



the standard in safety

Underwriters
Laboratories

LABORATORY REPORT

This report contains 17 pages.
(including the cover page)

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the standard in safety

Underwriters
Laboratories

Laboratory Report

Client: Pall Life Sciences
Attn: John Campbell
600 South Wagner Road
Ann Arbor, MI 48103

Report: 271520
Priority: Standard Written
Status: Final
PWS ID: Not Supplied

Copies
to: Laurel Beyer

Sample Information

UL ID #	Client ID	Method	Collected Date / Time	Collected By:	Received Date / Time
2549689	Outfall 11/07/11	317.0	11/07/11 00:00	Client	11/17/11 09:30
2549690	HC/HR 11/01/11	317.0	11/01/11 09:05	Client	11/17/11 09:30
2549691	HC/HR 11/02/11	317.0	11/02/11 08:15	Client	11/17/11 09:30
2549692	HC/HR 11/03/11	317.0	11/03/11 08:15	Client	11/17/11 09:30
2549693	HC/HR 11/04/11	317.0	11/04/11 09:20	Client	11/17/11 09:30
2549694	HC/HR 11/07/11	317.0	11/07/11 08:00	Client	11/17/11 09:30
2549695	HC/HR 11/08/11	317.0	11/08/11 08:10	Client	11/17/11 09:30
2549696	HC/HR 11/09/11	317.0	11/09/11 07:50	Client	11/17/11 09:30
2549697	HC/HR 11/10/11	317.0	11/10/11 08:40	Client	11/17/11 09:30
2549698	HC/HR 11/11/11	317.0	11/11/11 08:55	Client	11/17/11 09:30
2549699	Outfall 11/01/11	317.0	11/01/11 00:00	Client	11/17/11 09:30
2549700	Outfall 11/02/11	317.0	11/02/11 00:00	Client	11/17/11 09:30
2549701	Outfall 11/03/11	317.0	11/03/11 00:00	Client	11/17/11 09:30
2549702	Outfall 11/06/11	317.0	11/06/11 00:00	Client	11/17/11 09:30
2549703	Outfall 11/08/11	317.0	11/08/11 00:00	Client	11/17/11 09:30
2549704	Outfall 11/09/11	317.0	11/09/11 00:00	Client	11/17/11 09:30
2549705	Outfall 11/10/11	317.0	11/10/11 00:00	Client	11/17/11 09:30
2549706	Outfall 11/13/11	317.0	11/13/11 00:00	Client	11/17/11 09:30
2549707	Outfall 11/14/11	317.0	11/14/11 00:00	Client	11/17/11 09:30
2549708	Outfall 11/15/11	317.0	11/15/11 00:00	Client	11/17/11 09:30
2549709	HC/HR 11/14/11	317.0	11/14/11 07:50	Client	11/17/11 09:30
2549710	HC/HR 11/15/11	317.0	11/15/11 08:30	Client	11/17/11 09:30
2549711	HC/HR 11/16/11	317.0	11/16/11 08:25	Client	11/17/11 09:30

Report Summary

Note: Sample containers were provided by the client.

Detailed quantitative results are presented on the following pages. The results presented relate only to the samples provided for analysis.

We appreciate the opportunity to provide you with this analysis. If you have any questions concerning this report, please do not hesitate to call Traci Chlebowski at (574) 233-4777.

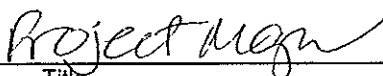
Client Name: Pall Life Sciences

Report #: 271520

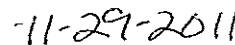
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Authorized Signature



Title



Date

Client Name: Pall Life Sciences

Report #: 271520

Client Name: Pall Life Sciences

Report #: 271520

Sampling Point: Outfall 11/07/11

PWS ID: Not Supplied

General Chemistry									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	UL ID #
15541-45-4	Bromate	317.0	10 *	1.0	7.9	ug/L	---	11/22/11 09:50	2549689

Sampling Point: HC/HR 11/01/11

PWS ID: Not Supplied

General Chemistry									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	UL ID #
15541-45-4	Bromate	317.0	10 *	1.0	< 1.0	ug/L	---	11/22/11 10:13	2549690

Sampling Point: HC/HR 11/02/11

PWS ID: Not Supplied

General Chemistry									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	UL ID #
15541-45-4	Bromate	317.0	10 *	1.0	< 1.0	ug/L	---	11/22/11 11:22	2549691

Sampling Point: HC/HR 11/03/11

PWS ID: Not Supplied

General Chemistry									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	UL ID #
15541-45-4	Bromate	317.0	10 *	1.0	< 1.0	ug/L	---	11/22/11 11:45	2549692

Sampling Point: HC/HR 11/04/11

PWS ID: Not Supplied

General Chemistry									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	UL ID #
15541-45-4	Bromate	317.0	10 *	1.0	< 1.0	ug/L	---	11/22/11 12:08	2549693

Client Name: Pall Life Sciences

Report #: 271520

Sampling Point: HC/HR 11/07/11

PWS ID: Not Supplied

General Chemistry									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	UL ID #
15541-45-4	Bromate	317.0	10 *	1.0	< 1.0	ug/L	---	11/22/11 12:31	2549694

Sampling Point: HC/HR 11/08/11

PWS ID: Not Supplied

General Chemistry									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	UL ID #
15541-45-4	Bromate	317.0	10 *	1.0	< 1.0	ug/L	---	11/22/11 12:54	2549695

Sampling Point: HC/HR 11/09/11

PWS ID: Not Supplied

General Chemistry									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	UL ID #
15541-45-4	Bromate	317.0	10 *	1.0	< 1.0	ug/L	---	11/22/11 13:17	2549696

Sampling Point: HC/HR 11/10/11

PWS ID: Not Supplied

General Chemistry									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	UL ID #
15541-45-4	Bromate	317.0	10 *	1.0	< 1.0	ug/L	---	11/22/11 13:40	2549697

Sampling Point: HC/HR 11/11/11

PWS ID: Not Supplied

General Chemistry									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	UL ID #
15541-45-4	Bromate	317.0	10 *	1.0	< 1.0	ug/L	---	11/22/11 14:03	2549698

Client Name: Pall Life Sciences

Report #: 271520

Sampling Point: Outfall 11/01/11

PWS ID: Not Supplied

General Chemistry									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	UL ID #
15541-45-4	Bromate	317.0	10 *	1.0	7.6	ug/L	---	11/22/11 14:49	2549699

Sampling Point: Outfall 11/02/11

PWS ID: Not Supplied

General Chemistry									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	UL ID #
15541-45-4	Bromate	317.0	10 *	1.0	8.4	ug/L	---	11/22/11 15:58	2549700

Sampling Point: Outfall 11/03/11

PWS ID: Not Supplied

General Chemistry									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	UL ID #
15541-45-4	Bromate	317.0	10 *	1.0	7.8	ug/L	---	11/22/11 16:21	2549701

Sampling Point: Outfall 11/06/11

PWS ID: Not Supplied

General Chemistry									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	UL ID #
15541-45-4	Bromate	317.0	10 *	1.0	8.3	ug/L	---	11/22/11 16:44	2549702

Sampling Point: Outfall 11/08/11

PWS ID: Not Supplied

General Chemistry									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	UL ID #
15541-45-4	Bromate	317.0	10 *	1.0	7.1	ug/L	---	11/22/11 17:07	2549703

Client Name: Pall Life Sciences

Report #: 271520

Sampling Point: Outfall 11/09/11

PWS ID: Not Supplied

General Chemistry									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	UL ID #
15541-45-4	Bromate	317.0	10 *	1.0	6.8	ug/L	---	11/22/11 17:30	2549704

Sampling Point: Outfall 11/10/11

PWS ID: Not Supplied

General Chemistry									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	UL ID #
15541-45-4	Bromate	317.0	10 *	1.0	5.1	ug/L	---	11/22/11 17:53	2549705

Sampling Point: Outfall 11/13/11

PWS ID: Not Supplied

General Chemistry									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	UL ID #
15541-45-4	Bromate	317.0	10 *	1.0	5.3	ug/L	---	11/22/11 18:16	2549706

Sampling Point: Outfall 11/14/11

PWS ID: Not Supplied

General Chemistry									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	UL ID #
15541-45-4	Bromate	317.0	10 *	1.0	4.3	ug/L	---	11/22/11 18:39	2549707

Sampling Point: Outfall 11/15/11

PWS ID: Not Supplied

General Chemistry									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	UL ID #
15541-45-4	Bromate	317.0	10 *	1.0	< 1.0	ug/L	---	11/22/11 19:02	2549708

Client Name: Pall Life Sciences

Report #: 271520

Sampling Point: HC/HR 11/14/11

PWS ID: Not Supplied

General Chemistry									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	UL ID #
15541-45-4	Bromate	317.0	10 *	1.0	1.4	ug/L	---	11/22/11 01:31	2549709

Sampling Point: HC/HR 11/15/11

PWS ID: Not Supplied

General Chemistry									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	UL ID #
15541-45-4	Bromate	317.0	10 *	1.0	< 1.0	ug/L	---	11/22/11 02:40	2549710

Sampling Point: HC/HR 11/16/11

PWS ID: Not Supplied

General Chemistry									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	UL ID #
15541-45-4	Bromate	317.0	10 *	1.0	< 1.0	ug/L	---	11/22/11 03:03	2549711

† UL has demonstrated it can achieve these report limits in reagent water, but can not document them in all sample matrices.

Reg Limit Type:	MCL	SMCL	AL
Symbol:	*	^	

Lab Definitions

Continuing Calibration Check Standard (CCC) / Continuing Calibration Verification (CCV) / Initial Calibration Verification Standard (ICV) / Initial Performance Check (IPC) - is a standard containing one or more of the target analytes that is prepared from the same standards used to calibrate the instrument. This standard is used to verify the calibration curve at the beginning of each analytical sequence, and may also be analyzed throughout and at the end of the sequence. The concentration of continuing standards may be varied, when prescribed by the reference method, so that the range of the calibration curve is verified on a regular basis.

Internal Standards (IS) - are pure compounds with properties similar to the analytes of interest, which are added to field samples or extracts, calibration standards, and quality control standards at a known concentration. They are used to measure the relative responses of the analytes of interest and surrogates in the sample, calibration standard or quality control standard.

Laboratory Duplicate (LD) - is a field sample aliquot taken from the same sample container in the laboratory and analyzed separately using identical procedures. Analysis of laboratory duplicates provides a measure of the precision of the laboratory procedures.

Laboratory Fortified Blank (LFB) / Laboratory Control Sample (LCS) - is an aliquot of reagent water to which known concentrations of the analytes of interest are added. The LFB is analyzed exactly the same as the field samples. LFBs are used to determine whether the method is in control.

Laboratory Method Blank (LMB) / Laboratory Reagent Blank (LRB) - is a sample of reagent water included in the sample batch analyzed in the same way as the associated field samples. The LMB is used to determine if method analytes or other background contamination have been introduced during the preparation or analytical procedure. The LMB is analyzed exactly the same as the field samples.

Laboratory Trip Blank (LTB) - is a sample of laboratory reagent water placed in a sample container in the laboratory and treated as a field sample, including storage, preservation, and all analytical procedures. The LTB container follows the collection bottles to and from the collection site, but the LTB is not opened at any time during the trip. LTB is not exposed to site conditions or pumping and collection equipment. The LTB is primarily a travel blank used to verify that the samples were not contaminated during shipment.

Matrix Spike Duplicate Sample (MSD) / Laboratory Fortified Matrix Duplicate (LFD) - is a sample aliquot taken from the same field sample source as the Matrix Spike Sample to which known quantities of the analytes of interest are added in the laboratory. The MSD is analyzed exactly the same as the field samples. Analysis of the MSD provides a measure of the precision of the laboratory procedures in a specific matrix.

Matrix Spike Sample (MS) / Laboratory Fortified Matrix (LFM) - is a sample aliquot taken from field sample source to which known quantities of the analytes of interest are added in the laboratory. The MS is analyzed exactly the same as the field samples. The purpose is to demonstrate recovery of the analytes from a sample matrix to determine if the specific matrix contributes bias to the analytical results.

Quality Control Standard (QCS) / Second Source Calibration Verification (SSCV) - is a solution containing known concentrations of the analytes of interest prepared from a source different from the source of the calibration standards. The solution is obtained from a second manufacturer or lot if the lot can be demonstrated by the manufacturer as prepared independently from other lots. The QCS sample is analyzed using the same procedures as field samples. The QCS is used as a check on the calibration standards used in the method on a routine basis.

Reporting Limit Check (RLC) / Initial Calibration Check Standard (ICCS) - is a procedural standard that is analyzed each day to evaluate instrument performance at or below the minimum reporting limit (MRL).

Surrogate Standard (SS) / Surrogate Analyte (SUR) - is a pure compound with properties similar to the analytes of interest, which is highly unlikely to be found in any field sample, that is added to the field samples, calibration standards, blanks and quality control standards before sample preparation. The SS is used to evaluate the efficiency of the sample preparation process.

UL Drinking Water Laboratory
Extended Result Record Sheet

Run Number: 162822
PC File Name: 112111B
Order Number: 215622

Instrument: IC DP
Analyst: J. Timm
Receipt Batch: 271520

Method(s): 317.0
Submitted By: J. Timm
Today's Date: 11/28/2011

Client: Pall Life Sciences / John Campbell

Generated By: P. Mahler

Sample ID: 2547373
Extracted: N/A
Type: Laboratory Reagent Blank
Analyzed: 11/22/2011 00:22

Dil Factor: 1.000

CAS Number	Parameter	MRL	Amount	Report	Units
15541-45-4	Bromate	1.0	0.0000	< 1.0	ug/L

Sample ID: 2547351
Extracted: N/A
Type: Instrument Performance Check
Analyzed: 11/22/2011 00:45

Dil Factor: 1.000

CAS Number	Parameter	Target	Amount	% Rec	Limits	P/F
15541-45-4	Bromate	1.0	0.9207	92	75-125	Pass

Sample ID: 2547375
Extracted: N/A
Type: Laboratory Fortified Blank
Analyzed: 11/22/2011 01:08

Dil Factor: 1.000

CAS Number	Parameter	Target	Amount	% Rec	Limits	P/F
15541-45-4	Bromate	5.0	4.6271	93	85-115	Pass

Sample ID: 2549709
Extracted: N/A
Type: Field Sample
Analyzed: 11/22/2011 01:31

Site: HC/HR 11/14/11
Dil Factor: 1.000

CAS Number	Parameter	MRL	Amount	Report	Units
15541-45-4	Bromate	1.0	1.3685	1.4	ug/L

Sample ID: 2551514
Extracted: N/A
Type: Matrix Spike of 2549709
Analyzed: 11/22/2011 01:54

Site: HC/HR 11/14/11
Dil Factor: 1.000

CAS Number	Parameter	Target	Amount	Parent Amt	%Rec	Limits	P/F
15541-45-4	Bromate	5.0	5.5160	1.3685	83	75-125	Pass

Sample ID: 2551515
Extracted: N/A
Type: Matrix Spike Duplicate of 2549709
Analyzed: 11/22/2011 02:17

Site: HC/HR 11/14/11
Dil Factor: 1.000

CAS Number	Parameter	Target	Amount	Parent Amt	%Rec	Limits	P/F
15541-45-4	Bromate	5.0	5.5556	1.3685	84	75-125	Pass

Sample ID: 2549710
Extracted: N/A
Type: Field Sample
Analyzed: 11/22/2011 02:40

Site: HC/HR 11/15/11
Dil Factor: 1.000

CAS Number	Parameter	MRL	Amount	Report	Units
15541-45-4	Bromate	1.0	0.6359	< 1.0	ug/L

Sample ID: 2549711
Extracted: N/A
Type: Field Sample
Analyzed: 11/22/2011 03:03

Site: HC/HR 11/16/11
Dil Factor: 1.000

CAS Number	Parameter	MRL	Amount	Report	Units
15541-45-4	Bromate	1.0	0.4175	< 1.0	ug/L

Sample ID: 2547366
Extracted: N/A
Type: Continuing Calibration Check
Analyzed: 11/22/2011 04:58

Dil Factor: 1.000

CAS Number	Parameter	Target	Amount	% Rec	Limits	P/F
15541-45-4	Bromate	10.0	9.8013	98	85-115	Pass

NOTE: The dilution factor is included
in the percent recovery calculation.

UL Drinking Water Laboratory
Extended Result Record Sheet

Run Number: 162898
PC File Name: 112211A
Order Number: 215622

Instrument: IC DP
Analyst: J. Timm
Receipt Batch: 271520

Method(s): 317.0
Submitted By: J. Timm
Today's Date: 11/28/2011

Client: Pall Life Sciences / John Campbell

Generated By: P. Mahler

Sample ID: 2547384
Extracted: N/A
Type: Laboratory Reagent Blank
Analyzed: 11/22/2011 08:18

Dil Factor: 1.000

CAS Number	Parameter	MRL	Amount	Report	Units
15541-45-4	Bromate	1.0	0.0000	< 1.0 ug/L	

Sample ID: 2547353
Extracted: N/A
Type: Instrument Performance Check
Analyzed: 11/22/2011 08:41

Dil Factor: 1.000

CAS Number	Parameter	Target	Amount	% Rec	Limits	P/F
15541-45-4	Bromate	1.0	1.1301	113	75-125	Pass

Sample ID: 2547386
Extracted: N/A
Type: Laboratory Fortified Blank
Analyzed: 11/22/2011 09:04

Dil Factor: 1.000

CAS Number	Parameter	Target	Amount	% Rec	Limits	P/F
15541-45-4	Bromate	5.0	4.9110	98	85-115	Pass

Sample ID: 2535629
Extracted: N/A
Type: Quality Control Sample
Analyzed: 11/22/2011 09:27

Dil Factor: 1.000

CAS Number	Parameter	Target	Amount	% Rec	Limits	P/F
15541-45-4	Bromate	5.0	4.9617	99	85-115	Pass

Sample ID: 2549689
Extracted: N/A
Type: Field Sample
Analyzed: 11/22/2011 09:50

Site: Outfall 11/07/11
Dil Factor: 1.000

CAS Number	Parameter	MRL	Amount	Report	Units
15541-45-4	Bromate	1.0	7.9407	7.9 ug/L	

Sample ID: 2549690
Extracted: N/A
Type: Field Sample
Analyzed: 11/22/2011 10:13

Site: HC/HR 11/01/11
Dil Factor: 1.000

CAS Number	Parameter	MRL	Amount	Report	Units
15541-45-4	Bromate	1.0	0.9625	< 1.0 ug/L	

Sample ID: 2552523
Extracted: N/A
Type: Matrix Spike of 2549690
Analyzed: 11/22/2011 10:36

Site: HC/HR 11/01/11
Dil Factor: 1.000

CAS Number	Parameter	Target	Amount	Parent Amt	%Rec	Limits	P/F
15541-45-4	Bromate	5.0	5.2729	< MRL	105	75-125	Pass

Sample ID: 2552524
Extracted: N/A
Type: Matrix Spike Duplicate of 2549690
Analyzed: 11/22/2011 10:59

Site: HC/HR 11/01/11
Dil Factor: 1.000

CAS Number	Parameter	Target	Amount	Parent Amt	%Rec	Limits	P/F
15541-45-4	Bromate	5.0	5.3145	< MRL	106	75-125	Pass

Sample ID: 2549691
Extracted: N/A
Type: Field Sample
Analyzed: 11/22/2011 11:22

Site: HC/HR 11/02/11
Dil Factor: 1.000

CAS Number	Parameter	MRL	Amount	Report	Units
15541-45-4	Bromate	1.0	0.8828	< 1.0 ug/L	

NOTE: The dilution factor is included
in the percent recovery calculation.

UL Drinking Water Laboratory
Extended Result Record Sheet

Run Number: 162898
PC File Name: 112211A
Order Number: 215622

Instrument: IC DP
Analyst: J. Timm
Receipt Batch: 271520

Method(s): 317.0
Submitted By: J. Timm
Today's Date: 11/28/2011

Client: Pall Life Sciences / John Campbell

Generated By: P. Mahler

Sample ID: 2549692
Extracted: N/A
Type: Field Sample
Analyzed: 11/22/2011 11:45

Site: HC/HR 11/03/11
Dil Factor: 1.000

CAS Number	Parameter	MRL	Amount	Report	Units
15541-45-4	Bromate	1.0	0.9600	< 1.0 ug/L	

Sample ID: 2549693
Extracted: N/A
Type: Field Sample
Analyzed: 11/22/2011 12:08

Site: HC/HR 11/04/11
Dil Factor: 1.000

CAS Number	Parameter	MRL	Amount	Report	Units
15541-45-4	Bromate	1.0	0.9420	< 1.0 ug/L	

Sample ID: 2549694
Extracted: N/A
Type: Field Sample
Analyzed: 11/22/2011 12:31

Site: HC/HR 11/07/11
Dil Factor: 1.000

CAS Number	Parameter	MRL	Amount	Report	Units
15541-45-4	Bromate	1.0	0.8615	< 1.0 ug/L	

Sample ID: 2549695
Extracted: N/A
Type: Field Sample
Analyzed: 11/22/2011 12:54

Site: HC/HR 11/08/11
Dil Factor: 1.000

CAS Number	Parameter	MRL	Amount	Report	Units
15541-45-4	Bromate	1.0	0.9580	< 1.0 ug/L	

Sample ID: 2549696
Extracted: N/A
Type: Field Sample
Analyzed: 11/22/2011 13:17

Site: HC/HR 11/09/11
Dil Factor: 1.000

CAS Number	Parameter	MRL	Amount	Report	Units
15541-45-4	Bromate	1.0	0.9871	< 1.0 ug/L	

Sample ID: 2549697
Extracted: N/A
Type: Field Sample
Analyzed: 11/22/2011 13:40

Site: HC/HR 11/10/11
Dil Factor: 1.000

CAS Number	Parameter	MRL	Amount	Report	Units
15541-45-4	Bromate	1.0	0.8982	< 1.0 ug/L	

Sample ID: 2549698
Extracted: N/A
Type: Field Sample
Analyzed: 11/22/2011 14:03

Site: HC/HR 11/11/11
Dil Factor: 1.000

CAS Number	Parameter	MRL	Amount	Report	Units
15541-45-4	Bromate	1.0	0.8606	< 1.0 ug/L	

Sample ID: 2547367
Extracted: N/A
Type: Continuing Calibration Check
Analyzed: 11/22/2011 14:26

Dil Factor: 1.000

CAS Number	Parameter	Target	Amount	% Rec	Limits	P/F
15541-45-4	Bromate	10.0	10.0518	101	85-115	Pass

Sample ID: 2549699
Extracted: N/A
Type: Field Sample
Analyzed: 11/22/2011 14:49

Site: Outfall 11/01/11
Dil Factor: 1.000

CAS Number	Parameter	MRL	Amount	Report	Units
15541-45-4	Bromate	1.0	7.5687	7.6 ug/L	

NOTE: The dilution factor is included
in the percent recovery calculation.

UL Drinking Water Laboratory
Extended Result Record Sheet

Run Number: 162898
PC File Name: 112211A
Order Number: 215622

Instrument: IC DP
Analyst: J. Timm
Receipt Batch: 271520

Method(s): 317.0
Submitted By: J. Timm
Today's Date: 11/28/2011

Client: Pall Life Sciences / John Campbell

Generated By: P. Mahler

Sample ID: 2552525
Extracted: N/A
Type: Matrix Spike of 2549699
Analyzed: 11/22/2011 15:12

Site: Outfall 11/01/11
Dil Factor: 1.000

CAS Number	Parameter	Target	Amount	Parent Amt	%Rec	Limits	P/F
15541-45-4	Bromate	5.0	13.2573	7.5687	114	75-125	Pass

Sample ID: 2552526
Extracted: N/A
Type: Matrix Spike Duplicate of 2549699
Analyzed: 11/22/2011 15:35

Site: Outfall 11/01/11
Dil Factor: 1.000

CAS Number	Parameter	Target	Amount	Parent Amt	%Rec	Limits	P/F
15541-45-4	Bromate	5.0	13.1806	7.5687	112	75-125	Pass

Sample ID: 2549700
Extracted: N/A
Type: Field Sample
Analyzed: 11/22/2011 15:58

Site: Outfall 11/02/11
Dil Factor: 1.000

CAS Number	Parameter	MRL	Amount	Report	Units
15541-45-4	Bromate	1.0	8.4145	8.4	ug/L

Sample ID: 2549701
Extracted: N/A
Type: Field Sample
Analyzed: 11/22/2011 16:21

Site: Outfall 11/03/11
Dil Factor: 1.000

CAS Number	Parameter	MRL	Amount	Report	Units
15541-45-4	Bromate	1.0	7.8350	7.8	ug/L

Sample ID: 2549702
Extracted: N/A
Type: Field Sample
Analyzed: 11/22/2011 16:44

Site: Outfall 11/06/11
Dil Factor: 1.000

CAS Number	Parameter	MRL	Amount	Report	Units
15541-45-4	Bromate	1.0	8.2705	8.3	ug/L

Sample ID: 2549703
Extracted: N/A
Type: Field Sample
Analyzed: 11/22/2011 17:07

Site: Outfall 11/08/11
Dil Factor: 1.000

CAS Number	Parameter	MRL	Amount	Report	Units
15541-45-4	Bromate	1.0	7.1014	7.1	ug/L

Sample ID: 2549704
Extracted: N/A
Type: Field Sample
Analyzed: 11/22/2011 17:30

Site: Outfall 11/09/11
Dil Factor: 1.000

CAS Number	Parameter	MRL	Amount	Report	Units
15541-45-4	Bromate	1.0	6.7617	6.8	ug/L

Sample ID: 2549705
Extracted: N/A
Type: Field Sample
Analyzed: 11/22/2011 17:53

Site: Outfall 11/10/11
Dil Factor: 1.000

CAS Number	Parameter	MRL	Amount	Report	Units
15541-45-4	Bromate	1.0	5.1426	5.1	ug/L

Sample ID: 2549706
Extracted: N/A
Type: Field Sample
Analyzed: 11/22/2011 18:16

Site: Outfall 11/13/11
Dil Factor: 1.000

CAS Number	Parameter	MRL	Amount	Report	Units
15541-45-4	Bromate	1.0	5.2894	5.3	ug/L

NOTE: The dilution factor is included
in the percent recovery calculation.

UL Drinking Water Laboratory
Extended Result Record Sheet

Run Number: 162898
PC File Name: 112211A
Order Number: 215622

Instrument: IC DP
Analyst: J. Timm
Receipt Batch: 271520

Method(s): 317.0
Submitted By: J. Timm
Today's Date: 11/28/2011

Client: Pall Life Sciences / John Campbell

Generated By: P. Mahler

Sample ID: 2549707
Extracted: N/A
Type: Field Sample
Analyzed: 11/22/2011 18:39

Site: Outfall 11/14/11
Dil Factor: 1.000

CAS Number	Parameter	MRL	Amount	Report	Units
15541-45-4	Bromate	1.0	4.3140	4.3 ug/L	

Sample ID: 2549708
Extracted: N/A
Type: Field Sample
Analyzed: 11/22/2011 19:02

Site: Outfall 11/15/11
Dil Factor: 1.000

CAS Number	Parameter	MRL	Amount	Report	Units
15541-45-4	Bromate	1.0	0.7170	< 1.0 ug/L	

Sample ID: 2547377
Extracted: N/A
Type: Continuing Calibration Check
Analyzed: 11/22/2011 19:25

Dil Factor: 1.000

CAS Number	Parameter	Target	Amount	% Rec	Limits	P/F
15541-45-4	Bromate	15.0	14.0743	94	85-115	Pass

Company Pall Corporation
Name 600 S. Wagner Road Susan E. Peters
Street At 600 S. Wagner Road
City Ann Arbor State MI Zip 48103
Phone 734-913-6531 Fax 734-913-6103
Email _____

Requested Turnaround: Standard * 4 business days * 3 business days
Before the end of the month 48 hours * 24 hours * ASAP / Same day
Project Name / Number: _____
Print Sampler Name: _____
Invoice To: _____

Sample Identification or Location (This will appear on the final report)		Sample Date	Sample Time	Water Matrix				Number of Containers	Requested Testing	Preservation						Lab ID
				Drinking	Ground	Waste	Other			None	4 °C	HCl	HNO ₃	H ₂ SO ₄	Other	
1	Outfall 11/07/11	11/07/11	composit													2549 689
2	HC/HR 11/01/11	11/01/11	09:05													690
3	HC/HR 11/02/11	11/02/11	08:15													691
4	HC/HR 11/03/11	11/03/11	08:15													692
5	HC/HR 11/04/11	11/04/11	09:20													693
6	HC/HR 11/07/11	11/07/11	08:00													694
7	HC/HR 11/08/11	11/08/11	08:10													695
8	HC/HR 11/09/11	11/09/11	07:50													696
9	HC/HR 11/10/11	11/10/11	08:40													697
10	HC/HR 11/11/11	11/11/11	08:55													698
Released by Sampler: <u>[Signature]</u>		Date: / /	Time: :	Received by: <u>Susan E. Peters</u>						Date: 11/16/11 Time: 10:35						
Released by: <u>Susan E. Peters</u>		Date: 11/16/11	Time: 12:00	Received by: <u>[Signature]</u>						Date: 11/17/11 Time: 09:30						

Within holding times	Y	N	Containers are intact	Y	N	Labels and COC agree	Y	N	Correct volume and container	Y	N	Ice remaining	Y	N	Temperature on receipt	0.4 °C
----------------------	---	---	-----------------------	---	---	----------------------	---	---	------------------------------	---	---	---------------	---	---	------------------------	--------

PALL

Pall Corporation

Environmental Laboratory Services

600 South Wagner Rd. Ann Arbor, MI 48103-9019

Phone: (734)-913-6531 * Fax: (734)-913-6103

Chain of Custody Record

Page 2 of 3

Company Pall Corporation
 Name Susan E. O. Peters
 Street 600 S. Wagner Road
 City Ann Arbor State MI Zip 48103
 Phone 734-913-6531 Fax _____
 Email Sue-Peters@pall.com

Requested Turnaround: Standard 4 business days * 3 business days
Before end of month 48 hours * 24 hours * ASAP / Same day
 Project Name / Number: _____
 Print Sampler Name: _____
 Invoice To: _____

	Sample Identification or Location (This will appear on the final report)	Sample Date	Sample Time	Water Matrix				Number of Containers	Requested Testing	Preservation						Lab ID
				Drinking	Ground	Waste	Other			None	4 °C	HCl	HNO ₃	H ₂ SO ₄	Other	
1	Outfall 11/01/11	11/01/11	composit				✓	1	317		✓					2549699
2	Outfall 11/02/11	11/02/11	composit				✓	1	317		✓					700
3	Outfall 11/03/11	11/03/11	composit				✓	1	317		✓					701
4	Outfall 11/06/11	11/06/11	composit				✓	1	317		✓					702
5	Outfall 11/08/11	11/08/11	composit				✓	1	317		✓					703
6	Outfall 11/09/11	11/09/11	composit				✓	1	317		✓					704
7	Outfall 11/10/11	11/10/11	composite				✓	1	317		✓					705
8	Outfall 11/13/11	11/13/11	composite				✓	1	317		✓					706
9	Outfall 11/14/11	11/14/11	composit				✓	1	317		✓					707
10	Outfall 11/15/11	11/15/11	composit				✓	1	317		✓					708
Released by Sampler: <u>Joh [Signature]</u>		Date: <u>11/16/11</u>	Time: <u>12:00</u>	Received by: <u>Susan E O Peters</u>		Date: <u>11/16/11</u>	Time: <u>10:30</u>									
Released by: <u>Susan E O Peters</u>		Date: <u>11/16/11</u>	Time: <u>12:00</u>	Received by: <u>[Signature]</u>		Date: <u>11/17/11</u>	Time: <u>09:30</u>									

Within holding times Y N Containers are intact Y N Labels and COC agree Y N Correct volume and container Y N Ice remaining Y N Temperature on receipt 0.4 °C

PINK Copy - Sampler

WHITE copy and YELLOW copy - Forward to laboratory with samples.

Company Pall Corporation
Name Susan E.O. Peters
Street 600 S. Wagner Road
City Ann Arbor State MI Zip 48103
Phone 734-913- Fax 734-913-
Email Sue-Peters@pall.com

Requested Turnaround: Standard * 4 business days * 3 business days
Before the end of the month 48 hours * 24 hours * ASAP / Same day
Project Name / Number: _____
Print Sampler Name: _____
Invoice To: _____

Sample Identification or Location (This will appear on the final report)		Sample Date	Sample Time	Water Matrix				Number of Containers	Requested Testing	Preservation						Lab ID
				Drinking	Ground	Waste	Other			None	4 °C	HCl	HNO ₃	H ₂ SO ₄	Other	
1	HC/HR 11-14-11	11/14/11	07:30				✓	1	Bromate		✓					2549, 709
2	HC/HR 11-15-11	11/15/11	08:30				✓	1	317		✓					710
3	HC/HR 11-16-11	11/16/11	08:25				✓	1	317		✓					711
4		/ /	:													
5		/ /	:													
6		/ /	:													
7		/ /	:													
8		/ /	:													
9		/ /	:													
10		/ /	:													

Entry Error 11-16-11 SEC

Cross Offs on COC by Client

Released by Sampler: John C. Miller Date: / / Time: : Received by: Susan E.O. Peters Date: 11/16/11 Time: 10:35
Released by: Susan E.O. Peters Date: 11/16/11 Time: 12:00 Received by: Susan E.O. Peters Date: 11/17/11 Time: 09:30

Within holding times Y N Containers are intact Y N Labels and COC agree Y N Correct volume and container Y N Ice remaining Y N Temperature on receipt 0.4°C



the standard in safety

Underwriters
Laboratories

LABORATORY REPORT

This report contains 6 pages.
(including the cover page)

If you have any questions concerning this report, please do not hesitate to call us at
(800) 332-4345 or (574) 233-4777.

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Underwriters Laboratories Inc.
110 S. Hill Street, South Bend, IN 46617-2702 USA
T: 800 332-4345 / F: 574 233 8207 / W: ul.com



the standard in safety

Underwriters
Laboratories

Laboratory Report

Client: Pall Life Sciences
Attn: John Campbell
600 South Wagner Road
Ann Arbor, MI 48103

Report: 271807
Priority: Immediate Written
Status: Final
PWS ID: Not Supplied

Copies
to: Laurel Beyer

Sample Information

UL ID #	Client ID	Method	Collected Date / Time	Collected By:	Received Date / Time
2552981	Outfall 11-16-11	317.0	11/16/11 00:00	Client	11/23/11 09:45
2552982	Outfall 11-17-11	317.0	11/17/11 00:00	Client	11/23/11 09:45
2552983	Outfall 11-20-11	317.0	11/20/11 00:00	Client	11/23/11 09:45
2552984	Outfall 11-21-11	317.0	11/21/11 00:00	Client	11/23/11 09:45

Report Summary

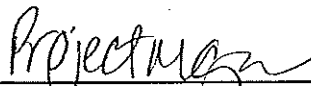
Note: Sample containers were provided by the client.

Detailed quantitative results are presented on the following pages. The results presented relate only to the samples provided for analysis.

We appreciate the opportunity to provide you with this analysis. If you have any questions concerning this report, please do not hesitate to call Traci Chlebowski at (574) 233-4777.

Note: This report may not be reproduced, except in full, without written approval from Underwriters Laboratories (UL).


Authorized Signature


Title

11-30-2011
Date

Client Name: Pall Life Sciences
Report #: 271807

Client Name: Pall Life Sciences

Report #: 271807

Sampling Point: Outfall 11-16-11

PWS ID: Not Supplied

General Chemistry									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	UL ID #
15541-45-4	Bromate	317.0	10 *	1.0	4.4	ug/L	---	11/28/11 15:58	2552981

Sampling Point: Outfall 11-17-11

PWS ID: Not Supplied

General Chemistry									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	UL ID #
15541-45-4	Bromate	317.0	10 *	1.0	5.6	ug/L	---	11/28/11 16:21	2552982

Sampling Point: Outfall 11-20-11

PWS ID: Not Supplied

General Chemistry									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	UL ID #
15541-45-4	Bromate	317.0	10 *	1.0	5.3	ug/L	---	11/28/11 16:44	2552983

Sampling Point: Outfall 11-21-11

PWS ID: Not Supplied

General Chemistry									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	UL ID #
15541-45-4	Bromate	317.0	10 *	1.0	5.8	ug/L	---	11/28/11 17:07	2552984

† UL has demonstrated it can achieve these report limits in reagent water, but can not document them in all sample matrices.

Reg Limit Type:	MCL	SMCL	AL
Symbol:	*	^	!

Lab Definitions

Continuing Calibration Check Standard (CCC) / Continuing Calibration Verification (CCV) / Initial Calibration Verification Standard (ICV) / Initial Performance Check (IPC) - is a standard containing one or more of the target analytes that is prepared from the same standards used to calibrate the instrument. This standard is used to verify the calibration curve at the beginning of each analytical sequence, and may also be analyzed throughout and at the end of the sequence. The concentration of continuing standards may be varied, when prescribed by the reference method, so that the range of the calibration curve is verified on a regular basis.

Internal Standards (IS) - are pure compounds with properties similar to the analytes of interest, which are added to field samples or extracts, calibration standards, and quality control standards at a known concentration. They are used to measure the relative responses of the analytes of interest and surrogates in the sample, calibration standard or quality control standard.

Laboratory Duplicate (LD) - is a field sample aliquot taken from the same sample container in the laboratory and analyzed separately using identical procedures. Analysis of laboratory duplicates provides a measure of the precision of the laboratory procedures.

Laboratory Fortified Blank (LFB) / Laboratory Control Sample (LCS) - is an aliquot of reagent water to which known concentrations of the analytes of interest are added. The LFB is analyzed exactly the same as the field samples. LFBs are used to determine whether the method is in control.

Laboratory Method Blank (LMB) / Laboratory Reagent Blank (LRB) - is a sample of reagent water included in the sample batch analyzed in the same way as the associated field samples. The LMB is used to determine if method analytes or other background contamination have been introduced during the preparation or analytical procedure. The LMB is analyzed exactly the same as the field samples.

Laboratory Trip Blank (LTB) / Field Reagent Blank (FRB) - is a sample of laboratory reagent water placed in a sample container in the laboratory and treated as a field sample, including storage, preservation, and all analytical procedures. The FRB/LTB container follows the collection bottles to and from the collection site, but the FRB/LTB is not opened at any time during the trip. The FRB/LTB is primarily a travel blank used to verify that the samples were not contaminated during shipment.

Matrix Spike Duplicate Sample (MSD) / Laboratory Fortified Sample Matrix Duplicate (LFSMD) - is a sample aliquot taken from the same field sample source as the Matrix Spike Sample to which known quantities of the analytes of interest are added in the laboratory. The MSD is analyzed exactly the same as the field samples. Analysis of the MSD provides a measure of the precision of the laboratory procedures in a specific matrix.

Matrix Spike Sample (MS) / Laboratory Fortified Sample Matrix (LFSM) - is a sample aliquot taken from field sample source to which known quantities of the analytes of interest are added in the laboratory. The MS is analyzed exactly the same as the field samples. The purpose is to demonstrate recovery of the analytes from a sample matrix to determine if the specific matrix contributes bias to the analytical results.

Quality Control Standard (QCS) / Second Source Calibration Verification (SSCV) - is a solution containing known concentrations of the analytes of interest prepared from a source different from the source of the calibration standards. The solution is obtained from a second manufacturer or lot if the lot can be demonstrated by the manufacturer as prepared independently from other lots. The QCS sample is analyzed using the same procedures as field samples. The QCS is used as a check on the calibration standards used in the method on a routine basis.

Reporting Limit Check (RLC) / Initial Calibration Check Standard (ICCS) - is a procedural standard that is analyzed each day to evaluate instrument performance at or below the minimum reporting limit (MRL).

Surrogate Standard (SS) / Surrogate Analyte (SUR) - is a pure compound with properties similar to the analytes of interest, which is highly unlikely to be found in any field sample, that is added to the field samples, calibration standards, blanks and quality control standards before sample preparation. The SS is used to evaluate the efficiency of the sample preparation process.

UL Drinking Water Laboratory
Extended Result Record Sheet

Run Number: 163043
PC File Name: 112811Aa
Order Number: 216046

Instrument: IC DP
Analyst: J. Timm
Receipt Batch: 271807

Method(s): 317.0
Submitted By: J. Timm
Today's Date: 11/30/2011

Client: Pall Life Sciences / John Campbell

Generated By: P. Mahler

Sample ID: 2547363 Type: Instrument Performance Check
Extracted: N/A Analyzed: 11/28/2011 14:26

Dil Factor: 1.000

CAS Number	Parameter	Target	Amount	% Rec	Limits	P/F
15541-45-4	Bromate	1.0	1.1001	110	75-125	Pass

Sample ID: 2547395 Type: Laboratory Reagent Blank
Extracted: N/A Analyzed: 11/28/2011 14:49

Dil Factor: 1.000

CAS Number	Parameter	MRL	Amount	Report	Units
15541-45-4	Bromate	1.0	0.0000	< 1.0	ug/L

Sample ID: 2547397 Type: Laboratory Fortified Blank
Extracted: N/A Analyzed: 11/28/2011 15:12

Dil Factor: 1.000

CAS Number	Parameter	Target	Amount	% Rec	Limits	P/F
15541-45-4	Bromate	5.0	4.8315	97	85-115	Pass

Sample ID: 2541665 Type: Quality Control Sample
Extracted: N/A Analyzed: 11/28/2011 15:35

Dil Factor: 1.000

CAS Number	Parameter	Target	Amount	% Rec	Limits	P/F
15541-45-4	Bromate	5.0	4.9900	100	85-115	Pass

Sample ID: 2552981 Type: Field Sample
Extracted: N/A Analyzed: 11/28/2011 15:58

Site: Outfall 11-16-11
Dil Factor: 1.000

CAS Number	Parameter	MRL	Amount	Report	Units
15541-45-4	Bromate	1.0	4.4147	4.4	ug/L

Sample ID: 2552982 Type: Field Sample
Extracted: N/A Analyzed: 11/28/2011 16:21

Site: Outfall 11-17-11
Dil Factor: 1.000

CAS Number	Parameter	MRL	Amount	Report	Units
15541-45-4	Bromate	1.0	5.5501	5.6	ug/L

Sample ID: 2552983 Type: Field Sample
Extracted: N/A Analyzed: 11/28/2011 16:44

Site: Outfall 11-20-11
Dil Factor: 1.000

CAS Number	Parameter	MRL	Amount	Report	Units
15541-45-4	Bromate	1.0	5.3363	5.3	ug/L

Sample ID: 2552984 Type: Field Sample
Extracted: N/A Analyzed: 11/28/2011 17:07

Site: Outfall 11-21-11
Dil Factor: 1.000

CAS Number	Parameter	MRL	Amount	Report	Units
15541-45-4	Bromate	1.0	5.8167	5.8	ug/L

Sample ID: 2547378 Type: Continuing Calibration Check
Extracted: N/A Analyzed: 11/28/2011 20:34

Dil Factor: 1.000

CAS Number	Parameter	Target	Amount	% Rec	Limits	P/F
15541-45-4	Bromate	10.0	9.1096	91	85-115	Pass

NOTE: The dilution factor is included
in the percent recovery calculation.

Company Pall Corporation
Name Susan EO Peters
Street 600 S. Wagner Road
City Ann Arbor MI State MI Zip 48103
Phone 734-913-6531 Fax 734-913-6103
Email sue-peters@pall.com

Requested Turnaround: Standard * 4 business days * 3 business days
Before end of month 48 hours * 24 hours * ASAP / Same day
Project Name / Number: _____
Print Sampler Name: _____
Invoice To: _____

Immediate Written

Sample Identification or Location (This will appear on the final report)		Sample Date	Sample Time	Water Matrix				Number of Containers	Requested Testing Bromate 317	Preservation						Lab ID
				Drinking	Ground	Waste	Other			None	4 °C	HCl	HNO ₃	H ₂ SO ₄	Other	
1	HC/HR 11-17-11	11/17/11	08:10				✓	1	317		✓					
2	HC/HR 11-18-11	11/18/11	08:20				✓	1	317		✓					
3	HC/HR 11-21-11	11/21/11	07:30				✓	1	317		✓					
4	HC/HR 11-22-11	11/22/11	08:15				✓	1	317		✓					
5	Outfall 11-16-11	11/16/11	composite				✓	1	317		✓					2552981
6	Outfall 11-17-11	11/17/11	composite				✓	1	317		✓					982
7	Outfall 11-20-11	11/20/11	composite				✓	1	317		✓					983
8	Outfall 11-21-11	11/21/11	composite				✓	1	317		✓					984
9		/ /	:													
10		/ /	:													
Released by Sampler: John Campbell		Date: as above	Time: :	Received by: Susan EO Peters				Date: 11/22/11		Time: :						
Released by: Susan EO Peters		Date: 11/22/11	Time: 14:38	Received by: BM Leniski				Date: 11/23/11		Time: 9:45AM						

Within holding times ☒ Y ☐ N Containers are intact ☒ Y ☐ N Labels and COC agree ☒ Y ☐ N Correct volume and container ☒ Y ☐ N Ice remaining ☒ Y ☐ N Temperature on receipt 2.0 °C



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Underwriters
Laboratories

LABORATORY REPORT

This report contains 6 pages.
(including the cover page)

If you have any questions concerning this report, please do not hesitate to call us at
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110 S. Hill Street, South Bend, IN 46617 2702 USA
T : 800 332-4345 / F: 574.233.8207 / W : ul.com



the standard in safety

Underwriters
Laboratories

Laboratory Report

Client: Pall Life Sciences
Attn: John Campbell
600 South Wagner Road
Ann Arbor, MI 48103

Report: 271805
Priority: Immediate Written
Status: Final
PWS ID: Not Supplied

Copies
to: Laurel Beyer

Sample Information

UL ID #	Client ID	Method	Collected Date / Time	Collected By:	Received Date / Time
2552972	HC/HR 11-17-11	317.0	11/17/11 08:10	Client	11/23/11 09:45
2552973	HC/HR 11-18-11	317.0	11/18/11 08:20	Client	11/23/11 09:45
2552974	HC/HR 11-21-11	317.0	11/21/11 07:30	Client	11/23/11 09:45
2552975	HC/HR 11-22-11	317.0	11/22/11 08:15	Client	11/23/11 09:45

Report Summary

Note: Sample containers were provided by the client.

Detailed quantitative results are presented on the following pages. The results presented relate only to the samples provided for analysis.

We appreciate the opportunity to provide you with this analysis. If you have any questions concerning this report, please do not hesitate to call Traci Chlebowski at (574) 233-4777.

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Authorized Signature

Title

Date

Client Name: Pall Life Sciences
Report #: 271805

Client Name: Pall Life Sciences

Report #: 271805

Sampling Point: HC/HR 11-17-11

PWS ID: Not Supplied

General Chemistry									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	UL ID #
15541-45-4	Bromate	317.0	10 *	1.0	< 1.0	ug/L	---	11/28/11 17:30	2552972

Sampling Point: HC/HR 11-18-11

PWS ID: Not Supplied

General Chemistry									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	UL ID #
15541-45-4	Bromate	317.0	10 *	1.0	< 1.0	ug/L	---	11/28/11 17:53	2552973

Sampling Point: HC/HR 11-21-11

PWS ID: Not Supplied

General Chemistry									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	UL ID #
15541-45-4	Bromate	317.0	10 *	1.0	< 1.0	ug/L	---	11/28/11 18:16	2552974

Sampling Point: HC/HR 11-22-11

PWS ID: Not Supplied

General Chemistry									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	UL ID #
15541-45-4	Bromate	317.0	10 *	1.0	< 1.0	ug/L	---	11/28/11 18:30	2552975

† UL has demonstrated it can achieve these report limits in reagent water, but can not document them in all sample matrices.

Reg Limit Type:	MCL	SMCL	AL
Symbol:	*	^	!

Lab Definitions

Continuing Calibration Check Standard (CCC) / Continuing Calibration Verification (CCV) / Initial Calibration Verification Standard (ICV) / Initial Performance Check (IPC) - is a standard containing one or more of the target analytes that is prepared from the same standards used to calibrate the instrument. This standard is used to verify the calibration curve at the beginning of each analytical sequence, and may also be analyzed throughout and at the end of the sequence. The concentration of continuing standards may be varied, when prescribed by the reference method, so that the range of the calibration curve is verified on a regular basis.

Internal Standards (IS) - are pure compounds with properties similar to the analytes of interest, which are added to field samples or extracts, calibration standards, and quality control standards at a known concentration. They are used to measure the relative responses of the analytes of interest and surrogates in the sample, calibration standard or quality control standard.

Laboratory Duplicate (LD) - is a field sample aliquot taken from the same sample container in the laboratory and analyzed separately using identical procedures. Analysis of laboratory duplicates provides a measure of the precision of the laboratory procedures.

Laboratory Fortified Blank (LFB) / Laboratory Control Sample (LCS) - is an aliquot of reagent water to which known concentrations of the analytes of interest are added. The LFB is analyzed exactly the same as the field samples. LFBs are used to determine whether the method is in control.

Laboratory Method Blank (LMB) / Laboratory Reagent Blank (LRB) - is a sample of reagent water included in the sample batch analyzed in the same way as the associated field samples. The LMB is used to determine if method analytes or other background contamination have been introduced during the preparation or analytical procedure. The LMB is analyzed exactly the same as the field samples.

Laboratory Trip Blank (LTB) / Field Reagent Blank (FRB) - is a sample of laboratory reagent water placed in a sample container in the laboratory and treated as a field sample, including storage, preservation, and all analytical procedures. The FRB/LTB container follows the collection bottles to and from the collection site, but the FRB/LTB is not opened at any time during the trip. The FRB/LTB is primarily a travel blank used to verify that the samples were not contaminated during shipment.

Matrix Spike Duplicate Sample (MSD) / Laboratory Fortified Sample Matrix Duplicate (LFSMD) - is a sample aliquot taken from the same field sample source as the Matrix Spike Sample to which known quantities of the analytes of interest are added in the laboratory. The MSD is analyzed exactly the same as the field samples. Analysis of the MSD provides a measure of the precision of the laboratory procedures in a specific matrix.

Matrix Spike Sample (MS) / Laboratory Fortified Sample Matrix (LFSM) - is a sample aliquot taken from field sample source to which known quantities of the analytes of interest are added in the laboratory. The MS is analyzed exactly the same as the field samples. The purpose is to demonstrate recovery of the analytes from a sample matrix to determine if the specific matrix contributes bias to the analytical results.

Quality Control Standard (QCS) / Second Source Calibration Verification (SSCV) - is a solution containing known concentrations of the analytes of interest prepared from a source different from the source of the calibration standards. The solution is obtained from a second manufacturer or lot if the lot can be demonstrated by the manufacturer as prepared independently from other lots. The QCS sample is analyzed using the same procedures as field samples. The QCS is used as a check on the calibration standards used in the method on a routine basis.

Reporting Limit Check (RLC) / Initial Calibration Check Standard (ICCS) - is a procedural standard that is analyzed each day to evaluate instrument performance at or below the minimum reporting limit (MRL).

Surrogate Standard (SS) / Surrogate Analyte (SUR) - is a pure compound with properties similar to the analytes of interest, which is highly unlikely to be found in any field sample, that is added to the field samples, calibration standards, blanks and quality control standards before sample preparation. The SS is used to evaluate the efficiency of the sample preparation process.

UL Drinking Water Laboratory
Extended Result Record Sheet

Run Number: 163043
PC File Name: 112811Aa
Order Number: 216046

Instrument: IC DP
Analyst: J. Timm
Receipt Batch: 271805

Method(s): 317.0
Submitted By: J. Timm
Today's Date: 11/30/2011

Client: Pall Life Sciences / John Campbell

Generated By: P. Mahler

Sample ID: 2547363
Extracted: N/A
Type: Instrument Performance Check
Analyzed: 11/28/2011 14:26

Dil Factor: 1.000

CAS Number	Parameter	Target	Amount	% Rec	Limits	P/F
15541-45-4	Bromate	1.0	1.1001	110	75-125	Pass

Sample ID: 2547395
Extracted: N/A
Type: Laboratory Reagent Blank
Analyzed: 11/28/2011 14:49

Dil Factor: 1.000

CAS Number	Parameter	MRL	Amount	Report	Units
15541-45-4	Bromate	1.0	0.0000	< 1.0	ug/L

Sample ID: 2547397
Extracted: N/A
Type: Laboratory Fortified Blank
Analyzed: 11/28/2011 15:12

Dil Factor: 1.000

CAS Number	Parameter	Target	Amount	% Rec	Limits	P/F
15541-45-4	Bromate	5.0	4.8315	97	85-115	Pass

Sample ID: 2541665
Extracted: N/A
Type: Quality Control Sample
Analyzed: 11/28/2011 15:35

Dil Factor: 1.000

CAS Number	Parameter	Target	Amount	% Rec	Limits	P/F
15541-45-4	Bromate	5.0	4.9900	100	85-115	Pass

Sample ID: 2552972
Extracted: N/A
Type: Field Sample
Analyzed: 11/28/2011 17:30

Site: HC/HR 11-17-11
Dil Factor: 1.000

CAS Number	Parameter	MRL	Amount	Report	Units
15541-45-4	Bromate	1.0	0.6965	< 1.0	ug/L

Sample ID: 2552973
Extracted: N/A
Type: Field Sample
Analyzed: 11/28/2011 17:53

Site: HC/HR 11-18-11
Dil Factor: 1.000

CAS Number	Parameter	MRL	Amount	Report	Units
15541-45-4	Bromate	1.0	0.6021	< 1.0	ug/L

Sample ID: 2552974
Extracted: N/A
Type: Field Sample
Analyzed: 11/28/2011 18:16

Site: HC/HR 11-21-11
Dil Factor: 1.000

CAS Number	Parameter	MRL	Amount	Report	Units
15541-45-4	Bromate	1.0	0.6003	< 1.0	ug/L

Sample ID: 2552975
Extracted: N/A
Type: Field Sample
Analyzed: 11/28/2011 18:39

Site: HC/HR 11-22-11
Dil Factor: 1.000

CAS Number	Parameter	MRL	Amount	Report	Units
15541-45-4	Bromate	1.0	0.6913	< 1.0	ug/L

Sample ID: 2547378
Extracted: N/A
Type: Continuing Calibration Check
Analyzed: 11/28/2011 20:34

Dil Factor: 1.000

CAS Number	Parameter	Target	Amount	% Rec	Limits	P/F
15541-45-4	Bromate	10.0	9.1096	91	85-115	Pass

NOTE: The dilution factor is included
in the percent recovery calculation.

271805

216046

Company Pall Corporation
Name Susan EO Peters
Street 600 S. Wagner Road
City Ann Arbor MI State MI Zip 48103
Phone 734-913-6531 Fax 734-913-6103
Email sue-peters@pall.com

Requested Turnaround: Standard * 4 business days * 3 business days
Before end of month 48 hours * 24 hours * ASAP / Same day
Project Name / Number: _____
Print Sampler Name: _____
Invoice To: _____

Immediate Written

Sample Identification or Location (This will appear on the final report)		Sample Date	Sample Time	Water Matrix				Number of Containers	Requested Testing Bromate	Preservation						Lab ID
				Drinking	Ground	Waste	Other			None	4 °C	HCl	HNO ₃	H ₂ SO ₄	Other	
1	HC/HR 11-17-11	11/17/11	08:10				✓	1	317		✓					25520712
2	HC/HR 11-18-11	11/18/11	08:20				✓	1	317		✓					973
3	HC/HR 11-21-11	11/21/11	07:30				✓	1	317		✓					974
4	HC/HR 11-22-11	11/22/11	08:15				✓	1	317		✓					975
5	Outfall 11-16-11	11/16/11	composite				✓	1	317		✓					
6	Outfall 11-17-11	11/17/11	composite				✓	1	317		✓					
7	Outfall 11-20-11	11/20/11	composite				✓	1	317		✓					
8	Outfall 11-21-11	11/21/11	composite				✓	1	317		✓					
9		/ /	:													
10		/ /	:													
Released by Sampler: <u>John Campbell</u>		Date: <u>as above</u>	Time: <u>6:50P</u>	Received by: <u>Susan EO Peters</u>				Date: <u>11/22/11</u>				Time: <u>as above</u>				
Released by: <u>Susan EO Peters</u>		Date: <u>11/22/11</u>	Time: <u>4:08</u>	Received by: <u>BM Leniski</u>				Date: <u>11/23/11</u>				Time: <u>9:45AM</u>				

Within holding times ☒ Y ☐ N Containers are intact ☒ Y ☐ N Labels and COC agree ☒ Y ☐ N Correct volume and container. ☒ Y ☐ N Ice remaining ☒ Y ☐ N Temperature on receipt 20 °C



the standard in safety

Underwriters
Laboratories

LABORATORY REPORT

This report contains 6 pages.
(including the cover page)

If you have any questions concerning this report, please do not hesitate to call us at
(800) 332-4345 or (574) 233-4777.

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110 S. Hill Street, South Bend, IN 46617-2702 USA
T:: 800.332.4345 / F:: 574.233.8207 / W:: ul.com



the standard in safety

Underwriters
Laboratories

Laboratory Report

Client: Pall Life Sciences
Attn: John Campbell
600 South Wagner Road
Ann Arbor, MI 48103

Report: 271109
Priority: Standard Written
Status: Final
PWS ID: Not Supplied

Copies
to: Laurel Beyer

Sample Information

UL ID #	Client ID	Method	Collected Date / Time	Collected By:	Received Date / Time
2544764	Outfall 11-7-11	317.0	11/07/11 00:00	Client	11/09/11 09:30

Report Summary

Note: Sample container was provided by the client.

Detailed quantitative results are presented on the following pages. The results presented relate only to the samples provided for analysis.

We appreciate the opportunity to provide you with this analysis. If you have any questions concerning this report, please do not hesitate to call Traci Chlebowski at (574) 233-4777.

Note: This report may not be reproduced, except in full, without written approval from Underwriters Laboratories (UL).

Traci Chlebowski

Authorized Signature

Project Manager

Title

11-16-11

Date

Client Name: Pall Life Sciences
Report #: 271109

Client Name: Pall Life Sciences

Report #: 271109

Sampling Point: Outfall 11-7-11

PWS ID: Not Supplied

General Chemistry									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	UL ID #
15541-45-4	Bromate	317.0	10 *	1.0	8.1	ug/L	---	11/09/11 12:32	2544764

† UL has demonstrated it can achieve these report limits in reagent water, but can not document them in all sample matrices.

Reg Limit Type:	MCL	SMCL	AL
Symbol:	*	Δ	!

Lab Definitions

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Laboratory Trip Blank (LTB) - is a sample of laboratory reagent water placed in a sample container in the laboratory and treated as a field sample, including storage, preservation, and all analytical procedures. The LTB container follows the collection bottles to and from the collection site, but the LTB is not opened at any time during the trip. LTB is not exposed to site conditions or pumping and collection equipment. The LTB is primarily a travel blank used to verify that the samples were not contaminated during shipment.

Matrix Spike Duplicate Sample (MSD) / Laboratory Fortified Matrix Duplicate (LFD) - is a sample aliquot taken from the same field sample source as the Matrix Spike Sample to which known quantities of the analytes of interest are added in the laboratory. The MSD is analyzed exactly the same as the field samples. Analysis of the MSD provides a measure of the precision of the laboratory procedures in a specific matrix.

Matrix Spike Sample (MS) / Laboratory Fortified Matrix (LFM) - is a sample aliquot taken from field sample source to which known quantities of the analytes of interest are added in the laboratory. The MS is analyzed exactly the same as the field samples. The purpose is to demonstrate recovery of the analytes from a sample matrix to determine if the specific matrix contributes bias to the analytical results.

Quality Control Standard (QCS) / Second Source Calibration Verification (SSCV) - is a solution containing known concentrations of the analytes of interest prepared from a source different from the source of the calibration standards. The solution is obtained from a second manufacturer or lot if the lot can be demonstrated by the manufacturer as prepared independently from other lots. The QCS sample is analyzed using the same procedures as field samples. The QCS is used as a check on the calibration standards used in the method on a routine basis.

Reporting Limit Check (RLC) / Initial Calibration Check Standard (ICCS) - is a procedural standard that is analyzed each day to evaluate instrument performance at or below the minimum reporting limit (MRL).

Surrogate Standard (SS) / Surrogate Analyte (SUR) - is a pure compound with properties similar to the analytes of interest, which is highly unlikely to be found in any field sample, that is added to the field samples, calibration standards, blanks and quality control standards before sample preparation. The SS is used to evaluate the efficiency of the sample preparation process.

UL Drinking Water Laboratory
Extended Result Record Sheet

Run Number: 162547
PC File Name: 110911A
Order Number: 215388

Instrument: IC DP
Analyst: J. Timm
Receipt Batch: 271109

Method(s): 317.0
Submitted By: J. Timm
Today's Date: 11/16/2011

Client: Pall Life Sciences / John Campbell

Generated By: R. Polite

Sample ID: 2547417 Type: Laboratory Reagent Blank
Extracted: N/A Analyzed: 11/09/2011 10:38

Dil Factor: 1.000

CAS Number	Parameter	MRL	Amount	Report	Units
15541-45-4	Bromate	1.0	0.0000	< 1.0	ug/L

Sample ID: 2547419 Type: Laboratory Fortified Blank
Extracted: N/A Analyzed: 11/09/2011 11:23

Dil Factor: 1.000

CAS Number	Parameter	Target	Amount	% Rec	Limits	P/F
15541-45-4	Bromate	5.0	5.5648	111	85-115	Pass

Sample ID: 2547420 Type: Instrument Performance Check
Extracted: N/A Analyzed: 11/09/2011 12:10

Dil Factor: 1.000

CAS Number	Parameter	Target	Amount	% Rec	Limits	P/F
15541-45-4	Bromate	1.0	1.2412	124	75-125	Pass

Sample ID: 2544764 Type: Field Sample Site: Outfall 11-7-11
Extracted: N/A Analyzed: 11/09/2011 12:32 Dil Factor: 1.000

CAS Number	Parameter	MRL	Amount	Report	Units
15541-45-4	Bromate	1.0	8.0778	8.1	ug/L

Sample ID: 2547421 Type: Continuing Calibration Check
Extracted: N/A Analyzed: 11/09/2011 17:07

Dil Factor: 1.000

CAS Number	Parameter	Target	Amount	% Rec	Limits	P/F
15541-45-4	Bromate	10.0	11.1205	111	85-115	Pass

Samples Sent to U.C.

215388

PALL Pall CorporationEnvironmental Laboratory Services
600 South Wagner Rd. Ann Arbor, MI 48103-9019
Phone: (734)-913-6531 * Fax: (734)-913-6103

Chain of Custody Record

Page 1 of 1

SS 11/9/11 271108 271109

Company Pall Corporation
 Name Susan EO Peters
 Street 600 South Wagner Road
 City Ann Arbor State MI Zip 48103
 Phone 734-913-6531 Fax 734-913-6103
 Email sue-peters@pall.com

Requested Turnaround: Standard * 4 business days * 3 business days
 48 hours * 24 hours * ASAP / Same day

Project Name / Number: _____

Print Sampler Name: J. Campbell

Invoice To: _____

RUSH

Sample Identification or Location (This will appear on the final report)		Sample Date	Sample Time	Water Matrix				Number of Containers	Requested Testing	Preservation						Lab ID
				Drinking	Ground	Waste	Other			None	4 °C	HCl	HNO ₃	H ₂ SO ₄	Other	
1	Outfall 11-7-11	11/07/11	Composit				✓	1	317		✓					2544764
2	EFF 1A-360	11/08/11	10:20				✓	1	317		✓					
3	EFF 2A-360	11/08/11	10:22				✓	1	317		✓					
4	EFF-1A-390	11/08/11	13:50				✓	1	317		✓					
5	EFF-2A-390	11/08/11	13:52				✓	1	317		✓					
6	Control	11/08/11	Composit				✓	1	317		✓				EDA	
7		1/1	:													
8		1/1	:													
9		1/1	:													
10		1/1	:													
Released by Sampler: <u>S. Campbell</u>		Date: <u>11/08/11</u>	Time: <u>13:59</u>	Received by: <u>Susan EO Peters</u>		Date: <u>11/08/11</u>	Time: <u>14:00</u>									
Released by: <u>Susan EO Peters</u>		Date: <u>11/08/11</u>	Time: <u>14:15</u>	Received by: <u>Stefan</u>		Date: <u>11/9/11</u>	Time: <u>09:30</u>									

Within holding times (Y) N Containers are intact (Y) N Labels and COC agree (Y) N Correct volume and container (Y) N Ice remaining (Y) N Temperature on receipt 2.4°C

PINK Copy - Sampler

WHITE copy and YELLOW copy - Forward to laboratory with samples.

Client Provided Sample Container



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Underwriters
Laboratories

LABORATORY REPORT

This report contains 8 pages.
(including the cover page)

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110 S. LaSalle Street, South Bend, IN 46617-2702 USA
T: 800 332-4345 / F: 574 233-0207 / W: ul.com



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Underwriters
Laboratories

Laboratory Report

Client: Pall Life Sciences
Attn: John Campbell
600 South Wagner Road
Ann Arbor, MI 48103

Report: 272077
Priority: Immediate Written
Status: Final
PWS ID: Not Supplied

Copies
to: Laurel Beyer

Sample Information

UL ID #	Client ID	Method	Collected Date / Time	Collected By:	Received Date / Time
2556863	Outfall 11-22-11	317.0	11/22/11 00:00	Client	12/02/11 09:30
2556864	Outfall 11-23-11	317.0	11/23/11 00:00	Client	12/02/11 09:30
2556865	Outfall 11-27-11	317.0	11/27/11 00:00	Client	12/02/11 09:30
2556866	Outfall 11-28-11	317.0	11/28/11 00:00	Client	12/02/11 09:30
2556867	Outfall 11-29-11	317.0	11/29/11 00:00	Client	12/02/11 09:30
2556868	Outfall 11-30-11	317.0	11/30/11 00:00	Client	12/02/11 09:30

Report Summary

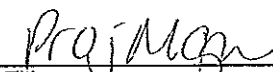
Note: Sample containers were provided by the client.

Detailed quantitative results are presented on the following pages. The results presented relate only to the samples provided for analysis.

We appreciate the opportunity to provide you with this analysis. If you have any questions concerning this report, please do not hesitate to call Traci Chlebowski at (574) 233-4777.

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Authorized Signature


Title


Date

Client Name: Pall Life Sciences
Report #: 272077

Client Name: Pall Life Sciences

Report #: 272077

Sampling Point: Outfall 11-22-11

PWS ID: Not Supplied

General Chemistry									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	UL ID #
15541-45-4	Bromate	317.0	10 *	1.0	5.6	ug/L	---	12/05/11 20:51	2556863

Sampling Point: Outfall 11-23-11

PWS ID: Not Supplied

General Chemistry									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	UL ID #
15541-45-4	Bromate	317.0	10 *	1.0	6.5	ug/L	---	12/05/11 21:13	2556864

Sampling Point: Outfall 11-27-11

PWS ID: Not Supplied

General Chemistry									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	UL ID #
15541-45-4	Bromate	317.0	10 *	1.0	4.4	ug/L	---	12/05/11 21:58	2556865

Sampling Point: Outfall 11-28-11

PWS ID: Not Supplied

General Chemistry									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	UL ID #
15541-45-4	Bromate	317.0	10 *	1.0	4.4	ug/L	---	12/05/11 22:21	2556866

Sampling Point: Outfall 11-29-11

PWS ID: Not Supplied

General Chemistry									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	UL ID #
15541-45-4	Bromate	317.0	10 *	1.0	4.5	ug/L	---	12/05/11 22:43	2556867

Client Name: Pall Life Sciences

Report #: 272077

Sampling Point: Outfall 11-30-11

PWS ID: Not Supplied

General Chemistry									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	UL ID #
15541-45-4	Bromate	317.0	10 *	1.0	5.7	ug/L	---	12/05/11 23:06	2556868

† UL has demonstrated it can achieve these report limits in reagent water, but can not document them in all sample matrices.

Reg Limit Type:	MCL	SMCL	AL
Symbol:	*	^	1

Lab Definitions

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UL Drinking Water Laboratory
Extended Result Record Sheet

Run Number: 163263
PC File Name: 120511a
Order Number: 216289

Instrument: IC BK
Analyst: S. Lovick
Receipt Batch: 272077

Method(s): 317.0
Submitted By: S. Lovick
Today's Date: 12/07/2011

Client: Pall Life Sciences / John Campbell

Generated By: P. Mahler

Sample ID: 2558145 Type: Initial Calibration Blank
Extracted: N/A Analyzed: 12/01/2011 11:13

Dil Factor: 1.000

CAS Number	Parameter	MRL	Amount	Report	Units
15541-45-4	Bromate	1.0	0.0000	< 1.0	ug/L

Sample ID: 2558151 Type: Laboratory Reagent Blank
Extracted: N/A Analyzed: 12/05/2011 17:06

Dil Factor: 1.000

CAS Number	Parameter	MRL	Amount	Report	Units
15541-45-4	Bromate	1.0	0.0000	< 1.0	ug/L

Sample ID: 2558152 Type: Laboratory Fortified Blank
Extracted: N/A Analyzed: 12/05/2011 17:28

Dil Factor: 1.000

CAS Number	Parameter	Target	Amount	% Rec	Limits	P/F
15541-45-4	Bromate	5.0	4.2520	85	85-115	Pass

Sample ID: 2547396 Type: Instrument Performance Check
Extracted: N/A Analyzed: 12/05/2011 17:51

Dil Factor: 1.000

CAS Number	Parameter	Target	Amount	% Rec	Limits	P/F
15541-45-4	Bromate	1.0	0.8400	84	75-125	Pass

Sample ID: 2556863 Type: Field Sample
Extracted: N/A Analyzed: 12/05/2011 20:51

Site: Outfall 11-22-11
Dil Factor: 1.000

CAS Number	Parameter	MRL	Amount	Report	Units
15541-45-4	Bromate	1.0	5.6340	5.6	ug/L

Sample ID: 2556864 Type: Field Sample
Extracted: N/A Analyzed: 12/05/2011 21:13

Site: Outfall 11-23-11
Dil Factor: 1.000

CAS Number	Parameter	MRL	Amount	Report	Units
15541-45-4	Bromate	1.0	6.5090	6.5	ug/L

Sample ID: 2558153 Type: Continuing Calibration Check
Extracted: N/A Analyzed: 12/05/2011 21:36

Dil Factor: 1.000

CAS Number	Parameter	Target	Amount	% Rec	Limits	P/F
15541-45-4	Bromate	10.0	9.0560	91	85-115	Pass

Sample ID: 2556865 Type: Field Sample
Extracted: N/A Analyzed: 12/05/2011 21:58

Site: Outfall 11-27-11
Dil Factor: 1.000

CAS Number	Parameter	MRL	Amount	Report	Units
15541-45-4	Bromate	1.0	4.3700	4.4	ug/L

Sample ID: 2556866 Type: Field Sample
Extracted: N/A Analyzed: 12/05/2011 22:21

Site: Outfall 11-28-11
Dil Factor: 1.000

CAS Number	Parameter	MRL	Amount	Report	Units
15541-45-4	Bromate	1.0	4.4400	4.4	ug/L

NOTE: The dilution factor is included
in the percent recovery calculation.

UL Drinking Water Laboratory
Extended Result Record Sheet

Run Number: 163263
PC File Name: 120511a
Order Number: 216289

Instrument: IC BK
Analyst: S. Lovick
Receipt Batch: 272077

Method(s): 317.0
Submitted By: S. Lovick
Today's Date: 12/07/2011

Client: Pall Life Sciences / John Campbell

Generated By: P. Mahler

Sample ID: 2556867
Extracted: N/A
Type: Field Sample
Analyzed: 12/05/2011 22:43

Site: Outfall 11-29-11
Dil Factor: 1.000

CAS Number	Parameter	MRL	Amount	Report	Units
15541-45-4	Bromate	1.0	4.4640	4.5	ug/L

Sample ID: 2556868
Extracted: N/A
Type: Field Sample
Analyzed: 12/05/2011 23:06

Site: Outfall 11-30-11
Dil Factor: 1.000

CAS Number	Parameter	MRL	Amount	Report	Units
15541-45-4	Bromate	1.0	5.7370	5.7	ug/L

Sample ID: 2557975
Extracted: N/A
Type: Matrix Spike of 2556868
Analyzed: 12/05/2011 23:28

Site: Outfall 11-30-11
Dil Factor: 1.000

CAS Number	Parameter	Target	Amount	Parent Amt	%Rec	Limits	P/F
15541-45-4	Bromate	5.0	10.0890	5.7370	87	75-125	Pass

Sample ID: 2557976
Extracted: N/A
Type: Matrix Spike Duplicate of 2556868
Analyzed: 12/05/2011 23:51

Site: Outfall 11-30-11
Dil Factor: 1.000

CAS Number	Parameter	Target	Amount	Parent Amt	%Rec	Limits	P/F
15541-45-4	Bromate	5.0	9.7480	5.7370	80	75-125	Pass

Sample ID: 2558154
Extracted: N/A
Type: Continuing Calibration Check
Analyzed: 12/06/2011 00:13

Dil Factor: 1.000

CAS Number	Parameter	Target	Amount	% Rec	Limits	P/F
15541-45-4	Bromate	15.0	13.9350	93	85-115	Pass

272077 216289

Company Pall Corporation
Name Susan Peters
Street 600 South Wagner Road
City Ann Arbor State MI Zip 48103-9019
Phone 734-913-6531 Fax 734-913-6103
Email sue_peters@pall.com

Requested Turnaround: Standard * 4 business days Please
48 hours * 24 hours * ASAP / Same day

Project Name / Number: November Data
Print Sampler Name: Robert Using / Christian Duma
Invoice To: Laurel Beyer

Sample Identification or Location (This will appear on the final report)		Sample Date	Sample Time	Water Matrix				Number of Containers	Requested Testing	Preservation						Lab ID
				Drinking	Ground	Waste	Other			None	4 °C	HCl	HNO ₃	H ₂ SO ₄	Other	
1	Outfall 11-22-11	11/22/11	composite				✓	1	317		✓					2556-863
2	Outfall 11-23-11	11/23/11	composite				✓	1	317		✓					864
3	Outfall 11-27-11	11/27/11	composite				✓	1	317		✓					865
4	Outfall 11-28-11	11/28/11	composite				✓	1	317		✓					866
5	Outfall 11-29-11	11/29/11	composite				✓	1	317		✓					867
6	Outfall 11-30-11	11/30/11	composite				✓	1	317		✓					868
7	HC/HR 11-23-11	11/23/11	08:10													
8	HC/HR 11-28-11	11/28/11	08:15													
9	HC/HR 11-29-11	11/29/11	08:40													
10	HC/HR 11-30-11	11/30/11	09:20													
Released by Sampler <u>R. Using + C. Duma</u>		Date: <u>on/dates above</u>	Time: :	Received by: <u>Susan E Peters</u>		Date: <u>on/dates above</u>		Time: :								
Released by: <u>Susan E Peters</u>		Date: <u>12/1/11</u>	Time: <u>08:00</u>	Received by: <u>Keene Dymov</u>		Date: <u>12/1/11</u>		Time: <u>09:30</u>								

Within holding times Y N	Containers are intact Y N	Labels and COC agree Y N	Correct volume and container Y N	Ice remaining <u>(Y)</u> N	Temperature on receipt <u>0.2C</u>
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the standard in safety

Underwriters
Laboratories

LABORATORY REPORT

This report contains 8 pages.
(including the cover page)

If you have any questions concerning this report, please do not hesitate to call us at
(800) 332-4345 or (574) 233-4777.

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Underwriters Laboratories Inc.
110 S. LaSalle Street, Suite 2000, Chicago, IL 60601-2702 USA
T: 800 332-4345 / F: 574 233-0207 / W: ul.com



the standard in safety

Underwriters
Laboratories

Laboratory Report

Client: Pall Life Sciences
Attn: John Campbell
600 South Wagner Road
Ann Arbor, MI 48103

Report: 272076
Priority: Immediate Written
Status: Final
PWS ID: Not Supplied

Copies
to: Laurel Beyer

Sample Information

UL ID #	Client ID	Method	Collected Date / Time	Collected By:	Received Date / Time
2556858	HC/HR 11-23-11	317.0	11/23/11 08:10	Client	12/02/11 09:30
2556859	HC/HR 11-28-11	317.0	11/28/11 08:15	Client	12/02/11 09:30
2556860	HC/HR 11-29-11	317.0	11/29/11 08:40	Client	12/02/11 09:30
2556861	HC/HR 11-30-11	317.0	11/30/11 09:20	Client	12/02/11 09:30
2556862	HC/HR 12-1-11	317.0	12/01/11 09:00	Client	12/02/11 09:30

Report Summary

Note: Sample containers were provided by the client.

Detailed quantitative results are presented on the following pages. The results presented relate only to the samples provided for analysis.

We appreciate the opportunity to provide you with this analysis. If you have any questions concerning this report, please do not hesitate to call Traci Chlebowski at (574) 233-4777.

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Authorized Signature


Title

12/7/2011
Date

Client Name: Pall Life Sciences
Report #: 272076

Client Name: Pall Life Sciences

Report #: 272076

Sampling Point: HC/HR 11-23-11

PWS ID: Not Supplied

General Chemistry									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	UL ID #
15541-45-4	Bromate	317.0	10 *	1.0	< 1.0	ug/L	---	12/05/11 18:13	2556858

Sampling Point: HC/HR 11-28-11

PWS ID: Not Supplied

General Chemistry									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	UL ID #
15541-45-4	Bromate	317.0	10 *	1.0	< 1.0	ug/L	---	12/05/11 19:21	2556859

Sampling Point: HC/HR 11-29-11

PWS ID: Not Supplied

General Chemistry									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	UL ID #
15541-45-4	Bromate	317.0	10 *	1.0	< 1.0	ug/L	---	12/05/11 19:43	2556860

Sampling Point: HC/HR 11-30-11

PWS ID: Not Supplied

General Chemistry									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	UL ID #
15541-45-4	Bromate	317.0	10 *	1.0	< 1.0	ug/L	---	12/05/11 20:08	2556861

Sampling Point: HC/HR 12-1-11

PWS ID: Not Supplied

General Chemistry									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	UL ID #
15541-45-4	Bromate	317.0	10 *	1.0	< 1.0	ug/L	---	12/05/11 20:28	2556862

† UL has demonstrated it can achieve these report limits in reagent water, but can not document them in all sample matrices.

Reg Limit Type:	MCL	SMCL	AL
Symbol:	*	^	

Lab Definitions

Continuing Calibration Check Standard (CCC) / Continuing Calibration Verification (CCV) / Initial Calibration Verification Standard (ICV) / Initial Performance Check (IPC) - is a standard containing one or more of the target analytes that is prepared from the same standards used to calibrate the instrument. This standard is used to verify the calibration curve at the beginning of each analytical sequence, and may also be analyzed throughout and at the end of the sequence. The concentration of continuing standards may be varied, when prescribed by the reference method, so that the range of the calibration curve is verified on a regular basis.

Internal Standards (IS) - are pure compounds with properties similar to the analytes of interest, which are added to field samples or extracts, calibration standards, and quality control standards at a known concentration. They are used to measure the relative responses of the analytes of interest and surrogates in the sample, calibration standard or quality control standard.

Laboratory Duplicate (LD) - is a field sample aliquot taken from the same sample container in the laboratory and analyzed separately using identical procedures. Analysis of laboratory duplicates provides a measure of the precision of the laboratory procedures.

Laboratory Fortified Blank (LFB) / Laboratory Control Sample (LCS) - is an aliquot of reagent water to which known concentrations of the analytes of interest are added. The LFB is analyzed exactly the same as the field samples. LFBs are used to determine whether the method is in control.

Laboratory Method Blank (LMB) / Laboratory Reagent Blank (LRB) - is a sample of reagent water included in the sample batch analyzed in the same way as the associated field samples. The LMB is used to determine if method analytes or other background contamination have been introduced during the preparation or analytical procedure. The LMB is analyzed exactly the same as the field samples.

Laboratory Trip Blank (LTB) / Field Reagent Blank (FRB) - is a sample of laboratory reagent water placed in a sample container in the laboratory and treated as a field sample, including storage, preservation, and all analytical procedures. The FRB/LTB container follows the collection bottles to and from the collection site, but the FRB/LTB is not opened at any time during the trip. The FRB/LTB is primarily a travel blank used to verify that the samples were not contaminated during shipment.

Matrix Spike Duplicate Sample (MSD) / Laboratory Fortified Sample Matrix Duplicate (LFSMD) - is a sample aliquot taken from the same field sample source as the Matrix Spike Sample to which known quantities of the analytes of interest are added in the laboratory. The MSD is analyzed exactly the same as the field samples. Analysis of the MSD provides a measure of the precision of the laboratory procedures in a specific matrix.

Matrix Spike Sample (MS) / Laboratory Fortified Sample Matrix (LFSM) - is a sample aliquot taken from field sample source to which known quantities of the analytes of interest are added in the laboratory. The MS is analyzed exactly the same as the field samples. The purpose is to demonstrate recovery of the analytes from a sample matrix to determine if the specific matrix contributes bias to the analytical results.

Quality Control Standard (QCS) / Second Source Calibration Verification (SSCV) - is a solution containing known concentrations of the analytes of interest prepared from a source different from the source of the calibration standards. The solution is obtained from a second manufacturer or lot if the lot can be demonstrated by the manufacturer as prepared independently from other lots. The QCS sample is analyzed using the same procedures as field samples. The QCS is used as a check on the calibration standards used in the method on a routine basis.

Reporting Limit Check (RLC) / Initial Calibration Check Standard (ICCS) - is a procedural standard that is analyzed each day to evaluate instrument performance at or below the minimum reporting limit (MRL).

Surrogate Standard (SS) / Surrogate Analyte (SUR) - is a pure compound with properties similar to the analytes of interest, which is highly unlikely to be found in any field sample, that is added to the field samples, calibration standards, blanks and quality control standards before sample preparation. The SS is used to evaluate the efficiency of the sample preparation process.

UL Drinking Water Laboratory
Extended Result Record Sheet

Run Number: 163263
PC File Name: 120511a
Order Number: 216289

Instrument: IC BK
Analyst: S. Lovick
Receipt Batch: 272076

Method(s): 317.0
Submitted By: S. Lovick
Today's Date: 12/07/2011

Client: Pall Life Sciences / John Campbell

Generated By: P. Mahler

Sample ID: 2558145
Extracted: N/A
Type: Initial Calibration Blank
Analyzed: 12/01/2011 11:13

Dil Factor: 1.000

CAS Number	Parameter	MRL	Amount	Report	Units
15541-45-4	Bromate	1.0	0.0000	< 1.0 ug/L	

Sample ID: 2558151
Extracted: N/A
Type: Laboratory Reagent Blank
Analyzed: 12/05/2011 17:06

Dil Factor: 1.000

CAS Number	Parameter	MRL	Amount	Report	Units
15541-45-4	Bromate	1.0	0.0000	< 1.0 ug/L	

Sample ID: 2558152
Extracted: N/A
Type: Laboratory Fortified Blank
Analyzed: 12/05/2011 17:28

Dil Factor: 1.000

CAS Number	Parameter	Target	Amount	% Rec	Limits	P/F
15541-45-4	Bromate	5.0	4.2520	85	85-115	Pass

Sample ID: 2547396
Extracted: N/A
Type: Instrument Performance Check
Analyzed: 12/05/2011 17:51

Dil Factor: 1.000

CAS Number	Parameter	Target	Amount	% Rec	Limits	P/F
15541-45-4	Bromate	1.0	0.8400	84	75-125	Pass

Sample ID: 2556858
Extracted: N/A
Type: Field Sample
Analyzed: 12/05/2011 18:13

Site: HC/HR 11-23-11
Dil Factor: 1.000

CAS Number	Parameter	MRL	Amount	Report	Units
15541-45-4	Bromate	1.0	0.4910	< 1.0 ug/L	

Sample ID: 2557973
Extracted: N/A
Type: Matrix Spike of 2556858
Analyzed: 12/05/2011 18:36

Site: HC/HR 11-23-11
Dil Factor: 1.000

CAS Number	Parameter	Target	Amount	Parent Amt	%Rec	Limits	P/F
15541-45-4	Bromate	5.0	4.3820	< MRL	88	75-125	Pass

Sample ID: 2557974
Extracted: N/A
Type: Matrix Spike Duplicate of 2556858
Analyzed: 12/05/2011 18:58

Site: HC/HR 11-23-11
Dil Factor: 1.000

CAS Number	Parameter	Target	Amount	Parent Amt	%Rec	Limits	P/F
15541-45-4	Bromate	5.0	4.4950	< MRL	90	75-125	Pass

Sample ID: 2556859
Extracted: N/A
Type: Field Sample
Analyzed: 12/05/2011 19:21

Site: HC/HR 11-28-11
Dil Factor: 1.000

CAS Number	Parameter	MRL	Amount	Report	Units
15541-45-4	Bromate	1.0	0.0000	< 1.0 ug/L	

Sample ID: 2556860
Extracted: N/A
Type: Field Sample
Analyzed: 12/05/2011 19:43

Site: HC/HR 11-29-11
Dil Factor: 1.000

CAS Number	Parameter	MRL	Amount	Report	Units
15541-45-4	Bromate	1.0	0.0000	< 1.0 ug/L	

NOTE: The dilution factor is included
in the percent recovery calculation.

UL Drinking Water Laboratory
Extended Result Record Sheet

Run Number: 163263
PC File Name: 120511a
Order Number: 216289

Instrument: IC BK
Analyst: S. Lovick
Receipt Batch: 272076

Method(s): 317.0
Submitted By: S. Lovick
Today's Date: 12/07/2011

Client: Pall Life Sciences / John Campbell

Generated By: P. Mahler

Sample ID: 2556861
Extracted: N/A

Type: Field Sample
Analyzed: 12/05/2011 20:06

Site: HC/HR 11-30-11
Dil Factor: 1.000

CAS Number	Parameter	MRL	Amount	Report	Units
15541-45-4	Bromate	1.0	0.1220	< 1.0	ug/L

Sample ID: 2556862
Extracted: N/A

Type: Field Sample
Analyzed: 12/05/2011 20:28

Site: HC/HR 12-1-11
Dil Factor: 1.000

CAS Number	Parameter	MRL	Amount	Report	Units
15541-45-4	Bromate	1.0	0.0000	< 1.0	ug/L

Sample ID: 2558153
Extracted: N/A

Type: Continuing Calibration Check
Analyzed: 12/05/2011 21:36

Dil Factor: 1.000

CAS Number	Parameter	Target	Amount	% Rec	Limits	P/F
15541-45-4	Bromate	10.0	9.0560	91	85-115	Pass

PALL

Pall Corporation

Environmental Laboratory Services

600 South Wagner Rd. Ann Arbor, MI 48103-9019

Phone: (734)-913-6531 * Fax: (734)-913-6103

Chain of Custody Record

Page 1 of 2216289
272076

Please

Company Pall Corporation
 Name Susan Peters
 Street 600 South Wagner Road
 City Ann Arbor State MI Zip 48103-9019
 Phone 734-913-6531 Fax 734-913-6103
 Email sue_peters@pall.com

Requested Turnaround: Standard * 4 business days * 3 business days

48 hours * 24 hours * ASAP / Same day

Project Name / Number: November DataPrint Sampler Name: Robert Ursing / Christian DumaInvoice To: Laurel Beyer

Immediate Written

RUSH

Sample Identification or Location (This will appear on the final report)		Sample Date	Sample Time	Water Matrix				Number of Containers	Requested Testing	Preservation						Lab ID
				Drinking	Ground	Waste	Other			None	4 °C	HCl	HNO ₃	H ₂ SO ₄	Other	
1	Outfall 11-22-11	11/22/11	Composite				✓	1	317		✓					
2	Outfall 11-23-11	11/23/11	Composite				✓	1	317		✓					
3	Outfall 11-27-11	11/27/11	Composite				✓	1	317		✓					
4	Outfall 11-28-11	11/28/11	Composite				✓	1	317		✓					
5	Outfall 11-29-11	11/29/11	Composite				✓	1	317		✓					
6	Outfall 11-30-11	11/30/11	Composite				✓	1	317		✓					
7	HC/HR 11-23-11	11/23/11	08:10													2556858
8	HC/HR 11-28-11	11/28/11	08:15													854
9	HC/HR 11-29-11	11/29/11	08:40													860
10	HC/HR 11-30-11	11/30/11	09:20													861
Released by Sampler: <u>Rursing + C. Duma</u>		Date: <u>on date above</u>	Time: :	Received by: <u>Susan E Peters</u>				Date: <u>on date above</u>				Time: :				
Released by: <u>Susan E Peters</u>		Date: <u>12/1/11</u>	Time: <u>08:00</u>	Received by: <u>Keene Dymore</u>				Date: <u>12/1/11</u>				Time: <u>09:30</u>				

Within holding times Y N Containers are intact Y N Labels and COC agree Y N Correct volume and container Y N Ice remaining Y N Temperature on receipt 0.2c

PINK Copy - Sampler

WHITE copy and YELLOW copy - Forward to laboratory with samples.

PALL

Pall Corporation

Environmental Laboratory Services

600 South Wagner Rd. Ann Arbor, MI 48103-9019

Phone: (734)-913-6531 * Fax: (734)-913-6103

Chain of Custody Record

Page 2 of 2

Company Pall Corporation
 Name Susan Peters
 Street 600 South Wagner Road
 City Ann Arbor State MI Zip 48103-9019
 Phone 734-913-6531 Fax 734-913-6103
 Email sue-peters@pall.com

Requested Turnaround: Standard * 4 business days * 3 business days
 48 hours * 24 hours * ASAP / Same day

Project Name / Number: November dataPrint Sampler Name: Robert Ursing / Christian DumaInvoice To: Laurel Beyer**RUSH**

Sample Identification or Location (This will appear on the final report)		Sample Date	Sample Time	Water Matrix				Number of Containers	Requested Testing	Preservation						Lab ID
				Drinking	Ground	Waste	Other			None	4°C	HCl	HNO ₃	H ₂ SO ₄	Other	
1	HC/HR 12-1-11	12/01/11	09:00				✓	1	Bromate 517		✓					2556862
2		/ /	:													
3		/ /	:													
4		/ /	:													
5		/ /	:													
6		/ /	:													
7		/ /	:													
8		/ /	:													
9		/ /	:													
10		/ /	:													

Released by Sampler: R. Ursing + C. Duma Date: 12/01/11 Time: : Received by: Susan Peters Date: 12/01/11 Time: 08:00

Released by: R. Susan Peters Date: 12/01/11 Time: 12:00 Received by: Laurel Beyer Date: 12/11 Time: 09:30

Within holding times Y N Containers are intact Y N Labels and COC agree Y N Correct volume and container Y N Ice remaining Y N Temperature on receipt 0.2°C

PINK Copy - Sampler

WHITE copy and YELLOW copy - Forward to laboratory with samples.