



Pall Corporation

# Sample Analysis Report

600 Wagner Road  
Ann Arbor, MI 48103-9019 US  
Phone: 734.665.0651  
Web: www.pall.com

June, 2014

Analyst Initials: BEOP  
Date: 07-09-14

Sample Name - Date/Time Sampled	1,4-Dioxane Results (ppb)	R.L. (ppb)	Bromate Results (ppb)	R.L. (ppb)	Bromide Results (ppb)	R.L. (ppb)	Comments	Qualifier(s)
<b>Extraction Wells</b>								
<b>C3</b>								
TW-20-06-02-14-11:23-1	860	10.0						D
TW-6-06-12-14-09:52-1	68	1.0						
<b>D2</b>								
LB-4-06-02-14-10:51-1	480	10.0						D
TW-21-06-02-14-11:12-1	110	5.0						D
TW-5-06-02-14-11:04-1	720	25.0						D
TW-9-06-02-14-11:19-1	700	10.0						D
<b>E</b>								
TW-11-06-02-14-11:03-1	200	5.0						D
TW-18-06-02-14-07:50-1	260	10.0						D
TW-19-06-02-14-10:52-1	630	10.0						D
<b>Marshy</b>								
PW-1-06-02-14-07:52-1	550	25.0						D
<b>SW</b>								
TW-22-06-02-14-11:47-1	540	10.0						D
TW-8-06-02-14-11:46-1	640	10.0						D
<b>Monitoring Wells</b>								
<b>D0</b>								

Sample Name - Date/Time Sampled	1,4-Dioxane Results (ppb)	R.L. (ppb)	Bromate Results (ppb)	R.L. (ppb)	Bromide Results (ppb)	R.L. (ppb)	Comments	Qualifier(s)
A2 Cleaning Supply-06-05-14-08:31-1	55	1.0						
MW-61d-06-05-14-09:38-1	2	1.0						
MW-61s-06-05-14-09:58-1	14	1.0						
<b>D2</b>								
175 Jackson Plaza-06-06-14-12:01-1	950	50.0						D
3161 Dexter Rd-06-05-14-11:20-1	nd	1.0						
373 Pinewood Shallow-06-11-14-10:42-1	360	5.0						D
465 Dupont-06-10-14-13:24-1	1300	25.0						D
593 Allison-06-11-14-11:48-1	240	5.0						D
MW-118-06-11-14-14:21-1	62	1.0						
MW-124s-06-04-14-12:09-1	nd	1.0						
MW-55-06-05-14-11:58-1	26	1.0						
MW-77-06-10-14-14:16-1	1600	25.0						D
MW-92-06-11-14-13:31-1	25	1.0						
MW-94s-06-05-14-14:15-1	180	5.0						D
<b>E</b>								
IW-2-06-10-14-09:49-1	1600	10.0						D
IW-2-06-19-14-14:19-1	1500	50.0						D
MW-100-06-06-14-14:22-1	2000	50.0						D
MW-103s-06-16-14-11:35-1	58	1.0						
MW-108d-06-12-14-14:32-1	1800	50.0						D
MW-108s-06-12-14-13:46-1	570	10.0						D
MW-112i-06-16-14-10:59-1	8	1.0						
MW-112s-06-16-14-11:17-1	nd	1.0						
MW-124d-06-04-14-11:46-1	nd	1.0						
MW-71-06-12-14-11:54-1	1900	50.0						D
MW-76i-06-13-14-13:51-1	91	1.0						

Sample Name - Date/Time Sampled	1,4-Dioxane Results (ppb)	R.L. (ppb)	Bromate Results (ppb)	R.L. (ppb)	Bromide Results (ppb)	R.L. (ppb)	Comments	Qualifier(s)
MW-76s-06-13-14-14:09-1	300	10.0						D
MW-84s-06-13-14-09:49-1	220	10.0						D
MW-94d-06-05-14-13:56-1	2	1.0						
MW-95-06-12-14-10:47-1	31	1.0						
MW-96-06-10-14-11:43-1	140	5.0						D

## Surface Water

### Not Applicable

HC/HR-06-02-14-08:10-1			nd	2.0				
HC/HR-06-03-14-07:20-1			nd	2.0				
HC/HR-06-04-14-07:50-1			nd	2.0				
HC/HR-06-05-14-07:43-1			nd	2.0				
HC/HR-06-06-14-07:35-1			nd	2.0				
HC/HR-06-09-14-07:15-1			nd	2.0				
HC/HR-06-10-14-06:50-1			nd	2.0				
HC/HR-06-11-14-07:35-1			nd	2.0				
HC/HR-06-12-14-07:40-1			nd	2.0				
HC/HR-06-13-14-07:41-1			nd	2.0				
HC/HR-06-16-14-08:03-1			nd	2.0				
HC/HR-06-17-14-07:38-1			nd	2.0				
HC/HR-06-18-14-07:42-1			nd	2.0				
HC/HR-06-19-14-07:26-1			nd	2.0				
HC/HR-06-20-14-07:15-1			nd	2.0				
HC/HR-06-23-14-07:43-1			nd	2.0				
HC/HR-06-24-14-08:07-1			nd	2.0				
HC/HR-06-25-14-07:53-1			nd	2.0				
HC/HR-06-26-14-07:57-1			nd	2.0				
HC/HR-06-27-14-08:02-1			nd	2.0				

Sample Name - Date/Time Sampled	1,4-Dioxane Results (ppb)	R.L. (ppb)	Bromate Results (ppb)	R.L. (ppb)	Bromide Results (ppb)	R.L. (ppb)	Comments	Qualifier(s)
HC/HR-06-30-14-08:00-1			nd	2.0				
<b>Treatment System</b>								
OUTFALL-06-01-14-1	6	1.0						
OUTFALL-06-01-14-2			nd	5.0				
OUTFALL-06-02-14-1	5	1.0						
OUTFALL-06-02-14-2			5	5.0				
OUTFALL-06-03-14-2			5	5.0				
OUTFALL-06-03-14-1	5	1.0						
OUTFALL-06-04-14-2			5	5.0				
OUTFALL-06-04-14-1	5	1.0						
OUTFALL-06-05-14-2			nd	5.0				
OUTFALL-06-05-14-1	5	1.0						
OUTFALL-06-08-14-1	5	1.0						
OUTFALL-06-08-14-2			nd	5.0				
OUTFALL-06-09-14-1	5	1.0						
OUTFALL-06-09-14-2			nd	5.0				
OUTFALL-06-10-14-1	5	1.0						
OUTFALL-06-10-14-2			5	5.0				
OUTFALL-06-11-14-1	5	1.0						
OUTFALL-06-11-14-2			6	5.0				
OUTFALL-06-12-14-1	5	1.0						
OUTFALL-06-12-14-2			5	5.0				
OUTFALL-06-15-14-2			6	5.0				
OUTFALL-06-15-14-1	5	1.0						
OUTFALL-06-16-14-1	6	1.0						
OUTFALL-06-16-14-2			nd	5.0				
OUTFALL-06-17-14-02			5	5.0				

Sample Name - Date/Time Sampled	1,4-Dioxane Results (ppb)	R.L. (ppb)	Bromate Results (ppb)	R.L. (ppb)	Bromide Results (ppb)	R.L. (ppb)	Comments	Qualifier(s)
OUTFALL-06-17-14-01	6	1.0						
OUTFALL-06-18-14-2			5	5.0				
OUTFALL-06-18-14-1	5	1.0						
OUTFALL-06-19-14-1	5	1.0						
OUTFALL-06-19-14-2			6	5.0				
OUTFALL-06-22-14-1	5	1.0						
OUTFALL-06-22-14-2			7	5.0				
OUTFALL-06-23-14-1	4	2.0						D
OUTFALL-06-23-14-2			6	5.0				
OUTFALL-06-24-14-1	4	1.0						
OUTFALL-06-24-14-2			6	5.0				
OUTFALL-06-25-14-1	4	1.0						
OUTFALL-06-25-14-2			6	5.0				
OUTFALL-06-26-14-1	4	1.0						
OUTFALL-06-26-14-2			7	5.0				
OUTFALL-06-29-14-1	5	1.0						
OUTFALL-06-29-14-2			nd	5.0				
OUTFALL-06-30-14-1	6	1.0						
OUTFALL-06-30-14-2			nd	5.0				
Red Pond-06-02-14-07:45-1	440	10.0						D
Red Pond-06-09-14-07:30-1	430	10.0						D
Red Pond-06-16-14-08:16-1	450	10.0						D
Red Pond-06-23-14-08:55-1	390	50.0						D
Red Pond-06-30-14-07:05-1	430	10.0						D

**Qualifier Code:** \_\_\_\_\_ **Qualifier Description** \_\_\_\_\_

**D**  
**DOLPH**

Analyte value quantified from a dilution, reporting limit is raised to reflect dilution  
DOLPH was not sampled as well was under maintenance/rehabilitation.

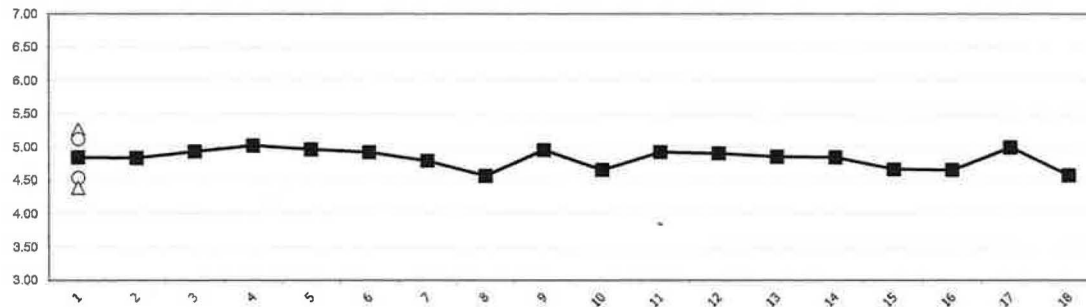
Control Chart for 06/2014 CVS

Analyst: SEOP 07-09-14

GC/MS Data: #2  
 Report Date: 7/9/2014  
 Chemist: Susan E.O. Peters  
 Dept: Environmental  
 Analyte: 1,4-dioxane  
 Start date: 6/1/2014  
 End date: 6/30/2014  
 Desired level: 100%

Date	CVS Values				Mean (Daily Average)	Sample Mean (All Individual Data)	Daily Standard Deviation	Daily Average Sample Standard Deviation	Lower Control Limit	Upper Control Limit	Lower Warning Limit	Upper Warning Limit
	CVS 1	CVS 2	CVS 3	CVS 4								
6/2/2014	4.85				4.85	4.83	na	0.15	4.40	5.27	4.54	5.13
6/3/2014	4.74	4.94			4.84	4.83	0.14					
6/4/2014	4.94				4.94	4.83	na					
6/5/2014	5.03				5.03	4.83	na					
6/6/2014	4.97				4.97	4.83	na					
6/9/2014	4.93				4.93	4.83	na					
6/10/2014	4.80				4.80	4.83	na					
6/11/2014	4.57				4.57	4.83	na					
6/12/2014	4.96				4.96	4.83	na					
6/13/2014	4.66				4.66	4.83	na					
6/17/2014	4.93				4.93	4.83	na					
6/20/2014	4.91				4.91	4.83	na					
6/23/2014	4.86				4.86	4.83	na					
6/24/2014	4.85				4.85	4.83	na					
6/25/2014	4.67				4.67	4.83	na					
6/26/2014	4.66				4.66	4.83	na					
6/27/2014	5.00				5.00	4.83	na					
6/30/2014	4.58				4.58	4.83	na					

06/2014 CVS with Control Limits

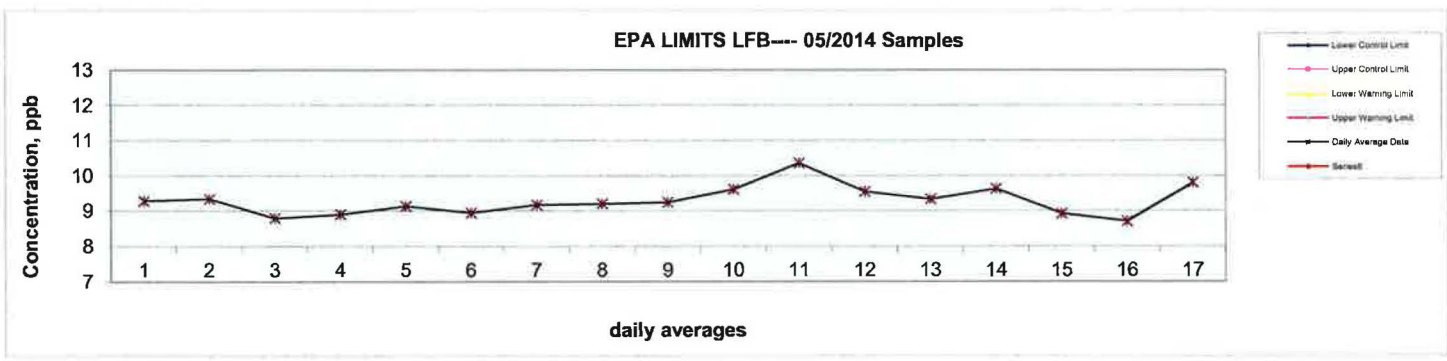


# Control Chart for 06/2014 LFB

Analyst: SEOP 07-09-14

GC/MS Data: #1  
 Report Date: 7/9/2014  
 Chemist: Susan E.O. Peters  
 Dept: Environmental  
 Analyte: 1,4-dioxane  
 Start date: 6/1/2014  
 End date: 6/30/2014  
 Desired level: 100%

Date	LFB Values						Mean (Daily Average)	Sample Mean (All Individual Data)	Daily Standard Deviation	Daily Average Sample Standard Deviation	Lower Control Limit	Upper Control Limit	Lower Warning Limit	Upper Warning Limit
	LFB 1	LFB 2	LFB 3	LFB 4	LFB 5	LFB 6								
6/2/2014	9.05	9.36	9.45				9.29	9.26	0.21	0.42	8.01	10.51	8.43	10.09
6/3/2014	9.30	9.35	9.23	9.31	9.51		9.34	9.26	0.10					
6/4/2014	9.06	8.82	8.50				8.79	9.26	0.28					
6/5/2014	8.56	9.26	8.88				8.90	9.26	0.35					
6/6/2014	9.24	8.96	9.20				9.13	9.26	0.15					
6/9/2014	8.29	9.21	9.32				8.94	9.26	0.57					
6/10/2014	8.97	9.33	9.20				9.17	9.26	0.18					
6/11/2014	9.31	9.01	9.28				9.20	9.26	0.17					
6/12/2014	8.91	9.16	9.67				9.25	9.26	0.39					
6/13/2014	9.46	9.21	10.19				9.62	9.26	0.51					
6/17/2014	10.02	10.71					10.37	9.26	0.49					
6/20/2014	9.39	9.64	9.63				9.55	9.26	0.14					
6/23/2014	9.17	9.50					9.34	9.26	0.23					
6/24/2014	9.38	9.63	9.90				9.64	9.26	0.26					
6/26/2014	8.74	8.79	9.24				8.92	9.26	0.28					
6/27/2014	8.57	8.86	8.68				8.70	9.26	0.15					
6/30/2014	9.75	9.87					9.81	9.26	0.08					



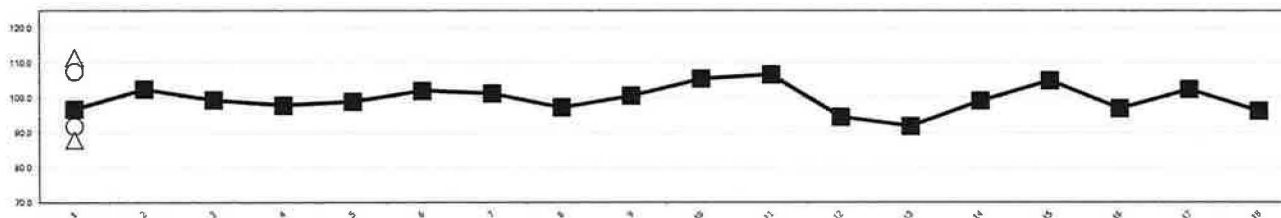
# Control Chart for 06/2014 MS/MSD %Recoveries

Analyst: BEOP 07-09-14

GC/MS Data: Instrument #1  
 Report Date: 7/9/2014  
 Chemist: Susan E.O. Peters  
 Dept: Environmental  
 Analyte: 1,4-dioxane  
 Start date: 6/1/2014  
 End date: 6/30/2014  
 Desired level: 100%

Date	Matrix Spike % Recovery Values							Mean (Daily Average)	Sample Mean (All Individual Data)	Daily Standard Deviation	Daily Average Sample Standard Deviation	Lower Control Limit	Upper Control Limit	Lower Warning Limit	Upper Warning Limit	Mean RPD (Individual Data)
	MS 1	MSD 1	MS 2	MSD 2	Replicate Ave.	Std. Dev.	# data pts									
6/2/2014	97	97			5.93	0.11	2	96.75	99.7	4.3	3.9	88.0	111.5	91.9	107.6	99.7
6/3/2014	102	103			5.48	0.03	2	102.50								
6/4/2014	100	99			5.67	0.38	2	99.35								
6/5/2014	98	98			4.99	0.14	2	97.85								
6/6/2014	97	101			4.89	0.27	2	98.90								
6/9/2014	101	103			5.13	0.21	2	102.10								
6/10/2014	101	102			5.29	0.15	2	101.30								
6/11/2014	96	99			5.17	0.27	2	97.25								
6/12/2014	101	100			4.94	0.04	2	100.60								
6/13/2014	105	106			4.83	0.13	2	105.50								
6/17/2014	105	109			5.95	0.11	2	106.70								
6/20/2014	93	96			5.98	0.07	2	94.55								
6/23/2014	96	88			4.68	0.18	2	91.90								
6/24/2014	102	96			4.51	0.28	2	99.20								
6/24/2014	102	108			na	na	na	105.00								
6/26/2014	95	99			4.27	0.28	2	97.00								
6/27/2014	100	105			4.38	0.25	2	102.50								
6/30/2014	99	94			na	na	na	96.25								

06/2014 MS/MSD with Control Limits





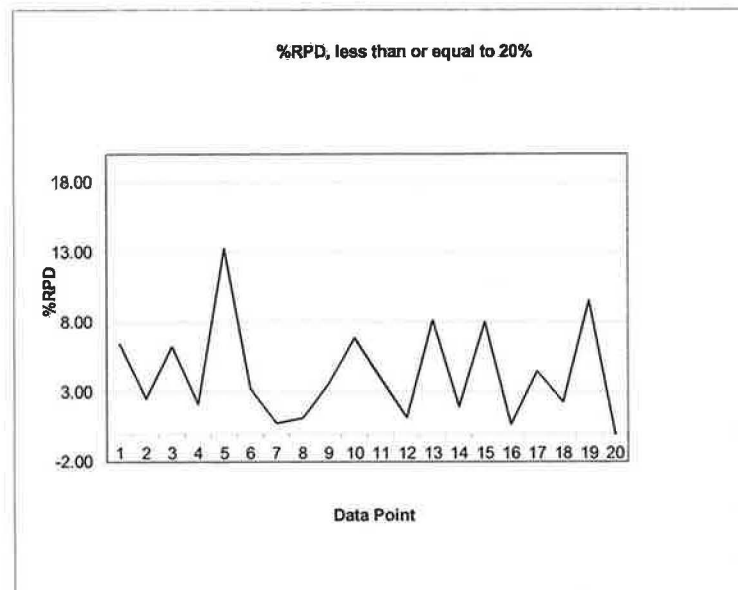
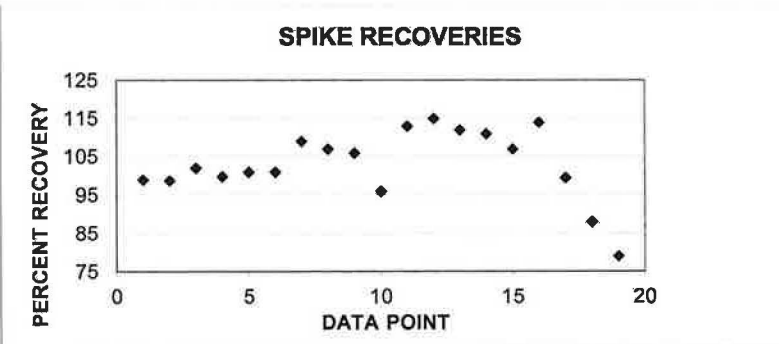
# Control Chart for 06/2014 MS/MSD & Repeat %Recoveries

Analyst: SEOP 07-09-14

**IC:** Metrohm  
**Report Date:** 7/9/2014  
**Chemist:** Susan E.O. Peters  
**Dept:** Environmental  
**Analyte:** Bromate  
**Start date:** 6/1/2014  
**End date:** 6/30/2014  
**Desired level:** 100%

Analysis Date	MS Recoveries and Replicate Recoveries							
	Spike 1 ----- % Rec	Spike 2 ----- % Rec	Ave. Spike Recovery (75-125%)	%RPD Spike Recovery (0-20%)	Std. Dev. Spikes	Ave. Sample Replicates	Std. Dev. Sample Replicates	n=
6/2/2014	103	96	99	6.48	5.02	1.00	0.02	2
6/3/2014	100	97	99	2.55	1.84	1.04	0.12	2
6/4/2014	106	99	102	6.30	5.02	1.06	0.01	2
6/5/2014	101	99	100	2.16	1.70	1.07	0.02	2
6/6/2014	94	108	101	13.30	10.20	0.75	0.06	3
6/11/2014	100	103	101	3.27	2.40	1.06	0.04	2
6/11/2014	109	110	109	0.77	0.71	1.02	0.15	2
6/11/2014	104	103	107	1.14	0.70	1.01	0.05	2
6/12/2014	104	108	106	3.60	1.41			2
6/13/2014	100	92	96	6.89	5.02	1.09	0.09	2
6/16/2014	111	116	113	3.98	3.54	1.29	0.39	2
6/17/2014	116	115	115	1.18	0.92	1.00	0.09	2
6/18/2014	107	117	112	8.18	7.07	1.05	0.08	3
6/19/2014	110	112	111	1.96	1.41	1.04	0.02	2
6/20/2014	112	103	107	8.04	6.72	1.12	0.02	2
6/23/2014	115	114	114	0.69	0.74	1.40	0.20	2
6/26/2014	102	97	100	4.49	4.17	3.17	0.29	2
6/26/2014	90	87	88	2.30	2.12	3.05	0.43	2
6/27/2014*	75	84	79	9.57	6.36	1.22	0.65	2

\*System recalibrated after this run and samples rerun

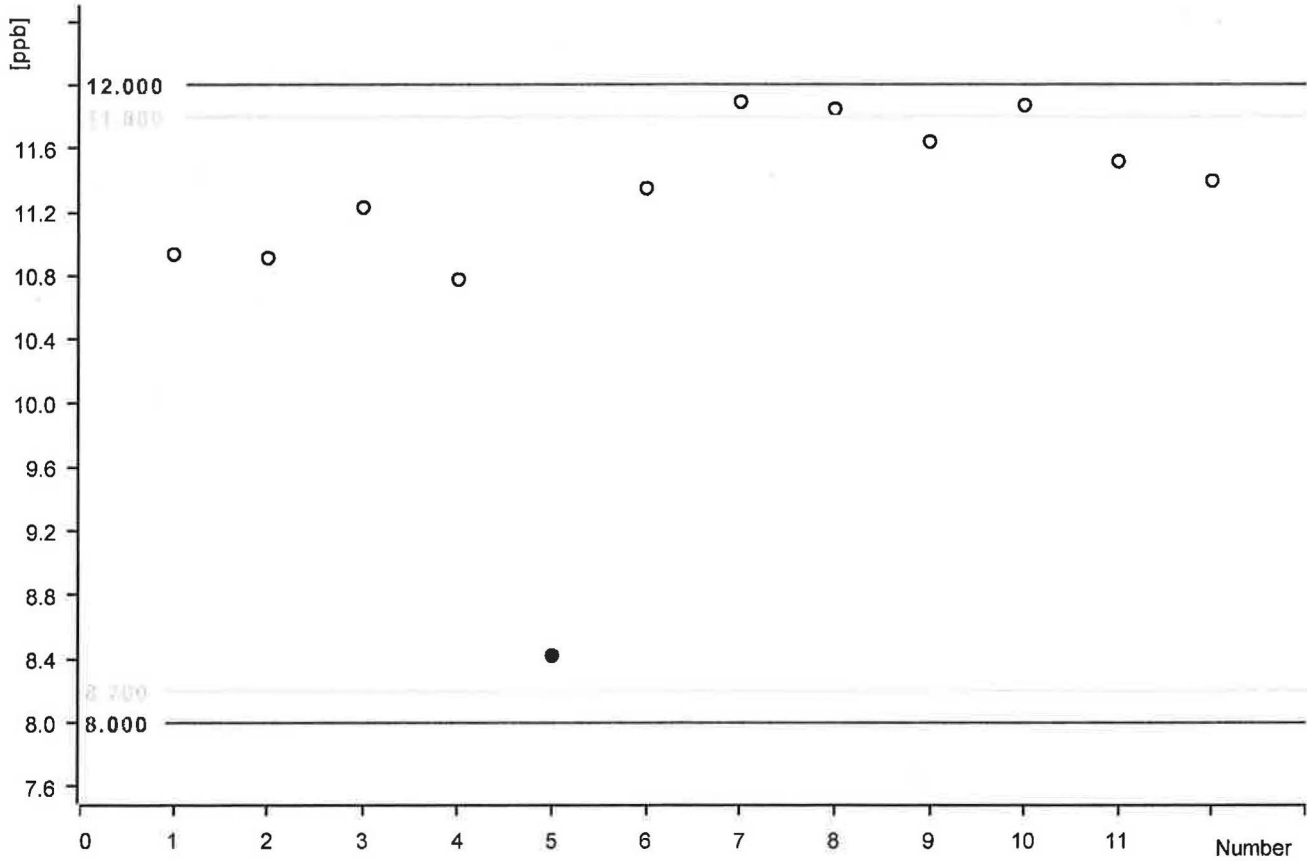


**Control chart**

SEOP 07-09-14

**Comment**

**10PPB BROMATE qcs**



**Statistics**

Mean value:	11.147 ppb	Absolute standard deviation:	0.940 ppb
Minimum:	8.420 ppb	Relative standard deviation:	8.435 %
Maximum:	11.889 ppb	Number of determinations:	12

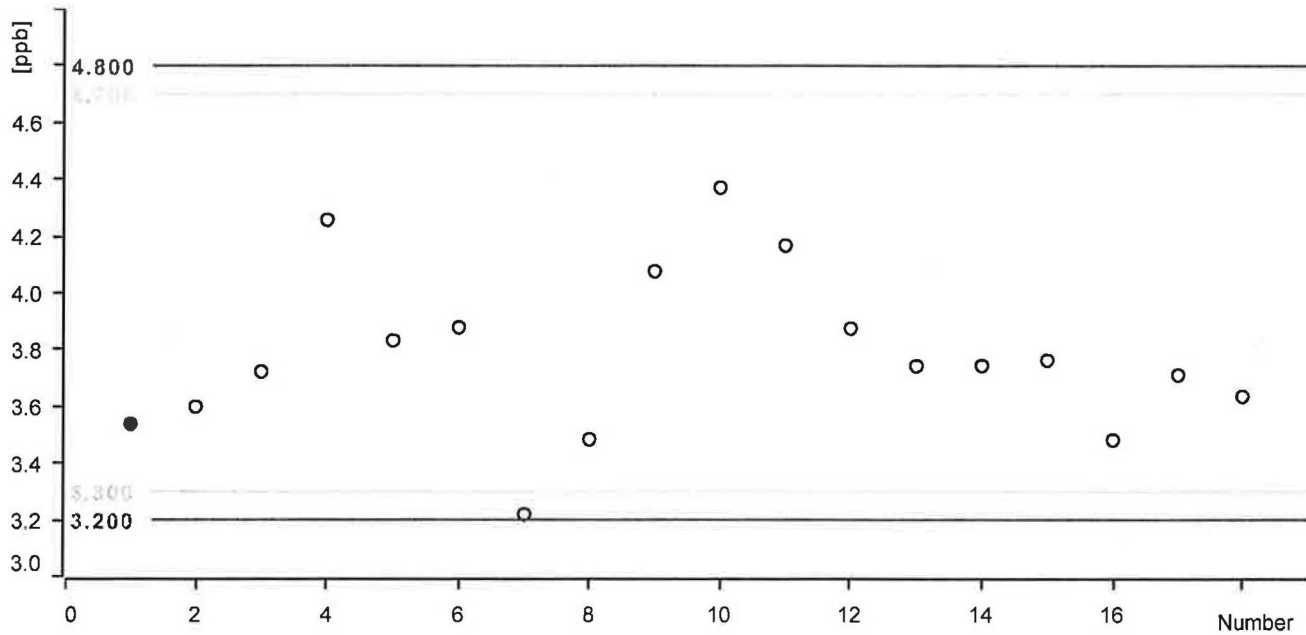
Date	Number	Ident	Sample type	Method	10PPB BROMATE qcs	Statistics
2014-06-03 17:53:41 UTC-4	1	QCS	Sample	05132014 300.1	10.933 ppb	on
2014-06-04 17:05:15 UTC-4	2	QCS	Sample	05132014 300.1	10.910 ppb	on
2014-06-05 16:51:02 UTC-4	3	QCS	Sample	05132014 300.1	11.226 ppb	on
2014-06-06 17:55:13 UTC-4	4	QCS	Sample	05132014 300.1	10.774 ppb	on
2014-06-12 11:55:45 UTC-4	5	QCS	Sample	06122014 300.1	8.420 ppb	on
2014-06-12 19:29:55 UTC-4	6	QCS	Sample	06122014 300.1	11.347 ppb	on
2014-06-16 17:58:12 UTC-4	7	QCS	Sample	06122014 300.1	11.808 ppb	on
2014-06-17 17:34:28 UTC-4	8	QCS	Sample	06122014 300.1	11.846 ppb	on
2014-06-18 18:45:39 UTC-4	9	QCS	Sample	06122014 300.1	11.639 ppb	on
2014-06-19 17:41:54 UTC-4	10	QCS	Sample	06122014 300.1	11.870 ppb	on
2014-06-20 16:29:24 UTC-4	11	QCS	Sample	06122014 300.1	11.517 ppb	on
2014-06-23 16:42:57 UTC-4	12	QCS	Sample	06122014 300.1	11.395 ppb	on

# Control chart

SEOP 07-09-14

## Comment

### Bromate 4 PPB concentration



## Statistics

Mean value:	3.783 ppb	Absolute standard deviation:	0.292 ppb
Minimum:	3.219 ppb	Relative standard deviation:	7.715 %
Maximum:	4.370 ppb	Number of determinations:	18

Date	Number	Ident	Sample type	Method	Bromate 4 PPB concentration	Statistics
2014-06-02 17:04:22 UTC-4	1	ECCS/CCCS	Sample	05132014 300,1	3.538 ppb	on
2014-06-03 16:36:13 UTC-4	2	ECCS/CCCS	Sample	05132014 300,1	3.599 ppb	on
2014-06-04 15:47:48 UTC-4	3	ECCS/CCCS	Sample	05132014 300,1	3.722 ppb	on
2014-06-05 15:33:36 UTC-4	4	ECCS/CCCS	Sample	05132014 300,1	4.257 ppb	on
2014-06-06 15:59:04 UTC-4	5	ECCS/CCCS	Sample	05132014 300,1	3.832 ppb	on
2014-06-06 16:37:47 UTC-4	6	ECCS/CCCS	Sample	05132014 300,1	3.876 ppb	on
2014-06-12 02:14:27 UTC-4	7	ECCS/CCCS	Sample	05132014 300,1	3.259 ppb	on
2014-06-13 03:14:38 UTC-4	8	ECCS/CCCS	Sample	06122014 300,1	3.484 ppb	on
2014-06-13 16:34:19 UTC-4	9	ECCS/CCCS	Sample	06122014 300,1	4.076 ppb	on
2014-06-16 16:40:45 UTC-4	10	ECCS/CCCS	Sample	06122014 300,1	4.370 ppb	on
2014-06-17 16:16:59 UTC-4	11	ECCS/CCCS	Sample	06122014 300,1	4.167 ppb	on
2014-06-19 15:45:42 UTC-4	12	ECCS/CCCS	Sample	06122014 300,1	3.876 ppb	on
2014-06-19 16:24:26 UTC-4	13	ECCS/CCCS	Sample	06122014 300,1	3.742 ppb	on
2014-06-20 14:33:12 UTC-4	14	ECCS/CCCS	Sample	06122014 300,1	3.744 ppb	on
2014-06-20 15:11:58 UTC-4	15	ECCS/CCCS	Sample	06122014 300,1	3.763 ppb	on
2014-06-23 16:04:13 UTC-4	16	ECCS/CCCS	Sample	06122014 300,1	3.482 ppb	on
2014-06-26 21:20:41 UTC-4	17	ECCS/CCCS	Sample	06122014 300,1	3.711 ppb	on
2014-06-27 22:09:34 UTC-4	18	ECCS/CCCS	Sample	06122014 300,1	3.636 ppb	on

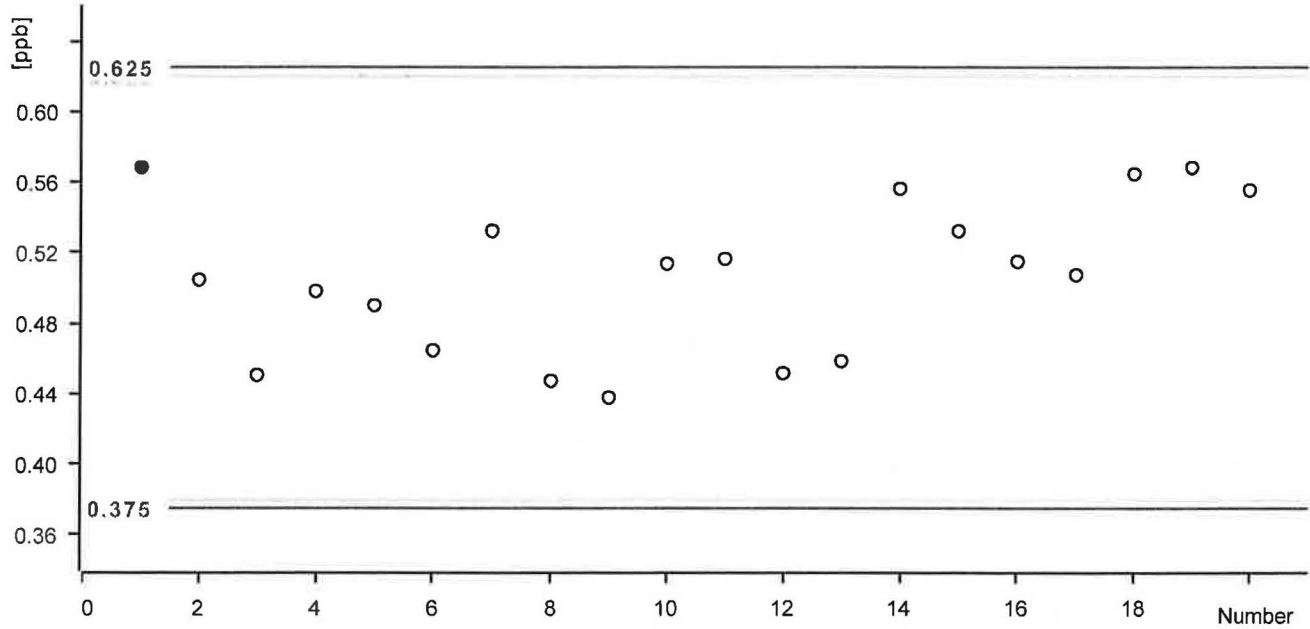
**ECCS/CCCS Bromate, 4.0ppb**

**Control chart**

SEOP 07-09-14

**Comment**

**0.5PPB STD**



**Statistics**

Mean value:	0.507 ppb	Absolute standard deviation:	0.044 ppb
Minimum:	0.438 ppb	Relative standard deviation:	8.628 %
Maximum:	0.568 ppb	Number of determinations:	20

Date	Number	Ident	Sample type	Method	0.5PPB STD	Statistics
2014-06-02 11:15:54 UTC-4	1	ICCS/LFB	Sample	05132014 300.1	0.568 ppb	on
2014-06-02 11:54:37 UTC-4	2	ICCS/LFB	Sample	05132014 300.1	0.505 ppb	on
2014-06-03 09:30:10 UTC-4	3	ICCS/LFB	Sample	05132014 300.1	0.451 ppb	on
2014-06-03 10:08:53 UTC-4	4	ICCS/LFB	Sample	05132014 300.1	0.498 ppb	on
2014-06-04 08:41:29 UTC-4	5	ICCS/LFB	Sample	05132014 300.1	0.490 ppb	on
2014-06-05 09:02:05 UTC-4	6	ICCS/LFB	Sample	05132014 300.1	0.465 ppb	on
2014-06-06 09:00:53 UTC-4	7	ICCS/LFB	Sample	05132014 300.1	0.532 ppb	on
2014-06-09 09:19:07 UTC-4	8	ICCS/LFB	Sample	05132014 300.1	0.447 ppb	on
2014-06-11 13:15:54 UTC-4	9	ICCS/LFB	Sample	05132014 300.1	0.438 ppb	on
2014-06-12 21:26:06 UTC-4	10	ICCS/LFB	Sample	06122014 300.1	0.514 ppb	on
2014-06-13 10:45:50 UTC-4	11	ICCS/LFB	Sample	06122014 300.1	0.516 ppb	on
2014-06-16 09:46:27 UTC-4	12	ICCS/LFB	Sample	06122014 300.1	0.452 ppb	on
2014-06-17 09:39:58 UTC-4	13	ICCS/LFB	Sample	06122014 300.1	0.458 ppb	on
2014-06-18 10:33:06 UTC-4	14	ICCS/LFB	Sample	06122014 300.1	0.558 ppb	on
2014-06-19 08:39:43 UTC-4	15	ICCS/LFB	Sample	06122014 300.1	0.532 ppb	on
2014-06-19 09:18:27 UTC-4	16	ICCS/LFB	Sample	06122014 300.1	0.515 ppb	on
2014-06-20 08:44:40 UTC-4	17	ICCS/LFB	Sample	06122014 300.1	0.508 ppb	on
2014-06-23 08:58:12 UTC-4	18	ICCS/LFB	Sample	06122014 300.1	0.565 ppb	on
2014-06-26 07:46:52 UTC-4	19	ICCS/LFB	Sample	06122014 300.1	0.568 ppb	on
2014-06-27 09:29:32 UTC-4	20	ICCS/LFB	Sample	06122014 300.1	0.556 ppb	on