Appendix A
Area 3 NAPL Characterization Documentation

Air Sampling Results

DATA CHEM LABORATORIES
A Sorenson Company

ANALYTICAL REPORT

Form ARF-AL
Page 1 of 2
Part 1 of 1
04150511005482X

Date APR 15 2005
Laboratory Group Name 05I-1308-01
Account No. 07350

CH2MHILL
Attention: Jim Bushnell
1100 12th Avenue NE
Suite 400
Bellevue, WA 98004-4504

FAX (425) 468-3074
Telephone (425) 233-3678
E-mail jbushnel@ch2m.com

Sampling Collection and Shipment

Sampling Site Velsicol Date of Collection

Date Samples Received at Laboratory April 08, 2005

Analysis

Method of Analysis 5600(Mod)

Date(s) of Analysis April 14, 2005

Analytical Results

Field Sample Number	Laboratory Number	Sample Type	DBCP ng/sample	DBCP ppb v/v	Air Volume L
VMP-PAM-01	05I12474	TUBE	ND	<0.027	4.94
VMP-PAM-02	05I12475	TUBE	2.4	0.062	4.017
VMP-PAM-03	05I12476	TUBE	2.2	0.027	8.336
VMP-PAM-04	05I12477	TUBE	4.5	0.057	8.192
VMP-PAM-05	05I12478	TUBE	ND	**	0
VMP-PAM-06	05I12479	TUBE	ND	<0.030	4.509
VMP-PAM-07	05I12480	TUBE	7.5	0.13	5.928
VMP-PAM-08	05I12481	TUBE	2.1	0.024	8.996
VMP-PAM-09	05I12482	TUBE	ND	<0.017	8.0136
Limit of Detection			1.3		

† See comment on last page.
ND Parameter not detected above LOD.
NR Parameter not requested.
NA Parameter not applicable.

** See comment on last page.
( ) Parameter between LOD and LOQ.

Analyst: Mila V. Potekhin

Reviewer: Vicki Hoe-Lin Tsai

Date APR 15 2005

Laboratory Group Name 05I-1308-01

General Set Comments

** Result cannot be calculated for samples missing air volume.
ppm formula: (24.45 * Result) / (Volume * MW)

ppb v/v formula: (24.45 * Result) / (Volume * MW)

General Lab Comments

The results provided in this report relate only to the items tested.
Samples were received in acceptable condition unless otherwise noted in the General Set Comments above.
Samples have not been field blank corrected unless otherwise noted in the General Set Comments above.
This test report shall not be reproduced, except in full, without written approval of DataChem Laboratories, Inc.
This page is the concluding page of the report.

960 West LeVoy Drive / Salt Lake City, Utah 84123-2547
Phone (801) 266-7700 Web Page: www.datachem.com
FAX (801) 268-9992 E-mail: lab@datachem.com

DATA CHEM LABORATORIES, INC.

ANALYTICAL REQUEST FORM

1. ☒ REGULAR Status 05I:1308-01

☐ RUSH Status Requested - ADDITIONAL CHARGE
RESULTS REQUIRED BY _____ DATE
CONTACT DATACHEM LABS PRIOR TO SENDING SAMPLES

2. Date 7Apr 05 Purchase Order No. _____

3. Company Name CH2MHill
Address 777 108th AVE NE
Bellevue, WA 98004
Person to Contact Jim Bushnell
Telephone (425) 453-5005 X-5678
Fax Telephone (425) 468-3074
E-mail Address JBushnel@CH2M.com
Billing Address (if different from above)

4. Quote No. _____
DCL Project Manager Stella Tanis

5. Sample Collection
Sampling Site Vesicol
Industrial Process _____
Date of Collection _____
Time Collected _____
Date of Shipment _____
Chain of Custody No _____

6. REQUEST FOR ANALYSES

Laboratory Use Only	Client Sample Number	Matrix*	Sample Volume	ANALYSES REQUESTED - Use method number if known	Units**
	WC				
05I12474	VMP-PAM-01	Pet Charcoal	4.94 L	DBCP GC Analysis	ppb
75	VMP-PAM-02		~~8.336 L~~ 4.017 L		
76	VMP-PAM-03		8.336 L		
77	VMP-PAM-04		8.192 L		
78	VMP-PAM-05TB		0		
79	VMP-PAM-06		4.509		
80	VMP-PAM-07		5.928		
81	VMP-PAM-08		8.996		
82	VMP-PAM-09		8.013		

1,2 Dibromo 3Chloropropane

* Specify: Solid sorbent tube, e g Charcoal; Filter type; Impinger solution; Bulk sample; Blood; Urine; Tissue; Soil; Water; Other

** 1 ug/sample 2 mg/m³ 3 ppm 4 % (5) PPB (other) Please indicate one or more units in the column entitled Units**

Comments 1,2 Dibromo 3chloropropane Report in PPB
Petroleum impregnated carbon filter

Possible Contamination and/or Chemical Hazards Male Sterilizer

7. Chain of Custody (Optional)

Relinquished by	[signature]	Date/Time	7Apr 05 1700
Received by	[signature]	Date/Time	4/8/05 1000
Relinquished by	[signature]	Date/Time	4/8/05 1000
Received by		Date/Time	
Relinquished by		Date/Time	
Received by		Date/Time	

AIR TOXICS LTD.

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Air Toxics Ltd. Introduces the Electronic Report

Thank you for choosing Air Toxics Ltd. To better serve our customers, we are providing your report by e-mail. This document is provided in Portable Document Format which can be viewed with Acrobat Reader by Adobe.

This electronic report includes the following:

- Work order Summary;
- Laboratory Narrative;
- Results; and
- Chain of Custody (copy).

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630

(916) 985-1000 .FAX (916) 985-1020
Hours 8:00 A.M to 6:00 P.M. Pacific
E-mail to:samplereceiving@airtoxics.com

@ AIR TOXICS LTD.
AN ENVIRONMENTAL ANALYTICAL LABORATORY

WORK ORDER #: 0407599

Work Order Summary

CLIENT:	Ms. Heather Hodach CH2M Hill 135 South 84th Street Suite 325 Milwaukee, WI 53214	**BILL TO:**	Accounts Payable/Denver CH2M Hill PO Box 241329 Denver, CO 80224
PHONE:	414-272-1052	**P.O. #**	901567
FAX:	414-272-4408	**PROJECT #**	184199.CV.01 Velsicol Chemical Superfund Site
DATE RECEIVED:	7/31/2004	**CONTACT:**	DeDe Dodge
DATE COMPLETED:	8/13/2004		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.
01A	04CB09-85	Modified TO-14A	7.5 "Hg
01AA	04CB09-85 Duplicate	Modified TO-14A	7.5 "Hg
02A	Lab Blank	Modified TO-14A	NA
03A	CCV	Modified TO-14A	NA
04A	LCS	Modified TO-14A	NA

CERTIFIED BY: Linda D. Frumarn DATE: 08/13/04

Laboratory Director

Certfication numbers: AR DEQ - 03-084-0, CA NELAP - 02110CA, LA NELAP/LELAP- AI 30763, NJ NELAP - CA004
NY NELAP - 11291, UT NELAP - 9166389892
Name of Accrediting Agency: NELAP/Florida Department of Health, Scope of Application: Clean Air Act,
Accreditation number: E87680, Effective date: 07/01/04, Expiration date: 06/30/05
Air Toxics Ltd. certifies that the test results contained in this report meet all requirements of the NELAC standards

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(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

LABORATORY NARRATIVE
Modified TO-14A
CH2M Hill
Workorder# 0407599

One 6 Liter Summa Canister sample was received on July 31, 2004. The laboratory performed analysis via modified EPA Method TO-14A using GC/MS in the full scan mode. The method involves concentrating up to 0.2 liters of air. The concentrated aliquot is then flash vaporized and swept through a water management system to remove water vapor. Following dehumidification, the sample passes directly into the GC/MS for analysis. See the data sheets for the reporting limits for each compound.

Method modifications taken to run these samples include:

Requirement	***TO-14A/TO-15***	***ATL Modifications***
Continuing Calibration criteria	</= 30% Difference	</= 30% Difference with two allowed out to </= 40% Difference; flag and narrate outliers
Initial Calibration criteria	RSD<30% (TO-14A)	RSD</=30%, two compounds allowed up to 40%.
Moisture control	Nafion Dryer (TO-14A)	Multisorbent trap
Blank acceptance criteria	<0.20 ppbv (TO-14A)	<Reporting Limit
Primary ions for Quantification	Freon 114: 85, Carbon Tetrachloride: 117, Trichloroethene: 130, Ethyl Benzene, m,p- and o-Xylene: 91, Vinyl Acetate: 43, 2-Butanone: 43, 4-Methyl-2-Pentanone: 43.	Freon 114: 135, Carbon Tetrachloride: 119, Trichloroethene: 95, Ethyl Benzene, m,p- and o-Xylene: 106, Vinyl Acetate: 86, 2-Butanone: 72, 4-Methyl-2-Pentanone: 58.
Dilutions for Initial Calibration	Dynamic dilutions or static using canisters	Syringe dilutions
BFB absolute abundance criteria	Within 10% of that from previous day. (TO-14A)	CCV internal standard area counts are compared to ICAL, corrective action for > 40% D.
Sample Load Volume	400 mL (TO-14A)	Varied to 200 mL
Sample collection media	Summa canister	ATL recommends use of summa canisters to insure data defensibility, but will report results from Tedlar bags at client request
Concentration of IS Spike.	10 ppbv (TO-15)	25 ppbv.
BFB Abundance	CLP Protocol (TO-15)	SW-846 Protocol
IS Recoveries.	Within 40% of mean over ICAL for blanks, and within 40% of daily CCV for samples. (TO-15)	Within 40% of CCV recoveries for blanks and samples.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

Dilution was performed on samples 04CB09-85 and 04CB09-85 Duplicate due to the presence of high level non-target species.

Definition of Data Qualifying Flags

Eight qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction no performed).

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit.

UJ- Non-detected compound associated with low bias in the CCV

N - The identification is based on presumptive evidence.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

AIR TOXICS LTD.

SAMPLE NAME: 04CB09-85

ID#: 0407599-01A

MODIFIED EPA METHOD TO-14A GC/MS FULL SCAN

File Name:	**s080609**	**Date of Collection: 7/28/04**	
Dil. Factor:	**3580**	**Date of Analysis: 8/6/04 02:33 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Chloromethane	7200	Not Detected	15000	Not Detected
Vinyl Chloride	1800	Not Detected	4600	Not Detected
Bromomethane	1800	Not Detected	7100	Not Detected
Chloroethane	1800	5400	4800	14000
1,1-Dichloroethene	1800	Not Detected	7200	Not Detected
Methylene Chloride	1800	18000	6300	63000
1,1-Dichloroethane	1800	5100	7400	21000
cis-1,2-Dichloroethene	1800	Not Detected	7200	Not Detected
Chloroform	1800	190000	8900	970000
1,1,1-Trichloroethane	1800	Not Detected	9900	Not Detected
Carbon Tetrachloride	1800	180000	11000	1100000
Benzene	1800	56000	5800	180000
1,2-Dichloroethane	1800	230000	7400	960000
Trichloroethene	1800	17000	9800	95000
1,2-Dichloropropane	1800	130000	8400	620000
Toluene	1800	Not Detected	6800	Not Detected
trans-1,3-Dichloropropene	1800	Not Detected	8200	Not Detected
1,1,2-Trichloroethane	1800	Not Detected	9900	Not Detected
Tetrachloroethene	1800	2100	12000	14000
Chlorobenzene	1800	Not Detected	8400	Not Detected
Ethyl Benzene	1800	Not Detected	7900	Not Detected
m,p-Xylene	1800	Not Detected	7900	Not Detected
o-Xylene	1800	Not Detected	7900	Not Detected
Styrene	1800	Not Detected	7700	Not Detected
1,1,2,2-Tetrachloroethane	1800	Not Detected	12000	Not Detected
Acetone	7200	Not Detected	17000	Not Detected
Carbon Disulfide	1800	Not Detected	5700	Not Detected
trans-1,2-Dichloroethene	1800	Not Detected	7200	Not Detected
2-Butanone (Methyl Ethyl Ketone)	1800	Not Detected	5400	Not Detected
Bromodichloromethane	7200	Not Detected	49000	Not Detected
4-Methyl-2-pentanone	1800	Not Detected	7400	Not Detected
2-Hexanone	7200	Not Detected	30000	Not Detected
Dibromochloromethane	7200	Not Detected	62000	Not Detected
Bromoform	1800	Not Detected	19000	Not Detected

Container Type: 6 Liter Summa Canister

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	103	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	101	70-130

AIR TOXICS LTD.

SAMPLE NAME: 04CB09-85

ID#: 0407599-01A

MODIFIED EPA METHOD TO-14A GC/MS FULL SCAN

File Name:	**s080609**	**Date of Collection: 7/28/04**
Dil. Factor:	**3580**	**Date of Analysis: 8/6/04 02:33 PM**

AIR TOXICS LTD.

SAMPLE NAME: 04CB09-85 Duplicate

ID#: 0407599-01AA

MODIFIED EPA METHOD TO-14A GC/MS FULL SCAN

File Name:	**s080610**	**Date of Collection: 7/28/04**	
Dil. Factor:	**3580**	**Date of Analysis: 8/6/04 03:19 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Chloromethane	7200	Not Detected	15000	Not Detected
Vinyl Chloride	1800	Not Detected	4600	Not Detected
Bromomethane	1800	Not Detected	7100	Not Detected
Chloroethane	1800	6400	4800	17000
1,1-Dichloroethene	1800	Not Detected	7200	Not Detected
Methylene Chloride	1800	18000	6300	63000
1,1-Dichloroethane	1800	5600	7400	23000
cis-1,2-Dichloroethene	1800	Not Detected	7200	Not Detected
Chloroform	1800	190000	8900	960000
1,1,1-Trichloroethane	1800	Not Detected	9900	Not Detected
Carbon Tetrachloride	1800	180000	11000	1200000
Benzene	1800	56000	5800	180000
1,2-Dichloroethane	1800	230000	7400	960000
Trichloroethene	1800	17000	9800	95000
1,2-Dichloropropane	1800	130000	8400	620000
Toluene	1800	Not Detected	6800	Not Detected
trans-1,3-Dichloropropene	1800	Not Detected	8200	Not Detected
1,1,2-Trichloroethane	1800	Not Detected	9900	Not Detected
Tetrachloroethene	1800	2100	12000	14000
Chlorobenzene	1800	Not Detected	8400	Not Detected
Ethyl Benzene	1800	Not Detected	7900	Not Detected
m,p-Xylene	1800	Not Detected	7900	Not Detected
o-Xylene	1800	Not Detected	7900	Not Detected
Styrene	1800	Not Detected	7700	Not Detected
1,1,2,2-Tetrachloroethane	1800	Not Detected	12000	Not Detected
Acetone	7200	Not Detected	17000	Not Detected
Carbon Disulfide	1800	Not Detected	5700	Not Detected
trans-1,2-Dichloroethene	1800	Not Detected	7200	Not Detected
2-Butanone (Methyl Ethyl Ketone)	1800	Not Detected	5400	Not Detected
Bromodichloromethane	7200	Not Detected	49000	Not Detected
4-Methyl-2-pentanone	1800	Not Detected	7400	Not Detected
2-Hexanone	7200	Not Detected	30000	Not Detected
Dibromochloromethane	7200	Not Detected	62000	Not Detected
Bromoform	1800	Not Detected	19000	Not Detected

Container Type: 6 Liter Summa Canister

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	101	70-130
Toluene-d8	97	70-130
4-Bromofluorobenzene	97	70-130

AIR TOXICS LTD.

SAMPLE NAME: 04CB09-85 Duplicate

ID#: 0407599-01AA

MODIFIED EPA METHOD TO-14A GC/MS FULL SCAN

File Name:	**s080610**	**Date of Collection: 7/28/04**
Dil. Factor:	**3580**	**Date of Analysis: 8/6/04 03:19 PM**

AIR TOXICS LTD.

SAMPLE NAME: Lab Blank

ID#: 0407599-02A

MODIFIED EPA METHOD TO-14A GC/MS FULL SCAN

File Name:	**s080605**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/6/04 11:20 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Chloromethane	2.0	Not Detected	4.2	Not Detected
Vinyl Chloride	0.50	Not Detected	1.3	Not Detected
Bromomethane	0.50	Not Detected	2.0	Not Detected
Chloroethane	0.50	Not Detected	1.3	Not Detected
1,1-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Methylene Chloride	0.50	Not Detected	1.8	Not Detected
1,1-Dichloroethane	0.50	Not Detected	2.0	Not Detected
cis-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Chloroform	0.50	Not Detected	2.5	Not Detected
1,1,1-Trichloroethane	0.50	Not Detected	2.8	Not Detected
Carbon Tetrachloride	0.50	Not Detected	3.2	Not Detected
Benzene	0.50	Not Detected	1.6	Not Detected
1,2-Dichloroethane	0.50	Not Detected	2.0	Not Detected
Trichloroethene	0.50	Not Detected	2.7	Not Detected
1,2-Dichloropropane	0.50	Not Detected	2.3	Not Detected
Toluene	0.50	Not Detected	1.9	Not Detected
trans-1,3-Dichloropropene	0.50	Not Detected	2.3	Not Detected
1,1,2-Trichloroethane	0.50	Not Detected	2.8	Not Detected
Tetrachloroethene	0.50	Not Detected	3.4	Not Detected
Chlorobenzene	0.50	Not Detected	2.3	Not Detected
Ethyl Benzene	0.50	Not Detected	2.2	Not Detected
m,p-Xylene	0.50	Not Detected	2.2	Not Detected
o-Xylene	0.50	Not Detected	2.2	Not Detected
Styrene	0.50	Not Detected	2.2	Not Detected
1,1,2,2-Tetrachloroethane	0.50	Not Detected	3.5	Not Detected
Acetone	2.0	Not Detected	4.8	Not Detected
Carbon Disulfide	0.50	Not Detected	1.6	Not Detected
trans-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.50	Not Detected	1.5	Not Detected
Bromodichloromethane	2.0	Not Detected	14	Not Detected
4-Methyl-2-pentanone	0.50	Not Detected	2.1	Not Detected
2-Hexanone	2.0	Not Detected	8.3	Not Detected
Dibromochloromethane	2.0	Not Detected	17	Not Detected
Bromoform	0.50	Not Detected	5.2	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	100	70-130
Toluene-d8	97	70-130
4-Bromofluorobenzene	97	70-130

AIR TOXICS LTD.

SAMPLE NAME: Lab Blank

ID#: 0407599-02A

MODIFIED EPA METHOD TO-14A GC/MS FULL SCAN

File Name:	**s080605**	**Date of Collection: NA**
Dil. Factor:	**1.00**	**Date of Analysis: 8/6/04 11:20 AM**

AIR TOXICS LTD.

SAMPLE NAME: CCV

ID#: 0407599-03A

MODIFIED EPA METHOD TO-14A GC/MS FULL SCAN

File Name:	**s080603**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/6/04 09:20 AM**	

Compound	%Recovery
Chloromethane	88
Vinyl Chloride	89
Bromomethane	106
Chloroethane	81
1,1-Dichloroethene	87
Methylene Chloride	91
1,1-Dichloroethane	87
cis-1,2-Dichloroethene	89
Chloroform	87
1,1,1-Trichloroethane	90
Carbon Tetrachloride	98
Benzene	78
1,2-Dichloroethane	81
Trichloroethene	84
1,2-Dichloropropane	84
Toluene	83
trans-1,3-Dichloropropene	93
1,1,2-Trichloroethane	89
Tetrachloroethene	88
Chlorobenzene	86
Ethyl Benzene	88
m,p-Xylene	85
o-Xylene	87
Styrene	92
1,1,2,2-Tetrachloroethane	86
Acetone	87
Carbon Disulfide	90
trans-1,2-Dichloroethene	88
2-Butanone (Methyl Ethyl Ketone)	95
Bromodichloromethane	89
4-Methyl-2-pentanone	88
2-Hexanone	94
Dibromochloromethane	98
Bromoform	100

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	102	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	102	70-130

AIR TOXICS LTD.

SAMPLE NAME: CCV

ID#: 0407599-03A

MODIFIED EPA METHOD TO-14A GC/MS FULL SCAN

File Name:	**s080603**	**Date of Collection: NA**
Dil. Factor:	**1.00**	**Date of Analysis: 8/6/04 09:20 AM**

AIR TOXICS LTD.

SAMPLE NAME: LCS

ID#: 0407599-04A

MODIFIED EPA METHOD TO-14A GC/MS FULL SCAN

File Name:	**s080604**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/6/04 10:10 AM**	

Compound	%Recovery
Chloromethane	82
Vinyl Chloride	85
Bromomethane	62 Q
Chloroethane	52 Q
1,1-Dichloroethene	93
Methylene Chloride	86
1,1-Dichloroethane	96
cis-1,2-Dichloroethene	79
Chloroform	95
1,1,1-Trichloroethane	96
Carbon Tetrachloride	102
Benzene	85
1,2-Dichloroethane	96
Trichloroethene	96
1,2-Dichloropropane	102
Toluene	79
trans-1,3-Dichloropropene	103
1,1,2-Trichloroethane	91
Tetrachloroethene	88
Chlorobenzene	88
Ethyl Benzene	86
m,p-Xylene	85
o-Xylene	89
Styrene	101
1,1,2,2-Tetrachloroethane	89
Acetone	97
Carbon Disulfide	96
trans-1,2-Dichloroethene	93
2-Butanone (Methyl Ethyl Ketone)	100
Bromodichloromethane	94
4-Methyl-2-pentanone	101
2-Hexanone	112
Dibromochloromethane	104
Bromoform	105

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	102	70-130
Toluene-d8	96	70-130
4-Bromofluorobenzene	104	70-130

AIR TOXICS LTD.

SAMPLE NAME: LCS

ID#: 0407599-04A

MODIFIED EPA METHOD TO-14A GC/MS FULL SCAN

File Name:	**s080604**	**Date of Collection: NA**
Dil. Factor:	**1.00**	**Date of Analysis: 8/6/04 10:10 AM**

CH2M HILL

CLIENT # A005
REPORT # 04-182

SUBMITTED BY:
CHESTER LABNET
12242 S.W. GARDEN PLACE
TIGARD, OR 97223
(503)624-2183/FAX (503)624-2653
www.ChesterLab.Net

CHESTER LabNet

12242 SW Garden Place ❖ Tigard, OR 97223-8246 ❖ USA
Telephone 503-624-2183 ❖ Fax 503-624-2653 ❖ www.chesterlab.net

Case Narrative

Date: August 11, 2004

General Information

Client:	CH2M HILL
Client Number:	A005
Report Number:	04-182
Sample Description:	Treated Filter
Sample Numbers:	04-M533

Analysis

Analytes:	Br2
Analytical Protocols:	NIOSH 6011
Analytical Notes:	No problems were encountered during the analyses.
QA/QC Review:	All of the data have been reviewed by the analysts performing the analyses and the project manager. All of the quality control and sample-specific information in this package is complete and meets or exceeds the minimum requirements for acceptability.
Comments:	If you have any questions or concerns regarding this analysis, please feel free to contact the project manager.

Paul Duda 8/11/04

Project Manager Date
Paul Duda

Client: A005 - CH2MHILL
Report Number: 04-182

Lab ID: 04-M533
Client ID: 04CB09-86
Site: tank3-bromine
Sample Date: 8/ 1/04
Sample Time: 13:58
Sample Volume: 10.0 mL

Analyte	Results
Br2	31.3 µg

QA/QC Report

Client Name: CH2MHILL
Project Number: A005
Analytical Technique: Ion Chromatography
Sample Description: Treated filter
Report Number: 04-182

Blank Data

Analyte	Sample ID	Measured Conc. mg/L	MDL Conc. mg/L
Br	ICB	< MDL	0.050
Br	Prep_Blk	< MDL	0.050
Br	Meth_Blk	< MDL	0.050
Br	CCB	< MDL	0.050

Calibration QC

Analyte	Sample ID	Standard Conc. mg/L	Measured Conc. mg/L	Percent Recovery
Br	ICV_LO	1.00	0.98	98.0
Br	ICV_MID	10.0	10.2	102.5
Br	CCV_LO	1.00	1.03	103.0
Br	CCV_MID	10.0	10.6	105.7

Replicate Data

Analyte	Sample ID	Sample Conc. mg/L	Replicate Conc. mg/L	RPD
Br	04-M533	3.13	3.09	1.29

RPD = {(sample-replicate)/[(sample+replicate)/2]}x100
N/C: RPD is not calculated when sample or replicate is below detection limit
#: per EPA CLP protocol, control limits do not apply if sample and/or replicate concentration is less than 5x the detection limit

Laboratory Control Sample/Matrix Post Spike Analysis

Analyte	Sample ID	Sample Conc. mg/L	Spike Conc. mg/L	Spike Amount mg/L	Percent Recovery
Br	LCS	< 0.05	11.5	10.0	115.
Br	04-M533	3.13	13.1	10.0	99.9

*: per EPA CLP protocol, control limits do not apply if spike concentration is less than 25% of the sample concentration

QA/QC Limits

Continuing Calibration: ± 10% *LCS: ± 20%*
Replicates: ± 20% RPD *Spikes: ± 25%*

USEPA Contract Laboratory Program
Generic Chain of Custody

Reference Case
Client No: 04CB09
SDG No:
L

Date Shipped:	8/2/2004
Carrier Name:	FedEx
Airbill:	847863329482
Shipped to:	Chester Lab Net 12242 SW Garden Place Tigard OR 97223 (503) 624-2183

Chain of Custody Record

Sampler Signature:

	Relinquished By	(Date / Time)	Received By	(Date / Time)
1		8/2/04 1600		8/3/04 9:30
2				
3				
4				

For Lab Use Only

Lab Contract No:
Unit Price:
Transfer To:
Lab Contract No:
Unit Price:

SAMPLE No.	MATRIX/ SAMPLER	CONC/ TYPE	ANALYSIS/ TURNAROUND	TAG No./ PRESERVATIVE/ Bottles	STATION LOCATION	SAMPLE COLLECT DATE/TIME		FOR LAB USE ONLY Sample Condition On Receipt
04CB09-86	Air/ Danny Lynch	M/G	BR (21)	5214598 (Ice Only) (1)	tank3-bromine	S: 8/1/2004	13:58	04-M533

Shipment for Case Complete? N	Sample(s) to be used for laboratory QC:	Additional Sampler Signature(s):	Cooler Temperature Upon Receipt 11°C	Chain of Custody Seal Number: 82072, 82073
Analysis Key: BR = Bromine	Concentration: L = Low, M = Low/Medium, H = High	Type/Designate: Composite = C, Grab = G		Custody Seal Intact? Y / Shipment Iced? Y

TR Number: 5-145192649-080204-0002

LABORATORY COPY

PR provides preliminary results. Requests for preliminary results will increase analytical costs.
Send Copy to: Sample Management Office, 2000 Edmund Halley Dr., Reston, VA. 20191-3400 Phone 703/264-9348 Fax 703/264-9222

Case # or Project Code	Sample Number	Month/Day/Year	Time	DESIGNATE Comp.	DESIGNATE Grab
Station Number and Location					
Samplers (signatures)					

Tag Number 5- 214598

Lab Sample Number

USE FOR MS/MSD ☐

ANALYSES

Remarks

Sample Number: 04CB09-86 Sample Date: 8/1/2004
Sample time: 13:58
Analysis: Bromine Preservative:Ice Only
Station Location: tank3-bromine Tag Number:
5214598

PRESERVATIVE: H_2SO_4 ☐ ICE ☐
HCL ☐ HNO_3 ☐ NaOH ☐ Other ☐

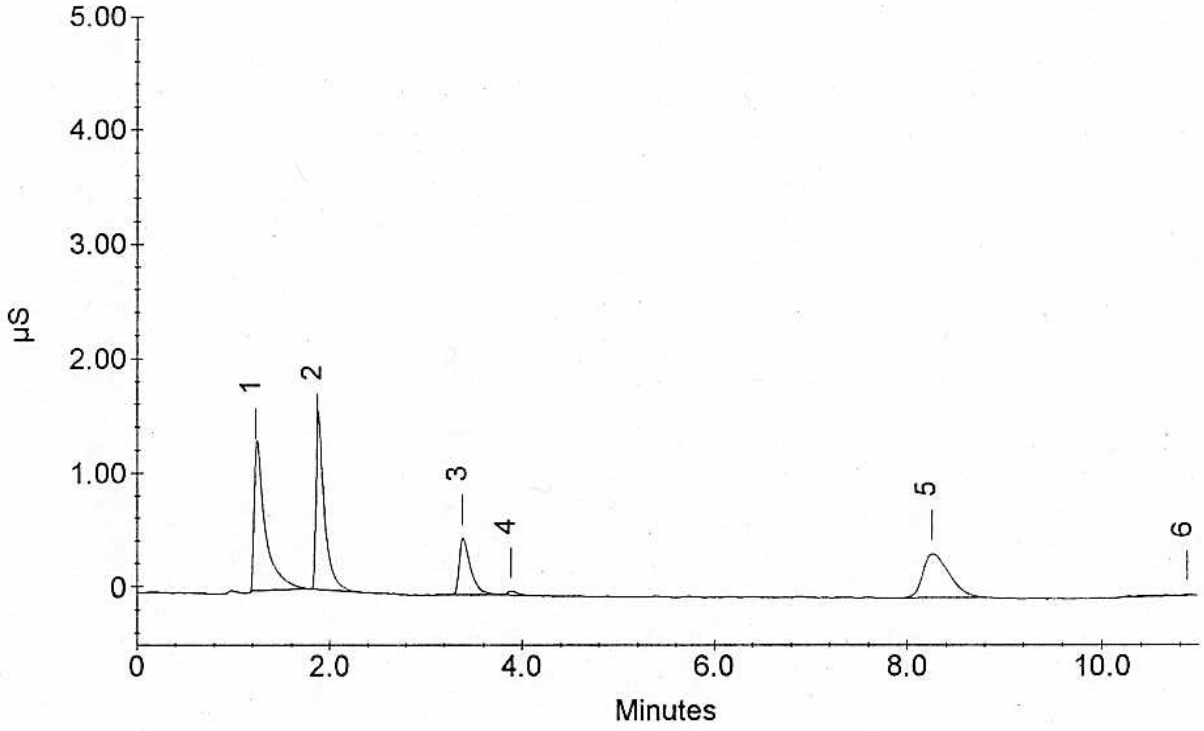
Chester LabNet IC Report

Sample Name : ICV LO
Data File Name : C:\PEAKNET\DATA\0809AN_A001.DXD
Method File Name : c:\peaknet\method\anion low method.met
Date Time Collected : 8/9/04 10:48:55 AM
System Operator : AJO
Dilution Factor : 1.00

Peak Information : All Peaks

Peak #	Component	Retention Time	Amount (ppm) (ppm)	Peak Area	Peak Height
1	Fluoride	1.23	0.98	105243	12172
2	Chloride	1.87	1.01	94437	13314
3	Bromide	3.38	0.98	39487	4940
4	Nitrate	3.88	0.04	2317	320
5	Sulfate	8.25	1.03	69594	3770
6	Unknown 1	10.87	0.00	2591	65

ICV LO



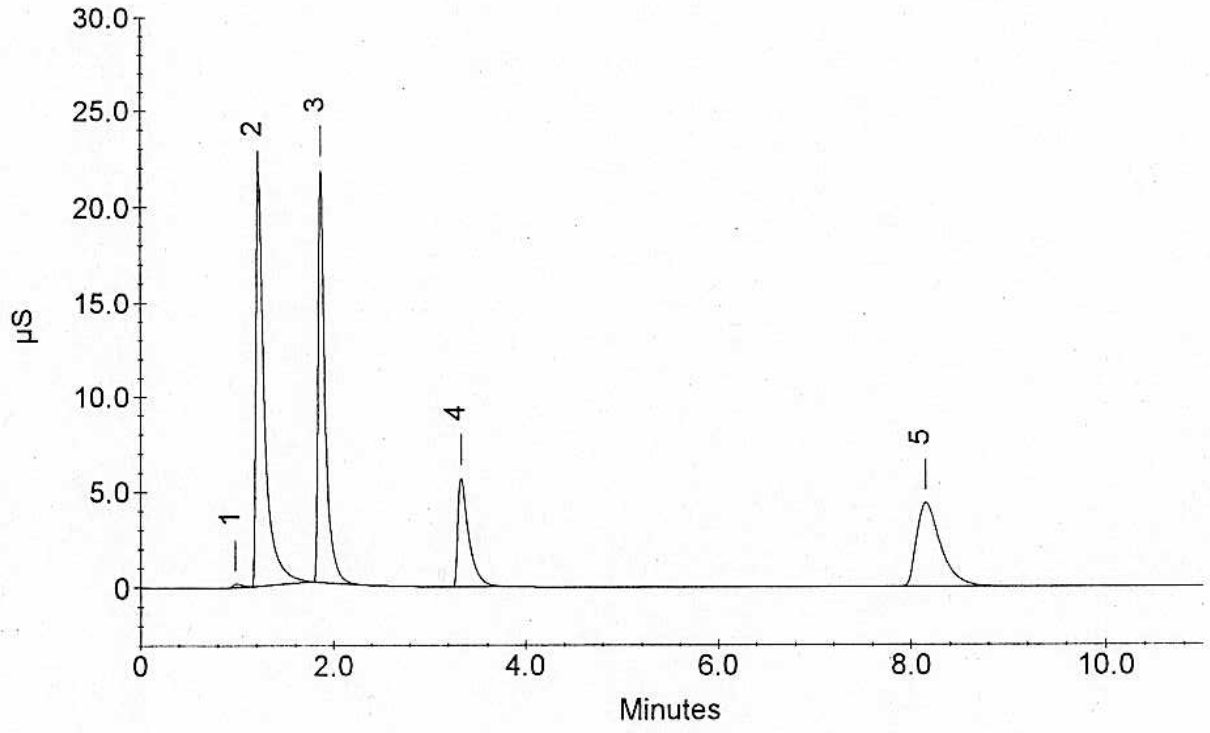
Chester LabNet IC Report

Sample Name : ICV MID
Data File Name : C:\PEAKNET\DATA\0809AN_002.DXD
Method File Name : c:\peaknet\method\anion mid method.met
Date Time Collected : 8/9/04 11:01:05 AM
System Operator : AJO
Dilution Factor : 1.00

Peak Information : All Peaks

Peak #	Component	Retention Time	Amount (ppm) (ppm)	Peak Area	Peak Height
1	Unknown 1	0.98	0.00	11556	1859
2	Fluoride	1.22	9.42	1346015	205665
3	Chloride	1.87	9.93	1125288	216226
4	Bromide	3.33	10.25	442543	56554
5	Sulfate	8.15	10.48	746185	43626

ICV MID



Current Date : 08/10/2004

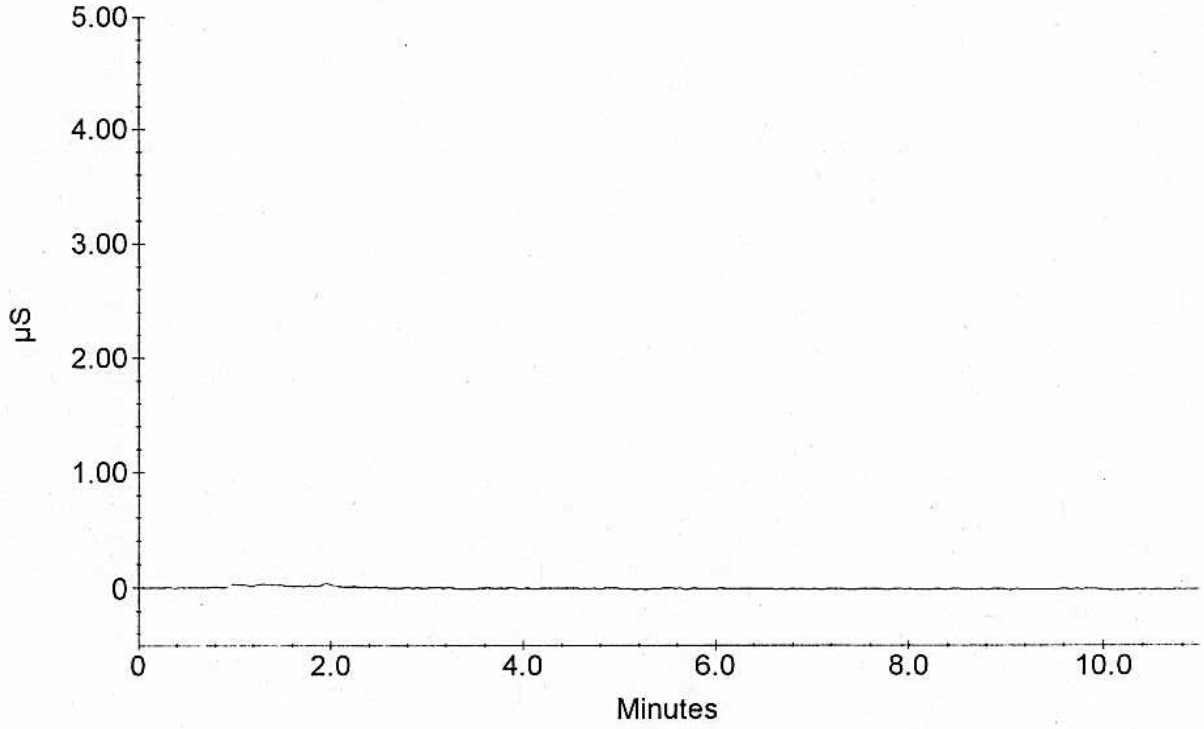
Chester LabNet IC Report

Sample Name : ICB
Data File Name : C:\PEAKNET\DATA\0809AN_003.DXD
Method File Name : c:\peaknet\method\anion low method.met
Date Time Collected : 8/9/04 11:13:18 AM
System Operator : AJO
Dilution Factor : 1.00

Peak Information : All Peaks

Peak #	Component	Retention Time	Amount (ppm) (ppm)	Peak Area	Peak Height

ICB



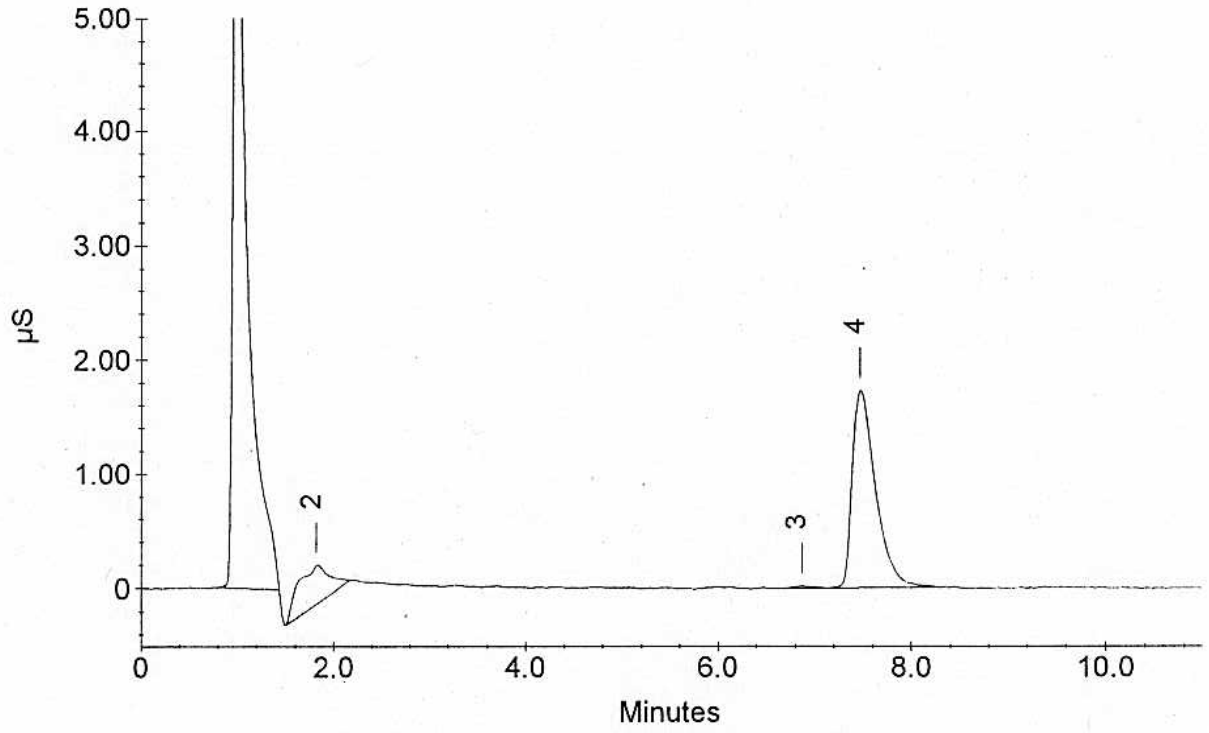
Chester LabNet IC Report

Sample Name : PB 04-182
Data File Name : C:\PEAKNET\DATA\0809AN_004.DXD
Method File Name : c:\peaknet\method\anion low method.met
Date Time Collected : 8/9/04 11:25:32 AM
System Operator : AJO
Dilution Factor : 1.00

Peak Information : All Peaks

Peak #	Component	Retention Time	Amount (ppm) (ppm)	Peak Area	Peak Height
1	Unknown 1	0.98	0.00	723565	71725
2	Chloride	1.82	0.82	76817	3306
3	Phosphate	6.87	0.08	2002	166
4	Unknown 2	7.47	0.00	292346	17227

PB 04-182



Current Date : 08/10/2004

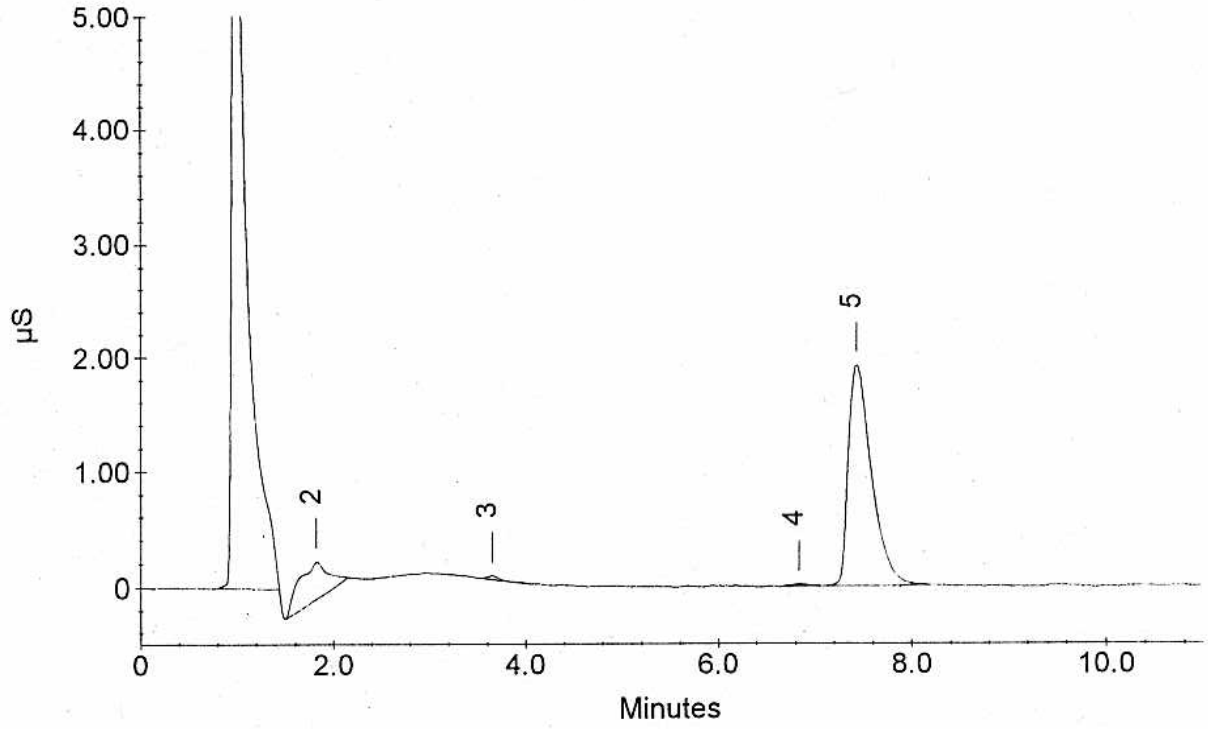
Chester LabNet IC Report

Sample Name : MB 04-182
Data File Name : C:\PEAKNET\DATA\0809AN_006.DXD
Method File Name : c:\peaknet\method\anion low method.met
Date Time Collected : 8/9/04 11:59:58 AM
System Operator : AJO
Dilution Factor : 1.00

Peak Information : All Peaks

Peak #	Component	Retention Time	Amount (ppm) (ppm)	Peak Area	Peak Height
1	Unknown 1	0.98	0.00	758345	73949
2	Chloride	1.82	0.75	69851	3191
3	Nitrate	3.65	0.05	2742	332
4	Phosphate	6.83	0.08	2120	135
5	Unknown 2	7.43	0.00	317844	19086

MB 04-182



Current Date : 08/10/2004

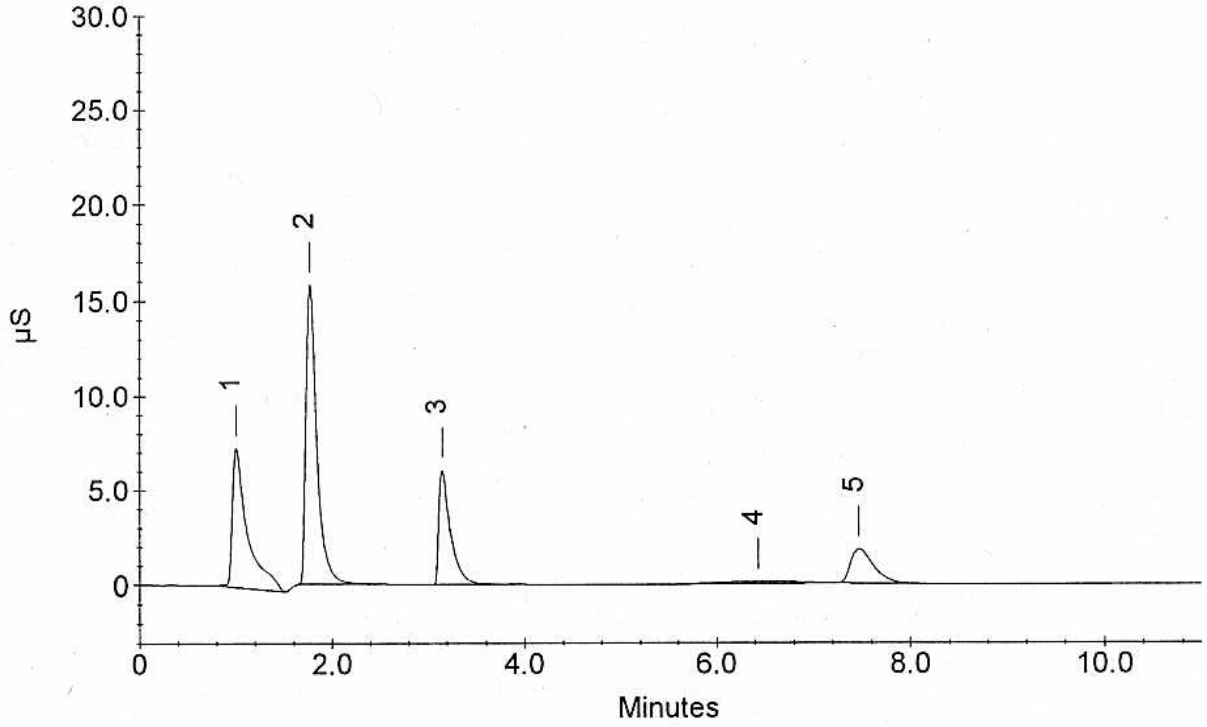
Chester LabNet IC Report

Sample Name : LCS 04-182
Data File Name : C:\PEAKNET\DATA\0809AN_008.DXD
Method File Name : c:\peaknet\method\anion mid method.met
Date Time Collected : 8/9/04 12:40:43 PM
System Operator : AJO
Dilution Factor : 1.00

Peak Information : All Peaks

Peak #	Component	Retention Time	Amount (ppm) (ppm)	Peak Area	Peak Height
1	Unknown 1	1.00	0.00	799076	73582
2	Chloride	1.77	10.78	1231222	157146
3	Bromide	3.15	11.52	500600	60100
4	Phosphate	6.43	2.70	59191	1041
5	Unknown 2	7.47	0.00	300379	18111

LCS 04-182



Current Date : 08/10/2004

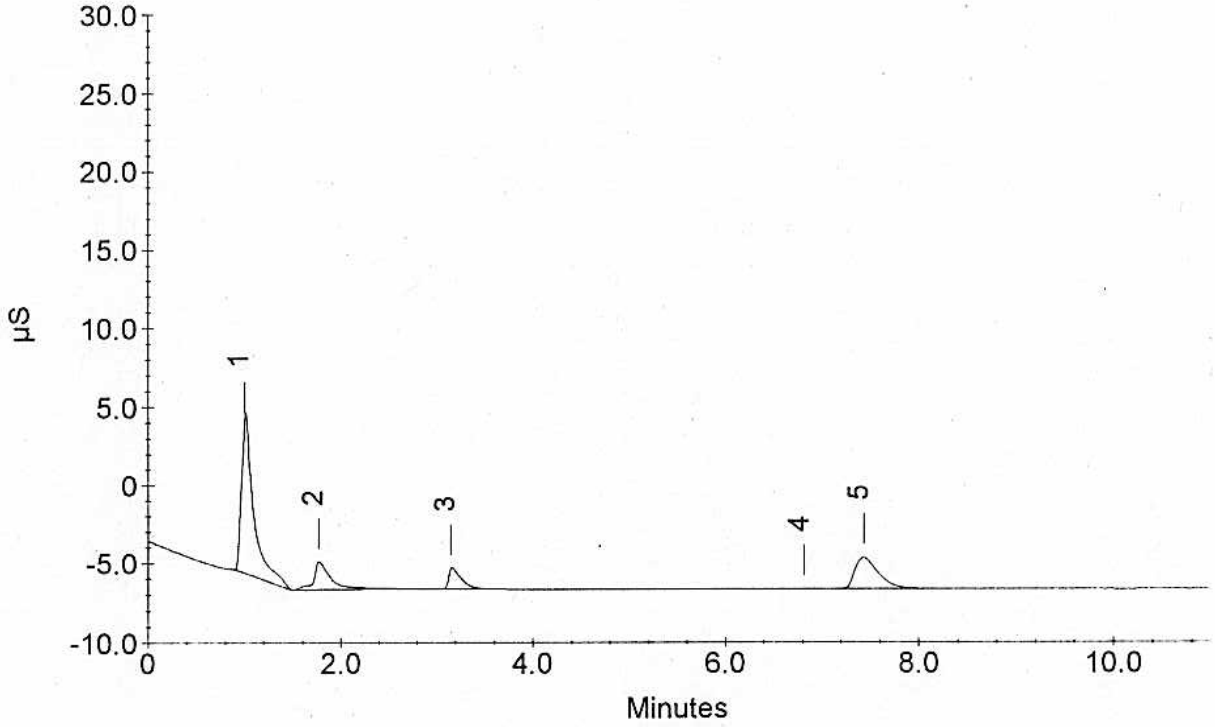
Chester LabNet IC Report

Sample Name : 04M 533
Data File Name : C:\PEAKNET\DATA\0809AN_010.DXD
Method File Name : C:\PeakNet\method\anion mid method.met
Date Time Collected : 8/9/04 1:05:12 PM
System Operator : AJO
Dilution Factor : 1.00

Peak Information : All Peaks

Peak #	Component	Retention Time	Amount (ppm) (ppm)	Peak Area	Peak Height
1	Unknown 1	1.00	0.00	898999	94908
2	Unknown 2	1.77	0.00	220178	17640
3	Bromide	3.15	3.13	116420	12783
4	Unknown 3	6.82	0.00	1613	142
5	Unknown 4	7.43	0.00	327903	19881

04M 533



Current Date : 08/10/2004

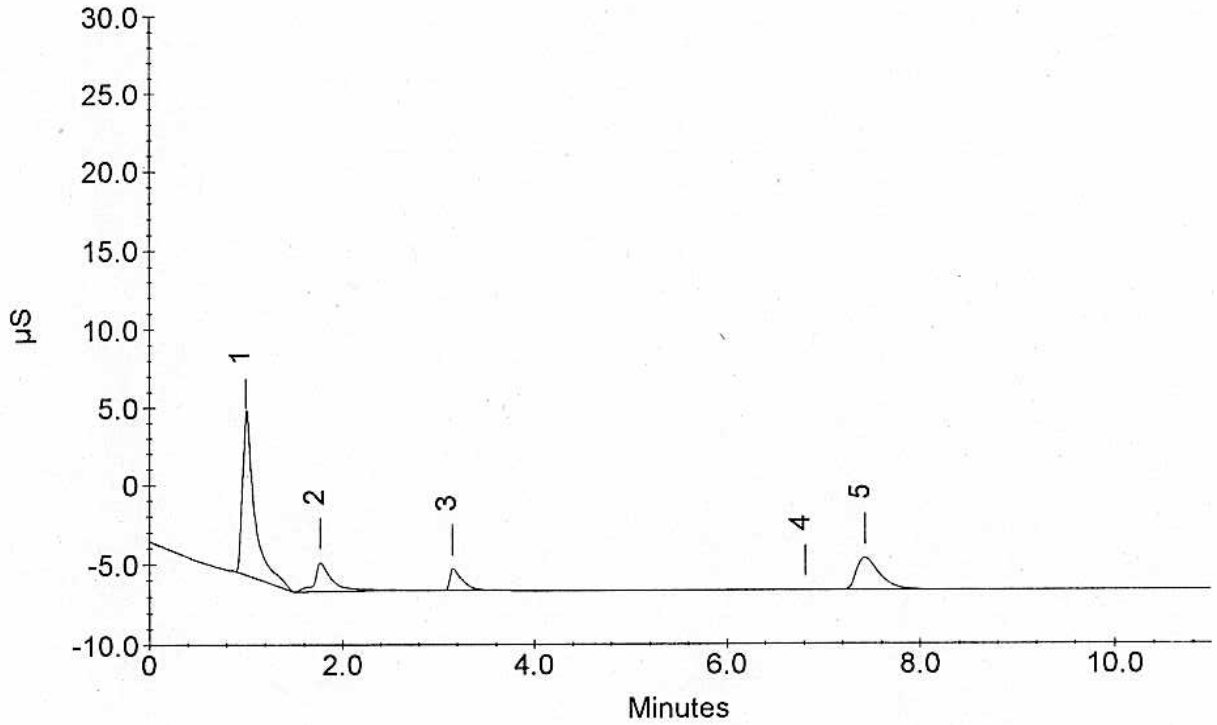
Chester LabNet IC Report

Sample Name : 04M 533 REP
Data File Name : C:\PEAKNET\DATA\0809AN_012.DXD
Method File Name : C:\PeakNet\method\anion mid method.met
Date Time Collected : 8/9/04 1:29:40 PM
System Operator : AJO
Dilution Factor : 1.00

Peak Information : All Peaks

Peak #	Component	Retention Time	Amount (ppm) (ppm)	Peak Area	Peak Height
1	Unknown 1	1.00	0.00	906348	97780
2	Unknown 2	1.77	0.00	226069	17815
3	Bromide	3.15	3.09	114803	13177
4	Unknown 3	6.82	0.00	1958	154
5	Unknown 4	7.43	0.00	327140	19963

04M 533 REP



Current Date : 08/10/2004

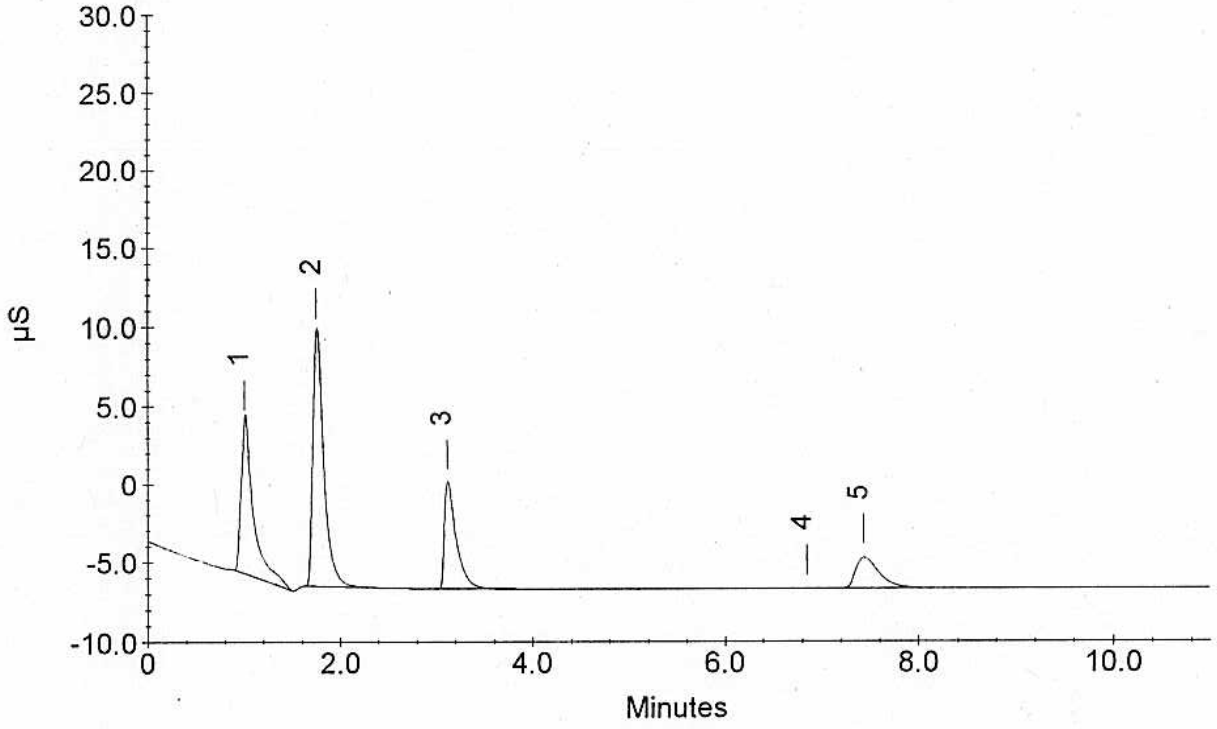
Chester LabNet IC Report

Sample Name : 04M 533 PST SPK
Data File Name : C:\PEAKNET\DATA\0809AN_014.DXD
Method File Name : c:\peaknet\method\anion mid method.met
Date Time Collected : 8/9/04 1:54:10 PM
System Operator : AJO
Dilution Factor : 1.00

Peak Information : All Peaks

Peak #	Component	Retention Time	Amount (ppm) (ppm)	Peak Area	Peak Height
1	Unknown 1	1.00	0.00	890757	96253
2	Chloride	1.75	11.26	1289848	161988
3	Bromide	3.12	13.12	574101	67844
4	Unknown 2	6.85	0.00	1664	138
5	Unknown 3	7.43	0.00	322027	19534

04M 533 PST SPK



Current Date : 08/10/2004

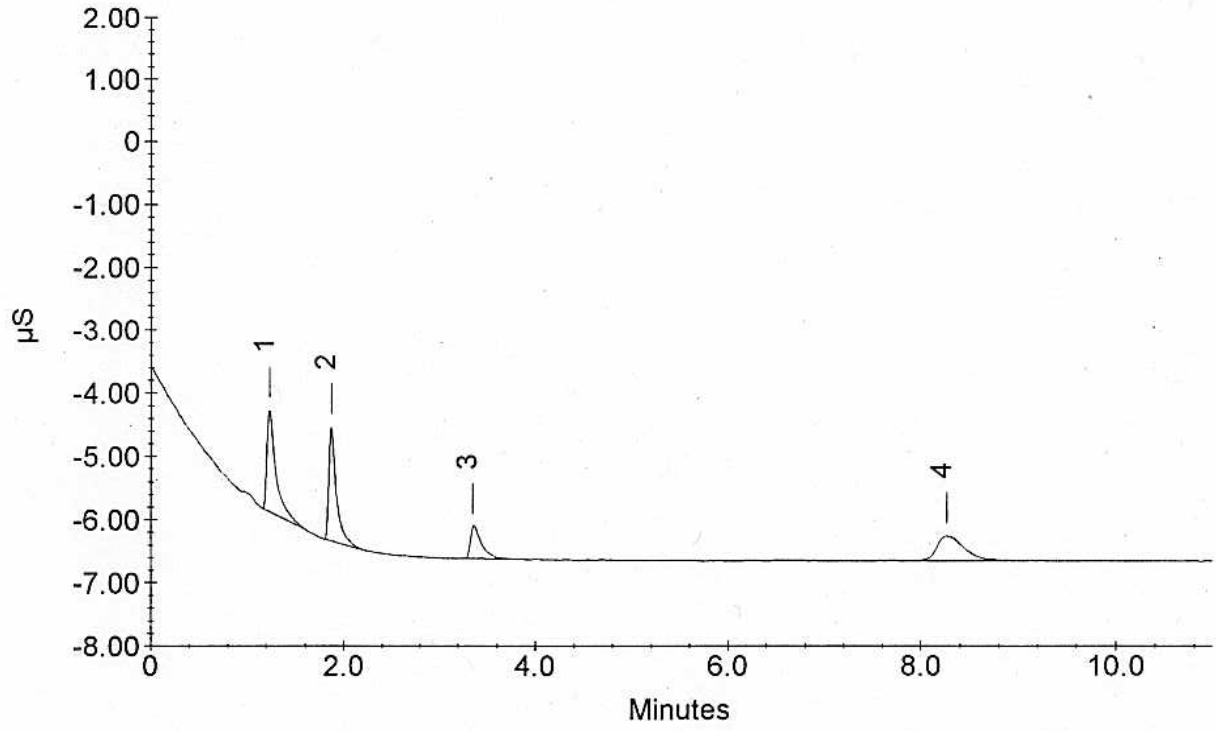
Chester LabNet IC Report

Sample Name : CCV LO
Data File Name : C:\PEAKNET\DATA\0809AN_016.DXD
Method File Name : c:\peaknet\method\anion low method.met
Date Time Collected : 8/9/04 2:18:38 PM
System Operator : AJO
Dilution Factor : 1.00

Peak Information : All Peaks

Peak #	Component	Retention Time	Amount (ppm) (ppm)	Peak Area	Peak Height
1	Fluoride	1.23	0.96	103154	15944
2	Chloride	1.87	1.06	98964	17903
3	Bromide	3.35	1.03	41280	4998
4	Sulfate	8.27	1.12	75971	3940

CCV LO



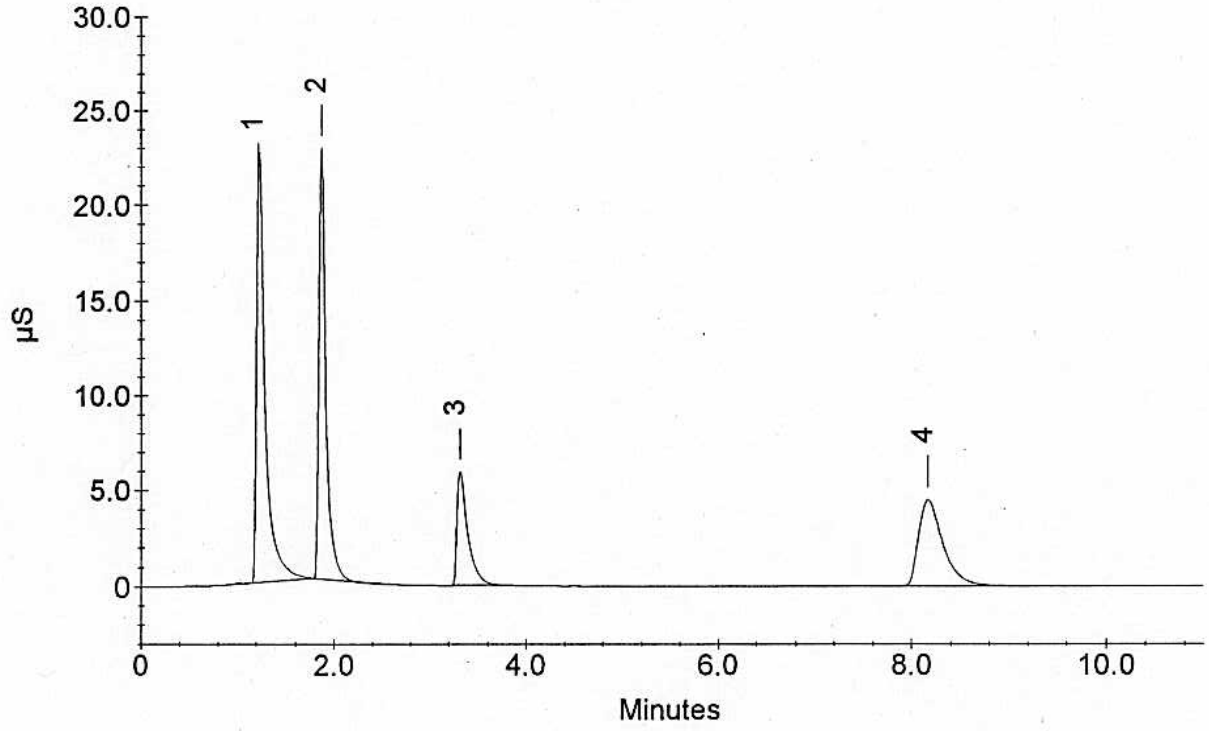
Chester LabNet IC Report

Sample Name : CCV MID
Data File Name : C:\PEAKNET\DATA\0809AN_017.DXD
Method File Name : c:\peaknet\method\anion mid method.met
Date Time Collected : 8/9/04 2:30:51 PM
System Operator : AJO
Dilution Factor : 1.00

Peak Information : All Peaks

Peak #	Component	Retention Time	Amount (ppm) (ppm)	Peak Area	Peak Height
1	Fluoride	1.22	9.64	1378922	207103
2	Chloride	1.87	10.08	1143463	226082
3	Bromide	3.32	10.57	457163	58796
4	Sulfate	8.17	10.79	769236	44584

CCV MID



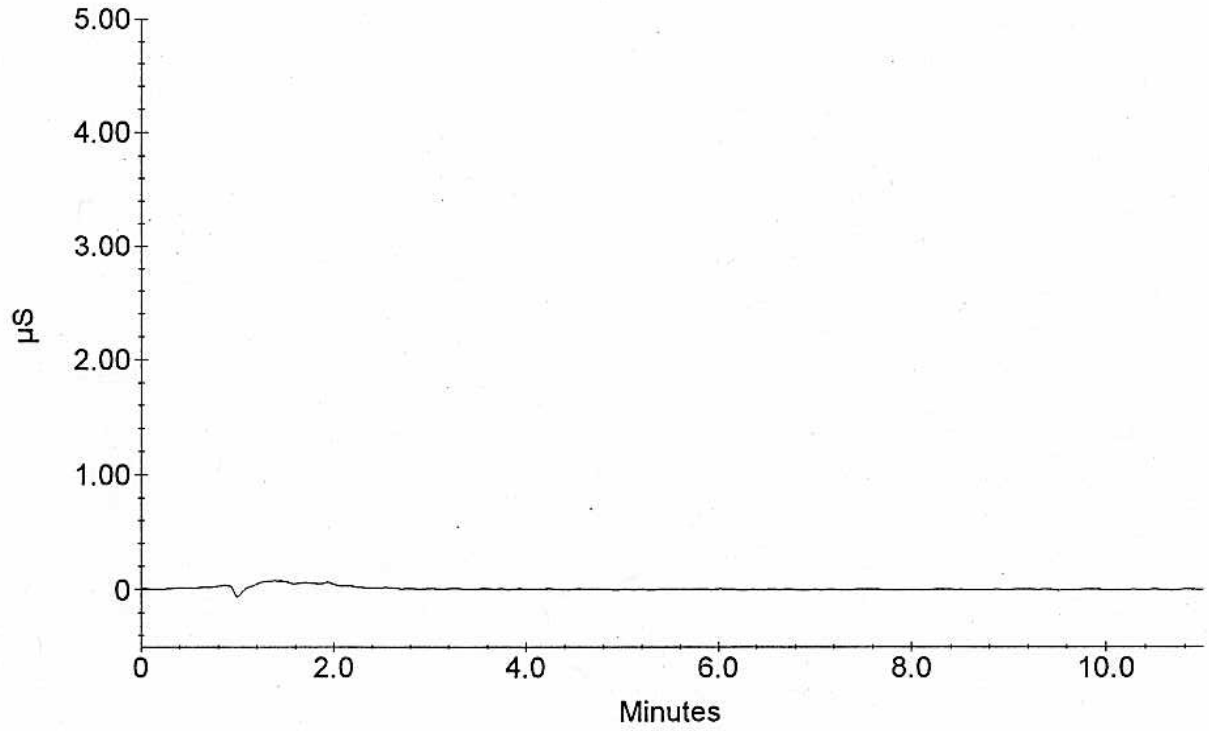
Chester LabNet IC Report

Sample Name : CCB
Data File Name : C:\PEAKNET\DATA\0809AN_018.DXD
Method File Name : c:\peaknet\method\anion low method.met
Date Time Collected : 8/9/04 2:43:05 PM
System Operator : AJO
Dilution Factor : 1.00

Peak Information : All Peaks

Peak #	Component	Retention Time	Amount (ppm) (ppm)	Peak Area	Peak Height

CCB



Current Date : 08/10/2004

From: Bayer, Regina/MKE
Sent: Wednesday, March 02, 2005 3:00 PM
To: 'Linebaugh.Stephanie@epamail.epa.gov'
Cc: Von Wallmenich, Theo/LSG; Stryker, Robert/MKE
Subject: FW: Air Sampling Results
Attachments: 0407599_d.pdf; Area3AirSample.pdf

The purpose of this Email is to convey the results of air sampling conducted by CH2M HILL during operations at the Velsicol Site in the Fall of 2004 and discuss the implications of these results and new information regarding 1,2-dibromo-3-chloropropane that has been obtained from site characterization activities subsequent to these activities. Two types of air sampling were conducted and will be discussed in more detail below: (1) Tank headspace vapor sampling, and (2) Personal diffusion badge sampling.

Tank Headspace Vapor Sampling

Tank headspace vapor sampling was conducted on August 1, 2004 during transfer of total fluids from manhole MH-3 into the MH-3 holding tank. This sampling consisted of volatile organic compound vapor sampling with a SUMMA canister, reactive bromine cartridge sampling, and real-time monitoring of organic vapors with a multiRAE device equipped with a 11.7 eV photoionization detector (PID) and a chlorine industrial hygiene probe with 100 percent cross-sensitivity for bromine. All equipment was set up in the tank headspace and operating prior to starting the actual total fluids transfer. The actual transfer operation took 23 minutes to complete. Total fluids were pumped to the holding tank at an estimated rate of 10 gallons per minute. The highest reading noted on the PID was 4.9 parts per million (ppm; background was 0.6 ppm). The highest reading on the chlorine probe was 1.3 ppm (background was 0.3 ppm).

The Area 3 Holding Tank Headspace Sampling Results, August 2004, collected during Total Fluids Transfer from Manhole 3 to Holding Tank, are given in the two attached files, from Chester Labs and Air Toxics Lab.

Personal Diffusion Badge Sampling

Air sampling badges were worn by site personnel for activities conducted on September 15 and 16, 2004 and November 2, 2004. The samples in September were taken while staff were observing the advancement of test pits. Non-Aqueous Phase Liquid (NAPL) was observed in test pits during this activity. Air sampling badge constituents analyzed were benzene, methylene chloride and 1,2-dichloroethane. These were chosen since among the compounds known to be present at the site at that time these have the lowest exposure limits. The benzene and methylene chloride exposures were tested, in part, to comply with OSHA regulations for assessing exposure. The methylene chloride standard in particular requires air sampling if methylene chloride is present and there is any potential for exposure, regardless of duration or days of potential exposure.

Results for the September sampling were below the limits of quantification for benzene and 1,2-dichloroethane. The reporting limit for benzene is .001 milligrams (mg)/sample and the reporting limit for 1,2-dichloroethane is .01 mg/sample. Methylene chloride was detected at very low levels. The levels found in the personal air samples were similar to the levels found in the trip blank. After correcting for methylene chloride in the blank the exposure was below the reporting limit of 0.01 mg/sample. The sample collected in November was also for observation of test pit advancement. All results were below the reporting limit for this air sample.

1,2-Dibromo-3-chloropropane

1,2-dibromo-3-chloropropane was detected in two out of 13 soil samples from the test pits at concentrations of 6.8 micrograms per kilogram (ug/kg; Test Pit #6 at seven feet below grade) and 12,100 ug/kg (Test Pit #7

at 20 feet below grade). This compound had been detected infrequently in groundwater during the RI (three samples from the Shallow Unit had concentrations ranging from 10 to 23 micrograms per liter [ug/L]) but had not been analyzed in soil samples until these test pits.

CH2M HILL's health and safety practices were re-evaluated to address potential for exposure to 1,2-dibromo-3-chloropropane. 1,2-dibromo-3-chloropropane has a low Permissible Exposure Level (1 part per billion). Field instrumentation are not expected to be suitable for monitoring for 1,2-dibromo-3-chloropropane because its PEL is roughly two to three orders of magnitude lower than the low range of air monitoring devices. For certain activities that have relatively limited exposure potential (such as drilling, soil sampling and groundwater sampling) the natural strong winds at the site supplemented by engineering controls such as work zone positioning relative to wind direction and ventilation devices if necessary are expected to mitigate potential exposure to 1,2-dibromo-3-chloropropane. The exposure potential for 1,2-dibromo-3-chloropropane will also be assessed with air sampling specific for 1,2-dibromo-3-chloropropane, and contingency plans for supplied air upgrade as indicated by the results of air sampling.

Based on recent information provided by Weston in conference calls there may be additional locations at the site where 1,2-dibromo-3-chloropropane exposure may be of increased concern. It is proposed that the Site Teams (USEPA /CH2M HILL and MDEQ/Weston) should hold a conference call specifically for the purpose of identifying all known occurrences of 1,2-dibromo-3-chloropropane and determine areas of concern for 1,2-dibromo-3-chloropropane where additional precautions may need to be taken to ensure the safety of our workers in the field.

MH1 and MH2, 3 NAPL Analytical Results

National Environmental Services Corp

PO Box 300

Clear Creek, IN 47426

Phone: 812-339-9000
Fax: 812-331-8235

TRANSMITTAL
No. 00009

PROJECT: Velsicol Chemical/Pine River Site

DATE: 6/24/05

TO: CH2M HILL
135 South 84th Street
Suite 325
Milwaukee, WI 53214

REF: USEPA #68-W6-0025
Work #208-RARA-0532
NESC Job H56

ATTN: Rob Stryker

WE ARE SENDING:	SUBMITTED FOR:	ACTION TAKEN:
✔ Shop Drawings	Approval	Approved as Submitted
Letter	✔ Your Use	Approved as Noted
Prints	As Requested	Returned After Loan
Change Order	Review and Comment	Resubmit
Plans		Submit
Samples	**SENT VIA:**	Returned
Specifications	✔ Attached	Returned for Corrections
Other:	✔ Separate Cover Via: overnight	Due Date:

Manhole analytical report

CC: Dan Lynch

Signed: EJW

Emily Wilson

Expedition ®

TestAmerica
ANALYTICAL TESTING CORPORATION

RECEIVED
JUN 22 2005

339 W. Walton Blvd. • Pontiac, MI 48340 • 248-332-1940 • Fax: 248-332-5450

ANALYTICAL REPORT

Judson Waters
NATIONAL ENVIRONMENTAL SER
417 South Walnut Street
Bloomington, IN 47401

06/17/2005

Job Number: 05.09349

Veliscol Chem

Enclosed is the Analytical Report for the following samples submitted to the Pontiac Division of TestAmerica Analytical Testing Corporation - Pontiac Division

Sample Number	Sample Description	Date Taken	Date Received
119325	Manhole #1	05/17/2005	05/18/2005
119326	Manhole #2/3	05/17/2005	05/18/2005

TestAmerica Analytical Testing Corporation certifies that the analytical results contained herein apply only to the specific samples analyzed. Reproduction of this analytical report is permitted only in its entirety. All samples will be discarded after thirty days unless otherwise notified.

Susan Schafer
Project Manager

TestAmerica
ANALYTICAL TESTING CORPORATION
339 W. Walton Blvd. • Pontiac, MI 48340 • 248-332-1940 • Fax: 248-332-5450

ANALYTICAL REPORT

Judson Waters
NATIONAL ENVIRONMENTAL SER
417 South Walnut Street
Bloomington, IN 47401

06/17/2005

Job No.: 05.09349
Sample No.: 119325

Veliscol Chem

Sample Description: Manhole #1

Date Taken: 05/17/2005 Time Taken: 03:00

Date Received: 05/18/2005

Parameter	Result	Unit	Date Prepared	Date Analyzed	Lab Tech.	Methodology	Note
Corrosivity (pH)	6.50	S.U.		05/20/2005	smd	SW 9040	
Ignitability of Liquids	105	Degree F		06/16/2005	mss	SW 1010	
VOLATILE COMPOUNDS-8260 Non-Aq							O
Acetone	<5,000,000	ug/Kg		06/09/2005	jcs	SW 8260A	
Acrolein	<2,500,000	ug/Kg		06/09/2005	jcs	SW 8260A	
Acrylonitrile	<2,500,000	ug/Kg		06/09/2005	jcs	SW 8260A	
Allyl chloride	<1,250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
Benzene	<250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
tert-Butylbenzene	<250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
sec-Butylbenzene	<250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
n-Butylbenzene	<250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
Bromochloromethane	<250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
Bromodichloromethane	<250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
Bromoform	<250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
Bromobenzene	<250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
2-Butanone (MEK)	<2,500,000	ug/Kg		06/09/2005	jcs	SW 8260A	
Carbon disulfide	<250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
Carbon tetrachloride	<250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
Chlorobenzene	46,100,000	ug/Kg		06/09/2005	jcs	SW 8260A	
Chloroethane	<1,250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
2-Chlorotoluene	<250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
4-Chlorotoluene	<250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
Chloroform	<250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
2-Chloroethyl Vinyl Ether	<1,250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
Chloromethane	<1,250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
Chloroprene	<1,250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
Dibromochloromethane	<250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
Dibromomethane	<250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
Dichlorodifluoromethane	<250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
1,2-Dibromo-3-chloropropane	<1,250,000	ug/Kg		06/09/2005	jcs	SW 8260A	

O - Elevated reporting limit due to sample matrix.

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ANALYTICAL REPORT

Judson Waters
NATIONAL ENVIRONMENTAL SER
417 South Walnut Street
Bloomington, IN 47401

06/17/2005

Job No.: 05.09349
Sample No.: 119325

Veliscol Chem

Sample Description: Manhole #1

Date Taken: 05/17/2005 Time Taken: 03:00

Date Received: 05/18/2005

Parameter	Result	Unit	Date Prepared	Date Analyzed	Lab Tech.	Methodology	Note
1,2-Dibromoethane (EDB)	<1,250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
1,2-Dichlorobenzene	<250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
1,3-Dichlorobenzene	<250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
1,4-Dichlorobenzene	358,000	ug/Kg		06/09/2005	jcs	SW 8260A	
trans-1,4-Dichloro-2-butene	<1,250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
1,1-Dichloroethane	<250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
1,2-Dichloroethane	<250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
1,1-Dichloroethene	<250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
cis-1,2-Dichloroethene	<250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
trans-1,2-Dichloroethene	<250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
1,2-Dichloropropane	<250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
1,3-Dichloropropane	<250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
2,2-Dichloropropane	<250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
1,1-Dichloropropene	<250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
cis-1,3-Dichloropropene	<250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
trans-1,3-Dichloropropene	<250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
Ethyl methacrylate	<1,250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
Ethylbenzene	<250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
Hexachlorobutadiene	<1,250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
n-Hexane	<1,250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
2-Hexanone	<2,500,000	ug/Kg		06/09/2005	jcs	SW 8260A	
Iodomethane (Methyl Iodide)	<1,250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
Isopropylbenzene (Cumene)	<250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
p-Isopropyltoluene	<250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
Methacrylonitrile	<1,250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
Bromomethane	<1,250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
Methylene Chloride	<1,250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
Methyl t-butyl ether (MTBE)	<1,250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
4-Methyl-2-pentanone (MIBK)	<2,500,000	ug/Kg		06/09/2005	jcs	SW 8260A	
2-Methylnaphthalene	<1,250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
Methyl methacrylate	<1,250,000	ug/Kg		06/09/2005	jcs	SW 8260A	

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ANALYTICAL REPORT

Judson Waters
NATIONAL ENVIRONMENTAL SER
417 South Walnut Street
Bloomington, IN 47401

06/17/2005

Job No.: 05.09349
Sample No.: 119325

Veliscol Chem

Sample Description: Manhole #1

Date Taken: 05/17/2005 Time Taken: 03:00

Date Received: 05/18/2005

Parameter	Result	Unit	Date Prepared	Date Analyzed	Lab Tech.	Methodology	Note
Pentachloroethane	<1,250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
Propionitrile	<2,500,000	ug/Kg		06/09/2005	jcs	SW 8260A	
n-Propylbenzene	<250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
Styrene	<250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
Naphthalene	<1,250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
1,1,1,2-Tetrachloroethane	<250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
1,1,2,2-Tetrachloroethane	<250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
Tetrachloroethene	<250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
Toluene	<250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
1,2,4-Trichlorobenzene	<1,250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
1,2,3-Trichlorobenzene	<1,250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
1,1,1-Trichloroethane	<250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
1,1,2-Trichloroethane	<250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
Trichloroethene	<250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
Trichlorofluoromethane	<250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
1,2,3-Trichloropropane	<1,250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
1,2,4-Trimethylbenzene	<250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
1,3,5-Trimethylbenzene	<250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
Vinyl Acetate	<1,250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
Vinyl Chloride	<250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
Xylenes, Total	<500,000	ug/Kg		06/09/2005	jcs	SW 8260A	
BASE NEUT. COMPS.-8270 Non-aq			05/23/2005				O
Acenaphthene	<943,000	ug/Kg		05/24/2005	jdm	SW 8270C	
Acenaphthylene	<943,000	ug/Kg		05/24/2005	jdm	SW 8270C	
Anthracene	<943,000	ug/Kg		05/24/2005	jdm	SW 8270C	
Benzo(a)anthracene	<943,000	ug/Kg		05/24/2005	jdm	SW 8270C	
Benzo(b)fluoranthene	<943,000	ug/Kg		05/24/2005	jdm	SW 8270C	
Benzo(k)fluoranthene	<943,000	ug/Kg		05/24/2005	jdm	SW 8270C	
Benzo(a)pyrene	<472,000	ug/Kg		05/24/2005	jdm	SW 8270C	
Benzo(ghi)perylene	<943,000	ug/Kg		05/24/2005	jdm	SW 8270C	

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ANALYTICAL REPORT

Judson Waters
NATIONAL ENVIRONMENTAL SER
417 South Walnut Street
Bloomington, IN 47401

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Sample No.: 119325

Veliscol Chem

Sample Description: Manhole #1

Date Taken: 05/17/2005 Time Taken: 03:00 Date Received: 05/18/2005

Parameter	Result	Unit	Date Prepared	Date Analyzed	Lab Tech.	Methodology	Note
Benzyl alcohol	<943,000	ug/Kg		05/24/2005	jdm	SW 8270C	
Benzyl butyl phthalate	<943,000	ug/Kg		05/24/2005	jdm	SW 8270C	
Bis(2-chloroethyl)ether	<943,000	ug/Kg		05/24/2005	jdm	SW 8270C	
Bis(2-chloroethoxy)methane	<943,000	ug/Kg		05/24/2005	jdm	SW 8270C	
Bis(2-ethylhexyl)phthalate	<943,000	ug/Kg		05/24/2005	jdm	SW 8270C	
bis(2-chloroisopropyl)ether	<943,000	ug/Kg		05/24/2005	jdm	SW 8270C	
4-Bromophenyl phenyl ether	<943,000	ug/Kg		05/24/2005	jdm	SW 8270C	
Carbazole	<943,000	ug/Kg		05/24/2005	jdm	SW 8270C	
4-Chloroaniline	<943,000	ug/Kg		05/24/2005	jdm	SW 8270C	
2-Chloronaphthalene	<943,000	ug/Kg		05/24/2005	jdm	SW 8270C	
4-Chlorophenylphenyl ether	<943,000	ug/Kg		05/24/2005	jdm	SW 8270C	
Chrysene	<943,000	ug/Kg		05/24/2005	jdm	SW 8270C	
Dibenz(a,h)anthracene	<472,000	ug/Kg		05/24/2005	jdm	SW 8270C	
Dibenzofuran	<943,000	ug/Kg		05/24/2005	jdm	SW 8270C	
Di-n-butylphthalate	<943,000	ug/Kg		05/24/2005	jdm	SW 8270C	
1,2-Dichlorobenzene	772,000	ug/Kg		05/24/2005	jdm	SW 8270C	
1,3-Dichlorobenzene	<943,000	ug/Kg		05/24/2005	jdm	SW 8270C	
1,4-Dichlorobenzene	2,760,000	ug/Kg		05/24/2005	jdm	SW 8270C	
3,3'-Dichlorobenzidine	<1,890,000	ug/Kg		05/24/2005	jdm	SW 8270C	
Diethyl phthalate	<943,000	ug/Kg		05/24/2005	jdm	SW 8270C	
Dimethyl phthalate	<943,000	ug/Kg		05/24/2005	jdm	SW 8270C	
2,4-Dinitrotoluene	<943,000	ug/Kg		05/24/2005	jdm	SW 8270C	
2,6-Dinitrotoluene	<943,000	ug/Kg		05/24/2005	jdm	SW 8270C	
Di-n-octylphthalate	<943,000	ug/Kg		05/24/2005	jdm	SW 8270C	
Fluoranthene	<943,000	ug/Kg		05/24/2005	jdm	SW 8270C	
Fluorene	<943,000	ug/Kg		05/24/2005	jdm	SW 8270C	
Hexachlorobenzene	<943,000	ug/Kg		05/24/2005	jdm	SW 8270C	
Hexachloro-1,3-butadiene	<943,000	ug/Kg		05/24/2005	jdm	SW 8270C	
Hexachlorocyclopentadiene	<1,890,000	ug/Kg		05/24/2005	jdm	SW 8270C	
Hexachloroethane	<943,000	ug/Kg		05/24/2005	jdm	SW 8270C	
Indeno(1,2,3-cd)pyrene	<943,000	ug/Kg		05/24/2005	jdm	SW 8270C	

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ANALYTICAL REPORT

Judson Waters
NATIONAL ENVIRONMENTAL SER
417 South Walnut Street
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06/17/2005

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Veliscol Chem

Sample Description: Manhole #1

Date Taken: 05/17/2005 Time Taken: 03:00

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Parameter	Result	Unit	Date Prepared	Date Analyzed	Lab Tech.	Methodology	Note
Isophorone	<943,000	ug/Kg		05/24/2005	jdm	SW 8270C	
2-Methylnaphthalene	<943,000	ug/Kg		05/24/2005	jdm	SW 8270C	
Naphthalene	<943,000	ug/Kg		05/24/2005	jdm	SW 8270C	
2-Nitroaniline	<1,420,000	ug/Kg		05/24/2005	jdm	SW 8270C	
3-Nitroaniline	<1,420,000	ug/Kg		05/24/2005	jdm	SW 8270C	
4-Nitroaniline	<1,420,000	ug/Kg		05/24/2005	jdm	SW 8270C	
Nitrobenzene	<943,000	ug/Kg		05/24/2005	jdm	SW 8270C	
N-Nitrosodiphenylamine	<943,000	ug/Kg		05/24/2005	jdm	SW 8270C	
N-Nitrosodi-n-propylamine	<943,000	ug/Kg		05/24/2005	jdm	SW 8270C	
Phenanthrene	<943,000	ug/Kg		05/24/2005	jdm	SW 8270C	
Pyrene	<943,000	ug/Kg		05/24/2005	jdm	SW 8270C	
1,2,4-Trichlorobenzene	633,000	ug/Kg		05/24/2005	jdm	SW 8270C	
ACID COMPOUNDS - 8270 Non-aq			05/23/2005				O
Benzoic Acid	<4,717,000	ug/Kg		05/24/2005	jdm	SW 8270C	
4-Chloro-3-methylphenol	<943,000	ug/Kg		05/24/2005	jdm	SW 8270C	
2-Chlorophenol	<943,000	ug/Kg		05/24/2005	jdm	SW 8270C	
2,4-Dichlorophenol	<943,000	ug/Kg		05/24/2005	jdm	SW 8270C	
2,4-Dimethylphenol	<943,000	ug/Kg		05/24/2005	jdm	SW 8270C	
2,4-Dinitrophenol	<943,000	ug/Kg		05/24/2005	jdm	SW 8270C	
2-Methyl-4,6-dinitrophenol	<943,000	ug/Kg		05/24/2005	jdm	SW 8270C	
2-Methylphenol	<943,000	ug/Kg		05/24/2005	jdm	SW 8270C	
meta & para-Methylphenol	<943,000	ug/Kg		05/24/2005	jdm	SW 8270C	
2-Nitrophenol	<943,000	ug/Kg		05/24/2005	jdm	SW 8270C	
4-Nitrophenol	<943,000	ug/Kg		05/24/2005	jdm	SW 8270C	
Pentachlorophenol	<943,000	ug/Kg		05/24/2005	jdm	SW 8270C	
Phenol	<943,000	ug/Kg		05/24/2005	jdm	SW 8270C	
2,4,5-Trichlorophenol	<943,000	ug/Kg		05/24/2005	jdm	SW 8270C	
2,4,6-Trichlorophenol	<943,000	ug/Kg		05/24/2005	jdm	SW 8270C	

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PESTICIDES NON-AQUEOUS 8081A			05/23/2005				O
Aldrin	<1,000,000	ug/Kg		06/01/2005	310	SW 8081A	
alpha-BHC	2,500,000	ug/Kg		06/01/2005	310	SW 8081A	
beta-BHC	<1,000,000	ug/Kg		06/01/2005	310	SW 8081A	
gamma-BHC (Lindane)	<1,000,000	ug/Kg		06/01/2005	310	SW 8081A	
delta-BHC	<1,000,000	ug/Kg		06/01/2005	310	SW 8081A	
Chlordane	<1,000,000	ug/Kg		06/01/2005	310	SW 8081A	
alpha-Chlordane	<1,000,000	ug/Kg		06/01/2005	310	SW 8081A	
gamma-Chlordane	15,000,000	ug/Kg		06/01/2005	310	SW 8081A	
4,4'-DDD	225,000,000	ug/Kg		06/01/2005	310	SW 8081A	
4,4'-DDE	76,000,000	ug/Kg		06/01/2005	310	SW 8081A	
4,4'-DDT	180,000,000	ug/Kg		06/01/2005	310	SW 8081A	
Dieldrin	<1,000,000	ug/Kg		06/01/2005	310	SW 8081A	
Endosulfan I	<1,000,000	ug/Kg		06/01/2005	310	SW 8081A	
Endosulfan II	<1,000,000	ug/Kg		06/01/2005	310	SW 8081A	
Endosulfan Sulfate	<1,000,000	ug/Kg		06/01/2005	310	SW 8081A	
Endrin	<1,000,000	ug/Kg		06/01/2005	310	SW 8081A	
Endrin Aldehyde	<1,000,000	ug/Kg		06/01/2005	310	SW 8081A	
Endrin Ketone	<1,000,000	ug/Kg		06/01/2005	310	SW 8081A	
Heptachlor	<1,000,000	ug/Kg		06/01/2005	310	SW 8081A	
Heptachlor Epoxide	<1,000,000	ug/Kg		06/01/2005	310	SW 8081A	
Methoxychlor	<5,000,000	ug/Kg		06/01/2005	310	SW 8081A	
Toxaphene	<100,000,000	ug/Kg		06/01/2005	310	SW 8081A	
HERBICIDES - 8151 Non-Aq			05/21/2005				
2,4-D	<50,000,000	ug/Kg		06/03/2005	310	SW 8151A	
2,4-DB	<50,000,000	ug/Kg		06/03/2005	310	SW 8151A	
2,4,5-T	<5,000,000	ug/Kg		06/03/2005	310	SW 8151A	
2,4,5-TP (Silvex)	<5,000,000	ug/Kg		06/03/2005	310	SW 8151A	
Dalapon	<100,000,000	ug/Kg		06/03/2005	310	SW 8151A	
Dicamba	<5,000,000	ug/Kg		06/03/2005	310	SW 8151A	

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Parameter	Result	Unit	Date Prepared	Date Analyzed	Lab Tech.	Methodology	Note
Dichloroprop	<50,000,000	ug/Kg		06/03/2005	310	SW 8151A	
Dinoseb	<25,000,000	ug/Kg		06/03/2005	310	SW 8151A	
MCPA	<1,000,000,000	ug/Kg		06/03/2005	310	SW 8151A	
MCPP	<1,000,000,000	ug/Kg		06/03/2005	310	SW 8151A	
Pentachlorophenol	<50,000,000	ug/Kg		06/03/2005	310	SW 8151A	
PCBs			05/25/2005				O
Aroclor 1016	<200,000	ug/Kg		05/27/2005	mrb	SW 8082	
Aroclor 1221	<200,000	ug/Kg		05/27/2005	mrb	SW 8082	
Aroclor 1232	<200,000	ug/Kg		05/27/2005	mrb	SW 8082	
Aroclor 1242	<200,000	ug/Kg		05/27/2005	mrb	SW 8082	
Aroclor 1248	<200,000	ug/Kg		05/27/2005	mrb	SW 8082	
Aroclor 1254	<200,000	ug/Kg		05/27/2005	mrb	SW 8082	
Aroclor 1260	<200,000	ug/Kg		05/27/2005	mrb	SW 8082	
Aluminum, ICP	60.6	mg/Kg	05/20/2005	05/23/2005	epk	SW 6010B	
Antimony, ICP	<2.00	mg/Kg	05/20/2005	05/23/2005	epk	SW 6010B	
Arsenic, GFAA	<0.250	mg/Kg	05/20/2005	05/26/2005	epk	SW 7060A	
Barium, ICP	<0.400	mg/Kg	05/20/2005	05/23/2005	epk	SW 6010B	
Beryllium, ICP	<0.100	mg/Kg	05/20/2005	05/23/2005	epk	SW 6010B	
Cadmium, ICP	<0.600	mg/Kg	05/20/2005	05/23/2005	epk	SW 6010B	
Calcium, ICP	<20.0	mg/Kg	05/20/2005	05/23/2005	epk	SW 6010B	
Chromium, ICP	<0.800	mg/Kg	05/20/2005	05/23/2005	epk	SW 6010B	
Cobalt, ICP	<0.400	mg/Kg	05/20/2005	05/23/2005	epk	SW 6010B	
Copper, ICP	<0.400	mg/Kg	05/20/2005	05/23/2005	epk	SW 6010B	
Iron, ICP	40.3	mg/Kg	05/20/2005	05/23/2005	epk	SW 6010B	
Lead, ICP	<1.60	mg/Kg	05/20/2005	05/23/2005	epk	SW 6010B	
Magnesium, ICP	<20.0	mg/Kg	05/20/2005	05/23/2005	epk	SW 6010B	
Manganese, ICP	0.212	mg/Kg	05/20/2005	05/23/2005	epk	SW 6010B	
Mercury,CVAA	0.140	mg/Kg	05/24/2005	05/24/2005	mbb	SW 7471A	
Nickel, ICP	<0.200	mg/Kg	05/20/2005	05/23/2005	epk	SW 6010B	
Potassium, ICP	<20.0	mg/Kg	05/20/2005	05/23/2005	epk	SW 6010B	
Selenium, GFAA	0.342	mg/Kg	05/20/2005	05/26/2005	epk	SW 7740	

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417 South Walnut Street
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06/17/2005

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Veliscol Chem

Sample Description: Manhole #1

Date Taken: 05/17/2005 Time Taken: 03:00

Date Received: 05/18/2005

Parameter	Result	Unit	Date Prepared	Date Analyzed	Lab Tech.	Methodology	Note
Silver, ICP	<0.800	mg/Kg	05/20/2005	05/23/2005	epk	SW 6010B	
Sodium, ICP	<20.0	mg/Kg	05/20/2005	05/23/2005	epk	SW 6010B	
Thallium, ICP	<2.00	mg/Kg	05/20/2005	05/23/2005	epk	SW 6010B	
Vanadium, ICP	<1.00	mg/Kg	05/20/2005	05/23/2005	epk	SW 6010B	
Zinc, ICP	<1.00	mg/Kg	05/20/2005	05/23/2005	epk	SW 6010B	

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ANALYTICAL REPORT

Judson Waters
NATIONAL ENVIRONMENTAL SER
417 South Walnut Street
Bloomington, IN 47401

06/17/2005

Job No.: 05.09349
Sample No.: 119326

Veliscol Chem

Sample Description: Manhole #2/3

Date Taken: 05/17/2005 Time Taken: 03:00

Date Received: 05/18/2005

Parameter	Result	Unit	Date Prepared	Date Analyzed	Lab Tech.	Methodology	Note
Corrosivity (pH)	6.34	S.U.		05/20/2005	smd	SW 9040	
Ignitability of Liquids	>184	Degree F		06/16/2005	mss	SW 1010	
VOLATILE COMPOUNDS-8260 Non-Aq							O
Acetone	<5,000,000	ug/Kg		06/09/2005	jcs	SW 8260A	
Acrolein	<2,500,000	ug/Kg		06/09/2005	jcs	SW 8260A	
Acrylonitrile	<2,500,000	ug/Kg		06/09/2005	jcs	SW 8260A	
Allyl chloride	<1,250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
Benzene	368,000	ug/Kg		06/09/2005	jcs	SW 8260A	
tert-Butylbenzene	<250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
sec-Butylbenzene	<250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
n-Butylbenzene	<250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
Bromochloromethane	<250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
Bromodichloromethane	<250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
Bromoform	<250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
Bromobenzene	<250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
2-Butanone (MEK)	<2,500,000	ug/Kg		06/09/2005	jcs	SW 8260A	
Carbon disulfide	<250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
Carbon tetrachloride	2,350,000	ug/Kg		06/09/2005	jcs	SW 8260A	
Chlorobenzene	<250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
Chloroethane	<1,250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
2-Chlorotoluene	<250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
4-Chlorotoluene	<250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
Chloroform	2,090,000	ug/Kg		06/09/2005	jcs	SW 8260A	
2-Chloroethyl Vinyl Ether	<1,250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
Chloromethane	<1,250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
Chloroprene	<1,250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
Dibromochloromethane	<250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
Dibromomethane	<250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
Dichlorodifluoromethane	<250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
1,2-Dibromo-3-chloropropane	7,870,000	ug/Kg		06/09/2005	jcs	SW 8260A	

O - Elevated reporting limit due to sample matrix.

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Veliscol Chem

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1,2-Dibromoethane (EDB)	<1,250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
1,2-Dichlorobenzene	<250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
1,3-Dichlorobenzene	<250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
1,4-Dichlorobenzene	<250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
trans-1,4-Dichloro-2-butene	<1,250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
1,1-Dichloroethane	<250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
1,2-Dichloroethane	2,600,000	ug/Kg		06/09/2005	jcs	SW 8260A	
1,1-Dichloroethene	<250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
cis-1,2-Dichloroethene	<250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
trans-1,2-Dichloroethene	<250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
1,2-Dichloropropane	1,430,000	ug/Kg		06/09/2005	jcs	SW 8260A	
1,3-Dichloropropane	30,900,000	ug/Kg		06/09/2005	jcs	SW 8260A	
2,2-Dichloropropane	<250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
1,1-Dichloropropene	<250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
cis-1,3-Dichloropropene	<250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
trans-1,3-Dichloropropene	<250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
Ethyl methacrylate	<1,250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
Ethylbenzene	<250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
Hexachlorobutadiene	<1,250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
n-Hexane	<1,250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
2-Hexanone	<2,500,000	ug/Kg		06/09/2005	jcs	SW 8260A	
Iodomethane (Methyl Iodide)	<1,250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
Isopropylbenzene (Cumene)	<250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
p-Isopropyltoluene	<250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
Methacrylonitrile	<1,250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
Bromomethane	<1,250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
Methylene Chloride	<1,250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
Methyl t-butyl ether (MTBE)	<1,250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
4-Methyl-2-pentanone (MIBK)	<2,500,000	ug/Kg		06/09/2005	jcs	SW 8260A	
2-Methylnaphthalene	<1,250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
Methyl methacrylate	<1,250,000	ug/Kg		06/09/2005	jcs	SW 8260A	

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Sample No.: 119326

Veliscol Chem

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Date Taken: 05/17/2005 Time Taken: 03:00 Date Received: 05/18/2005

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Pentachloroethane	<1,250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
Propionitrile	<2,500,000	ug/Kg		06/09/2005	jcs	SW 8260A	
n-Propylbenzene	<250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
Styrene	<250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
Naphthalene	<1,250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
1,1,1,2-Tetrachloroethane	<250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
1,1,2,2-Tetrachloroethane	<250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
Tetrachloroethene	<250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
Toluene	<250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
1,2,4-Trichlorobenzene	<1,250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
1,2,3-Trichlorobenzene	<1,250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
1,1,1-Trichloroethane	<250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
1,1,2-Trichloroethane	<250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
Trichloroethene	<250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
Trichlorofluoromethane	<250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
1,2,3-Trichloropropane	<1,250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
1,2,4-Trimethylbenzene	<250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
1,3,5-Trimethylbenzene	<250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
Vinyl Acetate	<1,250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
Vinyl Chloride	<250,000	ug/Kg		06/09/2005	jcs	SW 8260A	
Xylenes, Total	<500,000	ug/Kg		06/09/2005	jcs	SW 8260A	
BASE NEUT. COMPS.-8270 Non-aq			05/23/2005				O
Acenaphthene	<877,000	ug/Kg		05/24/2005	jdm	SW 8270C	
Acenaphthylene	<877,000	ug/Kg		05/24/2005	jdm	SW 8270C	
Anthracene	<877,000	ug/Kg		05/24/2005	jdm	SW 8270C	
Benzo(a)anthracene	<877,000	ug/Kg		05/24/2005	jdm	SW 8270C	
Benzo(b)fluoranthene	<877,000	ug/Kg		05/24/2005	jdm	SW 8270C	
Benzo(k)fluoranthene	<877,000	ug/Kg		05/24/2005	jdm	SW 8270C	
Benzo(a)pyrene	<439,000	ug/Kg		05/24/2005	jdm	SW 8270C	
Benzo(ghi)perylene	<877,000	ug/Kg		05/24/2005	jdm	SW 8270C	

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Benzyl alcohol	<877,000	ug/Kg		05/24/2005	jdm	SW 8270C	
Benzyl butyl phthalate	<877,000	ug/Kg		05/24/2005	jdm	SW 8270C	
Bis(2-chloroethyl)ether	<877,000	ug/Kg		05/24/2005	jdm	SW 8270C	
Bis(2-chloroethoxy)methane	<877,000	ug/Kg		05/24/2005	jdm	SW 8270C	
Bis(2-ethylhexyl)phthalate	<877,000	ug/Kg		05/24/2005	jdm	SW 8270C	
bis(2-chloroisopropyl)ether	<877,000	ug/Kg		05/24/2005	jdm	SW 8270C	
4-Bromophenyl phenyl ether	<877,000	ug/Kg		05/24/2005	jdm	SW 8270C	
Carbazole	<877,000	ug/Kg		05/24/2005	jdm	SW 8270C	
4-Chloroaniline	<877,000	ug/Kg		05/24/2005	jdm	SW 8270C	
2-Chloronaphthalene	<877,000	ug/Kg		05/24/2005	jdm	SW 8270C	
4-Chlorophenylphenyl ether	<877,000	ug/Kg		05/24/2005	jdm	SW 8270C	
Chrysene	<877,000	ug/Kg		05/24/2005	jdm	SW 8270C	
Dibenz(a,h)anthracene	<439,000	ug/Kg		05/24/2005	jdm	SW 8270C	
Dibenzofuran	<877,000	ug/Kg		05/24/2005	jdm	SW 8270C	
Di-n-butylphthalate	<877,000	ug/Kg		05/24/2005	jdm	SW 8270C	
1,2-Dichlorobenzene	<877,000	ug/Kg		05/24/2005	jdm	SW 8270C	
1,3-Dichlorobenzene	<877,000	ug/Kg		05/24/2005	jdm	SW 8270C	
1,4-Dichlorobenzene	<877,000	ug/Kg		05/24/2005	jdm	SW 8270C	
3,3'-Dichlorobenzidine	<1,750,000	ug/Kg		05/24/2005	jdm	SW 8270C	
Diethyl phthalate	<877,000	ug/Kg		05/24/2005	jdm	SW 8270C	
Dimethyl phthalate	<877,000	ug/Kg		05/24/2005	jdm	SW 8270C	
2,4-Dinitrotoluene	<877,000	ug/Kg		05/24/2005	jdm	SW 8270C	
2,6-Dinitrotoluene	<877,000	ug/Kg		05/24/2005	jdm	SW 8270C	
Di-n-octylphthalate	<877,000	ug/Kg		05/24/2005	jdm	SW 8270C	
Fluoranthene	<877,000	ug/Kg		05/24/2005	jdm	SW 8270C	
Fluorene	<877,000	ug/Kg		05/24/2005	jdm	SW 8270C	
Hexachlorobenzene	<877,000	ug/Kg		05/24/2005	jdm	SW 8270C	
Hexachloro-1,3-butadiene	<877,000	ug/Kg		05/24/2005	jdm	SW 8270C	
Hexachlorocyclopentadiene	<1,750,000	ug/Kg		05/24/2005	jdm	SW 8270C	
Hexachloroethane	<877,000	ug/Kg		05/24/2005	jdm	SW 8270C	
Indeno(1,2,3-cd)pyrene	<877,000	ug/Kg		05/24/2005	jdm	SW 8270C	

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Parameter	Result	Unit	Date Prepared	Date Analyzed	Lab Tech.	Methodology	Note
Isophorone	<877,000	ug/Kg		05/24/2005	jdm	SW 8270C	
2-Methylnaphthalene	<877,000	ug/Kg		05/24/2005	jdm	SW 8270C	
Naphthalene	<877,000	ug/Kg		05/24/2005	jdm	SW 8270C	
2-Nitroaniline	<1,320,000	ug/Kg		05/24/2005	jdm	SW 8270C	
3-Nitroaniline	<1,320,000	ug/Kg		05/24/2005	jdm	SW 8270C	
4-Nitroaniline	<1,320,000	ug/Kg		05/24/2005	jdm	SW 8270C	
Nitrobenzene	<877,000	ug/Kg		05/24/2005	jdm	SW 8270C	
N-Nitrosodiphenylamine	<877,000	ug/Kg		05/24/2005	jdm	SW 8270C	
N-Nitrosodi-n-propylamine	<877,000	ug/Kg		05/24/2005	jdm	SW 8270C	
Phenanthrene	<877,000	ug/Kg		05/24/2005	jdm	SW 8270C	
Pyrene	<877,000	ug/Kg		05/24/2005	jdm	SW 8270C	
1,2,4-Trichlorobenzene	<877,000	ug/Kg		05/24/2005	jdm	SW 8270C	
ACID COMPOUNDS - 8270 Non-aq			05/23/2005				O
Benzoic Acid	<4,386,000	ug/Kg		05/24/2005	jdm	SW 8270C	
4-Chloro-3-methylphenol	<877,000	ug/Kg		05/24/2005	jdm	SW 8270C	
2-Chlorophenol	<877,000	ug/Kg		05/24/2005	jdm	SW 8270C	
2,4-Dichlorophenol	<877,000	ug/Kg		05/24/2005	jdm	SW 8270C	
2,4-Dimethylphenol	<877,000	ug/Kg		05/24/2005	jdm	SW 8270C	
2,4-Dinitrophenol	<877,000	ug/Kg		05/24/2005	jdm	SW 8270C	
2-Methyl-4,6-dinitrophenol	<877,000	ug/Kg		05/24/2005	jdm	SW 8270C	
2-Methylphenol	<877,000	ug/Kg		05/24/2005	jdm	SW 8270C	
meta & para-Methylphenol	<877,000	ug/Kg		05/24/2005	jdm	SW 8270C	
2-Nitrophenol	<877,000	ug/Kg		05/24/2005	jdm	SW 8270C	
4-Nitrophenol	<877,000	ug/Kg		05/24/2005	jdm	SW 8270C	
Pentachlorophenol	<877,000	ug/Kg		05/24/2005	jdm	SW 8270C	
Phenol	<877,000	ug/Kg		05/24/2005	jdm	SW 8270C	
2,4,5-Trichlorophenol	<877,000	ug/Kg		05/24/2005	jdm	SW 8270C	
2,4,6-Trichlorophenol	<877,000	ug/Kg		05/24/2005	jdm	SW 8270C	

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PESTICIDES NON-AQUEOUS 8081A			05/23/2005				O
Aldrin	<1,000,000	ug/Kg		06/01/2005	310	SW 8081A	
alpha-BHC	<1,000,000	ug/Kg		06/01/2005	310	SW 8081A	
beta-BHC	<1,000,000	ug/Kg		06/01/2005	310	SW 8081A	
gamma-BHC (Lindane)	<1,000,000	ug/Kg		06/01/2005	310	SW 8081A	
delta-BHC	<1,000,000	ug/Kg		06/01/2005	310	SW 8081A	
Chlordane	<1,000,000	ug/Kg		06/01/2005	310	SW 8081A	
alpha-Chlordane	<1,000,000	ug/Kg		06/01/2005	310	SW 8081A	
gamma-Chlordane	<1,000,000	ug/Kg		06/01/2005	310	SW 8081A	
4,4'-DDD	<1,000,000	ug/Kg		06/01/2005	310	SW 8081A	
4,4'-DDE	<1,000,000	ug/Kg		06/01/2005	310	SW 8081A	
4,4'-DDT	<1,000,000	ug/Kg		06/01/2005	310	SW 8081A	
Dieldrin	<1,000,000	ug/Kg		06/01/2005	310	SW 8081A	
Endosulfan I	<1,000,000	ug/Kg		06/01/2005	310	SW 8081A	
Endosulfan II	<1,000,000	ug/Kg		06/01/2005	310	SW 8081A	
Endosulfan Sulfate	<1,000,000	ug/Kg		06/01/2005	310	SW 8081A	
Endrin	<1,000,000	ug/Kg		06/01/2005	310	SW 8081A	
Endrin Aldehyde	<1,000,000	ug/Kg		06/01/2005	310	SW 8081A	
Endrin Ketone	<1,000,000	ug/Kg		06/01/2005	310	SW 8081A	
Heptachlor	<1,000,000	ug/Kg		06/01/2005	310	SW 8081A	
Heptachlor Epoxide	<1,000,000	ug/Kg		06/01/2005	310	SW 8081A	
Methoxychlor	<5,000,000	ug/Kg		06/01/2005	310	SW 8081A	
Toxaphene	<100,000,000	ug/Kg		06/01/2005	310	SW 8081A	
HERBICIDES - 8151 Non-Aq			05/21/2005				O
2,4-D	<50,000,000	ug/Kg		06/03/2005	310	SW 8151A	
2,4-DB	<50,000,000	ug/Kg		06/03/2005	310	SW 8151A	
2,4,5-T	<5,000,000	ug/Kg		06/03/2005	310	SW 8151A	
2,4,5-TP (Silvex)	<5,000,000	ug/Kg		06/03/2005	310	SW 8151A	
Dalapon	<100,000,000	ug/Kg		06/03/2005	310	SW 8151A	
Dicamba	<5,000,000	ug/Kg		06/03/2005	310	SW 8151A	

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Dichloroprop	<50,000,000	ug/Kg		06/03/2005	310	SW 8151A	
Dinoseb	<25,000,000	ug/Kg		06/03/2005	310	SW 8151A	
MCPA	<1,000,000,000	ug/Kg		06/03/2005	310	SW 8151A	
MCPP	<1,000,000,000	ug/Kg		06/03/2005	310	SW 8151A	
Pentachlorophenol	<50,000,000	ug/Kg		06/03/2005	310	SW 8151A	
PCBs			05/20/2005				O
Aroclor 1016	<200,000	ug/Kg		05/27/2005	mrb	SW 8082	
Aroclor 1221	<200,000	ug/Kg		05/27/2005	mrb	SW 8082	
Aroclor 1232	<200,000	ug/Kg		05/27/2005	mrb	SW 8082	
Aroclor 1242	<200,000	ug/Kg		05/27/2005	mrb	SW 8082	
Aroclor 1248	<200,000	ug/Kg		05/27/2005	mrb	SW 8082	
Aroclor 1254	<200,000	ug/Kg		05/27/2005	mrb	SW 8082	
Aroclor 1260	<200,000	ug/Kg		05/27/2005	mrb	SW 8082	
Aluminum, ICP	<2.0	mg/Kg	05/20/2005	05/23/2005	epk	SW 6010B	
Antimony, ICP	<2.00	mg/Kg	05/20/2005	05/23/2005	epk	SW 6010B	
Arsenic, GFAA	<0.250	mg/Kg	05/20/2005	05/26/2005	epk	SW 7060A	
Barium, ICP	<0.400	mg/Kg	05/20/2005	05/23/2005	epk	SW 6010B	
Beryllium, ICP	<0.100	mg/Kg	05/20/2005	05/23/2005	epk	SW 6010B	
Cadmium, ICP	<0.600	mg/Kg	05/20/2005	05/23/2005	epk	SW 6010B	
Calcium, ICP	<20.0	mg/Kg	05/20/2005	05/23/2005	epk	SW 6010B	
Chromium, ICP	<0.800	mg/Kg	05/20/2005	05/23/2005	epk	SW 6010B	
Cobalt, ICP	<0.400	mg/Kg	05/20/2005	05/23/2005	epk	SW 6010B	
Copper, ICP	<0.400	mg/Kg	05/20/2005	05/23/2005	epk	SW 6010B	
Iron, ICP	<2.00	mg/Kg	05/20/2005	05/23/2005	epk	SW 6010B	
Lead, ICP	<1.60	mg/Kg	05/20/2005	05/23/2005	epk	SW 6010B	
Magnesium, ICP	<20.0	mg/Kg	05/20/2005	05/23/2005	epk	SW 6010B	
Manganese, ICP	<0.200	mg/Kg	05/20/2005	05/23/2005	epk	SW 6010B	
Mercury,CVAA	0.017	mg/Kg	05/24/2005	05/24/2005	mbb	SW 7471A	
Nickel, ICP	<0.200	mg/Kg	05/20/2005	05/23/2005	epk	SW 6010B	
Potassium, ICP	<20.0	mg/Kg	05/20/2005	05/23/2005	epk	SW 6010B	
Selenium, GFAA	0.180	mg/Kg	05/20/2005	05/26/2005	epk	SW 7740	

O - Elevated reporting limit due to sample matrix.

TestAmerica
ANALYTICAL TESTING CORPORATION
339 W. Walton Blvd. • Pontiac, MI 48340 • 248-332-1940 • Fax: 248-332-5450

ANALYTICAL REPORT

Judson Waters
NATIONAL ENVIRONMENTAL SER
417 South Walnut Street
Bloomington, IN 47401

06/17/2005

Job No.: 05.09349
Sample No.: 119326

Veliscol Chem

Sample Description: Manhole #2/3

Date Taken: 05/17/2005 Time Taken: 03:00

Date Received: 05/18/2005

Parameter	Result	Unit	Date Prepared	Date Analyzed	Lab Tech.	Methodology	Note
Silver, ICP	<0.800	mg/Kg	05/20/2005	05/23/2005	epk	SW 6010B	
Sodium, ICP	<20.0	mg/Kg	05/20/2005	05/23/2005	epk	SW 6010B	
Thallium, ICP	<2.00	mg/Kg	05/20/2005	05/23/2005	epk	SW 6010B	
Vanadium, ICP	<1.00	mg/Kg	05/20/2005	05/23/2005	epk	SW 6010B	
Zinc, ICP	<1.00	mg/Kg	05/20/2005	05/23/2005	epk	SW 6010B	

TestAmerica INCORPORATED

Pontiac Division
339 W. Walton Blvd.
Pontiac, MI 48340

Phone: 248-332-1940
Fax: 248-332-5450

To assist us in using the proper analytical methods, is this work being conducted for regulatory purposes?
Compliance Monitoring _____

Client Name: National Environmental Client #: _____
Address: 324 North St.
City/State/Zip Code: St. Louis Mi 48880
Project Manager: Jim McNitt - 812-320-2378
Jeff Baker Telephone Number: 812-345-2119 Fax: 989-681-3165
Sampler Name: (Print Name) Jeff Baker
Sampler Signature: Jeff Baker

Project Name: Velsicol Chem
Project #: _____
Site/Location ID: 324 North St. State: MI
Report To: St. Louis MI
Invoice To: _____
Quote # _____ PO# _____

SAMPLE ID	Date Sampled	Time Sampled	G=Grab, C=Composite	Field Filtered	Matrix (SL-Sludge DW-Drinking Water GW-Groundwater S-Soil/Solid WW-Wastewater Specify Other)	Preservation & # of Containers: HNO_3	HCl	NaOH	H_2SO_4	Methanol	None	Other (Specify)	Analyze For:	REMARKS
Manhole #1	17-	3:00												
Manhole #2	17-	3:05												

TAT
___ Standard
___ Rush (surcharges may apply)
Date Needed: _____
Fax Results: Y N

QC Deliverables
___ None
___ Level 2 (Batch QC)
___ Level 3
___ Level 4
Other: _____

Special Instructions:

LABORATORY COMMENTS:
Init Lab Temp:
Rec Lab Temp:
Custody Seals: Y N N/A
Bottles Supplied by Test America: Y N
Method of Shipment:

Relinquished By: Jeff Baker	Date:	Time:	Received By: John Cornish	Date: 7/8/05	Time:
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	Date:	Time:

Velsicol Data Review

Brominated Organic Data Review for Area 3 NAPL Sample, Velsicol/Pine River Superfund Site, St. Louis, Michigan

TO: Theo Von Wallmenich/LSG
COPIES: Herb Kelly/GNV

FROM: Mark Stinnett/GNV

DATE: September 8, 2004

Sample information

The purpose of the technical memorandum (TM) is to present the review of the analytical data for sample #04CB09-87.

The Area 3 NAPL sample was collected on August 1, 2004 during transfer of fluids from Manhole 3 into the onsite holding tank. No field QC samples were collected for this event. Since the goal of this analysis was to identify compounds, there were no quantitation associated with this event. The sample was analyzed by SW846 method 8270 for Semi-Volatile Organic (SVOC) compounds reporting only Tentatively Identified Compounds (TIC).

The TICs were compared to the "expanded brominated compounds list" which is a list of 32 chemicals reported to have been either actual products or used in synthesis of products during operation of the chemical plant.

Technical approach

A Gas Chromatograph/Mass Spectrometry (GC/MS) was used by the PEL Labs in the identification of the project's compounds of interest as well as any TIC that may exist. The analysis by this method is completed in two phases. The first phase is the separation of constituents from the sample via the Gas Chromatograph's analytical column. As the compounds elute from the column into the Mass Spectrometer portion of the instrument, the second phase of the analysis occurs. The separated compounds are bombarded of with a beam of electrons, causing the compounds to fragment into various and predictable ions based upon their "mass-to-charge" ratios. Once the ion fragments have made their way through the analyzer system, the computer data system assimilates the massive quantities of electronic signals. The compounds are identified by comparing the sample mass spectra to the instrument computer's library of mass spectra.

Review

The review of the data package indicates the presence of high concentration of target compounds in the matrix requiring a dilution of 1:10 of the sample before analysis. Three compounds from the expanded brominated compounds list, trimethylene chlorobromide (CAS No. 109-70-6), hexyl bromide (CAS No. 111-25-1), and 1,2-dibromo-3-chloropropane (CAS No. 96-12-8), were identified by a mass spectral library search. Also, trimethylene chlorobromide, 1,2,-dibromo-3-chloropropane, and an additional 10 halogenated compounds and one isomer series were detected and identified based upon the compound match quality criteria which reflects a high level of confidence in the

match between the detected compound and the library spectral information. **Table 1-1** lists the compounds identified by a search of the spectral library.

Table 1-1.

Compound Name	CAS Number
1-Chlorohexane	544-10-5
1,3-Dibromopropane	109-64-8
1-Bromo-2,3-dichloro, propane	33037-07-09
1-Chloro, octane	111-85-3
1-Bromo-2-chlorobenzene	694-80-4
1,6-Dichlorohexane	2163-00-0
1-Bromo,Octane	111-83-1
1,2,3-Tribromopropane	96-11-7
1-Bromo-6-chlorohexane	6294-17-3
1,6-Dibromohexane	629-03-8
1-Bromo, Tridecane Isomer series	NA

Outcomes

After reviewing the results of this analysis with the subcontracted analytical laboratory it was determined that analytical standards are currently available only for 1-chlorohexane and 1,2-dibromo-3-chloropropane. Therefore, these two compounds were added to the routine analytical profile for the site.