256 25Oct1995

Run Status : RunStatusOK
EndOffBaseline

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

Pk#	RT	ID-tm	Factor	Height	Code	MG/L	Name
1	1.83	1.93	1.91E-05	587713	PV	20.9656	NITRITE
2	2.99	3.00	1.14E-05	60986	VV	9.6844	BROMIDE x1.1 = 10.65 = 107%
3	5.75	6.01	2.66E-04	-23	PV	-104.7671	PHOSPHATE
4	10.29	#9.90	4.91E-06	134097	PB	36.0160	SULFATE x1.1 = 39.61

MB
10/25/95

lab used results as valid
results for 45718-61 Spk
X/10 results are also valid

DMK
4/24/96

Br Std
Br 2.97-2.99

ICV
Br 3.01

sample RT
Br. 2.99

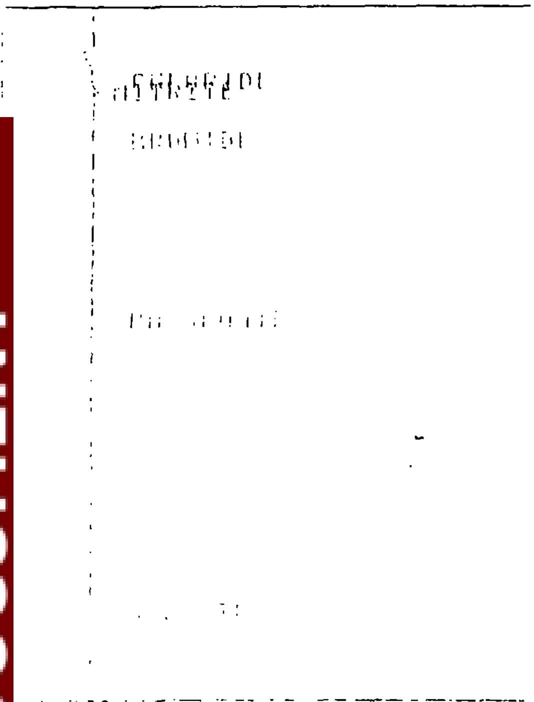
* result of record

0000149

PACE INCORPORATED

US EPA 600 - 4/79/020, 1979 REVISED 1983, METHOD 300.0 n
DIONEX 30uS, PLOT SCALE: 200000 - 800000
1.8mm Na2CO3/ 1.7mm NaHCO3, 2.0 ml/min. SEE QA SOP #5802 µ
INJECTION VOLUME: 20uL COLUMN: IONPAC AS4A 4mm #26328
Sample Name : Report No :652.00

Instrument : DIONEX Subseq/Sample/Bottle: 1/ 18/ 18



Sequence File: /DATA/DIONEX/SEQUENCE/IC_10_25.SEQ 3rd CAL
Method File : /DATA/DIONEX/METHOD/IC512.MTH
Result File : /DATA/DIONEX/RESULT/IC0525677.RES

Run Time : 12.03 Minutes Injected on 1505 25Oct1995
Report Time : 1517 25Oct1995
Run Status : RunStatusOK
EndOffBaseline

Dil-Fact : 100.00% Sample Amt: 0.0000 Standard Amt: 1.0000

PK#	RT	IS-tm	Factor	Height	Code	MG/L	Name
1	1.91	1.75	2.13E-06	5733	PP	.5594	CHLORIDE
2	1.97	1.94	1.91E-05	-1105	PV	.2026	NITRITE
3	2.80	7.02	1.14E-05	-[illegible]	PV	1.6254	BROMIDE NP
4	5.76	6.04	[illegible]E-04	-[illegible]	PV	-[illegible].6702	PHOSPHATE
5	10.65	[illegible].05	[illegible]E-06	-[illegible]	PV	1.1240	SULFATE NP

MB 10/25/95

Values not < 1.0
no peaks present.

DMK 6/24/96

0000157

Analysis: SO4
Laboratory: Pace Incorporated
Analysis Date: 10/20/95

	HEIGHT x	CONC. y	XY	X2	Y2
	31223	**1**	31223	974875729	1
	27798	**5**	138990	772728804	25
6	**48345**	**10**	483450	2337239025	100
	107739	**20**	2154780	11607692121	400
	211494	**40**	8459760	44729712036	1600
	585250	**100**	58525000	3.42518E+11	10000
SUMS	1011849	176	69793203	4.0294E+11	12126
	XY	178085424			

r 0.997342404
rsqrd **0.994691871**

slope **0.0001727**
INTERCEPT **0.2132471**

	x'	y'			x'	y'
ICV/CCS	277270	48.090705		CCV	255210	44.28151
ICB/MB	105	0.2313779		CCB	-326	0.156955
CCV	288011	49.945402		45718-62	13917	2.616358 X10
CCB	0	0.2132471		45718-62S	53341	9.423877 X10
45718-18	16697	3.0963932	X10	45718-63	13791	2.594601 X10
45718-18S	60383	10.639851	X10	45718-63S	50689	8.965945 X10
45718-19	14581	2.731014	X10	45718-64	256505	44.50512 X10
45718-19S	60054	10.583041	X10	45718-64S	275839	47.84361 X10
45718-20	14487	2.7147826	X10	45718-65	268730	46.61606 X10
45718-20S	57522	10.14583	X10	45718-65S	303419	52.60597 X10
45718-21	26793	4.8397149	X10	CCV	232651	40.38614
45718-21S	68731	12.081338	X10	CCB	455	0.291814
CCV	263480	45.709524				0.213247
CCB	339	0.2717838				0.213247
45718-22	186750	32.460209	X10			0.213247
45718-22S	240921	41.81416	X10			0.213247
45718-23	278725	48.341946	X10			0.213247
45718-23S	302887	52.514108	X10			0.213247
45718-24	547721	94.790695	X10			0.213247
45718-24S	566737	98.074274	X10			0.213247
CCV	252011	43.72912				0.213247
CCB	336	0.2712658				0.213247
CCV	254987	44.242999				0.213247
CCB	-306	0.1604087				0.213247
45718-60	15215	2.8404896	X10			
45718-60S	62739	11.046672	X10			
45718-61	13154	2.4846075	X10			
45718-61S	56550	9.9779899	X10			

data used as a guidance for rawdata provided.
DMC 6/24/96

Analysis: SO4
Laboratory: Pace Incorporated
Analysis Date: 10/24/95

	HEIGHT x	CONC. y	XY	X2	Y2
	6140	**1**	6140	37699600	1
	25726	**5**	128630	661827076	25
6	**51391**	**10**	513910	2641034881	100
	104556	**20**	2091120	10931957136	400
	225353	**40**	9014120	50783974609	1600
	609122	**100**	60912200	3.7103E+11	10000
SUMS	1022288	176	72666120	4.36086E+11	12126
	XY	179922688			

r 0.999382834

slope **0.000163**
INTERCEPT **1.5689086**

	x'	y'		x'	y'
ICV/CCS	283556	47.775668			1.568909
ICB/MB	0	1.5689086			1.568909
CCV	107969	19.162956			1.568909
CCB	136	1.5910705			1.568909
CCV	95388	17.112824			1.568909
CCB	376	1.6301796			1.568909
LCS	243986	41.327554			1.568909
MB	-449	1.495742			1.568909
CCV	91328	16.451228			1.568909
CCB	-237	1.5302884			1.568909
CCV	99974	17.860133			1.568909
CCB	134	1.5907446			1.568909
45718-66	97322	17.427978	X50		1.568909
CCV	81592	14.864702			1.568909
CCB	-40	1.5623904			1.568909
		1.5689086			1.568909

data used as a guidance for raw data provided

DJM 6/19/96

Analysis: Br
Laboratory: Pace Incorporated
Analysis Date: 10/24/95

	HEIGHT x	CONC. y	XY	X2	Y2
	7825	**1**	7825	61230625	1
	37213	**5**	186065	1384807369	25
6	**76590**	**10**	765900	5866028100	100
	159456	**20**	3189120	25426215936	400
	344767	**40**	13790680	1.18864E+11	1600
	966237	**100**	96623700	9.33614E+11	10000
SUMS	1592088	176	114563290	1.08522E+12	12126
	XY	280207488			

r 0.998942448

slope **0.0001024**
INTERCEPT **2.1634974**

	x'	y'		x'	y'
ICV/CCS	441497	47.369797	45718-61	0	2.163497
ICB/MB	0	2.1634974	45718-62	0	2.163497
45718-18	0	2.1634974	CCV	149416	17.46268
45718-19	1268	2.293332	CCB	-263	2.136568
CCV	170312	19.602291	45718-63	0	2.163497
CCB	-260	2.1368751	45718-64	0	2.163497
45718-20	0	2.1634974	CCV	167467	19.31098
45718-21	75127	9.8559928	CCB	-312	2.131551
45718-22	0	2.1634974	CCV	139524	16.44981
45718-22S	0	2.1634974	CCB	0	2.163497
45718-23	0	2.1634974			2.163497
45718-23S	0	2.1634974			2.163497
45718-24	0	2.1634974			2.163497
45718-24S	0	2.1634974			2.163497
CCV	152960	17.825564			2.163497
CCB	-183	2.1447594			2.163497
LCS	402039	43.329565			2.163497
MB	-117	2.1515174			2.163497
45718-60	0	2.1634974			2.163497
45718-65	0	2.1634974			2.163497
45718-66	0	2.1634974			2.163497

data used as a guidance for raw data provided
DM 6/24/96

Analysis: ortho-phosphorus
Laboratory: Pace Incorporated
Initial Cal. Date 2/1/95 Analysis Date: 10/19/95

	ABS. x	CONC. y	XY	X2	Y2
	0.001	**-0.00375**	-0.00000375	0.000001	1.40625E-05
	0.017	**0.01530**	0.000260015	0.000289	0.000233937
7	**0.035**	**0.034344**	0.00120204	0.001225	0.00117951
	0.07	**0.072442**	0.00507094	0.0049	0.005247843
	0.18	**0.186735**	0.0336123	0.0324	0.03486996
	0.376	**0.377224**	0.141836224	0.141376	0.142297946
	0.571	**0.567714**	0.324164694	0.326041	0.322299186
SUMS	1.25	1.250004	0.506142463	0.506232	0.506142445
XY		1.562505			

r **0.999841836**

slope **0.9996811**
INTERCEPT **5.752E-05**

	x'	y'	x'	y'
ICVA	0.035	0.035046		5.75159E-05
ICVB/LCS	0.363	0.362942		5.75159E-05
ICB/MB	0.003	0.003057		5.75159E-05
45718-18	0.005	0.005056		5.75159E-05
45718-19	0.01	0.010054		5.75159E-05
45718-20	0.011	0.011054		5.75159E-05
45718-21S	0.367	0.36694		5.75159E-05
45718-22	0.004	0.004056		5.75159E-05
54718-23	0.004	0.004056		5.75159E-05
45718-24	0.009	0.009055		5.75159E-05
CCV	0.357	0.356944		5.75159E-05
CCB	0.003	0.003057		5.75159E-05
CCV	0.37	0.36994		5.75159E-05
CCB	0.004	0.004056		5.75159E-05
ICB/MB	0	5.75E-05		5.75159E-05
LCS	0.35	0.349946		5.75159E-05
45718-60	0	5.75E-05		5.75159E-05
45718-61	0.015	0.015053		5.75159E-05
45718-62	0.017	0.017052		5.75159E-05
45718-63	0.364	0.363941		5.75159E-05
45718-64	0.003	0.003057		5.75159E-05
45718-65	0.003	0.003057		5.75159E-05
45718-66	0	5.75E-05		5.75159E-05
CCV	0.364	0.363941		5.75159E-05
CCB	0	5.75E-05		

TECHNICAL NARRATIVE

Laboratory Number: 45718

Samples were received in acceptable condition, with the exceptions noted on the sample receipt condition report.

All samples were prepared and analyzed within the holding times specified in the referenced methods.

Instrumentation used for analysis was calibrated and/or tuned with the appropriate frequency and to the appropriate specifications required by the referenced methods.

Blank contamination was not observed at levels affecting the analytical results.

Matrix effects, as monitored by matrix spike recovery, unusual physical properties and/or surrogate analyte recovery, were not apparent.

Accuracy and precision as monitored by laboratory control sample analyses were within laboratory acceptance limits.

P O Box 2130
1 Lafayette Road
Hampton, NH 03842
TEL 603-926-7777
800-992-0724
FAX 603-926-7939

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

pg 2 of 3   Hampton Lab

298684

CHAIN-OF-CUSTODY RECORD
Analytical Request

Client: Olin
Address: Eames St.
Wilmington MA.
Phone:

Report To: Rick Sacks
Bill To: Olin
P.O. # / Billing Reference:
Project Name / No. 7074-0102

Pace Client No.
Pace Project Manager
Pace Project No.
*Requested Due Date:

Sampled By (PRINT): Russell Mehalick / Tim Ebner
Sampler Signature: Russell Mehalick
Date Sampled: 10/18/95

ITEM NO.	SAMPLE DESCRIPTION	TIME	MATRIX	PACE NO.	NO. OF CONTAINERS	UNPRESERVED	H_2SO_4	HNO_3	VOA	Zn Acetate NaOH	sulfide	Cl, SO_4, NO_3, Br	NH_3	REMARKS
1	SW 14	0810	AQ	45718	3	1	1			1	✓ 1	✓ 18	✓ 33	Filtered
2	SW 12	0905	AQ		9	3	3			3	✓ 2,3,4	✓ 19,20,21	✓ 34,35,36	MS/MSD
3	SW 17	1025	AQ		3	1	1			1	✓ 5	✓ 22	✓ 37	
4	SW Field Rep	1025	AQ		3	1	1			1	✓ 6	✓ 23	✓ 38	
5	SW 16	1150	AQ		3	1	1			1	✓ 7	✓ 24	✓ 39	
6	GW 500	1230	AQ		3	1	1			1	✓ 8	✓ 25	✓ 40	
7														
8														

COOLER NOS.	BAILERS	SHIPMENT METHOD OUT/DATE	RETURNED DATE

ITEM NUMBER	RELINQUISHED BY / AFFILIATION	ACCEPTED BY / AFFILIATION	DATE	TIME
	Russell Mehalick BCM/Smith	Gretchen Frankheim	10/18/95	1520

Additional Comments
Shipped Via Eastern Connection #1064700

No Samples from SW11 and SW15

SEE REVERSE SIDE FOR INSTRUCTIONS

0000212

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

pg 1 of 3

Hampton Lab

298689

CHAIN-OF-CUSTODY RECORD
Analytical Request

Client Olin

Address Eames St
Wilmington MA

Phone

Report To: Rick Sacks

Bill To: Olin

P.O. # / Billing Reference

Project Name / No. 7074-0102

Pace Client No.

Pace Project Manager

Pace Project No.

*Requested Due Date:

Sampled By (PRINT): Russell Mehalick / Tim Ebner

Sampler Signature Russell Mehalick

Date Sampled 10/18/95

ITEM NO.	SAMPLE DESCRIPTION	TIME	MATRIX	PACE NO.	NO. OF CONTAINERS	PRESERVATIVES: UNPRESERVED	H_2SO_4	HNO_3	VOA	Zn acetate NaOH	ANALYSES REQUEST: Sulfide	Cl, SO4, o-PO4, Br	NH3	REMARKS
1	SW14	0810	AQ	45718	3	1	1			1	✓ 52	✓ 60	✓ 68	unfiltered
2	SW 12	0905	AQ		9	3	3			3	✓ 53 54 55	✓ 61 62 63	✓ 69, 70, 71	MS/MSD
3	SW 17	1025	AQ		3	1	1			1	✓ 56	✓ 64	✓ 72	
4	SW Field Rep	1025	AQ		3	1	1			1	✓ 57	✓ 65	✓ 73	
5	SW 16	1150	AQ		3	1	1			1	✓ 58	✓ 66	✓ 74	
6	GW500	1230	AQ		3	1	1			1	✓ 59	✓ 67	✓ 75	
7														
8														

COOLER NOS.	BAILERS	SHIPMENT METHOD OUT/DATE	RETURNED/DATE

ITEM NUMBER	RELINQUISHED BY / AFFILIATION	ACCEPTED BY / AFFILIATION	DATE	TIME
	Russell Mehalick 10/18/95 BEM/Smith	Gretchen Franzheim	10/18/95	1520

Additional Comments
Shipped Eastern Connection # 1064700
No samples from SW11 and SW15

SEE REVERSE SIDE FOR INSTRUCTIONS

0000211

Katahdin
ANALYTICAL SERVICES

6/7/96

Ms. Danielle Leauby
Smith BCM
By FAX

Dear Danielle:

In response to questions raised on the phone I am providing the following:

Bromide and sulfate linear regression - It would appear that the data provided in the package was determined from peak area and only peak height is available from the raw chromatograms. This data system is no longer available to us. The data cannot be corrected.

Bromide chromatograms from WL1595 (Hampton 45663-15,16) not integrated for an apparent bromide peak - The laboratory believes that there is no issue with the choice of peaks for bromide quantitation.

Lachat analyses - The Lachat is calibrated by using a point to point method. Results for the analyte are reported in concentration units. No raw absorbance was reported in the package that would allow comparison of sample results to the calibration data. Results from the Lachat are accepted by the laboratory based on the performance of ICVs, CCVs and LCSs.

Please call if you have further questions.

Sincerely,

Richard L. Wellman

Richard L. Wellman
Client Services Manager

RECEIVED
JUN 10 1996

310 County Road No. [illegible]
P.O. Box 720 Westbrook, ME 04098
Tel (207) 874-2400 Fax (207) 775-4029

210 West Road No. 3, Portsmouth, NH [illegible]
Tel (603) 431-5277 Fax (603) [illegible]

DATA VALIDATION REPORT

OCTOBER, 1995 MONITORING EVENT

WORK ORDER NUMBER WL-1644

FOR

OLIN CORPORATION
WILMINGTON, MASSACHUSETTS

SMITH ENVIRONMENTAL TECHNOLOGIES CORPORATION
PROJECT NO. 00-7074-0102

PREPARED FOR

OLIN CORPORATION

JUNE, 1996

SMITH
ENVIRONMENTAL TECHNOLOGIES CORPORATION

Engineering • Consulting • Remediation • Construction

SMITH
ENVIRONMENTAL TECHNOLOGIES CORPORATION

DATA REVIEW COVER SHEET

Date: June 25, 1996
Subject: Data Validation of the October 1995 Sampling Event at the Olin Corporation's Wilmington, MA Facility
Smith Env. Tech. Corp. Project No. 00-7074-0102

Data validation was performed on selected analytical results from the October 1995 sampling event at Olin Corporation's Wilmington, Massachusetts Facility. Samples collected during these events were analyzed by Katahdin Analytical Services' Westbrook, Maine and New Hampshire facilities. The laboratory work order numbers reviewed were WL-1612, WL-1595, WL-1622, WL-1628 (surface water samples only), and WL-1644.

The data validation guidelines that were used for the reviews are referenced in the individual reports. The data validation reports address all issues detailed in the appropriate data validation guidelines.

The following Smith Environmental Technologies Corporation Quality Assurance (QA) Department personnel contributed to the preparation of the data review reports:

Atwood F. Davis, CPC, QA Director	Atwood F. Davis
Martin B. Kudlesky, CPC, Senior QA Scientist	Martin B. Kudlesky
Danielle M. Leauby, QA Scientist	Danielle M. Leauby
Marybeth Ousey, QA Scientist	Marybeth Ousey
E. Bryan Rivers, QA Scientist	E. Bryan Rivers

A copy of this cover sheet with appropriate signatures must accompany all listed reports.

SMITH

DATA VALIDATION REPORT
TARGET COMPOUND LIST VOLATILES
AND ADDITIONAL COMPOUNDS
OLIN CORPORATION
GROUNDWATER SAMPLES

INTRODUCTION

A data validation was performed on the analytical data from the 6 groundwater sampling locations sampled on October 19, 1995 at the Olin Corporation's Wilmington, Massachusetts Facility. This review is of work order number WL-1644 which contained 6 groundwater samples, 1 field duplicate sample, 1 field blank, and 1 trip blank. All samples in this report were analyzed by Katahdin Analytical Services, Inc. (formerly PACE Incorporated Environmental Laboratories), Westbrook, Maine, following United States Environmental Protection Agency (EPA) Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (SW-846) Method 8240 for target compound list volatiles and the additional compound 2,4,4-trimethyl-2-pentene and 2,4,4-trimethyl-1-pentene.

Because the analyses were not performed according to the EPA Contract Laboratory Program (CLP) methods, the findings in this report are based upon a review of sample data and of quality control (QC) specified by the individual analytical methods and provided by the laboratory. The quality assurance review was performed according to EPA Region I Laboratory Data Validation Functional Guidelines for Evaluating Organics Analysis (data validation guidelines), February 1988, where applicable. The validation performed was a Tier II level validation which evaluates data reporting forms only. When necessary, raw data was also evaluated to obtain further information.

The support documentation in Appendix A of this report summarizes the specifics of this review. Appendix A also provides the sample results as reported by the laboratory. The data summary lists all compounds that were analyzed. Analytical problems are outlined in the following Findings/Qualifiers section. Other issues which were identified which did not warrant qualification are detailed in the Notes Section.

SMITH

FINDINGS/QUALIFIERS

This data validation report addresses Katahdin work order number WI -1644 whic' contained 6 groundwater samples, 1 field duplicate sample, 1 field blank, and 1 trip blank. The data were evaluated for the following parameters:

- * data completeness
- * holding times
- * GC/MS Tuning
- calibrations
- blanks
- * surrogate recoveries
- matrix spike/matrix spike duplicate results
- * field duplicate reproducibility
- laboratory duplicate reproducibility
- laboratory control sample results
- * internal standard performance
- + compound identification

* All criteria were met for this parameter.
\+ All criteria were met for this parameter; however, this parameter is discussed in the Notes Section of this report.

The data summary table provided at the end of this report summarizes the following data qualifications:

1. The methylene chloride results are negated in samples GW-81D (WL-1644-6), the field blank sample GW-300 (WL-1644-10), and Trip Blank (WL-1644-11) due to method blank contamination. The reported concentrations have been changed to reflect adjusted quantitation limits.

2. The following sample results are negated due to field blank contamination. The reported concentrations have been changed to reflect adjusted quantitation limits.

    - acetone in samples GW-80S (WL-1644-1), GW-80D (WL-1644-2), GW-80BR (WL-1644-3), and GW-65BR (WL-1644-8).

    - toluene in samples GW-81D (WL-1644-6), GW-81BR (WL-1644-7), GW-65BR (WL-1644-8), and the field duplicate sample GW-81D (WL-1644-9)

3. All positive acetone results are estimated because the initial calibration percent relative standard deviation (%RSD) exceeded 30%. It is noted that the positive acetone results for the groundwater samples are previously negated due to field blank contamination.

4. A laboratory duplicate sample was performed for field sample GW-80BR (WL-1644-3). Smith Environmental Technologies Corporation has established a maximum relative percent difference (RPD) criteria of 30 percent for aqueous samples to evaluate the precision of these results. Due to RPDs of greater than 30 percent, vinyl chloride, chloroethane, 1,1-dichloroethane, and 1,2-dichloroethane are estimated. Details are provided on the Laboratory Worksheet included in Appendix A.

5. The retention time for 1,1,2-trichloroethane for sample GW-80BR (WL-1644-3) is 16.08 which is the same as the retention time for tetrachloroethene in this sample. The sample spectra for both 1,1,2-trichloroethane and tetrachloroethene for this sample are the same and best match the reference spectrum for tetrachloroethene. However, since mass spectrum includes the 97 quantitation ion for 1,1,2-trichloroethane, the reported result for 1,1,2-trichloroethane in sample GW-80BR (WL-1644-3) is considered presumptively present and qualified with an "N".

6. All sample results identified at concentrations less than the reporting limits are estimated.

NOTES

The following items were noted during the validation review which did not impact results or necessitate further qualification of data:

1. The following observations were noted based upon review of the sample mass spectra. Identifications are considered valid, there is no effect on the data.

   - The mass spectra for acetone, 1,1-dichloroethene, and 4-methyl-2-pentanone for sample GW-80BR (WL-1644-3) exhibited low abundances for their associated primary ions and extraneous ions. Since the proper primary ions were used for quantitations, the reported concentrations are considered valid.

   - The mass spectra for chlorobenzene and 1,1,2,2-tetrachloroethane for sample GW-80BR (WL-1644-3) exhibited extraneous ions and elevated ion peaks. Since the proper primary ions were used for quantitations, the reported concentrations are considered valid.

- The mass spectrum for toluene for sample GW-81D (WL-1644-6) exhibited a low abundance for the primary ion and extraneous ions. Since the proper primary ion was used for quantitation, the reported concentration is considered valid.

SUMMARY

This review has identified laboratory and field blank contamination, initial calibration results, laboratory duplicate variability, and presumptive compound evidence as areas of concern. The reported data are usable as qualified on the data summary table. For specifics relating to this review, see the attached documentation in Appendix A.

SMITH

QUALIFIER CODES

U - The compound was analyzed for but not detected. The associated numerical value is the sample quantitation limit. The detected compound was present in the associated blank(s) at a similar concentration, it is not considered to be present in the sample. The qualified quantitation limit has been elevated to either the sample concentration or the method quantitation limit, whichever is higher.

J - The associated numerical value is an estimated concentration.

UJ - The compound was analyzed for, but was not detected. The sample quantitation limit is an estimated quantity.

N - Denotes presumptive evidence of a compound.

DATA SUMMARY - TCL VOLATILE ORGANIC COMPOUNDS

Site Name	Olin	Laboratory	Katahdin
Project Number	00-7074-0102	Case/Order #	WL-1644
Sampling Date(s)	10/19/95	Fraction/Method	CLP Volatiles/ SOW 3/90

Soil samples in ug/Kg

Aqueous samples in ug/L

CRDL	Sample description or location	GW-80S	GW-80D	GW-80BR	GW-81D	GW-81BR	GW-65BR	GW-81D	GW-300	Trip Blank	
	Sample number	WL-1644-1	WL-1644-2	WL-1644-3	WL-1644-6	WL-1644-7	WL-1644-8	WL-1644-9	WL-1644-10	WL-1644-11	
	Matrix	Aqueous	Aqueous	Aqueous	Aqueous	Aqueous	Aqueous	Aqueous	Aqueous	Aqueous	
	% Moisture	100%	100%	100%	100%	100%	100%	100%	100%	100%	
	Dilution factor	varies	varies	varies	1	1	1	1	1	1	
	Sampling Date	10/19/95	10/19/95	10/19/95	10/19/95	10/19/95	10/19/95	10/19/95	10/19/95	10/19/95	
CRDL	Comments				Field Dup. A			Field Dup. B	Field Blank		
10	chloromethane										
10	bromomethane										
10	vinyl chloride		19	300 J							
10	chloroethane		230 J	790 J							
10	methylene chloride		31	220	10 U				10 U	10 U	
[illegible]	acetone	52 U	31 U	280 U			10 U		20 J		
10	carbon disulfide										
5	1,1-dichloroethene		2 J	120							
5	1,1-dichloroethane		430	1100 J							
5	1,2-dichloroethene (total)	14	160	1300							
5	chloroform										
[illegible]	1,2-dichloroethane			23 J							
[illegible]	2-butanone	19	13 J	300					1 J		
5	1,1,1-trichloroethane			1500							
5	carbon tetrachloride										
[illegible]	vinyl acetate										

WL1644V.XLS

QA Scientist: Marybeth Dusey Date 6/21/96

DATA SUMMARY - TCL VOLATILE ORGANIC COMPOUNDS

Site Name	Olin		Laboratory	Katahdin
Project Number	00-7074-0102	Soil samples in ug/Kg	Case/Order #	WL-1644
Sampling Date(s)	10/19/95	Aqueous samples in ug/L	Fraction/Method	CLP Volatiles/ SOW 3/90

	Sample description or location	GW-80S	GW-80D	GW-80BR	GW-81D	GW-81BR	GW-65BR	GW-81D	GW-300	Trip Blank	
	Sample number	WL-1644-1	WL-1644-2	WL-1644-3	WL-1644-6	WL-1644-7	WL-1644-8	WL-1644-9	WL-1644-10	WL-1644-11	
5	bromodichloromethane										
5	1,2-dichloropropane										
5	cis-1,3-dichloropropene										
5	trichloroethene			56					1 J		
5	dibromochloromethane										
5	1,1,2-trichloroethane			26 NJ							
5	benzene	28	94	130							
5	trans-1,3-dichloropropene										
5	bromoform			12 J							
10	2,4,4-trimethyl-2-pentene										
10	2,4,4-trimethyl-1-pentene										
15	4-methyl-2-pentanone			1200							
15	2-hexanone										
5	tetrachloroethene			43 J							
5	1,1,2,2-tetrachloroethane			41 J							
5	toluene	4400	7100	15000	10 U	10 U	10 U	10 U	8		
5	chlorobenzene	1 J	79	170							
5	ethylbenzene	1300	340	290							
5	styrene										
5	xylene (total)	2800	1100	1100		1 J	1 J				

WL1644V.XLS

QA Scientist Marybeth Duse Date 6/21/96

SMITH

DATA VALIDATION REPORT
TARGET COMPOUND LIST SEMIVOLATILES
OLIN CORPORATION
GROUNDWATER SAMPLES

INTRODUCTION

A data validation was performed on the analytical data from the 6 groundwater sampling locations sampled on October 19, 1995 at the Olin Corporation's Wilmington, Massachusetts Facility. This review is of work order number WL-1644 which contained 6 groundwater samples, 1 field duplicate sample, and 1 field blank. All samples in this report were analyzed by Katahdin Analytical Services, Inc. (formerly PACE Incorporated Environmental Laboratories), Westbrook, Maine, following United States Environmental Protection Agency (EPA) Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (SW-846) Method 8270 for target compound list semivolatiles.

Because the analyses were not performed according to the EPA Contract Laboratory Program (CLP) methods, the findings in this report are based upon a review of sample data and of quality control (QC) specified by the individual analytical methods and provided by the laboratory. The quality assurance review was performed according to EPA Region I Laboratory Data Validation Functional Guidelines for Evaluating Organics Analysis (data validation guidelines), February 1988, where applicable. The validation performed was a Tier II level validation which evaluates data reporting forms only. When necessary, raw data were also evaluated to obtain further information.

The support documentation in Appendix B of this report summarizes the specifics of this review. Appendix B also provides the sample results as reported by the laboratory. The data summary lists all compounds that were analyzed. Analytical problems are outlined in the following Findings/Qualifiers Section. Other issues which were identified which did not warrant qualification are detailed in the Notes Section.

FINDINGS/QUALIFIERS

This data validation report addresses Katahdin work order number WL-1644 which contained 6 groundwater samples, 1 field duplicate sample, and 1 field blank. The data were evaluated for the following parameters:

* data completeness
* holding times
* GC/MS Tuning
calibrations

SMITH

blanks
* surrogate recoveries
+ matrix spike/matrix spike duplicate results
field duplicate reproducibility
laboratory duplicate reproducibility
* laboratory control sample results
internal standard performance
* compound identification

* All criteria were met for this parameter.
+ All criteria were met for this parameter; however, this parameter is discussed in the Notes Section of this report.

The data summary table provided at the end of this report summarizes the following data qualifications:

1. The bis(2-ethylhexyl)phthalate results are negated in samples GW-80S (WL-1644-1), GW-80D (WL-1644-2), GW-80BR (WL-1644-3), GW-81D (WL-1644-6), GW-81BR (WL-1644-7), GW-65BR (WL-1644-8), the field duplicate sample GW-81D (WL-1644-9), and the field blank sample GW-300 (WL-1644-10) due to method blank contamination. The reported concentrations have been changed to reflect adjusted quantitation limits.

2. The phenol results are negated in samples GW-80S (WL-1644-1), GW-80D (WL-1644-2), and GW-80BR (WL-1644-3) due to field blank contamination. The reported concentrations have been changed to reflect adjusted quantitation limits.

3. The positive 4-methylphenol result in sample GW-80D (WL-1644-2) is estimated because the initial calibration percent relative standard deviation (%RSD) exceeded 30%.

4. The quantitation limits for bis(2-chloroethyl)ether in samples GW-80S (WL-1644-1), GW-81BR (WL-1644-7), the field duplicate sample GW-81D (WL-1644-9), and the field blank sample GW-300 (WL-1644-10) are estimated because the continuing calibration percent difference (%D) exceeded 50%.

5. A laboratory duplicate sample was performed for field sample GW-80BR (WL-1644-3). Smith Environmental Technologies Corporation has established a maximum relative percent difference (RPD) criteria of 30 percent for aqueous samples to evaluate the precision of these results based upon Region I guidance for field duplicate results. Due to RPDs of greater than 30 percent, positive results for phenol, 2-

methylphenol, 4-methylphenol, and bis(2-ethylhexyl)phthalate are estimated in sample GW-80BR (WL-1644-3).

6. Field duplicate results were reviewed to evaluate duplicate precision. Due to a RPD greater than 30 percent, the positive result and the quantitation limit for di-n-octylphthalate is estimated in sample GW-81D (WL-1644-6) and the field duplicate sample GW-81D (WL-1644-9). Diethylphthalate and di-n-butylphthalate were detected in sample GW-81D (WL-1644-6) at estimated concentrations below the reporting limits but were not detected in GW-81D (WL-1644-9). Bis(2-ethylhexyl)phthalate was detected in both samples but is negated due to blank contamination. No further qualification is required for diethylphthalate, di-n-butylphthalate, and bis(2-ethylhexyl)phthalate.

7. Due to low chrysene-d12 and perylene-d12 internal standard areas, quantitation limits are estimated for pyrene, butylbenzylphthalate, 3,3'-dichlorobenzidine, benzo(a)anthracene, chrysene, bis(2-ethylhexyl)phthalate, di-n-octylphthalate, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, dibenzo(a,h) anthracene, and benzo(g,h,i)perylene in sample GW-80BR (WL-1644-3).

8. All sample results identified at concentrations less than the reporting limits are estimated.

NOTES

The following item was noted during the validation review which did not impact results or necessitate further qualification of data:

1. The matrix spike (MS) sample met the accuracy criteria for all spiked compounds. A matrix spike duplicate (MSD) analysis was not performed; therefore, MS/MSD precision criteria could not be evaluated. Instead, the laboratory performed a laboratory duplicate analysis of sample GW-80BR (WL-1644-3) to evaluate precision. Qualifications based upon the laboratory duplicate analysis results are discussed in Item 5 of the Findings/Qualifiers Section.

SUMMARY

This review has identified laboratory and field blank contamination, initial and continuing calibration variability, laboratory and field duplicate variability, and low internal standard areas as areas of concern. The reported data are usable as qualified on the data summary table. For specifics relating to this review, see the attached documentation in Appendix B.

SMITH

QUALIFIER CODES

U - The compound was analyzed for but not detected. The associated numerical value is the sample quantitation limit. Because the qualified compound was present in the associated blank(s) at a similar concentration it is not considered to be present in the sample. The qualified quantitation limit has been elevated to either the sample concentration or the method quantitation limit, whichever is higher.

J - The associated numerical value is an estimated concentration.

UJ - The compound was analyzed for, but was not detected. The sample quantitation limit is an estimated quantity.

DATA SUMMARY - TCL SEMIVOLATILE ORGANIC COMPOUNDS

Site Name	Olin, Wilmington MA		Laboratory	Katahdin
Project Number	00-7074-0102	Soil samples in ug/Kg	Case/Order #	WL-1644
Sampling Date(s)	10/19/95	Aqueous samples in ug/L	Fraction/Method	TCL Semivolatiles/ 8270

		Sample description or location	GW-80S	GW-80D	GW-80BR	GW-81D	GW-81BR	GW-65BR	GW-81D	GW-300 Field Blank		
		Sample number	WL-1644-1	WL-1644-2	WL-1644-3	WL-1644-6	WL-1644-7	WL-1644-8	WL-1644-9	WL-1644-10		
		Matrix	Aqueous	Aqueous	Aqueous	Aqueous	Aqueous	Aqueous	Aqueous	Aqueous		
		% Moisture	100%	100%	100%	100%	100%	100%	100%	100%		
		Dilution factor	1 ,2	1, 2	1, 5	1, 300	1	1	1	1		
		Sample volume										
AQ	SOIL	Sampling Date	10/19/95	10/19/95	10/19/95	10/19/95	10/19/95	10/19/95	10/19/95	10/19/95		
CRQL	CRQL	Comments				Field Dup			Field Dup			
10	330	phenol	82 U	10 U	10 U					19		
10	330	bis(2-chloroethyl)ether	UJ				UJ		UJ	UJ		
10	330	2-chlorophenol										
10	330	1,3-dichlorobenzene		2 J	4 J							
10	330	1,4-dichlorobenzene		18	38							
10	330	1,2-dichlorobenzene	2 J	290	770							
10	330	2-methylphenol	26	17	18 J							
10	330	2,2'-oxybis(1-chloropropane)										
10	330	4-methylphenol	190	63 J	70 J							
10	330	N-nitroso-di-n-propylamine										
10	330	hexachloroethane										
10	330	nitrobenzene										
10	330	isophorone	2 J									
10	330	2-nitrophenol										
10	330	2,4-dimethylphenol	25	12	9 J							
10	330	bis(2-chloroethoxy)methane										
10	330	2,4-dichlorophenol										
10	330	1,2,4-trichlorobenzene		8 J	20							

WL1644SV.XLS

QA Scientist *M. Kudlesky* Date *6/24/96*

DATA SUMMARY - TCL SEMIVOLATILE ORGANIC COMPOUNDS

Site Name	Olin, Wilmington MA	Laboratory	Katahdin
Project Number	00-7074-0102	Case/Order #	WL-1644
Sampling Date(s)	10/19/95	Fraction/Method	TCL Semivolatiles/ 8270

Soil samples in ug/Kg

Aqueous samples in ug/L

		Sample description or location	GW-80S	GW-80D	GW-80BR	GW-81D	GW-81BR	GW-65BR	GW-81D	GW-300 Field Blank		
		Sample number	WL-1644-1	WL-1644-2	WL-1644-3	WL-1644-6	WL-1644-7	WL-1644-8	WL-1644-9	WL-1644-10		
10	330	naphthalene	4 J	27	13							
10	330	4-chloroaniline										
10	330	hexachlorobutadiene										
10	330	4-chloro-3-methylphenol		21	4 J							
10	330	2-methylnaphthalene										
10	330	hexachlorocyclopentadiene										
10	330	2,4,6-trichlorophenol										
25	800	2,4,5-trichlorophenol										
10	330	2-chloronaphthalene										
25	800	2-nitroaniline										
10	330	dimethylphthalate										
10	330	acenaphthylene										
10	330	2,6-dinitrotoluene										
25	800	3-nitroaniline										
10	330	acenaphthene										
25	800	2,4-dinitrophenol										
25	800	4-nitrophenol										
10	330	dibenzofuran										
10	330	2,4-dinitrotoluene										
10	330	diethylphthalate				2 J	1 J					
10	330	4-chlorophenyl-phenylether										
10	330	fluorene										
25	800	4-nitroaniline										

WL1644SV.XLS

QA Scientist *M. Kudlosky* Date *6/24/96*

DATA SUMMARY - TCL SEMIVOLATILE ORGANIC COMPOUNDS

Site Name	Olin, Wilmington MA		Laboratory	Katahdin
Project Number	00-7074-0102	Soil samples in ug/Kg	Case/Order #	WL-1644
Sampling Date(s)	10/19/95	Aqueous samples in ug/L	Fraction/Method	TCL Semivolatiles/ 8270

		Sample description or location	GW-80S	GW-80D	GW-80BR	GW-81D	GW-81BR	GW-65BR	GW-81D	GW-300 Field Blank		
		Sample number	WL-1644-1	WL-1644-2	WL-1644-3	WL-1644-6	WL-1644-7	WL-1644-8	WL-1644-9	WL-1644-10		
25	800	4,6-dinitro-2-methylphenol										
10	330	n-nitrosodiphenylamine	2 J									
10	330	4-bromophenyl-phenylether										
10	330	hexachlorobenzene										
25	800	pentachlorophenol										
10	330	phenanthrene										
10	330	anthracene										
10	330	carbazole										
10	330	di-n-butylphthalate	1 J			1 J	1 J					
10	330	fluoranthene										
10	330	pyrene			UJ							
10	330	butylbenzylphthalate	3 J		UJ							
10	330	3,3'-dichlorobenzidine			UJ							
10	330	benzo(a)anthracene			UJ							
10	330	chrysene			UJ							
10	330	bis(2-ethylhexyl)phthalate	16 U	10 U	10 U	5000 U	10 U	10 U	10 U	10 U		
10	330	di-n-octylphthalate			UJ	18 J			UJ			
10	330	benzo(b)fluoranthene			UJ							
10	330	benzo(k)fluoranthene			UJ							
10	330	benzo(a)pyrene			UJ							
10	330	indeno(1,2,3-cd)pyrene			UJ							
10	330	dibenz(a,h)anthracene			UJ							
10	330	benzo(g,h,i)-perylene			UJ							

WL1644SV.XLS

QA Scientist *M. Kudlesky* Date *6/24/96*

SMITH

DATA VALIDATION REPORT
PESTICIDE ORGANIC COMPOUNDS
OLIN CORPORATION
GROUNDWATER SAMPLES

INTRODUCTION

A data validation was performed on the analytical data from the 6 groundwater sampling locations sampled on October 19, 1995 at the Olin Corporation's Wilmington, Massachusetts Facility. This review is of work order number WL-1644 which contained 6 groundwater samples, 1 field duplicate sample, and 1 field blank. All samples in this report were analyzed by Katahdin Analytical Services, Inc. (formerly PACE Incorporated Environmental Laboratories), Westbrook, Maine, following United States Environmental Protection Agency (EPA) *"Test Methods for Evaluating Solid Waste, Physical/Chemical Methods"* (SW-846) Method 8080 for pesticide organic compounds.

Because the analyses were not performed according to the EPA Contract Laboratory Program (CLP) methods, the findings in this report are based upon a review of sample data and of quality control (QC) specified by the individual analytical methods and provided by the laboratory. The quality assurance review was performed according to EPA Region I *"Laboratory Data Validation Functional Guidelines for Evaluating Organics Analysis"* (data validation guidelines), February 1988, where applicable to Method 8080. In addition, EPA Region III *"Modifications to National Functional Guidelines for Pesticide/Aroclor Data Review"*, May 1993, was applied to the data for the evaluation of surrogates, since it provides updated guidance for qualification of sample results based upon two surrogate compound recoveries.

The support documentation in Appendix C of this report summarizes the specifics of this review. Appendix C also provides the sample results as reported by the laboratory. The data summary lists all compounds that were analyzed. Analytical problems are outlined in the following Findings/Qualifiers Section. Other issues which were identified which did not warrant qualification are detailed in the Notes Section.

FINDINGS/QUALIFIERS

This data validation report addresses Katahdin work order number WL-1644 which contained 6 groundwater samples, 1 field duplicate sample, and 1 field blank. The data were evaluated for the following parameters:

* data completeness
* holding times

SMITH

+ instrument performance
  calibrations
* blanks
  surrogate recoveries
  matrix spike results
* field duplicate reproducibility
  laboratory duplicate reproducibility
* laboratory control sample results
* compound identification and retention time criteria

* All criteria were met for this parameter.
\+ All criteria were met for this parameter; however, this parameter is discussed in the Notes Section of this report.

The data summary table provided at the end of this report summarizes the following data qualifications:

1. According to SW-846, all continuing calibration standards (CCs) must respond within 15 percent difference (%D) of the initial calibration standards. For the CC (File ID 8OCB238.RST) analyzed on the DB608 column, heptachlor, endrin aldehyde, and endrin ketone exhibited a decrease in response greater than 15 %D. All the compounds for the DB1701 column were within the %D criteria. There are no positive results or identifications for endrin ketone and endrin aldehyde above the practical quantitation limit (PQL) on the DB1701 column for any of the samples in this case. However, heptachlor was identified in sample GW-80BR (WL-1644-3) on both columns above the PQL. The lower of the two values was reported by the laboratory from the DB608 column. Since the DB608 column response exhibited a greater than 15 %D, the positive results for heptachlor in sample WL-1644-3 and in the laboratory duplicate sample GW-80BR (WL-1644-5) are estimated.

2. The field chain of custody indicated that the matrix spike (MS) and laboratory duplicate (LD) samples were to be analyzed from sampling location GW-80BR (WL-1644-3). A matrix spike duplicate was not performed on this sample. Therefore, the MS/MSD precision could not be evaluated. The MS sample exhibited low percent recoveries (%Rs) for aldrin and dieldrin. Due to the low %Rs, the PQLs for aldrin and dieldrin in sample WL-1644-3 are estimated.

SMITH

The laboratory performed a laboratory duplicate analysis of sample GW-80BR (WL-1644-3) to evaluate precision. Smith Environmental Technologies Corporation has established a maximum relative percent difference (RPD) criteria of 30 percent for aqueous samples to evaluate the precision of the duplicate results based upon Region I guidance for field duplicates. Delta-BHC was detected in the laboratory duplicate of WL-1644-3 above the PQL, but it was not detected in the original analysis. Due to the RPD greater than 30% for delta-BHC, the PQL in sample WL-1644-3 and the positive result in the laboratory duplicate sample GW-80BR (WL-1644-5) are estimated.

It is further noted that the laboratory analyzed batch quality control (QC) which consisted of a method blank and a laboratory control sample (LCS). The method blanks and the LCS for all compounds are within the laboratory established QC limits.

3. Due to surrogate compound recovery outliers, the following samples are qualified:

- beta-BHC and heptachlor in sample GW-80BR (WL-1644-3) are estimated,

- heptachlor, beta-BHC and delta-BHC in sample GW-80BR (WL-1644-5) are estimated, and

- all non-detected pesticides in sample GW-81BR (WL-1644-7) are estimated.

It is further noted that WL-1644-5 is the laboratory duplicate analysis of sample WL-1644-3.

4 Smith Environmental Technologies Corporation has adopted a maximum acceptance criteria for the evaluation of chromatograms that exhibit on-scale interferences. Chromatograms with on-scale interferences greater than 25% of full scale have been closely evaluated to determine the impact on the quantitation limits in the range of the interference. Sample GW-80BR (WL-1644-3) exhibited on-scale positive peak interferences at different retention times throughout the entire chromatogram on both the DB608 and the DB1701 columns. As a result, the positive results for beta-BHC and heptachlor, and the PQLs for non-detected compounds in sample WL-1644-3 are estimated. Positive on-scale interferences, may be indicative of carryover.

SMITH

It is further noted that the MS sample and the LD analysis of sample WL-1644-3 exhibited the same positive on-scale interference as the unspiked sample. There is no impact on the rest of the samples in this case due to the positive on-scale interference exhibited in the MS and LD.

NOTES

The following items were noted during the validation review which did not impact results or necessitate further qualification of data:

1. According to SW-846, the initial calibration percent relative standard deviation (%RSD) for all pesticide compounds must be below 20%. Due to the non-linearity of the low level concentration standard of 0.01 nanograms per microliters (ng/µL), there are several compounds analyzed on the DB1701 and the DB608 columns that exceeded the 20% criteria. However, the PQLs are based on the 0.05 ng/µL standard which is within the linear calibration of the instrument. Therefore, there is no impact on the reported PQLs. For the compounds that did not meet the 20% criteria, there are no positive results above the PQLs. Therefore, no qualification is necessary due to %RSD criteria. See Appendix C for support documentation.

2. Samples GW-80S (WL-1644-1), the matrix spike GW-80BR (WL-1644-4), and the field blank GW-300 (WL-1644-10) have one surrogate recovery out of criteria. No qualification is necessary when one surrogate falls out of criteria.

   It is further noted that there are two peaks present near the retention time (RT) of tetrachloro-m-xylene (TCX) in sample WL-1644-10. Both peaks were integrated as one and identified as TCX. Therefore, due to poor integration of the two peaks and the incorrect identification of TCX, the percent recovery of TCX in sample WL-1644-10 is biased high. The peak area for TCX appears to be high enough that, if the peaks were reintegrated properly, the %R would be within criteria.

SMITH

SUMMARY

This review has identified continuing calibration variability, poor accuracy results, laboratory duplicate variability, and surrogate outliers, on-scale positive inferences, and initial calibration outliers areas as areas of concern. The reported data are usable as qualified on the data summary table. For specifics relating to this review, see the attached documentation in Appendix C.

QUALIFIER CODES

J - The associated numerical value is an estimated concentration.

UJ - The compound was analyzed for, but was not detected. The sample quantitation limit is an estimated quantity.

DATA SUMMARY - PESTICIDE ORGANIC COMPOUNDS

Site Name	Wilmington, MA		Laboratory	Pace Incorporated
Project Number	00-7074-0102	Soil samples in ug/Kg	Case/Order #	WL1644
Sampling Date(s)	October 19, 1995	Aqueous samples in ug/L	Fraction/Method	Pesticides/ SW-846 Method 8080

		Sample description or location	GW-80S	GW-80D	GW-80BR	GW-81D	GW-81BR	GW-65BR	GW-81D DUP Field Rep	GW-300		
		Sample number	WL-1644-1	WL-1644-2	WL-1644-3	WL-1644-6	WL-1644-7	WL-1644-8	WL-1644-9	WL-1644-10		
		Matrix	Aqueous	Aqueous	Aqueous	Aqueous	Aqueous	Aqueous	Aqueous	Aqueous		
		% Moisture	100%	100%	100%	100%	100%	100%	100%	100%		
		Dilution factor	1	1	1	1	1	1	1	1		
AQ	SOIL	Sampling Date	10/19/95	10/19/95	10/19/95	10/19/95	10/19/95	10/19/95	10/19/95	10/19/95		
		Extraction Date	10/20/95	10/20/95	10/20/95	10/20/95	10/20/95	10/20/95	10/20/95	10/20/95		
		Analysis Date	10/23/95	10/23/95	10/23/95	10/23/95	10/23/95	10/23/95	10/24/95	10/24/95		
		Time Analyzed	17:01	17:54	18:47	21:27	22:21	22:21	00:07	01:01		
		Instrument ID	H58908	H58908	H58908	H58908	H58908	H58908	H58908	H58908		
PQL	PQL	Comments	unfilt.	unfilt.	unfilt.	Field Dup A	unfilt.	unfilt.	Field Dup B	Field Blank		
0.05	1.7	alpha-BHC			UJ		UJ					
0.05	1.7	beta-BHC			0.063 J		UJ					
0.05	1.7	delta-BHC			UJ		UJ					
0.05	1.7	lindane			UJ		UJ					
0.05	1.7	heptachlor			0.050 J		UJ					
0.05	1.7	aldrin			UJ		UJ					
0.05	1.7	heptachlor epoxide			UJ		UJ					
0.05	1.7	endosulfan I			UJ		UJ					
0.10	3.3	dieldrin			UJ		UJ					
0.10	3.3	4,4'-DDE			UJ		UJ					
0.10	3.3	endrin			UJ		UJ					
0.10	3.3	endosulfan II			UJ		UJ					
0.10	3.3	4,4'-DDD			UJ		UJ					
0.10	3.3	endosulfan sulfate			UJ		UJ					

WL1644PS.XLS

QA Scientist Dheaubry Date 7/17/96

DATA SUMMARY - PESTICIDE ORGANIC COMPOUNDS

Site Name	Wilmington, MA	Laboratory	Pace Incorporated
Project Number	00-7074-0102	Case/Order #	WL1644
Sampling Date(s)	October 19, 1995	Fraction/Method	Pesticides/ SW-846 Method 8080

Soil samples in ug/Kg

Aqueous samples in ug/L

		Sample description or location	GW-80S	GW-80D	GW-80BR	GW-81D	GW-81BR	GW-65BR	GW-81D DUP Field Rep	GW-300		
		Sample number	WL-1644-1	WL-1644-2	WL-1644-3	WL-1644-6	WL-1644-7	WL-1644-8	WL-1644-9	WL-1644-10		
0.10	[illegible]	4,4'-DDT			UJ		UJ					
0.50	[illegible]	methoxychlor			UJ		UJ					
0.10	[illegible]	endrin ketone			UJ		UJ					
0.10	[illegible]	endrin aldehyde			UJ		UJ					
0.05	17	alpha chlordane			UJ		UJ					
0.05	17	gamma chlordane			UJ		UJ					
1.0	170.0	toxaphene			UJ		UJ					

WL1644PS.XLS

QA Scientist Dheauley Date 7/17/96

APPENDIX A

Volatile/Semivolatile Data Validation Summary

SMTH Project Name: Olin, Wilmington MA
SMTH Project No.: 02-7074-0102
Project Manager: B. Cushing
Laboratory: Katahdin

Case No./SDG: WL-1044
Sampling Date(s): 10/19/96
Reviewed By: M. Ousey
Completion Date: 10/20/96

Fraction Reviewed: ☑ VOLATILE ORGANICS ☐ SEMIVOLATILE ORGANICS

Compound List: ☑ TCL ☐ Priority Pollutant ☐ Appendix IX ☐ Other

Method: ☑ CLP SOW 3/90 ☐ 40 CFR 136 Method____ ☐ SW-846 Method____ ☐ Other

The following table indicates the data validation criteria examined, problems identified, and QA action.

Data Validation Criteria:	accept/	FYI/	qualify	comments
Holding Times	✓			
GC/MS Tuning	✓			w/in 12? assumed (limited review)
Initial Calibrations			✓	all + acetone
Continuing Calibrations		✓		See form in App A
Blank Analysis Results *		✓	FB ✓	blank results too low for qual
System Monitoring/Surrogate Results	✓			
MS/MSD Results	✓			
Field Duplicate Results	✓			SID (-6 & -9
Internal Standard Areas/RT	✓			
Target Compound Identification	✓			
TIC Identification		✓		NA
Quantitation/Detection Limits		✓		NR
System Performance	✓			
Overall Assessment of Data	✓			
Other: LCS Laboratory Duplicate	✓			

General Comments: MISC Compounds

* Field Blank qual - unusual results are negated.

NA - Not applicable
NR - Not reviewed

QA Scientist M. Ousey Date 6/18/96

pace INCORPORATED ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1644-1
Report Date: 11/06/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-80S (UNFILT)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
TCL Volatile Organics +								1
Trimethylpentenes by USEPA 8240								
Chloromethane	<10.	µg/L	1.0	10	EPA 8240	10/20/95	TG	
Bromomethane	<10.	µg/L	1.0	10	EPA 8240	10/20/95	TG	
Vinyl chloride	<10.	µg/L	1.0	10	EPA 8240	10/20/95	TG	
Chloroethane	<10.	µg/L	1.0	10	EPA 8240	10/20/95	TG	
Methylene chloride	<10.	µg/L	1.0	10	EPA 8240	10/20/95	TG	
Acetone	52.	µg/L	1.0	15	EPA 8240	10/20/95	TG	
Carbon disulfide	<10.	µg/L	1.0	10	EPA 8240	10/20/95	TG	
1,1-Dichloroethene	<5.	µg/L	1.0	5	EPA 8240	10/20/95	TG	
1,1-Dichloroethane	<5.	µg/L	1.0	5	EPA 8240	10/20/95	TG	
Total 1,2-Dichloroethene	14.	µg/L	1.0	5	EPA 8240	10/20/95	TG	
Chloroform	<5.	µg/L	1.0	5	EPA 8240	10/20/95	TG	
1,2-Dichloroethane	<5.	µg/L	1.0	5	EPA 8240	10/20/95	TG	
2-Butanone	19.	µg/L	1.0	15	EPA 8240	10/20/95	TG	
1,1,1-Trichloroethane	<5.	µg/L	1.0	5	EPA 8240	10/20/95	TG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) "J" flag denotes an estimated value less than the Laboratory's Practical Quantitation Level.

11/06/95

LJO/jcbgbp(dw)/jfg/lag/sra

CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

REPORT OF LABORATORY ANALYSIS

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1644-.
Report Date: 11/06/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-80S (UNFILT)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Carbon tetrachloride	<5.	µg/L	1.0	5	EPA 8240	10/20/95	TG	
Vinyl acetate	<15.	µg/L	1.0	15	EPA 8240	10/20/95	TG	
Bromodichloromethane	<5.	µg/L	1.0	5	EPA 8240	10/20/95	TG	
1,2-Dichloropropane	<5.	µg/L	1.0	5	EPA 8240	10/20/95	TG	
cis-1,3-Dichloropropene	<5.	µg/L	1.0	5	EPA 8240	10/20/95	TG	
Trichloroethene	<5.	µg/L	1.0	5	EPA 8240	10/20/95	TG	
Dibromochloromethane	<5.	µg/L	1.0	5	EPA 8240	10/20/95	TG	
1,1,2-Trichloroethane	<5.	µg/L	1.0	5	EPA 8240	10/20/95	TG	
Benzene	28.	µg/L	1.0	5	EPA 8240	10/20/95	TG	
trans-1,3-Dichloropropene	<5.	µg/L	1.0	5	EPA 8240	10/20/95	TG	
Bromoform	<5.	µg/L	1.0	5	EPA 8240	10/20/95	TG	
2,4,4-Trimethyl-2-pentene	<10.	µg/L	1.0	10	EPA 8240	10/20/95	TG	
2,4,4-Trimethyl-1-pentene	<10.	µg/L	1.0	10	EPA 8240	10/20/95	TG	
4-Methyl-2-pentanone	<15.	µg/L	1.0	15	EPA 8240	10/20/95	TG	
2-Hexanone	<15.	µg/L	1.0	15	EPA 8240	10/20/95	TG	
Tetrachloroethene	<5.	µg/L	1.0	5	EPA 8240	10/20/95	TG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

11/06/95

LJO/jcbgbp(dw)/jfg/lag/sra

CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

REPORT OF LABORATORY ANALYSIS

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1644-1
Report Date: 11/06/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-80S (UNFILT)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
1,1,2,2-Tetrachloroethane	<5.	µg/L	1.0	5	EPA 8240	10/20/95	TG	
Toluene	4400.	µg/L	50.	5	EPA 8240	10/20/95	TG	
Chlorobenzene	J1.	µg/L	1.0	5	EPA 8240	10/20/95	TG	
Ethylbenzene	1300.	µg/L	50.	5	EPA 8240	10/20/95	TG	
Styrene	<5.	µg/L	1.0	5	EPA 8240	10/20/95	TG	
Total Xylenes	2800.	µg/L	50.	5	EPA 8240	10/20/95	TG	
1,2-Dichloroethane-d4 (% Recovery)	95.	%	1.0		EPA 8240	10/20/95	TG	
Toluene-d8 (% Recovery)	91.	%	1.0		EPA 8240	10/20/95	TG	
p-Bromofluorobenzene (% Recovery)	99.	%	1.0		EPA 8240	10/20/95	TG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

11/06/95

LJO/jcbgbp(dw)/jfg/lag/sra

CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1644-2
Report Date: 11/06/95
PO No. : SB-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-80D (UNFILT)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
TCL Volatile Organics + Trimethylpentenes by USEPA 8240								1,2
Chloromethane	<10.	µg/L	1.0	10	EPA 8240	10/20/95	LG	
Bromomethane	<10.	µg/L	1.0	10	EPA 8240	10/20/95	LG	
Vinyl chloride	19.	µg/L	1.0	10	EPA 8240	10/20/95	LG	
Chloroethane	J230	µg/L	50.	10	EPA 8240	10/20/95	LG	
Methylene chloride	B31	µg/L	1.0	10	EPA 8240	10/20/95	LG	
Acetone	31.	µg/L	1.0	15	EPA 8240	10/20/95	LG	
Carbon disulfide	<10.	µg/L	1.0	10	EPA 8240	10/20/95	LG	
1,1-Dichloroethene	J2	µg/L	1.0	5	EPA 8240	10/20/95	LG	
1,1-Dichloroethane	430.	µg/L	50.	5	EPA 8240	10/20/95	LG	
Total 1,2-Dichloroethene	160.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
Chloroform	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
1,2-Dichloroethane	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
2-Butanone	J13	µg/L	1.0	15	EPA 8240	10/20/95	LG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) "J" flag denotes an estimated value less than the Laboratory's Practical Quantitation Level.
(2) "B" flag denotes detection of this analyte in the laboratory method blank analyzed concurrently with the sample.

11/06/95

LJO/jcbgbp(dw)/jfg/lag/sra

CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

REPORT OF LABORATORY ANALYSIS

pace INCORPORATED ENVIRONMENTAL LABORATORIES

Lab Number : WL-1644-2
Report Date: 11/06/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
GW-80D (UNFILT)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
1,1,1-Trichloroethane	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
Carbon tetrachloride	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
Vinyl acetate	<15.	µg/L	1.0	15	EPA 8240	10/20/95	LG	
Bromodichloromethane	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
1,2-Dichloropropane	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
cis-1,3-Dichloropropene	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
Trichloroethene	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
Dibromochloromethane	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
1,1,2-Trichloroethane	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
Benzene	94.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
trans-1,3-Dichloropropene	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
Bromoform	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
2,4,4-Trimethyl-2-pentene	<10.	µg/L	1.0	10	EPA 8240	10/20/95	LG	
2,4,4-Trimethyl-1-pentene	<10.	µg/L	1.0	10	EPA 8240	10/20/95	LG	
4-Methyl-2-pentanone	<15.	µg/L	1.0	15	EPA 8240	10/20/95	LG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

11/06/95

LJO/jcbgbp(dw)/jfg/lag/sra

CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1644-2
Report Date: 11/06/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-80D (UNFILT)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
2-Hexanone	<15.	µg/L	1.0	15	EPA 8240	10/20/95	LG	
Tetrachloroethene	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
1,1,2,2-Tetrachloroethane	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
Toluene	7100.	µg/L	50.	5	EPA 8240	10/20/95	LG	
Chlorobenzene	79.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
Ethylbenzene	340.	µg/L	50.	5	EPA 8240	10/20/95	LG	
Styrene	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
Total Xylenes	1100.	µg/L	50.	5	EPA 8240	10/20/95	LG	
1,2-Dichloroethane-d4 (% Recovery)	103.	%	1.0		EPA 8240	10/20/95	LG	
Toluene-d8 (% Recovery)	91.	%	1.0		EPA 8240	10/20/95	LG	
p-Bromofluorobenzene (% Recovery)	103.	%	1.0		EPA 8240	10/20/95	LG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

11/06/95

LJO/jcbgbp(dw)/jfg/lag/sra

CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

REPORT OF LABORATORY ANALYSIS

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1644-3
Report Date: 11/06/95
PO No. : SB-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-80BR (UNFILT)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
TCL Volatile Organics +								1,2,3
Trimethylpentenes by USEPA 8240								
Chloromethane	<100.	µg/L	10	10	EPA 8240	10/20/95	TG	
Bromomethane	<100.	µg/L	10	10	EPA 8240	10/20/95	TG	
Vinyl chloride	300.	µg/L	10	10	EPA 8240	10/20/95	TG	
Chloroethane	790.	µg/L	10	10	EPA 8240	10/20/95	TG	
Methylene chloride	B220	µg/L	10	10	EPA 8240	10/20/95	TG	
Acetone	280.	µg/L	10	15	EPA 8240	10/20/95	TG	
Carbon disulfide	<100.	µg/L	10	10	EPA 8240	10/20/95	TG	
1,1-Dichloroethene	120.	µg/L	10	5	EPA 8240	10/20/95	TG	
1,1-Dichloroethane	1100.	µg/L	10	5	EPA 8240	10/20/95	TG	
Total 1,2-Dichloroethene	1300.	µg/L	10	5	EPA 8240	10/20/95	TG	
Chloroform	<50.	µg/L	10	5	EPA 8240	10/20/95	TG	
1,2-Dichloroethane	J23	µg/L	10	5	EPA 8240	10/20/95	TG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) "J" flag denotes an estimated value less than the Laboratory's Practical Quantitation Level.
(2) "B" flag denotes detection of this analyte in the laboratory method blank analyzed concurrently with the sample.
(3) Sample dilution required for quantitation of one or more target analytes; therefore, standard laboratory Practical Quantitation Level (PQL) could not be achieved.

11/06/95

LJO/jcbgbp(dw)/jfg/lag/sra

CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

pace
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1644-3
Report Date: 11/06/95
PO No. : SB-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-80BR (UNFILT)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
2-Butanone	300.	µg/L	10	15	EPA 8240	10/20/95	TG	
1,1,1-Trichloroethane	1500.	µg/L	10	5	EPA 8240	10/20/95	TG	
Carbon tetrachloride	<50.	µg/L	10	5	EPA 8240	10/20/95	TG	
Vinyl acetate	<150.	µg/L	10	15	EPA 8240	10/20/95	TG	
Bromodichloromethane	<50.	µg/L	10	5	EPA 8240	10/20/95	TG	
1,2-Dichloropropane	<50.	µg/L	10	5	EPA 8240	10/20/95	TG	
cis-1,3-Dichloropropene	<50.	µg/L	10	5	EPA 8240	10/20/95	TG	
Trichloroethene	56.	µg/L	10	5	EPA 8240	10/20/95	TG	
Dibromochloromethane	<50.	µg/L	10	5	EPA 8240	10/20/95	TG	
1,1,2-Trichloroethane	J26	µg/L	10	5	EPA 8240	10/20/95	TG	
Benzene	130.	µg/L	10	5	EPA 8240	10/20/95	TG	
trans-1,3-Dichloropropene	<50.	µg/L	10	5	EPA 8240	10/20/95	TG	
Bromoform	J12	µg/L	10	5	EPA 8240	10/20/95	TG	
2,4,4-Trimethyl-2-pentene	<100.	µg/L	10	10	EPA 8240	10/20/95	TG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

11/06/95

LJO/jcbgbp(dw)/jfg/lag/sra

CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1644-3
Report Date: 11/06/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-80BR (UNFILT)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
2,4,4-Trimethyl-1-pentene	<100.	µg/L	10	10	EPA 8240	10/20/95	TG	
4-Methyl-2-pentanone	1200.	µg/L	10	15	EPA 8240	10/20/95	TG	
2-Hexanone	<150.	µg/L	10	15	EPA 8240	10/20/95	TG	
Tetrachloroethene	J43	µg/L	10	5	EPA 8240	10/20/95	TG	
1,1,2,2-Tetrachloroethane	JB41	µg/L	10	5	EPA 8240	10/20/95	TG	
Toluene	15000.	µg/L	100.	5	EPA 8240	10/20/95	TG	
Chlorobenzene	170.	µg/L	10	5	EPA 8240	10/20/95	TG	
Ethylbenzene	290.	µg/L	10	5	EPA 8240	10/20/95	TG	
Styrene	<50.	µg/L	10	5	EPA 8240	10/20/95	TG	
Total Xylenes	1100.	µg/L	10	5	EPA 8240	10/20/95	TG	
1,2-Dichloroethane-d4 (% Recovery)	96.	%	10		EPA 8240	10/20/95	TG	
Toluene-d8 (% Recovery)	96.	%	10		EPA 8240	10/20/95	TG	
p-Bromofluorobenzene (% Recovery)	100.	%	10		EPA 8240	10/20/95	TG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

11/06/95

LJO/jcbgbp(dw)/jfg/lag/sra

CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1644-
Report Date: 11/06/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-80BR (UNFILT/DUP)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER		RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
TCL Volatile Organics + Trimethylpentenes by USEPA 8240									1,2,3
Chloromethane		<100.	µg/L	10	10	EPA 8240	10/20/95	TG	
Bromomethane		<100.	µg/L	10	10	EPA 8240	10/20/95	TG	
Vinyl chloride		410.	µg/L	10	10	EPA 8240	10/20/95	TG	
Chloroethane		1100.	µg/L	10	10	EPA 8240	10/20/95	TG	
Methylene chloride		B230	µg/L	10	10	EPA 8240	10/20/95	TG	
Acetone	*	<150.	µg/L	10	15	EPA 8240	10/20/95	TG	
Carbon disulfide		<100.	µg/L	10	10	EPA 8240	10/20/95	TG	
1,1-Dichloroethene		130.	µg/L	10	5	EPA 8240	10/20/95	TG	
1,1-Dichloroethane		1500.	µg/L	10	5	EPA 8240	10/20/95	TG	
Total 1,2-Dichloroethene		1700.	µg/L	10	5	EPA 8240	10/20/95	TG	
Chloroform		<50.	µg/L	10	5	EPA 8240	10/20/95	TG	
1,2-Dichloroethane		J13	µg/L	10	5	EPA 8240	10/20/95	TG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) "J" flag denotes an estimated value less than the Laboratory's Practical Quantitation Level.
(2) "B" flag denotes detection of this analyte in the laboratory method blank analyzed concurrently with the sample.
(3) Sample dilution required for quantitation of one or more target analytes; therefore, standard laboratory Practical Quantitation Level (PQL) could not be achieved.

11/06/95

LJO/jcbgbp(dw)/jfg/lag/sra

CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

* Note WL-1644-3 → negate acetone result b/c this lab. dup acetone result is < 200, which is the negation action level. wo 6/19/96

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1644-4
Report Date: 11/06/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-80BR (UNFILT/DUP)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
2-Butanone	390.	µg/L	10	15	EPA 8240	10/20/95	TG	
1,1,1-Trichloroethane	2000.	µg/L	10	5	EPA 8240	10/20/95	TG	
Carbon tetrachloride	<50.	µg/L	10	5	EPA 8240	10/20/95	TG	
Vinyl acetate	<150.	µg/L	10	15	EPA 8240	10/20/95	TG	
Bromodichloromethane	<50.	µg/L	10	5	EPA 8240	10/20/95	TG	
1,2-Dichloropropane	<50.	µg/L	10	5	EPA 8240	10/20/95	TG	
cis-1,3-Dichloropropene	<50.	µg/L	10	5	EPA 8240	10/20/95	TG	
Trichloroethene	53.	µg/L	10	5	EPA 8240	10/20/95	TG	
Dibromochloromethane	<50.	µg/L	10	5	EPA 8240	10/20/95	TG	
1,1,2-Trichloroethane	J21	µg/L	10	5	EPA 8240	10/20/95	TG	
Benzene	150.	µg/L	10	5	EPA 8240	10/20/95	TG	
trans-1,3-Dichloropropene	<50.	µg/L	10	5	EPA 8240	10/20/95	TG	
Bromoform	<50.	µg/L	10	5	EPA 8240	10/20/95	TG	
2,4,4-Trimethyl-2-pentene	<100.	µg/L	10	10	EPA 8240	10/20/95	TG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

11/06/95

LJO/jcbgbp(dw)/jfg/lag/sra

CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1644-4
Report Date: 11/06/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-80BR (UNFILT/DUP)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
2,4,4-Trimethyl-1-pentene	<100.	µg/L	10	10	EPA 8240	10/20/95	TG	
4-Methyl-2-pentanone	1600.	µg/L	10	15	EPA 8240	10/20/95	TG	
2-Hexanone	<150.	µg/L	10	15	EPA 8240	10/20/95	TG	
Tetrachloroethene	J39	µg/L	10	5	EPA 8240	10/20/95	TG	
1,1,2,2-Tetrachloroethane	JB33	µg/L	10	5	EPA 8240	10/20/95	TG	
Toluene	15000.	µg/L	100.	5	EPA 8240	10/20/95	TG	
Chlorobenzene	190.	µg/L	10	5	EPA 8240	10/20/95	TG	
Ethylbenzene	350.	µg/L	10	5	EPA 8240	10/20/95	TG	
Styrene	<50.	µg/L	10	5	EPA 8240	10/20/95	TG	
Total Xylenes	1300.	µg/L	10	5	EPA 8240	10/20/95	TG	
1,2-Dichloroethane-d4 (% Recovery)	99.	%	10		EPA 8240	10/20/95	TG	
Toluene-d8 (% Recovery)	99.	%	10		EPA 8240	10/20/95	TG	
p-Bromofluorobenzene (% Recovery)	102.	%	10		EPA 8240	10/20/95	TG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

11/06/95

LJO/jcbgbp(dw)/jfg/lag/sra

CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

pace INCORPORATED ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1644-5
Report Date: 11/06/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-80BR (UNFILT/MS)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
TCL Volatile Organics + Trimethylpentenes by USEPA 8240								1,2
Chloromethane	370.	µg/L	10	10	EPA 8240	10/20/95	TG	
Bromomethane	460.	µg/L	10	10	EPA 8240	10/20/95	TG	
Vinyl chloride	780.	µg/L	10	10	EPA 8240	10/20/95	TG	
Chloroethane	1300.	µg/L	10	10	EPA 8240	10/20/95	TG	
Methylene chloride	B690	µg/L	10	10	EPA 8240	10/20/95	TG	
Acetone	710.	µg/L	10	15	EPA 8240	10/20/95	TG	
Carbon disulfide	470.	µg/L	10	10	EPA 8240	10/20/95	TG	
1,1-Dichloroethene	630.	µg/L	10	5	EPA 8240	10/20/95	TG	
1,1-Dichloroethane	1800.	µg/L	10	5	EPA 8240	10/20/95	TG	
Total 1,2-Dichloroethene	11000.	µg/L	100.	5	EPA 8240	10/20/95	TG	
Chloroform	510.	µg/L	10	5	EPA 8240	10/20/95	TG	
1,2-Dichloroethane	520.	µg/L	10	5	EPA 8240	10/20/95	TG	
2-Butanone	550.	µg/L	10	15	EPA 8240	10/20/95	TG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

(1) "B" flag denotes detection of this analyte in the laboratory method blank analyzed concurrently with the sample.

(2) Sample dilution required for quantitation of one or more target analytes; therefore, standard laboratory Practical Quantitation Level (PQL) could not be achieved.

11/06/95

LJO/jcbgbp(dw)/jfg/lag/sra

CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

pace ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1644-5
Report Date: 11/06/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-80BR (UNFILT/MS)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
1,1,1-Trichloroethane	6800.	µg/L	100.	5	EPA 8240	10/20/95	TG	
Carbon tetrachloride	500.	µg/L	10	5	EPA 8240	10/20/95	TG	
Vinyl acetate	370.	µg/L	10	15	EPA 8240	10/20/95	TG	
Bromodichloromethane	500.	µg/L	10	5	EPA 8240	10/20/95	TG	
1,2-Dichloropropane	520.	µg/L	10	5	EPA 8240	10/20/95	TG	
cis-1,3-Dichloropropene	500.	µg/L	10	5	EPA 8240	10/20/95	TG	
Trichloroethene	540.	µg/L	10	5	EPA 8240	10/20/95	TG	
Dibromochloromethane	480.	µg/L	10	5	EPA 8240	10/20/95	TG	
1,1,2-Trichloroethane	510.	µg/L	10	5	EPA 8240	10/20/95	TG	
Benzene	620.	µg/L	10	5	EPA 8240	10/20/95	TG	
trans-1,3-Dichloropropene	490.	µg/L	10	5	EPA 8240	10/20/95	TG	
Bromoform	490.	µg/L	10	5	EPA 8240	10/20/95	TG	
2,4,4-Trimethyl-2-pentene	4700.	µg/L	100.	10	EPA 8240	10/20/95	TG	
2,4,4-Trimethyl-1-pentene	4400.	µg/L	100.	10	EPA 8240	10/20/95	TG	
4-Methyl-2-pentanone	8800.	µg/L	100.	15	EPA 8240	10/20/95	TG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

11/06/95

LJO/jcbgbp(dw)/jfg/lag/sra

CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1644-5
Report Date: 11/06/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-80BR (UNFILT/MS)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
2-Hexanone	300.	µg/L	10	15	EPA 8240	10/20/95	TG	
Tetrachloroethene	530.	µg/L	10	5	EPA 8240	10/20/95	TG	
1,1,2,2-Tetrachloroethane	B560	µg/L	10	5	EPA 8240	10/20/95	TG	
Toluene	20000.	µg/L	100.	5	EPA 8240	10/20/95	TG	
Chlorobenzene	680.	µg/L	10	5	EPA 8240	10/20/95	TG	
Ethylbenzene	770.	µg/L	10	5	EPA 8240	10/20/95	TG	
Styrene	510.	µg/L	10	5	EPA 8240	10/20/95	TG	
Total Xylenes	19000.	µg/L	100.	5	EPA 8240	10/20/95	TG	
1,2-Dichloroethane-d4 (% Recovery)	105.	%	10		EPA 8240	10/20/95	TG	
Toluene-d8 (% Recovery)	101.	%	10		EPA 8240	10/20/95	TG	
p-Bromofluorobenzene (% Recovery)	101.	%	10		EPA 8240	10/20/95	TG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

11/06/95

LJO/jcbgbp(dw)/jfg/lag/sra

CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

pace
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1644-6
Report Date: 11/06/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
GW-81D (UNFILT)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
TCL Volatile Organics + Trimethylpentenes by USEPA 8240								1,2
Chloromethane	<10.	µg/L	1.0	10	EPA 8240	10/20/95	LG	
Bromomethane	<10.	µg/L	1.0	10	EPA 8240	10/20/95	LG	
Vinyl chloride	<10.	µg/L	1.0	10	EPA 8240	10/20/95	LG	
Chloroethane	<10.	µg/L	1.0	10	EPA 8240	10/20/95	LG	
Methylene chloride	JB3	µg/L	1.0	10	EPA 8240	10/20/95	LG	
Acetone	<15.	µg/L	1.0	15	EPA 8240	10/20/95	LG	
Carbon disulfide	<10.	µg/L	1.0	10	EPA 8240	10/20/95	LG	
1,1-Dichloroethene	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
1,1-Dichloroethane	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
Total 1,2-Dichloroethene	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
Chloroform	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
1,2-Dichloroethane	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
2-Butanone	<15.	µg/L	1.0	15	EPA 8240	10/20/95	LG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) "J" flag denotes an estimated value less than the Laboratory's Practical Quantitation Level.
(2) "B" flag denotes detection of this analyte in the laboratory method blank analyzed concurrently with the sample.

11/06/95

LJO/jcbgbp(dw)/jfg/lag/sra

CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

P.O. Box 720 - 340 County Road #5
Westbrook, ME 04098
TEL: 207-874-2400

REPORT OF LABORATORY ANALYSIS

CLIENT: DON CAMERON OLIN CHEMICALS 51 EAMES STREET WILMINGTON, MA 01887	Lab Number : WL-1644-6 Report Date: 11/06/95 PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-81D (UNFILT)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
1,1,1-Trichloroethane	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
Carbon tetrachloride	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
Vinyl acetate	<15.	µg/L	1.0	15	EPA 8240	10/20/95	LG	
Bromodichloromethane	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
1,2-Dichloropropane	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
cis-1,3-Dichloropropene	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
Trichloroethene	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
Dibromochloromethane	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
1,1,2-Trichloroethane	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
Benzene	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
trans-1,3-Dichloropropene	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
Bromoform	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
2,4,4-Trimethyl-2-pentene	<10.	µg/L	1.0	10	EPA 8240	10/20/95	LG	
2,4,4-Trimethyl-1-pentene	<10.	µg/L	1.0	10	EPA 8240	10/20/95	LG	
4-Methyl-2-pentanone	<15.	µg/L	1.0	15	EPA 8240	10/20/95	LG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

11/06/95

LJO/jcbgbp(dw)/jfg/lag/sra

CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

pace INCORPORATED ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1644-6
Report Date: 11/06/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
GW-81D (UNFILT)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
2-Hexanone	<15.	µg/L	1.0	15	EPA 8240	10/20/95	LG	
Tetrachloroethene	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
1,1,2,2-Tetrachloroethane	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
Toluene	J3	µg/L	1.0	5	EPA 8240	10/20/95	LG	
Chlorobenzene	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
Ethylbenzene	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
Styrene	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
Total Xylenes	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
1,2-Dichloroethane-d4 (% Recovery)	101.	%	1.0		EPA 8240	10/20/95	LG	
Toluene-d8 (% Recovery)	100.	%	1.0		EPA 8240	10/20/95	LG	
p-Bromofluorobenzene (% Recovery)	96.	%	1.0		EPA 8240	10/20/95	LG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

11/06/95

LJO/jcbgbp(dw)/jfg/lag/sra

CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1644-7
Report Date: 11/06/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-81BR (UNFILT)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
TCL Volatile Organics + Trimethylpentenes by USEPA 8240								1
Chloromethane	<10.	µg/L	1.0	10	EPA 8240	10/20/95	LG	
Bromomethane	<10.	µg/L	1.0	10	EPA 8240	10/20/95	LG	
Vinyl chloride	<10.	µg/L	1.0	10	EPA 8240	10/20/95	LG	
Chloroethane	<10.	µg/L	1.0	10	EPA 8240	10/20/95	LG	
Methylene chloride	<10.	µg/L	1.0	10	EPA 8240	10/20/95	LG	
Acetone	<15.	µg/L	1.0	15	EPA 8240	10/20/95	LG	
Carbon disulfide	<10.	µg/L	1.0	10	EPA 8240	10/20/95	LG	
1,1-Dichloroethene	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
1,1-Dichloroethane	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
Total 1,2-Dichloroethene	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
Chloroform	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
1,2-Dichloroethane	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
2-Butanone	<15.	µg/L	1.0	15	EPA 8240	10/20/95	LG	
1,1,1-Trichloroethane	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) "J" flag denotes an estimated value less than the Laboratory's Practical Quantitation Level.

11/06/95

LJO/jcbgbp(dw)/jfg/lag/sra

CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

REPORT OF LABORATORY ANALYSIS

pace ENVIRONMENTAL LABORATORIES

Lab Number : WL-1644-7
Report Date: 11/06/95
PO No. : SB-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-81BR (UNFILT)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Carbon tetrachloride	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
Vinyl acetate	<15.	µg/L	1.0	15	EPA 8240	10/20/95	LG	
Bromodichloromethane	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
1,2-Dichloropropane	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
cis-1,3-Dichloropropene	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
Trichloroethene	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
Dibromochloromethane	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
1,1,2-Trichloroethane	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
Benzene	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
trans-1,3-Dichloropropene	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
Bromoform	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
2,4,4-Trimethyl-2-pentene	<10.	µg/L	1.0	10	EPA 8240	10/20/95	LG	
2,4,4-Trimethyl-1-pentene	<10.	µg/L	1.0	10	EPA 8240	10/20/95	LG	
4-Methyl-2-pentanone	<15.	µg/L	1.0	15	EPA 8240	10/20/95	LG	
2-Hexanone	<15.	µg/L	1.0	15	EPA 8240	10/20/95	LG	
Tetrachloroethene	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

11/06/95

LJO/jcbgbp(dw)/jfg/lag/sra

CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1644-7
Report Date: 11/06/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-81BR (UNFILT)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
1,1,2,2-Tetrachloroethane	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
Toluene	9.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
Chlorobenzene	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
Ethylbenzene	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
Styrene	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
Total Xylenes	J1	µg/L	1.0	5	EPA 8240	10/20/95	LG	
1,2-Dichloroethane-d4 (% Recovery)	97.	%	1.0		EPA 8240	10/20/95	LG	
Toluene-d8 (% Recovery)	97.	%	1.0		EPA 8240	10/20/95	LG	
p-Bromofluorobenzene (% Recovery)	100.	%	1.0		EPA 8240	10/20/95	LG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

11/06/95

LJO/jcbgbp(dw)/jfg/lag/sra

CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

REPORT OF LABORATORY ANALYSIS

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1644-8
Report Date: 11/06/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-65BR (UNFILT)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
TCL Volatile Organics + Trimethylpentenes by USEPA 8240								1
Chloromethane	<10.	µg/L	1.0	10	EPA 8240	10/20/95	LG	
Bromomethane	<10.	µg/L	1.0	10	EPA 8240	10/20/95	LG	
Vinyl chloride	<10.	µg/L	1.0	10	EPA 8240	10/20/95	LG	
Chloroethane	<10.	µg/L	1.0	10	EPA 8240	10/20/95	LG	
Methylene chloride	<10.	µg/L	1.0	10	EPA 8240	10/20/95	LG	
Acetone	J3	µg/L	1.0	15	EPA 8240	10/20/95	LG	
Carbon disulfide	<10.	µg/L	1.0	10	EPA 8240	10/20/95	LG	
1,1-Dichloroethene	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
1,1-Dichloroethane	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
Total 1,2-Dichloroethene	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
Chloroform	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
1,2-Dichloroethane	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
2-Butanone	<15.	µg/L	1.0	15	EPA 8240	10/20/95	LG	
1,1,1-Trichloroethane	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) "J" flag denotes an estimated value less than the Laboratory's Practical Quantitation Level.

11/06/95

LJO/jcbgbp(dw)/jfg/lag/sra

CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1644-8
Report Date: 11/06/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-65BR (UNFILT)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Carbon tetrachloride	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
Vinyl acetate	<15.	µg/L	1.0	15	EPA 8240	10/20/95	LG	
Bromodichloromethane	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
1,2-Dichloropropane	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
cis-1,3-Dichloropropene	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
Trichloroethene	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
Dibromochloromethane	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
1,1,2-Trichloroethane	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
Benzene	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
trans-1,3-Dichloropropene	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
Bromoform	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
2,4,4-Trimethyl-2-pentene	<10.	µg/L	1.0	10	EPA 8240	10/20/95	LG	
2,4,4-Trimethyl-1-pentene	<10.	µg/L	1.0	10	EPA 8240	10/20/95	LG	
4-Methyl-2-pentanone	<15.	µg/L	1.0	15	EPA 8240	10/20/95	LG	
2-Hexanone	<15.	µg/L	1.0	15	EPA 8240	10/20/95	LG	
Tetrachloroethene	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

11/06/95

LJO/jcbgbp(dw)/jfg/lag/sra

CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

REPORT OF LABORATORY ANALYSIS

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

Lab Number : WL-1644-8
Report Date: 11/06/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
GW-65BR (UNFILT)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
1,1,2,2-Tetrachloroethane	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
Toluene	6.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
Chlorobenzene	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
Ethylbenzene	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
Styrene	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
Total Xylenes	J1	µg/L	1.0	5	EPA 8240	10/20/95	LG	
1,2-Dichloroethane-d4 (% Recovery)	96.	%	1.0		EPA 8240	10/20/95	LG	
Toluene-d8 (% Recovery)	99.	%	1.0		EPA 8240	10/20/95	LG	
p-Bromofluorobenzene (% Recovery)	96.	%	1.0		EPA 8240	10/20/95	LG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

11/06/95

LJO/jcbgbp(dw)/jfg/lag/sra

CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1644-9
Report Date: 11/06/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
FIELD REP (UNFILT)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
TCL Volatile Organics +								1
Trimethylpentenes by USEPA 8240								
Chloromethane	<10.	µg/L	1.0	10	EPA 8240	10/20/95	LG	
Bromomethane	<10.	µg/L	1.0	10	EPA 8240	10/20/95	LG	
Vinyl chloride	<10.	µg/L	1.0	10	EPA 8240	10/20/95	LG	
Chloroethane	<10.	µg/L	1.0	10	EPA 8240	10/20/95	LG	
Methylene chloride	<10.	µg/L	1.0	10	EPA 8240	10/20/95	LG	
Acetone	<15.	µg/L	1.0	15	EPA 8240	10/20/95	LG	
Carbon disulfide	<10.	µg/L	1.0	10	EPA 8240	10/20/95	LG	
1,1-Dichloroethene	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
1,1-Dichloroethane	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
Total 1,2-Dichloroethene	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
Chloroform	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
1,2-Dichloroethane	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
2-Butanone	<15.	µg/L	1.0	15	EPA 8240	10/20/95	LG	
1,1,1-Trichloroethane	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) "J" flag denotes an estimated value less than the Laboratory's Practical Quantitation Level.

11/06/95

LJO/jcbgbp(dw)/jfg/lag/sra

CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1644-9
Report Date: 11/06/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
FIELD REP (UNFILT)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Carbon tetrachloride	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
Vinyl acetate	<15.	µg/L	1.0	15	EPA 8240	10/20/95	LG	
Bromodichloromethane	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
1,2-Dichloropropane	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
cis-1,3-Dichloropropene	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
Trichloroethene	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
Dibromochloromethane	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
1,1,2-Trichloroethane	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
Benzene	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
trans-1,3-Dichloropropene	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
Bromoform	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
2,4,4-Trimethyl-2-pentene	<10.	µg/L	1.0	10	EPA 8240	10/20/95	LG	
2,4,4-Trimethyl-1-pentene	<10.	µg/L	1.0	10	EPA 8240	10/20/95	LG	
4-Methyl-2-pentanone	<15.	µg/L	1.0	15	EPA 8240	10/20/95	LG	
2-Hexanone	<15.	µg/L	1.0	15	EPA 8240	10/20/95	LG	
Tetrachloroethene	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

11/06/95

LJO/jcbgbp(dw)/jfg/lag/sra

CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1644-9
Report Date: 11/06/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
FIELD REP (UNFILT)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
1,1,2,2-Tetrachloroethane	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
Toluene	J3	µg/L	1.0	5	EPA 8240	10/20/95	LG	
Chlorobenzene	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
Ethylbenzene	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
Styrene	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
Total Xylenes	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
1,2-Dichloroethane-d4 (% Recovery)	97.	%	1.0		EPA 8240	10/20/95	LG	
Toluene-d8 (% Recovery)	99.	%	1.0		EPA 8240	10/20/95	LG	
p-Bromofluorobenzene (% Recovery)	98.	%	1.0		EPA 8240	10/20/95	LG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

11/06/95

LJO/jcbgbp(dw)/jfg/lag/sra

CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

pace INCORPORATED ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1644-10
Report Date: 11/06/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
GW-300 (UNFILT)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
TCL Volatile Organics +								1,2
Trimethylpentenes by USEPA 8240								
Chloromethane	<10.	µg/L	1.0	10	EPA 8240	10/20/95	LG	
Bromomethane	<10.	µg/L	1.0	10	EPA 8240	10/20/95	LG	
Vinyl chloride	<10.	µg/L	1.0	10	EPA 8240	10/20/95	LG	
Chloroethane	<10.	µg/L	1.0	10	EPA 8240	10/20/95	LG	
Methylene chloride	JB2	µg/L	1.0	10	EPA 8240	10/20/95	LG	
Acetone	20.	µg/L	1.0	15	EPA 8240	10/20/95	LG	
Carbon disulfide	<10.	µg/L	1.0	10	EPA 8240	10/20/95	LG	
1,1-Dichloroethene	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
1,1-Dichloroethane	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
Total 1,2-Dichloroethene	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
Chloroform	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
1,2-Dichloroethane	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
2-Butanone	J1	µg/L	1.0	15	EPA 8240	10/20/95	LG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) "J" flag denotes an estimated value less than the Laboratory's Practical Quantitation Level.
(2) "B" flag denotes detection of this analyte in the laboratory method blank analyzed concurrently with the sample.

11/06/95

LJO/jcbgbp(dw)/jfg/lag/sra

CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1644-10
Report Date: 11/06/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-300 (UNFILT)	Aqueous	R. MEIRLICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
1,1,1-Trichloroethane	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
Carbon tetrachloride	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
Vinyl acetate	<15.	µg/L	1.0	15	EPA 8240	10/20/95	LG	
Bromodichloromethane	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
1,2-Dichloropropane	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
cis-1,3-Dichloropropene	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
Trichloroethene	J1	µg/L	1.0	5	EPA 8240	10/20/95	LG	
Dibromochloromethane	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
1,1,2-Trichloroethane	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
Benzene	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
trans-1,3-Dichloropropene	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
Bromoform	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
2,4,4-Trimethyl-2-pentene	<10.	µg/L	1.0	10	EPA 8240	10/20/95	LG	
2,4,4-Trimethyl-1-pentene	<10.	µg/L	1.0	10	EPA 8240	10/20/95	LG	
4-Methyl-2-pentanone	<15.	µg/L	1.0	15	EPA 8240	10/20/95	LG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample specific reporting limits. Sample-specific limits are indicated by results annotated with '<' value

11/06/95

LJO/jcbgbp(dw)/jfg/lag/sra

CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

REPORT OF LABORATORY ANALYSIS

pace ENVIRONMENTAL LABORATORIES

Lab Number : WL-1644-10
Report Date: 11/06/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-300 (UNFILT)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
2-Hexanone	<15.	µg/L	1.0	15	EPA 8240	10/20/95	LG	
Tetrachloroethene	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
1,1,2,2-Tetrachloroethane	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
Toluene	8.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
Chlorobenzene	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
Ethylbenzene	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
Styrene	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
Total Xylenes	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
1,2-Dichloroethane-d4 (% Recovery)	97.	%	1.0		EPA 8240	10/20/95	LG	
Toluene-d8 (% Recovery)	99.	%	1.0		EPA 8240	10/20/95	LG	
p-Bromofluorobenzene (% Recovery)	98.	%	1.0		EPA 8240	10/20/95	LG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

11/06/95

LJO/jcbgbp(dw)/jfg/lag/sra

CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1644-11
Report Date: 11/06/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
TRIP BLANK	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
TCL Volatile Organics +								1,2
Trimethylpentenes by USEPA 8240								
Chloromethane	<10.	µg/L	1.0	10	EPA 8240	10/20/95	LG	
Bromomethane	<10.	µg/L	1.0	10	EPA 8240	10/20/95	LG	
Vinyl chloride	<10.	µg/L	1.0	10	EPA 8240	10/20/95	LG	
Chloroethane	<10.	µg/L	1.0	10	EPA 8240	10/20/95	LG	
Methylene chloride	JB2	µg/L	1.0	10	EPA 8240	10/20/95	LG	
Acetone	<15.	µg/L	1.0	15	EPA 8240	10/20/95	LG	
Carbon disulfide	<10.	µg/L	1.0	10	EPA 8240	10/20/95	LG	
1,1-Dichloroethene	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
1,1-Dichloroethane	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
Total 1,2-Dichloroethene	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
Chloroform	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
1,2-Dichloroethane	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
2-Butanone	<15.	µg/L	1.0	15	EPA 8240	10/20/95	LG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) "J" flag denotes an estimated value less than the Laboratory's Practical Quantitation Level.
(2) "B" flag denotes detection of this analyte in the laboratory method blank analyzed concurrently with the sample.

11/06/95

LJO/jcbgbp(dw)/jfg/lag/sra

CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

PACE INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1644-11
Report Date: 11/06/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
TRIP BLANK	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
1,1,1-Trichloroethane	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
Carbon tetrachloride	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
Vinyl acetate	<15.	µg/L	1.0	15	EPA 8240	10/20/95	LG	
Bromodichloromethane	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
1,2-Dichloropropane	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
cis-1,3-Dichloropropene	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
Trichloroethene	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
Dibromochloromethane	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
1,1,2-Trichloroethane	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
Benzene	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
trans-1,3-Dichloropropene	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
Bromoform	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
2,4,4-Trimethyl-2-pentene	<10.	µg/L	1.0	10	EPA 8240	10/20/95	LG	
2,4,4-Trimethyl-1-pentene	<10.	µg/L	1.0	10	EPA 8240	10/20/95	LG	
4-Methyl-2-pentanone	<15.	µg/L	1.0	15	EPA 8240	10/20/95	LG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

11/06/95

LJO/jcbgbp(dw)/jfg/lag/sra

CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1644-11
Report Date: 11/06/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
TRIP BLANK	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
2-Hexanone	<15.	µg/L	1.0	15	EPA 8240	10/20/95	LG	
Tetrachloroethene	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
1,1,2,2-Tetrachloroethane	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
Toluene	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
Chlorobenzene	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
Ethylbenzene	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
Styrene	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
Total Xylenes	<5.	µg/L	1.0	5	EPA 8240	10/20/95	LG	
1,2-Dichloroethane-d4 (% Recovery)	103.	%	1.0		EPA 8240	10/20/95	LG	
Toluene-d8 (% Recovery)	97.	%	1.0		EPA 8240	10/20/95	LG	
p-Bromofluorobenzene (% Recovery)	92.	%	1.0		EPA 8240	10/20/95	LG	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

11/06/95

LJO/jcbgtp(dw)/jfg/lag/sra

CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

pace
ENVIRONMENTAL LABORATORIES

Pg 1 of 2

Resample for VOA; SVOA

298693

CHAIN-OF-CUSTODY RECORD
Analytical Request

Client: Olin Wilmington Mass.
Address: Eames St

Phone:

Report To: Rick Sacks
Bill To: Olin
P.O. # / Billing Reference
Project Name / No. 7074-0102

Pace Client No.
Pace Project Manager
Pace Project No. W16E4
*Requested Due Date:

Sampled By (PRINT): Russell Mehalick / Tim Ebner
Sampler Signature: Russell Mehalick
Date Sampled: 10/19/95

ITEM NO.	SAMPLE DESCRIPTION	TIME	MATRIX	PACE NO.	NO. OF CONTAINERS	UNPRESERVED	H_2SO_4	HNO_3	VOA w/ HCL	N/M Amber GL	TCL VOA + TMP	SVOA + PEST	REMARKS
	GW80S	0800	AQ	1	5				2	3	✓	✓	unfiltered
	GW80D	0815	AQ	2	5				2	3	✓	✓	
	GW80BR	0830	AQ	3, 4, 5 dp ms	15				6	9	✓	✓	ms/msD
	GW81D	0915	AQ	6	5				2	3	✓	✓	
	GW81BR	0900	AQ	7	5				2	3	✓	✓	
	GW65BR	0945	AQ	8	5				2	3	✓	✓	
	Field Rep	0915	AQ	9	5				2	3	✓	✓	
	GW300	0825	AQ	10	5				2	3	✓	✓	

COOLER NOS.	BAILERS	SHIPMENT METHOD OUT DATE	RETURNED DATE	ITEM NUMBER	RELINQUISHED BY / AFFILIATION	ACCEPTED BY / AFFILIATION	DATE	TIME
					Russell Mehalick BCM/Smith 10/19/95			
						[signature]	10/19/95	1520

Additional Comments

SEE REVERSE SIDE FOR INSTRUCTIONS

pace INCORPORATED
IRONMENTAL LABORATORIES

pg 2 of 2

Resample for VOA & SVOA

298694

CHAIN-OF-CUSTODY RECORD
Analytical Request

Olin	Report To: Rick Sacks	Pace Client No.	
ess Eames St	Bill To: Olin	Pace Project Manager	
Wilmington MA.	P.O. # / Billing Reference	Pace Project No.	
e	Project Name / No. 7074-0102	*Requested Due Date:	

pled By (PRINT): Russell Mehalick / Tim Ebner

pler Signature: Russell Mehalick — Date Sampled: 10/19/95

SAMPLE DESCRIPTION	TIME	MATRIX	PACE NO.	NO. OF CONTAINERS	UNPRESERVED	H_2SO_4	HNO_3	VOA w/HCl			ANALYSES REQUEST: TCL VOA + TMP	REMARKS
Trip Blank	—	AQ	11	4				4				

COOLER NOS.	BAILERS	SHIPMENT METHOD OUT DATE	SHIPMENT METHOD RETURNED DATE

ITEM NUMBER	RELINQUISHED BY / AFFILIATION	ACCEPTED BY / AFFILIATION	DATE	TIME
	Russell Mehalick BCM/Smith			

ional Comments

SEE REVERSE SIDE FOR INSTRUCTIONS

0000007

PACE, Inc.
Maine Laboratory
Quality Control Report

Methods, Chronology of Analysis and Method Blank Results

Volatile Analysis by GC/MS Method: 8240

Water Matrix

CHRONOLOGY

PACE-ME Sample Nos.	Date Analyzed	LCS File	Dilution Factor~	PACE-ME Sample No.	Date Analyzed	LCS File	Dilution Factor
WL1644-1	20-Oct-95	Y2125	1.0				
WL1644-2	20-Oct-95	Y2125	1.0				
WL1644-7	20-Oct-95	Y2125	1.0				
WL1644-8	20-Oct-95	Y2125	1.0				
WL1644-9	20-Oct-95	Y2125	1.0				
WL1644-10	20-Oct-95	Y2125	1.0				
WL1644-4	20-Oct-95	Y2125	10.0				
WL1644-5	20-Oct-95	Y2125	10.0				
WL1644-3	20-Oct-95	Y2125	10.0				
WL1644-2DL	20-Oct-95	Y2125	50.0				
WL1644-6	20-Oct-95	Y2125	1.0				
WL1644-11	20-Oct-95	Y2125	1.0				

METHOD BLANK RESULTS*

Compound	Conc. (ug/L)
Methylene Chloride	J1
1,1,2,2-Tetrachloroethane	J1

results too high for qual.
[illegible]
6/19/96

* Only positive hits have been included. The remaining compounds were not detected in the method blank.

~ The Dilution Factor (DF) indicates whether a sample, prepared in accordance with the analytical method protocol, was diluted prior to analysis. The Dilution Factor could also indicate that a smaller aliquot than specified in the method was utilized for sample preparation and analysis. For example, a dilution factor of 5 means that the sample was effectively diluted by a factor of 5 prior to analysis, i.e., the sample was analyzed at 20% its reported concentration.

PACE, Inc
Maine Laboratory
Quality Control Report

Methods, Chronology of Analysis and Method Blank Results

Volatile Analysis by GC/MS Method: 8240

Water Matrix

CHRONOLOGY

PACE-ME Sample Nos.	Date Analyzed	LCS File	Dilution Factor	PACE-ME Sample Nos.	Date Analyzed	LCS File	Dilution Factor
WL1644-1DL	23-Oct-95	Y2156	50.0				
WL1644-3DL	23-Oct-95	Y2156	100.0				
WL1644-4DL	23-Oct-95	Y2156	100.0				
WL1644-5DL	23-Oct-95	Y2156	100.0				

METHOD BLANK RESULTS*

Compound	Conc. (ug/L)
Methylene Chloride	J2
Tetrachloroethene	J1

results too high for qual. MO 6/19/96

* Only positive hits have been included. The remaining compounds were not detected in the method blank.

~ The Dilution Factor (DF) indicates whether a sample, prepared in accordance with the analytical method protocol, was diluted prior to analysis. The Dilution Factor could also indicate that a smaller aliquot than specified in the method was utilized for sample preparation and analysis. For example, a dilution factor of 5 means that the sample was effectively diluted by a factor of 5 prior to analysis, i.e., the sample was analyzed at 20% its reported concentration.

HSL Compounds

Case No: ________________________ Instrument ID: __________________

Contractor: PACE-ME Calibration Date: 10/19/95

Contract No: ____________________

Minimum $\overline{RF}$ for SPCC is Maximum % RSD for CCC is %

Compound	Laboratory ID: >Y2082 RF 20.00	>Y2077 RF 50.00	>Y2079 RF 100.00	>Y2080 RF 150.00	>Y2081 RF 200.00	$\overline{RRT}$	$\overline{RF}$	% RSD	CCC	SPCC
Chloromethane	.92100	.83345	.57463	.61815	.67571	.296	.72459	20.310		**
Bromomethane	1.57746	1.34249	1.36289	1.29702	1.39631	.352	1.39523	7.743		
Vinyl Chloride	1.20936	.99299	.90582	.91020	.99495	.309	1.00267	12.296	*	
Chloroethane	.65714	.60195	.56282	.52449	.55899	.358	.58108	8.709		
Methylene Chloride	1.39387	1.05875	1.19940	1.01853	1.29197	.616	1.19250	13.169		
Acetone	.60041	.29871	.37405	.42582	.30165	.525	.40013	30.973		
Carbon Disulfide	3.18043	2.70611	2.79900	2.77318	2.56548	.526	2.80484	8.153		
1,1-Dichloroethene	1.07635	.86569	.89525	.85452	1.11006	.490	.96038	12.781	*	
1,1-Dichloroethane	2.71890	2.14771	2.22327	2.25243	2.38350	.804	2.34516	9.620		**
1,2-Dichloroethene (trans)	1.54590	.88894	1.27477	1.24487	1.34957	.670	1.26081	18.932		
1,2-Dichloroethene (cis)	1.65130	1.30082	1.35666	1.32860	1.37561	.950	1.40260	10.116		
Chloroform	3.49123	2.77397	2.87700	2.75644	2.94646	1.021	2.96902	10.173	*	
1,2-Dichloroethane	1.79560	1.47275	1.56003	1.52394	1.63958	1.130	1.59838	7.876		
1,2-Dichloroethane-d4 (surr.)	1.67651	1.32533	1.36476	1.42070	1.42568	1.117	1.44260	9.510		
2-Butanone	.92633	.53568	.65470	.50629	.52087	.969	.62882	28.055		
1,1,1-Trichloroethane	.74366	.58753	.62375	.61366	.67166	.872	.64805	9.492		
Carbon Tetrachloride	.74525	.60666	.62880	.62007	.68935	.891	.65803	8.836		
Vinyl Acetate	.58194	.44071	.47140	.46230	.53168	.695	.49761	11.651		
Bromodichloromethane	.76705	.61526	.65159	.63422	.68808	1.105	.67124	8.924		
1,2-Dichloropropane	.37530	.29979	.31451	.30372	.33235	1.066	.32513	9.458	*	
cis-1,3-Dichloropropene	.54433	.43574	.45433	.43736	.47702	1.164	.46976	9.555		
Trichloroethene	.53874	.42323	.44110	.41492	.45291	1.027	.45418	10.911		
Dibromochloromethane	.68139	.54698	.57026	.54459	.60827	1.305	.59030	9.654		
1,1,2-Trichloroethane	.33431	.26541	.28092	.26071	.28226	1.261	.28472	10.283		
Benzene	1.00203	.77899	.80839	.81108	.86573	.928	.85324	10.416		
trans-1,3-Dichloropropene	.45643	.36703	.39536	.37259	.42158	1.239	.40260	9.190		
Bromoform	.50687	.37644	.41240	.38221	.42808	1.478	.42120	12.444		**
4-Methyl-2-Pentanone	.40759	.27262	.26321	.24010	.28997	.866	.29470	22.269		
2-Hexanone	.41114	.26596	.25785	.26654	.24556	.942	.28941	23.696		
Tetrachloroethene	.65221	.52055	.51774	.49420	.55295	.920	.54753	11.350		

C-YHW

NOU5 LSD

J/UJ all posit acetone

MO 6/19/96

RF - Response Factor (Subscript is amount in UG/L)

$\overline{RRT}$ - Average Relative Retention Time (RT Std/RT Istd)

$\overline{RF}$ - Average Response Factor

%RSD - Percent Relative Standard Deviation

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

Calibration Report

Title: MISCELLANEOUS VOA COMPOUNDS 624 WATER
Calibrated: 951023 10:48

C - YEXW

Compound	Files: >Y2082 RF 20.00	>Y2077 RF 50.00	>Y2079 RF 100.00	>Y2080 RF 150.00	>Y2081 RF 200.00	$\overline{RRT}$	$\overline{RF}$	% RSD
1,4-Dioxane	.14521	.13283	.12972	.12272	.14233	.616	.13456	6.854
Dichlorodifluoromethane	-	-	-	-	-	-	-	-
Trichlorofluoromethane	1.67277	1.36947	1.42407	1.35052	1.52095	.392	1.46756	9.025
Hexane	-	-	-	-	-	-	-	-
Acrolein	.07433	.06041	.07324	.06964	.07953	.487	.07143	9.950
Acrylonitrile	.22110	.16109	.18515	.17686	.19658	.705	.18815	11.959
Methyl-t-butylether	-	-	-	-	-	-	-	-
Methyl Acrylate	.92801	.62991	.70799	.70272	.76493	.982	.74671	15.014
Tetrahydrofuran	.32642	.17006	.19087	.18719	.20758	1.004	.21642	29.871
2,4,4-Trimethyl-2-Pentene	.19633	.15157	.15718	.15187	.16631	1.050	.16465	11.358
2,4,4-Trimethyl-1-Pentene	.13294	.10355	.10319	.09961	.10817	1.013	.10949	12.290
2-Chloroethylvinylether	.07182	.05172	.04870	.04517	.08818	1.150	.05712	39.5[illegible]
Vinyl Acetate	.57720	.43405	.46120	.44532	.51197	.695	.48595	12.157
Methyl methacrylate	.08218	.06177	.06352	.06005	.06793	1.086	.06709	13.308
1,2-Dibromoethane (EDB)	-	.03217	.03302	.03133	.03445	1.450	.03279	4.324
1,3-Dichlorobenzene	1.00452	.69835	.74026	.72181	.60272	1.281	.75353	19.903
1,4-Dichlorobenzene	.71765	.53223	.59883	.55057	.54320	1.210	.58850	13.009
1,2-Dichlorobenzene	.97940	.68858	.74855	.72295	.73091	1.243	.77408	15.093

outliers are not compounds of concern.
MO
6/19/96

RF - Response Factor (Subscript is amount in UG/L)

$\overline{RRT}$ - Average Relative Retention Time (RT Std/RT Istd)

$\overline{RF}$ - Average Response Factor

%RSD - Percent Relative Standard Deviation

Continuing Calibration Check
HSL Compounds

C-44w

Case No: ____________________ Calibration Date: 10/20/95

Contractor: PACE-ME Time: 09:53

Contract No: ____________________ Laboratory ID: >Y2124

Instrument ID: ____________________ Initial Calibration Date: 10/19/95

Minimum $\overline{RF}$ for SPCC is Maximum % Diff for CCC is %

Compound	$\overline{RF}$	RF	%Diff	CCC	SPCC
Chloromethane	.72459	.98487	35.92		**
Bromomethane	1.39523	1.53147	9.76		
Vinyl Chloride	1.00267	1.15842	15.53	*	
Chloroethane	.58108	.69065	18.86		
Methylene Chloride	1.19250	1.18783	.39		
Acetone	.40013	.42973	7.40		
Carbon Disulfide	2.80484	3.08944	10.15		
1,1-Dichloroethene	.96038	1.05165	9.50	*	
1,1-Dichloroethane	2.34516	2.51594	7.28		**
1,2-Dichloroethene (trans)	1.26081	1.25712	.29		
1,2-Dichloroethene (cis)	1.40260	1.45528	3.76		
Chloroform	2.96902	3.19093	7.47	*	
1,2-Dichloroethane	1.59838	1.75189	9.60		
1,2-Dichloroethane-d4 (surr.)	1.44260	1.43230	.71		
2-Butanone	.62882	.66649	5.99		
1,1,1-Trichloroethane	.64805	.66856	3.16		
Carbon Tetrachloride	.65803	.69566	5.72		
Vinyl Acetate	.49761	.42833	13.92		
Bromodichloromethane	.67124	.71059	5.86		
1,2-Dichloropropane	.32513	.33750	3.80	*	
cis-1,3-Dichloropropene	.46976	.47808	1.77		
Trichloroethene	.45418	.46823	3.09		
Dibromochloromethane	.59030	.62783	6.36		
1,1,2-Trichloroethane	.28472	.29593	3.94		
Benzene	.85324	.89550	4.95		
trans-1,3-Dichloropropene	.40260	.40901	1.59		
Bromoform	.42120	.42555	1.03		**
4-Methyl-2-Pentanone	.29470	.27724	5.92		
2-Hexanone	.28941	.28223	2.48		
Tetrachloroethene	.54753	.55572	1.50		
1,1,2,2-Tetrachloroethane	.56331	.55391	1.67		**
Toluene	.73109	.74269	1.59	*	

~~J/UJ all results~~
No positive results for chloromethane & %D is < 50. Therefore, no qual. is required.
MO
6/19/96

RF - Response Factor from daily standard file at 50.00 UG/L

$\overline{RF}$ - Average Response Factor from Initial Calibration Form VI

%Diff - % Difference from original average or curve

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

Title: MISCELLANEOUS VOA COMPOUNDS 624 WATER
Calibrated: 951020 10:35

C-YC&W

Check Standard Data File: >Y2124
Injection Time: 951020 09:53

Compound	$\overline{RF}$	RF	%Diff	Calib Meth
1,4-Dioxane	.13456	.14045	4.38	Average
Dichlorodifluoromethane	-	-	-	Average
Trichlorofluoromethane	1.46756	1.63784	11.60	Average
Hexane	-	-	-	Average
Acrolein	.06868	.05563	18.99	Average
Acrylonitrile	.18815	.18210	3.22	Average
Methyl-t-butylether	-	-	-	Average
Methyl Acrylate	.74671	.72359	3.10	Average
Tetrahydrofuran	2972.45	.12802	100.00	Average
2,4,4-Trimethyl-2-Pentene	.16465	.16676	1.28	Average
2,4,4-Trimethyl-1-Pentene	.10949	.11510	5.12	Average
2-Chloroethylvinylether	.05712	.10737	87.99	Average
Vinyl Acetate	.48595	.48580	.03	Average
Methyl methacrylate	.06709	.06206	7.50	Average
1,2-Dibromoethane (EDB)	.03279	.03433	4.70	Average
1,3-Dichlorobenzene	.75353	.80559	6.91	Average
1,4-Dichlorobenzene	.58850	.60550	2.89	Average
1,2-Dichlorobenzene	.77408	.80516	4.02	Average

outliers are not COCs
MO
6/19/96

RF - Response Factor from daily standard file at 50.00 UG/L

$\overline{RF}$ - Average Response Factor from Initial Calibration

%Diff - % Difference from original average or curve

HSL Compounds

Case No: ______________________ Calibration Date: 10/23/95

Contractor: PACE-ME Time: 10:35

Contract No: ______________________ Laboratory ID: >Y2155

Instrument ID: ______________________ Initial Calibration Date: 10/19/95

Minimum $\overline{RF}$ for SPCC is Maximum % Diff for CCC is %

Compound	$\overline{RF}$	RF	%Diff	CCC	SPCC
Chloromethane	.72459	.68485	5.48		**
Bromomethane	1.39523	1.24547	10.73		
Vinyl Chloride	1.00267	.88957	11.28	*	
Chloroethane	.58108	.54907	5.51		
Methylene Chloride	1.19250	1.02238	14.27		
Acetone	.40013	.16188	59.54		
Carbon Disulfide	2.80484	2.40548	14.24		
1,1-Dichloroethene	.96038	.85841	10.62	*	
1,1-Dichloroethane	2.34516	2.16089	7.86		**
1,2-Dichloroethene (trans)	1.26081	1.10411	12.43		
1,2-Dichloroethene (cis)	1.40260	1.31887	5.97		
Chloroform	2.96902	2.86436	3.53	*	
1,2-Dichloroethane	1.59838	1.54770	3.17		
1,2-Dichloroethane-d4 (surr.)	1.44260	1.36592	5.32		
2-Butanone	.62882	.41844	33.46		
1,1,1-Trichloroethane	.64805	.63560	1.92		
Carbon Tetrachloride	.65803	.63503	3.49		
Vinyl Acetate	.49761	.42944	13.70		
Bromodichloromethane	.67124	.64633	3.71		
1,2-Dichloropropane	.32513	.30822	5.20	*	
cis-1,3-Dichloropropene	.46976	.44622	5.01		
Trichloroethene	.45418	.43138	5.02		
Dibromochloromethane	.59030	.56601	4.11		
1,1,2-Trichloroethane	.28472	.26933	5.41		
Benzene	.85324	.76705	10.10		
trans-1,3-Dichloropropene	.40260	.37407	7.09		
Bromoform	.42120	.38772	7.95		**
4-Methyl-2-Pentanone	.29470	.25242	14.34		
2-Hexanone	.28941	.15532	46.33		
Tetrachloroethene	.54753	.52458	4.19		
1,1,2,2-Tetrachloroethane	.56331	.51309	8.92		**
Toluene	.73109	.66021	9.70	*	

Results of record associated w/this cal have no outliers.

MO
6/19/96

RF - Response Factor from daily standard file at 50.00 UG/L

$\overline{RF}$ - Average Response Factor from Initial Calibration Form VI

%Diff - % Difference from original average or curve

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

Title: MISCELLANEOUS VOA COMPOUNDS 624 WATER
Calibrated: 951023 10:48

Check Standard Data File: >Y2155
Injection Time: 951023 10:35

Compound	$\overline{RF}$	RF	%Diff	Calib Meth
1,4-Dioxane	.13456	.12744	5.29	Average
Dichlorodifluoromethane	-	-	-	Average
Trichlorofluoromethane	1.46756	3.35223	128.42	Average
Hexane	-	-	-	Average
Acrolein	.07143	.08119	13.67	Average
Acrylonitrile	.18815	.14940	20.60	Average
Methyl-t-butylether	-	-	-	Average
Methyl Acrylate	.74671	.66770	10.58	Average
Tetrahydrofuran	.21642	.24457	13.01	Average
2,4,4-Trimethyl-2-Pentene	.16465	.17502	6.30	Average
2,4,4-Trimethyl-1-Pentene	.10949	.11792	7.69	Average
2-Chloroethylvinylether	*.05712*	*.12634*	*121.19*	*Average*
Vinyl Acetate	.48595	.45851	5.65	Average
Methyl methacrylate	.06709	.05599	16.54	Average
1,2-Dibromoethane (EDB)	.03279	.03168	3.41	Average
1,3-Dichlorobenzene	.75353	.75790	.58	Average
1,4-Dichlorobenzene	.58850	.62539	6.27	Average
1,2-Dichlorobenzene	.77408	.77602	.25	Average

Outliers are Not COCs

MO
6/19/96

RF - Response Factor from daily standard file at 50.00 UG/L

$\overline{RF}$ - Average Response Factor from Initial Calibration

%Diff - % Difference from original average or curve

Client: Olin Chemicals, Work Order: WL1644 10/26/95

PACE, Inc.
Maine Laboratory
Quality Control Report

Sample Duplicate Results

Volatile Organics by GC/MS Method: 8240

Water Matrix

PACE Sample No. Duplicated: WL1644-3 as WL1644-4

Compound	Units	Sample Conc.	Sample Duplicate Conc.	RPD (%)
Vinyl Chloride	ug/L	300	410	31
Chloroethane	ug/L	790	1100	33
Methylene Chloride	ug/L	B220	B230	4
1,1-dichloroethene	ug/L	120	130	8
1,1-dichloroethane	ug/L	1100	1500	31
1,2-dichloroethene(total)	ug/L	1300	1700	27
2-butanone	ug/L	300	390	26
1,1,1-trichloroethane	ug/L	1500	2000	29
Trichloroehtene	ug/L	56	53	6
1,1,2-Trichloroethane	ug/L	J26	J21	21
Benzene	ug/L	130	150	14
Bromoform	ug/L	J12	<50	NC
4-Methyl-2-pentanone	ug/L	1200	1600	29
Tetrachloroethene	ug/L	J43	J39	10
1,1,2,2-Tetrachloroethane	ug/L	JB41	JB33	22
Toluene	ug/L	15000	15000	0
Chlorobenzene	ug/L	170	190	11
Ethylbenzene	ug/L	290	350	19
Xylenes(total)	ug/L	1100	1300	17
Acetone	ug/L	280	<150	NC
1,2-dichloroethane	ug/L	J23	J13	56

Estimate circled results bas on field dup criteria from Reg I
KO 6/19/96

"J"flag denotes an estimated value less than the Laboratory's Practical Quantitation Level.

"B"flag denotes detection of this analyte in the laboratory method blank currently analyzed with sample.

NC = Not Calculated

^ Only positive results have been included. The remaining compounds were not detected.

* The laboratory does not use the calculated relative percent difference (RPD) for sample duplicates to assess quality control; RPD data for sample duplicates are used to evaluate method precision for the environmental sample matrix. Please refer to LCS data for assessment of quality control for this method.

000015

QUANT REPORT

)perator ID: DAW　　Quant Rev: 7　　Quant Time: 951020 18:39
)utput File: ^Y2138::D3　　Injected at: 951020 18:12
)ata File: >Y2138::D4　　Dilution Factor: 10.00000
Jame: WL1644-3DL　　Instrument ID: 5970
Aisc: 5970;OLIN

:D File: I_YHW::QT
'itle: IFB
.ast Calibration: 950719 05:30　　Last Qcal Time: 951020 09:53

	Compound	R.T.	Q ion	Area	Conc	Units	q
1)	*Bromochloromethane	10.68	128.0	43568	50.00	UG/L	99
4)	Vinyl Chloride	3.36	62.0	30806	305.19	UG/L	97
5)	Chloroethane	3.82	64.0	47541	789.97	UG/L	93
6)	Methylene Chloride	6.59	84.0	22506	217.44	UG/L	92
7)	Acetone	5.58	43.0	10653	~~284.49~~	~~UG/L~~ OK for	100
9)	1,1-Dichloroethene	5.25	96.0	10583	115.49	UG/L	90
10)	1,1-Dichloroethane	8.57	63.0	248042	1131.43	UG/L	99
11)	1,2-Dichloroethene (trans)	7.16	96.0	8410	76.78	UG/L	94
12)	1,2-Dichloroethene (cis)	10.14	96.0	160753	1267.70	UG/L	86
14)	1,2-Dichloroethane	12.05	62.0	3586	23.49	UG/L	94
15)	1,2-Dichloroethane-d4 (surr.)	11.91	65.0	59774	478.94	UG/L	86
16)	2-Butanone	10.34	43.0	17549	302.18	UG/L	91
17)	*1,4-Difluorobenzene	12.74	114.0	174362	50.00	UG/L	87
18)	1,1,1-Trichloroethane OK	11.09	97.0	351157	1506.19	UG/L	93
19)	Carbon Tetrachloride	11.09	117.0	50461	~~808.01~~	~~UG/L~~ diff ions	94
24)	Trichloroethene	13.07	130.0	9090	55.67	UG/L	95
26)	1,1,2-Trichloroethane	16.08	97.0	2684	26.01	UG/L	91
27)	Benzene	11.83	78.0	39378^	126.10	UG/L	72
29)	Bromoform	18.84	173.0	1748	11.78	UG/L	92
30)	*Chlorobenzene-d5	17.48	117.0	132183	50.00	UG/L	95
31)	4-Methyl-2-Pentanone	15.14	43.0	89959	1227.39	UG/L	98
33)	Tetrachloroethene	16.08	164.0	6386	43.47	UG/L	96
34)	1,1,2,2-Tetrachloroethane	19.64	83.0	6024	41.14	UG/L	99
35)	Toluene	15.29	92.0	2057340	10478.33	UG/L	57
36)	Toluene-d8 (surr.)	15.16	98.0	148904	480.63	UG/L	94
37)	Chlorobenzene	17.53	112.0	47313	167.11	UG/L	89
38)	Ethylbenzene	17.66	106.0	34764	292.65	UG/L	71
40)	Xylene (total)	17.86	106.0	119962	883.04	UG/L	85
40)	Xylene (total)	18.48	106.0	35741	263.09	UG/L	91
41)	p-Bromofluorobenzene (surr.)	19.33	174.0	74151	497.77	UG/L	73

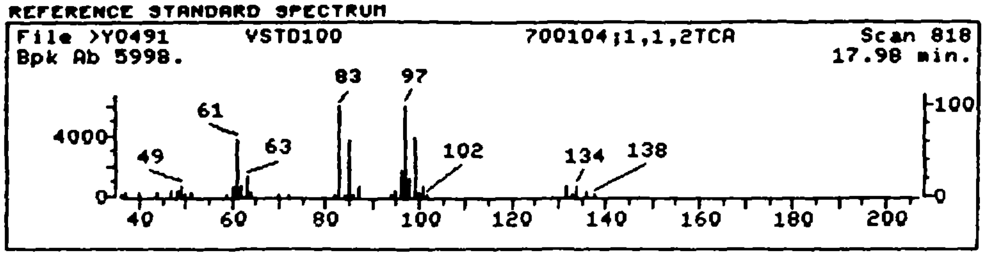
* Compound is ISTD

what about these

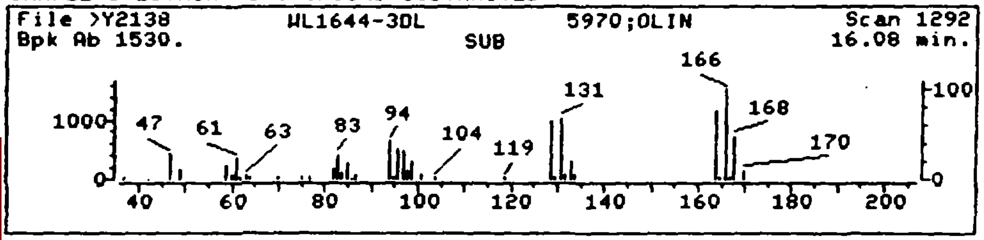
spectra match each other

0000103

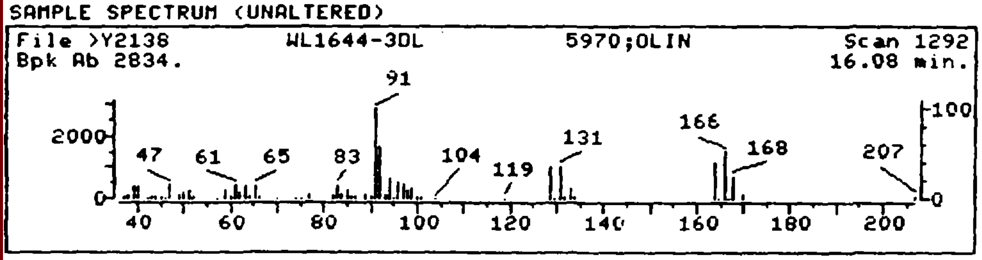
REFERENCE STANDARD SPECTRUM



SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



SAMPLE SPECTRUM (UNALTERED)



Data File: >Y2138::D4
Name: WL1644-3DL
Misc: 5970;OLIN
Quant Time: 951020 18:39
Injected at: 951020 18:12
Last Qcal Time: 951020 09:53

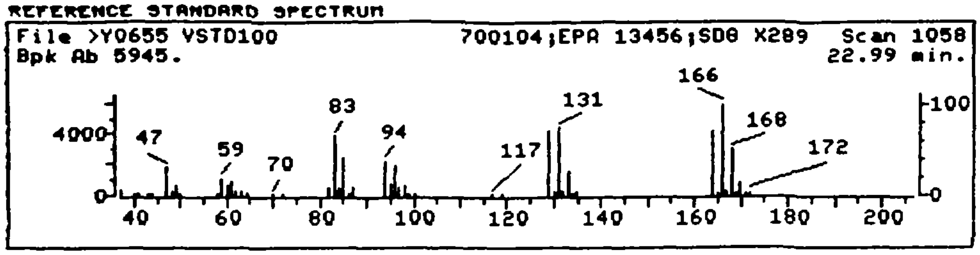
Quant Output File: ^Y2138::D3
Instrument ID: 5970

Quant ID File: I_YHW::QT
Last Calibration: 950719 05:30

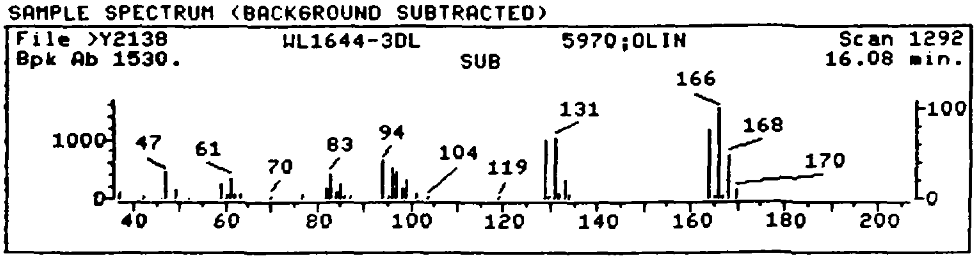
Compound No : 26
Compound Name : 1,1,2-Trichloroethane
Scan Number : 1292
Retention Time: 16.08 min.
Quant Ion : 97.0
Area : 2684
Concentration : 26.01 UG/L
q-value : 91

N

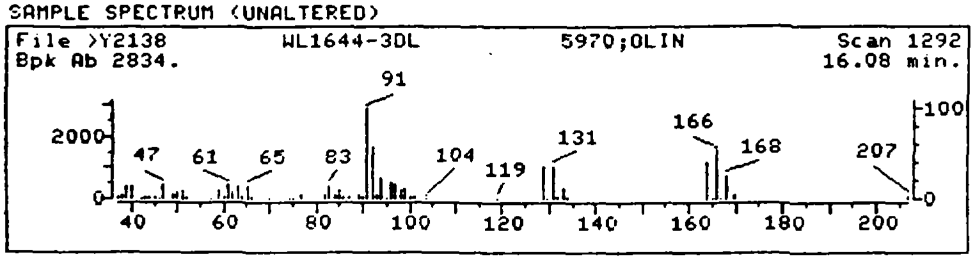
REFERENCE STANDARD SPECTRUM



SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



SAMPLE SPECTRUM (UNALTERED)

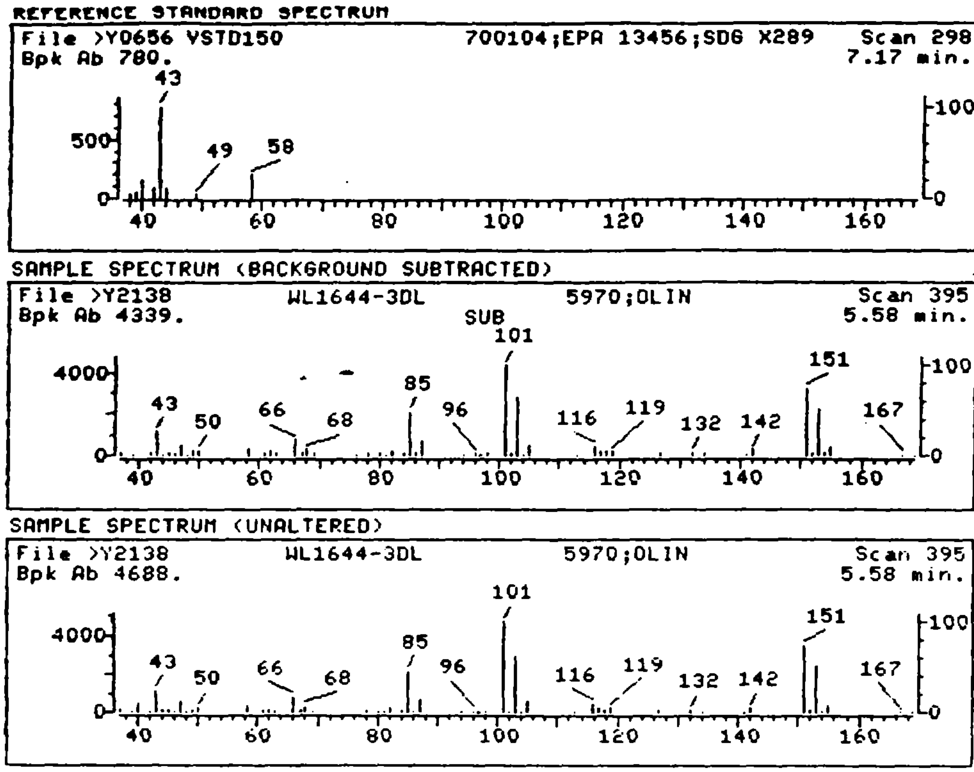


Data File: >Y2138::D4
Name: WL1644-3DL
Misc: 5970;OLIN
Quant Time: 951020 18:39
Injected at: 951020 18:12
Last Qcal Time: 951020 09:53

Quant Output File: ^Y2138::D3
Instrument ID: 5970

Quant ID File: I_YHW::QT
Last Calibration: 950719 05:30

Compound No : 33
Compound Name : Tetrachloroethene
Scan Number : 1292
Retention Time: 16.08 min.
Quant Ion : 164.0
Area : 6386
Concentration : 43.47 UG/L
q-value : 96



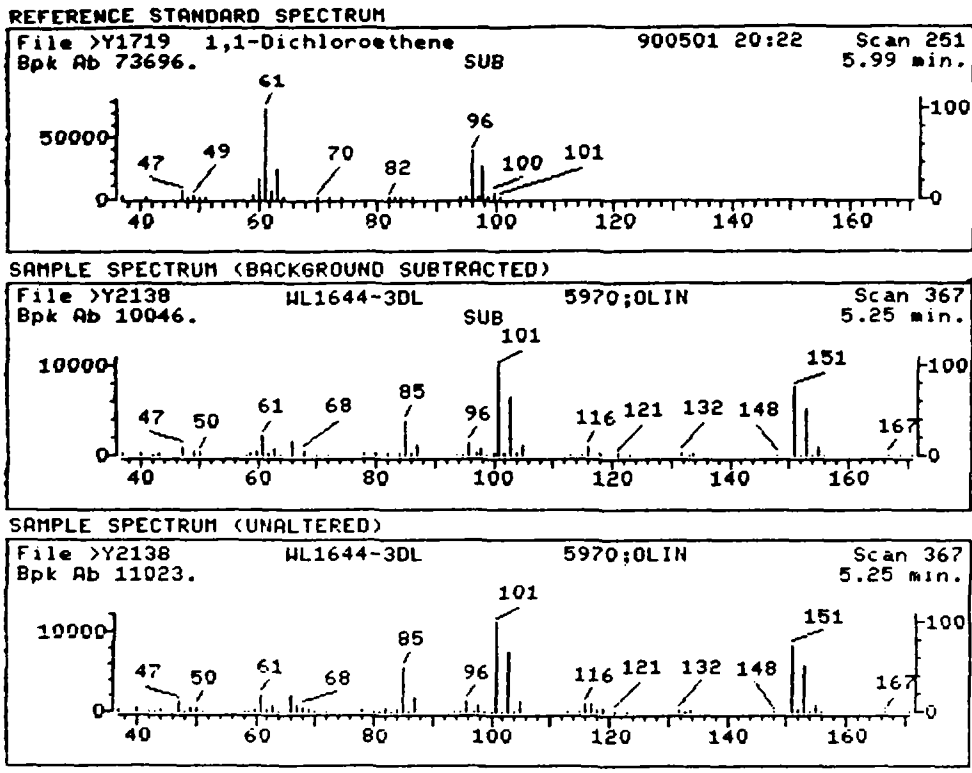
Interference
MO
6/19/96

Data File: >Y2138::D4
Name: WL1644-3DL
Misc: 5970;OLIN
Quant Time: 951020 18:39
Injected at: 951020 18:12
Last Qcal Time: 951020 09:53

Quant Output File: ^Y2138::D3
Instrument ID: 5970

Quant ID File: I_YHW::QT
Last Calibration: 950719 05:30

Compound No : 7
Compound Name : Acetone
Scan Number : 395
Retention Time: 5.58 min.
Quant Ion : 43.0
Area : 10653
Concentration : 284.49 UG/L
q-value : 100



Interferences
6/19/96

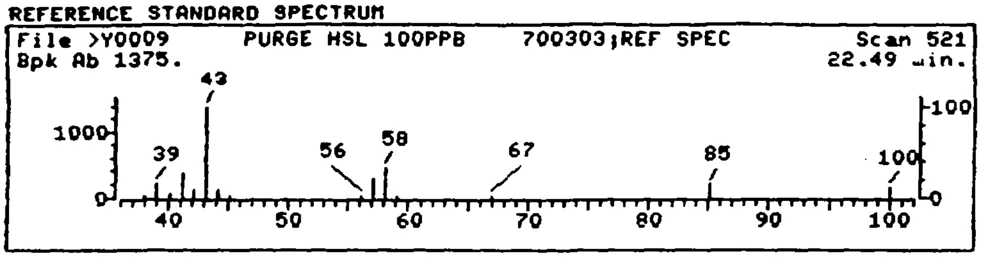
Data File: >Y2138::D4
Name: WL1644-3DL
Misc: 5970;OLIN
Quant Time: 951020 18:39
Injected at: 951020 18:12
Last Qcal Time: 951020 09:53

Quant Output File: ^Y2138::D3
Instrument ID: 5970

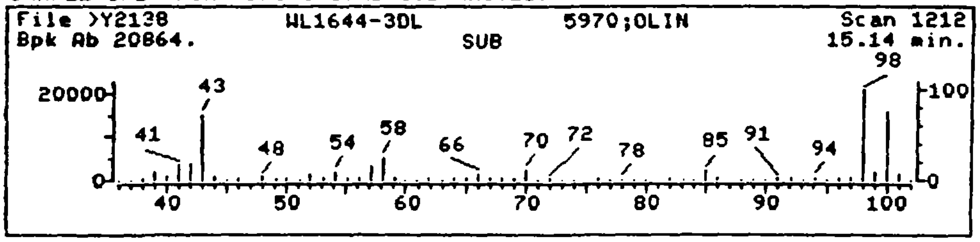
Quant ID File: I_YHW::QT
Last Calibration: 950719 05:30

Compound No	:	9
Compound Name	:	1,1-Dichloroethene
Scan Number	:	367
Retention Time	:	5.25 min.
Quant Ion	:	96.0
Area	:	10583
Concentration	:	115.49 UG/L
q-value	:	90

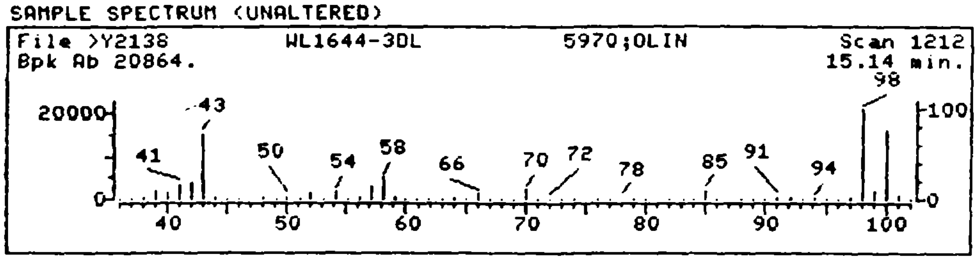
REFERENCE STANDARD SPECTRUM



SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



SAMPLE SPECTRUM (UNALTERED)

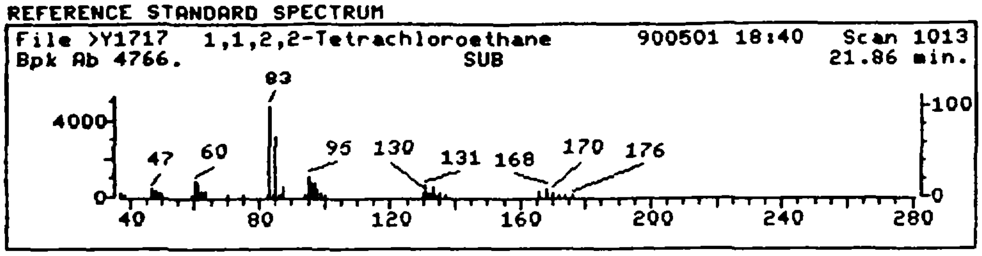


Data File: >Y2138::D4
Quant Output File: ^Y2138::D3
Name: WL1644-3DL
Instrument ID: 5970
Misc: 5970;OLIN
Quant Time: 951020 18:39
Quant ID File: I_YHW::QT
Injected at: 951020 18:12
Last Calibration: 950719 05:30
Last Qcal Time: 951020 09:53

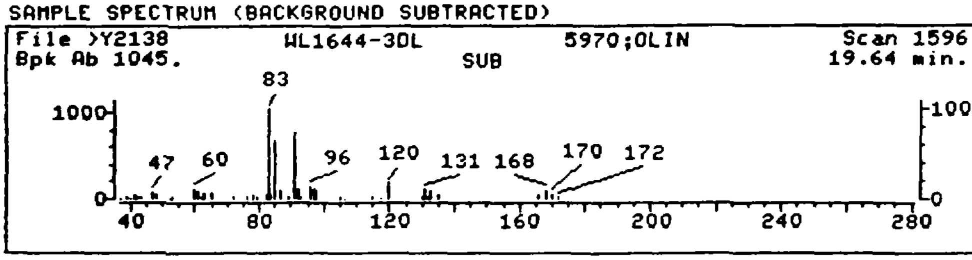
Compound No : 31
Compound Name : 4-Methyl-2-Pentanone
Scan Number : 1212
Retention Time: 15.14 min.
Quant Ion : 43.0
Area : 89959
Concentration : 1227.39 UG/L
q-value : 98

Interferences
wo
6/19/96

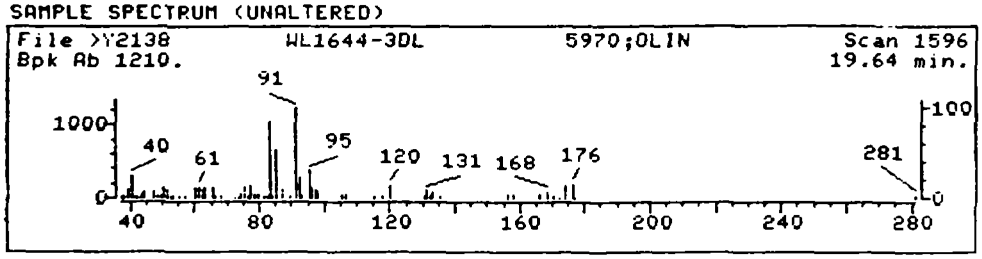
REFERENCE STANDARD SPECTRUM



SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



SAMPLE SPECTRUM (UNALTERED)



Interferences
MO
6/19/96

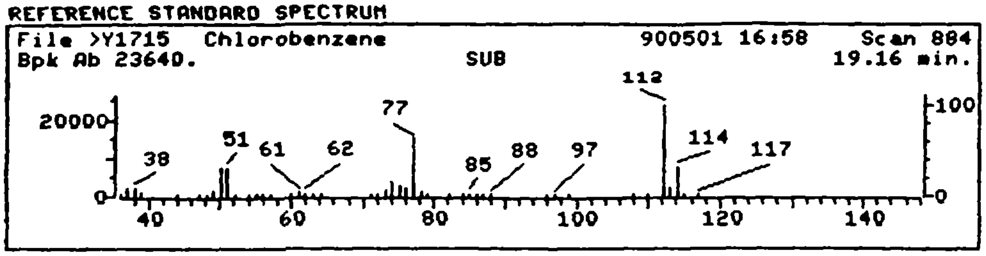
Data File: >Y2138::D4
Name: WL1644-3DL
Misc: 5970;OLIN
Quant Time: 951020 18:39
Injected at: 951020 18:12
Last Qcal Time: 951020 09:53

Quant Output File: ^Y2138::D3
Instrument ID: 5970

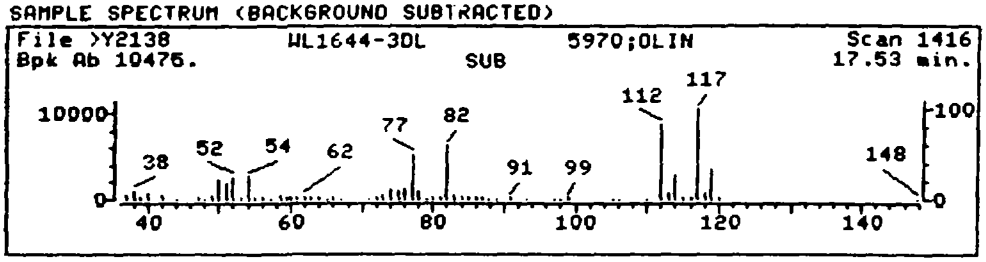
Quant ID File: I_YHW::QT
Last Calibration: 950719 05:30

Compound No : 34
Compound Name : 1,1,2,2-Tetrachloroethane
Scan Number : 1596
Retention Time: 19.64 min.
Quant Ion : 83.0
Area : 6024
Concentration : 41.14 UG/L
q-value : 99

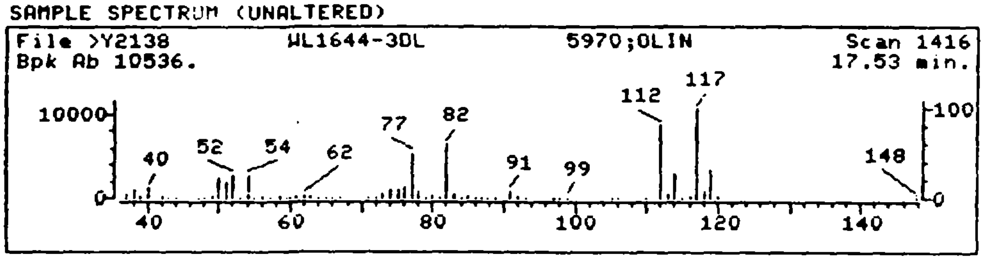
REFERENCE STANDARD SPECTRUM



SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



SAMPLE SPECTRUM (UNALTERED)



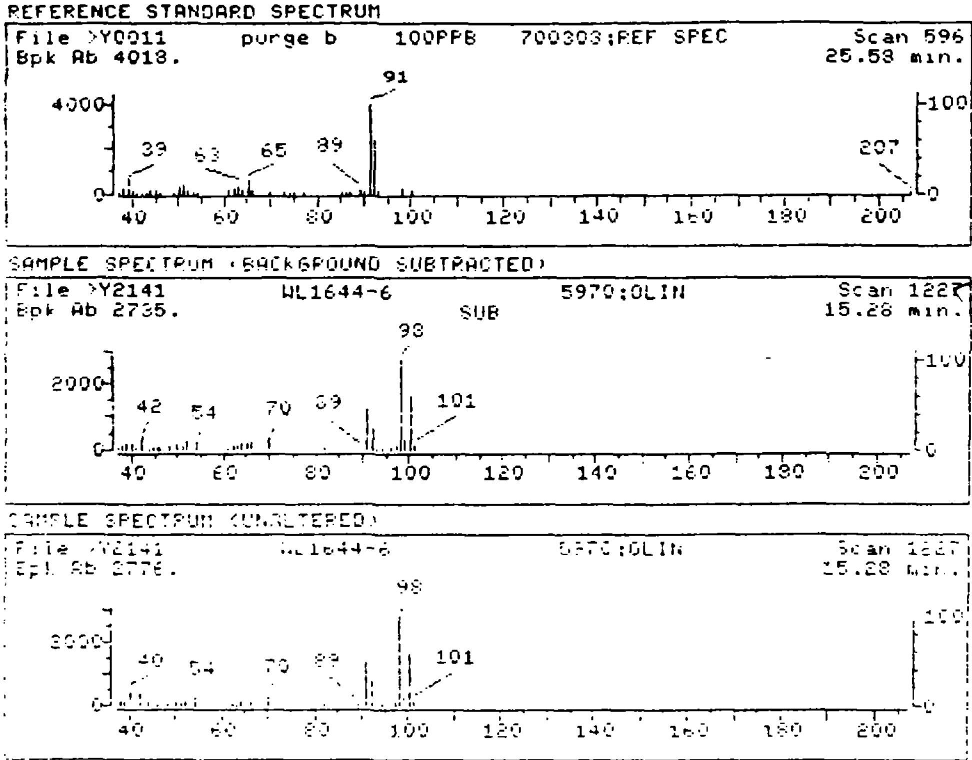
Interferences
uo
6/19/96

Data File: >Y2138::D4
Name: WL1644-3DL
Misc: 5970;OLIN
Quant Time: 951020 18:39
Injected at: 951020 18:12
Last Qcal Time: 951020 09:53

Quant Output File: ^Y2138::D3
Instrument ID: 5970

Quant ID File: I_YHW::QT
Last Calibration: 950719 05:30

Compound No	:	37
Compound Name	:	Chlorobenzene
Scan Number	:	1416
Retention Time	:	17.53 min.
Quant Ion	:	112.0
Area	:	47313
Concentration	:	167.11 UG/L
q-value	:	89



Interferences
6/19/96

Data File: >Y2141::D4
Name: WL1644-6
Misc: 5970;OLIN
Quant Time: 951020 20:17
Injected at: 951020 19:51
Last Qcal Time: 951020 09:53

Quant Output File: ^Y2141::D3
Instrument ID: 5970

Quant ID File: I_YHW::QT
Last Calibration: 950719 05:30

Compound No : 35
Compound Name : Toluene
Scan Number : 1227
Retention Time: 15.28 min.
Quant Ion : 92.0
Area : 4897
Concentration : 2.75 UG/L
q-value : 94

QUANT REPORT Page 1

Operator ID: DAW Quant Rev: 7 Quant Time: 951020 13:34
Output File: ^Y2128::D5 Injected at: 951020 12:40
Data File: >Y2128::D4 Dilution Factor: 1.00000
Name: WL1644-2 Instrument ID: 5970
Misc: 5970;OLIN GW80D

ID File: I_YEXW::D3
Title: MISCELLANEOUS VOA COMPOUNDS 624 WATER
Last Calibration: 930412 10:33 Last Qcal Time: 951020 09:53

	Compound	R.T.	Q ion	Area	Conc	Units	q
1)	*Bromochloromethane	10.70	128.0	44136	50.00	UG/L	88
2)	1,4-Dioxane	6.59	88.0	3797	30.63	UG/L	100
3)	Dichlorodifluoromethane	2.57	85.0	1594	27.67	UG/L	100
4)	Trichlorofluoromethane	5.03	101.0	3265	2.26	UG/L	92
7)	Acrolein	5.59	56.0	9	.183	UG/L	98
11)	Tetrahydrofuran	10.72	42.0	3051969	27008.23	UG/L	21
12)	*1,4-Difluorobenzene	12.72	114.0	201082	50.00	UG/L	91
13)	2,4,4-Trimethyl-2-Pentene	13.39	112.0	117^	.174	UG/L	82
15)	2-Chloroethylvinylether	14.94	63.0	479	1.11	UG/L	1
16)	Vinyl Acetate	8.77	43.0	13258	6.79	UG/L	87
17)	Methyl methacrylate	14.18	100.0	96	.385	UG/L	49
18)	1,2-Dibromoethane (EDB)	18.47	107.0	24121	174.69	UG/L	92
19)	*Chlorobenzene-d5	17.48	117.0	149892	50.00	UG/L	94
20)	1,3-Dichlorobenzene	21.01	146.0	4418	1.83	UG/L	96
21)	1,4-Dichlorobenzene	21.15	146.0	35628	19.63	UG/L	94
22)	1,2-Dichlorobenzene	21.74	146.0	834748	345.83	UG/L	94

* Compound is ISTD

Not target compound Therefore, not evaluated as part of this data review. No spectra provided
mo 6/17/96

)perator ID: DAW Quant Rev: 7 Quant Time: 951020 19:01
)utput File: ^Y2138::D5 Injected at: 951020 18:12
ata File: >Y2138::D4 Dilution Factor: 1.00000
Jame: WL1644-3DL Instrument ID: 5970
!isc: 5970;OLIN

D File: I_YEXW::D3
'itle: **MISCELLANEOUS VOA COMPOUNDS 624 WATER**
.ast Calibration: 930412 10:33 Last Qcal Time: 951020 09:53

	Compound	R.T.	Q ion	Area	Conc	Units	q
1)	*Bromochloromethane	10.68	128.0	43974	50.00	UG/L	98
2)	1,4-Dioxane	6.60	88.0	2006	16.24	UG/L	100
4)	Trichlorofluoromethane	4.17	101.0	8908	6.18	UG/L	83
5)	FREON-113	5.29	151.0	223281	8336.21	UG/L	92
11)	Tetrahydrofuran	10.69	42.0	916500	8140.40	UG/L	52
12)	*1,4-Difluorobenzene	12.74	114.0	179244	50.00	UG/L	91
18)	1,2-Dibromoethane (EDB)	18.48	107.0	3252	26.42	UG/L	94
19)	*Chlorobenzene-d5	17.48	117.0	136369	50.00	UG/L	96
20)	1,3-Dichlorobenzene	21.00	146.0	5261	2.39	UG/L	93
21)	1,4-Dichlorobenzene	21.16	146.0	13292	8.05	UG/L	97
22)	1,2-Dichlorobenzene	21.75	146.0	277468	126.35	UG/L	93

* Compound is ISTD

Same note as page 76 MO 6/21/96

QUANT REPORT Page 1

Operator ID: DAW Quant Rev: 7 Quant Time: 951020 12:56
Output File: ^Y2127::D5 Injected at: 951020 12:07
Data File: >Y2127::D4 Dilution Factor: 1.00000
Name: WL1644-1 Instrument ID: 5970
Misc: 5970;OLIN GW80S

ID File: I_YEXW::D3
Title: MISCELLANEOUS VOA COMPOUNDS 624 WATER
Last Calibration: 930412 10:33 Last Qcal Time: 951020 09:53

	Compound	R.T.	Q ion	Area	Conc	Units	q
1)	*Bromochloromethane	10.62	128.0	42907	50.00	UG/L	89
8)	Acrylonitrile	7.62	53.0	385	2.46	UG/L	100
11)	Tetrahydrofuran	10.66	42.0	124582	1134.06	UG/L	47
12)	*1,4-Difluorobenzene	12.70	114.0	174733	50.00	UG/L	92
18)	1,2-Dibromoethane (EDB)	18.46	107.0	83892	699.19	UG/L	91
19)	*Chlorobenzene-d5	17.46	117.0	131699	50.00	UG/L	95
20)	1,3-Dichlorobenzene	21.15	146.0	3761	1.77	UG/L	91
22)	1,2-Dichlorobenzene	21.73	146.0	4831	2.28	UG/L	95

* Compound is ISTD

same note as page
76 MO 6/21/96

SMITH

APPENDIX B

Volatile/Semivolatile Data Validation Summary SMTH

SMTH Project Name: Olin · Wilmington **Case No./SDG:** WL-1644
SMTH Project No.: 00-7074-0102 **Sampling Date(s):** 10/19/95
Project Manager: Bruce Cushing **Reviewed By:** M. Kudlesky
Laboratory: Pace **Completion Date:** 6/21/96

Fraction Reviewed: ☐ VOLATILE ORGANICS ☒ SEMIVOLATILE ORGANICS

Compound List: ☒ TCL ☐ Priority Pollutant ☐ Appendix IX ☐ Other

Method: ☐ CLP SOW ____ ☐ 40 CFR 136 Method ____ ☒ SW-846 Method 8270 ☐ Other

The following table indicates the data validation criteria examined, problems identified, and QA acti

Data Validation Criteria:	accept	FYI	qualify	comments
Holding Times	✓	✓		WL-1644-1RE, 2RE, & 4RE (MS) reextracted w/in hold time.
GC/MS Tuning	✓			
Initial Calibrations	✓		✓	MS1 = 4-methylphenol & hexachloroethane %RSD > 3[illegible] but LT 50%. Estimate positive results
Continuing Calibrations			✓	28800 - bis(2-chloroethyl)ether
Blank Analysis Results			✓	bis(2-ethylhexyl)phthalate questioned due to method blanks. Phenol - Rinse [illegible]
System Monitoring/Surrogate Results	✓	✓		Blanks - OK, LCS - OK, RE/DLs - OK - 1644-6 1:300 - surrog diluted out
~~MS/MSD~~ Matrix spike / lab duplicate Results		✓	✓	MS % Rs - OK. Duplicate % RPDs >20% for 8 compounds
Field Duplicate Results		✓		Diethyl phthalate & di-n-butyl phthalate detected in GW-81D below QL; not detected in GW-81D (Field [illegible] ~~bis(2-ethylhexyl)phthalate detected in both~~ but question[illegible]
Internal Standard Areas/RT			✓	WL-1644-3 (DF 1.0 & 1.0RE) chrysene D12 & Perylene d[illegible]
Target Compound Identification	✓			Quant report revied / compared to report form - OK. Mass spectra OK
TIC Identification		✓		N/A
Quantitation/Detection Limits	✓			Transcriptions for hits on report forms verified from quant report.
System Performance	✓			
Overall Assessment of Data	✓			
Other: LCS	✓			LCS spike %Rs OK

General Comments: ______________________________

NA - Not applicable
NR - Not reviewed

QA Scientist M. Kudlesky Date 6/21/96

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1644-1
Report Date: 11/07/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-80S (UNFILT)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
TCL Semivolatile Organics by USEPA 8270								1,2,3,4
Phenol	82.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
bis(2-Chloroethyl)ether	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
2-Chlorophenol	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
1,3-Dichlorobenzene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
1,4-Dichlorobenzene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
1,2-Dichlorobenzene	J2	µg/L	1.0	10	EPA 8270	10/24/95	AC	
2-Methylphenol	26.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
bis(2-Chloroisopropyl) ether	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
4-Methylphenol	190.	µg/L	2.0	10	EPA 8270	10/24/95	AC	
n-Nitroso-dipropylamine	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Hexachloroethane	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Nitrobenzene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/20/95 by RAL using EPA 3520
(2) "J" flag denotes an estimated value less than the Laboratory's Practical Quantitation Level.
(3) "B" flag denotes detection of this analyte in the laboratory method blank analyzed concurrently with the sample.
(4) "$" flag denotes surrogate compound recovery is out of criteria. Re-extraction or re-analysis confirmed matrix interference.

11/07/95

LJO/jcbgbp(dw)/jfg/nen/sra
LJ24W1
CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

pace
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1644-1
Report Date: 11/07/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-80S (UNFILT)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Isophorone	J2	µg/L	2.0	10	EPA 8270	10/24/95	AC	
2-Nitrophenol	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
2,4-Dimethylphenol	25.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
bis(2-Chloroethoxy)methane	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
2,4-Dichlorophenol	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
1,2,4-Trichlorobenzene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Naphthalene	J4	µg/L	1.0	10	EPA 8270	10/24/95	AC	
4-Chloroaniline	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Hexachlorobutadiene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
4-Chloro-3-methylphenol	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
2-Methylnaphthalene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Hexachlorocyclopentadiene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
2,4,6-Trichlorophenol	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values

11/07/95

LJO/jcbgbp(dw)/jfg/nen/sra
LJ24W1
CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1644-1
Report Date: 11/07/95
PO No. : SB-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-80S (UNFILT)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
2,4,5-Trichlorophenol	<25.	µg/L	1.0	25	EPA 8270	10/24/95	AC	
2-Chloronaphthalene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
2-Nitroaniline	<25.	µg/L	1.0	25	EPA 8270	10/24/95	AC	
Dimethylphthalate	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Acenaphthylene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
2,6-Dinitrotoluene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
3-Nitroaniline	<25.	µg/L	1.0	25	EPA 8270	10/24/95	AC	
Acenaphthene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
2,4-Dinitrophenol	<25.	µg/L	1.0	25	EPA 8270	10/24/95	AC	
4-Nitrophenol	<25.	µg/L	1.0	25	EPA 8270	10/24/95	AC	
Dibenzofuran	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
2,4-Dinitrotoluene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Diethylphthalate	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

11/07/95

LJO/jcbgbp(dw)/jfg/nen/sra
LJ24W1
CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1644-1
Report Date: 11/07/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-80S (UNFILT)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTE
4-Chlorophenyl phenyl ether	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Fluorene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
4-Nitroaniline	<25.	µg/L	1.0	25	EPA 8270	10/24/95	AC	
4,6-Dinitro-2-methylphenol	<25.	µg/L	1.0	25	EPA 8270	10/24/95	AC	
n-Nitrosodiphenylamine	J2	µg/L	1.0	10	EPA 8270	10/24/95	AC	
4-Bromophenyl phenyl ether	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Hexachlorobenzene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Pentachlorophenol	<25.	µg/L	1.0	25	EPA 8270	10/24/95	AC	
Phenanthrene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Anthracene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Carbazole	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Di-n-butylphthalate	J1	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Fluoranthene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values

11/07/95

LJO/jcbgbp(dw)/jfg/nen/sra
LJ24W1
CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

REPORT OF LABORATORY ANALYSIS

Pace Incorporated Environmental Laboratories

Lab Number : WL-1644-1
Report Date: 11/07/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-80S (UNFILT)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Pyrene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Butyl benzylphthalate	J3	µg/L	1.0	10	EPA 8270	10/24/95	AC	
3,3'-Dichlorobenzidine	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Benzo(a)anthracene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Chrysene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
bis(2-Ethylhexyl)phthalate	B16	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Di-n-octylphthalate	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Benzo(b)fluoranthene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Benzo(k)fluoranthene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Benzo(a)pyrene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Indeno(1,2,3-cd)pyrene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Dibenzo(a,h)anthracene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Benzo(g,h,i)perylene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

11/07/95

LJO/jcbgbp(dw)/jfg/nen/sra
LJ24W1
CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

REPORT OF LABORATORY ANALYSIS

pace ENVIRONMENTAL LABORATORIES

Lab Number : WL-1644-1
Report Date: 11/07/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-80S (UNFILT)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
2-Fluorophenol (Surr.)	70.	%	1.0		EPA 8270	10/24/95	AC	
Phenol-d5 (Surr.)	86.	%	1.0		EPA 8270	10/24/95	AC	
Nitrobenzene-d5 (Surr.)	$14	%	1.0		EPA 8270	10/24/95	AC	
2-Fluorobiphenyl (Surr.)	83.	%	1.0		EPA 8270	10/24/95	AC	
2,4,6-Tribromophenol (Surr.)	88.	%	1.0		EPA 8270	10/24/95	AC	
Terphenyl-d14 (Surr.)	41.	%	1.0		EPA 8270	10/24/95	AC	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

1 outlier allowed per fraction provided it is > 10%.
6/24/96
(initials)

11/07/95

LJO/jcbgbp(dw)/jfg/nen/sra
LJ24WL
CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1644-2
Report Date: 11/07/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
GW-80D (UNFILT)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
TCL Semivolatile Organics by USEPA 8270								1,2,3,4
Phenol	J7	µg/L	1.0	10	EPA 8270	10/24/95	AC	
bis(2-Chloroethyl)ether	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
2-Chlorophenol	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
1,3-Dichlorobenzene	J2	µg/L	1.0	10	EPA 8270	10/24/95	AC	
1,4-Dichlorobenzene	18.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
1,2-Dichlorobenzene	290.	µg/L	2.0	10	EPA 8270	10/24/95	AC	
2-Methylphenol	17.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
bis(2-Chloroisopropyl) ether	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
4-Methylphenol	63.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
n-Nitroso-dipropylamine	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Hexachloroethane	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Nitrobenzene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/20/95 by RAL using EPA 3520
(2) "J" flag denotes an estimated value less than the Laboratory's Practical Quantitation Level.
(3) "B" flag denotes detection of this analyte in the laboratory method blank analyzed concurrently with the sample.
(4) "$" flag denotes surrogate compound recovery is out of criteria. Re-extraction or re-analysis confirmed matrix interference.

11/07/95

LJO/jcbgbp(dw)/jfg/nen/sra
LJ20W1
CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1644-2
Report Date: 11/07/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-80D (UNFILT)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Isophorone	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
2-Nitrophenol	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
2,4-Dimethylphenol	12.	µg/L	~~5.0~~ 1.0 MC 6/10/96	10	EPA 8270	10/24/95	AC	
bis(2-Chloroethoxy)methane	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
2,4-Dichlorophenol	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
1,2,4-Trichlorobenzene	J8	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Naphthalene	27.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
4-Chloroaniline	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Hexachlorobutadiene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
4-Chloro-3-methylphenol	21.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
2-Methylnaphthalene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Hexachlorocyclopentadiene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
2,4,6-Trichlorophenol	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

11/07/95

LJO/jcbgbp(dw)/jfg/nen/sra
LJ20W1
CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

PACE INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1644-2
Report Date: 11/07/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-80D (UNFILT)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
2,4,5-Trichlorophenol	<25.	µg/L	1.0	25	EPA 8270	10/24/95	AC	
2-Chloronaphthalene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
2-Nitroaniline	<25.	µg/L	1.0	25	EPA 8270	10/24/95	AC	
Dimethylphthalate	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Acenaphthylene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
2,6-Dinitrotoluene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
3-Nitroaniline	<25.	µg/L	1.0	25	EPA 8270	10/24/95	AC	
Acenaphthene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
2,4-Dinitrophenol	<25.	µg/L	1.0	25	EPA 8270	10/24/95	AC	
4-Nitrophenol	<25.	µg/L	1.0	25	EPA 8270	10/24/95	AC	
Dibenzofuran	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
2,4-Dinitrotoluene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Diethylphthalate	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

11/07/95

LJO/jcbgbp(dw)/jfg/nen/sra
LJ20W1
CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

REPORT OF LABORATORY ANALYSIS

ENVIRONMENTAL LABORATORIES

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1644-2
Report Date: 11/07/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-80D (UNFILT)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
4-Chlorophenyl phenyl ether	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Fluorene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
4-Nitroaniline	<25.	µg/L	1.0	25	EPA 8270	10/24/95	AC	
4,6-Dinitro-2-methylphenol	<25.	µg/L	1.0	25	EPA 8270	10/24/95	AC	
n-Nitrosodiphenylamine	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
4-Bromophenyl phenyl ether	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Hexachlorobenzene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Pentachlorophenol	<25.	µg/L	1.0	25	EPA 8270	10/24/95	AC	
Phenanthrene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Anthracene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Carbazole	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Di-n-butylphthalate	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Fluoranthene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

11/07/95

LJO/jcbgbp(dw)/jfg/nen/sra
LJ20W1
CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

REPORT OF LABORATORY ANALYSIS

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

Lab Number : WL-1644-2
Report Date: 11/07/95
PO No. : SB-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-80D (UNFILT)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Pyrene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Butyl benzylphthalate	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
3,3'-Dichlorobenzidine	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Benzo(a)anthracene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Chrysene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
bis(2-Ethylhexyl)phthalate	JB2	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Di-n-octylphthalate	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Benzo(b)fluoranthene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Benzo(k)fluoranthene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Benzo(a)pyrene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Indeno(1,2,3-cd)pyrene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Dibenzo(a,h)anthracene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Benzo(g,h,i)perylene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

11/07/95

LJO/jcbgbp(dw)/jfg/nen/sra
LJ20W1
CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

pace INCORPORATED ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1644-2
Report Date: 11/07/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-80D (UNFILT)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
2-Fluorophenol (Surr.)	90.	%	1.0		EPA 8270	10/24/95	AC	
Phenol-d5 (Surr.)	84.	%	1.0		EPA 8270	10/24/95	AC	
Nitrobenzene-d5 (Surr.)	$29	%	1.0		EPA 8270	10/24/95	AC	
2-Fluorobiphenyl (Surr.)	95.	%	1.0		EPA 8270	10/24/95	AC	
2,4,6-Tribromophenol (Surr.)	121.	%	1.0		EPA 8270	10/24/95	AC	
Terphenyl-d14 (Surr.)	88.	%	1.0		EPA 8270	10/24/95	AC	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

1 outlier allowed provided it is > 10%.

11/07/95

LJO/jcbgbp(dw)/jfg/nen/sra
LJ20W1
CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

REPORT OF LABORATORY ANALYSIS

pace INCORPORATED ENVIRONMENTAL LABORATORIES

Lab Number : WL-1644-3
Report Date: 11/07/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-80BR (UNFILT)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
TCL Semivolatile Organics by USEPA 8270								1,2,3,4
Phenol	J5	µg/L	1.0	10	EPA 8270	10/23/95	AC	
bis(2-Chloroethyl)ether	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
2-Chlorophenol	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
1,3-Dichlorobenzene	J4	µg/L	1.0	10	EPA 8270	10/23/95	AC	
1,4-Dichlorobenzene	38.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
1,2-Dichlorobenzene	770.	µg/L	5.0	10	EPA 8270	10/23/95	AC	
2-Methylphenol	18.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
bis(2-Chloroisopropyl) ether	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
4-Methylphenol	70.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
n-Nitroso-dipropylamine	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
Hexachloroethane	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
Nitrobenzene	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/20/95 by RAL using EPA 3520
(2) "J" flag denotes an estimated value less than the Laboratory's Practical Quantitation Level.
(3) "B" flag denotes detection of this analyte in the laboratory method blank analyzed concurrently with the sample.
(4) Internal standard area(s) are out of criteria. Reanalysis confirmed matrix interference.

11/07/95

LJO/jcbajc/gbp(dw)/jfg/sra
LJ20W1
CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

pace ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1644-3
Report Date: 11/07/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-80BR (UNFILT)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Isophorone	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
2-Nitrophenol	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
2,4-Dimethylphenol	J9.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
bis(2-Chloroethoxy)methane	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
2,4-Dichlorophenol	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
1,2,4-Trichlorobenzene	20.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
Naphthalene	13.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
4-Chloroaniline	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
Hexachlorobutadiene	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
4-Chloro-3-methylphenol	J4	µg/L	1.0	10	EPA 8270	10/23/95	AC	
2-Methylnaphthalene	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
Hexachlorocyclopentadiene	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
2,4,6-Trichlorophenol	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

11/07/95

LJO/jcbajc/gbp(dw)/jfg/sra
LJ20W1
CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

REPORT OF LABORATORY ANALYSIS

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

Lab Number : WL-1644-3
Report Date: 11/07/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
GW-80BR (UNFILT)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
2,4,5-Trichlorophenol	<25.	µg/L	1.0	25	EPA 8270	10/23/95	AC	
2-Chloronaphthalene	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
2-Nitroaniline	<25.	µg/L	1.0	25	EPA 8270	10/23/95	AC	
Dimethylphthalate	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
Acenaphthylene	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
2,6-Dinitrotoluene	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
3-Nitroaniline	<25.	µg/L	1.0	25	EPA 8270	10/23/95	AC	
Acenaphthene	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
2,4-Dinitrophenol	<25.	µg/L	1.0	25	EPA 8270	10/23/95	AC	
4-Nitrophenol	<25.	µg/L	1.0	25	EPA 8270	10/23/95	AC	
Dibenzofuran	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
2,4-Dinitrotoluene	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
Diethylphthalate	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

11/07/95

LJO/jcbajc/gbp(dw)/jfg/sra
LJ20W1
CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

pace ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1644-3
Report Date: 11/07/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-80BR (UNFILT)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
4-Chlorophenyl phenyl ether	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
Fluorene	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
4-Nitroaniline	<25.	µg/L	1.0	25	EPA 8270	10/23/95	AC	
4,6-Dinitro-2-methylphenol	<25.	µg/L	1.0	25	EPA 8270	10/23/95	AC	
n-Nitrosodiphenylamine	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
4-Bromophenyl phenyl ether	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
Hexachlorobenzene	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
Pentachlorophenol	<25.	µg/L	1.0	25	EPA 8270	10/23/95	AC	
Phenanthrene	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
Anthracene	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
Carbazole	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
Di-n-butylphthalate	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
Fluoranthene	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values

11/07/95

LJO/jcbajc/gbp(dw)/jfg/sra
LJ20WL
CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

REPORT OF LABORATORY ANALYSIS

pace INCORPORATED ENVIRONMENTAL LABORATORIES

Lab Number : WL-1644-3
Report Date: 11/07/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-80BR (UNFILT)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Pyrene	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
Butyl benzylphthalate	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
3,3'-Dichlorobenzidine	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
Benzo(a)anthracene	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
Chrysene	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
bis(2-Ethylhexyl)phthalate	JB7	µg/L	1.0	10	EPA 8270	10/23/95	AC	
Di-n-octylphthalate	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
Benzo(b)fluoranthene	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
Benzo(k)fluoranthene	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
Benzo(a)pyrene	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
Indeno(1,2,3-cd)pyrene	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
Dibenzo(a,h)anthracene	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
Benzo(g,h,i)perylene	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

11/07/95

LJO/jcbajc/gbp(dw)/jfg/sra
LJ20W1
CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

REPORT OF LABORATORY ANALYSIS

pace ENVIRONMENTAL LABORATORIES

Lab Number : WL-1644-3
Report Date: 11/07/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-80BR (UNFILT)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
2-Fluorophenol (Surr.)	37.	%	1.0		EPA 8270	10/23/95	AC	
Phenol-d5 (Surr.)	41.	%	1.0		EPA 8270	10/23/95	AC	
Nitrobenzene-d5 (Surr.)	76.	%	1.0		EPA 8270	10/23/95	AC	
2-Fluorobiphenyl (Surr.)	85.	%	1.0		EPA 8270	10/23/95	AC	
2,4,6-Tribromophenol (Surr.)	35.	%	1.0		EPA 8270	10/23/95	AC	
Terphenyl-d14 (Surr.)	91.	%	1.0		EPA 8270	10/23/95	AC	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

11/07/95

LJO/jcbajc/gbp(dw)/jfg/sra
LJ20W1
CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

pace
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1644-4
Report Date: 11/07/95
PO No. : SB-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
GW-80BR (UNFILT/DUP)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
TCL Semivolatile Organics by USEPA 8270								1,2,3,4
Phenol	J41	µg/L	5.0	10	EPA 8270	10/31/95	AC	
bis(2-Chloroethyl)ether	<50.	µg/L	5.0	10	EPA 8270	10/31/95	AC	
2-Chlorophenol	J38	µg/L	5.0	10	EPA 8270	10/31/95	AC	
1,3-Dichlorobenzene	<50.	µg/L	5.0	10	EPA 8270	10/31/95	AC	
1,4-Dichlorobenzene	70.	µg/L	5.0	10	EPA 8270	10/31/95	AC	
1,2-Dichlorobenzene	E910	µg/L	5.0	10	EPA 8270	10/31/95	AC	
2-Methylphenol	J28	µg/L	5.0	10	EPA 8270	10/31/95	AC	
bis(2-Chloroisopropyl) ether	<50.	µg/L	5.0	10	EPA 8270	10/31/95	AC	
4-Methylphenol	120.	µg/L	5.0	10	EPA 8270	10/31/95	AC	
n-Nitroso-dipropylamine	J45	µg/L	5.0	10	EPA 8270	10/31/95	AC	
Hexachloroethane	<50.	µg/L	5.0	10	EPA 8270	10/31/95	AC	
Nitrobenzene	<50.	µg/L	5.0	10	EPA 8270	10/31/95	AC	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/26/95 by RAL using EPA 3520
(2) "J" flag denotes an estimated value less than the Laboratory's Practical Quantitation Level.
(3) "E" flag indicates an estimated value. The analyte was detected in the sample at a concentration greater than the standard calibration range.
(4) Sample dilution required for quantitation of one or more target analytes; therefore, standard laboratory Practical Quantitation Level (PQL) could not be achieved.

11/07/95

LJO/jcbajc/gbp(dw)/jfg/nen/sra
LJ20W1
CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

REPORT OF LABORATORY ANALYSIS

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1644-4
Report Date: 11/07/95
PO No. : SB-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-80BR (UNFILT/DUP)	Aqueous	R. MIHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Isophorone	<50.	µg/L	5.0	10	EPA 8270	10/31/95	AC	
2-Nitrophenol	<50.	µg/L	5.0	10	EPA 8270	10/31/95	AC	
2,4-Dimethylphenol	J11	µg/L	5.0	10	EPA 8270	10/31/95	AC	
bis(2-Chloroethoxy)methane	J39	µg/L	5.0	10	EPA 8270	10/31/95	AC	
2,4-Dichlorophenol	<50.	µg/L	5.0	10	EPA 8270	10/31/95	AC	
1,2,4-Trichlorobenzene	57.	µg/L	5.0	10	EPA 8270	10/31/95	AC	
Naphthalene	J12	µg/L	5.0	10	EPA 8270	10/31/95	AC	
4-Chloroaniline	<50.	µg/L	5.0	10	EPA 8270	10/31/95	AC	
Hexachlorobutadiene	<50.	µg/L	5.0	10	EPA 8270	10/31/95	AC	
4-Chloro-3-methylphenol	J60	µg/L	5.0	10	EPA 8270	10/31/95	AC	
2-Methylnaphthalene	<50.	µg/L	5.0	10	EPA 8270	10/31/95	AC	
Hexachlorocyclopentadiene	<50.	µg/L	5.0	10	EPA 8270	10/31/95	AC	
2,4,6-Trichlorophenol	<50.	µg/L	5.0	10	EPA 8270	10/31/95	AC	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

11/07/95

LJO/jcbajc/gbp(dw)/jfg/nen/sra
LJ20W1
CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

REPORT OF LABORATORY ANALYSIS

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1644-4
Report Date: 11/07/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-80BR (UNFILT/DUP)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
2,4,5-Trichlorophenol	<130.	µg/L	5.0	25	EPA 8270	10/31/95	AC	
2-Chloronaphthalene	<50.	µg/L	5.0	10	EPA 8270	10/31/95	AC	
2-Nitroaniline	<130.	µg/L	5.0	25	EPA 8270	10/31/95	AC	
Dimethylphthalate	<50.	µg/L	5.0	10	EPA 8270	10/31/95	AC	
Acenaphthylene	<50.	µg/L	5.0	10	EPA 8270	10/31/95	AC	
2,6-Dinitrotoluene	<50.	µg/L	5.0	10	EPA 8270	10/31/95	AC	
3-Nitroaniline	<130.	µg/L	5.0	25	EPA 8270	10/31/95	AC	
Acenaphthene	J41	µg/L	5.0	10	EPA 8270	10/31/95	AC	
2,4-Dinitrophenol	<130.	µg/L	5.0	25	EPA 8270	10/31/95	AC	
4-Nitrophenol	J36	µg/L	5.0	25	EPA 8270	10/31/95	AC	
Dibenzofuran	<50.	µg/L	5.0	10	EPA 8270	10/31/95	AC	
2,4-Dinitrotoluene	J27	µg/L	5.0	10	EPA 8270	10/31/95	AC	
Diethylphthalate	<50.	µg/L	5.0	10	EPA 8270	10/31/95	AC	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

11/07/95

LJO/jcbajc/gbp(dw)/jfg/nen/sra
LJ20W1
CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

pace ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1644-4
Report Date: 11/07/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-80BR (UNFILT/DUP)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
4-Chlorophenyl phenyl ether	<50.	µg/L	5.0	10	EPA 8270	10/31/95	AC	
Fluorene	<50.	µg/L	5.0	10	EPA 8270	10/31/95	AC	
4-Nitroaniline	<130.	µg/L	5.0	25	EPA 8270	10/31/95	AC	
4,6-Dinitro-2-methylphenol	<130.	µg/L	5.0	25	EPA 8270	10/31/95	AC	
n-Nitrosodiphenylamine	<50.	µg/L	5.0	10	EPA 8270	10/31/95	AC	
4-Bromophenyl phenyl ether	<50.	µg/L	5.0	10	EPA 8270	10/31/95	AC	
Hexachlorobenzene	<50.	µg/L	5.0	10	EPA 8270	10/31/95	AC	
Pentachlorophenol	J52	µg/L	5.0	25	EPA 8270	10/31/95	AC	
Phenanthrene	<50.	µg/L	5.0	10	EPA 8270	10/31/95	AC	
Anthracene	<50.	µg/L	5.0	10	EPA 8270	10/31/95	AC	
Carbazole	<50.	µg/L	5.0	10	EPA 8270	10/31/95	AC	
Di-n-butylphthalate	<50.	µg/L	5.0	10	EPA 8270	10/31/95	AC	
Fluoranthene	<50.	µg/L	5.0	10	EPA 8270	10/31/95	AC	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

11/07/95

LJO/jcbajc/gbp(dw)/jfg/nen/sra
LJ20W1
CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1644-4
Report Date: 11/07/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-80BR (UNFILT/DUP)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Pyrene	J39	µg/L	5.0	10	EPA 8270	10/31/95	AC	
Butyl benzylphthalate	<50.	µg/L	5.0	10	EPA 8270	10/31/95	AC	
3,3'-Dichlorobenzidine	<50.	µg/L	5.0	10	EPA 8270	10/31/95	AC	
Benzo(a)anthracene	<50.	µg/L	5.0	10	EPA 8270	10/31/95	AC	
Chrysene	<50.	µg/L	5.0	10	EPA 8270	10/31/95	AC	
bis(2-Ethylhexyl)phthalate	<50.	µg/L	5.0	10	EPA 8270	10/31/95	AC	
Di-n-octylphthalate	<50.	µg/L	5.0	10	EPA 8270	10/31/95	AC	
Benzo(b)fluoranthene	<50.	µg/L	5.0	10	EPA 8270	10/31/95	AC	
Benzo(k)fluoranthene	<50.	µg/L	5.0	10	EPA 8270	10/31/95	AC	
Benzo(a)pyrene	<50.	µg/L	5.0	10	EPA 8270	10/31/95	AC	
Indeno(1,2,3-cd)pyrene	<50.	µg/L	5.0	10	EPA 8270	10/31/95	AC	
Dibenzo(a,h)anthracene	<50.	µg/L	5.0	10	EPA 8270	10/31/95	AC	
Benzo(g,h,i)perylene	<50.	µg/L	5.0	10	EPA 8270	10/31/95	AC	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

11/07/95

LJO/jcbajc/gbp(dw)/jfg/nen/sra
LJ20W1
CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

REPORT OF LABORATORY ANALYSIS

Lab Number : VL-1644-4
Report Date: 11/07/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
GW-80BR (UNFILT/DUP)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
2-Fluorophenol (Surr.)	36.	%	5.0		EPA 8270	10/31/95	AC	
Phenol-d5 (Surr.)	50.	%	5.0		EPA 8270	10/31/95	AC	
Nitrobenzene-d5 (Surr.)	65.	%	5.0		EPA 8270	10/31/95	AC	
2-Fluorobiphenyl (Surr.)	78.	%	5.0		EPA 8270	10/31/95	AC	
2,4,6-Tribromophenol (Surr.)	42.	%	5.0		EPA 8270	10/31/95	AC	
Terphenyl-d14 (Surr.)	58.	%	5.0		EPA 8270	10/31/95	AC	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

11/07/95

LJO/jcbajc/gbp(dw)/jfg/nen/sra
LJ20W1
CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1644-5
Report Date: 11/07/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
GW-80BR (UNFILT/MS)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
TCL Semivolatile Organics by USEPA 8270								1,2,3
Phenol	J8	µg/L	1.0	10	EPA 8270	10/23/95	AC	
bis(2-Chloroethyl)ether	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
2-Chlorophenol	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
1,3-Dichlorobenzene	J4	µg/L	1.0	10	EPA 8270	10/23/95	AC	
1,4-Dichlorobenzene	40.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
1,2-Dichlorobenzene	840.	µg/L	5.0	10	EPA 8270	10/23/95	AC	
2-Methylphenol	31.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
bis(2-Chloroisopropyl) ether	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
4-Methylphenol	130.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
n-Nitroso-dipropylamine	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
Hexachloroethane	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
Nitrobenzene	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
Isophorone	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/20/95 by RAL using EPA 3520
(2) "J" flag denotes an estimated value less than the Laboratory's Practical Quantitation Level.
(3) "B" flag denotes detection of this analyte in the laboratory method blank analyzed concurrently with the sample.

11/07/95

LJO/jcbajc/gbp(dw)/jfg/sra
LJ20W1
CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

pace ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1644-5
Report Date: 11/07/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-80BR (UNFILT/MS)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
2-Nitrophenol	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
2,4-Dimethylphenol	J13	µg/L	5.0	10	EPA 8270	10/23/95	AC	
bis(2-Chloroethoxy)methane	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
2,4-Dichlorophenol	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
1,2,4-Trichlorobenzene	21.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
Naphthalene	13.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
4-Chloroaniline	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
Hexachlorobutadiene	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
4-Chloro-3-methylphenol	J5	µg/L	1.0	10	EPA 8270	10/23/95	AC	
2-Methylnaphthalene	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
Hexachlorocyclopentadiene	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
2,4,6-Trichlorophenol	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
2,4,5-Trichlorophenol	<25.	µg/L	1.0	25	EPA 8270	10/23/95	AC	
2-Chloronaphthalene	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

11/07/95

LJO/jcbajc/gbp(dw)/jfg/sra
LJ20WL
CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

PACE INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1644-5
Report Date: 11/07/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-80BR (UNFILT/MS)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
2-Nitroaniline	<25.	µg/L	1.0	25	EPA 8270	10/23/95	AC	
Dimethylphthalate	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
Acenaphthylene	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
2,6-Dinitrotoluene	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
3-Nitroaniline	<25.	µg/L	1.0	25	EPA 8270	10/23/95	AC	
Acenaphthene	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
2,4-Dinitrophenol	<25.	µg/L	1.0	25	EPA 8270	10/23/95	AC	
4-Nitrophenol	<25.	µg/L	1.0	25	EPA 8270	10/23/95	AC	
Dibenzofuran	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
2,4-Dinitrotoluene	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
Diethylphthalate	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
4-Chlorophenyl phenyl ether	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
Fluorene	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
4-Nitroaniline	<25.	µg/L	1.0	25	EPA 8270	10/23/95	AC	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

11/07/95

LJO/jcbajc/gbp(dw)/jfg/sra
LJ20W1
CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1644-5
Report Date: 11/07/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-80BR (UNFILT/MS)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
4,6-Dinitro-2-methylphenol	<25.	µg/L	1.0	25	EPA 8270	10/23/95	AC	
n-Nitrosodiphenylamine	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
4-Bromophenyl phenyl ether	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
Hexachlorobenzene	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
Pentachlorophenol	<25.	µg/L	1.0	25	EPA 8270	10/23/95	AC	
Phenanthrene	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
Anthracene	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
Carbazole	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
Di-n-butylphthalate	J1	µg/L	1.0	10	EPA 8270	10/23/95	AC	
Fluoranthene	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
Pyrene	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
Butyl benzylphthalate	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
3,3'-Dichlorobenzidine	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
Benzo(a)anthracene	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

11/07/95

LJO/jcbajc/gbp(dw)/jfg/sra
LJ20W1
CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1644-5
Report Date: 11/07/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-80BR (UNFILT/MS)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Chrysene	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
bis(2-Ethylhexyl)phthalate	B10	µg/L	1.0	10	EPA 8270	10/23/95	AC	
Di-n-octylphthalate	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
Benzo(b)fluoranthene	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
Benzo(k)fluoranthene	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
Benzo(a)pyrene	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
Indeno(1,2,3-cd)pyrene	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
Dibenzo(a,h)anthracene	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
Benzo(g,h,i)perylene	<10.	µg/L	1.0	10	EPA 8270	10/23/95	AC	
2-Fluorophenol(Surr.)	40.	%	1.0		EPA 8270	10/23/95	AC	
Phenol-d5(Surr.)	65.	%	1.0		EPA 8270	10/23/95	AC	
Nitrobenzene-d5(Surr.)	84.	%	1.0		EPA 8270	10/23/95	AC	
2-Fluorobiphenyl(Surr.)	88.	%	1.0		EPA 8270	10/23/95	AC	
2,4,6-Tribromophenol(Surr.)	67.	%	1.0		EPA 8270	10/23/95	AC	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

11/07/95

LJO/jcbajc/gbp(dw)/jfg/sra
LJ20W1
CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

REPORT OF LABORATORY ANALYSIS

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1644-5
Report Date: 11/07/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-80BR (UNFILT/MS)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Terphenyl-d14 (Surr.)	55.	%	1.0		EPA 8270	10/23/95	AC	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

11/07/95

LJO/jcbajc/gbp(dw)/jfg/sra
LJ20W1
CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1644-6
Report Date: 11/07/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-81D (UNFILT)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
TCL Semivolatile Organics by USEPA 8270								1,2,3
Phenol	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
bis(2-Chloroethyl)ether	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
2-Chlorophenol	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
1,3-Dichlorobenzene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
1,4-Dichlorobenzene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
1,2-Dichlorobenzene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
2-Methylphenol	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
bis(2-Chloroisopropyl) ether	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
4-Methylphenol	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
n-Nitroso-dipropylamine	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Hexachloroethane	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Nitrobenzene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Isophorone	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/20/95 by RAL using EPA 3520
(2) "J" flag denotes an estimated value less than the Laboratory's Practical Quantitation Level.
(3) "B" flag denotes detection of this analyte in the laboratory method blank analyzed concurrently with the sample.

11/07/95

LJO/jcbgbp(dw)/jfg/sra
LJ20W1
CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

pace ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1644-6
Report Date: 11/07/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-81D (UNFILT)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
2-Nitrophenol	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
2,4-Dimethylphenol	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
bis(2-Chloroethoxy)methane	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
2,4-Dichlorophenol	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
1,2,4-Trichlorobenzene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Naphthalene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
4-Chloroaniline	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Hexachlorobutadiene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
4-Chloro-3-methylphenol	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
2-Methylnaphthalene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Hexachlorocyclopentadiene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
2,4,6-Trichlorophenol	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
2,4,5-Trichlorophenol	<25.	µg/L	1.0	25	EPA 8270	10/24/95	AC	
2-Chloronaphthalene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

11/07/95

LJO/jcbgbp(dw)/jfg/sra
LJ20W1
CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

pace INCORPORATED ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1644-6
Report Date: 11/07/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-81D (UNFILT)	Aqueous	R. MIHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
2-Nitroaniline	<25.	µg/L	1.0	25	EPA 8270	10/24/95	AC	
Dimethylphthalate	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Acenaphthylene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
2,6-Dinitrotoluene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
3-Nitroaniline	<25.	µg/L	1.0	25	EPA 8270	10/24/95	AC	
Acenaphthene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
2,4-Dinitrophenol	<25.	µg/L	1.0	25	EPA 8270	10/24/95	AC	
4-Nitrophenol	<25.	µg/L	1.0	25	EPA 8270	10/24/95	AC	
Dibenzofuran	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
2,4-Dinitrotoluene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Diethylphthalate	J2	µg/L	1.0	10	EPA 8270	10/24/95	AC	
4-Chlorophenyl phenyl ether	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Fluorene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
4-Nitroaniline	<25.	µg/L	1.0	25	EPA 8270	10/24/95	AC	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

11/07/95

LJO/jcbgbp(dw)/jfg/sra
LJ20W1
CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1644-6
Report Date: 11/07/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-81D (UNFILT)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
4,6-Dinitro-2-methylphenol	<25.	µg/L	1.0	25	EPA 8270	10/24/95	AC	
n-Nitrosodiphenylamine	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
4-Bromophenyl phenyl ether	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Hexachlorobenzene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Pentachlorophenol	<25.	µg/L	1.0	25	EPA 8270	10/24/95	AC	
Phenanthrene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Anthracene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Carbazole	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Di-n-butylphthalate	J1	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Fluoranthene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Pyrene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Butyl benzylphthalate	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
3,3'-Dichlorobenzidine	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Benzo(a)anthracene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

11/07/95

LJO/jcbgbp(dw)/jfg/sra
LJ20W1
CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

REPORT OF LABORATORY ANALYSIS

pace INCORPORATED ENVIRONMENTAL LABORATORIES

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1644-6
Report Date: 11/07/95
PO No. : SB-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-81D (UNFILT)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Chrysene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
bis(2-Ethylhexyl)phthalate	B5000	µg/L	300.	10	EPA 8270	10/24/95	AC	
Di-n-octylphthalate	18.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Benzo(b)fluoranthene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Benzo(k)fluoranthene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Benzo(a)pyrene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Indeno(1,2,3-cd)pyrene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Dibenzo(a,h)anthracene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Benzo(g,h,i)perylene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
2-Fluorophenol(Surr.)	75.	%	1.0		EPA 8270	10/24/95	AC	
Phenol-d5(Surr.)	44.	%	1.0		EPA 8270	10/24/95	AC	
Nitrobenzene-d5(Surr.)	107.	%	1.0		EPA 8270	10/24/95	AC	
2-Fluorobiphenyl(Surr.)	93.	%	1.0		EPA 8270	10/24/95	AC	
2,4,6-Tribromophenol(Surr.)	111.	%	1.0		EPA 8270	10/24/95	AC	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values

11/07/95

LJO/jcbgbp(dw)/jfg/sra
LJ20W1
CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1644-6
Report Date: 11/07/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-81D (UNFILT)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Terphenyl-d14 (Surr.)	86.	%	1.0		EPA 8270	10/24/95	AC	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

11/07/95

LJO/jcbgbp(dw)/jfg/sra
LJ20W1
CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1644-7
Report Date: 11/07/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
GW-81BR (UNFILT)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
TCL Semivolatile Organics by USEPA 8270								1,2,3
Phenol	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
bis(2-Chloroethyl)ether	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
2-Chlorophenol	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
1,3-Dichlorobenzene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
1,4-Dichlorobenzene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
1,2-Dichlorobenzene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
2-Methylphenol	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
bis(2-Chloroisopropyl) ether	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
4-Methylphenol	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
n-Nitroso-dipropylamine	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Hexachloroethane	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Nitrobenzene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Isophorone	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/20/95 by RAL using EPA 3520
(2) "J" flag denotes an estimated value less than the Laboratory's Practical Quantitation Level.
(3) "B" flag denotes detection of this analyte in the laboratory method blank analyzed concurrently with the sample.

11/07/95

LJO/jcbajc/gbp(dw)/jfg/sra
LJ20W1
CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1644-7
Report Date: 11/07/95
PO No. : SB-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-81BR (UNFILT)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
2-Nitrophenol	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
2,4-Dimethylphenol	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
bis(2-Chloroethoxy)methane	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
2,4-Dichlorophenol	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
1,2,4-Trichlorobenzene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Naphthalene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
4-Chloroaniline	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Hexachlorobutadiene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
4-Chloro-3-methylphenol	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
2-Methylnaphthalene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Hexachlorocyclopentadiene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
2,4,6-Trichlorophenol	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
2,4,5-Trichlorophenol	<25.	µg/L	1.0	25	EPA 8270	10/24/95	AC	
2-Chloronaphthalene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

11/07/95

LJO/jcbajc/gbp(dw)/jfg/sra
LJ20W1
CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

REPORT OF LABORATORY ANALYSIS

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

Lab Number : WL-1644-7
Report Date: 11/07/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-81BR (UNFILT)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
2-Nitroaniline	<25.	µg/L	1.0	25	EPA 8270	10/24/95	AC	
Dimethylphthalate	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Acenaphthylene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
2,6-Dinitrotoluene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
3-Nitroaniline	<25.	µg/L	1.0	25	EPA 8270	10/24/95	AC	
Acenaphthene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
2,4-Dinitrophenol	<25.	µg/L	1.0	25	EPA 8270	10/24/95	AC	
4-Nitrophenol	<25.	µg/L	1.0	25	EPA 8270	10/24/95	AC	
Dibenzofuran	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
2,4-Dinitrotoluene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Diethylphthalate	J1	µg/L	1.0	10	EPA 8270	10/24/95	AC	
4-Chlorophenyl phenyl ether	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Fluorene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
4-Nitroaniline	<25.	µg/L	1.0	25	EPA 8270	10/24/95	AC	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

11/07/95

LJO/jcbajc/gbp(dw)/jfg/sra
LJ20W1
CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

pace
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1644-7
Report Date: 11/07/95
PO No. : SB-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-81BR (UNFILT)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
4,6-Dinitro-2-methylphenol	<25.	µg/L	1.0	25	EPA 8270	10/24/95	AC	
n-Nitrosodiphenylamine	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
4-Bromophenyl phenyl ether	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Hexachlorobenzene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Pentachlorophenol	<25.	µg/L	1.0	25	EPA 8270	10/24/95	AC	
Phenanthrene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Anthracene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Carbazole	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Di-n-butylphthalate	J1	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Fluoranthene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Pyrene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Butyl benzylphthalate	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
3,3'-Dichlorobenzidine	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Benzo(a)anthracene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

11/07/95

LJO/jcbajc/gbp(dw)/jfg/sra
LJ20W1
CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1644-7
Report Date: 11/07/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-81BR (UNFILT)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Chrysene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
bis(2-Ethylhexyl)phthalate	JB6	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Di-n-octylphthalate	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Benzo(b)fluoranthene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Benzo(k)fluoranthene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Benzo(a)pyrene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Indeno(1,2,3-cd)pyrene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Dibenzo(a,h)anthracene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Benzo(g,h,i)perylene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
2-Fluorophenol(Surr.)	68.	%	1.0		EPA 8270	10/24/95	AC	
Phenol-d5(Surr.)	79.	%	1.0		EPA 8270	10/24/95	AC	
Nitrobenzene-d5(Surr.)	73.	%	1.0		EPA 8270	10/24/95	AC	
2-Fluorobiphenyl(Surr.)	74.	%	1.0		EPA 8270	10/24/95	AC	
2,4,6-Tribromophenol(Surr.)	114.	%	1.0		EPA 8270	10/24/95	AC	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

11/07/95

LJO/jcbajc/gbp(dw)/jfg/sra
LJ20W1
CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1644-7
Report Date: 11/07/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
GW-81BR (UNFILT)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Terphenyl-d14 (Surr.)	86.	%	1.0		EPA 8270	10/24/95	AC	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

11/07/95

LJO/jcbajc/gbp(dw)/jfg/sra
LJ20W1
CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1644-8
Report Date: 11/07/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-65BR (UNFILT)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
TCL Semivolatile Organics by USEPA 8270								1,2,3
Phenol	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
bis(2-Chloroethyl)ether	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
2-Chlorophenol	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
1,3-Dichlorobenzene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
1,4-Dichlorobenzene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
1,2-Dichlorobenzene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
2-Methylphenol	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
bis(2-Chloroisopropyl) ether	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
4-Methylphenol	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
n-Nitroso-dipropylamine	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Hexachloroethane	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Nitrobenzene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Isophorone	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/20/95 by RAL using EPA 3520
(2) "J" flag denotes an estimated value less than the Laboratory's Practical Quantitation Level.
(3) "B" flag denotes detection of this analyte in the laboratory method blank analyzed concurrently with the sample.

11/07/95

LJO/jcbajc/gbp(dw)/jfg/sra
LJ20W1
CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1644-8
Report Date: 11/07/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
GW-65BR (UNFILT)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
2-Nitrophenol	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
2,4-Dimethylphenol	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
bis(2-Chloroethoxy)methane	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
2,4-Dichlorophenol	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
1,2,4-Trichlorobenzene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Naphthalene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
4-Chloroaniline	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Hexachlorobutadiene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
4-Chloro-3-methylphenol	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
2-Methylnaphthalene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Hexachlorocyclopentadiene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
2,4,6-Trichlorophenol	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
2,4,5-Trichlorophenol	<25.	µg/L	1.0	25	EPA 8270	10/24/95	AC	
2-Chloronaphthalene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

11/07/95

LJO/jcbajc/gbp(dw)/jfg/sra
LJ20W1
CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1644-8
Report Date: 11/07/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
GW-65BR (UNFILT)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
2-Nitroaniline	<25.	µg/L	1.0	25	EPA 8270	10/24/95	AC	
Dimethylphthalate	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Acenaphthylene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
2,6-Dinitrotoluene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
3-Nitroaniline	<25.	µg/L	1.0	25	EPA 8270	10/24/95	AC	
Acenaphthene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
2,4-Dinitrophenol	<25.	µg/L	1.0	25	EPA 8270	10/24/95	AC	
4-Nitrophenol	<25.	µg/L	1.0	25	EPA 8270	10/24/95	AC	
Dibenzofuran	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
2,4-Dinitrotoluene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Diethylphthalate	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
4-Chlorophenyl phenyl ether	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Fluorene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
4-Nitroaniline	<25.	µg/L	1.0	25	EPA 8270	10/24/95	AC	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

11/07/95

LJO/jcbajc/gbp(dw)/jfg/sra
LJ20W1
CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

REPORT OF LABORATORY ANALYSIS

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1644-8
Report Date: 11/07/95
PO No. : SB-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-65BR (UNFILT)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
4,6-Dinitro-2-methylphenol	<25.	µg/L	1.0	25	EPA 8270	10/24/95	AC	
n-Nitrosodiphenylamine	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
4-Bromophenyl phenyl ether	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Hexachlorobenzene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Pentachlorophenol	<25.	µg/L	1.0	25	EPA 8270	10/24/95	AC	
Phenanthrene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Anthracene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Carbazole	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Di-n-butylphthalate	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Fluoranthene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Pyrene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Butyl benzylphthalate	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
3,3'-Dichlorobenzidine	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Benzo(a)anthracene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

11/07/95

LJO/jcbajc/gbp(dw)/jfg/sra
LJ20W1
CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

REPORT OF LABORATORY ANALYSIS

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1644-8
Report Date: 11/07/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
GW-65BR (UNFILT)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Chrysene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
bis(2-Ethylhexyl)phthalate	JB6	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Di-n-octylphthalate	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Benzo(b)fluoranthene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Benzo(k)fluoranthene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Benzo(a)pyrene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Indeno(1,2,3-cd)pyrene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Dibenzo(a,h)anthracene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Benzo(g,h,i)perylene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
2-Fluorophenol (Surr.)	58.	%	1.0		EPA 8270	10/24/95	AC	
Phenol-d5 (Surr.)	67.	%	1.0		EPA 8270	10/24/95	AC	
Nitrobenzene-d5 (Surr.)	59.	%	1.0		EPA 8270	10/24/95	AC	
2-Fluorobiphenyl (Surr.)	82.	%	1.0		EPA 8270	10/24/95	AC	
2,4,6-Tribromophenol (Surr.)	54.	%	1.0		EPA 8270	10/24/95	AC	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

11/07/95

LJO/jcbajc/gbp(dw)/jfg/sra
LJ20W1
CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

REPORT OF LABORATORY ANALYSIS

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1644-8
Report Date: 11/07/95
PO No. : SB-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-65BR (UNFILT)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Terphenyl-d14 (Surr.)	93.	%	1.0		EPA 8270	10/24/95	AC	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

11/07/95

LJO/jcbajc/gbp(dw)/jfg/sra
LJ20WL
CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

pace ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1644-9
Report Date: 11/07/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
FIELD REP (UNFILT)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
TCL Semivolatile Organics by USEPA 8270								1,2,3
Phenol	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
bis(2-Chloroethyl)ether	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
2-Chlorophenol	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
1,3-Dichlorobenzene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
1,4-Dichlorobenzene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
1,2-Dichlorobenzene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
2-Methylphenol	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
bis(2-Chloroisopropyl) ether	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
4-Methylphenol	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
n-Nitroso-dipropylamine	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Hexachloroethane	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Nitrobenzene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Isophorone	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values
(1) Sample Preparation on 10/20/95 by RAL using EPA 3520
(2) "J" flag denotes an estimated value less than the Laboratory's Practical Quantitation Level.
(3) "B" flag denotes detection of this analyte in the laboratory method blank analyzed concurrently with the sample.

11/07/95

LJO/jcbajc/gbp(dw)/jfg/sra
LJ20W1
CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

REPORT OF LABORATORY ANALYSIS

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

Lab Number : WL-1644-9
Report Date: 11/07/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
FIELD REP (UNFILT)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
2-Nitrophenol	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
2,4-Dimethylphenol	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
bis(2-Chloroethoxy)methane	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
2,4-Dichlorophenol	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
1,2,4-Trichlorobenzene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Naphthalene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
4-Chloroaniline	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Hexachlorobutadiene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
4-Chloro-3-methylphenol	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
2-Methylnaphthalene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Hexachlorocyclopentadiene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
2,4,6-Trichlorophenol	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
2,4,5-Trichlorophenol	<25.	µg/L	1.0	25	EPA 8270	10/24/95	AC	
2-Chloronaphthalene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

11/07/95

LJO/jcbajc/gbp(dw)/jfg/sra
LJ20W1
CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1644-9
Report Date: 11/07/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
FIELD REP (UNFILT)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
2-Nitroaniline	<25.	µg/L	1.0	25	EPA 8270	10/24/95	AC	
Dimethylphthalate	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Acenaphthylene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
2,6-Dinitrotoluene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
3-Nitroaniline	<25.	µg/L	1.0	25	EPA 8270	10/24/95	AC	
Acenaphthene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
2,4-Dinitrophenol	<25.	µg/L	1.0	25	EPA 8270	10/24/95	AC	
4-Nitrophenol	<25.	µg/L	1.0	25	EPA 8270	10/24/95	AC	
Dibenzofuran	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
2,4-Dinitrotoluene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Diethylphthalate	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
4-Chlorophenyl phenyl ether	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Fluorene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
4-Nitroaniline	<25.	µg/L	1.0	25	EPA 8270	10/24/95	AC	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

11/07/95

LJO/jcbajc/gbp(dw)/jfg/sra
LJ20W1
CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

pace INCORPORATED ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1644-9
Report Date: 11/07/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
FIELD REP (UNFILT)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
4,6-Dinitro-2-methylphenol	<25.	µg/L	1.0	25	EPA 8270	10/24/95	AC	
n-Nitrosodiphenylamine	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
4-Bromophenyl phenyl ether	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Hexachlorobenzene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Pentachlorophenol	<25.	µg/L	1.0	25	EPA 8270	10/24/95	AC	
Phenanthrene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Anthracene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Carbazole	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Di-n-butylphthalate	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Fluoranthene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Pyrene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Butyl benzylphthalate	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
3,3'-Dichlorobenzidine	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Benzo(a)anthracene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

11/07/95

LJO/jcbajc/gbp(dw)/jfg/sra
LJ20W1
CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

pace INCORPORATED ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1544-9
Report Date: 11/07/95
PO No. : SR-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
FIELD REP (UNFILT)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Chrysene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
bis(2-Ethylhexyl)phthalate	JB1	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Di-n-octylphthalate	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Benzo(b)fluoranthene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Benzo(k)fluoranthene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Benzo(a)pyrene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Indeno(1,2,3-cd)pyrene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Dibenzo(a,h)anthracene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Benzo(g,h,i)perylene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
2-Fluorophenol(Surr.)	64.	%	1.0		EPA 8270	10/24/95	AC	
Phenol-d5(Surr.)	72.	%	1.0		EPA 8270	10/24/95	AC	
Nitrobenzene-d5(Surr.)	70.	%	1.0		EPA 8270	10/24/95	AC	
2-Fluorobiphenyl(Surr.)	68.	%	1.0		EPA 8270	10/24/95	AC	
2,4,6-Tribromophenol(Surr.)	109.	%	1.0		EPA 8270	10/24/95	AC	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

11/07/95

LJO/jcbajc/gbp(dw)/jfg/sra
LJ20WL
CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1644-9
Report Date: 11/07/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
FIELD REP (UNFILT)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Terphenyl-d14 (Surr.)	83.	%	1.0		EPA 8270	10/24/95	AC	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

11/07/95

LJO/jcbajc/gbp(dw)/jfg/sra
LJ20W1
CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

REPORT OF LABORATORY ANALYSIS

pace ENVIRONMENTAL LABORATORIES

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1644-10
Report Date: 11/07/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-300 (UNFILT)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
TCL Semivolatile Organics by USEPA 8270								1,2,3
Phenol	19.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
bis(2-Chloroethyl)ether	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
2-Chlorophenol	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
1,3-Dichlorobenzene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
1,4-Dichlorobenzene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
1,2-Dichlorobenzene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
2-Methylphenol	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
bis(2-Chloroisopropyl) ether	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
4-Methylphenol	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
n-Nitroso-dipropylamine	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Hexachloroethane	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Nitrobenzene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Isophorone	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/20/95 by RAL using EPA 3520
(2) "J" flag denotes an estimated value less than the Laboratory's Practical Quantitation Level.
(3) "B" flag denotes detection of this analyte in the laboratory method blank analyzed concurrently with the sample.

11/07/95

LJO/jcbajc/gbp(dw)/jfg/sra
LJ20WL
CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1644-10
Report Date: 11/07/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
GW-300 (UNFILT)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
2-Nitrophenol	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
2,4-Dimethylphenol	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
bis(2-Chloroethoxy)methane	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
2,4-Dichlorophenol	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
1,2,4-Trichlorobenzene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Naphthalene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
4-Chloroaniline	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Hexachlorobutadiene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
4-Chloro-3-methylphenol	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
2-Methylnaphthalene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Hexachlorocyclopentadiene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
2,4,6-Trichlorophenol	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
2,4,5-Trichlorophenol	<25.	µg/L	1.0	25	EPA 8270	10/24/95	AC	
2-Chloronaphthalene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

11/07/95

LJO/jcbajc/gbp(dw)/jfg/sra
LJ20W1
CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1644-10
Report Date: 11/07/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-300 (UNFILT)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
2-Nitroaniline	<25.	µg/L	1.0	25	EPA 8270	10/24/95	AC	
Dimethylphthalate	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Acenaphthylene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
2,6-Dinitrotoluene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
3-Nitroaniline	<25.	µg/L	1.0	25	EPA 8270	10/24/95	AC	
Acenaphthene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
2,4-Dinitrophenol	<25.	µg/L	1.0	25	EPA 8270	10/24/95	AC	
4-Nitrophenol	<25.	µg/L	1.0	25	EPA 8270	10/24/95	AC	
Dibenzofuran	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
2,4-Dinitrotoluene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Diethylphthalate	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
4-Chlorophenyl phenyl ether	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Fluorene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
4-Nitroaniline	<25.	µg/L	1.0	25	EPA 8270	10/24/95	AC	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

11/07/95

LJO/jcbajc/gbp(dw)/jfg/sra
LJ20W1
CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1644-10
Report Date: 11/07/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-300 (UNFILT)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
4,6-Dinitro-2-methylphenol	<25.	µg/L	1.0	25	EPA 8270	10/24/95	AC	
n-Nitrosodiphenylamine	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
4-Bromophenyl phenyl ether	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Hexachlorobenzene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Pentachlorophenol	<25.	µg/L	1.0	25	EPA 8270	10/24/95	AC	
Phenanthrene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Anthracene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Carbazole	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Di-n-butylphthalate	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Fluoranthene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Pyrene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Butyl benzylphthalate	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
3,3'-Dichlorobenzidine	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Benzo(a)anthracene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

11/07/95

LJO/jcbajc/gbp(dw)/jfg/sra
LJ20W1
CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

pace
INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1644-10
Report Date: 11/07/95
PO No. : SB-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-300 (UNFILT)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Chrysene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
bis(2-Ethylhexyl)phthalate	JB3	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Di-n-octylphthalate	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Benzo(b)fluoranthene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Benzo(k)fluoranthene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Benzo(a)pyrene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Indeno(1,2,3-cd)pyrene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Dibenzo(a,h)anthracene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
Benzo(g,h,i)perylene	<10.	µg/L	1.0	10	EPA 8270	10/24/95	AC	
2-Fluorophenol(Surr.)	74.	%	1.0		EPA 8270	10/24/95	AC	
Phenol-d5(Surr.)	83.	%	1.0		EPA 8270	10/24/95	AC	
Nitrobenzene-d5(Surr.)	80.	%	1.0		EPA 8270	10/24/95	AC	
2-Fluorobiphenyl(Surr.)	75.	%	1.0		EPA 8270	10/24/95	AC	
2,4,6-Tribromophenol(Surr.)	109.	%	1.0		EPA 8270	10/24/95	AC	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

11/07/95

LJO/jcbajc/gbp(dw)/jfg/sra
LJ20W1
CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

REPORT OF LABORATORY ANALYSIS

pace INCORPORATED ENVIRONMENTAL LABORATORIES

Lab Number : WL-1644-10
Report Date: 11/07/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-300 (UNFILT)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Terphenyl-d14 (Surr.)	78.	%	1.0		EPA 8270	10/24/95	AC	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

11/07/95

LJO/jcbajc/gbp(dw)/jfg/sra
LJ20W1
CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

P.O. # SB-CH-827-VAR-C

Method 8270 NON-CLP Deliverables

ORGANICS COMPLETE SDG FILE (CSF) INVENTORY SHEET (Cont.)

CASE NO. WL-1644 SDG NO. ________ SDG NOS. TO FOLLOW ________

________ ________ SAS NO. ________________

	PAGE NOs FROM	PAGE NOs TO	CHECK LAB	CHECK EPA
5. **Semivolatiles Data**				
a. QC Summary				
Surrogate Percent Recovery Summary (Form II SV) ✓ ON "Report of Analysis" form per sample				
MS/MSD Summary (Form III SV) ✓				
Method Blank Summary (Form IV SV) ✓				
GC/MS Instrument Performance Check ✓ computer summary form (Form V SV)				
Internal Standard Area and RT Summary ✓ ~~NA~~ (MD) (Form VIII SV) Summarized on lab workbook sheet				
b. Sample Data				
TCL Results (Form I SV-1, SV-2) ✓ "Report of Laboratory Analysis" forms				
Tentatively Identified Compounds (Form I SV-TIC) Not reported				
Reconstructed total ion chromatograms (RIC) ✓ for each sample				
For each sample:				
Raw spectra and background-subtracted ✓ mass spectra of target compounds				
Quantitation reports ✓				
Mass spectra of TICs with three best library matches Not reported				
GPC chromatograms (if GPC performed) N/A				
c. Standards Data (All Instruments) ✓				
Initial Calibration Data (Form VI SV-1, SV-2)				
RICs and Quan Reports for all Standards ✓				
Continuing Calibration Data (Form VII SV-1, SV-2) ✓				
RICs and Quantitation Reports for all Standards ✓				
Semivolatile GPC Calibration Data-UV detector traces				
d. Raw QC Data				
DFTPP ✓				
Blank Data ✓				
Matrix Spike/Matrix Spike Duplicate Data ✓				
6. **Pesticides**				
a. QC Summary				
Surrogate Percent Recovery Summary (Form II PEST)				
MS/MSD Duplicate Summary (Form III PEST)				
Method Blank Summary (Form IV PEST)				

Client: Olin Chemicals, Work Order: WL1644 11/3/95

PACE, Inc.
Maine Laboratory
Quality Control Report

Methods, Chronology of Analysis and Method Blank Results

Semivolatile Organics by GC/MS Method: 8270

Sample Preparation Technique: 3520

Water Matrix

Sample file # 28831 28839 Sample File #

CHRONOLOGY

	PACE-ME Sample Nos.	Date Extracted	Date Analyzed	LCS File	Dilution Factor	PACE-ME Sample Nos.	Date Extracted	Date Analyzed	LCS File	Dilution Factor	
28790	WL1644-3 B	20-Oct-95	23-Oct-95	X9057	1.0	WL1644-10 B	20-Oct-95	24-Oct-95	X9057	1.0	28506
28792	WL1644-5	20-Oct-95	23-Oct-95	X9057	1.0	WL1644-1DL	20-Oct-95	31-Oct-95	X9057	2.0	28845
28807	WL1644-1 B	20-Oct-95	24-Oct-95	X9057	1.0	WL1644-6DL B	20-Oct-95	31-Oct-95	X9057	300.0	28847
28805	WL1644-2DL	20-Oct-95	24-Oct-95	X9057	2.0						
28809	WL1644-3DL	20-Oct-95	24-Oct-95	X9057	5.0						
28811	WL1644-5DL	20-Oct-95	24-Oct-95	X9057	5.0						
28803	WL1644-7 B	20-Oct-95	24-Oct-95	X9057	1.0						
28805	WL1644-9 B	20-Oct-95	24-Oct-95	X9057	1.0						

SBLK 10-20-95 METHOD BLANK RESULTS* 28801

Compound	Conc. (ug/L)
bis(2-ethylhexyl)Phthalate	J6 X 10 = 60

*Only positive hits have been included. The remaining compounds were not detected in the method blank.

The Dilution Factor (DF) indicates whether a sample, prepared in accordance with the analytical method protocol, was diluted prior to analysis. The Dilution Factor could also indicate that a smaller aliquot than specified in the method was utilized for sample preparation and analysis. For example, a dilution factor of 5 means that the sample was effectively diluted by a factor of 5 prior to analysis, i.e., the sample was analyzed at 20% its reported concentration.

0000450

F1-BNA-W.XLS

Client: Olin Chemicals, Work Order: WL1644 11/3/95

PACE, Inc.
Maine Laboratory
Quality Control Report

Methods, Chronology of Analysis and Method Blank Results

Semivolatile Organics by GC/MS Method: 8270
Sample Preparation Technique: 3520

Water Matrix

CHRONOLOGY

	PACE-ME Sample No.	Date Extracted	Date Analyzed	LCS File	Dilution Factor	PACE-ME Sample No.	Date Extracted	Date Analyzed	LCS File	Dilution Factor
X9050	WL1644-2 B	20-Oct-95	24-Oct-95	X9057	1.0					
X9051	WL1644-3RE	20-Oct-95	24-Oct-95	X9057	1.0					
X9053	WL1644-6	20-Oct-95	24-Oct-95	X9057	1.0					
X9055	WL1644-8 B	20-Oct-95	24-Oct-95	X9057	1.0					

5 BLK K-2064 METHOD BLANK RESULTS* X9044

Compound	Conc (ug/L)
bis(2-ethylhexyl)Phthalate	J4

x 10 = 40

*Only positive hits have been included. The remaining compounds were not detected in the method blank.

The Dilution Factor (DF) indicates whether a sample, prepared in accordance with the analytical method protocol, was diluted prior to analysis. The Dilution Factor could also indicate that a smaller aliquot than specified in the method was utilized for sample preparation and analysis. For example, a dilution factor of 5 means that the sample was effectively diluted by a factor of 5 prior to analysis, i.e., the sample was analyzed at 20% its reported concentration.

0000451

Client: Olin Chemicals, Work Order: WL1644 11/3/95

PAGE Inc.
Maine Laboratory
Quality Control Report

Methods, Chronology of Analysis and Method Blank Results

Semivolatile Organics by GC/MS Method: 8270
Sample Preparation Technique: 3520

Water Matrix

CHRONOLOGY

PAGE-ME Sample Nos.	Date Extracted	Date Analyzed	LCS File	Dilution Factor	PAGE-ME Sample Nos.	Date Extracted	Date Analyzed	LCS File	Dilution Factor
WL1644-1REX	26-Oct-95	30-Oct-95	Z8839	1.0					
WL1644-2REX	26-Oct-95	30-Oct-95	Z8839	1.0					
21146 WL1644-4MS	26-Oct-95	31-Oct-95	Z8839	5.0					

SBlk 11-2695 METHOD BLANK RESULTS* Z8855

Compound	Conc. (ug/L)

*Only positive hits have been included. The remaining compounds were not detected in the method blank.

The Dilution Factor (DF) indicates whether a sample, prepared in accordance with the analytical method protocol, was diluted prior to analysis. The Dilution Factor could also indicate that a smaller aliquot than specified in the method was utilized for sample preparation and analysis. For example, a dilution factor of 5 means that the sample was effectively diluted by a factor of 5 prior to analysis, i.e., the sample was analyzed at 20% its reported concentration.

0000452

HSL Compounds

Case No:

Calibration Date: 10/31/95

Contractor: PACE-ME

Time: 12:01

Contract No:

Laboratory ID: >Z8844

I_2HW

Instrument ID: MS3

Initial Calibration Date: 10/30/95

Minimum $\overline{RF}$ for SPCC is .0500   Maximum % Diff for CCC is 20%

Compound	$\overline{RF}$	RF	%Diff	CCC	SPCC
2-Fluorophenol (surr.)	1.32833	1.42123	6.99		
Phenol-d5 (surr.)	1.53295	1.64427	7.26		
Phenol	1.67226	1.76049	5.28	*	
bis(-2-Chloroethyl)Ether	1.37212	1.44581	5.37		
2-Chlorophenol	1.28544	1.45417	13.13		
1,3-Dichlorobenzene	1.47093	1.61289	9.65		
1,4-Dichlorobenzene	1.49221	1.64485	10.23	*	
Benzyl Alcohol	.73196	.77854	6.37		
1,2-Dichlorobenzene	1.29063	1.45496	12.73		
2-Methylphenol	1.05817	1.09564	3.54		
2,2'-oxybis(1-Chloropropane)	1.73985	1.67326	3.83		
4-Methylphenol	1.13135	1.20367	6.39		
N-Nitroso-Di-n-Propylamine	.91088	.93561	2.72		**
Hexachloroethane	.65681	.73712	12.23		
Nitrobenzene-d5 (surr.)	.47017	.50195	6.76		
Nitrobenzene	.47312	.49114	3.81		
Isophorone	.91483	.89947	1.68		
2-Nitrophenol	.21298	.24158	13.43	*	
2,4-Dimethylphenol	.43426	.44819	3.21		
Benzoic Acid	.14360	.14375	.10		
bis(-2-Chloroethoxy)Methane	.57295	.56101	2.08		
2,4-Dichlorophenol	.33516	.35968	7.32	*	
1,2,4-Trichlorobenzene	.38644	.42202	9.21		
Naphthalene	1.18474	1.22063	3.03		
4-Chloroaniline	.48531	.49692	2.39		
Hexachlorobutadiene	.24203	.28726	18.69	*	
4-Chloro-3-Methylphenol	.32150	.30540	5.01	*	
2-Methylnaphthalene	.67756	.70319	3.78		
Hexachlorocyclopentadiene	.45694	.62081	35.86		**
2,4,6-Trichlorophenol	.43238	.45508	5.25	*	
2,4,5-Trichlorophenol	.43735	.45552	4.16		
2-Fluorobiphenyl (surr.)	1.60081	1.73117	8.14		

Assoc. Samples

WL-1644-1   DF = 2

-4 MS   DF = 5

-6   DF = 300

No Impact.

Sample results reported from DF 1.0

RF - Response Factor from daily standard file at 50.00 UG/L

$\overline{RF}$ - Average Response Factor from Initial Calibration Form VI

%Diff - % Difference from original average or curve

CCC - Calibration Check Compounds (*)   SPCC - System Performance Check Compounds (**)

HSL Compounds

I XHW

Case No: ____________

Instrument ID: MS1

Contractor: PACE-ME

Calibration Date: 10/20/95

Contract No: ____________

Minimum $\overline{RF}$ for SPCC is .05   Maximum % RSD for CCC is 30%

Compound	Laboratory ID: >X9035 RF 20.00	>X9034 RF 50.00	>X9031 RF 80.00	>X9032 RF 120.00	>X9033 RF 160.00	$\overline{RRT}$	$\overline{RF}$	% RSD	CCC	SPCC
2-Fluorophenol (surr.)	1.36822	1.29468	1.17719	1.08707	1.03501	.670	1.19243	11.671		
Phenol-d5 (surr.)	1.80654	1.71003	1.68692	1.48121	1.36774	.924	1.61049	11.187		
Phenol	1.79527	1.66426	1.79306	1.56259	1.44321	.928	1.65168	9.190	*	
bis(-2-Chloroethyl)Ether	1.58222	1.32021	1.18123	.96972	.89368	.944	1.18941	23.300		
2-Chlorophenol	1.35511	1.19410	1.07039	.86887	.81558	.946	1.06081	21.155		
1,3-Dichlorobenzene	1.56749	1.44900	1.31279	1.16739	1.14674	.983	1.32868	13.614		
1,4-Dichlorobenzene	1.62619	1.48666	1.30110	1.13712	1.06413	1.005	1.32304	17.756	*	
Benzyl Alcohol	.86921	.81111	.82921	.76297	.69448	1.051	.79340	8.468		
1,2-Dichlorobenzene	1.47264	1.36531	1.16268	.99755	.89636	1.044	1.17891	20.517		
2-Methylphenol	1.23919	1.12753	1.06785	.94095	.86932	1.088	1.04897	14.031		
2,2'-oxybis(1-Chloropropane)	2.89211	2.75534	2.79235	2.58305	2.46027	1.091	2.69662	6.412		
4-Methylphenol	1.37087	1.14101	.84576	.67360	.63446	1.133	.93314	33.847		
N-Nitroso-Di-n-Propylamine	1.16511	.99268	.90550	.68228	.57376	1.129	.86387	27.528		**
Hexachloroethane	.74983	.63042	.41586	.31704	.31539	1.134	.48571	40.271		
Nitrobenzene-d5 (surr.)	.53314	.54120	.52934	.49320	.51124	.855	.52162	3.702		
Nitrobenzene	.51973	.51507	.50192	.46221	.45999	.859	.49179	5.851		
Isophorone	1.01314	.95395	.95890	.83997	.74891	.912	.90297	11.820		
2-Nitrophenol	.22826	.24777	.24065	.21651	.22240	.924	.23112	5.582	*	
2,4-Dimethylphenol	.44367	.44962	.44070	.39069	.38825	.946	.42258	7.197		
Benzoic Acid	.16963	.17479	.19937	.15584	.14964	.983	.16985	11.404		
bis(-2-Chloroethoxy)Methane	.62945	.61533	.61256	.55052	.47981	.966	.57754	10.824		
2,4-Dichlorophenol	.35930	.35605	.33276	.29434	.26320	.977	.32113	12.920	*	
1,2,4-Trichlorobenzene	.44324	.42598	.38627	.34165	.34764	.991	.38896	11.690		
Naphthalene	1.21930	1.16616	1.07190	.93702	.95884	1.005	1.07064	11.589		
4-Chloroaniline	.48993	.49502	.46227	.39797	.40070	1.024	.44918	10.505		
Hexachlorobutadiene	.29903	.28835	.25113	.22199	.23808	1.036	.25972	12.670	*	
4-Chloro-3-Methylphenol	.34239	.34865	.33439	.27107	.25689	1.135	.31068	13.912	*	
2-Methylnaphthalene	.72512	.66378	.62950	.52499	.51711	1.154	.61210	14.694		
Hexachlorocyclopentadiene	.39002	.58081	.59067	.62044	.70963	.864	.57831	20.209		**
2,4,6-Trichlorophenol	.49795	.51560	.50116	.48137	.50128	.885	.49947	2.444	*	

Less Than 50% - No impact for non-detects

estimate 1644-2

No impact

RF - Response Factor (Subscript is amount in UG/L)

$\overline{RRT}$ - Average Relative Retention Time (RT Std/RT Istd)

$\overline{RF}$ - Average Response Factor

%RSD - Percent Relative Standard Deviation

CCC - Calibration Check Compounds (*)   SPCC - System Performance Check Compounds (**)

Assoc. Samples:
1644-2; DF 1.0
1644-3; DF 1.0 RE (No Impact, no results reported)
1644-6 DF 1.0
1644-8 DF 1.0

MSL Compounds

Case No:

Calibration Date: 10/20/95

Contractor: PACE-ME

Time: 11:49

I_XHW

Contract No:

Laboratory ID: >X9034

Instrument ID: MS1

Initial Calibration Date: 10/20/95

I. Cal - No Impact. MK 6/20/96

samples run after C. Cal X9048

Minimum $\overline{RF}$ for SPCC is .05   Maximum % Diff for CCC is 20%

Compound	$\overline{RF}$	RF	%Diff	CCC	SPCC
2-Fluorophenol (surr.)	1.19243	1.29468	8.57		
Phenol-d5 (surr.)	1.61049	1.71003	6.18		
Phenol	1.65168	1.66426	.76	*	
bis(-2-Chloroethyl)Ether	1.18941	1.32021	11.00		
2-Chlorophenol	1.06081	1.19410	12.56		
1,3-Dichlorobenzene	1.32868	1.44900	9.06		
1,4-Dichlorobenzene	1.32304	1.48666	12.37	*	
Benzyl Alcohol	.79340	.81111	2.23		
1,2-Dichlorobenzene	1.17891	1.36531	15.81		
2-Methylphenol	1.04897	1.12753	7.49		
2,2'-oxybis(1-Chloropropane)	2.69662	2.75534	2.18		
4-Methylphenol	.93314	1.14101	22.28		
N-Nitroso-Di-n-Propylamine	.86387	.99268	14.91		**
Hexachloroethane	.48571	.63042	29.79		
Nitrobenzene-d5 (surr.)	.52162	.54120	3.75		
Nitrobenzene	.49179	.51507	4.74		
Isophorone	.90297	.95395	5.65		
2-Nitrophenol	.23112	.24777	7.21	*	
2,4-Dimethylphenol	.42258	.44962	6.40		
Benzoic Acid	.16985	.17479	2.90		
bis(-2-Chloroethoxy)Methane	.57754	.61533	6.54		
2,4-Dichlorophenol	.32113	.35605	10.87	*	
1,2,4-Trichlorobenzene	.38896	.42598	9.52		
Naphthalene	1.07064	1.16616	8.92		
4-Chloroaniline	.44918	.49502	10.21		
Hexachlorobutadiene	.25972	.28835	11.03	*	
4-Chloro-3-Methylphenol	.31068	.34865	12.22	*	
2-Methylnaphthalene	.61210	.66378	8.44		
Hexachlorocyclopentadiene	.57831	.58081	.43		**
2,4,6-Trichlorophenol	.49947	.51560	3.23	*	
2,4,5-Trichlorophenol	.51643	.55240	6.97		
2-Fluorobiphenyl (surr.)	1.66282	1.77118	6.52		

RF - Response Factor from daily standard file at 50.00 UG/L

$\overline{RF}$ - Average Response Factor from Initial Calibration Form VI

%Diff - % Difference from original average or curve

CCC - Calibration Check Compounds (*)   SPCC - System Performance Check Compounds (**)

HSL Compounds

Case No:

Contractor: PACE-ME

Contract No:

Instrument ID: MS1

Calibration Date: 10/24/95

Time: 08:40

Laboratory ID: >X9048

Initial Calibration Date: 10/20/95

I_X&W

Minimum $\overline{RF}$ for SPCC is .05   Maximum % Diff for CCC is 20%

Compound	$\overline{RF}$	RF	%Diff	CCC	SPCC
2-Fluorophenol (surr.)	1.19243	1.38401	16.07		
Phenol-d5 (surr.)	1.61049	1.90185	18.09		
Phenol	1.65168	1.78249	7.92	*	
bis(-2-Chloroethyl)Ether	1.18941	1.57149	32.12		
2-Chlorophenol	1.06081	1.26617	19.36		
1,3-Dichlorobenzene	1.32868	1.53037	15.18		
1,4-Dichlorobenzene	1.32304	1.53033	15.67	*	
Benzyl Alcohol	.79340	.90701	14.32		
1,2-Dichlorobenzene	1.17891	1.37187	16.37		
2-Methylphenol	1.04897	1.22497	16.78		
2,2'-oxybis(1-Chloropropane)	2.69662	2.83431	5.11		
4-Methylphenol	.93314	1.25839	34.86		
N-Nitroso-Di-n-Propylamine	.86387	1.21979	41.20		**
Hexachloroethane	.48571	.58593	20.63		
Nitrobenzene-d5 (surr.)	.52162	.51471	1.33		
Nitrobenzene	.49179	.51460	4.64		
Isophorone	.90297	1.08346	19.99		
2-Nitrophenol	.23112	.19261	16.66	*	
2,4-Dimethylphenol	.42258	.45972	8.79		
Benzoic Acid	.16985	.11520	32.18		
bis(-2-Chloroethoxy)Methane	.57754	.67696	17.22		
2,4-Dichlorophenol	.32113	.33022	2.83	*	
1,2,4-Trichlorobenzene	.38896	.42152	8.37		
Naphthalene	1.07064	1.22880	14.77		
4-Chloroaniline	.44918	.51366	14.36		
Hexachlorobutadiene	.25972	.25087	3.41	*	
4-Chloro-3-Methylphenol	.31068	.30783	.92	*	
2-Methylnaphthalene	.61210	.70337	14.91		
Hexachlorocyclopentadiene	.57831	.61434	6.23		**
2,4,6-Trichlorophenol	.49947	.44823	10.26	*	
2,4,5-Trichlorophenol	.51643	.45269	12.34		
2-Fluorobiphenyl (surr.)	1.66282	1.77736	6.89		

Assoc. Samples:

WL1644-2 DF-1.0
-3 DF-1.0 RE No Impact
-6 DF 1.0
-8 DF 1.0

qualified due to i-cal.

No impact for non-detects L.T. 50%

not a target compound

RF - Response Factor from daily standard file at 50.00 UG/L

$\overline{RF}$ - Average Response Factor from Initial Calibration Form VI

%Diff - % Difference from original average or curve

CCC - Calibration Check Compounds (*)   SPCC - System Performance Check Compounds (**)

Case No:

Contractor: PACE-ME

Contract No:

Instrument ID: MS3

Calibration Date: 10/24/95

Time: 07:52

Laboratory ID: >Z8800

Initial Calibration Date: 10/19/95

I2HW

Minimum RF for SPCC is .0500 Maximum % Diff for CCC is 20%

Compound	RF (avg)	RF	%Diff	CCC	SPCC
2-Fluorophenol (surr.)	1.28817	1.42183	10.38		
Phenol-d5 (surr.)	1.65874	1.73112	4.36		
Phenol	1.60392	1.75910	9.68	*	
bis(-2-Chloroethyl)Ether	1.35488	2.96065	118.52		
2-Chlorophenol	1.24089	1.43537	15.67		
1,3-Dichlorobenzene	1.42830	1.58973	11.30		
1,4-Dichlorobenzene	1.45009	1.62848	12.30	*	
Benzyl Alcohol	.83183	.83064	.14		
1,2-Dichlorobenzene	1.31864	1.49032	13.02		
2-Methylphenol	1.09313	1.17181	7.20		
2,2'-oxybis(1-Chloropropane)	2.08984	2.09244	.12		
4-Methylphenol	1.14465	1.23283	7.70		
N-Nitroso-Di-n-Propylamine	1.03165	1.22541	18.78		**
Hexachloroethane	.60461	.71973	19.04		
Nitrobenzene-d5 (surr.)	.54787	.57205	4.41		
Nitrobenzene	.52520	.55538	5.75		
Isophorone	1.01040	1.04231	3.16		
2-Nitrophenol	.24422	.25706	5.26	*	
2,4-Dimethylphenol	.44099	.49837	13.01		
Benzoic Acid	.18210	.16441	9.71		
bis(-2-Chloroethoxy)Methane	.58605	.60332	2.95		
2,4-Dichlorophenol	.32456	.34083	5.01	*	
1,2,4-Trichlorobenzene	.37908	.40860	7.79		
Naphthalene	1.13393	1.20968	6.68		
4-Chloroaniline	.46546	.45942	1.30		
Hexachlorobutadiene	.24540	.25046	2.06	*	
4-Chloro-3-Methylphenol	.30690	.29685	3.27	*	
2-Methylnaphthalene	.64694	.68978	6.62		
Hexachlorocyclopentadiene	.54976	.56643	3.03		**
2,4,6-Trichlorophenol	.43725	.43011	1.63	*	
2,4,5-Trichlorophenol	.43351	.41359	4.59		
2-Fluorobiphenyl (surr.)	1.65411	1.72287	4.16		

Assoc. Samples

WL-1644-7	DF=1.0
-9	1.0
-10	1.0
-1	1.0
-2	2.0
-3	5.0
-5	5.0

No Impact. Reported DF=1.

RF - Response Factor from daily standard file at 50.00 UG/L

RF (avg) - Average Response Factor from Initial Calibration Form VI

%Diff - % Difference from original average or curve

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

PACE, Inc.
Maine Laboratory
Quality Control Report

Sample Duplicate Results

Semivolatile Organics by GC/MS Method: 8270
Sample Preparation Technique: 3520

Duplicate Sample (WL-1644-5) Water Matrix

PACE Sample No. Duplicated: WL1644-3

Compound	Units	Sample Conc.	Sample Duplicate Conc.	RPD (%)
Phenol	ug/L	J 5	J 8	46
1,3-Dichlorobenzene	ug/L	J 4	J 4	0
1,4-Dichlorobenzene	ug/L	38	40	5
1,2-Dichlorobenzene	ug/L	770	840	9
2-Methylphenol	ug/L	18	31	53
4-Methylphenol	ug/L	70	130	60
2,4-Dimethylphenol	ug/L	J ~~11~~ 9	J 13	17
1,2,4-Trichlorobenzene	ug/L	20	21	5
Naphthalene	ug/L	13	13	0
4-chloro-3-methylphenol	ug/L	J 4	J 5	22
bis(2-ethylhexyl)Phthalate	ug/L	JB 7	B 10	35

MC 6/19/96
OK. Region I
ag criteria =
30%

"J" flag denotes an estimated value less than the Laboratory's Practical Quantitation Level.
"B" flag denotes detection of this analyte in the laboratory method blank analyzed concurrently with sample.

^ Only positive results have been included. The remaining compounds were not detected.
* The laboratory does not use the calculated relative percent difference (RPD) for sample duplicates to assess quality control; RPD data for sample duplicates are used to evaluate method precision for the environmental sample matrix. Please refer to LCS/LCSD data for assessment of quality control for this method.

PACE, Inc.
Maine Laboratory
Quality Control Report

Matrix Spike/Matrix Spike Duplicate Results

Semivolatile Organics by GC/MS Method: 8270
Sample Preparation Technique: 3520

Matrix Spike Sample (WL-1644-4)

Water Matrix

PACE Sample No. Spiked WL1644-3

Compound	Units	Spike Conc.	Sampl Conc.	MS Measured Conc.	MSD Measured Conc.	Theoretical Sample Spik Conc.	MS % Recovery	MSD % Recovery	Recovery Acceptance Range (%)*	RPD (%)	RPD Acceptance Range (%)*
Phenol	ug/l	75	J5	41.0	NA	75	48	NA	12-89	NA	0-42
2-Chlorophenol	ug/l	75	<10	37.7	NA	75	50	NA	27-123	NA	0-40
1,4-Dichlorobenzene	ug/l	50	38	70.0	NA	88	64	NA	36-97	NA	0-28
N-Nitroso-di-n-propylami	ug/l	50	<10	44.5	NA	50	89	NA	41-116	NA	0-38
1,2,4-Trichlorobenzene	ug/l	50	20	56.8	NA	70	74	NA	39-98	NA	0-28
4-Chloro-3-methylphenol	ug/l	75	J4	59.9	NA	75	75	NA	23-97	NA	0-42
Acenaphthene	ug/l	50	<10	41.1	NA	50	82	NA	46-118	NA	0-31
4-Nitrophenol	ug/l	75	<25	36.4	NA	75	49	NA	10-80	NA	0-50
2,4-Dinitrotoluene	ug/l	50	<10	27.2	NA	50	54	NA	24-96	NA	0-38
Pentachlorophenol	ug/l	75	<25	52.1	NA	75	69	NA	9-103	NA	0-50
Pyrene	ug/l	50	<10	39.0	NA	50	78	NA	26-127	NA	0-31

"J" flag denotes an estimated value. The analyte was detected in the sample at a concentration greater than the measured detection limit but less than the laboratory's Practical Quantitation Level.

* Acceptance ranges are obtained when available from the applicable US EPA analytical method. These ranges are based upon method performance data generated from the analysis of quality control check samples and not actual environmental samples. The laboratory does not use the MS/MSD acceptance ranges as quality control acceptance criteria; the MS/MSD data are used to evaluate method performance for the environmental sample matrix. Please refer to LCS/LCSD data for assessment of quality control for this method.

SMITH
ENVIRONMENTAL TECHNOLOGIES CORPORATION

COMPUTATION SHEET

Name of Client: Olin - Mass WL-1644

Project: Istd Eval Summary SVOA

Description: ✓ = I std low X = ISTD High

Sheet Number ______ of ______

Date ______

Job Number ______

Computed by ______ Checked by ______

[illegible]	File ID/DF	1,4-Dichloro benzene d-4	Naphthalene d-8	Acenaphthene d-10	Phenanthrene d-10	Chrysene d-12	Perylene d-12	Al... [illegible]
1	28807 (1.0)							✓
1	28845 (1.0)							✓
2	X905[illegible] (1.0)							✓
2	[illegible]							[illegible]
3	[illegible]					✓	✓	
[illegible]	[illegible]					✓	✓	
[illegible]	[illegible]							✓
[illegible]	[illegible]							✓
[illegible]	[illegible]							✓
[illegible]	[illegible]							✓
[illegible]	[illegible]							✓
[illegible]	[illegible]							✓
[illegible]	[illegible]							✓
[illegible]	[illegible]							✓
[illegible]	[illegible]							✓
[illegible]	[illegible]							✓
[illegible]	[illegible]							✓
[illegible]	[illegible]							✓
[illegible]	[illegible]							✓
[illegible]	[illegible]							✓
[illegible]	[illegible]							✓

ME
LABORATORY

BNA INITIAL DATA REVIEW SHEET

(to be done within 12 hours of batch completion)

Data was collected under DFTPP Tune File: XD518
Inj. Time: 07:22
Data was collected under Calibration Check File: ______
ENH-2,2
V3,200

Date: 102895
Primary Analyst: AJC
Supervisor Review: [illegible] 103195

Curve date: ______ Files ______

			Internal Standard Areas						Surrogate Recoveries Water / Soil								
									35-114 / 24-120	43-116 / 30-115	33-141 / 18-137	22-110 / 25-121	10-110 / 24-113	23-123 / 19-122	Chromatography acceptable (Y or N)	Target Compound in Working Range (Y or N)	Preliminary Data Acceptable Y or Rerun
Client	Pace Sample #	Data File	DCB	NAP	ACE	PHE	CHR	PER	NB	2-FBP	Ter	2FP	Ph-d5	246-TBP			
Calib	SSTD050 1.00	X9029	22750	70009	32222	31470	18069	17465							Y	Y	A [illegible]
	SSTD020	X9030	25797	82685	41603	46955	25613	29471							Y	Y	A [illegible]
	SSTD080	[illegible]	27496	79303	35198	36195	26043	27863							Y	Y	Y
	SSTD120	[illegible]	24800	70835	26074	22728	12593	11835							Y	Y	Y
	SSTD160	[illegible]	25402	66005	22542	21668	13915	14943							Y	Y	Y
	~~SSTD005~~	X9034															
	SSTD050	[illegible]	26357	72077	32107	30487	19721	21489							Y	Y	Y
	SSTD020	[illegible]35	27158	79383	37747	38023	17164	16381							Y	Y	Y
	SSTD005	X9036	24348	71932	35341	36559	16795	16462							Y	Y	Y

AJC 1028[illegible]

AJC 10309

0000897

Comments: curve is good - 50us curve is good
QCcald I-XHW, I-XHS :: A1
QCcald I-XD10 :: D2
QCcald I-XTLP :: D3

PACE-ME
GC/MS LABORATORY

BNA INITIAL DATA REVIEW SHEET

(to be done within 12 hours of batch completion)

Data was collected under DFTPP Tune File: XD520 Inj. Time: 08:16

Data was collected under Calibration Check File: ______ ENH-1,1 VS,100

Date: 102495
Primary Analyst: AJC
Supervisor Review: [signature] 102695

Curve date: ______ Files ______

Client	Pace Sample #	Data File	DCB	NAP	ACE	PHE	CHR	PER	NB (Water 35-114; Soil 24-120)	2-FBP (Water 43-116; Soil 30-115)	Ter (Water 33-141; Soil 18-137)	2FP (Water 22-110; Soil 25-121)	Ph-d5 (Water 10-110; Soil 24-113)	246-TBP (Water 23-123; Soil 19-122)	Chromatography acceptable (Y or N)	Target Compound In Working Range (Y or N)	Preliminary Data Acceptable Y or Rerun
Calib	3370050 1.00	X9048	39673	117894	49178	45010	26608	27965	—	—	—	—	—	—	Y	Y	Y
Olin	SBLK:102095 1.11	X9049	38188	121321	59114	53693	24088	20439	89	82	108	85	94	82	Y	Y	Y
	WL1644-2	X9050	45135	134101	60593	64580	41790	35974	29*	75	88	90	84	121	Y	N	R DL:2 (CAR)
	WL1644-3	X9051	41815	104816	34981	25414	12088	12335	88	91	94	35	22	33	Y	N	R DL:5
	WL1644-4	X9052	40758	100754	33135	23852	10087	9825	99	101	75	22	27	15*	Y	N	R DL:5
	WL1644-6	X9053	41479	91376	31269	33111	21998	19181	107	93	86	75	44	111	Y	N	R DL:90
	LCS,102095 1.11	X9054	44254	137276	64646	43391	12014	10471	103	82	111	84	86	74	Y	Y	R
	WL1644-8 1.11	X9055	44365	144578	70734	59120	31682	32095	59	82	93	58	67	54	Y	Y	Y
	LCS,102095 1.11	X9056	43144	134453	61858	39154	12659	13334	97	81	96	83	84	71	Y	Y	R
	LCS,102095 1.11	X9057	43553	135422	64391	43479	14277	14464	99	82	96	81	86	74	Y	Y	Y

AJC 102595

Comments: 50 us curve (good)
QCplud I-XHW, I-XHS:: Al

0000888

PACE-ME
GC/MS LABORATORY

BNA INITIAL DATA REVIEW SHEET

(to be done within 12 hours of batch completion)

Data was collected under DFTPP Tune File: 20272 Inj. Time: 07:28

Data was collected under Calibration Check File: ______ ENH-1,1 VS,100

Date: 101995
Primary Analyst: AJC
Supervisor Review: [signature] 101995

Curve data: ______________ Files ______________

Client	Pace Sample #	Data File	Internal Standard Areas: DCB	NAP	ACE	PHE	CHR	PER	Surrogate Recoveries (Water / Soil): 35-114 / 24-120 NB	43-116 / 30-115 2-FBP	33-141 / 18-137 Ter	22-110 / 25-121 2FP	10-110 / 24-113 Ph-d5	23-123 / 19-122 246-TBP	Chromatography acceptable (Y or N)	Target Compound in Working Range (Y or N)	Preliminary Data Acceptable Y or Rerun
Calib	SST0020 1.00	28765	20506	62824	30460	27305	18639	19279							Y	Y	Y
	SST0050	28766	33878	103995	49792	49436	31541	34709							Y	Y	Y
	SST0080	28767	32418	97979	45757	43900	29254	31858							Y	Y	Y
	SST0120	28768	26965	77034	31900	28772	19429	21896							Y	Y	Y
	SST0160	28769	38576	113246	48809	48681	33408	40933							Y	Y	Y
	SST0005	[illegible]	33274	107377	55971	54716	44645	50211							Y	Y	Y

AJC 101995

Comments: curve is good - 50 vs curve is good
QCalib I-2HW, I-2HS :: A1
QCalib I-2010 :: D2
QCalib I-2TLP :: A0

0000889

PACE-ME
GC/MS LABORATORY

BNA INITIAL DATA REVIEW SHEET

(to be done within 12 hours of batch completion)

Data was collected under DFTPP Tune File: ZD275 Inj. Time: 1139

Data was collected under Calibration Check File: ENH-3:3 PS300

Date: 102395
Primary Analyst: JJC/AJC
Supervisor Review: [signature]

Curve data: ______ Files ______

Client	Pace Sample #	Data File	DCB	NAP	ACE	PHE	CHR	PER	NB (Water 35-114; Soil 24-120)	2-FBP (Water 43-116; Soil 30-115)	Ter (Water 33-141; Soil 18-137)	2FP (Water 22-110; Soil 25-121)	Ph-d5 (Water 10-110; Soil 24-113)	246-TBP (Water 23-123; Soil 19-122)	Chromatography acceptable (Y or N)	Target Compound in Working Range (Y or N)	Preliminary Data Acceptable Y or Rerun
Calib.	SSTD050 1.00	Z8780	35138	104327	47090	44690	33070	37544	—	—	—	—	—	—	Y	Y	Y
[redacted]	SBLK;101995 1.11	Z8781	38741	117559	59942	62551	53421	58133	85	82	85	83	87	92	Y	Y	Y
	LCS;101995 1.11	Z8782	37223	111488	55723	58452	44713	51648	91	86	91	87	93	100	Y	Y	Y
	WL1599-1 1.21	Z8783	34103	96739	42986	40372	27134	19325	67	79	87	59	64	86	Y	Y	Y
	WL1599-1DUP 2.36	Z8784	30468	85190	38351	36306	22477	20618	31*	86	94	36	62	0*	Y	Y	OK
	WL1599-1MS 2.36	Z8785	32971	90598	37291	30918	16836	13455	69	86	92	58	61	49	Y	Y	OK
OLIN	SBLK;102095 1.11	Z8786	26339	71794	27783	21807	11446	9743	82	90	105	74	69	18*	Y	Y	R
	LCS;102095	Z8787	35163	99746	43477	36301	17835	16880	88	89	105	82	59	45	Y	Y	R
	WL1644-1	Z8788	25108	67529	26566	22867	14934	13498	13*	90	43	79	78	60	Y	Y	R
	WL1644-2	Z8789	36325	99730	40018	30956	17895	17789	25*	102	89	91	85	78	Y	N	Rstc 1:2
	WL1644-3	Z8790	26140	70420	29018	24929	16420	15421	76	85	91	37	41	35	Y	N	Rstc 1:5
	WL1644-4	Z8791	26102	70606	26173	20843	12393	11815	84	96	73	24	35	15*	Y	N	Rstc 1:5
	WL1644-5	Z8792	42765	119035	47512	39885	25064	22546	84	88	55	40	65	67	Y	N	R 1:5
	WL1644-6	Z8793	24698	60527	20614	18060	14060	11936	87	99	81	78	22	79	Y	N	Rstc 1:10
	WL1644-7	Z8794	39997	116907	49406	37122	18901	17339	71	81	99	70	14	64	Y	Y	Rstc-✓ Brc
[redacted]	SBLK;102395 1.11	Z8795	38872	112327	49870	40005	22224	20800	—	—	—	—	—	—	Y	Y	Y
	WL1573-3	Z8796	35194	98011	43223	34413	17954	16480	—	—	—	—	—	—	Y	Y	OK
	WL1578-1	Z8797	35840	107888	45175	34539	17662	15189	—	—	—	—	—	—	Y	Y	OK
	WL1578-5	Z8798	38081	117997	49776	40198	22885	21600	—	—	—	—	—	—	Y	Y	Y
	WL1588-3	Z8799	33076	101851	43502	36427	23744	22669	—	—	—	—	—	—	Y	Y	Y

Comments: 50 vs. curve is good.
Q-caled I-ZTLP::A2
Q-caled I-ZHW, I-ZHS::A1
Q-caled I-ZPAW, I-ZPAS::P2

Files Z8795 → Z8799 analyzed outside 12 hr clock to do lib searches to ✓ for fuel oil contamination. No specific method required by client.

0690000

PACE-ME
GC/MS LABORATORY

BNA INITIAL DATA REVIEW SHEET

(to be done within 12 hours of batch completion)

Data was collected under DFTPP Tune File: 20276 Inj. Time: 07:26

Data was collected under Calibration Check File: ______ ENH-1:1 VS,100

Date: 102495
Primary Analyst: AJS
Supervisor Review: [signature] 102495

Curve data: ________________ Files ________________

Client	Pace Sample #	Data File	Internal Standard Areas DCB	NAP	ACE	PHE	CHR	PER	Surrogate Recoveries Water 35-114 / Soil 24-120 NB	Water 43-116 / Soil 30-115 2-FBP	Water 33-141 / Soil 18-137 Ter	Water 22-110 / Soil 25-121 2FP	Water 10-110 / Soil 24-113 Ph-d5	Water 23-123 / Soil 19-122 246-TBP	Chromatography acceptable (Y or N)	Target Compound in Working Range (Y or N)	Preliminary Data Acceptable Y or Rerun	
Calib	SSTD050 1.00	28800	39457	120938	56986	51736	31394	32951	—	—	—	—	—	—	Y	Y	Y	
Oil:	SBLK102495 1.11	28801	44239	136678	70142	75830	53930	58443	90	83	87	83	95	104	Y	Y	Y	
	MS:102495 1.11	28802	42195	126836	68102	85001	69767	75242	90	79	80	84	92	127*	Y	Y	R	
	WL1644-7 1.11	28803	40024	123793	63407	59184	40435	45443	73	74	86	68	79	114	Y	Y	Y	
	WL1644-8 1.11	28804	44215	139931	72782	82270	66381	68523	51	81	85	54	68	72	Y	Y	R	
	WL1644-9 1.11	28805	39052	119452	62332	65358	47473	51490	70	68	83	64	72	109	Y	Y	Y	
	WL1644-10 1.11	28806	38451	114656	57212	60725	46772	51014	80	75	78	74	83	109	Y	Y	Y	
	WL1644-1 1.11	28807	36899	106773	50588	51085	37531	34705	14*	83	41	70	86	88	Y	N	R DIL:2	CAR?
	WL1644-2 DIL:2 2.22	28808	38048	113901	53273	46230	29789	31175	25*	96	74	91	96	102	Y	Y	Reext	CAR
	WL1644-3 DIL:5 5.55	28809	40455	125977	65488	65647	45269	47359	72	79	76	36	49	44	Y	Y	OK	
	WL1644-4 DIL:5	28810	39666	124012	6464	61069	59765	42314	78	87	56	23	40	21*	Y	Y	OK	CAR
	WL1644-5 DIL:5	28811	39943	127640	67010	65564	44109	46369	76	83	44	66	83	94	Y	Y	Y	
	WL1644-6 DIL:90 99.9	28812	25048	83224	42857	45124	33784	36669	DL						Y	N	R DIL:300	

AJS 1025

Comments: 50 ug curve is good
QC ok I.2HW, I.2HS::A]

0000691

PACE-ME
GC/MS LABORATORY

BNA INITIAL DATA REVIEW SHEET

(to be done within 12 hours of batch completion)

Data was collected under DFTPP Tune File: 20279 Inj. Time: 10:16

Data was collected under Calibration Check File: ______ ENH-1,1 VS,100

Date: 103095
Primary Analyst: AJC
Supervisor Review: [signature] 103195

Curve date: ______________ Files ______________

Client	Pace Sample #	Data File	Internal Standard Areas DCB	NAP	ACE	PHE	CHR	PER	Surrogate Recoveries Water 35-114 Soil 24-120 NB	Water 43-116 Soil 30-115 2-FBP	Water 33-141 Soil 18-137 Ter	Water 22-110 Soil 25-121 2FP	Water 10-110 Soil 24-113 Ph-d5	Water 23-123 Soil 19-122 246-TBP	Chromatography acceptable (Y or N)	Target Compound in Working Range (Y or N)	Preliminary Data Acceptable Y or Rerun
calib	SSTO050 1.00	28827	21453	59910	31677	34635	22462	22697							Y	Y	Y
	SSTO020	28828	38608	109831	55629	59531	34786	32335							Y	Y	Y
	SSTO080	28829	42295	116920	58742	61078	33727	32578							Y	Y	Y
	SSTO120	28830	43609	117333	56002	59608	40306	40135							Y	Y	Y
	SSTO160	28831	44127	116817	51703	52533	32589	31675							Y	Y	Y
	SSTO005	28832	45820	134861	66945	76840	55123	54330							Y	Y	Y
	SSTD050	28833	42703	123961	61753	69170	44514	37961							Y	Y	Y
[redacted]	SBLK01 1.11	28834	47794	134472	70215	83240	54146	54497	76	73	85	—	—	—	Y	Y	Y
	LCS01	28835	46550	127345	56831	53744	31247	31140	72	78	81	—	—	—	Y	Y	Y
	L01282608	28836	43211	123962	63120	65013	36159	35695	72	73	93	—	—	—	Y	Y	Y
	L01282801 1.39	28837	42301	128627	65613	72227	40046	37186	78	80	57	—	—	—	Y	Y	Y
OLIN	SBLK:102695 1.11	28838	46122	137485	71646	76390	42033	42266	88	89	98	90	95	81	Y	Y	Y
	LCS:102695	28839	37946	111846	56620	63690	35935	33660	78	82	98	75	86	65	Y	Y	Y
	WL1644-1RE	28840	46852	135340	66029	64893	33768	32761	0*	75	34	26	67	72	Y	Y	OK
	WL1644-2RE	28841	32670	94158	45613	43633	24093	23552	14*	79	44	64	72	76	Y	N(1:2)	OK

Comments: Q-caled I-2HW + I-2HS :: A1 [signature] 103195
Q-caled I-2PAW + I-2PAS :: A0
Q Caled I-2PW, I-2PS :: D1
Q Caled I-2VTA :: D2

0000892

PACE-ME
GC/MS LABORATORY

BNA INITIAL DATA REVIEW SHEET
(to be done within 12 hours of batch completion)

Data was collected under DFTPP Tune File: 20280 Inj. Time: 09:43 Date: 10 31 95
Data was collected under Calibration Check File: ______ EN8-1,1 VS,100
Primary Analyst: AJS
Supervisor Review: [signature] 11/02/95

Curve date: ______ Files ______

Client	Pace Sample #	Data File	Internal Standard Areas DCB	NAP	ACE	PHE	CHR	PER	Surrogate Recoveries Water 35-114 Soil 24-120 NB	Water 43-116 Soil 30-115 2-FBP	Water 33-141 Soil 18-137 Ter	Water 22-110 Soil 25-121 2FP	Water 10-110 Soil 24-113 Ph-d5	Water 23-123 Soil 19-122 246-TBP	Chroma-tography acceptable (Y or N)	Target Compound in Working Range (Y or N)	Preliminary Data Acceptable Y or Rerun
calib	6570050 1.00	28844	19926	52987	25743	25991	15916	16221	—	—	—	—	—	—	Y	Y	Y
Olin	WL1644-1 MS 2.22	28845	21994	61630	29338	27551	14373	14769	14*	92	45	50	93	72	Y	Y	OK
	WL1644-~~1 MS~~ 2.22 DUPS	28846	18299	52721	26836	26723	16698	18081	65	78	58	36	50	42	Y	N	~~Rerun~~ OK
	WL1644-~~6~~ DL 120 2020	28847	27788	78463	37510	40862	26238	25872	DL	DL	DL	DL	DL	DL	Y	Y	Y
[redacted]	WL1669-1 1.11	28848	22647	76717	33118	40181	25435	22160	—	—	—	58	69	76	Y	Y	Y
	WL1669-2	28849	29501	82256	42513	46697	25735	27257	—	—	—	76	82	85	Y	Y	Y
	WL1669-3	28850	Bad inj - R AJS														
	WL1669-4	28851	21318	57716	26317	28618	19766	20891	45	53	68	73	81	94	Y	Y	Y
	WL1669-11	28852	29539	82404	42047	42485	27820	27629	—	—	—	2*	13	5*	Y	Y	CAR
	WL1669-12	28853	31620	93135	48877	53271	32561	31293	—	—	—	2*	16	5*	Y	Y	CAR
	WL1669-13	28854	30143	83611	41532	46000	22036	27264	—	—	—	44	52	63	Y	Y	Y
	WL1669-14	28855	30241	84548	42862	45393	25055	2521	—	—	—	56	64	78	Y	Y	Y
	WL1669-17	28856	31387	89928	46335	48674	26675	25919	74	78	73	5*	37	9*	Y	Y	CAR

Comments: 50 vs curve is good
QCalid I,2HW, I,2HS :: A1
QCalid I,2PW, I,2HS :: D1
QCalid I,2UTM :: D2

[signature] 11/01

0000993

pace
/IRONMENTAL LABORATORIES

pg 1 of 2

Resample for VOA; SVOA

298693

CHAIN-OF-CUSTODY RECORD
Analytical Request

nt Olin Wilmington Mass.
ress Eames St

ne

Report To: Rick Sacks
Bill To: Olin
P.O. # / Billing Reference
Project Name / No. 7074-0102

Pace Client No.
Pace Project Manager
Pace Project No. WU6E4
*Requested Due Date:

npled By (PRINT): ussell Mehalick / Tim Ebner
npler Signature: ussell Mehalik
Date Sampled: 10/19/95

SAMPLE DESCRIPTION	TIME	MATRIX	PACE NO	NO. OF CONTAINERS	UNPRESERVED	H_2SO_4	HNO_3	VOA w/ HCL	N/M Amber QT	TCL VOA + TMP	SVOA + Pest	REMARKS
GW80S	0800	AQ	1	5				2	3	✓	✓	unfiltered
GW80D	0815	AQ	2	5				2	3	✓	✓	
GW80BR	0830	AQ	3, 4, 5 dup ms	15				6	9	✓	✓	ms/msD
GW81D	0915	AQ	6	5				2	3	✓	✓	
GW81BR	0900	AQ	7	5				2	3	✓	✓	
GW65BR	0945	AQ	8	5				2	3	✓	✓	
Field Rep	0915	AQ	9	5				2	3	✓	✓	
GW300	0825	AQ	10	5				2	3	✓	✓	

COOLER NOS	BAILERS	SHIPMENT METHOD OUT DATE	RETURNED DATE	ITEM NUMBER	RELINQUISHED BY AFFILIATION	ACCEPTED BY AFFILIATION	DATE	TIME
					Russell Mehalik BCM/Smith 10/19/95			
						[illegible signature]	10/19	1520

itional Comments

9000000

SEE REVERSE SIDE FOR INSTRUCTIONS

pace
IRONMENTAL LABORATORIES

pg 2 of 2

Resample for VOA & SVOA

298694

CHAIN-OF-CUSTODY RECORD
Analytical Request

Olin	Report To: Rick Sacks
ss Eames St	Bill To: Olin
wilmington MA	P.O. # / Billing Reference
e	Project Name / No. 7074-0102

Pace Client No.
Pace Project Manager
Pace Project No.
*Requested Due Date:

led By (PRINT): Russell Mehalick / Tim Ebner
ler Signature: Russell Mehalick
Date Sampled: 10/19/95

SAMPLE DESCRIPTION	TIME	MATRIX	PACE NO.	NO. OF CONTAINERS	UNPRESERVED	H_2SO_4	HNO_3	VOA w/HCL		TCL VOA + Tmp	REMARKS
Trip Blank	—	AQ	11	4				4			

COOLER NOS.	BAILERS	SHIPMENT METHOD OUT DATE	RETURNED DATE	ITEM NUMBER	RELINQUISHED BY / AFFILIATION	ACCEPTED BY / AFFILIATION	DATE	TIME
					Russell Mehalick BCM/Smith			

ional Comments

SEE REVERSE SIDE FOR INSTRUCTIONS

0000007

ORIGINAL

SMITH

APPENDIX C

(

Pesticide/PCB Data Validation Summary

BCM Project Name:	Olin Wilmington	**Case No./SDG**	WL1644
BCM Project No.:	00-7044-0102	**Sampling Date(s):**	10/19/95
Project Manager:	Bruce Cushing	**Reviewed By:**	Danielle Leauby
Laboratory:	Pace, Inc.	**Completion Date:**	12/12/96

Compound List: ☒ TCL ☐ Priority Pollutant ☐ Appendix IX ☐ Other ______

Method: ☐ CLP SOW ______ ☐ 40 CFR 136 Method ____ ☒ SW-846 Method 8080. 8000 ext by 3510 ☐ Other ______

The following table indicates the data validation criteria examined, problems identified, and QA action.

Data Validation Criteria:	accept/	FYI/	qualify	comments
Holding Times	✓	✓		sampled 10/19 Ext. 10/20 analyzed 10/23 + 10/24
Instrument Performance		✓		onscale interference noted
- Resolution Check		✓		NA samples analyzed by Mtd 8080.
- PEM Check / EVALUATION Mix	✓	✓		%B of endrin + DDT acceptable on both channels initial EVAL B acceptable
- TMX/DCB Retention Time	✓	✓		No shifts noted from ccals
- Retention Time Windows	✓	✓		information not provided (missing.) See response SW846 Mtd 8000
Initial Calibrations		✓		%RSD above 20% for INDA compds both channels lab used cal. curve to quantitate, INDB stds run on different instrument
Continuing Calibrations		✓		%Ds not provided (missing) 0.005 – 0.115 ug/L outliers cannot verify INDB b/c ICAL info from different column
Blank Analysis Results	✓	✓		No target compds confirming
Surrogate Recoveries		✓	✓	QC limits provided inquiry response – outliers present labest. QC limits
MS/MSD Results matrix spike matrix duplicate		✓	✓	lab dup – nondetect + ⊕ result for delta BHC – estimate RL + ⊕ result / Ald + dield out of %R criteria estimate RL
Field Duplicate Results	✓	✓		Both field dups nondetects
Target Compound Identification	✓	✓		compds above PQL reported only
Quantitation/Detection Limits	✓	✓		laboratory using PQLs 0.05 + 0.1 ug/L
Overall Assessment of Data		✓	✓	useable as qualified
Other:		✓		TMX CHA RF 9464870 CHB 9975150 DCB CHA RF 9508730 CHB 12494245

General Comments: ① No ICAL, CCAL or QC summary forms provided, ② Lab uses calibration curves not RFs to quant, Corr not provided.
ICAL – INDB analyzed on 9/21/95; INDA analyzed on 10/12/95; TOX analyzed on 9/10/95
Samples concentrated to 1.0 ml instead of 10 ml
ICAL INDB stds analyzed on different instrument from samples + cont. cals.

NA - Not applicable
NR - Not reviewed

QA Scientist Dleauby Date 6/17/96

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1644-1
Report Date: 11/07/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-80S (UNFILT)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
TCL Pesticides by USEPA 8080								1
alpha-BHC	<0.05	µg/L	1.0	0.05	EPA 8080	10/23/95	LB	
gamma-BHC (Lindane)	<0.05	µg/L	1.0	0.05	EPA 8080	10/23/95	LB	
Heptachlor	<0.05	µg/L	1.0	0.05	EPA 8080	10/23/95	LB	
Aldrin	<0.05	µg/L	1.0	0.05	EPA 8080	10/23/95	LB	
beta-BHC	<0.05	µg/L	1.0	0.05	EPA 8080	10/23/95	LB	
delta-BHC	<0.05	µg/L	1.0	0.05	EPA 8080	10/23/95	LB	
Heptachlor epoxide	<0.05	µg/L	1.0	0.05	EPA 8080	10/23/95	LB	
Endosulfan I	<0.05	µg/L	1.0	0.05	EPA 8080	10/23/95	LB	
gamma-Chlordane	<0.05	µg/L	1.0	0.05	EPA 8080	10/23/95	LB	
alpha-Chlordane	<0.05	µg/L	1.0	0.05	EPA 8080	10/23/95	LB	
4,4'-DDE	<0.1	µg/L	1.0	0.1	EPA 8080	10/23/95	LB	
Dieldrin	<0.1	µg/L	1.0	0.1	EPA 8080	10/23/95	LB	
Endrin	<0.1	µg/L	1.0	0.1	EPA 8080	10/23/95	LB	
4,4'-DDD	<0.1	µg/L	1.0	0.1	EPA 8080	10/23/95	LB	
Endosulfan II	<0.1	µg/L	1.0	0.1	EPA 8080	10/23/95	LB	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/20/95 by RAL using EPA 3510

11/07/95

LJO/jcbgbp(dw)/kwh/lab

CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1644-1
Report Date: 11/07/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-80S (UNFILT)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
4,4'-DDT	<0.1	µg/L	1.0	0.1	EPA 8080	10/23/95	LB	
Endrin aldehyde	<0.1	µg/L	1.0	0.1	EPA 8080	10/23/95	LB	
Endosulfan sulfate	<0.1	µg/L	1.0	0.1	EPA 8080	10/23/95	LB	
Methoxychlor	<0.5	µg/L	1.0	0.5	EPA 8080	10/23/95	LB	
Endrin ketone	<0.1	µg/L	1.0	0.1	EPA 8080	10/23/95	LB	
Toxaphene	CHB <1. CHA	µg/L	1.0	1	EPA 8080	10/23/95	LB	
2,4,5,6-Tetrachloro-meta-xylene (%	70. 130	%	1.0		EPA 8080	10/23/95	LB	
Decachlorobiphenyl (% Recovery)	51. 52	%	1.0		EPA 8080	10/23/95	LB	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

out of criteria
DME 7/3/96

11/07/95

LJO/jcbgbp(dw)/kwh/lab

CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

REPORT OF LABORATORY ANALYSIS

pace INCORPORATED ENVIRONMENTAL LABORATORIES

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1644-2
Report Date: 11/07/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
GW-80D (UNFILT)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
TCL Pesticides by USEPA 8080								1
alpha-BHC	<0.05	µg/L	1.0	0.05	EPA 8080	10/23/95	LB	
gamma-BHC (Lindane)	<0.05	µg/L	1.0	0.05	EPA 8080	10/23/95	LB	
Heptachlor	<0.05	µg/L	1.0	0.05	EPA 8080	10/23/95	LB	
Aldrin	<0.05	µg/L	1.0	0.05	EPA 8080	10/23/95	LB	
beta-BHC	<0.05	µg/L	1.0	0.05	EPA 8080	10/23/95	LB	
delta-BHC	<0.05	µg/L	1.0	0.05	EPA 8080	10/23/95	LB	
Heptachlor epoxide	<0.05	µg/L	1.0	0.05	EPA 8080	10/23/95	LB	
Endosulfan I	<0.05	µg/L	1.0	0.05	EPA 8080	10/23/95	LB	
gamma-Chlordane	<0.05	µg/L	1.0	0.05	EPA 8080	10/23/95	LB	
alpha-Chlordane	<0.05	µg/L	1.0	0.05	EPA 8080	10/23/95	LB	
4,4'-DDE	<0.1	µg/L	1.0	0.1	EPA 8080	10/23/95	LB	
Dieldrin	<0.1	µg/L	1.0	0.1	EPA 8080	10/23/95	LB	
Endrin	<0.1	µg/L	1.0	0.1	EPA 8080	10/23/95	LB	
4,4'-DDD	<0.1	µg/L	1.0	0.1	EPA 8080	10/23/95	LB	
Endosulfan II	<0.1	µg/L	1.0	0.1	EPA 8080	10/23/95	LB	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/20/95 by RAL using EPA 3510

11/07/95

LJO/jcbgbp(dw)/kwh/lab

CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1644-2
Report Date: 11/07/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
GW-80D (UNFILT)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
4,4'-DDT	<0.1	µg/L	1.0	0.1	EPA 8080	10/23/95	LB	
Endrin aldehyde	<0.1	µg/L	1.0	0.1	EPA 8080	10/23/95	LB	
Endosulfan sulfate	<0.1	µg/L	1.0	0.1	EPA 8080	10/23/95	LB	
Methoxychlor	<0.5	µg/L	1.0	0.5	EPA 8080	10/23/95	LB	
Endrin ketone	<0.1	µg/L	1.0	0.1	EPA 8080	10/23/95	LB	
Toxaphene CHA	<1. CHB	µg/L	1.0	1	EPA 8080	10/23/95	LB	
2,4,5,6-Tetrachloro-meta-xylene (%	84. 90	%	1.0		EPA 8080	10/23/95	LB	
Decachlorobiphenyl (% Recovery) TML 7/5/96	47. 61	%	1.0		EPA 8080	10/23/95	LB	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

11/07/95

LJO/jcbgbp(dw)/kdh/lab

CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1644-3
Report Date: 11/07/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-80BR (UNFILT)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
TCL Pesticides by USEPA 8080								1
alpha-BHC	<0.05	µg/L	1.0	0.05	EPA 8080	10/23/95	LB	
gamma-BHC (Lindane)	<0.05	µg/L	1.0	0.05	EPA 8080	10/23/95	LB	
Heptachlor	0.050	µg/L	1.0	0.05	EPA 8080	10/23/95	LB	
Aldrin	<0.05	µg/L	1.0	0.05	EPA 8080	10/23/95	LB	
beta-BHC	0.063	µg/L	1.0	0.05	EPA 8080	10/23/95	LB	
delta-BHC	<0.05	µg/L	1.0	0.05	EPA 8080	10/23/95	LB	UJ
Heptachlor epoxide	<0.05	µg/L	1.0	0.05	EPA 8080	10/23/95	LB	
Endosulfan I	<0.05	µg/L	1.0	0.05	EPA 8080	10/23/95	LB	
gamma-Chlordane	<0.05	µg/L	1.0	0.05	EPA 8080	10/23/95	LB	
alpha-Chlordane	<0.05	µg/L	1.0	0.05	EPA 8080	10/23/95	LB	
4,4'-DDE	<0.1	µg/L	1.0	0.1	EPA 8080	10/23/95	LB	
Dieldrin	<0.1	µg/L	1.0	0.1	EPA 8080	10/23/95	LB	
Endrin	<0.1	µg/L	1.0	0.1	EPA 8080	10/23/95	LB	
4,4'-DDD	<0.1	µg/L	1.0	0.1	EPA 8080	10/23/95	LB	
Endosulfan II	<0.1	µg/L	1.0	0.1	EPA 8080	10/23/95	LB	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/20/95 by RAL using EPA 3510

UJ = due to poor lab duplicate reproducibility
dmc 7/22/96

11/07/95

LJO/jcbgbp(dw)/kwh/lab

CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1644-3
Report Date: 11/07/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-80BR (UNFILT)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
4,4'-DDT	<0.1	µg/L	1.0	0.1	EPA 8080	10/23/95	LB	
Endrin aldehyde	<0.1	µg/L	1.0	0.1	EPA 8080	10/23/95	LB	
Endosulfan sulfate	<0.1	µg/L	1.0	0.1	EPA 8080	10/23/95	LB	
Methoxychlor	<0.5	µg/L	1.0	0.5	EPA 8080	10/23/95	LB	
Endrin ketone	<0.1	µg/L	1.0	0.1	EPA 8080	10/23/95	LB	
Toxaphene	CHB <1. CHA	µg/L	1.0	1	EPA 8080	10/23/95	LB	
2,4,5,6-Tetrachloro-meta-xylene (%	134. [illegible]	%	1.0		EPA 8080	10/23/95	LB	
Decachlorobiphenyl (% Recovery)	55 ~~54.~~ 54	%	1.0		EPA 8080	10/23/95	LB	

DML 7/8/96

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

out of lab est. criteria
DML 7/8/96

11/07/95

LJO/jcbgbp(dw)/kwh/lab

CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

P.O. Box 720 - 340 County Road #5
Westbrook, ME 04098
TEL: 207-874-2400

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1644-4
Report Date: 11/07/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-80BR (UNFILT/~~DUP~~) Spk EA 11/17/95	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
TCL Pesticides by USEPA 8080								1,2
alpha-BHC	0.21	µg/L	1.0	0.05	EPA 8080	10/23/95	LB	
gamma-BHC (Lindane)	0.19	µg/L	1.0	0.05	EPA 8080	10/23/95	LB	
Heptachlor	0.14	µg/L	1.0	0.05	EPA 8080	10/23/95	LB	J
Aldrin	0.080	µg/L	1.0	0.05	EPA 8080	10/23/95	LB	
beta-BHC	0.17	µg/L	1.0	0.05	EPA 8080	10/23/95	LB	
delta-BHC	0.22	µg/L	1.0	0.05	EPA 8080	10/23/95	LB	
Heptachlor epoxide	0.27	µg/L	1.0	0.05	EPA 8080	10/23/95	LB	
Endosulfan I	0.22	µg/L	1.0	0.05	EPA 8080	10/23/95	LB	
gamma-Chlordane	<0.05	µg/L	1.0	0.05	EPA 8080	10/23/95	LB	
alpha-Chlordane	<0.05	µg/L	1.0	0.05	EPA 8080	10/23/95	LB	
4,4'-DDE	0.18	µg/L	1.0	0.1	EPA 8080	10/23/95	LB	
Dieldrin	<0.1	µg/L	1.0	0.1	EPA 8080	10/23/95	LB	
Endrin	0.30	µg/L	1.0	0.1	EPA 8080	10/23/95	LB	
4,4'-DDD	0.16	µg/L	1.0	0.1	EPA 8080	10/23/95	LB	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/20/95 by RAL using EPA 3510
(2) "J" flag denotes an estimated value less than the Laboratory's Practical Quantitation Level.

J = due to CCals result taken from Channel B & Channel B CCals out of ~~above~~ 15% criteria
DMW 1/9/96

11/07/95

LJO/jcbgbp(dw)/kwh/lab/sra

CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1644-4
Report Date: 11/07/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
GW-80BR (UNFILT/~~DUP~~) SPK DP 11.17.95	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Endosulfan II	0.19	µg/L	1.0	0.1	EPA 8080	10/23/95	LB	
4,4'-DDT	0.25	µg/L	1.0	0.1	EPA 8080	10/23/95	LB	
Endrin aldehyde	J0.06	µg/L	1.0	0.1	EPA 8080	10/23/95	LB	
Endosulfan sulfate	0.20	µg/L	1.0	0.1	EPA 8080	10/23/95	LB	
Methoxychlor	J0.28	µg/L	1.0	0.5	EPA 8080	10/23/95	LB	
Endrin ketone	0.21	µg/L	1.0	0.1	EPA 8080	10/23/95	LB	J
Toxaphene	<1. cHA	µg/L	1.0	1	EPA 8080	10/23/95	LB	
2,4,5,6-Tetrachloro-meta-xylene (% cHB	73 172	%	1.0		EPA 8080	10/23/95	LB	
Decachlorobiphenyl (% Recovery)	55. 55	%	1.0		EPA 8080	10/23/95	LB	

DML 7/x/96

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

out of criteria

J = due to CCals. Results taken
from channel B & channel B
CCals ~~above~~ out of 15% D criteria

DML 2/9/96

11/07/95

LJO/jcbgbp(dw)/kwh/lab/sra

CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

P.O. Box 720 - 340 County Road #5
Westbrook, ME 04098
TEL: 207-874-2400
FAX: 207-775-4029

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1644-5
Report Date: 11/07/95
PO No. : SB-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-80BR (UNFILT/~~MS~~) Dup ED,1.17.95	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
TCL Pesticides by USEPA 8080								1,2
alpha-BHC	<0.05	µg/L	1.0	0.05	EPA 8080	10/23/95	LB	
gamma-BHC (Lindane)	<0.05	µg/L	1.0	0.05	EPA 8080	10/23/95	LB	
Heptachlor	0.058	µg/L	1.0	0.05	EPA 8080	10/23/95	LB	J, J1
Aldrin	<0.05	µg/L	1.0	0.05	EPA 8080	10/23/95	LB	
beta-BHC	0.063	µg/L	1.0	0.05	EPA 8080	10/23/95	LB	J, J1
delta-BHC	0.068	µg/L	1.0	0.05	EPA 8080	10/23/95	LB	J, J2
Heptachlor epoxide	<0.05	µg/L	1.0	0.05	EPA 8080	10/23/95	LB	
Endosulfan I	<0.05	µg/L	1.0	0.05	EPA 8080	10/23/95	LB	
gamma-Chlordane	<0.05	µg/L	1.0	0.05	EPA 8080	10/23/95	LB	
alpha-Chlordane	<0.05	µg/L	1.0	0.05	EPA 8080	10/23/95	LB	
4,4'-DDE	<0.1	µg/L	1.0	0.1	EPA 8080	10/23/95	LB	
Dieldrin	<0.1	µg/L	1.0	0.1	EPA 8080	10/23/95	LB	
Endrin	<0.1	µg/L	1.0	0.1	EPA 8080	10/23/95	LB	
4,4'-DDD	<0.1	µg/L	1.0	0.1	EPA 8080	10/23/95	LB	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/20/95 by RAL using EPA 3510
(2) "#" flag denotes surrogate compound recovery is out of criteria.

11/07/95

LJO/jcbgbp(dw)/kwh/lab

CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

J = due to CCals. Value reported from Channel B
Channel B CCals out of 15% D criteria
DML 7/9/96

P.O. Box 720 - 340 County Road #5
Westbrook, ME 04098
TEL: 207-874-2400
FAX: 207-775-4029

J1 = estimated due to surrogate compound outliers DML 7/22/96
J2 = due to poor laboratory duplicate reproducibility (QA)

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1644-5
Report Date: 11/07/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-80BR (UNFILT/~~MS~~) DUP 8/11/13/95	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Endosulfan II	<0.1	µg/L	1.0	0.1	EPA 8080	10/23/95	LB	
4,4'-DDT	<0.1	µg/L	1.0	0.1	EPA 8080	10/23/95	LB	
Endrin aldehyde	<0.1	µg/L	1.0	0.1	EPA 8080	10/23/95	LB	
Endosulfan sulfate	<0.1	µg/L	1.0	0.1	EPA 8080	10/23/95	LB	
Methoxychlor	<0.5	µg/L	1.0	0.5	EPA 8080	10/23/95	LB	
Endrin ketone	<0.1	µg/L	1.0	0.1	EPA 8080	10/23/95	LB	
Toxaphene	CHA <1. CHB	µg/L	1.0	1	EPA 8080	10/23/95	LB	
2,4,5,6-Tetrachloro-meta-xylene (%	178# 126	%	1.0		EPA 8080	10/23/95	LB	
Decachlorobiphenyl (% Recovery)	53 ~~51.~~ 51	%	1.0		EPA 8080	10/23/95	LB	

DML 7/8/96

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

out of lab est. criteria DML 7/8/96

11/07/95

LJO/jcbgbp (dw) /kwh/lab

CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

P.O. Box 720 - 340 County Road #5
Westbrook, ME 04098
TEL: 207-874-2400
FAX: 207-775-4029

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1644-6
Report Date: 11/07/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-81D (UNFILT)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
TCL Pesticides by USEPA 8080								1
alpha-BHC	<0.05	µg/L	1.0	0.05	EPA 8080	10/23/95	LB	
gamma-BHC (Lindane)	<0.05	µg/L	1.0	0.05	EPA 8080	10/23/95	LB	
Heptachlor	<0.05	µg/L	1.0	0.05	EPA 8080	10/23/95	LB	
Aldrin	<0.05	µg/L	1.0	0.05	EPA 8080	10/23/95	LB	
beta-BHC	<0.05	µg/L	1.0	0.05	EPA 8080	10/23/95	LB	
delta-BHC	<0.05	µg/L	1.0	0.05	EPA 8080	10/23/95	LB	
Heptachlor epoxide	<0.05	µg/L	1.0	0.05	EPA 8080	10/23/95	LB	
Endosulfan I	<0.05	µg/L	1.0	0.05	EPA 8080	10/23/95	LB	
gamma-Chlordane	<0.05	µg/L	1.0	0.05	EPA 8080	10/23/95	LB	
alpha-Chlordane	<0.05	µg/L	1.0	0.05	EPA 8080	10/23/95	LB	
4,4'-DDE	<0.1	µg/L	1.0	0.1	EPA 8080	10/23/95	LB	
Dieldrin	<0.1	µg/L	1.0	0.1	EPA 8080	10/23/95	LB	
Endrin	<0.1	µg/L	1.0	0.1	EPA 8080	10/23/95	LB	
4,4'-DDD	<0.1	µg/L	1.0	0.1	EPA 8080	10/23/95	LB	
Endosulfan II	<0.1	µg/L	1.0	0.1	EPA 8080	10/23/95	LB	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/20/95 by RAL using EPA 3510

11/07/95

LJO/jcbgbp(dw)/kwh/lab

CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1644-6
Report Date: 11/07/95
PO No. : SB-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-81D (UNFILT)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
4,4'-DDT	<0.1	µg/L	1.0	0.1	EPA 8080	10/23/95	LB	
Endrin aldehyde	<0.1	µg/L	1.0	0.1	EPA 8080	10/23/95	LB	
Endosulfan sulfate	<0.1	µg/L	1.0	0.1	EPA 8080	10/23/95	LB	
Methoxychlor	<0.5	µg/L	1.0	0.5	EPA 8080	10/23/95	LB	
Endrin ketone	<0.1	µg/L	1.0	0.1	EPA 8080	10/23/95	LB	
Toxaphene	chB <1. CHA	µg/L	1.0	1	EPA 8080	10/23/95	LB	
2,4,5,6-Tetrachloro-meta-xylene (%	70 67. 67	%	1.0		EPA 8080	10/23/95	LB	
Decachlorobiphenyl (% Recovery)	64. 68	%	1.0		EPA 8080	10/23/95	LB	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

DM 2/8/94

11/07/95

LJO/jcbgbp(dw)/kdh/lab

CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

REPORT OF LABORATORY ANALYSIS

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

Lab Number : WL-1644-7
Report Date: 11/07/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-81BR (UNFILT)	Aqueous	R MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
TCL Pesticides by USEPA 8080								1,2
alpha-BHC	<0.05	µg/L	1.0	0.05	EPA 8080	10/23/95	LB	
gamma-BHC (Lindane)	<0.05	µg/L	1.0	0.05	EPA 8080	10/23/95	LB	
Heptachlor	<0.05	µg/L	1.0	0.05	EPA 8080	10/23/95	LB	
Aldrin	<0.05	µg/L	1.0	0.05	EPA 8080	10/23/95	LB	
beta-BHC	<0.05	µg/L	1.0	0.05	EPA 8080	10/23/95	LB	
delta-BHC	<0.05	µg/L	1.0	0.05	EPA 8080	10/23/95	LB	
Heptachlor epoxide	<0.05	µg/L	1.0	0.05	EPA 8080	10/23/95	LB	
Endosulfan I	<0.05	µg/L	1.0	0.05	EPA 8080	10/23/95	LB	
gamma-Chlordane	<0.05	µg/L	1.0	0.05	EPA 8080	10/23/95	LB	
alpha-Chlordane	<0.05	µg/L	1.0	0.05	EPA 8080	10/23/95	LB	
4,4'-DDE	<0.1	µg/L	1.0	0.1	EPA 8080	10/23/95	LB	
Dieldrin	<0.1	µg/L	1.0	0.1	EPA 8080	10/23/95	LB	
Endrin	<0.1	µg/L	1.0	0.1	EPA 8080	10/23/95	LB	
4,4'-DDD	<0.1	µg/L	1.0	0.1	EPA 8080	10/23/95	LB	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/20/95 by RAL using EPA 3510
(2) "#" flag denotes surrogate compound recovery is out of criteria.

11/07/95

LJO/jcbgbp(dw)/kwh/lab

CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1644-7
Report Date: 11/07/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-81BR (UNFILT)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Endosulfan II	<0.1	µg/L	1.0	0.1	EPA 8080	10/23/95	LB	
4,4'-DDT	<0.1	µg/L	1.0	0.1	EPA 8080	10/23/95	LB	
Endrin aldehyde	<0.1	µg/L	1.0	0.1	EPA 8080	10/23/95	LB	
Endosulfan sulfate	<0.1	µg/L	1.0	0.1	EPA 8080	10/23/95	LB	
Methoxychlor	<0.5	µg/L	1.0	0.5	EPA 8080	10/23/95	LB	
Endrin ketone	<0.1	µg/L	1.0	0.1	EPA 8080	10/23/95	LB	
Toxaphene C#A	<1. C11B	µg/L	1.0	1	EPA 8080	10/23/95	LB	
2,4,5,6-Tetrachloro-meta-xylene (%	63. 70	%	1.0		EPA 8080	10/23/95	LB	
Decachlorobiphenyl (% Recovery) DML 7/8/96	23.2# (22)	%	1.0		EPA 8080	10/23/95	LB	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

out of lab est. criteria
DML 7/8/96

11/07/95

LJO/jcbgbp (dw) /kwh/lab

CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

REPORT OF LABORATORY ANALYSIS

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1644-8
Report Date: 11/07/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
GW-65BR (UNFILT)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
TCL Pesticides by USEPA 8080								1
alpha-BHC	<0.05	µg/L	1.0	0.05	EPA 8080	10/23/95	LB	
gamma-BHC (Lindane)	<0.05	µg/L	1.0	0.05	EPA 8080	10/23/95	LB	
Heptachlor	<0.05	µg/L	1.0	0.05	EPA 8080	10/23/95	LB	
Aldrin	<0.05	µg/L	1.0	0.05	EPA 8080	10/23/95	LB	
beta-BHC	<0.05	µg/L	1.0	0.05	EPA 8080	10/23/95	LB	
delta-BHC	<0.05	µg/L	1.0	0.05	EPA 8080	10/23/95	LB	
Heptachlor epoxide	<0.05	µg/L	1.0	0.05	EPA 8080	10/23/95	LB	
Endosulfan I	<0.05	µg/L	1.0	0.05	EPA 8080	10/23/95	LB	
gamma-Chlordane	<0.05	µg/L	1.0	0.05	EPA 8080	10/23/95	LB	
alpha-Chlordane	<0.05	µg/L	1.0	0.05	EPA 8080	10/23/95	LB	
4,4'-DDE	<0.1	µg/L	1.0	0.1	EPA 8080	10/23/95	LB	
Dieldrin	<0.1	µg/L	1.0	0.1	EPA 8080	10/23/95	LB	
Endrin	<0.1	µg/L	1.0	0.1	EPA 8080	10/23/95	LB	
4,4'-DDD	<0.1	µg/L	1.0	0.1	EPA 8080	10/23/95	LB	
Endosulfan II	<0.1	µg/L	1.0	0.1	EPA 8080	10/23/95	LB	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/20/95 by RAL using EPA 3510

11/07/95

LJO/jcbgbp(dw)/kwh/lab

CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

REPORT OF LABORATORY ANALYSIS

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1644-8
Report Date: 11/07/95
PO No. : SB-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-65BR (UNFILT)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
4,4'-DDT	<0.1	µg/L	1.0	0.1	EPA 8080	10/23/95	LB	
Endrin aldehyde	<0.1	µg/L	1.0	0.1	EPA 8080	10/23/95	LB	
Endosulfan sulfate	<0.1	µg/L	1.0	0.1	EPA 8080	10/23/95	LB	
Methoxychlor	<0.5	µg/L	1.0	0.5	EPA 8080	10/23/95	LB	
Endrin ketone	<0.1	µg/L	1.0	0.1	EPA 8080	10/23/95	LB	
Toxaphene	<1.	µg/L	1.0	1	EPA 8080	10/23/95	LB	
2,4,5,6-Tetrachloro-meta-xylene (%	LitB 55. CAA 57	%	1.0		EPA 8080	10/23/95	LB	
Decachlorobiphenyl (% Recovery)	52. 55	%	1.0		EPA 8080	10/23/95	LB	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

DML 7/8/96

11/07/95

LJO/jcbgbp(dw)/kwh/lab

CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

REPORT OF LABORATORY ANALYSIS

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1644-9
Report Date: 11/07/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
FIELD REP (UNFILT)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
TCL Pesticides by USEPA 8080								1
alpha-BHC	<0.05	µg/L	1.0	0.05	EPA 8080	10/24/95	LB	
gamma-BHC (Lindane)	<0.05	µg/L	1.0	0.05	EPA 8080	10/24/95	LB	
Heptachlor	<0.05	µg/L	1.0	0.05	EPA 8080	10/24/95	LB	
Aldrin	<0.05	µg/L	1.0	0.05	EPA 8080	10/24/95	LB	
beta-BHC	<0.05	µg/L	1.0	0.05	EPA 8080	10/24/95	LB	
delta-BHC	<0.05	µg/L	1.0	0.05	EPA 8080	10/24/95	LB	
Heptachlor epoxide	<0.05	µg/L	1.0	0.05	EPA 8080	10/24/95	LB	
Endosulfan I	<0.05	µg/L	1.0	0.05	EPA 8080	10/24/95	LB	
gamma-Chlordane	<0.05	µg/L	1.0	0.05	EPA 8080	10/24/95	LB	
alpha-Chlordane	<0.05	µg/L	1.0	0.05	EPA 8080	10/24/95	LB	
4,4'-DDE	<0.1	µg/L	1.0	0.1	EPA 8080	10/24/95	LB	
Dieldrin	<0.1	µg/L	1.0	0.1	EPA 8080	10/24/95	LB	
Endrin	<0.1	µg/L	1.0	0.1	EPA 8080	10/24/95	LB	
4,4'-DDD	<0.1	µg/L	1.0	0.1	EPA 8080	10/24/95	LB	
Endosulfan II	<0.1	µg/L	1.0	0.1	EPA 8080	10/24/95	LB	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/20/95 by RAL using EPA 3510

11/07/95

LJO/jcbgbp(dw)/kwh/lab

CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

REPORT OF LABORATORY ANALYSIS

ENVIRONMENTAL LABORATORIES

Lab Number : WL-1644-9
Report Date: 11/07/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
FIELD REP (UNFILT)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
4,4'-DDT	<0.1	µg/L	1.0	0.1	EPA 8080	10/24/95	LB	
Endrin aldehyde	<0.1	µg/L	1.0	0.1	EPA 8080	10/24/95	LB	
Endosulfan sulfate	<0.1	µg/L	1.0	0.1	EPA 8080	10/24/95	LB	
Methoxychlor	<0.5	µg/L	1.0	0.5	EPA 8080	10/24/95	LB	
Endrin ketone	<0.1	µg/L	1.0	0.1	EPA 8080	10/24/95	LB	
Toxaphene	<1. CHB	µg/L	1.0	1	EPA 8080	10/24/95	LB	
2,4,5,6-Tetrachloro-meta-xylene (% CHA	64. 66	%	1.0		EPA 8080	10/24/95	LB	
Decachlorobiphenyl (% Recovery)	65 ~~58.~~ 58	%	1.0		EPA 8080	10/24/95	LB	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

DML 7/8/96

11/07/95

LJO/jcbgbp(dw)/kwh/lab

CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

Lab Number : WL-1644-10
Report Date: 11/07/95
PO No. : SE-CH-827-VAR-C

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-300 (UNFILT)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
TCL Pesticides by USEPA 8080								1
alpha-BHC	<0.05	µg/L	1.0	0.05	EPA 8080	10/24/95	LB	
gamma-BHC (Lindane)	<0.05	µg/L	1.0	0.05	EPA 8080	10/24/95	LB	
Heptachlor	<0.05	µg/L	1.0	0.05	EPA 8080	10/24/95	LB	
Aldrin	<0.05	µg/L	1.0	0.05	EPA 8080	10/24/95	LB	
beta-BHC	<0.05	µg/L	1.0	0.05	EPA 8080	10/24/95	LB	
delta-BHC	<0.05	µg/L	1.0	0.05	EPA 8080	10/24/95	LB	
Heptachlor epoxide	<0.05	µg/L	1.0	0.05	EPA 8080	10/24/95	LB	
Endosulfan I	<0.05	µg/L	1.0	0.05	EPA 8080	10/24/95	LB	
gamma-Chlordane	<0.05	µg/L	1.0	0.05	EPA 8080	10/24/95	LB	
alpha-Chlordane	<0.05	µg/L	1.0	0.05	EPA 8080	10/24/95	LB	
4,4'-DDE	<0.1	µg/L	1.0	0.1	EPA 8080	10/24/95	LB	
Dieldrin	<0.1	µg/L	1.0	0.1	EPA 8080	10/24/95	LB	
Endrin	<0.1	µg/L	1.0	0.1	EPA 8080	10/24/95	LB	
4,4'-DDD	<0.1	µg/L	1.0	0.1	EPA 8080	10/24/95	LB	
Endosulfan II	<0.1	µg/L	1.0	0.1	EPA 8080	10/24/95	LB	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/20/95 by RAL using EPA 3510

11/07/95

LJO/jcbgbp(dw)/kwh/lab

CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

pace INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

Lab Number : WL-1644-10
Report Date: 11/07/95
PO No. : SE-CH-827-VAR-C

CLIENT: DON CAMERON
OLIN CHEMICALS
51 EAMES STREET
WILMINGTON, MA 01887

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
GW-300 (UNFILT)	Aqueous	R. MEHALICK	10/19/95	10/19/95

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
4,4'-DDT	<0.1	µg/L	1.0	0.1	EPA 8080	10/24/95	LB	
Endrin aldehyde	<0.1	µg/L	1.0	0.1	EPA 8080	10/24/95	LB	
Endosulfan sulfate	<0.1	µg/L	1.0	0.1	EPA 8080	10/24/95	LB	
Methoxychlor	<0.5	µg/L	1.0	0.5	EPA 8080	10/24/95	LB	
Endrin ketone	<0.1	µg/L	1.0	0.1	EPA 8080	10/24/95	LB	
Toxaphene	CHB <1 CHA	µg/L	1.0	1	EPA 8080	10/24/95	LB	
2,4,5,6-Tetrachloro-meta-xylene (%	97. 160	%	1.0		EPA 8080	10/24/95	LB	
Decachlorobiphenyl (% Recovery)	67. 70	%	1.0		EPA 8080	10/24/95	LB	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

DML 7/8/96
out of criteria

11/07/95

LJO/jcbgbp (dw) /kwh/lab

CC: OLIN-TN/STEVE MORROW
SMITH/RICK SACKS
PTI/CHRIS SELLSTONE

PACE, Inc.
Maine Laboratory
Quality Control Report

Methods, Chronology of Analysis and Method Blank Results

Pesticides by GC Method: 8080
Sample Preparation Technique: 3510

Water Matrix

CHRONOLOGY

PACE-ME Sample Nos.	Date Extracted	Date Analyzed	LCS File	Dilution Factor~	PACE-ME Sample Nos.	Date Extracted	Date Analyzed	LCS File	Dilution Factor~
WL1644-1	20-Oct-95	23-Oct-95	8OCA226	1.0	WL1644-9	20-Oct-95	24-Oct-95	8OCA226	1.0
WL1644-2	20-Oct-95	23-Oct-95	8OCA226	1.0	WL1644-10	20-Oct-95	24-Oct-95	8OCA226	1.0
WL1644-3	20-Oct-95	23-Oct-95	8OCA226	1.0					
WL1644-4	20-Oct-95	23-Oct-95	8OCA226	1.0					
WL1644-5	20-Oct-95	23-Oct-95	8OCA226	1.0					
WL1644-6	20-Oct-95	23-Oct-95	8OCA226	1.0					
WL1644-7	20-Oct-95	23-Oct-95	8OCA226	1.0					
WL1644-8	20-Oct-95	23-Oct-95	8OCA226	1.0					

METHOD BLANK RESULTS*

Compound	Conc. (ug/L)

* Only positive hits have been included. The remaining compounds were below the laboratory Practical Quantitation Levels.

~ The Dilution Factor (DF) indicates whether a sample, prepared in accordance with the analytical method protocol, was diluted prior to analysis. The Dilution Factor could also indicate that a smaller aliquot than specified in the method was utilized for sample preparation and analysis. For example, a dilution factor of 5 means that the sample was effectively diluted by a factor of 5 prior to analysis, i.e., the sample was analyzed at 20% its reported concentration.

Client: Olin Chemicals Work Order: WL1644 10/26/95

PACE Inc.
Maine Laboratory
Quality Control Report

Laboratory Control Sample Results

Pesticides/PCBs by GC Method: 8080
Sample Preparation Technique: 3550

Water Matrix

Date of Extraction: 10/20/95
Date of Analysis: 10/23/95

Files: 8OCA226.rs

Compound	Units	Spike Conc.	LCS Measured Conc.	LCS % Recovery	Recovery Acceptance Range (%)*
4,4'-DDD	ug/l	0.25	0.196	78	31-141
4,4'-DDE	ug/l	0.25	0.187	75	30-145
4,4'-DDT	ug/l	0.25	0.239	96	64-132^
Aldrin	ug/l	0.25	0.125	50	47-104^
alpha-BHC	ug/l	0.25	0.165	66	37-134
beta-BHC	ug/l	0.25	0.186	74	17-147
delta-BHC	ug/l	0.25	0.198	79	19-140
Dieldrin	ug/l	0.25	0.199	80	68-127^
Endosulfan I	ug/l	0.25	0.195	78	45-153
Endosulfan II	ug/l	0.25	0.209	84	D-202
Endosulfan Sulfate	ug/l	0.25	0.215	86	26-144
Endrin	ug/l	0.25	0.249	100	66-135^
Endrin Aldehyde	ug/l	0.25	0.204	82	**
Endrin Ketone	ug/l	0.25	0.199	80	**
gamma-BHC (Lindane)	ug/l	0.25	0.174	70	58-131^
Heptachlor	ug/l	0.25	0.150	60	49-121^
Heptachlor Epoxide	ug/l	0.25	0.192	77	37-142
Methoxychlor	ug/l	0.25	0.242	97	**

* Acceptance range as specified in EPA Method 8080; insufficient laboratory data are available to generate statistically based limits.

^ Acceptance range established using laboratory statistical 99% confidence ranges for LCS spike compound recoveries.

** EPA method 8080 does not specify acceptance criteria for this compound; insufficient laboratory data are available to generate statistically based limits.

See cover letter for additional information.

PACE, Inc.
Maine Laboratory
Quality Control Report

Sample Duplicate Results

Pesticides by GC Method: 8080
Sample Preparation Technique: 3510

Water Matrix

PACE Sample No. Duplicated: WL1644-3

Compound^	Units	Sample Conc.	Sample Duplicate Conc.	RPD (%)*
beta-BHC	ug/L	0.063	0.063	0
Heptachlor	ug/L	0.050	0.058	15
delta-BHC	ug/L	<0.05 (*)	0.068 (*)	NC

NC = Not Calculated

^ Only positive results have been included. The remaining compounds were below the Practical Quantitation Levels.

* The laboratory does not use the calculated relative percent difference (RPD) for sample duplicates to assess quality control; RPD data for sample duplicates are used to evaluate method precision for the environmental sample matrix. Please refer to LCS/LCSD data for assessment of quality control for this method.

(*) estimate RL + +positive result

DML 7/16/96

0060000

Client: Olin Chemicals , Work Order: WL1644 10/30/95

PACE, Inc.
Maine Laboratory
Quality Control Report

Matrix Spike Results

Pesticides by GC Method: 8080
Sample Preparation Technique: 3510
Water Matrix

Date of Extraction: 10/20/95
Date of Analysis: 10/23/95 **Files:** 8OCA230

Compound	Spike Added (ug/L)	Sample Concentration (ug/L)	MS Concentration (ug/L)	% Recovery	Acceptance Range (%)*
4,4'-DDD	0.25	<0.10	0.155	62	31-141
4,4'-DDE	0.25	<0.10	0.175	70	30-145
4,4'-DDT	0.25	<0.10	0.245	98	25-160
Aldrin	0.25	<0.05	0.080	32 ⊛	42-122
alpha-BHC	0.25	<0.05	0.206	82	37-134
beta-BHC	0.25	0.060	0.168	43	17-147
delta-BHC	0.25	<0.05	0.219	88	19-140
Dieldrin	0.25	<0.10	0.071	28 ⊛	36-146
Endosulfan I	0.25	<0.05	0.218	87	45-153
Endosulfan II	0.25	<0.10	0.188	75	D-202
Endosulfan Sulfate	0.25	<0.10	0.200	80	26-144
Endrin	0.25	<0.10	0.301	120	30-147
Endrin Aldehyde	0.25	<0.10	0.062	25	**
Endrin Ketone	0.25	<0.10	0.208	83	**
gamma-BHC (Lindane)	0.25	<0.05	0.185	74	32-127
Heptachlor	0.25	0.050	0.140	56	34-111
Heptachlor Epoxide	0.25	<0.05	0.271	108	37-142
Methoxychlor	0.25	<0.5	0.280	112	**

⊛ out of criteria

DML 3/16/96

********** SUMMARY REPORT *********

DB1701

File Name	Sample Name	Date of Injection	Time of Injection	alpha-BHC	gamma-BHC(LINDANE)	Heptachlor	Al Aldrin
80CA171.	INDA 0.01	10/12/95	18:32	5.9689e+06	6.5104e+06	9.3854e+06	7.1222e+0
80CA172.	INDA 0.025	10/12/95	19:25	8.0640e+06	8.5759e+06	1.0370e+07	8.2341e+0
80CA173.	INDA 0.05	10/12/95	20:18	8.8959e+06	8.9672e+06	9.7075e+06	8.3600e+0
80CA174.	INDA 0.10	10/12/95	21:12	1.1566e+07	1.1168e+07	1.1018e+07	1.0288e+0
80CA175.	INDA 0.25	10/12/95	22:05	1.2181e+07	1.1154e+07	1.0142e+07	1.0310e+0
80CA176.	INDA 0.40	10/12/95	22:59	1.2340e+07	1.1277e+07	1.0251e+07	1.0359e+0
Averages				9.8359e+06	9.6088e+06	1.0146e+07	9.1124e+0
%RSD				26.4101 *	20.1165 *	5.5620	15.262

File Name	Sample Name	Date of Injection	Time of Injection	beta-BHC	delta-BHC	HEPTACHLOR EPOXIDE	ENDOS I
80CA171.	INDA 0.01	10/12/95	18:32	5.0503e+06	5.0497e+06	8.2830e+06	7.5896e+0
80CA172.	INDA 0.025	10/12/95	19:25	5.4779e+06	6.2328e+06	9.2607e+06	8.4486e+0
80CA173.	INDA 0.05	10/12/95	20:18	5.1320e+06	6.8156e+06	8.7129e+06	8.0130e+0
80CA174.	INDA 0.10	10/12/95	21:12	5.7523e+06	9.1049e+06	9.9074e+06	9.1609e+0
80CA175.	INDA 0.25	10/12/95	22:05	5.3843e+06	9.4930e+06	9.4269e+06	8.7250e+0
80CA176.	INDA 0.40	10/12/95	22:59	5.4355e+06	9.9678e+06	9.4025e+06	8.7186e+0
Averages				5.3720e+06	7.7773e+06	9.1655e+06	8.4426e+0
%RSD				4.7168	25.8791 *	6.3010	6.667

File Name	Sample Name	Date of Injection	Time of Injection	4,4'-DDE	DIELDRIN	ENDRIN	4,4 DDD
80CA171.	INDA 0.01	10/12/95	18:32	6.2776e+06	7.0484e+06	5.0115e+06	5.0416e+0
80CA172.	INDA 0.025	10/12/95	19:25	6.7458e+06	7.4046e+06	5.3234e+06	5.0824e+0
80CA173.	INDA 0.05	10/12/95	20:18	6.7143e+06	7.5113e+06	5.2014e+06	4.9495e+0
80CA174.	INDA 0.10	10/12/95	21:12	8.2702e+06	9.0379e+06	6.0165e+06	6.1071e+0
80CA175.	INDA 0.25	10/12/95	22:05	8.3045e+06	9.0096e+06	5.6755e+06	6.3642e+0
80CA176.	INDA 0.40	10/12/95	22:59	8.6210e+06	9.1714e+06	5.9195e+06	6.4666e+0
Averages				7.4889e+06	8.1972e+06	5.5246e+06	5.6686e+0
%RSD				13.5869	11.8708	7.3694	12.6395

File Name	Sample Name	Date of Injection	Time of Injection	ENDOSULFAN II	4,4'-DDT	ENDRIN ALDEHYDE	ENDOSULFA SULFATE
80CA171.	INDA 0.01	10/12/95	18:32	6.5674e+06	2.9222e+06	6.4313e+06	5.6750e+06
80CA172.	INDA 0.025	10/12/95	19:25	8.0490e+06	3.6213e+06	5.9042e+06	6.0224e+06
80CA173.	INDA 0.05	10/12/95	20:18	7.3994e+06	3.7355e+06	5.4202e+06	5.6776e+06
80CA174.	INDA 0.10	10/12/95	21:12	8.2328e+06	4.6933e+06	6.1999e+06	6.4008e+06
80CA175.	INDA 0.25	10/12/95	22:05	7.8251e+06	4.7796e+06	6.6070e+06	6.2688e+06
80CA176.	INDA 0.40	10/12/95	22:59	7.7324e+06	5.3368e+06	6.8973e+06	6.4757e+06
Averages				7.6343e+06	4.1815e+06	6.2433e+06	6.0867e+06
%RSD				7.7928	21.5315 *	8.4440	5.8049

File Name	Sample Name	Date of Injection	Time of Injection	ENDRIN KETONE
80CA171.	INDA 0.01	10/12/95	18:32	5.2697e+06
80CA172.	INDA 0.025	10/12/95	19:25	5.8076e+06
80CA173.	INDA 0.05	10/12/95	20:18	5.6200e+06
80CA174.	INDA 0.10	10/12/95	21:12	6.5665e+06
80CA175.	INDA 0.25	10/12/95	22:05	6.8865e+06
80CA176.	INDA 0.40	10/12/95	22:59	7.0156e+06
Averages				6.1943e+06
%RSD				11.7007

* above 20% %RSD criteria
laboratory used calibration curve
y=mx+b to quant. take samples

* 0.05 RFs revised DMC 7/5/96
%RSD & ave RF revised

REVISED DATA
RESUBMITTED BY LABORATORY

INSERTED BY [signature] 7/8/96
SIGNATURE DATE

• Curve Coeff. information not provided.
DMC 7/8/96

********** SUMMARY REPORT ********

DB1701

File Name	Sample Name	Date of Injection	Time of Injection	METHOXYCHLOR
30CA172.	INDA 0.025	10/12/95	19:25	2.3704e+06
30CA173.	INDA 0.05	10/12/95	20:18	1.3344e+06
30CA174.	INDA 0.10	10/12/95	21:12	2.8552e+06
30CA175.	INDA 0.25	10/12/95	22:05	2.7590e+06
30CA176.	INDA 0.40	10/12/95	22:59	2.9240e+06
Averages				2.4486e+06
%RSD				26.8986 ⊗

0.01 std not included in %RSD calculation

⊗ above 20% RSD criteria

DML 7/8/96

REVISED DATA
RESUBMITTED BY LABORATORY
INSERTED BY [signature] 7/8/96
SIGNATURE DATE

*********** SUMMARY REPORT **********

DB608

File Name	Sample Name	Date of Injection	Time of Injection	alpha-BHC	gamma-BHC(LINDANE)	beta-BHC	HEPTACHl
8OCB171.	INDA 0.01	10/12/95	18:32	6.9637e+06	6.2230e+06	4.7493e+06	8.8389e+06
8OCB172.	INDA 0.025	10/12/95	19:25	8.2183e+06	8.3746e+06	5.5368e+06	1.0175e+07
8OCB173.	INDA 0.05	10/12/95	20:18	1.0018e+07	9.2875e+06	5.4386e+06	9.8397e+06
8OCB174.	INDA 0.10	10/12/95	21:12	1.3108e+07	1.2339e+07	6.3768e+06	1.1780e+07
8OCB175.	INDA 0.25	10/12/95	22:05	1.3933e+07	1.2768e+07	6.2253e+06	1.1322e+07
8OCB176.	INDA 0.40	10/12/95	22:59	1.4117e+07	1.3013e+07	6.3449e+06	1.1649e+07
Averages				1.1060e+07	1.0334e+07	5.7787e+06	1.0601e+07
%RSD				27.9370 *	27.0098 *	11.2431	11.0597

File Name	Sample Name	Date of Injection	Time of Injection	delta-BHC	ALDRIN	Heptachlor Epoxide	ENDOSULF I
8OCB171.	INDA 0.01	10/12/95	18:32	5.1183e+06	6.9260e+06	8.7725e+06	7.7707e+06
8OCB172.	INDA 0.025	10/12/95	19:25	6.5669e+06	8.10[illegible]e+06	9.7698e+06	8.7263e+06
8OCB173.	INDA 0.05	10/12/95	20:18	7.5967e+06	8.4289e+06	9.3731e+06	8.4784e+06
8OCB174.	INDA 0.10	10/12/95	21:12	1.0907e+07	1.0946e+07	1.0991e+07	1.0081e+07
8OCB175.	INDA 0.25	10/12/95	22:05	1.1750e+07	1.1502e+07	1.0674e+07	9.9269e+06
8OCB176.	INDA 0.40	10/12/95	22:59	1.2359e+07	1.1722e+07	1.0750e+07	1.0027e+07
Averages				9.0497e+06	9.6057e+06	1.0055e+07	9.1685e+06
%RSD				33.3068 *	21.1716 *	8.8214	10.6553

File Name	Sample Name	Date of Injection	Time of Injection	4,4'-DDE	DIELDRIN	ENDRIN	4,4'-[illegible]
8OCB171.	INDA 0.01	10/12/95	18:32	6.1768e+06	6.2902e+06	4.4867e+06	4.6214e+06
8OCB172.	INDA 0.025	10/12/95	19:25	6.9017e+06	7.8124e 06	4.8335e+06	5.0503e+06
8OCB173.	INDA 0.05	10/12/95	20:18	7.0069e+06	7.6534e+06	4.5974e+06	4.8437e+06
8OCB174.	INDA 0.10	10/12/95	21:12	9.0050e+06	9.6105e+06	5.5061e+06	6.2927e+06
8OCB175.	INDA 0.25	10/12/95	22:05	9.4136e+06	1.0025e+07	5.4636e+06	7.0042e+06
8OCB176.	INDA 0.40	10/12/95	22:59	9.8841e+06	1.0353e+07	5.8884e+06	7.4756e+06
Averages				8.0647e+06	8.6241e+06	5.1293e+06	5.8817e+06
%RSD				19.2491	18.6776	11.0747	* 20.5734

File Name	Sample Name	Date of Injection	Time of Injection	ENDOSULFAN II	4,4'-DDT	ENDRIN ALDEHYDE	ENDOSULFAN SULFATE
8OCB171.	INDA 0.01	10/12/95	18:32	6.9155e+06	3.0540e+06	1.1077e+07	6.4095e+06
8OCB172.	INDA 0.025	10/12/95	19:25	8.1776e+06	3.8861e+06	7.9504e+06	6.7828e+06
8OCB173.	INDA 0.05	10/12/95	20:18	7.5325e+06	4.1168e+06	6.9728e+06	6.5324e+06
8OCB174.	INDA 0.10	10/12/95	21:12	8.8826e+06	5.7005e+06	7.7689e+06	7.6371e+06
8OCB175.	INDA 0.25	10/12/95	22:05	8.8600e+06	6.2584e+06	7.5553e+06	7.7568e+06
8OCB176.	INDA 0.40	10/12/95	22:59	9.0501e+06	7.2301e+06	7.7510e+06	8.0540e+06
Averages				8.2364e+06	5.0410e+06	8.1793e+06	7.1955e+06
%RSD				10.4615	31.7957 *	17.8410	9.7774

File Name	Sample Name	Date of Injection	Time of Injection	ENDRIN KETONE
8OCB171.	INDA 0.01	10/12/95	18:32	6.7571e+06
8OCB172.	INDA 0.025	10/12/95	19:25	7.6471e+06
8OCB173.	INDA 0.05	10/12/95	20:18	7.6705e+06
8OCB174.	INDA 0.10	10/12/95	21:12	9.4145e+06
8OCB175.	INDA 0.25	10/12/95	22:05	1.0286e+07
8OCB176.	INDA 0.40	10/12/95	22:59	1.0611e+07
Averages				8.7311e+06
%RSD				18.1930

* above 20% RSD criteria

DML 7/3/97

REVISED DATA
RESUBMITTED BY LABORATORY

INSERTED BY [signature] 7/8/97
SIGNATURE DATE

DB608

File Name	Sample Name	Date of Injection	Time of Injection	METHOXYCHLOR
80CB172.	INDA 0.025	10/12/95	19:25	2.3843e+06
80CB173.	INDA 0.05	10/12/95	20:18	2.5208e+06
80CB174.	INDA 0.10	10/12/95	21:12	2.9948e+06
80CB175.	INDA 0.25	10/12/95	22:05	3.2205e+06
80CB176.	INDA 0.40	10/12/95	22:59	3.6331e+06
Averages				2.9507e+06
%RSD				17.3302

0,01 std not included in %RSD calculation DML 7/8/96

REVISED DATA
RESUBMITTED BY LABORATORY
INSERTED BY Dheauby 7/8/96
SIGNATURE DATE

Pesticdes Initial Calibration Curve Linearity Worksheet SMTH

Project Name: Olin Wilmington, MA

Project Number: 00-7074-0102

Case/SDG Number: WL1644

Calibration Date: 10/12/95 Channel A DB1701

Calibration File ID	8OCA171	8OCA172	8OCA173	8OCA174	8OCA175	8OCA176						
Calibration Concentra	0.01	0.025	0.05	0.1	0.25	0.4				HIGH		LOW
							AVG	5-PT	AVG	4-PT	AVG	4-PT
Target Compound	RF	RF	RF	RF	RF	RF	RF	RSD	RF	RSD	RF	RSD
alpha-BHC	5.969E+06	8.064E+06	8.896E+06	1.157E+07	1.218E+07	1.234E+07	9.836E+06	26.4 *	1.061E+07	18.7	9.335E+06	27.4 *
gamma-BHC												
heptachlor												
aldrin												
beta-BHC												
delta-BHC												
heptachlor epoxide												
endosulfan I												
4,4'-DDE												
dieldrin												
endrin												
4,4'-DDD												
endosulfan II												
4,4'-DDT	3.054E+06	3.621E+06	3.736E+06	4.693E+06	4.780E+06	5.337E+06	4.20E+06	20.6 *	4.43E+06	16.5	3.98E+06	18.6
endrin aldehyde												
methoxychlor												
endosulfan sulfate												
endrin ketone												
TMX												
DCB												
Aroclor-1016												
Aroclor-1221												
Aroclor-1232												
Aroclor-1242												
Aroclor-1248												
Aroclor-1254												
Aroclor-1260												
toxaphene												
technical chlordane												

Criteria: Max %RSD = 20 %

* - Denotes %RSD outside criteria

PESTCURV.XLS

QA Scientist DKearby Date 6/18/96

Pesticdes Initial Calibration Curve Linearity Worksheet SMTH

Project Name: Olin Wilmington, MA

Project Number: 00-7074-0102

Case/SDG Number: WL1644

Calibration Date: 10/12/95 Channel B/DB608

Calibration File ID	8OCA171	8OCA172	8OCA173	8OCA174	8OCA175	8OCA176						
Calibration Concentra	0.01	0.025	0.05	0.1	0.25	0.4				HIGH		LOW
							AVG	5-PT	AVG	4-PT	AVG	4-PT
Target Compound	RF	RF	RF	RF	RF	RF	RF	RSD	RF	RSD	RF	RSD
alpha-BHC	6.964E+06	8.218E+06	1.002E+07	1.311E+07	1.393E+07	1.412E+07	1.106E+07	27.9 *	1.188E+07	22.1 *	1.045E+07	28.9 *
gamma-BHC												
heptachlor												
aldrin												
beta-BHC												
delta-BHC												
heptachlor epoxide												
endosulfan I												
4,4'-DDE												
dieldrin												
endrin												
4,4'-DDD												
endosulfan II												
4,4'-DDT	3.054E+06	3.886E+06	4.117E+06	5.701E+06	6.258E+06	7.230E+06	5.04E+06	31.8 *	5.44E+06	26.2 *	4.60E+06	28.9 *
endrin aldehyde												
methoxychlor												
endosulfan sulfate												
endrin ketone												
TMX												
DCB												
Aroclor-1016												
Aroclor-1221												
Aroclor-1232												
Aroclor-1242												
Aroclor-1248												
Aroclor-1254												
Aroclor-1260												
toxaphene												
technical chlordane												

Criteria: Max %RSD = 20 %

* - Denotes %RSD outside criteria

PSTCRVB.XLS

QA Scientist Dleauby Date 6/18/96

DB1701 CHANNEL A VERIFICATION OF CURVE COEFFICIENTS

ICAL Analysis Date: 10/12/95

y	x	x	x
	HEPTACHLOR	DIELDRIN	4,4'-DDT
CONC.	AREA	AREA	AREA
0.01	93854.00	70484.17	29222.50
0.025	259251.00	185114.00	90532.28
0.05	485375.00	375567.00	186775.32
0.1	1101785.00	903794.00	469332.86
0.25	2535554.00	2252409.43	1194910.50
0.4	4100524.00	3668573.42	2134737.65
0.835	8576343.00	7455942.02	4105511.11
7161246.4	7.35537E+13		
r =	0.9997070	0.9998423	0.9982787
b =	-0.000508124	0.00509038	0.011841178
m =	9.77163E-08	1.07895E-07	1.8608E-07

Analysis Date: 10/23/95 10/23/95 10/23/95

Sample #: WL1644-1 WL1644-2 WL1644-3

Comp.	AREA	Conc.	AREA	Conc.	AREA	Conc.
heptachlor	23318.64	0.001770488	153786.71	0.014519	621778.98	0.0602498
deildrin	97361.54	0.015595189	24513.50	0.007735	0.00	0.0050904
4,4'-DDT	0.00	0.011841178	3426803.50	0.6495	7434741.81	1.3952969

Analysis Date: 10/23/95

DMY 7/16/96

Sample #: WL1644-4
Spike

Comp.	AREA	Conc.	AREA	Conc.	AREA	Conc.
heptachlor	3136216.22	0.305951408		-0.00051		-0.000508
deildrin	1815100.00	0.200930316		0.00509		0.0050904
4,4'-DDT	7636767.18	1.432889744		0.011841		0.0118412

DB608 CHANNEL B VERIFICATION OF CURVE COEFFICIENTS

ICAL Analysis Date: 10/12/95

y	x	x	x
	alpha-BHC	Endosulfan I	methoxychlor
CONC.	AREA	AREA	AREA
0.01	69636.69	77707.00	13977.50
0.025	205457.00	218158.00	55862.00
0.05	500910.86	423921.00	126042.00
0.1	1310776.50	1008148.50	299477.00
0.25	3483321.00	2481731.00	805117.50
0.4	5646621.59	4010947.00	1453226.00
0.835	11216723.64	8220612.50	2753702.00
9365964.239	1.25815E+14		
r=	**0.9997759**	**0.9998597**	**0.9980044**
b=	0.010102133	0.003759455	0.014180696
m=	6.90386E-08	9.883E-08	2.7233E-07

Analysis Date: 10/23/95 10/23/95 10/23/95

Sample #: WL1644-4 Spike WL1644-6 WL1644-7

Comp.	AREA	Conc.	AREA	Conc.	AREA	Conc.
alpha-BHC	2954378.13	0.214068343	28921.50	0.012099	61572.11	0.014353
Endosulfan I	3002385.38	0.300485252	29157.24	0.006641	14658.50	0.0052082
methoxychlor	933580.51	0.26842273	0.00	0.014181	0.00	0.0141807

Analysis Date: 10/24/95

DMi, 11/14/96

Sample #: WL1644-10

Comp.	AREA	Conc.	AREA	Conc.	AREA	Conc.
heptachlor	71151.49	0.015014334		0.010102		0.0101021
deildrin	31409.75	0.006863681		0.003759		0.0037595
4,4'-DDT	8094.00	0.016384936		0.014181		0.0141807

Analysis: heptachlor
Laboratory: Pace Incorporated
Initial Cal. Date **10/12/95** Analysis Date: **10/23/95**

	area	mass			
	x	**y**	XY	X2	Y2
	93854	**0.01**	938.54	8808573316	0.0001
	259251	**0.02500**	6481.275	67211081001	0.000625
6	**485375**	**0.05**	24268.75	2.35589E+11	0.0025
	1101785	**0.1**	110178.5	1.21393E+12	0.01
	2535554	**0.25**	633888.5	6.42903E+12	0.0625
	4100524	**0.4**	1640209.6	1.68143E+13	0.16
SUMS	*8576343*	*0.835*	*2415965.165*	*2.47689E+13*	*0.235725*
	XY	7161246			
				r 0.999706956	

slope	**9.772E-08**
INTERCEPT	**-0.000508**

	x'	y'	x'	y'
INDA	1110238	0.10798		-0.000508124
INDA	981040.5	0.095356		-0.000508124
GW80BR	621778.98	0.06025		-0.000508124
		-0.000508		-0.000508124
		-0.000508		-0.000508124
		-0.000508		-0.000508124
		-0.000508		-0.000508124
		-0.000508		-0.000508124
		-0.000508		-0.000508124
		-0.000508		-0.000508124
		-0.000508		-0.000508124
		-0.000508		-0.000508124
		-0.000508		-0.000508124
		-0.000508		-0.000508124
		-0.000508		-0.000508124
		-0.000508		-0.000508124
		-0.000508		-0.000508124
		-0.000508		-0.000508124
		-0.000508		-0.000508124
		-0.000508		-0.000508124
		-0.000508		-0.000508124
		-0.000508		-0.000508124
		-0.000508		-0.000508124
		-0.000508		-0.000508124
		-0.000508		

example of calibration curve $y=mx+b$
lab used to quantitate sample results.

KMI 5/8/96

DB1701

File Name	Sample Name	Date of Injection	Time of Injection	gamma-CHLORDANE	alpha-CHLORDANE
8SPE056.	INDB 0.05	9/21/95	20:27	9.9636e+06	1.0095e+07
8SPE057.	INDB 0.10	9/21/95	21:21	9.6999e+06	9.7191e+06
8SPE058.	INDB 0.25	9/21/95	22:14	1.0073e+07	9.9255e+06
8SPE059.	INDB 0.40	9/21/95	23:07	~~9.1563e+06~~	~~8.9643e+06~~
8SPE060.	INDB 0.50	9/22/95	00:01	9.0462e+06	8.8479e+06
Averages				4.6487E6 ~~9.5075e+06~~	~~9.5104e+06~~ 9.5756E6
%RSD				~~4.0071~~ 4.2737	~~5.9825~~ 5.2828

$\frac{3784274.33}{0.4}$ = 9.4607E6

9.2906 E6 = $\frac{3716221.}{0.4}$

DML 7/8/96

different instrument then the INDA ICAL, INDACCAL, INDBCCALS & samples?

↓

NO see fax dated 7/23/96

DML 7/22/96

REVISED DATA
RESUBMITTED BY LABORATORY
INSERTED BY [signature] 7/8/96
SIGNATURE DATE

*********** SUMMARY REPORT

DB608

File Name	Sample Name	Date of Injection	Time of Injection	gamma-CHLORDANE	alpha-CHLORDANE
8SPF056.	INDB 0.05	9/21/95	20:27	1.0576e+07	1.0712e+07
8SPF057.	INDB 0.10	9/21/95	21:21	1.0562e+07	1.0643e+07
8SPF058.	INDB 0.25	9/21/95	22:14	1.1387e+07	1.1243e+07
8SPF059.	INDB 0.40	9/21/95	23:07	1.0803e+07	1.0605e+07
8SPF060.	INDB 0.50	9/22/95	00:01	1.0346e+07	1.0128e+07
Averages				1.0735e+07	1.0666e+07
%RSD				3.7155	3.7174

different instrument then samples? → NO see fax dated 7/23/96 DML 7/22/96

DML 7/8/96

REVISED DATA
RESUBMITTED BY LABORATORY
INSERTED BY [signature] 7/8/96
SIGNATURE DATE

*****PACE-ME MULTI-COMPONENT CALIBRATION REPORT*****

==
INSTRUMENT: H58908   COLUMN: DB1701   ID: 0.53 mm
==

Sample Name	File Name	TOXAPHENE Height [μV]	TOXAPHENE PEAK HEIGHT/ PEAK AMOUNT
TX 0.5	80CA021.rs	77515.20	155030.40
TX 1.0	80CA022.rs	181591.77	181591.77
TX 2.5	80CA023.rs	347204.22	138881.69
TX 5.0	80CA024.rs	675885.92	135177.18
TX 10.0	80CA025.rs	1.38e+06	138432.68
Averages		533304.77	149822.74
%RSD		98.81	12.93

PACE, INC. MAINE LABORATORY

INST: H58908| PEST PCB METHOD: 608/8080 | Channel B DB608

Peak #	Time [min]	Area [uV*sec]	Component Name	Delta RT [%]	BL	Height [uV]	Area/Height [sec]	Raw Amount	Adjusted Amount
0	11.738	0.00	TRIFLURALIN	-------		0.00	-----------	0.0000	0.0000
1	14.010	959797.00	Tetrachloro-m-xylene	-0.0129	B	178557.17	5.3753	0.0960	0.0960
0	14.169	0.00	PROPACHLOR	-------		0.00	-----------	0.0000	0.0000
0	15.250	0.00	HEXACHLOROBENZENE	-------		0.00	-----------	0.0000	0.0000
2	15.967	8556.78		-------	B	1525.28	5.6100	0.0086	0.0086
3	17.426	1215245.22	alpha-BHC	-0.0135	V	247012.96	4.9198	0.0943	0.0943
4	19.276	1124643.50	gamma-BHC(LINDANE)	-0.0119	B	220210.67	5.1071	0.0929	0.0929
5	19.582	576017.50	beta-BHC	-0.0054	B	111391.83	5.1711	0.0916	0.0916
6	20.778	849731.00	HEPTACHLOR	-0.0102	B	142363.41	5.9687	0.0778	0.0778
7	21.262	1005901.50	delta-BHC	-0.0026	B	208253.60	4.8302	0.0940	0.0940
8	22.042	19260.25		-------	B	2633.38	7.3139	0.0193	0.0193
9	22.280	952056.75	ALDRIN	-0.0114	V	172090.95	5.5323	0.0895	0.0895
10	24.714	938066.00	Heptachlor Epoxide	-0.0130	B	164919.71	5.6880	0.0873	0.0873
0	25.416	0.00	gamma-Chlordane	-------		0.00	-----------	0.0000	0.0000
0	26.097	0.00	alpha-CHLORDANE	-------		0.00	-----------	0.0000	0.0000
11	26.255	860921.00	ENDOSULFAN I	-0.0120	B	150931.41	5.7040	0.0874	0.0874
12	27.060	803093.00	4,4'-DDE	-0.0099	B	157957.60	5.0842	0.0913	0.0913
13	27.548	832570.00	DIELDRIN	-0.0069	B	150224.99	5.5422	0.0890	0.0890
14	29.105	582358.11	ENDRIN	-0.0057	B	103317.06	5.6366	0.1058	0.1058
15	29.361	592863.89	4,4'-DDD	-0.0076	V	116345.41	5.0957	0.0952	0.0952
16	29.827	760840.50	ENDOSULFAN II	-0.0099	B	128663.47	5.9134	0.0875	0.0875
17	30.670	479641.00	4,4'-DDT	-0.0165	B	83202.25	5.7648	0.0891	0.0891
18	31.275	618700.00	ENDRIN ALDEHYDE	-0.0060	B	89042.48	6.9484	0.0807	0.0807
19	31.867	649844.00	ENDOSULFAN SULFATE	-0.0050	B	93430.86	6.9553	0.0871	0.0871
0	35.123	0.00	MIREX	-------		0.00	-----------	0.0000	0.0000
20	35.343	272352.00	METHOXYCHLOR	-0.0102	B	32113.48	8.4809	0.0934	0.0934
21	36.573	741368.00	ENDRIN KETONE	-0.0197	B	77971.52	9.5082	0.0819	0.0819
22	46.942	846813.00	Decachlorobiphenyl	-0.0478	B	50572.81	16.7444	0.0678	0.0678
		15690630.00				2.68e+06		1.8074	1.8074

15% Range criteria 0.085 - 0.115

HEPTACHLOR - out of criteria

ENDRIN ALDEHYDE - out of criteria

ENDRIN KETONE - out of criteria

Missing Component Report

Component	Expected Retention (Calibration File)
TRIFLURALIN	11.738
PROPACHLOR	14.169
HEXACHLOROBENZENE	15.250
gamma-Chlordane	25.416
alpha-CHLORDANE	26.097
MIREX	35.123

DML 7/9/96

* decrease in response

PACE, INC. MAINE LABORATORY

INST: H58908| PEST PCB METHOD: 608/8080 | Channel B DB608

Peak #	Time [min]	Area [uV*sec]	Component Name	Delta RT [%]	BL	Height [uV]	Area/Height [sec]	Raw Amount	Adjusted Amount
1	14.009	911861.00	Tetrachloro-m-xylene	-0.0702	B	172013.41	5.3011	0.0874	0.0874
2	15.965	8431.64		-------	*B	1479.28	5.6998	0.0084	0.0084
3	17.425	37344.36		-------	*V	1145.64	32.5969	0.0373	0.0373
4	21.607	96747.91		-------	*V	1136.77	85.1077	0.0967	0.0967
5	22.039	31969.46		-------	*V	2714.60	11.7769	0.0320	0.0320
6	22.479	22511.10		-------	*V	2988.62	7.5323	0.0225	0.0225
7	22.682	27284.19		-------	*V	2618.13	10.4212	0.0273	0.0273
8	23.509	129453.33		-------	*V	9476.73	13.6601	0.1295	0.1295
9	23.793	43542.02		-------	*V	3298.35	13.2012	0.0435	0.0435
10	24.068	57050.20		-------	*V	4161.62	13.7086	0.0571	0.0571
11	24.324	32968.62		-------	*V	3935.78	8.3766	0.0330	0.0330
12	24.732	161831.55		-------	*V	8283.47	19.5367	0.1618	0.1618
13	25.196	113041.32		-------	*V	6321.31	17.8826	0.1130	0.1130
14	25.514	167143.95		-------	*V	13285.68	12.5808	0.1671	0.1671
15	25.804	216263.86		-------	*V	13979.93	15.4696	0.2163	0.2163
16	26.152	75382.28		-------	*V	9606.71	7.8468	0.0754	0.0754
17	26.299	82117.26		-------	*V	9230.72	8.8961	0.0821	0.0821
18	26.653	263764.69		-------	*V	15902.19	16.5867	0.2638	0.2638
19	26.968	166405.52		-------	*V	20091.95	8.2822	0.1664	0.1664
20	27.323	380418.49		-------	*V	32265.01	11.7904	0.3804	0.3804
21	27.570	370306.00		-------	*V	18191.90	20.3555	0.3703	0.3703
22	28.082	509063.31		-------	*V	31996.66	15.9099	0.5091	0.5091
23	28.340	430298.81		-------	*V	41706.49	10.3173	0.4303	0.4303
24	28.674	294056.59		-------	*V	28665.07	10.2584	0.2941	0.2941
25	28.820	207676.49		-------	*V	19757.35	10.5114	0.2077	0.2077
26	29.058	223868.85		-------	*V	30451.03	7.3518	0.2239	0.2239
27	29.183	322401.49		-------	*V	31519.83	10.2285	0.3224	0.3224
28	29.512	650448.27		-------	*V	37034.30	17.5634	0.6504	0.6504
29	29.967	880008.64		-------	*V	63914.77	13.7685	0.8800	0.8800
30	30.254	214318.25		-------	*V	23762.71	9.0191	0.2143	0.2143
31	30.497	290361.78		-------	*V	29103.23	9.9770	0.2904	0.2904
32	30.612	211678.41		-------	*V	28050.30	7.5464	0.2117	0.2117
34	31.060	221962.21		-------	*V	27194.96	8.1619	0.2220	0.2220
35	31.451	897624.95		-------	*V	44838.32	20.0191	0.8976	0.8976
36	31.674	277428.76		-------	*V	32542.44	8.5251	0.2774	0.2774
38	32.402	340495.41		-------	*V	27522.96	12.3713	0.3405	0.3405
39	32.675	187796.76		-------	*V	18250.78	10.2898	0.1878	0.1878
40	32.884	264323.54		-------	*V	24979.27	10.5817	0.2643	0.2643
41	33.174	431462.38		-------	*V	28799.90	14.9814	0.4315	0.4315
42	33.565	224433.98		-------	*V	19216.60	11.6792	0.2244	0.2244
	34.362	3026622.75	TOXAPHENE	0.0000		227163.18	13.3236	1.8205	1.8205
45	35.083	157511.00		-------	*E	10876.54	14.4817	0.1575	0.1575
46	35.569	296743.95		-------	*V	18234.10	16.2741	0.2967	0.2967
47	36.125	237487.29		-------	*V	11523.34	20.6092	0.2375	0.2375
49	37.131	62964.58		-------	*V	3432.88	18.3416	0.0630	0.0630
50	37.529	96297.22		-------	*V	4850.67	19.8524	0.0963	0.0963
51	38.052	86259.04		-------	*V	5929.88	14.5465	0.0863	0.0863
52	38.388	57566.00		-------	*V	4167.46	13.8132	0.0576	0.0576
53	39.106	62300.53		-------	*V	2502.48	24.8955	0.0623	0.0623
54	39.937	26171.00		-------	*B	2390.88	10.9462	0.0262	0.0262
55	40.910	8531.25		-------	B	652.82	13.0684	0.0085	0.0085
56	41.337	10542.75		-------	V	814.93	12.9370	0.0105	0.0105
57	43.274	9278.00		-------	B	478.61	19.3855	0.0093	0.0093
58	46.942	894610.00	Decachlorobiphenyl	-0.0812	B	53510.66	16.7184	0.0776	0.0776
		15508433.00				1.29e+06		12.6609	12.6609

15% Range criteria
2.125-
2.875
out of criteria

DML
7/9/96

decrease [illegible]

Group Report For : TOXAPHENE

Peak	Time	Area	Component	Delta RT	BL	Height	Area/Height	Raw	Adjusted

*****PACE-ME MULTI-COMPONENT CALIBRATION REPORT*****

INSTRUMENT: H58908   COLUMN: DB608   ID: 0.53 mm

Sample Name	File Name	TOXAPHENE Height [μV]	PEAK HEIGHT/ PEAK AMOUNT
TX 0.5	8OCB021.rs	56824.82	1.1365e+05
TX 1.0	8OCB022.rs	145259.13	1.4526e+05
TX 2.5	8OCB023.rs	294996.83	1.1800e+05
TX 5.0	8OCB024.rs	617959.12	1.2359e+05
TX 10.0	8OCB025.rs	1.33e+06	1.3313e+05
Averages		489263.86	1.2673e+05
%RSD		105.64	9.9927

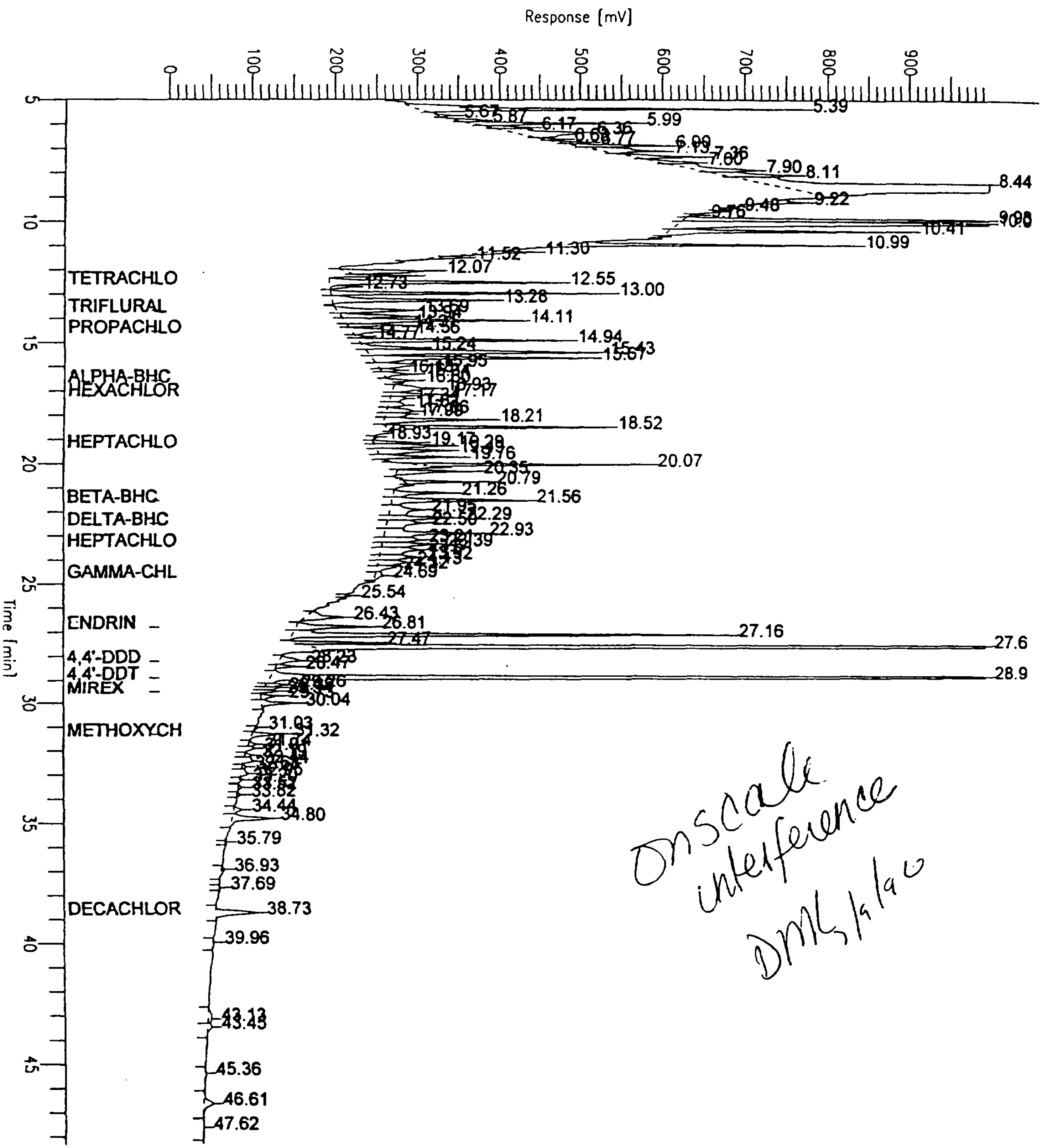
Chromatogram

Sample Name : WL1644-3
FileName : D:\08\80CA229.raw
Method : 1701A05B
Start Time : 5.00 min
Scale Factor: 1.0

End Time : 49.50 min
Plot Offset: -8 mV

Sample #:
Date : 10/23/95 19:37
Time of Injection: 10/23/95 18:47
Low Point : -7.90 mV
Plot Scale: 1007.9 mV

High Point : 1000.00 mV



Onscale interference DMK 1/9/96

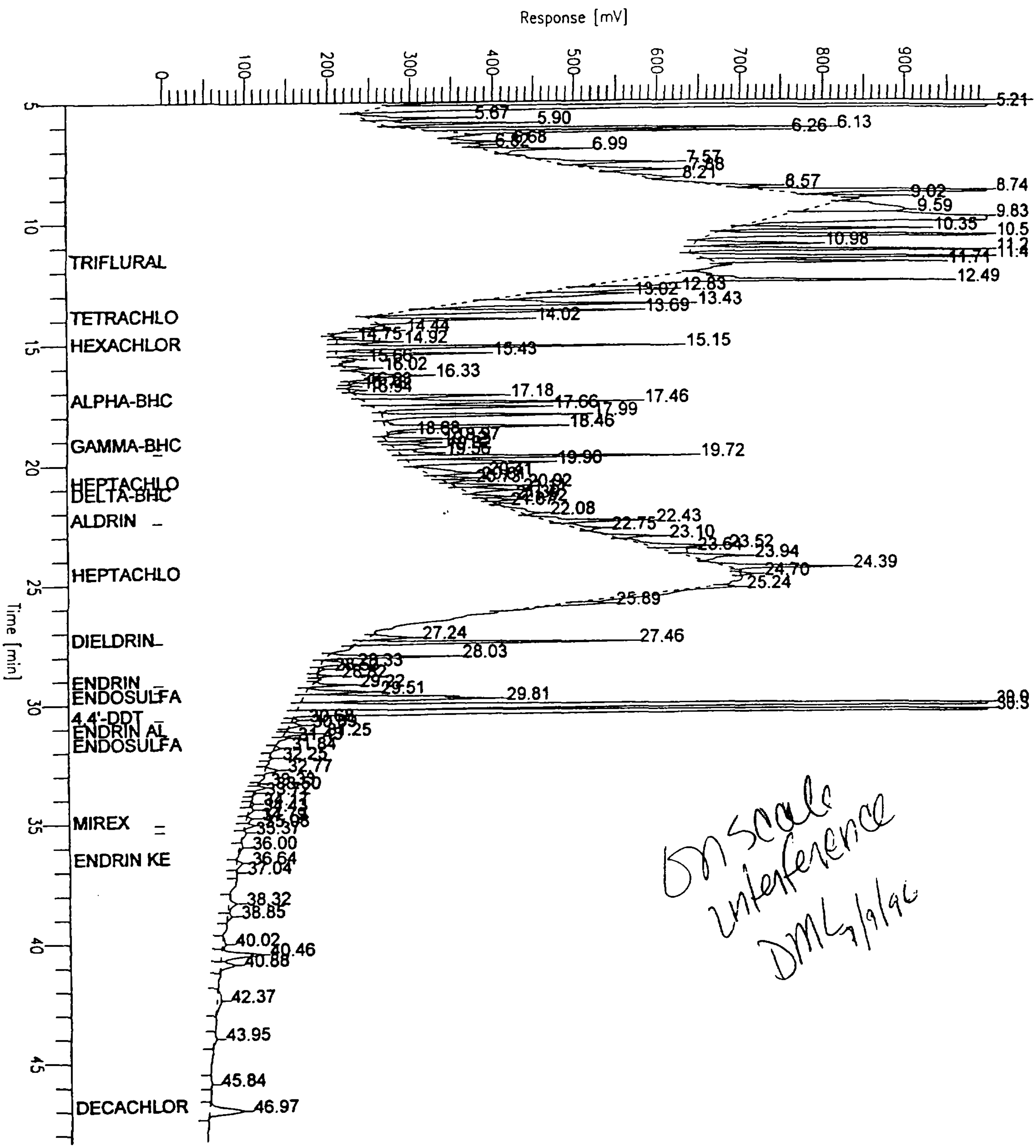
Chromatogram

Sample Name : WL1644-3
FileName : D:\08\8OCB229.raw
Method : 1701A05B
Start Time : 5.00 min
Scale Factor: 1.0

End Time : 49.50 min
Plot Offset: -0 mV

Sample #:
Date : 10/26/95 11:01
Time of Injection: 10/23/95 18:47
Low Point : -0.35 mV
Plot Scale: 1000.3 mV

High Point : 1000.00 mV



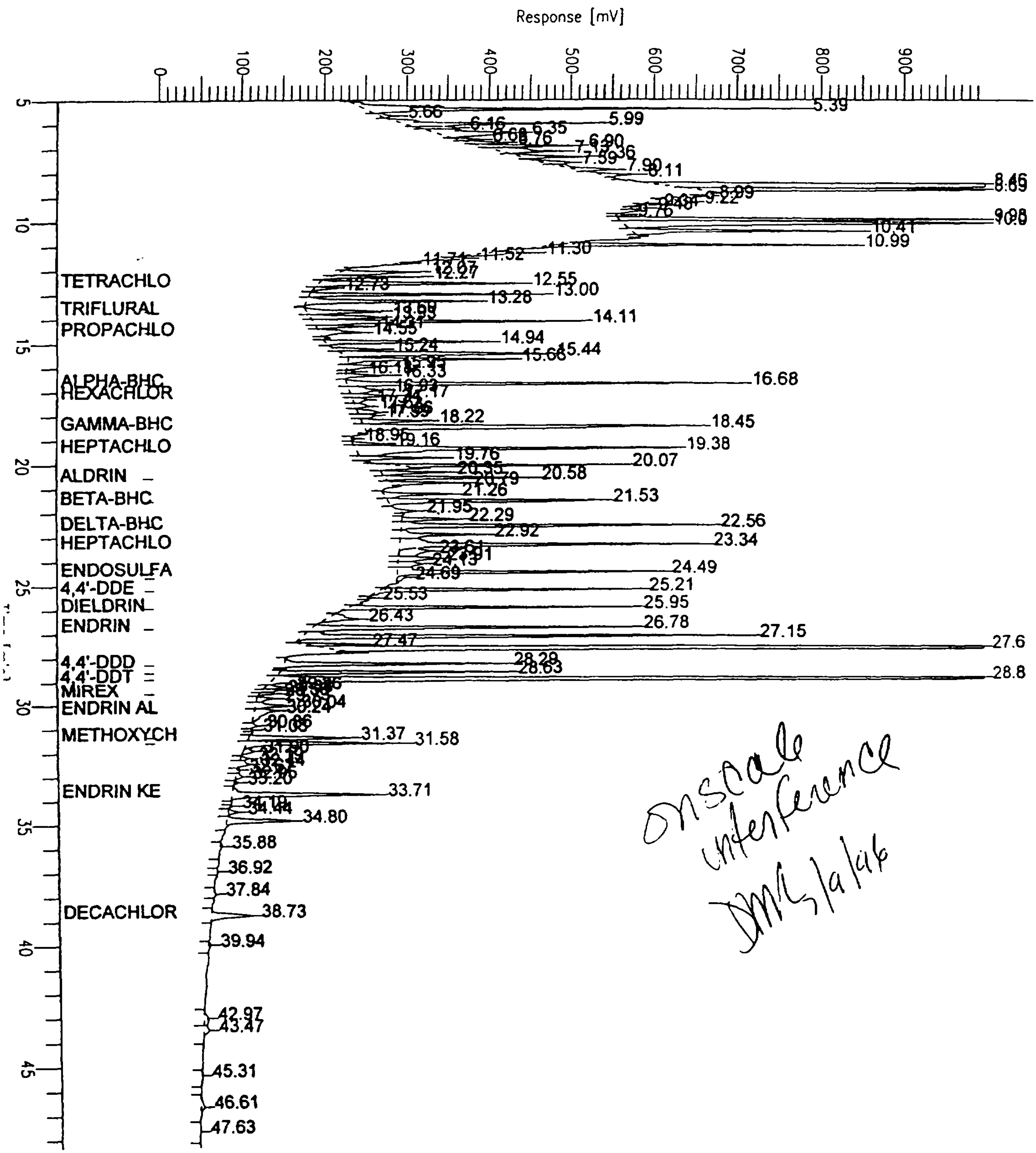
On scale interference DML 7/9/96

0000935

Chromatogram

ample Name : WL1644-4
ileName : D:\08\8OCA230.raw
ethod : 1701A05B
tart Time : 5.00 min   End Time : 49.50 min
cale Factor: 1.0   Plot Offset: -5 mV

Sample #:   Page 1 of 1
Date : 10/23/95 20:30
Time of Injection: 10/23/95 19:41
Low Point : -5.39 mV   High Point : 1000.00 mV
Plot Scale: 1005.4 mV



On scale interference
DMG 5/9/96

0000943

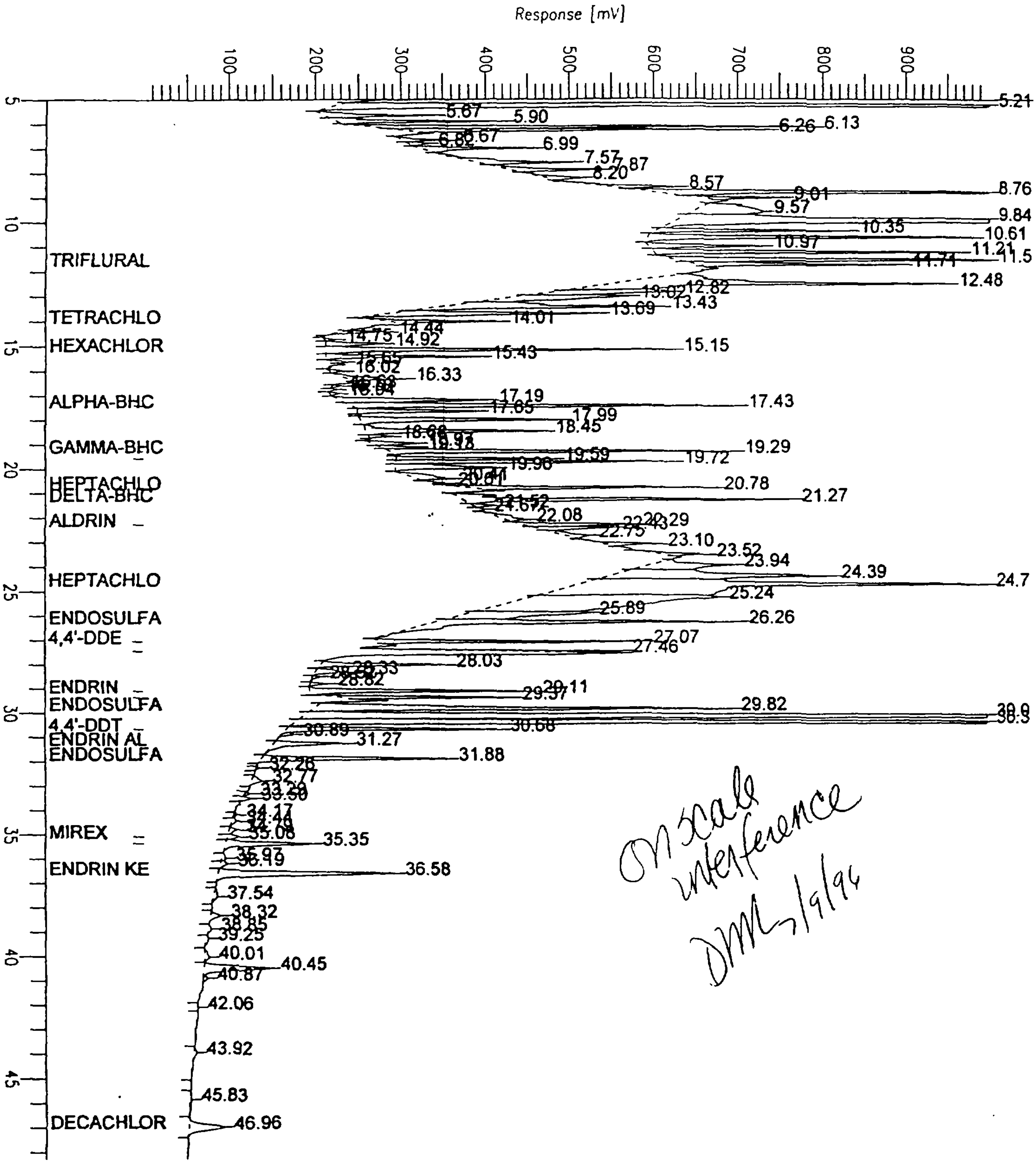
Chromatogram

Sample Name : WL1644-4
FileName : D:\08\8OCB230.raw
Method : 1701A05B
Start Time : 5.00 min
Scale Factor: 1.0

End Time : 49.50 min
Plot Offset: 1 mV

Sample #:
Date : 10/23/95 20:30
Time of Injection: 10/23/95 19:41
Low Point : 1.30 mV
Plot Scale: 998.7 mV

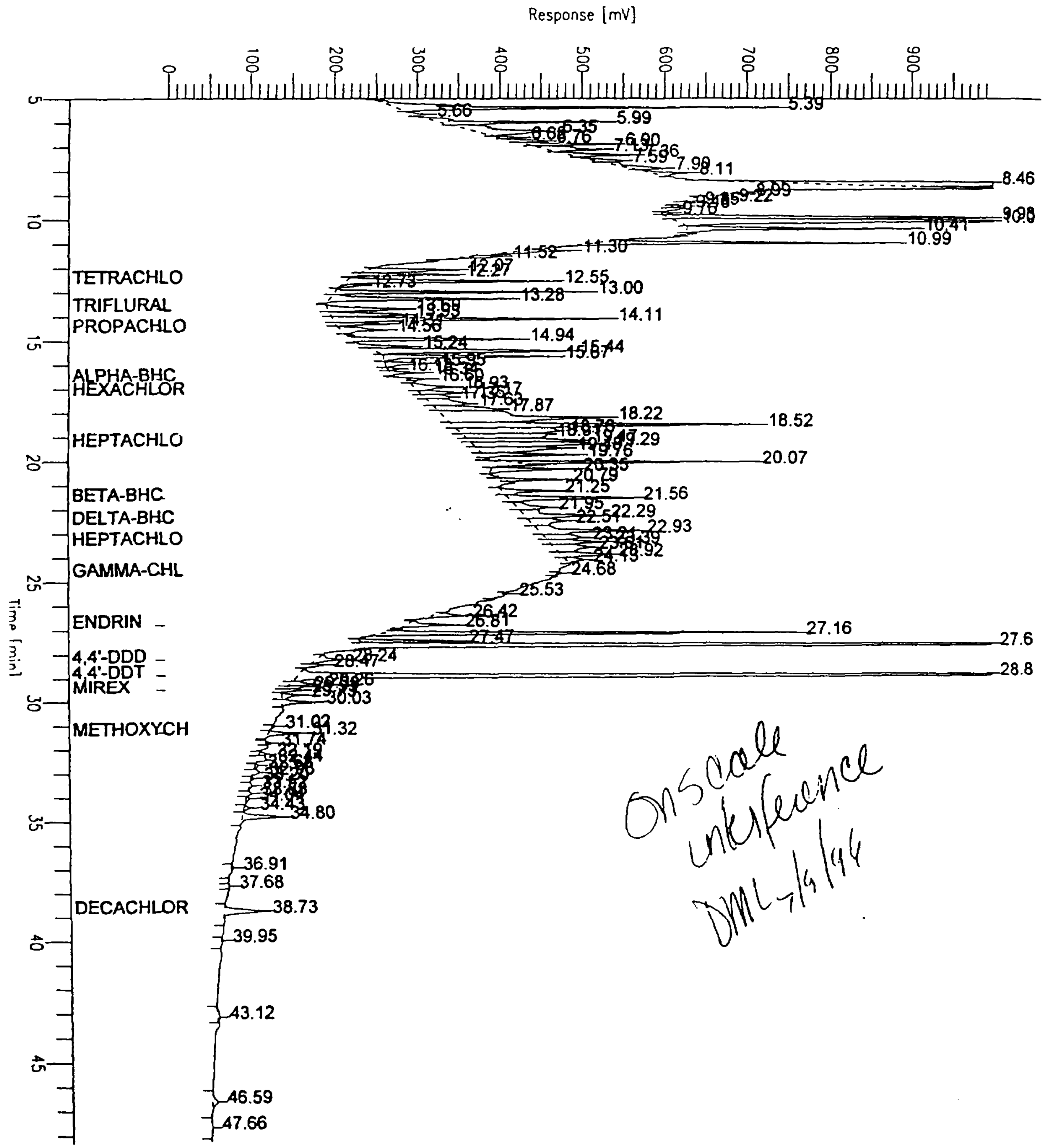
High Point : 1000.00 mV



On scale interference
DMM 1/9/96

Chromatogram

Sample Name : WL1644-5		Sample #:	Page 1 of 1
FileName : D:\08\BOCA231.raw		Date : 10/23/95 21:24	
Method : 1701A05B		Time of Injection: 10/23/95 20:34	
Start Time : 5.00 min	End Time : 49.50 min	Low Point : -1.57 mV	High Point : 1000.00 mV
Scale Factor: 1.0	Plot Offset: -2 mV	Plot Scale: 1001.6 mV	



On scale
interference
DML 7/1/94

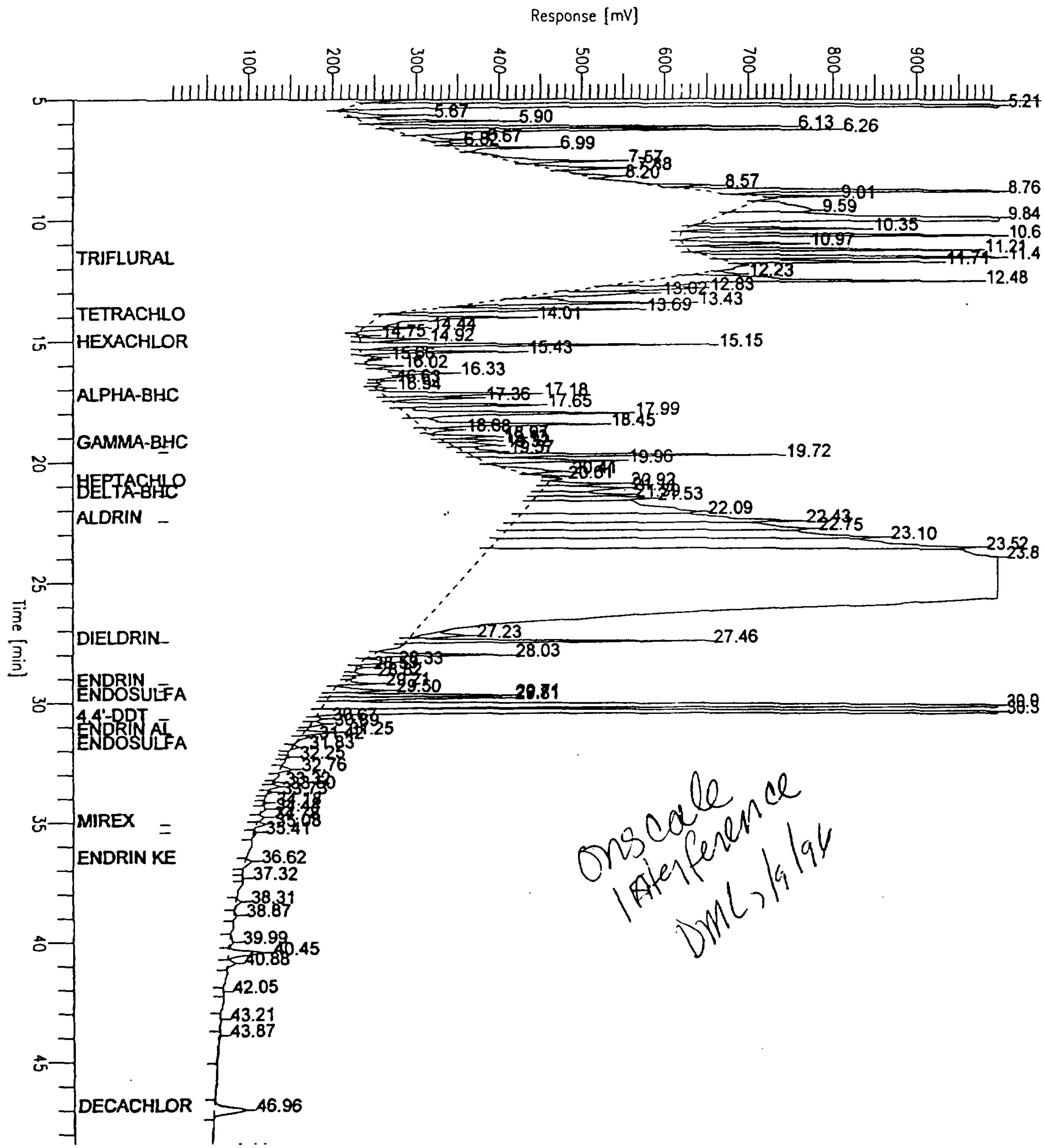
0000954

Chromatogram

Sample Name : WL1644-5
FileName : D:\08\8OCB231.raw
Method : 1701A05B
Start Time : 5.00 min
Scale Factor: 1.0
End Time : 49.50 min
Plot Offset: 6 mV

Sample #:
Date : 10/26/95 11:01
Time of Injection: 10/23/95 20:34
Low Point : 5.55 mV
Plot Scale: 994.5 mV

High Point : 1000.00 mV



Onscale interference DML 1/9/96

PACE, INC. MAINE LABORATORY

INST: H58908| PEST PCB METHOD: 608/8080 | WL1644-10

Peak #	Time [min]	Area [uV*sec]	Component Name	Delta RT [%]	BL	Height [uV]	Area/Height [sec]	Raw Amount	Adjusted Amount
1	5.200	105624.00		-------	B	23796.45	4.4386	0.1056	0.1056
2	5.316	216050.00		-------	V	39078.45	5.5286	0.2160	0.2160
3	5.532	35180.00		-------	V	6067.47	5.7981	0.0352	0.0352
4	5.795	50663.73		-------	B	8755.45	5.7865	0.0507	0.0507
5	6.027	12418.68		-------	V	2896.03	4.2882	0.0124	0.0124
6	6.271	95040.59		-------	V	11899.02	7.9873	0.0950	0.0950
7	6.891	77034.33		-------	B	6278.39	12.2698	0.0770	0.0770
8	7.073	420399.09		-------	V	62442.99	6.7325	0.4204	0.4204
9	7.258	109119.39		-------	V	14449.90	7.5516	0.1091	0.1091
10	7.481	48878.18		-------	V	7141.18	6.8446	0.0489	0.0489
11	7.803	75960.53		-------	B	14436.31	5.2618	0.0760	0.0760
12	8.183	89755.47		-------	V	8959.60	10.0178	0.0898	0.0898
13	8.611	115549.00		-------	B	15808.20	7.3094	0.1155	0.1155
14	8.857	36900.04		-------	B	7835.80	4.7092	0.0369	0.0369
15	8.992	87975.54		-------	V	17915.97	4.9105	0.0880	0.0880
16	9.159	30844.75		-------	V	6572.86	4.6927	0.0308	0.0308
17	9.352	177354.68		-------	V	25466.45	6.9642	0.1774	0.1774
18	9.761	29131.00		-------	B	4978.65	5.8512	0.0291	0.0291
19	9.936	14229.00		-------	B	2628.06	5.4143	0.0142	0.0142
20	10.134	29914.00		-------	B	4775.68	6.2638	0.0299	0.0299
21	10.321	28632.89		-------	B	6404.99	4.4704	0.0286	0.0286
22	10.455	10233.65		-------	V	2415.11	4.2373	0.0102	0.0102
23	10.708	5937426.96		-------	V	1.01e+06	5.8975	5.9374	5.9374
24	11.184	183459.00		-------	B	44703.01	4.1040	0.1835	0.1835
25	11.623	122825.00		-------	B	27666.89	4.4394	0.1228	0.1228
26	11.809	77199.16		-------	B	8933.17	8.6419	0.0772	0.0772
27	12.094	649738.84		-------	V	117029.34	5.5519	0.6497	0.6497
28	12.304	491236.75		-------	B	110884.07	4.4302	0.4912	0.4912
29	12.445	1501765.25	Tetrachloro-m-xylene	-0.6409	V	147424.11	10.1867	0.1597	0.1597
30	12.742	56201.00		-------	B	7803.09	7.2024	0.0562	0.0562
31	12.955	171220.00		-------	V	22533.41	7.5985	0.1712	0.1712
32	13.396	109156.50		-------	B	13231.06	8.2500	0.1092	0.1092
33	13.667	63602.05	~~TRIFLURALIN~~	0.6934	B	11757.88	5.4093	0.0014	0.0014
34	13.827	47926.71		-------	V	10324.54	4.6420	0.0479	0.0479
35	13.985	106593.15		-------	V	21903.79	4.8664	0.1066	0.1066
36	14.147	116889.10		-------	V	16555.69	7.0604	0.1169	0.1169
37	14.419	26763.00		-------	B	6370.46	4.2011	0.0268	0.0268
0	14.550	0.00	~~PROPACHLOR~~	-------		0.00	-----------	0.0000	0.0000
38	14.768	49266.00		-------	B	9495.33	5.1884	0.0493	0.0493
39	15.252	51603.50		-------	B	9854.97	5.2363	0.0516	0.0516
40	15.504	57107.92		-------	B	7488.10	7.6265	0.0571	0.0571
41	15.768	134373.06		-------	V	14960.17	8.9821	0.1344	0.1344
42	16.105	265307.33		-------	V	21494.42	12.3431	0.2653	0.2653
43	16.273	298903.44		-------	V	28841.03	10.3638	0.2989	0.2989
44	16.561	103076.56		-------	V	12731.76	8.0960	0.1031	0.1031
0	16.676	0.00	~~alpha-BHC~~	-------		0.00	-----------	0.0000	0.0000
45	16.936	160800.92		-------	V	23959.79	6.7113	0.1608	0.1608
46	17.040	175032.08		-------	V	19402.71	9.0210	0.1750	0.1750
47	17.254	89933.62	~~HEXACHLOROBENZENE~~	-0.2647	V	13219.35	6.8032	0.0008	0.0008
48	17.545	181840.90		-------	V	18406.95	9.8789	0.1818	0.1818
49	17.823	55225.17		-------	V	10466.27	5.2765	0.0552	0.0552
50	18.250	69472.00		-------	B	7583.49	9.1610	0.0695	0.0695
51	18.485	62618.00	~~gamma-BHC(LINDANE)~~	0.2872	B	7876.49	7.9500	0.0096	0.0096
52	19.334	129862.83	~~Heptachlor~~	-0.1890	B	18293.81	7.0987	0.0133	0.0133
53	19.665	102155.48		-------	V	8243.26	12.3926	0.1022	0.1022
54	20.043	123011.34		-------	V	13303.36	9.2466	0.1230	0.1230
55	20.519	187922.32	~~ALDRIN~~	-0.2551	V	17423.43	10.7856	0.0230	0.0230
56	20.863	37810.83		-------	V	5036.18	7.5078	0.0378	0.0378
57	21.046	21755.70		-------	V	3971.28	5.4783	0.0218	0.0218
58	21.351	377174.50		-------	B	60147.65	6.2708	0.3772	0.3772
0	21.505	0.00	~~beta-BHC~~	-------		0.00	-----------	0.0000	0.0000
59	21.720	22013.50		-------	B	4389.30	5.0153	0.0220	0.0220
0	22.556	0.00	~~delta-BHC~~	-------		0.00	-----------	0.0000	0.0000
60	22.665	1959527.00		-------	B	368325.45	5.3201	1.9595	1.9595

12.524 RT

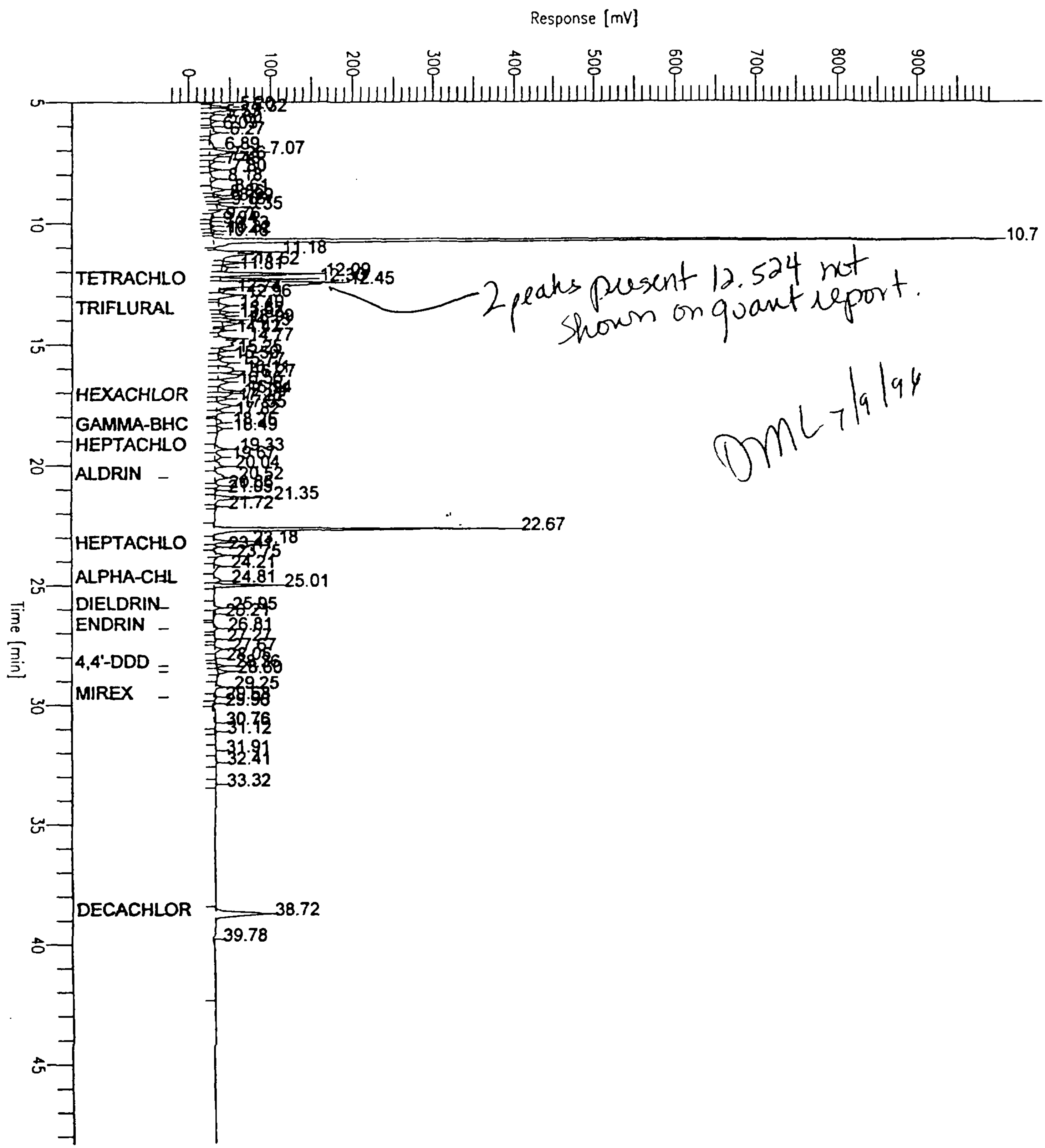
2 peaks on chromatogram if integrate 12.524 the %R might be in range

DML 7/4/94

Chromatogram

Sample Name : WL1644-10
FileName : D:\08\8OCA236.raw
Method : 1701A05B
Start Time : 5.00 min End Time : 49.50 min
Scale Factor: 1.0 Plot Offset: -23 mV

Sample #:
Date : 10/24/95 01:50
Time of Injection: 10/24/95 01:01
Low Point : -23.39 mV High Point : 1000.00 mV
Plot Scale: 1023.4 mV



2 peaks present 12.524 not shown on quant report.
DML 7/9/94

PACE, INC. MAINE LABORATORY

INST: H58908 | PEST PCB METHOD: 608/8080 | WL-1644-9

Peak #	Time [min]	Area [uV*sec]	Component Name	Delta RT [%]	BL	Height [uV]	Area/Height [sec]	Raw Amount	Adjusted Amount
1	5.931	18430.01		-------	B	1617.50	11.3941	0.0184	0.0184
2	6.184	40729.11		-------	V	7679.48	5.3036	0.0407	0.0407
3	6.374	64907.91		-------	V	12826.23	5.0606	0.0649	0.0649
4	6.607	38504.47		-------	V	5157.41	7.4659	0.0385	0.0385
5	7.031	11194.50		-------	B	2522.56	4.4378	0.0112	0.0112
6	7.627	24782.00		-------	B	3746.27	6.6151	0.0248	0.0248
7	8.033	15944.57		-------	B	1936.65	8.2331	0.0159	0.0159
8	8.361	13342.43		-------	V	2344.90	5.6900	0.0133	0.0133
9	9.110	80280.00		-------	B	13141.99	6.1087	0.0803	0.0803
10	9.608	121283.50		-------	B	20541.76	5.9042	0.1213	0.1213
11	10.811	50071.00		-------	B	6008.71	8.3331	0.0501	0.0501
12	11.434	58585.00		-------	B	7098.78	8.2528	0.0586	0.0586
0	11.738	0.00	TRIFLURALIN	-------		0.00	-----------	0.0000	0.0000
13	12.197	45886.00		-------	B	6803.77	6.7442	0.0459	0.0459
14	12.777	8419.50		-------	B	1422.53	5.9187	0.0084	0.0084
15	13.498	13134.53		-------	B	1520.01	8.6411	0.0131	0.0131
16	14.011	659631.97	Tetrachloro-m-xylene	-0.0070	V	113813.90	5.7957	0.0660	0.0660
0	14.169	0.00	PROPACHLOR	-------		0.00	-----------	0.0000	0.0000
17	15.025	25683.00		-------	B	4365.07	5.8837	0.0257	0.0257
0	15.250	0.00	HEXACHLOROBENZENE	-------		0.00	-----------	0.0000	0.0000
18	15.661	9517.00		-------	B	1152.36	8.2587	0.0095	0.0095
19	15.938	13366.00		-------	V	1742.09	7.6724	0.0134	0.0134
20	16.335	1783621.00		-------	B	313632.02	5.6870	1.7836	1.7836
21	17.334	8481.00		-------	B	1321.94	6.4156	0.0085	0.0085
22	17.494	45790.00	alpha-BHC	0.3787	B	8605.46	5.3210	0.0066	0.0066
23	17.946	120310.58		-------	B	13810.35	8.7116	0.1203	0.1203
24	18.488	21760.39		-------	V	2831.83	7.6842	0.0218	0.0218
25	18.713	13067.34		-------	V	1580.24	8.2692	0.0131	0.0131
26	19.019	67675.24		-------	V	5680.33	11.9140	0.0677	0.0677
0	19.278	0.00	gamma-BHC(LINDANE)	-------		0.00	-----------	0.0000	0.0000
27	19.533	61167.45	beta-BHC	-0.2546	V	3468.28	17.6362	0.0123	0.0123
28	19.914	63782.07		-------	B	9831.88	6.4873	0.0638	0.0638
29	20.125	28495.08		-------	V	2673.02	10.6603	0.0285	0.0285
30	20.404	30137.36		-------	V	3981.66	7.5690	0.0301	0.0301
31	20.818	16167.91	HEPTACHLOR	0.1826	B	2691.80	6.0064	0.0018	0.0018
32	21.068	27561.82		-------	V	4140.86	6.6561	0.0276	0.0276
33	21.359	13638.50	delta-BHC	0.4527	B	2651.97	5.1428	0.0027	0.0027
34	22.056	47894.33		-------	B	5739.92	8.3441	0.0479	0.0479
35	22.308	14749.67	ALDRIN	0.1131	V	2233.72	6.6032	0.0021	0.0021
36	22.609	5802030.00		-------	B	932623.73	6.2212	5.8020	5.8020
37	24.125	6815229.50		-------	B	995652.70	6.8450	6.8152	6.8152
38	24.875	24528.84	Heptachlor Epoxide	0.6381	V	3411.50	7.1901	0.0028	0.0028
39	25.152	79631.16		-------	V	13087.80	6.0844	0.0796	0.0796
0	25.416	0.00	gamma-Chlordane	-------		0.00	-----------	0.0000	0.0000
40	25.650	33833.00		-------	B	3491.49	9.6901	0.0338	0.0338
41	26.060	11966.76		-------	B	1538.66	7.7774	0.0120	~~0.0120~~ 0.0115
0	26.097	0.00	alpha-CHLORDANE	-------		0.00	-----------	0.0000	0.0000
42	26.314	26067.24	ENDOSULFAN I	0.2145	V	4162.10	6.2630	0.0034	0.0034
43	26.689	10027.60		-------	B	1502.65	6.6733	0.0100	0.0100
44	26.945	29626.40	4,4'-DDE	-0.4369	V	3469.64	8.5388	0.0048	0.0048
0	27.550	0.00	DIELDRIN	-------		0.00	-----------	0.0000	0.0000
45	28.493	11435.00		-------	B	1016.40	11.2505	0.0114	0.0114
46	28.757	25543.00		-------	B	3705.83	6.8927	0.0255	0.0255
0	29.107	0.00	ENDRIN	-------		0.00	-----------	0.0000	0.0000
0	29.363	0.00	4,4'-DDD	-------		0.00	-----------	0.0000	0.0000
47	29.597	16554.31		-------	B	2075.27	7.9769	0.0166	0.0166
0	29.830	0.00	ENDOSULFAN II	-------		0.00	-----------	0.0000	0.0000
48	30.115	275531.69		-------	V	40368.29	6.8254	0.2755	0.2755
49	30.805	58890.62	4,4'-DDT	0.4225	B	8780.71	6.7068	0.0164	0.0164
50	31.249	80049.88	ENDRIN ALDEHYDE	-0.0891	V	11512.13	6.9535	0.0072	0.0072
51	31.533	17825.50		-------	V	1703.10	10.4665	0.0178	0.0178
0	31.869	0.00	ENDOSULFAN SULFATE	-------		0.00	-----------	0.0000	0.0000
52	34.645	17475.00		-------	B	1915.37	9.1236	0.0175	0.0175
0	35.123	0.00	MIREX	-------		0.00	-----------	0.0000	0.0000

wrong RT selected for alpha-chl. by computer. New conc still below PQL.

DML 7/22/96

MA DEP QC LEVEL. (MS/DUP)

Pace Incorporated - Non-CLP Organic Extraction Log

PROTOCOL: EPA SW846

ANALYSIS : Pesticides/Polychlorinated Biphenyls

METHOD: CLLE/3520 SEP/3510

DATE QC STARTED: 11.20.95

DATE QC EXPIRES (+14 days): 11.3.95

QC BATCH ID : LJ20PPW1

MATRIX: AQUEOUS (pH>5, <9)

SURROGATE ID: GC092995:P51:A

SPIKE ID : GC062795:P15:B

Clean-up: GC Screen; GPC; Florosil; Acid Wash; Other: ___________

Count	Date Ext.	Ext Init	CLIENT	Sample ID	Init. Vol.	Surr. Vol.	Spike Vol.	Ob ser ver	Final Vol.	Date Conc	Tray Loc.	Init ials	COMMENTS
Blank1	10.20.95	EAL	QC	BLANK	1000 ml	0.5ml	NR	MAH	1.0 ml	10.20.95	PP156 B5	MAH	
LCS1	↓	↓	↓	LCS	↓		1.0ml	MAH	↓	↓	B6	↓	
MS			OLIN	WL1644-5MS									Added 500 ml
MSD	↓	↓	↓	WL1644-5MSD		↓	↓						CFRO H_2O
Blank2													
LCS2													
Blank3													
LCS3													
Blank4													
LCS4													
Blank5													
LCS5													
Blank6													
LCS6													

pm 10.20.95

Count	Date Ext.	Ext Init	CLIENT	Sample ID	Init Vol.	Surr. Vol	Spike Vol.	Ob ser ver	Final Vol.	Date Conc.	Tray Loc.	Init ials	COMMENTS
1	10.20.95	RAL	OLIN	WL1644-1	1000 ml	0.5ml	NR	HAH	1.0 ml	10.20.95	PP156 B7	HAH	
2				-2							B8		
3				-3							B9		
4				-4 MS			1.0ml				B10		Client MS
5				-5 Dup			NR				C1		Client Dup
6				-6							C2		
7				-7							C3		
8				-8							C4		
9				-9							C5		
10				-10							C6		
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

Reviewed By: ____________________

PACE-ME/ABB ANALYTICAL INSTRUMENT RUN LOG H5890-08 GC/ECD

METHOD: 8080 / 608
AMT. INJECTED: 2uL

different instrument than INDA

OPERATOR: LAB REVIEWED: [illegible]
DATE: 092195 DATE: 10/18/95

	DATE	CLIENT	SITE ID	PACE-ME/ABB SAMPLE #	CONC. SURR. INJ. (ug/L)	CHANNEL A: 8SPE B: 8SPF TC FILE	QC	DIL. FACTOR	MATRIX H2O OR SOIL	SURR. RECOV.	ANALYSIS ACCEP. (Y OR RE)	COMMENTS
1	9/21/95			INDA 0.10		51						
2				0.25		52						
3				0.40		53						
4				0.50		54						
5				Hexane		55						
6				INDB 0.05		56						
7				0.10		57						
8				0.25		58						
9				0.40		59						
10				0.50		60						
11				Hexane		61						
12				TL 0.10		62						
13				0.25		63						
14				~~0~~ 1.0		64						
15				2.5		65						
16				5.0		66						
17				Hexane		67						
18				TOX 0.5		68						
19				1.0		69						
20				2.5		70						
21				5.0		71						
22				10		72						
23				Hexane		73						
24				AR1016 2.5		74						
25				AR1221 5.0		75						

REVISED DATA
RESUBMITTED BY LABORATORY
INSERTED BY [illegible] 1/8/96
SIGNATURE DATE

PACE-ME/ABB ANALYTICAL GC PESTICIDE/PCB/HERBICIDE INJECTION LOG INST:H58908

FILE:A:\ORG\GC.08RUNLOG

DMO 1/16/96

CASE:

PAGE: 6

PACE-ME/ABB ANALYTICAL INSTRUMENT RUN LOG H5890-08 GC/ECD

METHOD: 8080 / 608
AMT. INJECTED: 2ul

OPERATOR: UAB REVIEWED: LAK
DATE: 052595 DATE: 10/18/96

	DATE	CLIENT	SITE ID	PACE-ME/ABB SAMPLE #	CONC. SURR. INJ. (ug/L)	CHANNEL A: 90CA B: 90CB TC FILE	QC	DIL. FACTOR	MATRIX H2O OR SOIL	SURR. RECOV.	ANALYSIS ACCEP. (Y OR RE)	COMMENTS
1	952595			ENDA 0.01		1					OK	
2				0.025		2						
3				0.05		3						
4				0.10		4						
5				0.25		5						
6				0.40		6						
7				0.50		7						
8				Surr. chk.		8						
9				ENB 0.05		9					OK UAB	
10				0.10		10						
11				0.25		11						
12				0.40		12						
13	092096			0.50		13						
14				hexane		14						
15				TC 0.10		15					OK NH	
16				0.25		16						
17				1.0 ~~0.40~~	UAB 092896	17						
18				2.5		18						
19				5.0		19						
20				hexane		20						
21				TX 0.5		21					OK	
22				1.0		22						
23				2.5		23						
24				5.0		24						
25				10.0		25						

REVISED DATA - RESUBMITTED BY LABORATORY

INSERTED BY [signature] 10/18/96
SIGNATURE / DATE

PACE-ME/ABB ANALYTICAL GC PESTICIDE\PCB\HERBICIDE INJECTION LOG INST-H58908

FILE A:\ORG\GC\08RUNLOG

CASE:

METHOD: 8080/608
AMT. INJECTED: 2ul

OPERATOR: AB REVIEWED: LA
DATE: 10.11.95 DATE: 10/18/95

REVISED DATA
RESUBMITTED BY LABORATORY
INSERTED BY SIGNATURE

	DATE	CLIENT	SITE ID	PACE-ME/ABB SAMPLE #	CONC. SURR. INJ. (ug/L)	CHANNEL A:80CA B:80CB TC FILE	QC	DIL. FACTOR	MATRIX H2O OR SOIL	SURR. RECOV.	ANALYSIS ACCEP. (Y OR RE)	COMMENTS
1	101195			INDA 0.01		150						
2				0.025		151						
3				0.05		152						
4				0.10		153						
5				0.25		154						
6	101295			0.40		155						
7				0.50		156						
8				0.10		157						
9				EVAL		158					RE	BD needs maintaince
10				Bek-FB		159						
11				Bek4W		160						
12				LCS-FB		161						
13				LCS-W		162						
14				WL1551-3		163						
15				WL1551-4		164						
16			EVAL	~~WL1486-1~~	LG 101295	165					RE	[illegible]
17				EVAL		166					OK	
18				IND A 0.1		167						
19				IND B 0.25		168						
20				hexane		169						
21				hexane		170						
22				INDA 0.01		171						
23				0.025		172						
24				0.05		173						
25				0.10		174						

PACE-ME/ABB ANALYTICAL GC PESTICIDE/PCB/HERBICIDE INJECTION LOG INST:1258908
FILE A:\ORG\GC\SBRLINLOG

CASE:

JUL- 3-96 ...

METHOD: 8080 / 608	
AMT INJECTED:	

OPERATOR: [illegible]	REVIEWED: KAK
DATE: [illegible]	DATE: 10/18/95

	DATE	CLIENT	SITE ID	PACE-ME/ABB SAMPLE #	CONC. SURR. INJ. (ug/L)	CHANNEL A: 30 ft B: 8005 TC FILE	QC	DIL. FACTOR	MATRIX H2O OR SOIL	SURR RECOV.	ANALYSIS ACCEP. (Y OR RE)	COMMENTS
1	10/12/95			INDA 0.25		175						
2				0.40		176						
3				0.50		177						
4	10/13/95		LAB 101295	~~[illegible]~~ CUAL		178						
5				INDA 0.10		179					RE	Endosulfan [illegible]
6				INDB 0.25		180					OK	
7				TC 1.0		181					OK	Low B
8				TOX 2.5		182					OK	Low B
9				AR1[illegible] 2.5		183					OK	Low B
10				AR1221 5.0		184					OK	Low B
11				AR1232 2.5		185					OK	
12				AR1242 2.5		186					OK	
13				AR1248 2.5		187					RE	
14				AR1254 2.5		188					RE	
15				INDA 0.05		189						
16				INA [illegible]		190					[illegible]	
17				EOPIL		191					NG	[illegible]
18				AR1248 [illegible]		192					OK	
19				AR1254 [illegible]		193					OK	
20				[illegible]		194						
21				BLK-FP	[illegible]	195						
22			LAB [illegible]	LCS FP	[illegible]	196						
23			BLK-FP	~~[illegible]~~		197						
24				[illegible]		[illegible]						
25				[illegible]		[illegible]						

REVISED DATA RESUBMITTED BY LABORATORY

INSERTED BY [illegible signature] 1/8/96
SIGNATURE DATE

PACE-ME/ABB ANALYTICAL GC PESTICIDE/PCB/HERBICIDE INJECTION LOG INST-HS8908 CASE:

FILE A:30RG GC[illegible]

PACE-ME/ABB ANALYTICAL INSTRUMENT RUN LOG H5890-08 GC/ECD

METHOD: 8081608	
AMT. INJECTED: 2ul	

OPERATOR: JAB REVIEWED:	
DATE: 101395 DATE:	

DATE	CLIENT	SITE ID	PACE-ME/ABB SAMPLE #	CONC. SURR. INJ. (ug/L)	CHANNEL A: 80CA B: 80CB TC FILE	QC	DIL. FACTOR	MATRIX H2O OR SOIL	SURR. RECOV.	ANALYSIS ACCEP. (Y OR RE)	COMMENTS
101395			1511579-10		200						
			hex		201						
			hex		202						
			hex		203						
			ar1660		204						
101495			ar1221 2.5		205						
			ar1232 5.0		206						
			ar1242 2.5		207						
			ar1248 2.5		208						
			ar1254 2.6		209						maintenance
101695			SWAC		210						BD still
					211						
101796					212						BD still
				cms	213						OK
102095			ar1660 2.5		214						
			ar1221 5.0		215						
			ar1232 2.5		216						
			ar1242 2.5		217						
			ar1248 2.6		218						
			ar1254 2.5		219						
102395			SWAC		220					RE	
102395			INDA 0.1		221					OK	
			INDB 0.25		222					OK	
			TOX 2.5		223						
			SWAC		224						

CE-ME/ABB ANALYTICAL GC PESTICIDE\PCB\HERBICIDE INJECTION LOG INST:H58908

CASE:

E:A:\ORG\GC\08RUNLOG

0001217

PACE-ME/ABB ANALYTICAL INSTRUMENT RUN LOG H5890-08 GC/ECD

METHOD: 8080 / 608	
AMT. INJECTED: 2ul	

OPERATOR: LAB	REVIEWED:
DATE: 102395	DATE:

	DATE	CLIENT	SITE ID	PACE-ME/ABB SAMPLE #	CONC. SURR. INJ. (ug/L)	CHANNEL A: 80CA B: 80CB TC FILE	QC	DIL. FACTOR	MATRIX H2O OR SOIL	SURR. RECOV.	ANALYSIS ACCEP. (Y OR RE)	COMMENTS
1	102395			BLK-W 10/20/95		225					OK	
2				LCS-W 10/20/95		226					OK	
3				1021609-1		227					OK	
4				-2		228						
5				-3		229						
6				-4		230						
7				-5		231						
8				-6		232						
9				-7		233						
0				-8		234						
1	102495			-9		235						
2				-10		236						
3				[illegible]		237						
4				INDA 0.1		238					OK	low B
5				INDB 0.05		239					OK	
6				TOX 2.5		240					OK	low B
7				TC 110		241						
8				1221 5.0		242						low A+B
9				1248		243						
0				SWBL		244						
1				[illegible]		245						
2						246						
3				[illegible] 1.0		247						
4				2.5		248						
5				5.0		249						

ACE-ME/ABB ANALYTICAL GC PESTICIDE\PCB\HERBICIDE INJECTION LOG INST:H58908

LE:A:\ORG\GC\08RUNLOG

CASE:

PAGE: 20

0001218

PACE INCORPORATED
ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

November 17, 1995

Mr. Don Cameron
Olin Chemicals
51 Eames Street
Wilmington, MA 01887

RE: PACE Lab Number: WL1644
Project ID: Wilmington
Project Manager: Mr. Jon B. Boutet
Sample Receipt Date: October 19, 1995

Dear Mr. Cameron:

Please find enclosed the following information:

* Reissued Report of Analysis

Sample WL1644-4 (Client ID-GW-80BR) was originally logged in as a duplicate of WL1644-3 (Client ID-GW-80BR). Sample WL1644-5 (Client ID-GW-80BR) was originally logged in as a matrix spike of WL1644-3. Due to laboratory error sample WL1644-4 was spiked instead of WL1644-5 for pesticide analyses. WL1644-5 was analyzed as the duplicate for the same analyses.

Because the correct sample was spiked for volatile and semivolatile analyses, it is not possible to change the site identifications for the pesticide samples through our LIMS system. We have hard corrected the site Ids for sample WL1644-4 and WL1644-5 for pesticide analyses. Sample WL1644-4 not reads GW-80BR (unfilt/spk) and sample WL1644-5 reads GW-80BR (unfilt/dup) for the pesticide analyses. The hand corrected pages have been signed and dated and are included for insertion into your report. We were not able to correct the diskette without affecting other analyses. We apologize for any inconvenience this error may have caused you.

Should you have any questions or comments concerning this Reissued Report of Analysis, please do not hesitate to contact the project manager listed above. This cover letter is an integral part of the ROA.

P.O. Box 720 - 340 County Road #5
Westbrook, ME 04098
TEL: 207-874-2400
FAX: 207-775-4029

PACE INCORPORATED ENVIRONMENTAL LABORATORIES

REPORT OF LABORATORY ANALYSIS

We appreciate your continued use of our laboratory and look forward to working with you in the future. The following signature indicates technical review and acceptance of the data.

Sincerely,

PACE New England, Inc.

Deborah J. Nadeau 11-17-95

Authorized Signature Date

c Mr. S. Morrow, Olin Chemicals

P.O. Box 720 - 340 County Road #5
Westbrook, ME 04098
TEL: 207-874-2400
FAX: 207-775-4029

SMITH ENVIRONMENTAL CORPORATE QUALITY ASSURANCE DEPARTMENT
DATA VALIDATION INQUIRY

To: Lil Pepin, Pace, Inc.
cc: Bruce Cushing, Project Manager, SMTH
DATA VALIDATION REPORT

Pace Laboratories Case No.: WL-1644
Project Name: Semi-Annual Groundwater Monitoring - Wilmington, MA

June 18, 1996

Dear Ms Pepin:

There are several summary forms and information that was not provided in the data package. The information and/or forms are necessary in order to complete the data validation. The following is a list information and questions that pertain to the pesticides data package for WL-1644:

1. A Case Narrative explaining any information about the samples, Login information, the analytical methods use for analysis, detailed information of any quality control (QC), problems that arose through out the sample analysis, etc.. should be including in the data package. Please provide a Case Narrative.

2. The sequence listings for the initial calibration standards were not provided. Please provide the sequence listings that documents the initial individual mix A (INDA) calibration standards, the initial individual mix B (INDB) calibration standards, an initial evaluation mix (EVAL) run prior to the INDA standards, and the toxaphene initial calibration standards.

3. The raw data for the initial EVAL run prior to the INDA standards was not provided. Please provide the raw data. This EVAL is needed in order to determine the percent breakdown prior to the standards.

4. The Retention Time Windows (RTWs) for each compound were not provided. Please provide the RTWs for each compound so that an assessment of RT can be performed. Also, please provide an explanation of the laboratory's procedure for updating the RTWs?

5. The EPA Method 8080 and the Contract Laboratory Protocol (CLP) Statement of Work (SOW) requires that all compounds to be below an initial calibration percent relative standard deviation (%RSD) of 20 %. Most of the compounds for the INDA standards are out of the method criteria. What is the laboratory's established acceptance criteria for the %RSDs? If the laboratory uses either of the method requirements, please explain why the system was not recalibrated prior to samples analysis?

6. The EPA Method 8080 requires that the Continuing Calibration (CC) standards meet a percent difference (%D) of 15 % for each compound. This information or any other information used for the comparison of the CC standards to the initial calibration standards was not provided. Please provide a summary form or a list of all the %Ds for each CC standard analyzed. If necessary, please provide an explanation of the laboratory's procedure for verifying the CC standards.

7. What are the known and expected amounts for the two surrogates, tetra-m-xylene (TMX) and decachlorobiphenyl (DCB). The information is needed in order to calculate the percent recoveries (%Rs) of the surrogates in each sample. Also, what response factors (RFs) are being used to calculate the raw amounts of TMX and DCB in the samples? What standards are the RFs for TMX and DCB being calculated from?

8. The raw data for the initial 0.25 INDB standard for Channel A (DB1701) was not provided. Please provide the raw data for the INDB standard.

9. The response factors (RFs) on the initial calibration summary form for the initial 0.05 INDA standard analyzed on Channel A (DB1701) are incorrect for all compounds. It appears that the area counts on the quantitation reports were divided by 0.1 instead of 0.05. Please verify the RFs for the 0.05 INDA standard. If the RFs are incorrect, please revise and resubmit the initial calibration data for Channel A (the RFs, the %RSDs, and the averages), the CC standards quantitation, and the quantitation of the samples.

10. The initial calibration summary form for methoxychlor on Channel B (DB608) documents the RFs for the 0.01 and the 0.025 standards as 2.508E+6. However, according to the raw data the RFs should be 1.397E+6 and 2.2345E+6, respectively. Please verify the RFs for the methoxychlor 0.01 and the 0.025 standards. If the RFs are incorrect, please revise and resubmit all affected data (see inquiry item 9 above).

11. The initial calibration summary form for gamma-chlordane and alpha-chlordane on Channel A (DB1701) documents the RFs for the 0.4 as 9.2184E+6 and 9.0246E+6, respectively. However, according to the raw data the RFs should be 9.4607E+6 and 9.2906E+6, respectively. Please verify the RFs for the gamma-chlordane and alpha-chlordane 0.4 standard. If the RFs are incorrect, please revise and resubmit all affected data (see inquiry item 9 above).

Please resubmit all appropriate data, forms, and information for the initial calibration standards, (CC) standards, and the samples to me by June 24, 1996 so that the package review may be completed. If you have any questions regarding this inquiry, please feel free to call me at (610) 825-3800 ext. 265.

Thank you,
Danielle M. Leauby
Quality Assurance Scientist

SMITH ENVIRONMENTAL CORPORATE QUALITY ASSURANCE DEPARTMENT
DATA VALIDATION INQUIRY

To: Lil Pepin, Pace, Inc.
cc: Bruce Cushing, Project Manager, SMTH
DATA VALIDATION REPORT

Pace Laboratories Case No.: WL-1644
Project Name: Semi-Annual Groundwater Monitoring - Wilmington, MA

June 19, 1996

Dear Ms Pepin:

The following questions pertain to the pesticides data package for WL-1644:

1. The concentration units of the initial calibration (ICAL) standards and continuing calibrations (CC) standards were not provided. Please provide the units.

2. The calculated raw amount on the sample quantitation reports can not be reproduced with the information provided. Please provide the proper response factors (RFs) in order to quantitate the sample concentrations. If the correct RFs were provided then please explain how the raw amounts are calculated. Also, provide a example calculation. If the RFs provided are correct, the sample concentrations (raw amounts) are incorrect, and the samples need to be requantitated with proper RFs, then please verify that all positive results that are above the practical quantitation limits (PQLs) are reported.

3. Review of the reporting form for the spiked samples indicates that estimated values (below the PQLs) were reported. Please explain why these values were reported in the spiked sample and not in any of the other samples.

4. Review of the raw data indicates that the retention times (RTs) of the CC standards and the samples shifted from the ICAL standards. Please provide information or an explanation indicating that the RTs and the RT windows were updated in order to identify target compounds properly in the samples.

5. Please provide the laboratory established quality control (QC) limits for percent recoveries for 2,4,5,6-tetrachloro-m-xylene (TMX) and decachlorobiphenyl (DCB).

Please resubmit all appropriate data, forms, and information for the samples to me by June 21, 1996 so that the package review may be completed. If you have any questions regarding this inquiry, please feel free to call me at (610) 825-3800 ext. 265.

Thank you,
Danielle M. Leauby
Quality Assurance Scientist

Katahdin
ANALYTICAL SERVICES

June 20, 1996

Ms. Danielle M. Leauby
Smith Environmental Technologies Corporation
Plymouth Meeting, PA

Dear Ms. Leauby:

This letter is written in response to your June 19, 1996 fax requesting additional information (Inquiry No. PESTQ2) for the pesticides fraction of Pace Laboratories Case No. WL1644 for the Semi-Annual Groundwater Monitoring at the Olin Chemicals Wilmington, MA site.

The following explanations are given to your questions:

1. The concentration units of the initial calibration (ICAL) standards and continuing calibrations (CC) standards are ng/uL.

2. The calibration procedure for method 8080 is taken from the general calibration procedures referenced in SW 846 method 8000. Section 7.4.2.2 of method 8000 states that the following calibration procedure should be employed:

"Tabulate peak height or area responses against the mass injected. The results can be used to prepare a calibration curve for each analyte. Alternatively, for samples that are introduced into the gas chromatograph using a syringe, the ratio of the response to the amount injected (CF), can be calculated for each analyte at each standard concentration. If the percent relative standard deviation (%RSD) of the calibration factors is less than 20% over the working range, linearity through the origin can be assumed and the average calibration factor can be used in place of a calibration curve."

The former Pace laboratory chose to use the calibration curve for the quantitation of all pesticide samples. The %RSD is provided on the initial calibration forms only to provide information about the initial calibration. The calibration curves were prepared using the equation:

$$y = mx + b$$

where,

y = response (height or area)
m= slope of the line between two calibration points
x = amount injected (ng/uL)
b = y-intercept of the line

The above curves are generated automatically through our PE Nelson Turbochrom data system software. The former Pace Laboratory used peak area for the quantitation of single component pesticides and used peak height for the quantitation of multi-component pesticides. The amount injected (in ng as calculated above) is then used in the following equation to calculate a sample specific result:

$$\text{conc (ug/L)} = \frac{(Vt)(x)(D)}{(Vi)}$$

where,

Vt = Volume of extract
x = amount injected (ng/uL) as calculated above
D = Dilution factor
Vi = Volume sample extracted

Using these equations, the reported sample concentrations can be calculated.

RECEIVED
02 DML 7/1/96
JUN 20 1996
DLeauby

3. Estimated values (below the PQL) were reported for the spiked samples because we knew that these compounds were really in the spiked samples (because we spiked them in). Due to matrix interfence, the decreased recovery of these compounds caused the results to be below the laboratory practical quantitation limit. Although below the PQL, results for these compounds were reported for your information.

4. Retention time windows are calculated according to the described in SW846 method 8000. Three injections of all single and multi-response products are injected throughout the course of a 72-hour period. The standard deviation of the three retention times is then calculated. Three times the standard deviation of the retention times for each standard is used to define the retention time window. Retention time windows are calculated each time a new analytical column is installed in the GC or if any major changes have been made to the chromatographic system. The retention time of the analyte from the daily continuing calibration standard (CC) is used to define the center of the daily retention time window for that analyte. These windows are updated daily in the PE Nelson Turbochrom data system. Copies of the initial 72-hour retention time windows are appended to this letter.

5. The laboratory established quality control (QC) limits for percent recoveries for TCMX and DCB are as follows:

Surrogate	Aqueous limits (%)	Soil /Solid limits (%)
TCMX	13 - 121	19 - 157
DCB	34 - 148	20 - 150

The response to Inquiry No. PESTQ1 will be sent to you under separate cover. If you have any questions or require additional information, please contact me or Lil Pepin at (207)874-2400.

Sincerely,

Kelly Perkins

Kelly Perkins
Project Manager
Katahdin Analytical Services

attachments: RT windows for the DB1701 and DB608 columns on inst H58908

RECEIVED
02 DMCH
JUL 26 1996

PACE

~~COAST TO COAST~~ ANALYTICAL SERVICES
RETENTION TIME MONITORING

COLUMN: DB1701
INSTR: H58908
RUN ID: 8AUA
DATE: 8/1/95 TO 8/2/95

COMPOUND	1	2	3	AVG RT	T WINDO	SEC
ALPHA-BHC	15.78	15.74	15.69	15.74	0.14	8
GAMMA-BHC	17.50	17.46	17.41	17.46	0.14	8
HEPTACHLOR	20.58	20.54	20.49	20.54	0.14	8
ALDRIN	18.39	18.36	18.30	18.35	0.14	8
beta-BHC	21.58	21.54	21.49	21.54	0.14	8
delta-BHC	19.56	19.52	19.46	19.51	0.15	9
HEPT EPOXIDE	22.30	22.25	22.20	22.25	0.15	9
ENDOSULFAN I	23.40	23.36	23.30	23.35	0.15	9
4,4,-DDE	24.17	24.13	24.07	24.12	0.15	9
DIELDRIN	24.85	24.80	24.74	27.50	0.17	10
ENDRIN	25.65	25.61	25.54	27.45	0.17	10
4,4,-DDD	27.21	27.17	27.10	27.39	0.17	10
ENDOSULFAN II	27.50	27.45	27.39	27.45	0.17	10
4,4,-DDT	27.86	27.81	27.75	27.81	0.17	10
ENDRIN ALDEHYDE	29.07	29.02	28.95	29.01	0.18	11
METHOXYCHLOR	30.26	30.21	30.14	30.20	0.18	11
ENDO SULFATE	30.13	30.08	30.02	30.08	0.17	10
ENDRIN KETONE	32.10	32.03	31.94	32.02	0.24	14
TCMX	11.70	11.66	11.62	11.66	0.12	7
DCB	36.43	36.33	36.21	36.32	0.33	20

RECEIVED
JUL ~~20~~ 02 1996
DML

PACE

~~COAST TO COAST~~ ANALYTICAL SERVICES
RETENTION TIME MONITORING

COLUMN: DB608
INSTR: H58908
RUN ID: 8AUB
DATE: 8/1/95 TO 8/2/95

COMPOUND	1	2	3	AVG RT	T WINDO	SEC
ALPHA-BHC	16.46	16.43	16.37	16.42	0.14	8
GAMMA-BHC	18.27	18.23	18.18	18.23	0.14	8
beta-BHC	18.59	18.55	18.50	18.55	0.14	8
HEPTACHLOR	19.73	19.69	19.63	19.68	0.15	9
delta-BHC	20.23	20.19	20.13	20.18	0.15	9
ALDRIN	21.19	21.15	21.09	21.14	0.15	9
HEPT EPOXIDE	23.60	23.55	23.49	23.55	0.17	10
ENDOSULFAN I	25.09	25.05	24.98	25.04	0.17	10
4,4,-DDE	25.95	25.90	25.84	25.90	0.17	10
DIELDRIN	26.37	26.32	26.25	26.31	0.18	11
ENDRIN	27.89	27.84	27.77	27.83	0.18	11
4,4,-DDD	28.21	28.16	28.10	28.16	0.17	10
ENDOSULFAN II	28.60	28.55	28.49	28.55	0.17	10
4,4,-DDT	29.43	29.38	29.32	29.38	0.17	10
ENDRIN ALDEHYDE	29.92	29.87	29.80	29.86	0.18	11
ENDO SULFATE	30.44	30.38	30.31	30.38	0.20	12
METHOXYCHLOR	33.52	33.44	33.35	33.44	0.26	15
ENDRIN KETONE	34.48	34.40	34.29	34.39	0.29	17
TCMX	13.12	13.08	13.04	13.08	0.12	7
DCB	43.38	43.25	43.06	43.23	0.48	29

RECEIVED
02
JUL ~~20~~ 1996

Katahdin
ANALYTICAL SERVICES

RECEIVED
JUL - 8 1996
DLeauby

July 5, 1996

Ms. Danielle M. Leauby
Smith Environmental Technologies Corporation
Plymouth Meeting, PA

Dear Ms. Leauby:

This letter is written in response to your June 18, 1996 fax requesting additional information (Inquiry No. PESTQ1) for the pesticides fraction of Pace Laboratories Case No. WL1644 for the Semi-Annaul Groundwater Monitoring at the Olin Chemicals Wilmington, MA site.

For this project, a MADEP QC package was requested by our client. This deliverable is not intended to provide an easily validatable package. It is intended to provide quality control information about the analytical batch (i.e. method blank, laboratory control spike, matrix spike and sample duplicate results). With the inclusion of the raw data and supporting documents, it is possible to validate a data package, although this task is not as easily accomplished as when summary forms are initially requested. At this time, we do not intend to provide additional summary forms and we give the following explanations to your questions:

1. A case narrative was not requested with this data package. A cover letter was included that would indicate any quality control (QC) problems that arose out of the sample analysis. Login information and analytical methods used in the analysis are included on the confirmation, the sample receiving documentation and on the applicable organic extraction log (pages 0000084 and 0000085 of the Pesticide Analysis section of the data report).

2. The sequence listings for the initial calibration standards are appended to this letter.

3. The raw date for the initial EVAL run prior to the INDA standards is appended to this letter

4. The retention time windows were provided in the response to PESTQ2 question 4 on June 20, 1996.

5. EPA method 8080 that all compounds in the initial calibration be below 20% relative standard deviation only if the average calibration factor is to be used for quantitation. The former Pace laboratory chose to use the calibration curve for quantitation. Please refer to the response for PESTQ2 question on June 20, 1996.

6. Method 8080 requires that continuing calibration compounds on the primary column be within 15% D from the initial calibration. If there is a hit for a particular compound, the confirmation column should also be within 15% D for that compound. The INDA continuing calibration standards were analyzed at 0.10 ng/ul. Therefore, the continuing calibration standards should be between 0.085 and 0.115 ng/ul. The INDB continuing calibration standards were analyzed at 0.25 ng/ul. Therefore, the continuing calibration standards should be between 0.2125 and 0.2875 ng/ul. The Toxaphene continuing calibration standards were analyzed at 2.5 ng/ul Therefore, the continuing calibration standards should be between 2.125 and 2.875 ng/ul.

7. The surrogates were spiked in the samples at 0.1 ppb and in the standards at 0.1 ng/ul.. The response factors for the surrogates were taken from the 0.01 ng/ul INDA standard.

8. The raw data for the initial 0.25 INDB standard is appended to this letter

340 County Road No. 5
P.O. Box 720, Westbrook, ME 04098
Tel: (207) 874-2400 Fax (207) 775-4029

210 West Road No. 5, Portsmouth, NH 03801
Tel (603) 431-5777 Fax (603) 436-3356

9. The response factors on the initial calibration summary form were entered incorrectly. A corrected form is appended to this letter. Because the calibration curve- not the average RF calculated on the summary form was used for quantitation, quantitation of the continuing calibrations and the samples was not affected.

10. The data for methoxychlor on the initial calibration summary form was entered incorrectly. Corrected summary forms are appended to this letter. As in the response to inquiry item 9 above, the quantitation of the continuing calibration standards and the samples was not affected because the actual calibration curve was used for sample quantitation.

11. Corrected initial calibration summary forms for gamma-chlordane and alpha-chlordane are appended to this letter. Again, because the calibration curve was used for sample quantitation, no data was affected.

If you have any questions or require additional information, please contact me or Lil Pepin at (207)874-2400.

Sincerely,

Kelly Perkins

Kelly Perkins
Project Manager
Katahdin Analytical Services

attachments: sequence listings, eval, initial calibration summary reports, initial 0.25 INDB standard for DB1701

SMITH ENVIRONMENTAL CORPORATE QUALITY ASSURANCE DEPARTMENT
DATA VALIDATION INQUIRY

To: Lil Pepin, Pace, Inc.
cc: Bruce Cushing, Project Manager, SMTH
DATA VALIDATION REPORT

Pace Laboratories Case No.: WL-1644
Project Name: Semi-Annual Groundwater Monitoring - Wilmington, MA

July 22, 1996

Dear Ms Pepin:

The following situation pertains to the pesticides data package for WL-1644:

1. Review of the raw data for the initial calibration standards (ICALs) indicates that the INDB ICALs (alpha-chlordane and gamma-chlordane only) have different Data File names then the INDA ICALs, the continuing calibration standards (CCALs) for INDA and INDB, and the samples. Were the INDB ICALs analyzed on a different instrument, or does the naming convention of the data files change from day to day on each instrument. Please look into to this situation. If the standards and samples were all analyzed on the same instrument regardless of the Data File names, then please provide a brief explanation. If the incorrect INDB ICALs were provided, and the data must be resubmitted, then please contact me so we can discuss the impacts on the data.

Please look into this situation and let me know today what needs to be done, so that the report may be completed. If you have any questions regarding this inquiry, please feel free to call me at (610) 825-3800 ext. 265.

Thank you,
Danielle M. Leauby
Quality Assurance Scientist

Katahdin
ANALYTICAL SERVICES

July 23, 1996

Ms. Danielle M. Leauby
Smith Environmental Technologies Corporation
Plymouth Meeting, PA

Dear Ms. Leauby:

This letter is written in response to Inquiry No. PESTQ3 for the semi-annual groundwater monitoring at Wilmington, MA (Pace Laboratories Case No.: WL-1644). The former Pace-ME laboratory used the following convention for the naming of pesticide/PCB data files.

#AABNNN

where,

- # = a number designation for the instrument
- AA = a two letter designation for the month the analytical sequence was started
- B = a one letter designation for the analytical sequence
- NNN= a three number designation for the data file

The correct INDB initial calibration was submitted with the pesticide package for WL-1644. The INDB mix contains alpha-chlordane and gamma-chlordane only. The response for these compounds is fairly consistent on the GC/ECD system- therefore, these compounds do not require frequent recalibration.

If you have any questions, or if you require additional information, please call me or Lil Pepin at (207)874-2400.

Sincerely,

Kelly Perkins

Kelly Perkins
Project Manager
Katahdin Analytical Services

RECEIVED
JUL 23 1996

340 County Road No. 5
P.O. Box 720, Westbrook, ME 04098
Tel: (207) 874-2400 Fax: (207) 775-4029

210 West Road No. 5, Portsmouth, NH 03801
Tel: (603) 431-5777 Fax: (603) 436-3356

SMITH

DATA VALIDATION REPORT
SELECTED INORGANICS
OLIN CORPORATION
GROUNDWATER SAMPLES

INTRODUCTION

This data review report addresses the metals data from the July 31, and August 1, 1996 groundwater sampling event at the Olin Corporation's Wilmington, Massachusetts Facility. This review is of work order number A1462 which consisted of 14 filtered groundwater samples and 3 field duplicate samples analyzed for ammonia, bicarbonate, carbonate, chloride and sulfate. All samples in this report were analyzed by IEA Corporation, Monroe, Connecticut, according to the laboratories Standard Operating Procedures (SOPs) which reference the United States Environmental Protection Agency (EPA) Methods for Chemical Analysis of Water and Wastes (MCAWW) or Standard Methods for the Examination of Water and Wastewater, 16th Edition, 1985 (SM), American Public Health Association (APHA). The following individual methods were referenced:

Analytes	Methods
ammonia	350.3
bicarbonate and carbonate	2320B
chloride	325.2
sulfate	375.4

Because the analyses were not performed according to the EPA Contract Laboratory Program (CLP) methods, the findings in this report are based upon a review of sample data and of quality control (QC) specified by the individual analytical SOPs and methods provided by the laboratory. The quality assurance review was prepared according to EPA Region I Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analysis (data validation guidelines), June 1988, where applicable.

The support documentation in Appendix B of this report summarizes the specifics of this review. Appendix B also provides the sample results as reported by the laboratory. The data summary table lists all compounds that were analyzed. Analytical problems are outlined in the following Findings/Qualifiers Section. Issues that arose which did not warrant qualification are detailed in the Notes Section.

SMITH

FINDINGS/QUALIFIERS

These data validation report addresses the 14 filtered groundwater samples and 3 field duplicate samples analyzed for ammonia, bicarbonate, carbonate, chloride and sulfate for work order number A1462 analyzed by IEA Corporation. The groundwater data were evaluated for the following parameters:

- * data completeness
- * holding times
- * data calibration verification
- * laboratory blank analysis
- \+ field blank analysis
- matrix spike recoveries
- * laboratory duplicates
- field duplicates
- \+ laboratory control sample results
- * detection limit results
- \+ sample results

* All criteria were met for this parameter.
\+ All criteria were met for this parameter; however, this parameter is discussed in the Notes Section of this report.

The data summary table provided at the end of this report summarizes the validation recommendations which were based on the following information:

1. All chloride results are estimated due to low matrix spike percent recoveries (%Rs).

2. The positive results for ammonia for the field duplicate pair Blind #2 (1462010) and GW64D (1462007) are estimated due to poor field duplicate precision. Details are provided on the Inorganic Field Duplicate Precision Worksheet included in Appendix B of this report.

SMITH

NOTES

The following items were noted during the validation review that did not impact results or necessitate further qualification of data:

1. The method qualifiers were not reported on the revised Wet Chem Analysis Data Sheets (Form 1s) for samples GW64S (1462006) and Butters Row #2 (1462008). No data are qualified. The reviewer-corrected Form 1s are included in Appendix B.

2. The %R for chloride was incorrectly reported on the Laboratory Control Sample Form (Form 6). No data are qualified. The reviewer-corrected Form 6 is included in Appendix B.

3. The analytical method referenced by the laboratory for ammonia in the case narrative is incorrect. The correct analytical method as verified by the laboratory is annotated on the case narrative is included in Appendix B. No data are qualified.

4. There were no field blanks associated with this sampling event.

SUMMARY

This review has identified a matrix spike %R and field duplicate results as areas of concern. The reported data are usable as qualified on the data summary table. For specifics relating to this review, see the attached documentation in Appendix B.

SMITH

QUALIFIER CODES

J - The associated value is an estimated quantity.

DATA SUMMARY - SELECTED INORGANICS

Site Name	Olin, Wilmington	Laboratory	IEA
Project Number	00-7074-0102	Case/Order #	A1462
Sampling Date(s)	7/31/96 and 8/1/96	Field Duplicates	A-05/A-09,A-07/A-10,A-16/A-17

[ ] Solid mg/kg

[x] Liquid mg/l

DL	Sample location or description	P	F	Chestnut #1A	Chestnut #1	GW63S	GW63D	Butters Row #1	GW64S	GW64D	Butters Row #2	Blind #1	Blind #2
	Sample number			1462001	1462002	1462003	1462004	1462005	1462006	1462007	1462008	1462009	1462010
	Sampling date			7/31/96	7/31/96	7/31/96	7/31/96	7/31/96	7/31/96	7/31/96	7/31/96	7/31/96	7/31/96
DL	unfilt. / filt.	P	F	filt.	filt.	filt.	filt.	filt.	filt.	filt.	filt.	filt.	filt.
0.04	Ammonia			0.410	1.31	0.260	0.087	6.43	0.125	8.39 J	0.498	5.35	2.30 J
2.0	Bicarbonate			24.8	50.2	32.0	79.4	44.4	21.8	74.0	37.6	46.2	76.0
1.0	Carbonate												
3.0	Chloride			78.6 J	113 J	121 J	104 J	109 J	80.7 J	126 J	77.3 J	109 J	129 J
10.0	Sulfate			32.5	58.4	12.3	54.7	114		209		105	224

DL	Sample location or description	P	F	Town Park #1	GW73S	GW73D	GW62S	GW62M	GW62D	Blind #3			
	Sample number			1462011	1462012	1462013	1462014	1462015	1462016	1462017			
	Sampling date			8/1/96	8/1/96	8/1/96	8/1/96	8/1/96	8/1/96	8/1/96			
DL	% SOLIDs	P	F	filt.	filt.	filt.	filt.	filt.	filt.	filt.			
0.04	Ammonia			0.234	0.110	0.078	1.32	1.23	1.91	1.92			
2.0	Bicarbonate			30.0	19.0	74.0	78.8	55.6	62.0	60.0			
1.0	Carbonate												
3.0	Chloride			100 J	19.1 J	86.1 J	57.4 J	51.6 J	60.0 J	60.0 J			
10.0	Sulfate			32.5			44.0	49.0	54.0	56.8			

P = ICP Analysis F=Furnace Analysis DL=Detection Limit

QA Scientist E. Buyer Rivers Date 11/20/96

SMITH

APPENDIX B

Inorganic Data Validation Summary

Project Name: Olin
Project No.: 00-7074-0102
Project Manager: Bruce Cushing
Laboratory: IEA

Case No./SDG: A1462
Sampling Date(s): 7/31/96 and 8/1/96
Reviewed By: E. Bryan Rivers
Completion Date:

Compound List: ☐ TAL ☐ Appendix IX ☑ Other Selected inorganics
Method: ☐ CLP SOW 3/90 ☐ SW-846 ☑ Other Standard Methods
Matrix: ☐ soil/solid (mg/Kg) ☒ aqueous (ug/L) field blank

The following table indicates the data validation criteria examined, problems identified, and QA action.

Data Validation Criteria:	accept	FYI	qualify	comments
Holding Times	✓			
Calibration Linearity - Furnace, Hg, and CN	✓			
Calibration Verification	✓			
CRDL Standard				NA
Calibration Blanks	✓			
Preparation Blanks	✓			
Field Blank				NA
ICP Interference Check Sample				NA
Laboratory Control Sample		✓		Transcription errors
Matrix Spike Results			✓	chloride results (all)
Laboratory Duplicate Results	✓	✓		~~Transcription errors~~ EBR
ICP Serial Dilution				NA
Post Digestion Analytical Spike				NA
Method of Standard Addition				NA
Field Duplicate Results			✓	Ammonia for field Duplicates.
Sample Result Verification		✓		Transcription errors
Other:				

General Comments:

NA - Not applicable
NR - Not reviewed

QA Scientist E. Bryan Rivers Date 11/12/96

1
WET CHEM ANALYSIS DATA SHEET

SAMPLE NO.

CHESTNUT #1A

Name: IEA Contract: ____

Lab Code: IEA Case No.: 1462A SAS No.: ____ SDG No.: A1462

Matrix: (soil/water) WATER Lab Sample ID: 1462001

% Solids: 0.0 Date Received: 08/01/96

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

Analyte	Concentration	C	Q	M
AMMONIA	0.410			AS
BICARB	24.8			
CARBONATE	1.00	U		
CHLORIDE	78.6		N	AS
SULFATE	32.5			G
				~~G~~ mcc

Comments:

FORM I - WC

SAMPLE NO. 302

1

WET CHEM ANALYSIS DATA SHEET

CHESTNUT #1

Name: IEA | Contract: ____

Lab Code: IEA | Case No.: 1462A | SAS No.: ____ | SDG No.: A1462

Matrix: (soil/water) WATER | Lab Sample ID: 1462002

% Solids: 0.0 | Date Received: 08/01/96

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

Analyte	Concentration	C	Q	M
AMMONIA	1.31			AS
BICARB	50.2			
CARBONATE	1.00	U		
CHLORIDE	113.		N	AS
SULFATE	58.4			G

Comments:

FORM I - WC

1

WET CHEM ANALYSIS DATA SHEET

SAMPLE NO. 303

GW63S

Lab Name: IEA Contract: ________

Lab Code: IEA Case No.: 1462A SAS No.: ______ SDG No.: A1462

Matrix: (soil/water) WATER Lab Sample ID: 1462003

% Solids: 0.0 Date Received: 08/01/96

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

Analyte	Concentration	C	Q	M
AMMONIA	0.260			AS
BICARB	32.0			
CARBONATE	1.00	U		
CHLORIDE	121.		N	AS
SULFATE	12.3			G

Comments:

FORM I - WC

1

WET CHEM ANALYSIS DATA SHEET

SAMPLE NO.

SW63D

Name: IEA   Contract: ____________

Lab Code: IEA   Case No.: 1462A   SAS No. : ______   SDG No.: A1462

Matrix: (soil/water) WATER   Lab Sample ID: 1462004

% Solids: 0.0   Date Received: 08/01/96

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

Analyte	Concentration	C	Q	M
AMMONIA	0.087			AS
BICARB	79.4			
CARBONATE	1.00	U		
CHLORIDE	104.		N	AS
SULFATE	54.7			G

Comments:

1

WET CHEM ANALYSIS DATA SHEET

BUTLERS RDA #1

Name: IEA Contract: ____________

Lab Code: IEA Case No.: 14620 SAS No. : ______ SDG No.: A1461

Matrix: (soil/water) WATER Lab Sample ID: 1462005

% Solids: 0.0 Date Received: 03/01/96

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

Analyte	Concentration	C	Q	M
AMMONIA	6.43			AS
BICARB	44.4			
CARBONATE	1.00	U		
CHLORIDE	109.		N	AS
SULFATE	114.			G

Comments:

FORM I - WC

EPA SAMPLE NO.

BUTLERS POND #1

WET CHEM ANALYSIS DATA SHEET

Name: IEA Contract:

Lab Code: IEA Case No.: 1462A SAS No. : SDG No.: A1462

Matrix: (soil/water) WATER Lab Sample ID: 1462005D

% Solids: Date Received: 08/01/96

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

Analyte	Concentration	C	Q	M
AMMONIA	5.74			
BICARB	44.2			
CARBONATE	1.00	U		
CHLORIDE	109.			
SULFATE	114.			

Comments:

FORM I - WC

1

WET CHEM ANALYSIS DATA SHEET

SAMPLE NO.

CUT ERS ROW #1

b Name: IEA Contract: ______

Lab Code: IEA Case No.: 1462A SAS No. : ______ SDG No.: A1462

Matrix: (soil/water) WATER Lab Sample ID: 14620058

% Solids: ______ Date Received: 08/01/96

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

Analyte	Concentration	C	Q	M
AMMONIA	3.24			
CHLORIDE	121.			
SULFATE	168.			

Comments: ______

FORM I - WC

1

WET CHEM ANALYSIS DATA SHEET

SAMPLE NO.

GW648

Lab Name: ISA Contract: ______

Lab Code: ISA Case No.: 1462A SAS No.: ______ SDG No.: A1462

Matrix: (soil/water) WATER Lab Sample ID: 1462006

% Solids: ______ Date Received: 08/01/96

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

Analyte	Concentration	C	Q	M
AMMONIA	0.125			AS
BICARB	21.8			
CARBONATE	1.00	U		
CHLORIDE	30.7		N	AS
SULFATE	10.000	U		C

EBR 10/2/96

EBR 10/2/96

Comments:

FORM ? - WC

REVISED DATA
RESUBMITTED BY LABORATORY
INSERTED BY [signature] 10/2/96
SIGNATURE DATE

1
WET CHEM ANALYSIS DATA SHEET

SAMPLE NO. 309

GW640

Lab Name: IEA Contract: ____________

Lab Code: IEA Case No.: 1462A SAS No.: ______ SDG No.: 41/47

Matrix: (soil/water) WATER Lab Sample ID: 1462007

% Solids: Date Received: 09/01/96

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

Analyte	Concentration	C	Q	M
AMMONIA	8.39			AJ
BICARB	74.0			
CARBONATE	1.00	U		
CHLORIDE	126.		N	AJ
SULFATE	209.			G

Comments: ____

FORM I - WC

1

WET CHEM ANALYSIS DATA SHEET

SAMPLE NO.

BUTTERS ROW #2

Lab Name: IEA Contract: ________

Lab Code: IEA Case No.: 1462A SAS No. : ______ SDG No.: A1462

Matrix: (soil/water) WATER Lab Sample ID: 1462008

% Solids: ______ Date Received: 08/01/96

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

Analyte	Concentration	C	Q	M
AMMONIA	0.498			AS
BICARB	37.6			
CARBONATE	1.00	U		
CHLORIDE	77.3		N	AS
SULFATE	10.000	U		G

EBR 10/2/96

EBR 10/2/96

Comments:

FORM I - WC

REVISED ... RESUBMITTED BY ... FORM ...

INSERTED BY T. Bryan Rivers 10/2/96
SIGNATURE DATE

1

WET CHEM ANALYSIS DATA SHEET

SAMPLE NO.

BLIND #1

Name: IEA Contract:

Lab Code: IEA Case No.: 1462A SAS No. : SDG No.: A1461

Matrix: (soil/water) WATER Lab Sample ID: 1462009

% Solids: Date Received: 08/01/96

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

Analyte	Concentration	C	Q	M
AMMONIA	5.35			AI
BICARB	46.2			
CARBONATE	1.00	U		
CHLORIDE	109.		N	AJ
SULFATE	105.			G

Comments:

FORM I - WC

1

WET CHEM ANALYSIS DATA SHEET

SAMPLE NO. 312

BLIND #2

b Name: IEA Contract:

Lab Code: IEA Case No.: 1462A SAS No. : SDG No.: 41462

Matrix: (soil/water) WATER Lab Sample ID: 1462010

% Solids: 0.0 Date Received: 08/01/96

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

Analyte	Concentration	C	Q	M
AMMONIA	2.30			AS
BICARB	76.0			
CARBONATE	1.00	U		
CHLORIDE	129.		N	AS
SULFATE	224.			G

Comments:

FORM I - WC

1

WET CHEM ANALYSIS DATA SHEET

SAMPLE NO. 313

TOWN PARK #1

Lab Name: IEA   Contract: ________

Lab Code: IEA   Case No.: 1462A   SAS No. : ______   SDG No : A1462

Matrix: (soil/water) WATER   Lab Sample ID: 1462011

% Solids: 0.0   Date Received: 08/07/96

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

Analyte	Concentration	C	Q	M
AMMONIA	0.234			AS
BICARB	30.0			
CARBONATE	1.00	U		
CHLORIDE	100.		N	AS
SULFATE	32.5			G

Comments:

FORM I - WC

WET CHEM ANALYSIS DATA SHEET

GW735

Lab Name: IEA Contract:

Lab Code: IEA Case No.: 1462A SAS No. : SDG No.: A1462

Matrix: (soil/water) WATER Lab Sample ID: 1462012

% Solids: 0.6 Date Received: 08/02/96

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

Analyte	Concentration	C	Q	M
AMMONIA	0.110			AS
BICARB	19.0			
CARBONATE	1.00	U		
CHLORIDE	19.1		N	AS
SULFATE	10.000	U		G

Comments:

FORM I - WC

1

WET CHEM ANALYSIS DATA SHEET

SAMPLE NO 315

GW73D

Lab Name: IEA Contract: ______

Lab Code: IEA Case No.: 1462A SAS No. : ______ SDG No.: A1462

Matrix: (soil/water) WATER Lab Sample ID: 1462013

% Solids: 0.0 Date Received: 08/02/96

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

Analyte	Concentration	C	Q	M
AMMONIA	0.078			AS
BICARB	74.0			
CARBONATE	1.00	U		
CHLORIDE	86.1		N	AS
SULFATE	10.000	U		G

Comments: ______

FORM I - WC

1
WET CHEM ANALYSIS DATA SHEET

GW628

Lab Name: IEA Contract: ________

Lab Code: IEA Case No.: 1462A SAS No. : ______ SDG No.: A1462

Matrix: (soil/water) WATER Lab Sample ID: 1462014

% Solids: 0.0 Date Received: 08/02/96

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

Analyte	Concentration	C	Q	M
AMMONIA	1.32			AS
BICARB	78.8			
CARBONATE	1.00	U		
CHLORIDE	57.4		N	AS
SULFATE	44.0			G

Comments:

FORM 1 - WC

WET CHEM ANALYSIS DATA SHEET

SAMPLE NO. 317

GW62M

Lab Name: IEA Contract: ______

Lab Code: IEA Case No.: 1462A SAS No. : ______ SDG No.: A1462

Matrix: (soil/water) WATER Lab Sample ID: 1462015

% Solids: 0.0 Date Received: 09/02/96

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

Analyte	Concentration	C	Q	M
AMMONIA	1.23			AS
BICARB	55.6			
CARBONATE	1.00	U		
CHLORIDE	51.6		N	AS
SULFATE	49.0			G

Comments: ______

FORM I - WC

WET CHEM ANALYSIS DATA SHEET

SW622

Lab Name: IEA Contract: ____________

Lab Code: IEA Case No.: 1462A SAS No.: ________ SDG No.: A1462

Matrix: (soil/water) WATER Lab Sample ID: 146216

% Solids: 0.0 Date Received: 08/02/96

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

Analyte	Concentration	C	Q	M
AMMONIA	1.91			AS
BICARB	62.0			
CARBONATE	1.00	U		
CHLORIDE	60.0		N	AS
SULFATE	54.0			G

Comments: ____________

FORM I - WC

3.

1
WET CHEM ANALYSIS DATA SHEET

SAMPLE NO.

BLIND #3

Name: IEA   Contract: ______

Lab Code: IEA   Case No.: 1462A   SAS No. : ______   SDG No.: A1462

Matrix: (soil/water) WATER   Lab Sample ID: 1462017

% Solids: 0.0   Date Received: 08/02/96

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

Analyte	Concentration	C	Q	M
AMMONIA	1.92			AS
BICARB	60.0			
CARBONATE	1.00	U		
CHLORIDE	60.0		N	AS
SULFATE	56.8			G

Comments:

FORM I - WC

4A
SPIKE SAMPLE RECOVERY

SAMPLE NO.

1462A-05

5 Name: IEA   Contract: ________

Lab Code: IEA   Case No.: 1462A   SAS No. : ______   SDG No.: A1462

Matrix: water

Solids for Sample: ____________

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

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Added (SA)	%R	Q	M
AMMONIA	75-125								
BICARB	75-125								
CARBONATE	75-125								
CHLORIDE	75-125	121.00		108.58		30.0	41.4	N	AS
SULFATE	75-125								

Comments: ____________

FORM IV (Part 1) - WC

Cl- all results are estimated and may be biased low

REVISED ... RESUBMITTED

SUBMITTED BY E. Bryan Rivers 10/31/96
SIGNATURE DATE

4A
SPIKE SAMPLE RECOVERY

SAMPLE NO.

Butters Raw #1

Name: IEA Contract: ______

Lab Code: IEA Case No.: 1462A SAS No. : ______ SDG No.: A1462

Matrix: Aqueous

Solids for Sample: ______

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

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Added (SA)	%R	Q	M
AMMONIA	75-125								
BICARB	75-125								
CARBONATE	75-125								
CHLORIDE	75-125	121.00		108.58		30.0	41.4	N	AJ
SULFATE	75-125								

Comments: Revised Chloride spike results 10/7/96

FORM IV (Part 1) - WC

Cl-all results are estimated and may be biased low.

REVISED DATA
RESUBMITTED BY LABORATORY
INSERTED BY E. Bejar Rivas 10/31/96
SIGNATURE DATE

Inorganic Field Duplicate Precision Worksheet

Project Name: Olin
Project Number: 00-7074-0102

Case Number: A1462

Sample location	Butters Row #1	Blind #1
Sample ID number	961462005	961462009
Matrix	Aqueous	Aqueous
Units	ug/l	ug/l
unfilt. / filt.	filt.	filt.

Compound	Sample Concentration	Field Duplicate Concentration	RPD	Q
Ammonia	6.43	5.35	18.3	
Bicarbonate	44.4	46.2	4.0	
Carbonate				
Chloride	109	109	0.0	
Sulfate	114	105	8.2	

* Indicates control limit out of criteria.

SMITH has established a criteria of 20 percent RPD for field duplicate analysis.

1462FD1I.XLS

QA Scientist E. Bryan Reid Date 11/22/96

Inorganic Field Duplicate Precision Worksheet

Project Name: Olin
Project Number: 00-7074-0102
Case Number: A1462

Sample location	GW62D	Blind #3
Sample ID number	961462016	961462017
Matrix	Aqueous	Aqueous
Units	ug/l	ug/l
unfilt. / filt.	filt.	filt.

Compound	Sample Concentration	Field Duplicate Concentration	RPD	Q
Ammonia	1.91	1.92	0.5	
Bicarbonate	62.0	60.0	3.3	
Carbonate				
Chloride	60.0	60.0	0.0	
Sulfate	54.0	56.8	5.1	

* Indicates control limit out of criteria.

SMITH has established a criteria of 20 percent RPD for field duplicate analysis.

1462FD2I.XLS

QA Scientist E. Bylun Rivas Date 6/20/96

Inorganic Field Duplicate Precision Worksheet

Project Name: Olin
Project Number: 00-7074-0102

Case Number: A1462

Sample location	GW64D	Blind #2
Sample ID number	961462007	961462010
Matrix	Aqueous	Aqueous
Units	ug/l	ug/l
unfilt. / filt.	filt.	filt.

Compound	Sample Concentration	Field Duplicate Concentration	RPD	Q
Ammonia	8.39	2.3	113.9	*
Bicarbonate	74	76	2.7	
Carbonate				
Chloride	126	129	2.4	
Sulfate	209	224	6.9	

* Indicates control limit out of criteria.

SMITH has established a criteria of 20 percent RPD for field duplicate analysis.

1462FDI.XLS

QA Scientist E. Bybee Rived Date 11/20/96

6

LABORATORY CONTROL SAMPLE

Lab Name: IEA Contract: ______

Lab Code: IEA Case No.: 1462A SAS No. : ______ SDG No.: A1462

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

Analyte	True	LCS Found	%R	LCS Source
AMMONIA	~~2.00~~ 2.48	2.24	~~112~~ 90.3	APG
BICARB	26.5	27.8	105	
CARBONATE				EBR
CHLORIDE	73.9	76.6	~~90.5~~ 103.7	
SULFATE	20.1	19.8	98.5	

EBR 10/3/96

FORM VI - WC

E. Bryan Rivert 10/3/96

IEA
An Aquarion Company
149 Rangeway Road
N. Billerica, Massachusetts 01862
508 / 667-1400
Fax 508 / 667-7871

"Month Sampling" Pg 1 of 1

CHAIN OF CUSTODY RECORD

REGULATORY CLASSIFICATION - PLEASE SPECIFY

☐ NPDES ☐ DRINKING WATER ☐ RCRA ☐ MCP ☐ OTHER

REQUIR...

CUST. P.O. #

IEA QUOTE #

TURN AROUND
☐ 15 BUSINESS DAY
☐ 10 BUSINESS DAY
☐ RUSH
☐ OTHER

COMPANY	CONTACT PERSON	PROJECT I.D.	PHONE #	FAX #
Olin Corp				

ADDRESS: 51 EAMES St

CITY	STATE	ZIP
Wilmington	MA	

DATE	TIME	SAMPLE I.D.	MATRIX	CONTAINER TYPE	# OF CONTAINERS	PRESERVATIVES	UNFIXED Filtered	H2SO4 FilterED	HNO3 FiltereD	HNO3 UNFiltered					(COMMENTS)
-31-96	10:00	ChestNUT #1A	GW	PP	4		1	1	1	1			01		
-31-96	10:15	ChestNUT #1	GW	PP	4		1	1	1	1			02		
-31-96	10:56	GW 63 S	GW	PP	4		1	1	1	1			03		
-31-96	11:20	GW 63 D	GW	PP	4		1	1	1	1			04		
-31-96	12:10	Butters Row #1	GW	PP	12		3	3	3	3			05		MS/MSD
-31-96	12:55	GW 64 S	GW	PP	4		1	1	1	1			06		
-31-96	13:55	GW 64 D	GW	PP	4		1	1	1	1			07		
-31-96	14:25	Butters Row #2	GW	PP	4		1	1	1	1			08		
-31-96	—	BLIND #1	GW	PP	4		1	1	1	1			09		
-31-96	—	BLIND #2	GW	PP	4		1	1	1	1			10		

SAMPLED BY: Timothy Ebner / Smith Environmental (PRINT NAME) Tim Ebner (SIGNATURE)

RELINQUISHED BY (SIGNATURE)	DATE / TIME	RECEIVED BY	DATE / TIME
Tim Ebner	7/31/96 18:50	Darlyn Colen	8/1/96 10:00

RELINQUISHED BY (SIGNATURE)	DATE / TIME	RECEIVED FOR LAB BY	DATE / TIME

IEA USE ONLY

Passed Rad Screen 7096-1462A
DC 8/1/96

FIELD REMARKS
SHIPPED VIA FEDERAL Express OVERNIGHT
CUSTODY SEALED IN ONE COOLER.

ω

Day #2 "Town 1 15 Monthly" Pg 1 of 1

IEA
An Aquarion Company
149 Rangeway Road
N. Billerica, Massachusetts 01862
508 / 667-1400
Fax 508 / 667-7871

CHAIN OF CUSTODY RECORD

REQUIRE

CUST. P.O. #

IEA QUOTE #

REGULATORY CLASSIFICATION - PLEASE SPECIFY

☐ NPDES ☐ DRINKING WATER ☐ RCRA ☐ MCP ☐ OTHER

TURN AROUND
☐ 15 BUSINESS DAY
☐ 10 BUSINESS DAY
☐ RUSH
☐ OTHER

COMPANY	CONTACT PERSON	PROJECT I.D.	PHONE #	FAX #
OLin Corp				

ADDRESS: 51 Eames St.

CITY	STATE	ZIP
Wilmington	MA	

DATE	TIME	SAMPLE I.D.	MATRIX	CONTAINER TYPE	# OF CONTAINERS	PRESERVATIVES	UNFIXED - Filtered	H_2SO_4 - Filtered	HNO_3 - Filtered	HNO_3 - UNFiltered				(COMMENTS)
8/1/96	10:10	TOWN PARK #1	GW	PP	4		1	1	1	1			11	
8/1/96	10:45	GW 73 S	GW	PP	4		1	1	1	1			12	
8/1/96	11:35	GW 73 D	GW	PP	4		1	1	1	1			13	Passed Rad Screen DC 8/6/96
8/1/96	12:33	GW 62 S	GW	PP	4		1	1	1	1			14	
8/1/96	13:00	GW 62 M	GW	PP	4		1	1	1	1			15	
8/1/96	13:15	GW 62 D	GW	PP	4		1	1	1	1			16	
8/1/96	—	BLIND #3	GW	PP	4		1	1	1	1			17	

SAMPLED BY: Timothy Ebner / Smith Environmental (PRINT NAME) Timothy Ebner (SIGNATURE)

RELINQUISHED BY (SIGNATURE)	DATE / TIME	RECEIVED BY	DATE / TIME
Timothy Ebner	8/1/96 18:15		
RELINQUISHED BY (SIGNATURE)	DATE / TIME	RECEIVED FOR LAB BY	DATE / TIME

IEA USE ONLY

7096.1462A

FIELD REMARKS

SHIPPED VIA FEDERAL Express overnight. Custody Sealed in one Cooler

IEA
An Aquarion Company

200 Monroe Turnpike
Monroe, Connecticut 06468

Phone 203-261-4458
Fax 203-268-5346

1

7096-1462A
OLIN CORPORATION

Case Narrative

Classical Chemistry - Listed below are the wet chemistry analyte methods and references for all samples analyzed in this SDG. Chloride failed the control limits for spike recovery analysis for sample Butler's Row # 1. This appears to be due to a sample matrix interference. No other analytical problems were encountered and all holding times were met.

Analyte	Method	Reference
Ammonia	~~310.1~~ 350.3	1
Bicarbonate	2320B	2
Carbonate	2320B	2
Chloride	325.2	1
Sulfate	375.4	1

EBK 10/2/96

References:

1. Methods for Chemical Analysis of Water and Wastes, USEPA 600, 1983.
2. Test Methods for the Evaluation of Solid Waste, SW846, 3rd edition, 1986.

Metals - ICAP metals were determined using a JA61 simultaneous ICAP and a JA61E trace ICAP using guidance provided in SW846 according to the following Methods: ICAP-3010/6010.

No problems occurred during analysis. All appropriate protocols were employed. All data appears to be consistent.

I certify that this data package is in compliance with the terms of this contract, both technically and for completeness, for other than the conditions detailed above. Release of this hardcopy data package has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

Jeffrey C. Curran
Laboratory Manager

Date Aug. 23, 1996

IEA
An Aquarion Company

CORRECTIVE ACTION FORM

A. Originator Information **Client Inquiry** X

Client: OLIN / WILMINGTON MA
Job/Case: 7096-1462A
Date/time: 9/30/96 9:30
Sample Number(s): 008
Client/Lab Contact: D. Plunkett
Date/Time Response Due: 10/1/96 11:00am

Detailed Description of Potential Problem: ① in some places in the report the PQL for sulfate is 5 and in others its 10? which is correct ② ~~[illegible]~~ sulfate for sample 008 is reported is that correct? (PQL 5-10)

B. Quality Assurance Information Corrective Action ID# 1957

Recommended Corrective Action:

* DM Reissue Form I'S for all 008, letter to state correct Sulfate results

Groups Involved: __Sample Control X Wet Chemistry __ Metals __Gas Chromatography __ Mass Spectrometry __ Report Generation 10/2 __Client Service __ Sample Preparation

C. Final Resolution

Describe What Happened and Long Term Corrective Action Taken: All results for sulfate should have PQLs of <10. Sample 008 should be <10. See attached revised form I'S [illegible] 10/1/96

Sent reg mail

Supervisor Signature C. Criscuolo Date 10/02/96 Date/Time Client Notified: ______

D. Quality Assurance Final Approval (QA Manager use only)

Corrective Action Approved: ______
Date Finalized: ______
Was a problem identified? Yes / No

RECEIVED
OCT 2 1996
E. [illegible]

IEA, Inc. Doc.# QAF00200.CT

IEA
An Aquarion Company

200 Monroe Turnpike
Monroe, Connecticut 06468

Phone 203·261·4458
Fax 203·268·5346

October 2, 1996

Mr. Bruce Cushing
OLIN CORPORATION
c/o Smith Environmental Corp.
One Plymouth Meeting
Plymouth Meeting, PA 19462

Dear Mr. Cushing:

In reference to corrective action report #4957, please find enclosed the revised analytical results for IEA report #7096-1462A.

The following tables have been revised: TABLE CC-1.0; Form I's.

The changes are based on the following issues: revised sulfate results.

Very truly yours,

Michele Sciongay

Data Management

CAC/ab

SMITH

DATA VALIDATION REPORT
SELECTED METALS
OLIN CORPORATION
GROUNDWATER SAMPLES

INTRODUCTION

This data review report addresses the metals data from the July 31, and August 1, 1996 groundwater sampling event at the Olin Corporation's Wilmington, Massachusetts Facility. This review is of work order number A1462 which consisted of 14 filtered groundwater samples and 3 field duplicate samples analyzed for calcium, chromium, magnesium and sodium, and 14 unfiltered groundwater samples and 3 unfiltered field duplicate samples analyzed for chromium. All samples in this report were analyzed by IEA Corporation Monroe, Connecticut, according to the United States Environmental Protection Agency (EPA) Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (SW-846) for Methods 3010 and 6010.

Data deliverables were reported following the United States Environmental Protection Agency (EPA) Contract Laboratory Program (CLP) Statement of Work (SOW) for Inorganic Analysis. The quality assurance review was prepared according to EPA Region I Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analysis (data validation guidelines), June 1988, where applicable. The findings in this report are based upon a general review of the raw data (where applicable), analytical holding times, calibration results, standards performed at the CLP contract required detection limits (CRDL), blank analysis results, interference check sample results, laboratory control sample results, laboratory and field duplicate results, matrix spike results, serial dilutions, detection limits, and a general review of the CLP forms provided.

The support documentation in Appendix A of this report summarizes the specifics of this review. Appendix A also provides the sample results as reported by the laboratory. The data summary table lists all compounds that were analyzed. Analytical problems are outlined in the following Findings/Qualifiers Section. Issues that arose which did not warrant qualification are detailed in the Notes Section.

FINDINGS/QUALIFIERS

This data validation report addresses the 14 filtered groundwater samples and 3 field duplicate samples analyzed for calcium, chromium, magnesium and sodium, and 14 unfiltered groundwater samples and 3 unfiltered field duplicate samples analyzed for chromium analysis of IEA Corporation work order number A1462. The groundwater data were evaluated for the following parameters:

- * data completeness
- * holding times
- * data calibration verification
- \+ CRDL standard
- * laboratory blank analysis
- * field blank analysis
- \+ interference check sample results
- * matrix spike recoveries
- * laboratory duplicates
- * field duplicates
- * laboratory control sample results
- \+ serial dilution results
- * detection limit results
- * sample results

* All criteria were met for this parameter.

\+ All criteria were met for this parameter; however, this parameter is discussed in the Notes Section of this report.

Based upon the data validation performed there were no quality control outliers or issues that warrant qualification of the sample results. The data are acceptable as reported on the summary tables.

NOTES

The following items noted during the validation review has not impact results or necessitate further qualification of data:

SMITH

1. The ICP Interference Check Sample (ICS) %R result for calcium was low. However, all sample concentrations did not exceed 50% of the ICS solution concentration; therefore, no data are qualified.

2. The serial dilution result for magnesium was incorrectly reported on the ICP Serial Dilution Form (Form 9). No data are qualified. The reviewer-corrected Form 9 is included in Appendix A.

3. The standards reported at the CRDL for calcium, magnesium, and sodium are incorrectly reported on the CRDL Standard for AA and ICP Forms (Form 2Bs). These metals are not required for CRDL standard analysis according to the EPA. It was confirmed by the Laboratory that standards at the CRDL were not performed for these analytes. The reviewer-corrected Form 2Bs are included in Appendix A.

SUMMARY

The reported data are usable based upon the data validation performed. There were no quality control outliers or issues that warrant qualification of the sample results. The data are acceptable as reported on the summary tables. For specifics relating to this review, see the attached documentation in Appendix A.

A1462M.XLS

DATA SUMMARY - SELECTED METALS

Site Name	Olin, Wilmington	Laboratory	IEA
Project Number	00-7074-0102	Case/Order #	A1462
Sampling Date(s)	7/31/96 and 8/1/96	Field Duplicates	A-05/A-09,A-07/A-10,A-16/A-17

☐ Solid mg/kg

☒ Liquid ug/l

DL	Sample location or description	P	F	Chestnut #1A	Chestnut #1	GW63S	GW63D	Butters Row #1	GW64S	GW64D	Butters Row #2	Blind #1	Blind #2
	Sample number			961462A-01	961462A-02	961462A-03	961462A-04	961462A-05	961462A-06	961462A-07	961462A-08	961462A-09	961462A-10
	Sampling date			7/31/96	7/31/96	7/31/96	7/31/96	7/31/96	7/31/96	7/31/96	7/31/96	7/31/96	7/31/96
	unfilt. / filt.			filt.	filt.	filt.	filt.	filt.	filt.	filt.	filt.	filt.	filt.
5000	Calcium	x		17400	29900	21900	39800	31600	11600	45800	24200	31100	44400
10.0	Chromium	x											
5000	Magnesium	x			6600		6660	7020		12200	5050	6930	11900
5000	Sodium	x		32400	52700	49500	43100	51100	34900	75300	33700	52300	74800

☐ Solid mg/kg

☒ Liquid ug/l

DL	Sample location or description	P	F	Town Park #1	GW73S	GW73D	GW62S	GW62M	GW62D	Blind #3			
	Sample number			961462A-11	961462A-12	961462A-13	961462A-14	961462A-15	961462A-16	961462A-17			
	Sampling date			8/1/96	8/1/96	8/1/96	8/1/96	8/1/96	8/1/96	8/1/96			
	unfilt. / filt.			filt.	filt.	filt.	filt.	filt.	filt.	filt.			
5000	Calcium	x		21800	23700	33800	29200	26300	28800	28200			
10.0	Chromium	x											
5000	Magnesium	x				10300		5610	7720	7570			
5000	Sodium	x		51100	2970	34100	33000	32800	39300	39000			

P = ICP Analysis F=Furnace Analysis DL=Detection Limit

QA Scientist E. Beyer Rivera Date 11/26/96

DATA SUMMARY - SELECTED METALS

Site Name	Olin, Wilmington	Laboratory	IEA
Project Number	00-7074-0102	Case/Order #	A1462
Sampling Date(s)	7/31/96 and 8/1/96	Field Duplicates	A-05/A-09,A-07/A-10,A-16/A-17

☐ Solid mg/kg
☒ Liquid ug/l

DL	Sample location or description	P	F	Chestnut #1A	Chestnut #1	GW63S	GW63D	Butters Row #1	GW64S	GW64D	Butters Row #2	Blind #1	Blind #2
	Sample number			961462A-01	961462A-02	961462A-03	961462A-04	961462A-05	961462A-06	961462A-07	961462A-08	961462A-09	961462A-10
	Sampling date			7/31/96	7/31/96	7/31/96	7/31/96	7/31/96	7/31/96	7/31/96	7/31/96	7/31/96	7/31/96
DL	unfilt. / filt.	P	F	unfilt.	unfilt.	unfilt.	unfilt.	unfilt.	unfilt.	unfilt.	unfilt.	unfilt.	unfilt.
5000	Calcium	x		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10.0	Chromium	x											
5000	Magnesium	x		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
5000	Sodium	x		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

☐ Solid mg/kg
☒ Liquid ug/l

DL	Sample location or description	P	F	Town Park #1	GW73S	GW73D	GW62S	GW62M	GW62D	Blind #3			
	Sample number			961462A-11	961462A-12	961462A-13	961462A-14	961462A-15	961462A-16	961462A-17			
	Sampling date			8/1/96	8/1/96	8/1/96	8/1/96	8/1/96	8/1/96	8/1/96			
DL	unfilt. / filt.	P	F	unfilt.	unfilt.	unfilt.	unfilt.	unfilt.	unfilt.	unfilt.			
5000	Calcium	x		N/A	N/A	N/A	N/A	N/A	N/A	N/A			
10.0	Chromium	x											
5000	Magnesium	x		N/A	N/A	N/A	N/A	N/A	N/A	N/A			
5000	Sodium	x		N/A	N/A	N/A	N/A	N/A	N/A	N/A			

P = ICP Analysis F=Furnace Analysis NA= Not Analyzed DL=Detection Limit

QA Scientist [illegible] Date [illegible]

SMITH

APPENDIX A

Inorganic Data Validation Summary

Project Name:	Olin	Case No./SDG:	A1462
Project No.:	00-7014-0102	Sampling Date(s):	7/31/96, 8/1/96
Project Manager:	Bruce Cushing	Reviewed By:	E. Bryan Rivers
Laboratory:	IEA	Completion Date:	10/3/96

Compound List: ☐ TAL ☐ Appendix IX ☑ Other Ca, Fe, Mg + Na

Method: ☑ CLP SOW 3/90 ☐ SW-846 ☐ Other

Matrix: ☐ soil/solid (mg/Kg) ☒ aqueous (ug/L) field blank

The following table indicates the data validation criteria examined, problems identified, and QA action.

Data Validation Criteria:	accept	FYI	qualify	comments
Holding Times	✓			
Calibration Linearity - Furnace, Hg, and CN	✓			
Calibration Verification	✓			
CRDL Standard		✓	~~X~~ EBR	reported but not required
Calibration Blanks	✓			
Preparation Blanks	✓			
Field Blank				NA
ICP Interference Check Sample		✓		Ca is low but all conc are >50% more than the levels in the ICS.
Laboratory Control Sample	✓			
Matrix Spike Results	✓			
Laboratory Duplicate Results	✓			
ICP Serial Dilution		✓		Transcription error
Post Digestion Analytical Spike				NA
Method of Standard Addition				NA
Field Duplicate Results	✓			
Sample Result Verification	✓			
Other:				

General Comments:

NA - Not applicable
NR - Not reviewed

QA Scientist E. Bryan Rivers Date 11/14/96

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

CHESTNUT #1A

Lab Name: IEA   Contract: ______

Lab Code: IEA   Case No.: 1462   SAS No.: ______   SDG No.: A1462

Matrix (soil/water): WATER   Lab Sample ID: T961462A-01

Level (low/med): LOW   Date Received: 08/01/96

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: YELLOW   Clarity Before: CLEAR   Texture: ______

Color After: COLORLESS   Clarity After: CLEAR   Artifacts: ______

Comments:
Total Metals

REVISED DATA
RESUBMITTED BY LABORATORY

INSERTED BY: E. Bynum 9/30/96
SIGNATURE   DATE

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

CHESTNUT #1

Lab Name: IEA Contract: ______

Lab Code: IEA Case No.: 1462 SAS No.: ______ SDG No.: A1462

Matrix (soil/water): WATER Lab Sample ID: T961462A-02

Level (low/med): LOW Date Received: 08/01/96

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: YELLOW Clarity Before: CLEAR Texture: ______

Color After: COLORLESS Clarity After: CLEAR Artifacts: ______

Comments:
Total Metals

REVISED ...
RESUBMITTED BY LABORATORY
INSERTED BY [signature] 9/30/96
SIGNATURE DATE

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

GW63S

Lab Name: IEA Contract:

Lab Code: IEA Case No.: 1462 SAS No.: SDG No.: A1462

Matrix (soil/water): WATER Lab Sample ID: T961462A-03

Level (low/med): LOW Date Received: 08/01/96

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: YELLOW Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:
Total Metals

REVISED DATA
RESUBMITTED BY LABORATORY
ACCEPTED BY [signature] 9/5/96
SIGNATURE DATE

FORM I - IN ILM03.0

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

GW63D

Lab Name: IEA Contract: ______

Lab Code: IEA Case No.: 1462 SAS No.: ______ SDG No.: ^1462

Matrix (soil/water): WATER Lab Sample ID: T961462A-04

Level (low/med): LOW Date Received: 08/01/96

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture: ______

Color After: COLORLESS Clarity After: CLEAR Artifacts: ______

Comments:
Total Metals

REVISED DATA
RESUBMITTED BY LABORATORY

INSERTED BY [signature] 9/30/96
SIGNATURE DATE

FORM I - IN ILM03.0

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BUTTERS ROW #1

Lab Name: IEA Contract: ____

Lab Code: IEA Case No.: 1462 SAS No.: ____ SDG No.: A1462

Matrix (soil/water): WATER Lab Sample ID: T961462A-05

Level (low/med): LOW Date Received: 08/01/96

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: YELLOW Clarity Before: CLEAR Texture: ____

Color After: COLORLESS Clarity After: CLEAR Artifacts: ____

Comments:
Total Metals

REVISED PAGE
RESUBMITTED BY LABORATORY

INSERTED BY [signature] 9/3/96
SIGNATURE DATE

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

GW64S

Lab Name: IEA Contract:

Lab Code: IEA Case No.: 1462 SAS No.: SDG No.: A1462

Matrix (soil/water): WATER Lab Sample ID: T961462A-06

Level (low/med): LOW Date Received: 08/01/96

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: YELLOW Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:
Total Metals

RESUBMITTED BY LABORATORY

INSERTED BY [illegible] 7/30/96
SIGNATURE DATE

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

GW64D

Lab Name: IEA Contract: ______

Lab Code: IEA Case No.: 1462 SAS No.: ______ SDG No.: A1462

Matrix (soil/water): WATER Lab Sample ID: T961462A-07

Level (low/med): LOW Date Received: 08/01/96

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture: ______

Color After: COLORLESS Clarity After: CLEAR Artifacts: ______

Comments:
Total Metals

REVISED DATA
RESUBMITTED BY LABORATORY

INSERTED BY [signature] 9/30/96
SIGNATURE DATE

FORM I - IN ILM03.0

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO. 0023

BUTTERS ROW #2

Lab Name: IEA Contract: ______

Lab Code: IEA Case No.: 1462 SAS No.: ______ SDG No.: A1462

Matrix (soil/water): WATER Lab Sample ID: T961462A-08

Level (low/med): LOW Date Received: 08/01/96

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture: ______

Color After: COLORLESS Clarity After: CLEAR Artifacts: ______

Comments:
Total Metals

REVISED DATA
RESUBMITTED BY LABORATORY
INSERTED BY [signature] 9/20/96
SIGNATURE DATE

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BLIND #1

Lab Name: IEA Contract: ______

Lab Code: IEA Case No.: 1462 SAS No.: ______ SDG No.: A1462

Matrix (soil/water): WATER Lab Sample ID: T961462A-09

Level (low/med): LOW Date Received: 08/01/96

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: YELLOW Clarity Before: CLEAR Texture: ______

Color After: COLORLESS Clarity After: CLEAR Artifacts: ______

Comments:
Total Metals

REVISED DATA
RESUBMITTED BY LABORATORY

INSERTED BY P. [illegible] 9/30/96
SIGNATURE DATE

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BLIND #2

Lab Name: IEA Contract: ______

Lab Code: IEA Case No.: 1462 SAS No.: ______ SDG No.: A1462

Matrix (soil/water): WATER Lab Sample ID: T961462A-10

Level (low/med): LOW Date Received: 08/01/96

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture: ______

Color After: COLORLESS Clarity After: CLEAR Artifacts: ______

Comments:
Total Metals

REVISED DATA
RESUBMITTED BY LABORATORY

INSERTED BY E. Bryan Zuell 9/30/96
SIGNATURE DATE

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TOWN PARK #1

Lab Name: IEA Contract: ______

Lab Code: IEA Case No.: 1462 SAS No.: ______ SDG No.: A1462

Matrix (soil/water): WATER Lab Sample ID: T961462A-11

Level (low/med): LOW Date Received: 08/02/96

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture: ______

Color After: COLORLESS Clarity After: CLEAR Artifacts: ______

Comments:
Total Metals

REVISED DATA
RESUBMITTED BY LABORATORY

INSERTED BY E. Bryan Rivers 9/30/96
SIGNATURE DATE

FORM I - IN ILM03.0

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

GW73S

Lab Name: IEA Contract:

Lab Code: IEA Case No.: 1462 SAS No.: SDG No.: A1462

Matrix (soil/water): WATER Lab Sample ID: T961462A-12

Level (low/med): LOW Date Received: 08/02/96

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:
Total Metals

REVISED DATA
RESUBMITTED BY LABORATORY
INSERTED BY C. Bykinkwer 5/30/96
SIGNATURE DATE

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO. 0028

GW73D

Lab Name: IEA Contract:

Lab Code: IEA Case No.: 1462 SAS No.: SDG No.: A1462

Matrix (soil/water): WATER Lab Sample ID: T961462A-13

Level (low/med): LOW Date Received: 08/02/96

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:
Total Metals

REVISED DATA
RESUBMITTED BY LABORATORY
INSERTED BY [signature] 9/30/96
SIGNATURE DATE

FORM I - IN ILM03.0

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

GW62S

Lab Name: IEA Contract: ______

Lab Code: IEA Case No.: 1462 SAS No.: ______ SDG No.: A1462

Matrix (soil/water): WATER Lab Sample ID: T961462A-14

Level (low/med): LOW Date Received: 08/02/96

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture: ______

Color After: COLORLESS Clarity After: CLEAR Artifacts: ______

Comments:
Total Metals

REVISED DATA
RESUBMITTED BY LABORATORY

INSERTED BY [signature] 9/30/96
SIGNATURE DATE

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

GW62M

Lab Name: IEA Contract: ______

Lab Code: IEA Case No.: 1462 SAS No.: ______ SDG No.: A1462

Matrix (soil/water): WATER Lab Sample ID: T961462A-15

Level (low/med): LOW Date Received: 08/02/96

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture: ______

Color After: COLORLESS Clarity After: CLEAR Artifacts: ______

Comments:
Total Metals

RESUBMITTED ... RATORY

INSERTED BY [signature] SIGNATURE [date] DATE

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

GW62D

Lab Name: IEA Contract:

Lab Code: IEA Case No.: 1462 SAS No.: SDG No.: A1462

Matrix (soil/water): WATER Lab Sample ID: T961462A-16

Level (low/med): LOW Date Received: 08/02/96

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:
Total Metals

REVISED DATA
RESUBMITTED BY LABORATORY
INSERTED BY [signature] 9/30/96
SIGNATURE DATE

FORM I - IN ILM03.0

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BLIND #3

Lab Name: IEA Contract:

Lab Code: IEA Case No.: 1462 SAS No.: SDG No.: A1462

Matrix (soil/water): WATER Lab Sample ID: T961462A-17

Level (low/med): LOW Date Received: 08/02/96

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:
Total Metals

REVISED DATA
RESUBMITTED BY LABORATORY

INSERTED BY E. Byler Rice 9/3/96
SIGNATURE DATE

FORM I - IN ILM03.0

160

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

CHESTNUT #1A

Lab Name: IEA Contract:

Lab Code: IEA Case No.: 1462 SAS No.: SDG No.: A1462

Matrix (soil/water): WATER Lab Sample ID: F961462A-01

Level (low/med): LOW Date Received: 08/01/96

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium	17400			P
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium	5000	U		P
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium	32400			P
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: YELLOW Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:
Filtered Metals

1161

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

CHESTNUT #1

Lab Name: IEA Contract:

Lab Code: IEA Case No.: 1462 SAS No.: SDG No.: A1462

Matrix (soil/water): WATER Lab Sample ID: F961462A-02

Level (low/med): LOW Date Received: 08/01/96

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium	29900			P
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium	6600			P
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium	52700			P
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: YELLOW Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:
Filtered Metals

FORM I - IN ILM03.0

16c

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

GW63S

Lab Name: IEA Contract:

Lab Code: IEA Case No.: 1462 SAS No.: SDG No.: A1462

Matrix (soil/water): WATER Lab Sample ID: F961462A-03

Level (low/med): LOW Date Received: 08/01/96

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium	21900			P
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium	5000	U		P
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium	49500			P
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: YELLOW Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:
Filtered Metals

1 6 ?

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

GW63D

Lab Name: IEA   Contract: ____

Lab Code: IEA   Case No.: 1462   SAS No.: ____   SDG No.: A1462

Matrix (soil/water): WATER   Lab Sample ID: F961462A-04

Level (low/med): LOW   Date Received: 08/01/96

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium	39800			P
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium	6660			P
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium	43100			P
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: COLORLESS   Clarity Before: CLEAR   Texture: ____

Color After: COLORLESS   Clarity After: CLEAR   Artifacts: ____

Comments:
Filtered Metals

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BUTLERS ROW #1

Lab Name: IEA Contract: ______

Lab Code: IEA Case No.: 1462 SAS No.: ______ SDG No.: A1462

Matrix (soil/water): WATER Lab Sample ID: F961462A-05

Level (low/med): LOW Date Received: 08/01/96

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium	31600			P
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium	7020			P
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium	51100			P
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: YELLOW Clarity Before: CLEAR Texture: ______

Color After: COLORLESS Clarity After: CLEAR Artifacts: ______

Comments:
Filtered Metals

FORM I - IN ILM03.0

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

GW64S

Lab Name: IEA Contract:

Lab Code: IEA Case No.: 1462 SAS No.: SDG No.: A1462

Matrix (soil/water): WATER Lab Sample ID: F961462A-06

Level (low/med): LOW Date Received: 08/01/96

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium	11600			P
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium	5000	U		P
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium	34900			P
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: YELLOW Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:
Filtered Metals

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

GW64D

Lab Name: IEA Contract: ______

Lab Code: IEA Case No.: 1462 SAS No.: ______ SDG No.: A1462

Matrix (soil/water): WATER Lab Sample ID: F961462A-07

Level (low/med): LOW Date Received: 08/01/96

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium	45800			P
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium	12200			P
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium	75300			P
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture: ______

Color After: COLORLESS Clarity After: CLEAR Artifacts: ______

Comments:
Filtered Metals

1661

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BUTLERS ROW #2

Lab Name: IEA Contract:

Lab Code: IEA Case No.: 1462 SAS No.: SDG No.: A1462

Matrix (soil/water): WATER Lab Sample ID: F961462A-08

Level (low/med): LOW Date Received: 08/01/96

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium	24200			P
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium	5050			P
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium	33700			P
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: YELLOW Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:
Filtered Metals

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BLIND #1

Lab Name: IEA Contract: ____

Lab Code: IEA Case No.: 1462 SAS No.: ____ SDG No.: A1462

Matrix (soil/water): WATER Lab Sample ID: F961462A-09

Level (low/med): LOW Date Received: 08/01/96

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium	31100			P
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium	6930			P
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium	52300			P
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: YELLOW Clarity Before: CLEAR Texture: ____

Color After: COLORLESS Clarity After: CLEAR Artifacts: ____

Comments:
Filtered Metals

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BLIND #2

Lab Name: IEA Contract:

Lab Code: IEA Case No.: 1462 SAS No.: SDG No.: A1462

Matrix (soil/water): WATER Lab Sample ID: F961462A-10

Level (low/med): LOW Date Received: 08/01/96

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium	44400			P
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium	11900			P
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium	74800			P
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:
Filtered Metals

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TOWN PARK #1

Lab Name: IEA Contract:

Lab Code: IEA Case No.: 1462 SAS No.: SDG No.: 11462

Matrix (soil/water): WATER Lab Sample ID: F961462A-11

Level (low/med): LOW Date Received: 08/02/96

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7440-70-2	Calcium	21800			P
7440-47-3	Chromium	10.0	U		P
7439-95-4	Magnesium	5000	U		P
7440-23-5	Sodium	51100			P

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

Filtered Metals

REVISED DATA

RESUBMITTED BY LABORATORY

INSERTED BY E. Bylunwell 10/2/96

SIGNATURE DATE

FORM I - IN ILM03.0

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

GW73S

Lab Name: IEA Contract: ________

Lab Code: IEA Case No.: 1462 SAS No.: ______ SDG No.: A1462

Matrix (soil/water): WATER Lab Sample ID: F961462A-12

Level (low/med): LOW Date Received: 08/02/96

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7440-70-2	Calcium	23700			P
7440-47-3	Chromium	10.0	U		P
7439-95-4	Magnesium	5000	U		P
7440-23-5	Sodium	5000	U		P

Color Before: COLORLESS Clarity Before: CLEAR Texture: ______

Color After: COLORLESS Clarity After: CLEAR Artifacts: ______

Comments:
Filtered Metals

REVISED DATA
RESUBMITTED BY LABORATORY
INSERTED BY E. Bryan Rivers 10/31/96
SIGNATURE DATE

FORM I - IN ILM03.0

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

GW73D

Lab Name: IEA Contract: ______

Lab Code: IEA Case No.: 1462 SAS No.: ______ SDG No.: A1462

Matrix (soil/water): WATER Lab Sample ID: F961462A-13

Level (low/med): LOW Date Received: 08/02/96

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7440-70-2	Calcium	33800			P
7440-47-3	Chromium	10.0	U		P
7439-95-4	Magnesium	10300			P
7440-23-5	Sodium	34100			P

Color Before: COLORLESS Clarity Before: CLEAR Texture: ______

Color After: COLORLESS Clarity After: CLEAR Artifacts: ______

Comments:
Filtered Metals

REVIS...
RESUBMITTED BY LABORATORY

INSERTED BY E. Byfon Rivas 10/31/96
SIGNATURE DATE

FORM I - IN ILM03.0

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

GW62S

Lab Name: IEA Contract:

Lab Code: IEA Case No.: 1462 SAS No.: SDG No.: A1462

Matrix (soil/water): WATER Lab Sample ID: F961462A-14

Level (low/med): LOW Date Received: 08/02/96

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7440-70-2	Calcium	29200			P
7440-47-3	Chromium	10.0	U		P
7439-95-4	Magnesium	5000	U		P
7440-23-5	Sodium	33000			P

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:
Filtered Metals

REVISED DATA
RESUBMITTED BY LABORATORY

INSERTED BY: E. [signature] 10/31/96
SIGNATURE DATE

FORM I - IN ILM03.0

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

GW62M

Lab Name: IEA Contract: ______

Lab Code: IEA Case No.: 1462 SAS No.: ______ SDG No.: A1462

Matrix (soil/water): WATER Lab Sample ID: F961462A-15

Level (low/med): LOW Date Received: 08/02/96

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7440-70-2	Calcium	26300			P
7440-47-3	Chromium	10.0	U		P
7439-95-4	Magnesium	5610			P
7440-23-5	Sodium	32800			P

Color Before: COLORLESS Clarity Before: CLEAR Texture: ______

Color After: COLORLESS Clarity After: CLEAR Artifacts: ______

Comments:
Filtered Metals

REVISED DATA
RESUBMITTED BY LABORATORY

INSERTED BY C. Bryan Piers 10/4/96
SIGNATURE DATE

FORM I - IN ILM03.0

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

GW62D

Lab Name: IEA Contract: ______

Lab Code: IEA Case No.: 1462 SAS No.: ______ SDG No.: A1462

Matrix (soil/water): WATER Lab Sample ID: F961462A-16

Level (low/med): LOW Date Received: 08/02/96

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7440-70-2	Calcium	28800			P
7440-47-3	Chromium	10.0	U		P
7439-95-4	Magnesium	7720			P
7440-23-5	Sodium	39300			P

Color Before: COLORLESS Clarity Before: CLEAR Texture: ______

Color After: COLORLESS Clarity After: CLEAR Artifacts: ______

Comments:
Filtered Metals

REVISED DATA
RESUBMITTED BY LABORATORY
INSERTED BY E. Bryan Rivers 10/31/96
SIGNATURE DATE

FORM I - IN ILM03.0

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BLIND #3

Lab Name: IEA Contract: ______

Lab Code: IEA Case No.: 1462 SAS No.: ______ SDG No.: A1462

Matrix (soil/water): WATER Lab Sample ID: F961462A-17

Level (low/med): LOW Date Received: 08/02/96

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7440-70-2	Calcium	28200			P
7440-47-3	Chromium	10.0	U		P
7439-95-4	Magnesium	7570			P
7440-23-5	Sodium	39000			P

Color Before: COLORLESS Clarity Before: CLEAR Texture: ______

Color After: COLORLESS Clarity After: CLEAR Artifacts: ______

Comments:
Filtered Metals

REVISED DATA
RESUBMITTED BY LABORATORY
INSERTED BY: E. Bryan Ivans 10/3/96
SIGNATURE DATE

FORM I - IN ILM03.0

U.S. EPA - CLP

2B
CRDL STANDARD FOR AA AND ICP

Lab Name: IEA Contract: ____

Lab Code: IEA Case No.: ____ SAS No.: ____ SDG No.: A1462

AA CRDL Standard Source: INORG. VENT.

ICP CRDL Standard Source: INORG. VENT.

Concentration Units: ug/L

Analyte	CRDL Standard for AA True	CRDL Standard for AA Found	CRDL Standard for AA %R(1)	CRDL Standard for ICP True	Initial Found	%R(1)	Final Found	%R(1)
Aluminum								
Antimony								
Arsenic								
Barium								
Beryllium								
Cadmium								
Calcium				~~2000.0~~	~~84.99~~	~~4.2~~	~~83.86~~	~~4.2~~ *
Chromium				20.0	22.66	113.3	21.72	108.6
Cobalt								
Copper								
Iron								
Lead								
Magnesium				~~2000.0~~	~~21.54~~	~~1.1~~	~~7.50~~	~~0.4~~ *
Manganese								
Mercury								
Nickel								
Potassium								
Selenium								
Silver								
Sodium				~~2000.0~~	~~132.06~~	~~6.6~~	~~141.77~~	~~7.1~~ *
Thallium								
Vanadium								
Zinc								
Cyanide								

* Ca, Mg + Na are not required for CRDL standard analysis. The lab responded to an inquiry to confirm that these analytes ~~spiking solutions~~ were not present in the spiking solution. The response is included in the Appendix

E. Benjamin Fuentes 11/7/96

U.S. EPA - CLP

2B
CRDL STANDARD FOR AA AND ICP

Lab Name: IEA Contract: ______

Lab Code: IEA Case No.: ______ SAS No.: ______ SDG No.: A1462

AA CRDL Standard Source: INORG. VENT.

ICP CRDL Standard Source: INORG. VENT.

Concentration Units: ug/L

Analyte	CRDL Standard for AA True	Found	%R(1)	CRDL Standard for ICP True	Initial Found	%R(1)	Final Found	%R(1)
Aluminum								
Antimony								
Arsenic								
Barium								
Beryllium								
Cadmium								
Calcium				~~2000.0~~	~~430.36~~	~~21.5~~	~~92.28~~	~~4.6~~
Chromium				20.0	17.46	87.3	20.64	103.2
Cobalt								
Copper								
Iron								
Lead								
Magnesium				~~2000.0~~	~~134.35~~	~~6.7~~	~~28.73~~	~~1.4~~
Manganese								
Mercury								
Nickel								
Potassium								
Selenium								
Silver								
Sodium				~~2000.0~~	~~11.87~~	~~0.6~~	~~2.70~~	~~0.4~~
Thallium								
Vanadium								
Zinc								
Cyanide								

* Ca, Mg + Na are not required for CRDL Standard analysis. The lab responded to an inquiry to confirm that these ~~spiking solution~~ analytes were not present in the spiking solution The response is included in the Appendix

E. Bryan Rivers 11/7/96

FORM II (PART 2) - IN ILM03.0

U.S. EPA - CLP

4
ICP INTERFERENCE CHECK SAMPLE

Lab Name: IEA Contract: ______

Lab Code: IEA Case No.: ______ SAS No.: ______ SDG No.: A1462

ID Number: JA61E ICS Source: EPA-LV87

Concentration Units: ug/L

Analyte	True Sol. A	True Sol. AB	Initial Found Sol. A	Initial Found Sol. AB	Initial Found %R	Final Found Sol. A	Final Found Sol. AB	Final Found %R
Aluminum	500000							
Antimony								
Arsenic								
Barium								
Beryllium								
Cadmium								
Calcium	500000	500000	415879	368242.7	73.6 *	446216	403314.9	80.6
Chromium		500	4	456.0	91.2	4	424.1	84.8
Cobalt								
Copper								
Iron	200000							
Lead								
Magnesium	500000	500000	475022	415812.3	83.1	522290	461995.7	92.3
Manganese								
Mercury								
Nickel								
Potassium								
Selenium								
Silver								
Sodium			-152	-106.8		-153	-118.8	
Thallium								
Vanadium								
Zinc								
Cyanide								

* Samples concentrations for A62A-01, 62A-02, 62A-03, 62A-04
62A-05, 62A-06, 62A-07, 62A-08
62A-09, 62A-10 ~~are estimated and biased low~~ EBR 10/3/96
for Calcium are not
50% more than their ICS. No
data are qualified.
E. Bryan Rivas 10/3/96

Inorganic Field Duplicate Precision Worksheet

Project Name: Olin
Project Number: 00-7074-0102
Case Number: A1462

Sample location	Butters Row #1	Blind #1
Sample ID number	961462A-05	961462A-09
Matrix	Aqueous	Aqueous
Units	ug/l	ug/l
unfilt. / filt.	filt.	filt.

Compound	Control Limit	Sample Concentration	Field Duplicate Concentration	RPD	Q
Calcium		31600	31100	1.6	
Chromium					
Magnesium	~~10000~~ 5000	7020	6930	1.3	
Sodium		51100	52300	2.3	

* Indicates control limit out of criteria.

EPA Region I has established the following criteria for field duplicate analysis:

When both samples are greater than 5x the CRDL, use control limit of 30 percent RPD.
When one or both samples are less than 5x the CRDL, use control limit of 2+/- CRDL.

1462FD1M.XLS

QA Scientist E. Byron Rivers Date 11/11/96

Inorganic Field Duplicate Precision Worksheet

Project Name: Olin
Project Number: 00-7074-0102

Case Number: A1462

Sample location	GW62D	Blind #3
Sample ID number	961462A-16	961462A-17
Matrix	Aqueous	Aqueous
Units	ug/l	ug/l
unfilt. / filt.	filt.	filt.

Compound	Control Limit	Sample Concentration	Field Duplicate Concentration	RPD	Q
Calcium		28800	28200	2.1	
Chromium					
Magnesium	~~10000~~ 4000 11/11/96 EBR	7720	7570	2.0	
Sodium		39300	39000	0.8	

* Indicates control limit out of criteria.

EPA Region I has established the following criteria for field duplicate analysis:

When both samples are greater than 5x the CRDL, use control limit of 30 percent RPD.
When one or both samples are less than 5x the CRDL, use control limit of 2+/- CRDL.

1462FD2M.XLS

QA Scientist E. Buyer Rivers Date 11/11/96

Inorganic Field Duplicate Precision Worksheet

Project Name: Olin

Project Number: 00-7074-0102

Case Number: A1462

Sample location	GW64D	Blind #2
Sample ID number	961462A-07	961462A-10
Matrix	Aqueous	Aqueous
Units	ug/l	ug/l
unfilt. / filt.	filt.	filt.

Compound	Control Limit	Sample Concentration	Field Duplicate Concentration	RPD	Q
Calcium		45800	44400	3.1	
Chromium					
Magnesium	~~10000~~ 5000	12200	11900	2.5	
Sodium		75300	74800	0.7	

* Indicates control limit out of criteria.

11/14/96 EBR

EPA Region I has established the following criteria for field duplicate analysis:

When both samples are greater than 5x the CRDL, use control limit of 30 percent RPD.
When one or both samples are less than 5x the CRDL, use control limit of 2+/- CRDL.

1462FDM.XLS

QA Scientist E. Bryan Rivers Date 11/14/96

U.S. EPA - CLP

9
ICP SERIAL DILUTIONS

EPA SAMPLE NO.

TLERS ROW #1L

Lab Name: IEA Contract: ____

Lab Code: IEA Case No.: 1462 SAS No.: ____ SDG No.: A1462

Matrix(soil/water): WATER Level (low/med): LOW

Concentration Units: ug/L

Analyte	Initial Sample Result (I)	C	Serial Dilution Result (S)	C	% Difference	Q	M
Aluminum							NR
Antimony							NR
Arsenic							NR
Barium							NR
Beryllium							NR
Cadmium							NR
Calcium	31651.39		32816.68		3.7		P
Chromium	10.00	U	50.00	U			P
Cobalt							NR
Copper							NR
Iron							NR
Lead			7386.76		5.2		NR
Magnesium	7021.81		~~25000.00~~	U	~~100.0~~		P
Manganese							NR
Mercury							NR
Nickel							NR
Potassium							NR
Selenium							NR
Silver							NR
Sodium	51109.67		55179.45		8.0		P
Thallium							NR
Vanadium							NR
Zinc							NR
Cyanide							NR

EBR 10/3/96

FORM IX - IN ILM03.0

E. Bryan Rivas 10/3/96

IEA
An Aquarion Company

200 Monroe Turnpike
Monroe, Connecticut 06468

Phone 203-261-4458
Fax 203-268-5346

1A

7096-1462A

OLIN CORPORATION

Case Narrative

Classical Chemistry - Listed below are the wet chemistry analyte methods and references for all samples analyzed in this SDG. Chloride failed the control limits for spike recovery analysis for sample Butler's Row # 1. This appears to be due to a sample matrix interference. No other analytical problems were encountered and all holding times were met.

Analyte	Method	Reference
Ammonia	~~310.1~~ 350.3	1
Bicarbonate	2320B	2
Carbonate	2320B	2
Chloride	325.2	1
Sulfate	375.4	1

EBK
10/2/96

References:

1. Methods for Chemical Analysis of Water and Wastes, USEPA 600, 1983.
2. Test Methods for the Evaluation of Solid Waste, SW846, 3rd edition, 1986.

Metals - ICAP metals were determined using a JA61 simultaneous ICAP and a JA61E trace ICAP using guidance provided in SW846 according to the following Methods: ICAP-3010/6010.

No problems occurred during analysis. All appropriate protocols were employed. All data appears to be consistent.

I certify that this data package is in compliance with the terms of this contract, both technically and for completeness, for other than the conditions detailed above. Release of this hardcopy data package has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

Jeffrey C. Curran
Laboratory Manager

Date Aug. 23, 1996

IEA
An Aquarion Company

200 Monroe Turnpike
Monroe, Connecticut 06468

Phone 203·261·4458
Fax 203·268·5346

September 26, 1996

Mr. Bruce Cushing
OLIN CORPORATION
c/o Smith Environmental Corp.
One Plymouth Meeting
Plymouth Meeting, PA 19462

Dear Mr. Cushing:

In reference to corrective action report #4947, please find enclosed the revised analytical results for IEA report #7096-1462A.

The tables have been revised and are enclosed.

The changes are based on the following issues: chromium results were incorrect; calcium, magnesium and sodium are not present in the spiking solution.

Very truly yours,

Cheryl Ann Cascella

Data Management

CAC/ab

cc: S. Morrow
L. Wiksteron

RECEIVED
SEP 30 1996

Schaumburg, Illinois 847 705 0740

N. Billerica, Massachusetts 508·667·1400

Whippany, New Jersey 201·428·8181

Cary, North Carolina 919·677·0090

SMITH ENVIRONMENTAL CORPORATE QUALITY ASSURANCE DEPARTMENT
DATA VALIDATION INQUIRY

To: Jeffrey Curran, L. Wiksteron, S. Morrow
cc: Bruce Cushing, Project Manager, SMTH
DATA VALIDATION REPORT

I.E.A. An Aquarion Company Case No.:A1462
Project Name: Wilmington, MA

September 25, 1996

Dear Mr. Curran:

The following questions pertain the metals' data for A1462:

1. The spike sample for the filtered metals was only analyzed for one analyte (chromium). Please send an explanation to why the other analytes were not analyzed or send the rest of the spike sample results as soon as possible.

2. I was informed that the detection limit for chromium is 10U and to ignore the 4U that was provided in some of the current data because the correct data is going to be sent later. If this information is incorrect please contact me as well.

Please call me with any questions that you may have regarding these issues.

Thank you,
E. Bryan Rivers
Quality Assurance Scientist

Project w Olin

IEA
An Aquarion Company

CORRECTIVE ACTION FORM

A. Originator Information Client Inquiry____

Client: Olin - Data reviewer
Date/time: 9/25/96
Client/Lab Contact: M Culek

Job/Case: 7096 - 1462A
Sample Number(s): Metals
Date/Time Response Due:

Detailed Description of Potential Problem: See attached

① Ca, Mg, Na are not present in the spiking solution

② Dissolved is 10 a what about Bkd ?

B. Quality Assurance Information Corrective Actio[redacted] 4947

Recommended Corrective Action:

Groups Involved:
- __ Sample Control
- __ Wet Chemistry
- X Metals
- __ Gas Chromatography
- __ Mass Spectrometry
- __ Report Generation
- __ Client Service
- __ Sample Preparation

C. Final Resolution

Describe What Happened and Long Term Corrective Action Taken:
1462A Total - forms' corrected + attached.

Report will be revised and data forms will be sent to Rpt address & CC's. ~~[illegible]~~ fedX. priority

Supervisor Signature: C. Casella Date 9/26/96 Date/Time Client Notified:

D. Quality Assurance Final Approval (QA Manager use only)

Corrective Action Approved: M. Culek
Date Finalized: 9/27/96
Was a problem identified? Yes / No

RECEIVED
OCT 2 1996
E. Bryan[illegible]

IEA, Inc. Doc.# QAF00200.CT

An Aquarion Company

IEA, INC.-CT FACSIMILE COVER SHEET

DATE: 10/21/96

NUMBER OF PAGES (INCLUDING COVER SHEET) 2

TO: Bryan Burtig

LOCATION:

TELEPHONE NO. FAX NO. 610-834-8236

FROM: STEPHANIE PLUNKETT

LOCATION: IEA, INC.-CONNECTICUT

TELEPHONE NO. (203) 261-4458 FAX NO. (203) 268-5346

MESSAGE

Bryan

Here is ~~the~~ the video we discussed regarding the mobile CRX standard. It was mailed out on Friday. Can you tell me what if anything you are still missing? As far as I can tell all revisions have been issued! Thanks,

Steph

Schaumburg, Illinois 708-705-0740

N. Billerica, Massachusetts 617-272-5212

Whippany, New Jersey 201-428-8181

Research Triangle Park, North Carolina 919-677-0090

IEA
An Aquarion Company

200 Monroe Turnpike
Monroe, Connecticut 06468

Phone 203·261·4458
Fax 203·268·5346

October 18, 1996

Mr. Bryan Rivers
Smith Environmental
1 Plymouth Meeting
Plymouth Meeting PA 19462

Dear Mr. Rivers:

The following is in response to a question concerning the elements showing poor recoveries in the CRDL standard. These analytes are not part of the commercially prepared standard solution. Due to a software programing issues these analytes are calculated and a very low or negative recovery is printed on the form. This issue is in the process of being reviewed by the systems department.

If you have any further question concerning this response, please do not hesitate to contact me or Stephanie Plunkett at (203) 261-4458.

Sincerely,

Marsha K. Culik

Marsha Culik
Quality Assurance Manager

cc: Stephanie Plunkett

RECEIVED
OCT 21 1996

IEA
An Aquarion Company

200 Monroe Turnpike
Monroe, Connecticut 06468

Phone 203-261-4458
Fax 203-268-5346

October 18, 1996

Mr. Bryan Rivers
Smith Environmental
1 Plymouth Meeting
Plymouth Meeting PA 19462

Dear Mr. Rivers:

The following is in response to a question concerning the elements showing poor recoveries in the CRDL standard. These analytes are not part of the commercially prepared standard solution. Due to a software programing issues these analytes are calculated and a very low or negative recovery is printed on the form. This issue is in the process of being reviewed by the systems department.

If you have any further question concerning this response, please do not hesitate to contact me or Stephanie Plunkett at (203) 261-4458.

Sincerely,

Marsha K. Culik

Marsha Culik
Quality Assurance Manager

cc: Stephanie Plunkett

IEA
An Aquarion Company

200 Monroe Turnpike
Monroe, Connecticut 06468

Phone 203-261-4458
Fax 203-268-5346

October 28, 1996

Mr. Bruce Cushing
OLIN CORPORATION
c/o Smith Environmental Corp.
One Plymouth Meeting
Plymouth Meeting, PA 19462

Dear Mr. Cushing:

In reference to corrective action report #4995/4974, please find enclosed the revised analytical results for IEA report #7096-1462A.

All forms have been revised and are attached, per the client's request.

Very truly yours,

Cheryl Ann Casella

Data Management

CAC/ab

cc: S. Morrow
L. Wiksteron

RECEIVED
OCT 29 1996

Schaumburg, Illinois 847-705-0740

N. Billerica, Massachusetts 508-667-1400

Whippany, New Jersey 201-428-8181

Cary, North Carolina 919-677-0090

IEA
An Aquarion Company
149 Rangeway Road
N. Billerica, Massachusetts 01862
508 / 667-1400
Fax 508 / 667-7871

"Month Sampling" Pg 1 of 1

CHAIN OF CUSTODY RECORD

REQUIR...

CUST. P.O. #:
IEA QUOTE #:

REGULATORY CLASSIFICATION - PLEASE SPECIFY

☐ NPDES ☐ DRINKING WATER ☐ RCRA ☐ MCP ☐ OTHER ____

TURN AROUND
☐ 15 BUSINESS DAY
☐ 10 BUSINESS DAY
☐ RUSH ____
☐ OTHER ____

COMPANY	CONTACT PERSON	PROJECT I.D.	PHONE #	FAX #
Olin Corp				

ADDRESS: 51 EAMES St

CITY	STATE	ZIP
Wilmington	MA	

REQUESTED PARAMETERS

DATE	TIME	SAMPLE I.D.	MATRIX	CONTAINER TYPE	# OF CONTAINERS	PRESERVATIVES	UNFIXED Filtered	H2SO4 Filtered	HNO3 Filtered	HNO3 UNFiltered					(COMMENTS)
~~7-31-96~~	~~10:00~~	~~Chestnut #1A~~	GW	PP	4		1	1	1	1			01		
7-31-96	10:15	ChestNUT #1	GW	PP	4		1	1	1	1			02		
7-31-96	10:56	GW 63 S	GW	PP	4		1	1	1	1			03		
7-31-96	11:20	GW 63 D	GW	PP	4		1	1	1	1			04		
7-31-96	12:10	Butlers Row #1	GW	PP	12		3	3	3	3			05		MS/MSD
7-31-96	12:55	GW 64 S	GW	PP	4		1	1	1	1			06		
7-31-96	13:55	GW 64 D	GW	PP	4		1	1	1	1			07		
7-31-96	14:25	Butlers Row #2	GW	PP	4		1	1	1	1			08		
7-31-96	—	BLIND #1	GW	PP	4		1	1	1	1			09		
7-31-96	—	BLIND #2	GW	PP	4		1	1	1	1			10		

SAMPLED BY: Timothy Ebner / Smith Environmental (PRINT NAME) Tim Ebner (SIGNATURE)

RELINQUISHED BY (SIGNATURE)	DATE / TIME	RECEIVED BY	DATE / TIME
Tim Ebner	7/31/96 18:50	Darlyn Colon	8/1/96 10^00
RELINQUISHED BY (SIGNATURE)	DATE / TIME	RECEIVED FOR LAB BY	DATE / TIME

IEA USE ONLY

Passed Red Screen 7096-1462A

DC 8/1/96

FIELD REMARKS

SHIPPED VIA FEDERAL Express overnight CUSTODY SEALED IN ONE COOLER

Day #2 "Town 1's Monthly" Pg 1 of 1

CHAIN OF CUSTODY RECORD

IEA
An Aquarion Company
149 Rangeway Road
N. Billerica, Massachusetts 01862
508 / 667-1400
Fax 508 / 667-7871

REGULATORY CLASSIFICATION - PLEASE SPECIFY

☐ NPDES ☐ DRINKING WATER ☐ RCRA ☐ MCP ☐ OTHER ____

REQUIRE[D]

CUST. P.O. #	
IEA QUOTE #	

TURN AROUND

☐ 15 BUSINESS DAY
☐ 10 BUSINESS DAY
☐ RUSH ____
☐ OTHER ____

COMPANY	CONTACT PERSON	PROJECT I.D.	PHONE #	FAX #
Olin Corp				

ADDRESS		
51 Eames St.		
CITY	**STATE**	**ZIP**
Wilmington	MA	

DATE	TIME	SAMPLE I.D.	MATRIX	CONTAINER TYPE	# OF CONTAINERS	PRESERVATIVES	UNFIXED - Filtered	H2SO4 - Filtered	HNO3 - Filtered	HNO3 - UNFiltered					(COMMENTS)
8/1/96	10:10	TOWN PARK #1	GW	PP	4		1	1	1	1				11	
8/1/96	10:45	GW 73 S	GW	PP	4		1	1	1	1				12	
8/1/96	11:35	GW 73 D	GW	PP	4		1	1	1	1				13	
8/1/96	12:33	GW 62 S	GW	PP	4		1	1	1	1				14	Passed Rad Screen RC 8/6/96
8/1/96	13:00	GW 62 M	GW	PP	4		1	1	1	1				15	
8/1/96	13:15	GW 62 D	GW	PP	4		1	1	1	1				16	
8/1/96	—	BLIND #3	GW	PP	4		1	1	1	1				17	

SAMPLED BY: Timothy Ebner / Smith Environmental (PRINT NAME) Timothy Ebner (SIGNATURE)

RELINQUISHED BY (SIGNATURE)	DATE / TIME	RECEIVED BY	DATE / TIME
Timothy Ebner	8/1/96 18:15		
RELINQUISHED BY (SIGNATURE)	**DATE / TIME**	**RECEIVED FOR LAB BY**	**DATE / TIME**
		[illegible]	[illegible]

IEA USE ONLY

7096.1462A

FIELD REMARKS

SHIPPED VIA FEDERAL EXPRESS OVERNIGHT. CUSTODY SEALED IN ONE COOLER

DATA VALIDATION REPORT
SELECTED METALS
OLIN CORPORATION
GROUNDWATER SAMPLES

INTRODUCTION

This data review report addresses the metals data from the July 31, and August 1, 1996 groundwater sampling event at the Olin Corporation's Wilmington, Massachusetts Facility. This review is of work order number A1462 which consisted of 14 filtered groundwater samples and 3 field duplicate samples analyzed for calcium, chromium, magnesium and sodium, and 14 unfiltered groundwater samples and 3 unfiltered field duplicate samples analyzed for chromium. All samples in this report were analyzed by IEA Corporation Monroe, Connecticut, according to the United States Environmental Protection Agency (EPA) Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (SW-846) for Methods 3010 and 6010.

Data deliverables were reported following the United States Environmental Protection Agency (EPA) Contract Laboratory Program (CLP) Statement of Work (SOW) for Inorganic Analysis. The quality assurance review was prepared according to EPA Region I Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analysis (data validation guidelines), June 1988, where applicable. The findings in this report are based upon a general review of the raw data (where applicable), analytical holding times, calibration results, standards performed at the CLP contract required detection limits (CRDL), blank analysis results, interference check sample results, laboratory control sample results, laboratory and field duplicate results, matrix spike results, serial dilutions, detection limits, and a general review of the CLP forms provided.

The support documentation in Appendix A of this report summarizes the specifics of this review. Appendix A also provides the sample results as reported by the laboratory. The data summary table lists all compounds that were analyzed. Analytical problems are outlined in the following Findings/Qualifiers Section. Issues that arose which did not warrant qualification are detailed in the Notes Section.

SMITH

FINDINGS/QUALIFIERS

This data validation report addresses the 14 filtered groundwater samples and 3 field duplicate samples analyzed for calcium, chromium, magnesium and sodium, and 14 unfiltered groundwater samples and 3 unfiltered field duplicate samples analyzed for chromium analysis of IEA Corporation work order number A1462. The groundwater data were evaluated for the following parameters:

- * data completeness
- * holding times
- * data calibration verification
- \+ CRDL standard
- * laboratory blank analysis
- * field blank analysis
- \+ interference check sample results
- * matrix spike recoveries
- * laboratory duplicates
- * field duplicates
- * laboratory control sample results
- \+ serial dilution results
- * detection limit results
- * sample results

* All criteria were met for this parameter.

\+ All criteria were met for this parameter; however, this parameter is discussed in the Notes Section of this report.

Based upon the data validation performed there were no quality control outliers or issues that warrant qualification of the sample results. The data are acceptable as reported on the summary tables.

NOTES

The following items noted during the validation review has not impact results or necessitate further qualification of data:

1. The ICP Interference Check Sample (ICS) %R result for calcium was low. However, all sample concentrations did not exceed 50% of the ICS solution concentration; therefore, no data are qualified.

2. The serial dilution result for magnesium was incorrectly reported on the ICP Serial Dilution Form (Form 9). No data are qualified. The reviewer-corrected Form 9 is included in Appendix A.

3. The standards reported at the CRDL for calcium, magnesium, and sodium are incorrectly reported on the CRDL Standard for AA and ICP Forms (Form 2Bs). These metals are not required for CRDL standard analysis according to the EPA. It was confirmed by the Laboratory that standards at the CRDL were not performed for these analytes. The reviewer-corrected Form 2Bs are included in Appendix A.

SUMMARY

The reported data are usable based upon the data validation performed. There were no quality control outliers or issues that warrant qualification of the sample results. The data are acceptable as reported on the summary tables. For specifics relating to this review, see the attached documentation in Appendix A.

SMITH

APPENDIX A

Inorganic Data Validation Summary

Project Name:	Olin	Case No./SDG:	A1462
Project No.:	00-7016-0102	Sampling Date(s):	7/31/96, 8/1/96
Project Manager:	Bruce Cushing	Reviewed By:	E. Bryan Rivers
Laboratory:	IEA	Completion Date:	10/3/96

Compound List: ☐ TAL ☐ Appendix IX ☑ Other Ca, Cr, Mg + Na

Method: ☑ CLP SOW 3/90 ☐ SW-846 ☐ Other ______

Matrix: ☐ soil/solid (mg/Kg) ☒ aqueous (ug/L) field blank

The following table indicates the data validation criteria examined, problems identified, and QA action.

Data Validation Criteria:	accept	FYI	qualify	comments
Holding Times	✓			
Calibration Linearity - Furnace, Hg, and CN	✓			
Calibration Verification	✓			
CRDL Standard		✓	~~✓~~ err	reported but not required
Calibration Blanks	✓			
Preparation Blanks	✓			
Field Blank				NA
ICP Interference Check Sample		✓		Ca is low but all conc. are >50% more than the levels in the ICS.
Laboratory Control Sample	✓			
Matrix Spike Results	✓			
Laboratory Duplicate Results	✓			
ICP Serial Dilution		✓		Transcription error
Post Digestion Analytical Spike				NA
Method of Standard Addition				NA
Field Duplicate Results	✓			
Sample Result Verification	✓			
Other:				

General Comments: ______

NA - Not applicable
NR - Not reviewed

QA Scientist E. Bryan Rivers Date 11/14/96

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

CHESTNUT #1A

Lab Name: IEA Contract: ______

Lab Code: IEA Case No.: 1462 SAS No.: ______ SDG No.: A1462

Matrix (soil/water): WATER Lab Sample ID: T961462A-01

Level (low/med): LOW Date Received: 08/01/96

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: YELLOW Clarity Before: CLEAR Texture: ______

Color After: COLORLESS Clarity After: CLEAR Artifacts: ______

Comments:
Total Metals

REVISED DATA
RESUBMITTED BY LABORATORY
INSERTED BY: E. [illegible] 9/30/96
SIGNATURE DATE

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

CHESTNUT #1

Lab Name: IEA Contract:

Lab Code: IEA Case No.: 1462 SAS No.: SDG No.: A1462

Matrix (soil/water): WATER Lab Sample ID: T961462A-02

Level (low/med): LOW Date Received: 08/01/96

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: YELLOW Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:
Total Metals

REVISED DATA
RESUBMITTED BY LABORATORY
INSERTED BY C. Bryan Rivers 9/30/96
SIGNATURE DATE

FORM I - IN ILM03.0

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

GW63S

Lab Name: IEA　　Contract:

Lab Code: IEA　　Case No.: 1462　　SAS No.:　　SDG No.: A1462

Matrix (soil/water): WATER　　Lab Sample ID: T961462A-03

Level (low/med): LOW　　Date Received: 08/01/96

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: YELLOW　　Clarity Before: CLEAR　　Texture:

Color After: COLORLESS　　Clarity After: CLEAR　　Artifacts:

Comments:
Total Metals

REVISED DATA
RESUBMITTED BY LABORATORY
RECEIVED BY [signature] 9/30/96
SIGNATURE　DATE

FORM I - IN　　ILM03.0

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

GW63D

Lab Name: IEA Contract:

Lab Code: IEA Case No.: 1462 SAS No.: SDG No.: A1462

Matrix (soil/water): WATER Lab Sample ID: T961462A-04

Level (low/med): LOW Date Received: 08/01/96

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:
Total Metals

REVISED DATA
RESUBMITTED BY LABORATORY

INSERTED BY [signature] 9/30/96
SIGNATURE DATE

FORM I - IN ILM03.0

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BUTTERS ROW #1

Lab Name: IEA Contract: ______

Lab Code: IEA Case No.: 1462 SAS No.: ______ SDG No.: A1462

Matrix (soil/water): WATER Lab Sample ID: T961462A-05

Level (low/med): LOW Date Received: 08/01/96

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: YELLOW Clarity Before: CLEAR Texture: ______

Color After: COLORLESS Clarity After: CLEAR Artifacts: ______

Comments:
Total Metals

REVISED DATA
RESUBMITTED BY LABORATORY
INSERTED BY [illegible] 9/30/96
SIGNATURE DATE

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

GW64S

Lab Name: IEA Contract:

Lab Code: IEA Case No.: 1462 SAS No.: SDG No.: A1462

Matrix (soil/water): WATER Lab Sample ID: T961462A-06

Level (low/med): LOW Date Received: 08/01/96

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: YELLOW Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:
Total Metals

RESUBMITTED BY LABORATORY

INSERTED BY [signature] 9/30/96
SIGNATURE DATE

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

GW64D

Lab Name: IEA Contract:

Lab Code: IEA Case No.: 1462 SAS No.: SDG No.: A1462

Matrix (soil/water): WATER Lab Sample ID: T961462A-07

Level (low/med): LOW Date Received: 08/01/96

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:
Total Metals

REVISED DATA
RESUBMITTED BY LABORATORY

INSERTED BY E. Bryan Lewis 9/30/96
SIGNATURE DATE

FORM I - IN ILM03.0

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO. 0023

BUTTERS ROW #2

Lab Name: IEA Contract: ______

Lab Code: IEA Case No.: 1462 SAS No.: ______ SDG No.: A1462

Matrix (soil/water): WATER Lab Sample ID: T961462A-08

Level (low/med): LOW Date Received: 08/01/96

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture: ______

Color After: COLORLESS Clarity After: CLEAR Artifacts: ______

Comments:
Total Metals

REVISED DATA
RESUBMITTED BY LABORATORY

INSERTED BY [signature] 9/20/96
SIGNATURE DATE

FORM I - IN ILM03.0

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BLIND #1

Lab Name: IEA Contract: ____

Lab Code: IEA Case No.: 1462 SAS No.: ____ SDG No.: A1462

Matrix (soil/water): WATER Lab Sample ID: T961462A-09

Level (low/med): LOW Date Received: 08/01/96

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: YELLOW Clarity Before: CLEAR Texture: ____

Color After: COLORLESS Clarity After: CLEAR Artifacts: ____

Comments:
Total Metals

REVISED DATA
RESUBMITTED BY LABORATORY

INSERTED BY T. Bryan Kiely 9/30/96
SIGNATURE DATE

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BLIND #2

Lab Name: IEA Contract: ______

Lab Code: IEA Case No.: 1462 SAS No.: ______ SDG No.: A1462

Matrix (soil/water): WATER Lab Sample ID: T961462A-10

Level (low/med): LOW Date Received: 08/01/96

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture: ______

Color After: COLORLESS Clarity After: CLEAR Artifacts: ______

Comments:
Total Metals

REVISED DATA
RESUBMITTED BY LABORATORY

INSERTED BY E. Bryan Zuel 9/30/96
SIGNATURE DATE

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TOWN PARK #1

Lab Name: IEA Contract:

Lab Code: IEA Case No.: 1462 SAS No.: SDG No.: A1462

Matrix (soil/water): WATER Lab Sample ID: T961462A-11

Level (low/med): LOW Date Received: 08/02/96

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:
Total Metals

REVISED DATA
RESUBMITTED BY LABORATORY

INSERTED BY E. Byron Rivers 9/30/96
SIGNATURE DATE

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

GW73S

Lab Name: IEA Contract:

Lab Code: IEA Case No.: 1462 SAS No.: SDG No.: A1462

Matrix (soil/water): WATER Lab Sample ID: T961462A-12

Level (low/med): LOW Date Received: 08/02/96

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:
Total Metals

REVISED DATA
RESUBMITTED BY LABORATORY

INSERTED BY [signature] 5/30/96
SIGNATURE DATE

FORM I - IN ILM03.0

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO. 002

GW73D

Lab Name: IEA Contract:

Lab Code: IEA Case No.: 1462 SAS No.: SDG No.: A1462

Matrix (soil/water): WATER Lab Sample ID: T961462A-13

Level (low/med): LOW Date Received: 08/02/96

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:
Total Metals

REVISED DATA
RESUBMITTED BY LABORATORY

INSERTED BY [signature] 9/30/96
SIGNATURE DATE

FORM I - IN ILM03.0

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

GW62S

Lab Name: IEA　　Contract:

Lab Code: IEA　　Case No.: 1462　　SAS No.:　　SDG No.: A1462

Matrix (soil/water): WATER　　Lab Sample ID: T961462A-14

Level (low/med): LOW　　Date Received: 08/02/96

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: COLORLESS　　Clarity Before: CLEAR　　Texture:

Color After: COLORLESS　　Clarity After: CLEAR　　Artifacts:

Comments:
Total Metals

~~REVISED DATA~~
~~RESUBMITTED BY LABORATORY~~

INSERTED BY: [signature] 9/30/96
SIGNATURE　　DATE

FORM I - IN　　ILM03.0

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

GW62M

Lab Name: IEA Contract:

Lab Code: IEA Case No.: 1462 SAS No.: SDG No.: A1462

Matrix (soil/water): WATER Lab Sample ID: T961462A-15

Level (low/med): LOW Date Received: 08/02/96

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:
Total Metals

RESUBMITTED [illegible] RATORY

INSERTED BY [signature] [date]
SIGNATURE DATE

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

GW62D

Lab Name: IEA Contract:

Lab Code: IEA Case No.: 1462 SAS No.: SDG No.: A1462

Matrix (soil/water): WATER Lab Sample ID: T961462A-16

Level (low/med): LOW Date Received: 08/02/96

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:
Total Metals

REVISED DATA
RESUBMITTED BY LABORATORY
INSERTED BY [illegible]
SIGNATURE 9/30/96
DATE

FORM I - IN ILM03.0

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BLIND #3

Lab Name: IEA Contract: ____________

Lab Code: IEA Case No.: 1462 SAS No.: ______ SDG No.: A1462

Matrix (soil/water): WATER Lab Sample ID: T961462A-17

Level (low/med): LOW Date Received: 08/02/96

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture: ______

Color After: COLORLESS Clarity After: CLEAR Artifacts: ______

Comments:
Total Metals

REVISED DATA
RESUBMITTED BY LABORATORY

INSERTED BY E. Byhn Davis 9/30/96
SIGNATURE DATE

FORM I - IN ILM03.0

160

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

CHESTNUT #1A

Lab Name: IEA Contract: ______

Lab Code: IEA Case No.: 1462 SAS No.: ______ SDG No.: A1462

Matrix (soil/water): WATER Lab Sample ID: F961462A-01

Level (low/med): LOW Date Received: 08/01/96

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium	17400			P
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium	5000	U		P
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium	32400			P
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: YELLOW Clarity Before: CLEAR Texture: ______

Color After: COLORLESS Clarity After: CLEAR Artifacts: ______

Comments:
Filtered Metals

161

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

CHESTNUT #1

Lab Name: IEA Contract: ______

Lab Code: IEA Case No.: 1462 SAS No.: ______ SDG No.: A1462

Matrix (soil/water): WATER Lab Sample ID: F961462A-02

Level (low/med): LOW Date Received: 08/01/96

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium	29900			P
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium	6600			P
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium	52700			P
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: YELLOW Clarity Before: CLEAR Texture: ______

Color After: COLORLESS Clarity After: CLEAR Artifacts: ______

Comments:
Filtered Metals

162

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

GW63S

Lab Name: IEA　　Contract: ______

Lab Code: IEA　　Case No.: 1462　　SAS No.: ______　　SDG No.: A1462

Matrix (soil/water): WATER　　Lab Sample ID: F961462A-03

Level (low/med): LOW　　Date Received: 08/01/96

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium	21900			P
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium	5000	U		P
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium	49500			P
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: YELLOW　　Clarity Before: CLEAR　　Texture: ______

Color After: COLORLESS　　Clarity After: CLEAR　　Artifacts: ______

Comments:

Filtered Metals

163

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

GW63D

Lab Name: IEA Contract: ______

Lab Code: IEA Case No.: 1462 SAS No.: ______ SDG No.: A1462

Matrix (soil/water): WATER Lab Sample ID: F961462A-04

Level (low/med): LOW Date Received: 08/01/96

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium	39800			P
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium	6660			P
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium	43100			P
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture: ______

Color After: COLORLESS Clarity After: CLEAR Artifacts: ______

Comments:
Filtered Metals

FORM I - IN ILM03.0

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BUTLERS ROW #1

Lab Name: IEA Contract: ____________

Lab Code: IEA Case No.: 1462 SAS No.: ________ SDG No.: A1462

Matrix (soil/water): WATER Lab Sample ID: F961462A-05

Level (low/med): LOW Date Received: 08/01/96

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium	31600			P
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium	7020			P
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium	51100			P
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: YELLOW Clarity Before: CLEAR Texture: ______

Color After: COLORLESS Clarity After: CLEAR Artifacts: ______

Comments:
Filtered Metals

165

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

GW64S

Lab Name: IEA Contract: ________

Lab Code: IEA Case No.: 1462 SAS No.: ______ SDG No.: [illegible]

Matrix (soil/water): WATER Lab Sample ID: F961462A-06

Level (low/med): LOW Date Received: 08/01/96

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium	11600			P
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium	5000	U		P
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium	34900			P
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: YELLOW Clarity Before: CLEAR Texture: ______

Color After: COLORLESS Clarity After: CLEAR Artifacts: ______

Comments:

Filtered Metals

166

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

GW64D

Lab Name: IEA Contract:

Lab Code: IEA Case No.: 1462 SAS No.: SDG No.: A1462

Matrix (soil/water): WATER Lab Sample ID: F961462A-07

Level (low/med): LOW Date Received: 08/01/96

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium	45800			P
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium	12200			P
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium	75300			P
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:
Filtered Metals

167

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BUTLERS ROW #2

Lab Name: IEA Contract: ______

Lab Code: IEA Case No.: 1462 SAS No.: ______ SDG No.: A1462

Matrix (soil/water): WATER Lab Sample ID: F961462A-08

Level (low/med): LOW Date Received: 08/01/96

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium	24200			P
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium	5050			P
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium	33700			P
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: YELLOW Clarity Before: CLEAR Texture: ______

Color After: COLORLESS Clarity After: CLEAR Artifacts: ______

Comments:
Filtered Metals

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BLIND #1

Lab Name: IEA Contract:

Lab Code: IEA Case No.: 1462 SAS No.: SDG No.: A1462

Matrix (soil/water): WATER Lab Sample ID: F961462A-09

Level (low/med): LOW Date Received: 08/01/96

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium	31100			P
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium	6930			P
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium	52300			P
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: YELLOW Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:
Filtered Metals

109

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BLIND #2

Lab Name: IEA   Contract: ____

Lab Code: IEA   Case No.: 1462   SAS No.: ____   SDG No.: A1462

Matrix (soil/water): WATER   Lab Sample ID: F961462A-10

Level (low/med): LOW   Date Received: 08/01/96

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium	44400			P
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium	11900			P
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium	74800			P
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
57-12-5	Cyanide				NR

Color Before: COLORLESS   Clarity Before: CLEAR   Texture: ____

Color After: COLORLESS   Clarity After: CLEAR   Artifacts: ____

Comments:
Filtered Metals

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TOWN PARK #1

Lab Name: IEA   Contract: ______

Lab Code: IEA   Case No.: 1462   SAS No.: ______   SDG No.: A1462

Matrix (soil/water): WATER   Lab Sample ID: F961462A-11

Level (low/med): LOW   Date Received: 08/02/96

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7440-70-2	Calcium	21800			P
7440-47-3	Chromium	10.0	U		P
7439-95-4	Magnesium	5000	U		P
7440-23-5	Sodium	51100			P

Color Before: COLORLESS   Clarity Before: CLEAR   Texture: ______

Color After: COLORLESS   Clarity After: CLEAR   Artifacts: ______

Comments:
Filtered Metals

REVISED DATA
RESUBMITTED BY LABORATORY

INSERTED BY E. Bryan Tiwell 10/4/96
SIGNATURE DATE

FORM I - IN   ILM03.0

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

GW73S

Lab Name: IEA Contract: ____

Lab Code: IEA Case No.: 1462 SAS No.: ____ SDG No.: A1462

Matrix (soil/water): WATER Lab Sample ID: F961462A-12

Level (low/med): LOW Date Received: 08/02/96

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7440-70-2	Calcium	23700			P
7440-47-3	Chromium	10.0	U		P
7439-95-4	Magnesium	5000	U		P
7440-23-5	Sodium	5000	U		P

Color Before: COLORLESS Clarity Before: CLEAR Texture: ____

Color After: COLORLESS Clarity After: CLEAR Artifacts: ____

Comments:
Filtered Metals

REVISED DATA
RESUBMITTED BY LABORATORY
INSERTED BY E. Bryan Rious 10/31/96
SIGNATURE DATE

FORM I - IN ILM03.0

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

GW73D

Lab Name: IEA Contract:

Lab Code: IEA Case No.: 1462 SAS No.: SDG No.: A1462

Matrix (soil/water): WATER Lab Sample ID: F961462A-13

Level (low/med): LOW Date Received: 08/02/96

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7440-70-2	Calcium	33800			P
7440-47-3	Chromium	10.0	U		P
7439-95-4	Magnesium	10300			P
7440-23-5	Sodium	34100			P

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:
Filtered Metals

REVIS[illegible]
RESUBMITTED BY LABORATORY

FORM I - IN ILM03.0

INSERTED BY [signature] 10/31/96
SIGNATURE DATE

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

GW62S

Lab Name: IEA Contract: ____

Lab Code: IEA Case No.: 1462 SAS No.: ____ SDG No.: A1^62

Matrix (soil/water): WATER Lab Sample ID: F961462A-14

Level (low/med): LOW Date Received: 08/02/96

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7440-70-2	Calcium	29200			P
7440-47-3	Chromium	10.0	U		P
7439-95-4	Magnesium	5000	U		P
7440-23-5	Sodium	33000			P

Color Before: COLORLESS Clarity Before: CLEAR Texture: ____

Color After: COLORLESS Clarity After: CLEAR Artifacts: ____

Comments:
Filtered Metals

REVISED DATA
RESUBMITTED BY LABORATORY
INSERTED BY: E. [signature] 10/31/96
SIGNATURE DATE

FORM I - IN ILM03.0

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

GW62M

Lab Name: IEA Contract:

Lab Code: IEA Case No.: 1462 SAS No.: SDG No.: A1462

Matrix (soil/water): WATER Lab Sample ID: F961462A-15

Level (low/med): LOW Date Received: 08/02/96

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7440-70-2	Calcium	26300			P
7440-47-3	Chromium	10.0	U		P
7439-95-4	Magnesium	5610			P
7440-23-5	Sodium	32800			P

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:
Filtered Metals

REVISED DATA
RESUBMITTED BY LABORATORY

INSERTED BY [signature] 10/3/96
SIGNATURE DATE

FORM I - IN ILM03.0

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

GW62D

Lab Name: IEA Contract:

Lab Code: IEA Case No.: 1462 SAS No.: SDG No.: A1462

Matrix (soil/water): WATER Lab Sample ID: F961462A-16

Level (low/med): LOW Date Received: 08/02/96

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7440-70-2	Calcium	28800			P
7440-47-3	Chromium	10.0	U		P
7439-95-4	Magnesium	7720			P
7440-23-5	Sodium	39300			P

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:
Filtered Metals

REVISED DATA
RESUBMITTED BY LABORATORY
INSERTED BY F. Bryan Rivers 10/31/96
SIGNATURE DATE

FORM I - IN ILM03.0

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BLIND #3

Lab Name: IEA Contract:

Lab Code: IEA Case No.: 1462 SAS No.: SDG No.: A1462

Matrix (soil/water): WATER Lab Sample ID: F961462A-17

Level (low/med): LOW Date Received: 08/02/96

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7440-70-2	Calcium	28200			P
7440-47-3	Chromium	10.0	U		P
7439-95-4	Magnesium	7570			P
7440-23-5	Sodium	39000			P

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:
Filtered Metals

REVISED DATA
RESUBMITTED BY LABORATORY
INSERTED BY [signature] 10/3/96
SIGNATURE DATE

FORM I - IN ILM03.0

U.S. EPA - CLP

2B
CRDL STANDARD FOR AA AND ICP

Lab Name: IEA Contract: ______

Lab Code: IEA Case No.: ______ SAS No.: ______ SDG No.: A1462

AA CRDL Standard Source: INORG. VENT.

ICP CRDL Standard Source: INORG. VENT.

Concentration Units: ug/L

Analyte	CRDL Standard for AA			CRDL Standard for ICP				
	True	Found	%R(1)	True	Initial Found	%R(1)	Final Found	%R(1)
Aluminum								
Antimony								
Arsenic								
Barium								
Beryllium								
Cadmium								
Calcium				~~2000.0~~	~~84.99~~	~~4.2~~	~~83.86~~	~~4.2~~ * EB 11/7
Chromium				20.0	22.66	113.3	21.72	108.6
Cobalt								
Copper								
Iron								
Lead								
Magnesium				~~2000.0~~	~~21.54~~	~~1.1~~	~~7.50~~	~~0.4~~ * EB 11/7
Manganese								
Mercury								
Nickel								
Potassium								
Selenium								
Silver								
Sodium				~~2000.0~~	~~132.06~~	~~6.6~~	~~141.77~~	~~7.1~~ * EB 11/7
Thallium								
Vanadium								
Zinc								
Cyanide								

* Ca, Mg + Na are not required for CRDL standard analysis. The lab responded to an inquiry to confirm that these ~~spiking solutions~~ analytes were not present in the spiking solution. The response is included in the Appendix

E. Benjamin [illegible] 11/7/96

U.S. EPA - CLP

2B
CRDL STANDARD FOR AA AND ICP

Lab Name: IEA Contract: ____________

Lab Code: IEA Case No.: ______ SAS No.: ______ SDG No.: A1462

AA CRDL Standard Source: INORG. VENT.

ICP CRDL Standard Source: INORG. VENT.

Concentration Units: ug/L

Analyte	CRDL Standard for AA True	Found	%R(1)	CRDL Standard for ICP True	Initial Found	%R(1)	Final Found	%R(1)
Aluminum								
Antimony								
Arsenic								
Barium								
Beryllium								
Cadmium								
Calcium				~~2000.0~~	~~430.36~~	~~21.5~~	~~92.28~~	~~4.6~~
Chromium				20.0	17.46	87.3	20.64	103.2
Cobalt								
Copper								
Iron								
Lead								
Magnesium				~~2000.0~~	~~134.35~~	~~6.7~~	~~28.73~~	~~1.4~~
Manganese								
Mercury								
Nickel								
Potassium								
Selenium								
Silver								
Sodium				~~2000.0~~	~~11.87~~	~~0.6~~	~~2.70~~	~~0.4~~
Thallium								
Vanadium								
Zinc								
Cyanide								

* EB 11/7

* EB 11/7

* EB 11/7

* Ca, Mg + Na are not required for CRDL Standard analysis. The lab responded to an inquiry to confirm that these ~~spiking solution~~ analytes were not present in the spiking solution. The response is included in the Appendix

E. Bryan Rivera 11/7/96

FORM II (PART 2) - IN ILM03.0

U.S. EPA - CLP

4
ICP INTERFERENCE CHECK SAMPLE

Lab Name: IEA Contract: ______

Lab Code: IEA Case No.: ______ SAS No.: ______ SDG No.: A1462

ID Number: JA61E ICS Source: EPA-LV87

Concentration Units: ug/L

Analyte	True Sol. A	True Sol. AB	Initial Found Sol. A	Initial Found Sol. AB	Initial Found %R	Final Found Sol. A	Final Found Sol. AB	Final Found %R
Aluminum	500000							
Antimony								
Arsenic								
Barium								
Beryllium								
Cadmium								
Calcium	500000	500000	415879	368242.7	73.6 *	446216	403314.9	80.6
Chromium		500	4	456.0	91.2	4	424.1	84.8
Cobalt								
Copper								
Iron	200000							
Lead								
Magnesium	500000	500000	475022	415812.3	83.1	522290	461995.7	92.3
Manganese								
Mercury								
Nickel								
Potassium								
Selenium								
Silver								
Sodium			-152	-106.8		-153	-118.8	
Thallium								
Vanadium								
Zinc								
Cyanide								

* Samples concentrations for 62A-01, 62A-02, 62A-03, 62A-04
62A-05, 62A-06, 62A-07, 62A-08
62A-09, 62A-10 ~~are estimated and~~ EBR 10/3/96
~~biased low~~ for Calcium are not
50% more than their ICS. No
data are qualified.
E. Bryan Rivers 10/3/96

Inorganic Field Duplicate Precision Worksheet

Project Name: Olin
Project Number: 00-7074-0102

Case Number: A1462

Sample location	Butters Row #1	Blind #1
Sample ID number	961462A-05	961462A-09
Matrix	Aqueous	Aqueous
Units	ug/l	ug/l
unfilt. / filt.	filt.	filt.

Compound	Control Limit	Sample Concentration	Field Duplicate Concentration	RPD	Q
Calcium		31600	31100	1.6	
Chromium					
Magnesium	~~10000~~ 5000	7020	6930	1.3	
Sodium		51100	52300	2.3	

* Indicates control limit out of criteria.

EPA Region I has established the following criteria for field duplicate analysis:

When both samples are greater than 5x the CRDL, use control limit of 30 percent RPD.
When one or both samples are less than 5x the CRDL, use control limit of 2+/- CRDL.

1462FD1M.XLS

QA Scientist E. Bryan Rivers Date 11/11/96

Inorganic Field Duplicate Precision Worksheet

Project Name: Olin
Project Number: 00-7074-0102

Case Number: A1462

Sample location	GW62D	Blind #3
Sample ID number	961462A-16	961462A-17
Matrix	Aqueous	Aqueous
Units	ug/l	ug/l
unfilt. / filt.	filt.	filt.

Compound	Control Limit	Sample Concentration	Field Duplicate Concentration	RPD	Q
Calcium		28800	28200	2.1	
Chromium					
Magnesium	~~10000~~ 5000 11/4/96 EBR	7720	7570	2.0	
Sodium		39300	39000	0.8	

* Indicates control limit out of criteria.

EPA Region I has established the following criteria for field duplicate analysis:

When both samples are greater than 5x the CRDL, use control limit of 30 percent RPD.
When one or both samples are less than 5x the CRDL, use control limit of 2+/- CRDL.

1462FD2M.XLS

QA Scientist E. Bryan Riley Date 11/11/96

Inorganic Field Duplicate Precision Worksheet

Project Name: Olin

Project Number: 00-7074-0102

Case Number: A1462

Sample location	GW64D	Blind #2
Sample ID number	961462A-07	961462A-10
Matrix	Aqueous	Aqueous
Units	ug/l	ug/l
unfilt. / filt.	filt.	filt.

Compound	Control Limit	Sample Concentration	Field Duplicate Concentration	RPD	Q
Calcium		45800	44400	3.1	
Chromium					
Magnesium	~~10000~~ 5000 11/11/96 EBR	12200	11900	2.5	
Sodium		75300	74800	0.7	

* Indicates control limit out of criteria.

EPA Region I has established the following criteria for field duplicate analysis:

When both samples are greater than 5x the CRDL, use control limit of 30 percent RPD.
When one or both samples are less than 5x the CRDL, use control limit of 2+/- CRDL.

1462FDM.XLS

QA Scientist E. Bryan Rivers Date 11/11/96

195

U.S. EPA - CLP

9
ICP SERIAL DILUTIONS

EPA SAMPLE NO.

TLERS ROW #1L

Lab Name: IEA Contract: ___

Lab Code: IEA Case No.: 1462 SAS No.: ___ SDG No.: A1462

Matrix(soil/water): WATER Level (low/med): LOW

Concentration Units: ug/L

Analyte	Initial Sample Result (I)	C	Serial Dilution Result (S)	C	% Differ-ence	Q	M
Aluminum							NR
Antimony							NR
Arsenic							NR
Barium							NR
Beryllium							NR
Cadmium							NR
Calcium	31651.39		32816.68		3.7		P
Chromium	10.00	U	50.00	U			P
Cobalt							NR
Copper							NR
Iron							NR
Lead							NR
Magnesium	7021.81		7386.76 ~~25000.00~~	U	5.2 ~~100.0~~		P
Manganese							NR
Mercury							NR
Nickel							NR
Potassium							NR
Selenium							NR
Silver							NR
Sodium	51109.67		55179.45		8.0		P
Thallium							NR
Vanadium							NR
Zinc							NR
Cyanide							NR

EBR 10/3/96

FORM IX - IN ILM03.0

E. Bryan Rivers 10/3/96

IEA
An Aquarion Company

200 Monroe Turnpike
Monroe, Connecticut 06468

Phone 203-261-4458
Fax 203-268-5346

7096-1452A
OLIN CORPORATION

Case Narrative

Classical Chemistry - Listed below are the wet chemistry analyte methods and references for all samples analyzed in this SDG. Chloride failed the control limits for spike recovery analysis for sample Butler's Row # 1. This appears to be due to a sample matrix interference. No other analytical problems were encountered and all holding times were met.

Analyte	Method	Reference
Ammonia	~~310.1~~ 350.3	1
Bicarbonate	2320B	2
Carbonate	2320B	2
Chloride	325.2	1
Sulfate	375.4	1

EBK
10/2/96

References:

1. Methods for Chemical Analysis of Water and Wastes, USEPA 600, 1983.
2. Test Methods for the Evaluation of Solid Waste, SW846, 3rd edition, 1986.

Metals - ICAP metals were determined using a JA61 simultaneous ICAP and a JA61E trace ICAP using guidance provided in SW846 according to the following Methods: ICAP-3010/6010.

No problems occurred during analysis. All appropriate protocols were employed. All data appears to be consistent.

I certify that this data package is in compliance with the terms of this contract, both technically and for completeness, for other than the conditions detailed above. Release of this hardcopy data package has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

Jeffrey C. Curran
Laboratory Manager

Date Aug. 23, 1996

IEA
An Aquarion Company

200 Monroe Turnpike
Monroe, Connecticut 06468

Phone 203-261-4458
Fax 203-268-5346

September 26, 1996

Mr. Bruce Cushing
OLIN CORPORATION
c/o Smith Environmental Corp.
One Plymouth Meeting
Plymouth Meeting, PA 19462

Dear Mr. Cushing:

In reference to corrective action report #4947, please find enclosed the revised analytical results for IEA report #7096-1462A.

The tables have been revised and are enclosed.

The changes are based on the following issues: chromium results were incorrect; calcium, magnesium and sodium are not present in the spiking solution.

Very truly yours,

Cheryl Ann Cascella

Data Management

CAC/ab

cc: S. Morrow
L. Wiksteron

RECEIVED
SEP 30 1996

Schaumburg, Illinois 847-705-0740

N. Billerica, Massachusetts 508-667-1400

Whippany, New Jersey 201-428-8181

Cary, North Carolina 919-677-0090

Inquiry No. MET1
Page 1 of 1

SMITH ENVIRONMENTAL CORPORATE QUALITY ASSURANCE DEPARTMENT
DATA VALIDATION INQUIRY

To: Jeffrey Curran, L. Wiksteron, S. Morrow
cc: Bruce Cushing, Project Manager, SMTH
DATA VALIDATION REPORT

I.E.A. An Aquarion Company Case No.:A1462
Project Name: Wilmington, MA

September 25, 1996

Dear Mr. Curran:

The following questions pertain the metals' data for A1462:

1. The spike sample for the filtered metals was only analyzed for one analyte (chromium). Please send an explanation to why the other analytes were not analyzed or send the rest of the spike sample results as soon as possible.

2. I was informed that the detection limit for chromium is 10U and to ignore the 4U that was provided in some of the current data because the correct data is going to be sent later. If this information is incorrect please contact me as well.

Please call me with any questions that you may have regarding these issues.

Thank you,
E. Bryan Rivers
Quality Assurance Scientist

— Project is close —

IEA
An Aquarion Company

CORRECTIVE ACTION FORM

A. Originator Information

Client Inquiry____

Client: Olin - Data reviewer
Job/Case: 7096 - 1462A
Date/time: 9/25/96
Sample Number(s): metals
Client/Lab Contact: M Culek
Date/Time Response Due:

Detailed Description of Potential Problem: See attached

① Ca, Mg, Na are not present in the spiking solution

② Dissolved is 10a what about Total?

B. Quality Assurance Information

Corrective Action # 4947

Recommended Corrective Action:

Groups Involved:
- __ Sample Control
- __ Wet Chemistry
- X Metals
- __ Gas Chromatography
- __ Mass Spectrometry
- __ Report Generation
- __ Client Service
- __ Sample Preparation

C. Final Resolution

Describe What Happened and Long Term Corrective Action Taken:
1462A Total - forms corrected + attached.
Report will be revised and data forms will be sent to Rpt address + CC's. FedX. priority

Supervisor Signature: C. Casella Date 9/26/96 Date/Time Client Notified:

D. Quality Assurance Final Approval (QA Manager use only)

Corrective Action Approved: M. Culek
Date Finalized: 9/27/96
Was a problem identified? Yes / No

RECEIVED
OCT 2 1996
E. Bryan...

IEA, Inc. Doc.# QAF00200.CT

10/21/96 09:42 ☎203 459 9095 IEA CONNECTICUT

May

An Aquarion Company

IEA, INC.-CT FACSIMILE COVER SHEET

DATE: 10/21/96

NUMBER OF PAGES (INCLUDING COVER SHEET) 2

TO: Bryan Rueing

LOCATION:

TELEPHONE NO. FAX NO. 610-834-8236

FROM: STEPHANIE PLUNKETT

LOCATION: IEA, INC.-CONNECTICUT

TELEPHONE NO. (203) 261-4458 FAX NO. (203) 268-5346

MESSAGE

Bryan

He is ~~att~~ the idea we discussed regarding the metals CRDL standard. It was mailed out on Friday. Can you tell me what if anything you are still missing? as far as I can tell all revisions have been issued! Thanks,

Steph

Schaumburg, Illinois 708-705-0740
N. Billerica, Massachusetts 617-272-5212
Whippany, New Jersey 201-428-8181
Research Triangle Park, North Carolina 919-677-0090

IEA
An Aquarion Company

200 Monroe Turnpike
Monroe, Connecticut 06468

Phone 203-261-4458
Fax 203-268-5346

October 18, 1996

Mr. Bryan Rivers
Smith Environmental
1 Plymouth Meeting
Plymouth Meeting PA 19462

Dear Mr. Rivers:

The following is in response to a question concerning the elements showing poor recoveries in the CRDL standard. These analytes are not part of the commercially prepared standard solution. Due to a software programing issues these analytes are calculated and a very low or negative recovery is printed on the form. This issue is in the process of being reviewed by the systems department.

If you have any further question concerning this response, please do not hesitate to contact me or Stephanie Plunkett at (203) 261-4458.

Sincerely,

Marsha K. Culik

Marsha Culik
Quality Assurance Manager

cc: Stephanie Plunkett

RECEIVED
OCT 21 1996

IEA
An Aquarion Company

200 Monroe Turnpike
Monroe, Connecticut 06468

Phone 203·261·4458
Fax 203·268·5346

October 18, 1996

Mr. Bryan Rivers
Smith Environmental
1 Plymouth Meeting
Plymouth Meeting PA 19462

Dear Mr. Rivers:

The following is in response to a question concerning the elements showing poor recoveries in the CRDL standard. These analytes are not part of the commercially prepared standard solution. Due to a software programing issues these analytes are calculated and a very low or negative recovery is printed on the form. This issue is in the process of being reviewed by the systems department.

If you have any further question concerning this response, please do not hesitate to contact me or Stephanie Plunkett at (203) 261-4458.

Sincerely,

Marsha K. Culik

Marsha Culik
Quality Assurance Manager

cc: Stephanie Plunkett

RECEIVED
OCT 22 1996

Schaumburg, Illinois 847·705·0740

N. Billerica, Massachusetts 508·667·1400

Whippany, New Jersey 201·428·8181

Cary, North Carolina 919·677·0090

IEA
An Aquarion Company

200 Monroe Turnpike
Monroe, Connecticut 06468

Phone 203·261·4458
Fax 203·268·5346

October 28, 1996

Mr. Bruce Cushing
OLIN CORPORATION
c/o Smith Environmental Corp.
One Plymouth Meeting
Plymouth Meeting, PA 19462

Dear Mr. Cushing:

In reference to corrective action report #4995/4974, please find enclosed the revised analytical results for IEA report #7096-1462A.

All forms have been revised and are attached, per the client's request.

Very truly yours,

Cheryl Ann Casella

Data Management

CAC/ab

cc: S. Morrow
L. Wiksteron

RECEIVED
OCT 29 1996

Schaumburg, Illinois 847·705·0740

N. Billerica, Massachusetts 508·667·1400

Whippany, New Jersey 201·428·8181

Cary, North Carolina 919·677·0090

"Month Sampling [illegible]

IEA
An Aquarion Company
149 Rangeway Road
N. Billerica, Massachusetts 01862
508 / 667-1400
Fax 508 / 667-7871

CHAIN OF CUSTODY RECORD

REGULATORY CLASSIFICATION - PLEASE SPECIFY

☐ NPDES ☐ DRINKING WATER ☐ RCRA ☐ MCP ☐ OTHER ______

REQUIR[illegible]

CUST. P.O. #	
IEA QUOTE #	

TURN AROUND

☐ 15 BUSINESS DAY
☐ 10 BUSINESS DAY
☐ RUSH ______
☐ OTHER ______

COMPANY	CONTACT PERSON	PROJECT I.D.	PHONE #	FAX #
Olin Corp				

ADDRESS		
51 EAMES St		
CITY	STATE	ZIP
Wilmington	MA	

DATE	TIME	SAMPLE I.D.	MATRIX	CONTAINER TYPE	# OF CONTAINERS	PRESERVATIVES	REQUESTED PARAMETERS: UNFIXED Filtered	H2SO4 Filtered	HNO3 Filtered	HNO3 UNFiltered					(COMMENTS)
7-31-96	10:00	ChestNUT #1A	GW	PP	4		1	1	1	1			01		
7-31-96	10:15	ChestNUT #1	GW	PP	4		1	1	1	1			02		
7-31-96	10:56	GW 63 S	GW	PP	4		1	1	1	1			03		
7-31-96	11:20	GW 63 D	GW	PP	4		1	1	1	1			04		
7-31-96	12:10	Butters Row #1	GW	PP	12		3	3	3	3			05		MS/MSD
7-31-96	12:55	GW 64 S	GW	PP	4		1	1	1	1			06		
7-31-96	13:55	GW 64 D	GW	PP	4		1	1	1	1			07		
7-31-96	14:25	Butters Row #2	GW	PP	4		1	1	1	1			08		
7-31-96	—	BLIND #1	GW	PP	4		1	1	1	1			09		
7-31-96	—	BLIND #2	GW	PP	4		1	1	1	1			10		

SAMPLED BY: Timothy Ebner / Smith Environmental (PRINT NAME) [signature] (SIGNATURE)

RELINQUISHED BY (SIGNATURE)	DATE / TIME	RECEIVED BY	DATE / TIME
[signature]	7/31/96 18:50	[signature]	8/1/96 10:00
RELINQUISHED BY (SIGNATURE)	DATE / TIME	RECEIVED FOR LAB BY	DATE / TIME

IEA USE ONLY

Passed Rad Screen 7096-1462A

DC 8/1/96

FIELD REMARKS

SHIPPED VIA FEDERAL Express overnight
CUSTODY SEALED IN ONE COOLER.

ω

Day #2 Town 1 '15 Monthly Pg 1 of 1

IEA An Aquarion Company
149 Rangeway Road
N. Billerica, Massachusetts 01862
508 / 667-1400
Fax 508 / 667-7871

CHAIN OF COUSTODY RECORD

REGULATORY CLASSIFICATION - PLEASE SPECIFY

☐ NPDES ☐ DRINKING WATER ☐ RCRA ☐ MCP ☐ OTHER

REQUIRE

CUST. P.O. #

IEA QUOTE #

TURN AROUND
☐ 15 BUSINESS DAY
☐ 10 BUSINESS DAY
☐ RUSH
☐ OTHER

COMPANY	CONTACT PERSON	PROJECT I.D.	PHONE #	FAX #
Olin Corp				

ADDRESS: 51 Eames St.

CITY	STATE	ZIP
Wilmington	MA	

DATE	TIME	SAMPLE I.D.	MATRIX	CONTAINER TYPE	# OF CONTAINERS	PRESERVATIVES	UNFIXED - FILTERED	H2SO4 - FILTERED	HNO3 - FILTERED	HNO3 - UNFILTERED					(COMMENTS)
8/1/96	10:10	TOWN PARK #1	GW	PP	4		/	/	/	/				11	
8/1/96	10:45	GW 73 S	GW	PP	4		/	/	/	/				12	
8/1/96	11:35	GW 73 D	GW	PP	4		/	/	/	/				13	Passed Rad Screen
8/1/96	12:33	GW 62 S	GW	PP	4		/	/	/	/				14	DC 8/6/96
8/1/96	13:00	GW 62 M	GW	PP	4		/	/	/	/				15	
8/1/96	13:15	GW 62 D	GW	PP	4		/	/	/	/				16	
8/1/96	—	BLIND #3	GW	PP	4		/	/	/	/				17	

SAMPLED BY: Timothy Ebner / Smith Environmental (PRINT NAME) — [signature] (SIGNATURE)

RELINQUISHED BY (SIGNATURE)	DATE / TIME	RECEIVED BY	DATE / TIME
[signature]	8/1/96 18:15		

RELINQUISHED BY (SIGNATURE)	DATE / TIME	RECEIVED FOR LAB BY	DATE / TIME
		[signature]	8/2/96 11:20

IEA USE ONLY

7096-1462A

FIELD REMARKS

SHIPPED VIA FEDERAL EXPRESS OVERNIGHT. CUSTODY SEALED IN ONE COOLER.

SMITH

DATA VALIDATION REPORT
SELECTED INORGANICS
OLIN CORPORATION
GROUNDWATER SAMPLES

INTRODUCTION

This data review report addresses the metals data from the July 31, and August 1, 1996 groundwater sampling event at the Olin Corporation's Wilmington, Massachusetts Facility. This review is of work order number A1462 which consisted of 14 filtered groundwater samples and 3 field duplicate samples analyzed for ammonia, bicarbonate, carbonate, chloride and sulfate. All samples in this report were analyzed by IEA Corporation, Monroe, Connecticut, according to the laboratories Standard Operating Procedures (SOPs) which reference the United States Environmental Protection Agency (EPA) Methods for Chemical Analysis of Water and Wastes (MCAWW) or Standard Methods for the Examination of Water and Wastewater, 16th Edition, 1985 (SM), American Public Health Association (APHA). The following individual methods were referenced:

Analytes	Methods
ammonia	350.3
bicarbonate and carbonate	2320B
chloride	325.2
sulfate	375.4

Because the analyses were not performed according to the EPA Contract Laboratory Program (CLP) methods, the findings in this report are based upon a review of sample data and of quality control (QC) specified by the individual analytical SOPs and methods provided by the laboratory. The quality assurance review was prepared according to EPA Region I Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analysis (data validation guidelines), June 1988, where applicable.

The support documentation in Appendix B of this report summarizes the specifics of this review. Appendix B also provides the sample results as reported by the laboratory. The data summary table lists all compounds that were analyzed. Analytical problems are outlined in the following Findings/Qualifiers Section. Issues that arose which did not warrant qualification are detailed in the Notes Section.

SMITH

FINDINGS/QUALIFIERS

These data validation report addresses the 14 filtered groundwater samples and 3 field duplicate samples analyzed for ammonia, bicarbonate, carbonate, chloride and sulfate for work order number A1462 analyzed by IEA Corporation. The groundwater data were evaluated for the following parameters:

- * data completeness
- * holding times
- * data calibration verification
- * laboratory blank analysis
- \+ field blank analysis
- matrix spike recoveries
- * laboratory duplicates
- field duplicates
- \+ laboratory control sample results
- * detection limit results
- \+ sample results

* All criteria were met for this parameter.
\+ All criteria were met for this parameter; however, this parameter is discussed in the Notes Section of this report.

The data summary table provided at the end of this report summarizes the validation recommendations which were based on the following information:

1. All chloride results are estimated due to low matrix spike percent recoveries (%Rs).

2. The positive results for ammonia for the field duplicate pair Blind #2 (1462010) and GW64D (1462007) are estimated due to poor field duplicate precision. Details are provided on the Inorganic Field Duplicate Precision Worksheet included in Appendix B of this report.

SMITH

NOTES

The following items were noted during the validation review that did not impact results or necessitate further qualification of data:

1. The method qualifiers were not reported on the revised Wet Chem Analysis Data Sheets (Form 1s) for samples GW64S (1462006) and Butters Row #2 (1462008). No data are qualified. The reviewer-corrected Form 1s are included in Appendix B.

2. The %R for chloride was incorrectly reported on the Laboratory Control Sample Form (Form 6). No data are qualified. The reviewer-corrected Form 6 is included in Appendix B.

3. The analytical method referenced by the laboratory for ammonia in the case narrative is incorrect. The correct analytical method as verified by the laboratory is annotated on the case narrative is included in Appendix B. No data are qualified.

4. There were no field blanks associated with this sampling event.

SUMMARY

This review has identified a matrix spike %R and field duplicate results as areas of concern. The reported data are usable as qualified on the data summary table. For specifics relating to this review, see the attached documentation in Appendix B.

SMITH

QUALIFIER CODES

J - The associated value is an estimated quantity.

DATA SUMMARY - SELECTED INORGANICS

Site Name	Olin, Wilmington	Laboratory	IEA
Project Number	00-7074-0102	Case/Order #	A1462
Sampling Date(s)	7/31/96 and 8/1/96	Field Duplicates	A-05/A-09,A-07/A-10,A-16/A-17

☐ Solid mg/kg

☒ Liquid mg/l

DL	Sample location or description	P	F	Chestnut #1A	Chestnut #1	GW63S	GW63D	Butters Row #1	GW64S	GW64D	Butters Row #2	Blind #1	Blind #2
	Sample number			1462001	1462002	1462003	1462004	1462005	1462006	1462007	1462008	1462009	1462010
	Sampling date			7/31/96	7/31/96	7/31/96	7/31/96	7/31/96	7/31/96	7/31/96	7/31/96	7/31/96	7/31/96
	unfilt. / filt.			filt.	filt.	filt.	filt.	filt.	filt.	filt.	filt.	filt.	filt.
0.04	Ammonia			0.410	1.31	0.260	0.087	6.43	0.125	8.39 J	0.498	5.35	2.30 J
2.0	Bicarbonate			24.8	50.2	32.0	79.4	44.4	21.8	74.0	37.6	46.2	76.0
1.0	Carbonate												
3.0	Chloride			78.6 J	113 J	121 J	104 J	109 J	80.7 J	126 J	77.3 J	109 J	129 J
10.0	Sulfate			32.5	58.4	12.3	54.7	114		209		105	224

DL	Sample location or description	P	F	Town Park #1	GW73S	GW73D	GW62S	GW62M	GW62D	Blind #3			
	Sample number			1462011	1462012	1462013	1462014	1462015	1462016	1462017			
	Sampling date			8/1/96	8/1/96	8/1/96	8/1/96	8/1/96	8/1/96	8/1/96			
	% SOLIDs			filt.	filt.	filt.	filt.	filt.	filt.	filt.			
0.04	Ammonia			0.234	0.110	0.078	1.32	1.23	1.91	1.92			
2.0	Bicarbonate			30.0	19.0	74.0	78.8	55.6	62.0	60.0			
1.0	Carbonate												
3.0	Chloride			100 J	19.1 J	86.1 J	57.4 J	51.6 J	60.0 J	60.0 J			
10.0	Sulfate			32.5			44.0	49.0	54.0	56.8			

P = ICP Analysis F=Furnace Analysis DL=Detection Limit

QA Scientist E. Buflin Rivers Date 11/20/96

SMITH

APPENDIX B

Inorganic Data Validation Summary

Project Name:	Olin	**Case No./SDG:**	A1462
Project No.:	00-7074-0102	**Sampling Date(s):**	7/31/96 and 8/1/96
Project Manager:	Bruce Cushing	**Reviewed By:**	E. Bryan Rivers
Laboratory:	IEA	**Completion Date:**	

Compound List: ☐ TAL ☐ Appendix IX ☑ Other Selected inorganics

Method: ☐ CLP SOW 3/90 ☐ ~~SW-846~~ ☑ Other Standard Methods

Matrix: ☐ soil/solid (mg/Kg) ☒ aqueous (ug/L) field blank

The following table indicates the data validation criteria examined, problems identified, and QA action.

Data Validation Criteria:	accept	FYI	qualify	comments
Holding Times	✓			
Calibration Linearity - Furnace, Hg, and CN	✓			
Calibration Verification	✓			
CRDL Standard				NA
Calibration Blanks	✓			
Preparation Blanks	✓			
Field Blank				NA
ICP Interference Check Sample				NA
Laboratory Control Sample		✓		Transcription errors
Matrix Spike Results			✓	chloride results (all)
Laboratory Duplicate Results	✓	✓		~~Transcription errors~~ use
ICP Serial Dilution				NA
Post Digestion Analytical Spike				NA
Method of Standard Addition				NA
Field Duplicate Results			✓	Ammonia for field Duplicates.
Sample Result Verification		✓		Transcription errors
Other:				

General Comments:

NA - Not applicable
NR - Not reviewed

QA Scientist E. Bryan Rivers Date 11/12/96

1

WET CHEM ANALYSIS DATA SHEET

SAMPLE NO. 301

CHESTNUT #1A

Name: IEA Contract: ___________

Lab Code: IEA Case No.: 1462A SAS No. : _______ SDG No.: A1462

Matrix: (soil/water) WATER Lab Sample ID: 1462001

% Solids: 0.0 Date Received: 08/01/96

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

Analyte	Concentration	C	Q	M
AMMONIA	0.410			AS
BICARB	24.8			
CARBONATE	1.00	U		
CHLORIDE	78.6		N	AS
SULFATE	32.5			G
				~~G~~ mec

Comments:

FORM I - WC

SAMPLE NO. 302

1
WET CHEM ANALYSIS DATA SHEET

CHESTNUT 91

Lab Name: IEA Contract: ______

Lab Code: IEA Case No.: 1462A SAS No. : ______ SDG No.: A1462

Matrix: (soil/water) WATER Lab Sample ID: 1462002

% Solids: 0.0 Date Received: 08/01/96

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

Analyte	Concentration	C	Q	M
AMMONIA	1.31			AS
BICARB	50.2			
CARBONATE	1.00	U		
CHLORIDE	113.		N	AS
SULFATE	58.4			G

Comments:

FORM I - WC

1

WET CHEM ANALYSIS DATA SHEET

SAMPLE NO. 303

SWA03

Lab Name: IEA Contract: ____________

Lab Code: IEA Case No.: 1462A SAS No.: ______ SDG No.: A1462

Matrix: (soil/water) WATER Lab Sample ID: 1462003

% Solids: 0.0 Date Received: 08/01/96

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

Analyte	Concentration	C	Q	M
AMMONIA	0.260			AS
BICARB	32.0			
CARBONATE	1.00	U		
CHLORIDE	121.		N	AS
SULFATE	12.3			G

Comments: ____________

FORM I - WC

1

WET CHEM ANALYSIS DATA SHEET

SAMPLE NO.

SW63D

Name: IEA Contract: ______

Lab Code: IEA Case No.: 1462A SAS No. : ______ SDG No.: A1462

Matrix: (soil/water) WATER Lab Sample ID: 1462004

% Solids: 0.0 Date Received: 08/01/96

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

Analyte	Concentration	C	Q	M
AMMONIA	0.087			AS
BICARB	79.4			
CARBONATE	1.00	U		
CHLORIDE	104.		N	AS
SULFATE	54.7			G

Comments: ______

FORM I - WC

1

WET CHEM ANALYSIS DATA SHEET

BUTLERS ROW #1

Name: IEA Contract: ____________

Lab Code: IEA Case No.: 1462A SAS No. : ______ SDG No.: A1462

Matrix: (soil/water) WATER Lab Sample ID: 1462005

% Solids: 0.0 Date Received: 03/01/96

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

Analyte	Concentration	C	Q	M
AMMONIA	6.43			AS
BICARB	44.4			
CARBONATE	1.00	U		
CHLORIDE	109.		N	AS
SULFATE	114.			G

Comments:

FORM I - WC

BUTLERS POW #1

WET CHEM ANALYSIS DATA SHEET

Name: IEA Contract:

Lab Code: IEA Case No.: 1462A SAS No. : SDG No.: A1462

Matrix: (soil/water) WATER Lab Sample ID: 1462005D

% Solids: Date Received: 08/01/96

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

Analyte	Concentration	C	Q	M
AMMONIA	5.74			
BICARB	44.2			
CARBONATE	1.00	U		
CHLORIDE	109.			
SULFATE	114.			

Comments:

FORM I - WC

SAMPLE NO.

WET CHEM ANALYSIS DATA SHEET

RUTGERS ROW #1

Lab Name: IEA Contract: ____________

Lab Code: IEA Case No.: 1462A SAS No. : ______ SDG No.: A1462

Matrix: (soil/water) WATER Lab Sample ID: 14620058

% Solids: ______ Date Received: 08/01/96

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

Analyte	Concentration	C	Q	M
AMMONIA	3.24			
CHLORIDE	121.			
SULFATE	163.			

Comments: ____________________

FORM I - WC

WET CHEM ANALYSIS DATA SHEET

SAMPLE NO.

GW64S

Lab Name: IEA Contract: ______

Lab Code: IEA Case No.: 1462A SAS No. : ______ SDG No.: A1462

Matrix: (soil/water) WATER Lab Sample ID: 1462006

% Solids: ______ Date Received: 08/01/96

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

Analyte	Concentration	C	Q	M
AMMONIA	0.125			As
BICARB	21.8			
CARBONATE	1.00	U		
CHLORIDE	30.7		N	As
SULFATE	10.000	U		G

EBR 10/2/96

EBR 10/2/96

Comments: ______

FORM 7 - WC

REVISED DATA
RESUBMITTED BY LABORATORY
INSERTED BY E. Byron Rivas 10/2/96
SIGNATURE DATE

1

WET CHEM ANALYSIS DATA SHEET

SAMPLE NO. 309

SW640

Name: IEA   Contract:

Lab Code: IEA   Case No.: 1462A   SAS No.:   SDG No.: 41/67

Matrix: (soil/water) WATER   Lab Sample ID: 1462007

% Solids: Date Received: 08/01/96

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

Analyte	Concentration	C	Q	M
AMMONIA	8.39			AJ
BICARB	74.0			
CARBONATE	1.00	U		
CHLORIDE	126.		N	AJ
SULFATE	209.			G

Comments:

FORM 1 - WC

1

WET CHEM ANALYSIS DATA SHEET

SAMPLE NO.

BUTTERS ROW #2

.ab Name: IEA Contract: __________

.ab Code: IEA Case No.: 1462A SAS No. : ______ SDG No.: A1462

1atrix: (soil/water) WATER Lab Sample ID: 1462008

% Solids: ______ Date Received: 08/01/96

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

Analyte	Concentration	C	Q	M
AMMONIA	0.498			As
BICARB	37.6			
CARBONATE	1.00	U		
CHLORIDE	77.3		N	AS
SULFATE	10.000	U		G

EBR 10/2/96

EBR 10/2/96

Comments: ____________________

FORM I - WC

REVIEWED ... RESUBMITTED BY ... FORMAT...

VERIFIED BY 7. Bryan Rivers 10/2/96
SIGNATURE DATE

1

SAMPLE NO.

WET CHEM ANALYSIS DATA SHEET

BLIND #1

Name: IEA   Contract: ____

ab Code: IEA   Case No.: 1462A   SAS No. : ____   SDG No.: A1462

atrix: (soil/water) WATER   Lab Sample ID: 1462009

Solids: ____   Date Received: 08/01/96

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

Analyte	Concentration	C	Q	M
AMMONIA	5.35			AJ
BICARB	46.2			
CARBONATE	1.00	U		
CHLORIDE	109.		N	AJ
SULFATE	105.			G

Comments:

FORM I - WC

WET CHEM ANALYSIS DATA SHEET

SAMPLE NO. 312

BLIND #2

b Name: IEA Contract:

Lab Code: IEA Case No.: 1462A SAS No. : SDG No.: A1462

Matrix: (soil/water) WATER Lab Sample ID: 1462010

% Solids: 0.0 Date Received: 08/01/96

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

Analyte	Concentration	C	Q	M
AMMONIA	2.30			AS
BICARB	76.0			
CARBONATE	1.00	U		
CHLORIDE	129.		N	AS
SULFATE	224.			C

Comments:

FORM I - WC

SAMPLE NO. 313

1

WET CHEM ANALYSIS DATA SHEET

TOWN PARK #1

Lab Name: IEA   Contract: ________

Lab Code: IEA   Case No.: 1462A   SAS No.: ______   SDG No.: A1462

Matrix: (soil/water) WATER   Lab Sample ID: 1462011

% Solids: 0.0   Date Received: 08/02/96

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

Analyte	Concentration	C	Q	M
AMMONIA	0.234			AS
BICARB	30.0			
CARBONATE	1.00	U		
CHLORIDE	100.		N	AS
SULFATE	32.5			G

Comments:

FORM 1 - WC

SAMPLE NO. 314

WET CHEM ANALYSIS DATA SHEET

GW73S

Lab Name: IEA Contract: ______

Lab Code: IEA Case No.: 1462A SAS No. : ______ SDG No.: A1462

Matrix: (soil/water) WATER Lab Sample ID: 1462012

% Solids: 0.6 Date Received: 08/02/96

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

Analyte	Concentration	C	Q	M
AMMONIA	0.110			AS
BICARB	19.0			
CARBONATE	1.00	U		
CHLORIDE	19.1		N	AS
SULFATE	10.000	U		G

Comments: ______

FORM I - WC

1

WET CHEM ANALYSIS DATA SHEET

SAMPLE NO 315

GW73D

b Name: IEA   Contract: ______

Lab Code: IEA   Case No.: 1462A   SAS No. : ______   SDG No.: A1462

Matrix: (soil/water) WATER   Lab Sample ID: 1462013

% Solids: 0.0   Date Received: 08/02/96

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

Analyte	Concentration	C	Q	M
AMMONIA	0.078			AS
BICARB	74.0			
CARBONATE	1.00	U		
CHLORIDE	86.1		N	AS
SULFATE	10.000	U		G

Comments:

FORM 1 - WC

1
WET CHEM ANALYSIS DATA SHEET

SAMPLE NO 316

GW62S

Lab Name: IEA Contract: ______

Lab Code: IEA Case No.: 1462A SAS No. : ______ SDG No.: A1462

Matrix: (soil/water) WATER Lab Sample ID: 1462014

% Solids: 0.0 Date Received: 08/02/96

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

Analyte	Concentration	C	Q	M
AMMONIA	1.32			AS
BICARB	78.8			
CARBONATE	1.00	U		
CHLORIDE	57.4		N	AS
SULFATE	44.0			G

Comments:

FORM 1 - WC

WET CHEM ANALYSIS DATA SHEET

GW62M

Lab Name: IEA Contract: ____

Lab Code: IEA Case No.: 1462A SAS No.: ____ SDG No.: A1462

Matrix: (soil/water) WATER Lab Sample ID: 1462015

% Solids: 0.0 Date Received: 08/02/96

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

Analyte	Concentration	C	Q	M
AMMONIA	1.23			AS
BICARB	55.6			
CARBONATE	1.00	U		
CHLORIDE	51.6		N	AS
SULFATE	49.0			G

Comments:

FORM I - WC

WET CHEM ANALYSIS DATA SHEET

2W62D

Lab Name: IEA Contract: ______

Lab Code: IEA Case No.: 1462A SAS No.: ______ SDG No.: 41462

Matrix: (soil/water) WATER Lab Sample ID: 1462016

% Solids: 0.0 Date Received: 08/02/96

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

Analyte	Concentration	C	Q	M
AMMONIA	1.91			AS
BICARB	62.0			
CARBONATE	1.00	U		
CHLORIDE	60.0		N	AS
SULFATE	54.0			G

Comments: ______

FORM I - WC

1

WET CHEM ANALYSIS DATA SHEET

SAMPLE NO.

BLIND #3

Name: IEA   Contract: ______

ab Code: IEA   Case No.: 1462A   SAS No. : ______   SDG No.: A1462

Matrix: (soil/water) WATER   Lab Sample ID: 1462017

% Solids: 0.0   Date Received: 08/02/96

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

Analyte	Concentration	C	Q	M
AMMONIA	1.92			AS
BICARB	60.0			
CARBONATE	1.00	U		
CHLORIDE	60.0		N	AS
SULFATE	56.8			G

Comments:

FORM I - WC

4A
SPIKE SAMPLE RECOVERY

SAMPLE NO.

1462A-05

Lab Name: IEA Contract: ____________

Lab Code: IEA Case No.: 1462A SAS No. : ______ SDG No.: A1462

Matrix: water

Solids for Sample: ____________

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

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Added (SA)	%R	Q	M
AMMONIA	75-125								
BICARB	75-125								
CARBONATE	75-125								
CHLORIDE	75-125	121.00		108.54		30.0	41.4	N	AS
SULFATE	75-125								

Comments: ____________

FORM IV (Part 1) - WC

Cl- all results are estimated and may be biased low

RECEIVED OCT 29 1996 E. Bryan Rivers

REVISED ... RESUBMITTED ...

INSERTED BY E. Bryan Rivers 10/31/96
Signature Date

4A
SPIKE SAMPLE RECOVERY

SAMPLE NO.

Butters Raw #1

Name: IEA Contract: ______

Lab Code: IEA Case No.: 1462A SAS No.: ______ SDG No.: A1462

Matrix: Aqueous

Solids for Sample: ______

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

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Added (SA)	%R	Q	M
AMMONIA	75-125								
BICARB	75-125								
CARBONATE	75-125								
CHLORIDE	75-125	121.00		108.58		30.0	41.4	N	AT
SULFATE	75-125								

Comments: Revised Chloride spike results 10/7/96

FORM IV (Part 1) - WC

Cl- all results are estimated and may be biased low.

REVISED DATA
RESUBMITTED BY LABORATORY
INSERTED BY E. Byers Rivas 10/31/96
SIGNATURE DATE

Inorganic Field Duplicate Precision Worksheet

Project Name: Olin
Project Number: 00-7074-0102
Case Number: A1462

Sample location	Butters Row #1	Blind #1
Sample ID number	961462005	961462009
Matrix	Aqueous	Aqueous
Units	ug/l	ug/l
unfilt. / filt.	filt.	filt.

Compound	Sample Concentration	Field Duplicate Concentration	RPD	Q
Ammonia	6.43	5.35	18.3	
Bicarbonate	44.4	46.2	4.0	
Carbonate				
Chloride	109	109	0.0	
Sulfate	114	105	8.2	

* Indicates control limit out of criteria.

SMITH has established a criteria of 20 percent RPD for field duplicate analysis.

1462FD1I.XLS

QA Scientist

Date

Inorganic Field Duplicate Precision Worksheet

Project Name: Olin
Project Number: 00-7074-0102
Case Number: A1462

Sample location	GW62D	Blind #3
Sample ID number	961462016	961462017
Matrix	Aqueous	Aqueous
Units	ug/l	ug/l
unfilt. / filt.	filt.	filt.

Compound	Sample Concentration	Field Duplicate Concentration	RPD	Q
Ammonia	1.91	1.92	0.5	
Bicarbonate	62.0	60.0	3.3	
Carbonate				
Chloride	60.0	60.0	0.0	
Sulfate	54.0	56.8	5.1	

* Indicates control limit out of criteria.

SMITH has established a criteria of 20 percent RPD for field duplicate analysis.

1462FD2I.XLS

QA Scientist E. Bryan Rivers Date 11/26/96

Inorganic Field Duplicate Precision Worksheet

Project Name: Olin

Project Number: 00-7074-0102

Case Number: A1462

Sample location	GW64D	Blind #2
Sample ID number	961462007	961462010
Matrix	Aqueous	Aqueous
Units	ug/l	ug/l
unfilt. / filt.	filt.	filt.

Compound	Sample Concentration	Field Duplicate Concentration	RPD	Q
Ammonia	8.39	2.3	113.9	*
Bicarbonate	74	76	2.7	
Carbonate				
Chloride	126	129	2.4	
Sulfate	209	224	6.9	

* Indicates control limit out of criteria.

SMITH has established a criteria of 20 percent RPD for field duplicate analysis.

1462FDI.XLS

QA Scientist E. Bylen Ruiet Date 11/20/96

7
LABORATORY CONTROL SAMPLE

Lab Name: IEA Contract:

Lab Code: IEA Case No.: 1462A SAS No.: SDG No.: 91462

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

Analyte	LCS True	LCS Found	%R	LCS Source
AMMONIA	~~2.00~~ 2.48	2.24	~~112~~ 90.3	APG
BICARB	26.5	27.8	105	
CARBONATE				
CHLORIDE	73.9	76.6	~~96.5~~ 103.7 EBR	
SULFATE	20.1	19.8	98.5	

EBR
10/3/96

FORM VI - WC

E. Bryan Rivard 10/3/96

IEA
An Aquarion Company
149 Rangeway Road
N. Billerica, Massachusetts 01862
508 / 667-1400
Fax 508 / 667-7871

CHAIN OF CUSTODY RECORD

REGULATORY CLASSIFICATION - PLEASE SPECIFY

☐ NPDES ☐ DRINKING WATER ☐ RCRA ☐ MCP ☐ OTHER

CUST. P.O. #:
IEA QUOTE #:

TURN AROUND
☐ 15 BUSINESS DAY
☐ 10 BUSINESS DAY
☐ RUSH
☐ OTHER

COMPANY	CONTACT PERSON	PROJECT I.D.	PHONE #	FAX #
Olin Corp				

ADDRESS: 51 EAMES St

CITY	STATE	ZIP
Wilmington	MA	

DATE	TIME	SAMPLE I.D.	MATRIX	CONTAINER TYPE	# OF CONTAINERS	PRESERVATIVES	UNFIXED Filtered	H2SO4 Filtered	HNO3 Filtered	HNO3 UNFiltered					(COMMENTS)
-31-96	10:00	ChestNUT #1A	GW	PP	4		1	1	1	1			01		
31-96	10:15	ChestNUT #1	GW	PP	4		1	1	1	1			02		
31-96	10:56	GW 63 S	GW	PP	4		1	1	1	1			03		
31-96	11:20	GW 63 D	GW	PP	4		1	1	1	1			04		
31-96	12:10	Butters Row #1	GW	PP	12		3	3	3	3			05		MS/MSD
31-96	12:55	GW 64 S	GW	PP	4		1	1	1	1			06		
31-96	13:55	GW 64 D	GW	PP	4		1	1	1	1			07		
31-96	14:25	Butters Row #2	GW	PP	4		1	1	1	1			08		
31-96	—	BLIND #1	GW	PP	4		1	1	1	1			09		
31-96	—	BLIND #2	GW	PP	4		1	1	1	1			10		

SAMPLED BY: Timothy Ebner / Smith Environmental (PRINT NAME) — Timothy Ebner (SIGNATURE)

RELINQUISHED BY (SIGNATURE)	DATE / TIME	RECEIVED BY	DATE / TIME
Timothy Ebner	7/31/96 18:50	Darlyn Colon	8/1/96 10:00
RELINQUISHED BY (SIGNATURE)	DATE / TIME	RECEIVED FOR LAB BY	DATE / TIME

IEA USE ONLY

Passed Rad Screen: DC 8/1/96

7096-1462A

FIELD REMARKS

SHIPPED VIA FEDERAL Express overnight CUSTODY SEALED IN ONE COOLER.

DAY #2 TOWN 15 MONTHLY 18181

IEA
An Aquarion Company
149 Rangeway Road
N. Billerica, Massachusetts 01862
508 / 667-1400
Fax 508 / 667-7871

CHAIN OF CUSTODY RECORD

REQUIRE

CUST. P.O. #	
IEA QUOTE #	

REGULATORY CLASSIFICATION - PLEASE SPECIFY

☐ NPDES ☐ DRINKING WATER ☐ RCRA ☐ MCP ☐ OTHER

TURN AROUND

☐ 15 BUSINESS DAY
☐ 10 BUSINESS DAY
☐ RUSH
☐ OTHER

COMPANY	CONTACT PERSON	PROJECT I.D.	PHONE #	FAX #
OLin Corp				

ADDRESS		
51 Eames St.		
CITY	STATE	ZIP
Wilmington	MA	

REQUESTED PARAMETERS

DATE	TIME	SAMPLE I.D.	MATRIX	CONTAINER TYPE	# OF CONTAINERS	PRESERVATIVES	UNFIXED - Filtered	H2SO4 - Filtered	HNO3 - Filtered	HNO3 - UNFiltered					(COMMENTS)
8/1/96	10:10	TOWN PARK #1	GW	PP	4		1	1	1	1				11	
8/1/96	10:45	GW 73 S	GW	PP	4		1	1	1	1				12	
8/1/96	11:35	GW 73 D	GW	PP	4		1	1	1	1				13	Passed Rad Screen DC 8/6/96
8/1/96	12:33	GW 62 S	GW	PP	4		1	1	1	1				14	
8/1/96	13:00	GW 62 M	GW	PP	4		1	1	1	1				15	
8/1/96	13:15	GW 62 D	GW	PP	4		1	1	1	1				16	
8/1/96	—	BLIND #3	GW	PP	4		1	1	1	1				17	

SAMPLED BY: Timothy Ebner / Smith Environmental (PRINT NAME) [signature] (SIGNATURE)

RELINQUISHED BY (SIGNATURE)	DATE / TIME	RECEIVED BY	DATE / TIME
[signature]	8/1/96 18:15		
RELINQUISHED BY (SIGNATURE)	DATE / TIME	RECEIVED FOR LAB BY	DATE / TIME
		[signature]	8/2/96 11:20

IEA USE ONLY

7096.1462A

FIELD REMARKS

SHIPPED VIA FEDERAL EXPRESS OVERNIGHT. CUSTODY SEALED IN ONE COOLER.

IEA
An Aquarion Company

200 Monroe Turnpike
Monroe, Connecticut 06468

Phone 203-261-4458
Fax 203-268-5346

1A

7096-1462A
OLIN CORPORATION

Case Narrative

Classical Chemistry - Listed below are the wet chemistry analyte methods and references for all samples analyzed in this SDG. Chloride failed the control limits for spike recovery analysis for sample Butler's Row # 1. This appears to be due to a sample matrix interference. No other analytical problems were encountered and all holding times were met.

Analyte	Method	Reference
Ammonia	~~310.1~~ 350.3	1
Bicarbonate	2320B	2
Carbonate	2320B	2
Chloride	325.2	1
Sulfate	375.4	1

EBK 10/2/96

References:

1. Methods for Chemical Analysis of Water and Wastes, USEPA 600, 1983.
2. Test Methods for the Evaluation of Solid Waste, SW846, 3rd edition, 1986.

Metals - ICAP metals were determined using a JA61 simultaneous ICAP and a JA61E trace ICAP using guidance provided in SW846 according to the following Methods: ICAP-3010/6010.

No problems occurred during analysis. All appropriate protocols were employed. All data appears to be consistent.

I certify that this data package is in compliance with the terms of this contract, both technically and for completeness, for other than the conditions detailed above. Release of this hardcopy data package has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

Jeffrey C. Curran
Laboratory Manager

Date Aug. 23, 1996

IEA
An Aquanon Company

CORRECTIVE ACTION FORM

A. Originator Information Client Inquiry X

Client: OLIN / WILMINGTON MA
Date/time: 9/30/96 9:30
Client/Lab Contact: D. Plunkett
Job/Case: 7096-1462A
Sample Number(s): CC8
Date/Time Response Due: 10/1/96 11:00am

Detailed Description of Potential Problem: ① in some places in the report the PQL for sulfate is 5 and in others its 10? which is correct ② sulfate for sample CC8 is reported is that correct? (PQL 5 or 10)

B. Quality Assurance Information Corrective Action ID# 1057

Recommended Corrective Action:

* DM Reissue FORM I'S for CC4 C8, letter to state correct Sulfate results

Groups Involved: __Sample Control X Wet Chemistry __ Metals __Gas Chromatography __ Mass Spectrometry __Report Generation 10/2 __Client Service __ Sample Preparation

C. Final Resolution

Describe What Happened and Long Term Corrective Action Taken: All results for sulfate should have PQL of <10. Sample CC4 + Sample CC8 should be <10. See attached revised form I'S [illegible] 10/1/96

Sent reg mail

Supervisor Signature C. Criscuolo Date 10/02/96 Date/Time Client Notified:

D. Quality Assurance Final Approval (QA Manager use only)

Corrective Action Approved: ____
Date Finalized: ____
Was a problem identified? Yes / No

RECEIVED OCT 2 1996 E. Bryan Rivers

IEA, Inc. Doc.# QAF00200.CT

IEA
An Aquarion Company

200 Monroe Turnpike
Monroe, Connecticut 06468

Phone 203·261·4458
Fax 203·268·5346

October 2, 1996

Mr. Bruce Cushing
OLIN CORPORATION
c/o Smith Environmental Corp.
One Plymouth Meeting
Plymouth Meeting, PA 19462

Dear Mr. Cushing:

In reference to corrective action report #4957, please find enclosed the revised analytical results for IEA report #7096-1462A.

The following tables have been revised: TABLE CC-1.0; Form I's.

The changes are based on the following issues: revised sulfate results.

Very truly yours,

Michele Sciongay

Data Management

CAC/ab

Schaumburg, Illinois 847·705·0740

N. Billerica, Massachusetts 508·667·1400

Whippany, New Jersey 201·428·8181

Cary, North Carolina 919·677·0090