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Revision 0

Calculation of Groundwater Sample Limits of Detection and Limits of Quantitation for Total Organic Carbon and Total Organic Halides for Calendar Year 2013

Prepared for the U.S. Department of Energy
Assistant Secretary for Environmental Management

Contractor for the U.S. Department of Energy
under Contract DE-AC06-08RL14788

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Approved for Public Release;
Further Dissemination Unlimited

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Environmental Calculation Cover Page

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Terms

ACS	American Chemical Society
CERCLA	*Comprehensive Environmental Response, Compensation, and Liability Act of 1980*
CFR	Code of Federal Regulations
CM	Critical mean
CY	Calendar year
EPA	U.S. Environmental Protection Agency
HISI	Hanford Information System Inventory
IUPAC	International Union of Pure and Applied Chemistry
LOD	Limit of detection
LOQ	Limit of quantitation
MDL	Method detection limit
ML	Minimum level
RCRA	*Resource Conservation and Recovery Act of 1976*
TASL	Test America, St. Louis
TOC	Total organic carbon
TOX	Total organic halides
WAC	Washington Administrative Code
WSCF	Waste Sampling & Characterization Facility

1 Purpose

This document describes the calculation of Calendar Year (CY) 2013 limits of detection (LOD) and limits of quantitation (LOQ) for total organic carbon (TOC) and total organic halides (TOX) to support detection groundwater monitoring at the Hanford Site under the *Resource Conservation and Recovery Act of 1976* (RCRA).

2 Background

From the 1940s until the 1980s, the Hanford Site produced plutonium for national defense. During that time operations used many chemical constituents which potentially can migrate to groundwater from disposal sites. In the 1990s, the mission at Hanford changed to environmental cleanup, including remediation of known groundwater contamination under the *Comprehensive Environmental Response, Compensation, and Liability Act of 1980* (CERCLA) and groundwater monitoring under RCRA.

Under 40 CFR 265.92(b)(3) as referenced by WAC 173-303-400(3)(a), interim-status groundwater monitoring requires measurement of pH, specific conductance, TOC, and TOX as indicators of groundwater impact from a facility. Monitoring for these parameters is also required by the Hanford permit for detection monitoring at certain final-status sites. Downgradient measurements of these indicator parameters are compared with upgradient measurements to determine potential facility impact to groundwater. 40 CFR 265.93(b) requires this comparison to be done with a *t*-test at a 0.01 level of significance. The threshold value of the downgradient well sample results that would statistically exceed the mean of the background data at the 0.01 level of significance is calculated from the upgradient measurements and is referred to as the critical mean (CM). The calculation of the CM is beyond the scope of this document, but it is a function of the mean and variance of the upgradient measurements. Because the means of upgradient measurements of TOC and TOX can be near zero and the variances can be small, the calculated CM can be below the LOQ, the level sufficiently quantifiable by the analytical laboratory. Because the test criterion for detection monitoring must be quantifiable, the test criterion is the greater of the critical mean and the LOQ. Thus, the LOQ precludes basing regulatory decisions on measurements which are insufficiently precise (WHC-SA-1124-FP, *Statistical Approach on RCRA Groundwater Monitoring Projects at the Hanford Site*; PNNL-13080, *Hanford Site Groundwater Monitoring: Setting, Sources and Methods*).

Several methods exist for determining minimum quantifiable concentration levels. The EPA defines the LOQ as “the lowest level at which the entire analytical system must give a recognizable signal and acceptable calibration point for the analyte,” (*Revised Assessment of Detection and Quantitation Approaches*, EPA 821-B-04-005, p. 2-5). In 1994, the EPA defined the LOQ as 10 times the standard deviation used to calculate the detection limit (EPA 821-B-04-005, p. 2-5). The EPA defines the method detection limit (MDL) as "The standard deviation among...replicate measurements...multiplied by the *t*-distribution for n-1 degrees of freedom (in the case of 7 replicates, the multiplier is 3.143, which is the value for 6 degrees of freedom [and a significance level of 0.02])" (EPA 821-B-04-005, p. 2-3). This is similar to the definition advanced by the American Chemical Society's (ACS) Committee on Environmental Improvement in the early 1980s. "The ACS LOD is defined as the lowest concentration level than can be determined to be statistically different from a blank. The recommended value for the LOD is three times the standard deviation of replicate measurements of a blank or low-level sample" (EPA 821-B-04-005, p. 2-10). This ACS definition of the LOD corresponds to the EPA’s definition of the minimum level (ML) (EPA 821-B-04-005, p. 2-5). The ACS also defined the LOQ as 10 times the standard deviation of blank or low-level sample results. The ACS definitions of the LOD and LOQ are the definitions used by the Soil & Groundwater Remediation Project.

Defining the LOQ as a concentration of 10 times the standard deviation of blank results seems high, but it can be shown statistically that this results in a 95% confidence level that the measured value would be within ±25% of the true value for an analytical result at the LOQ if the LOQ were determined from seven analytical blank results[1]. An accuracy of ±25% is generally deemed acceptable and is typical of quality control limits for spike recoveries at analytical laboratories.

3 Methodology

CY 2013 LODs and LOQs for TOC and TOX were calculated using results from blank samples. The calculations used four moving quarters of analytical results (e.g., the calculations for the 4th quarter of 2013 used the blanks results for all of 2013). The calculations were performed separately for each analytical laboratory from which blanks data were available, as follows:

1. Every quarter, TOC/TOX blanks data were obtained from the analytical laboratories.
2. Replicates were averaged and the data were reviewed for consistency.
3. Normality of the data was assessed using the Shapiro-Wilk test as described in Section 3.1 (*Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities Unified Guidance*, EPA 530/R-09-007, Section 10.5.1). This was done for information only (see Section 4, Assumptions and Inputs).
4. Potential outliers were identified by visual inspection of the measurements. Only those values substantially off-trend were considered to be potential outliers, and these were evaluated using Dixon's test as described in Section 3.2 (EPA 530/R-09-007, Section 12.3) for 25 or fewer analyses, or Rosner's test as described in Section 3.3 (EPA 530/R-09-007, Section 12.4) for more than 25 analyses. However, statistical outliers were removed from the calculation only if they were outside the range of historical results.
5. The current quarters' blanks results (for either TOC or TOX) were merged with the previous three quarters of blanks results and the pooled standard deviation (S_{pooled}) for the one-year period was calculated as follows (*Compendium of Chemical Terminology Gold Book*, IUPAC 2012):

$$S_{pooled} = \sqrt{\frac{\sum_{i=1}^{4}(n_i - 1) * s_i^{\,2}}{\sum_{i=1}^{4}(n_i - 1)}} \qquad \text{Equation 1}$$

   where n_i is the number of blanks results in the ith quarter, and $s_i^{\,2}$ is the variance of the blanks results for the ith quarter.

6. The LOD and LOQ were calculated (for either TOC or TOX) using the following equations, and were rounded to the nearest 10 µg/L for TOC and to the nearest 1/10th µg/L for TOX:

$$LOD = 3 \cdot S_{pooled} \qquad \text{Equation 2}$$

$$LOQ = 10 \cdot S_{pooled} \qquad \text{Equation 3}$$

[1] A 95% confidence interval on the *t*-distribution with 6 (i.e., *n*-1) degrees of freedom ($t_{0.95,6}$) is ±2.447 standard deviations about the mean. At a concentration of 10 standard deviations of the blank results, ±2.447 standard deviations corresponds to a range of ~±25% of the concentration, and thus a 95% confidence level that the true value would lie within ~±25% of the measured value (assuming normality).

3.1 Shapiro-Wilk Test for Normality

The procedure used for the Shapiro-Wilk test is documented in EPA 530/R-09-007, Section 10.5.1. As stated in that document, the "Shapiro-Wilk test is based on the premise that if a data set is normally distributed, the ordered values should be highly correlated with corresponding *quantiles* (z-scores) taken from a normal distribution." This test has the null hypothesis that the data are normally distributed. If the calculated test statistic exceeds the critical value, the null hypothesis is accepted. Otherwise, the null hypothesis is rejected and the alternative hypothesis that the data are not normally distributed is accepted. The steps for performing this test are as follows:

1. Order the measurements from least to greatest.
2. Compute the following differences

$$\left(x_{(n-i+1)} - x_{(i)}\right) \qquad \text{Equation 4}$$

   for $i = 1$ to n, where n is the number of measurements and $x_{(i)}$ is the i-th measurement. In effect, this generates a sequence of differences where the first value is the last measurement minus the first measurement, the second value is the second-to-last measurement minus the second measurement, etc. Note that the second half of these values will be of the same magnitude as the first half but of opposite sign. Thus, only the first half are used in the remainder of this test.
3. Determine k as the greatest integer less than or equal to $n/2$ (i.e., one-half the number of measurements truncated).
4. Obtain the Shapiro-Wilk coefficients from Table 10-2 in Appendix D of EPA 530/R-09-007. The coefficients are grouped by n, the number of measurements, and there will be k coefficients. The coefficients can be determined for up to 50 measurements, the limit of the Shapiro-Wilk test.
5. Compute the intermediate quantity, b, which is the sum of the products of the differences determined in step 2 and the coefficients determined in step 4, in sequence:

$$b = \sum_{i=1}^{k} a_{(n-i+1)}\left(x_{(n-i+1)} - x_{(i)}\right) \qquad \text{Equation 5}$$

   where the values, a, are the coefficients determined in Step 4.
6. Calculate the standard deviation of the measurements.
7. Calculate the Shapiro-Wilk test statistic, SW:

$$SW = \left(\frac{b}{s\sqrt{n-1}}\right)^2 \qquad \text{Equation 6}$$

8. Obtain the critical value from Table 10-3 in Appendix D of EPA 530/R-09-007. The critical values are given for three significance levels. In accordance with the guidance in EPA 530/R-09-007, use a level of significance of 0.10 for small data sets (i.e., $n < 10$), 0.05 for intermediate-sized data sets (i.e., $10 \leq n < 20$), and 0.01 for large data sets (i.e., $n \geq 20$).
9. If the test statistic computed in step 8 is greater than or equal to the critical value, accept normality. If the test statistic is less than the critical value, reject the null hypothesis of normality.

3.2 Dixon's Test for Outliers

With Dixon's test for outliers, the ratio of the gap between the suspected outlier and a nearby measurement to a measure of the range of the data is computed. If this test statistic exceeds a critical value, the suspected outlier is declared a statistical outlier. This test is most applicable to evaluating the most extreme measurement against the remaining measurements in a data set. It is used for relatively small data sets. When the number of measurements exceeds 25, Rosner's test is used (Section 3.3).

The steps for performing this test are:

1) Arrange the measurements in increasing order, x_1 to x_n., where n is the number of measurements.

2) For a suspected low outlier (x_1), compute the test statistic, C, from

$$C = \begin{cases} (x_2 - x_1)/(x_n - x_1) \text{ for } 3 \le n \le 7 \\ (\mathrm{x}_2 - x_1)/(x_{(n-1)} - x_1) \text{ for } 8 \le n \le 10 \\ (\mathrm{x}_3 - x_1)/(x_{(n-1)} - x_1) \text{ for } 11 \le n \le 13 \\ (\mathrm{x}_3 - x_1)/(x_{(n-2)} - x_1) \text{ for } 14 \le n \le 25 \end{cases} \qquad \text{Equation 7}$$

For a suspected high outlier (x_n), compute the test statistic, C, from

$$C = \begin{cases} (x_n - x_{(n-1)})/(x_n - x_1) \text{ for } 3 \le n \le 7 \\ (\mathrm{x}_n - x_{(n-1)})/(x_n - x_2) \text{ for } 8 \le n \le 10 \\ (\mathrm{x}_n - x_{(n-2)})/(x_n - x_2) \text{ for } 11 \le n \le 13 \\ (\mathrm{x}_n - x_{(n-2)})/(x_n - x_3) \text{ for } 14 \le n \le 25 \end{cases} \qquad \text{Equation 8}$$

3) Obtain the critical value from Table 12-1 in Appendix D of EPA 530/R-09-007 using a level of significance (α) of 0.05.

4) If the test statistic, C, exceeds the critical value, the suspected value is declared an outlier.

3.3 Rosner's Test for Outliers

This test is used for data sets exceeding 25 measurements, or when testing multiple potential outliers. It tests for outliers in blocks of measurements rather than singly. The steps for performing this test are:

1) Order the data set and determine the number of possible outliers, r_0, by inspection. The possible outliers could be either high or low values, or a combination of high and low values.

2) Compute the mean $\bar{x}^{(0)}$ and standard deviation, $s^{(0)}$, of all the measurements. Find the measurement furthest from the mean, $y^{(0)}$, and remove it from the dataset.

3) Compute the mean $\bar{x}^{(1)}$ and standard deviation, $s^{(1)}$, of all the remaining measurements. Find the measurement furthest from the new mean, $y^{(1)}$, and remove it from the dataset. Continue until all potential outliers are removed.

4) Test for r outliers (where $r \le r_0$) by iteratively computing the test statistic, R, as:

$$R_{r-1} = \frac{\left| y^{(r-1)} - \bar{x}^{(r-1)} \right|}{s^{(r-1)}} \qquad \text{Equation 6}$$

Critical values are obtained from Table 12-2 in Appendix D of EPA 530/R-09-007 based on sample size and using a level of significance (α) of 0.05. Test for r_0 outliers initially. If the test statistic exceeds the first critical value, conclude there are r_0 outliers. If not, test for r_0-1 outliers by the same method using the next critical value from the table and continue until a block of outliers is identified or no outliers are identified.

4 Assumptions and Inputs

Ninety-five percent confidence that a measured concentration lies within ±25% of the true concentration at the LOQ concentration level depends on the assumption that the field blank results are normally distributed. Dixon's and Rosner's tests for outliers also assume that the blanks results are normally distributed. To evaluate each data set for normality, the Shapiro-Wilk test (Section 3.1) was applied to each of the quarterly TOC and TOX blanks results (from each laboratory). The test was performed only for those quarters in which 8 or more blank sample results were available, in accordance with guidance in EPA 530/R-09-007.

It should be noted that the Shapiro-Wilk normality test is performed for information only. Quarterly blanks results that are found to be not normally distributed are still used in the LOD and LOQ calculations. This is done for several reasons. First, the method of calculating the LOD as 3 times the standard deviation of the blanks results and the LOQ as 10 times the standard deviation of the blanks results is a simplified method that yields only an estimate of the "true" LOD and LOQ. Thus, there is already some uncertainty in these calculations even when the data are normally distributed. Second, LOD and LOQ values for a given laboratory fluctuate over time (hence the need to periodically recalculate the values), which further adds to the uncertainty of determining values applicable for a particular quarter. Thus, it is assumed that the additional uncertainty of using non-normal data sets in the calculations is small given the sources of uncertainty already present in the calculations. In addition, a better estimate of "true" LOD and LOQ values would entail the analysis of many blind standards near the estimated LOD and LOQ concentration levels. This is not a viable option because it would unacceptably increase analytical costs.

A total of 14 normality tests were performed on the blanks results for 2012 and 2013 and the results are shown in Table 1. Only 6 of the 14 data sets were determined to be normally distributed. As stated above, it is assumed that the effect of using non-normally distributed data to calculate the LOD and LOQ is small given the other sources of uncertainty in the calculations.

Table 1. Results of the Shapiro-Wilk Normality Test

Quarter/Analyte	Number of Samples	Level of Significance	Test Statistic	Critical Value	Result
Waste Sampling & Characterization Facility (WSCF) Total Organic Carbon					
2012 1st Q TOC	23	0.01	0.485	0.881	Non-Normal
2012 2nd Q TOC	27	0.01	0.600	0.894	Non-Normal
2012 3rd Q TOC	20	0.01	0.615	0.868	Non-Normal
2012 4th Q TOC	10	0.05	0.733	0.842	Non-Normal
2013 1st Q TOC	29	0.01	0.675	0.898	Non-Normal
2013 2nd Q TOC	17	0.05	0.912	0.892	Normal
2013 3rd Q TOC	11	0.05	0.978	0.850	Normal

2013 4th Q TOC	18	0.05	0.924	0.897	Normal
Waste Sampling & Characterization Facility (WSCF) Total Organic Halides					
2012 1st Q TOX	20	0.01	0.958	0.868	Normal
2012 2nd Q TOX	16	0.05	0.691	0.887	Non-Normal
2012 3rd Q TOX	17	0.05	0.973	0.892	Normal
2012 4th Q TOX	4	n/a	n/a	n/a	n/a
2013 1st Q TOX	18	0.05	0.842	0.897	Non-Normal
2013 2nd Q TOX	12	0.05	0.868	0.859	Normal
2013 3rd Q TOX	6	n/a	n/a	n/a	n/a
2013 4th Q TOX	12	0.05	0.839	0.859	Non-Normal

The spreadsheets used for the normality testing and the calculation of the LODs and LOQs are shown in Appendix A. Two replicate analyses were found to be outliers and were excluded from the calculations: sample numbers B2K2P8 (2012 1st quarter TOC results from WSCF) and B2KTT3 (2012 2nd quarter TOC results from WSCF). Other measurements were found to be statistical outliers but were retained for the analyses because they were within the historical range of blanks results. The outlier tests are documented in the spreadsheets shown in Appendix A.

Replicate analyses for samples B2N5B3, B2N5B5, and B2N5B7 (TOX blanks results for 1/13/2013) were high and exhibited a wide range (4.88 to 30.71 µg/L). A field transfer blank collected the same day had a methylene chloride result of 19 µg/L indicating likely contamination of the deionized water supply used to prepare the blanks. It was assumed that samples B2N5B3, B2N5B5, and B2N5B7 were affected by the same contamination, so they were removed from the LOD/LOQ calculations for TOX.

5 Software Applications

A Microsoft Excel 2010®[2] spreadsheet was used to perform calculations described in Sections 3 and 4, using functions available in that software.

5.1 Description

Software Title: Microsoft® Excel 2010

Software Version: 2010

Hanford Information System Inventory (HISI) Number: 1915

Workstation Type and property number: HLAN Standard Workstation WF22699

5.2 Software Installation and Checkout

The Microsoft® Excel 2010 spreadsheets used for the calculations are shown in Appendix A. Inclusion of the calculation spreadsheet files in their complete configuration is exempt from the validation and verification requirements of PRC-PRO-IRM-309, *Controlled Software Management*.

[2] Microsoft Excel is a registered product of the Microsoft Corporation.

5.3 Statement of Valid Software Application

Microsoft® Excel 2010 is approved software for use in performing calculations at Hanford and the calculations were performed within the limitations of the software as approved, and consistent with the requirements of PRC-PRO-IRM-309.

6 Calculations

Spreadsheets for the quarterly calculation of the LODs and LOQs for CY 2013 are shown in Appendix A. The spreadsheets include the Shapiro-Wilk tests for normality and Dixon's and Rosner's tests for outliers.

7 Results

Table 2 lists the calculated LOD and LOQ values for TOC and TOX for each quarter of CY 2013. The calculations apply to the WSCF laboratory; no blanks results were received from the TASL laboratory during 2012 and 2013.

Table 2. Calendar Year 2013 Total Organic Carbon and Total Organic Halides Limits of Detection and Limits of Quantitation for WSCF.

Quarter	Limit of Detection (µg/L)	Limit of Quantitation (µg/L)
Total Organic Carbon[1]		
CY2013-Q1	200	650
CY2013-Q2	150	490
CY2013-Q3	110	350
CY2013-Q4	110	350
Total Organic Halides[2]		
CY2013-Q1	9.0	30.1
CY2013-Q2	8.1	26.9
CY2013-Q3	8.7	29.1
CY2013-Q4	8.5	28.5

Notes:
1. Total organic carbon Limits of Detection and Limits of Quantitation are rounded to the nearest 10 µg/L.
2. Total organic halide Limits of Detection and Limits of Quantitation are rounded to the nearest 0.1 µg/L.

8 References

40 CFR 265, "Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities," Code of Federal Regulations. Available at: http://www.access.gpo.gov/nara/cfr/waisidx_08/40cfr265_08.html.

40 CFR 265, Subpart F, "Ground-Water Monitoring."

40 CFR 265.92, "Sampling and Analysis."

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Appendix A
Calculation Spreadsheets

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Figure A.1. Example Spreadsheet with Formulas Displayed Showing the Shapiro-Wilk Normality Test and Dixon's Test for Outliers - CY 2012 1st Quarter TOC from WSCF (2 sheets)

	B	C	D	E	F	G	H	I	J	K	L	M	N
5	Quarter ID	SAMP_NUM	SAMP_DATE_TIME	LAB_CODE	FIELD_QC_TYPE	METHOD_NAME	CON_LONG_NAME	Conc. (mg/L)	Avg. (mg/L)	ANAL_DATE_TIME	LAB_SAMP_ID	SDG_NUM	REPLICATE_NUM
546	CY2012-Q1	B2JNT1	40912.2916666667	WSCF	FTB	9060_TOC	Total organic carbon	-0.04519	=AVERAGE(I546:I549)	40917.4006944444	120022017	WSCF120022	1
547	CY2012-Q1	B2JNT1	40912.2916666667					-0.0521					2
548	CY2012-Q1	B2JNT1	40912.2916666667					-0.0554					3
549	CY2012-Q1	B2JNT1	40912.2916666667					-0.05234					4
550	CY2012-Q1	B2JTM3	40917.34375	WSCF	FTB	9060_TOC	Total organic carbon	-0.06057	=AVERAGE(I550:I553)	40920.425	120065008	WSCF120065	1
551	CY2012-Q1	B2JTM3	40917.34375					-0.05978					2
552	CY2012-Q1	B2JTM3	40917.34375					-0.06212					3
553	CY2012-Q1	B2JTM3	40917.34375					-0.06167					4
554	CY2012-Q1	B2JVB2	40917.34375	WSCF	FTB	9060_TOC	Total organic carbon	-0.07414	=AVERAGE(I554:I557)	40924.4180555556	120065017	WSCF120065	1
555	CY2012-Q1	B2JVB2	40917.34375					-0.07526					2
556	CY2012-Q1	B2JVB2	40917.34375					-0.07419					3
557	CY2012-Q1	B2JVB2	40917.34375					-0.07466					4
558	CY2012-Q1	B2JVB4	40917.34375	WSCF	FTB	9060_TOC	Total organic carbon	0.218	=AVERAGE(I558:I561)	40924.4180555556	120065015	WSCF120065	1
559	CY2012-Q1	B2JVB4	40917.34375					0.2079					2
560	CY2012-Q1	B2JVB4	40917.34375					0.2072					3
561	CY2012-Q1	B2JVB4	40917.34375					0.2029					4
562	CY2012-Q1	B2JVB6	40917.34375	WSCF	FTB	9060_TOC	Total organic carbon	0.08023	=AVERAGE(I562:I565)	40924.4180555556	120065016	WSCF120065	1
563	CY2012-Q1	B2JVB6	40917.34375					0.07522					2
564	CY2012-Q1	B2JVB6	40917.34375					0.0748					3
565	CY2012-Q1	B2JVB6	40917.34375					0.07183					4
566	CY2012-Q1	B2JTT5	40917.3645833333	WSCF	FTB	9060_TOC	Total organic carbon	-0.07272	=AVERAGE(I566:I569)	40920.425	120064014	WSCF120064	1
567	CY2012-Q1	B2JTT5	40917.3645833333					-0.07072					2
568	CY2012-Q1	B2JTT5	40917.3645833333					-0.07086					3
569	CY2012-Q1	B2JTT5	40917.3645833333					-0.07158					4
570	CY2012-Q1	B2JVD0	40917.3645833333	WSCF	FTB	9060_TOC	Total organic carbon	-0.06184	=AVERAGE(I570:I573)	40920.425	120064016	WSCF120064	1
571	CY2012-Q1	B2JVD0	40917.3645833333					-0.06129					2
572	CY2012-Q1	B2JVD0	40917.3645833333					-0.06109					3
573	CY2012-Q1	B2JVD0	40917.3645833333					-0.06136					4
574	CY2012-Q1	B2JVD2	40917.3645833333	WSCF	FTB	9060_TOC	Total organic carbon	-0.06301	=AVERAGE(I574:I577)	40920.425	120064013	WSCF120064	1
575	CY2012-Q1	B2JVD2	40917.3645833333					-0.06053					2
576	CY2012-Q1	B2JVD2	40917.3645833333					-0.06095					3
577	CY2012-Q1	B2JVD2	40917.3645833333					-0.06136					4
578	CY2012-Q1	B2JVD4	40917.3645833333	WSCF	FTB	9060_TOC	Total organic carbon	-0.05699	=AVERAGE(I578:I581)	40920.425	120064015	WSCF120064	1
579	CY2012-Q1	B2JVD4	40917.3645833333					-0.05585					2
580	CY2012-Q1	B2JVD4	40917.3645833333					-0.05654					3
581	CY2012-Q1	B2JVD4	40917.3645833333					-0.05475					4
582	CY2012-Q1	B2JR79	40919.3333333333	WSCF	FTB	9060_TOC	Total organic carbon	-0.06426	=AVERAGE(I582:I585)	40933.4208333333	120087014	WSCF120087	1
583	CY2012-Q1	B2JR79	40919.3333333333					-0.06486					2
584	CY2012-Q1	B2JR79	40919.3333333333					-0.06417					3
585	CY2012-Q1	B2JR79	40919.3333333333					-0.06565					4
586	CY2012-Q1	B2JV15	40919.3333333333	WSCF	FTB	9060_TOC	Total organic carbon	-0.06848	=AVERAGE(I586:I589)	40933.4208333333	120087015	WSCF120087	1
587	CY2012-Q1	B2JV15	40919.3333333333					-0.06802					2
588	CY2012-Q1	B2JV15	40919.3333333333					-0.06871					3
589	CY2012-Q1	B2JV15	40919.3333333333					-0.06983					4

	O	P	Q	R	S
546		Shapiro-Wilk Normality Test			
547		**Rank #**	**Ave (mg/L)**	**x(n-i+1) - x(i)**	**Coefficient**
548		1	-0.08415	=INDIRECT(ADDRESS(571-P548,17))-Q548	0.4542
549		=P548+1	-0.0826825	=INDIRECT(ADDRESS(571-P549,17))-Q549	0.3126
550		=P549+1	-0.07843	=INDIRECT(ADDRESS(571-P550,17))-Q550	0.2563
551		=P550+1	-0.0745625	=INDIRECT(ADDRESS(571-P551,17))-Q551	0.2139
552		=P551+1	-0.0734475	=INDIRECT(ADDRESS(571-P552,17))-Q552	0.1787
553		=P552+1	-0.07147	=INDIRECT(ADDRESS(571-P553,17))-Q553	0.148
554		=P553+1	-0.07138	=INDIRECT(ADDRESS(571-P554,17))-Q554	0.1201
555		=P554+1	-0.070875	=INDIRECT(ADDRESS(571-P555,17))-Q555	0.0941
556		=P555+1	-0.06876	=INDIRECT(ADDRESS(571-P556,17))-Q556	0.0696
557		=P556+1	-0.064735	=INDIRECT(ADDRESS(571-P557,17))-Q557	0.0459
558		=P557+1	-0.0614625	=INDIRECT(ADDRESS(571-P558,17))-Q558	0.0228
559		=P558+1	-0.061395	=INDIRECT(ADDRESS(571-P559,17))-Q559	
560		=P559+1	-0.061035	=INDIRECT(ADDRESS(571-P560,17))-Q560	
561		=P560+1	-0.0608425	=INDIRECT(ADDRESS(571-P561,17))-Q561	
562		=P561+1	-0.0560325	=INDIRECT(ADDRESS(571-P562,17))-Q562	
563		=P562+1	-0.055965	=INDIRECT(ADDRESS(571-P563,17))-Q563	
564		=P563+1	-0.0525925	=INDIRECT(ADDRESS(571-P564,17))-Q564	
565		=P564+1	-0.0512575	=INDIRECT(ADDRESS(571-P565,17))-Q565	
566		=P565+1	-0.050585	=INDIRECT(ADDRESS(571-P566,17))-Q566	
567		=P566+1	-0.0483625	=INDIRECT(ADDRESS(571-P567,17))-Q567	
568		=P567+1	-0.0471	=INDIRECT(ADDRESS(571-P568,17))-Q568	
569		=P568+1	0.07552	=INDIRECT(ADDRESS(571-P569,17))-Q569	
570		=P569+1	0.209	=INDIRECT(ADDRESS(571-P570,17))-Q570	
571					
572		k:	=INT(P570/2)		
573		b:	=SUM(R548:R558*S548:S558)		
574		s:	=STDEV(Q548:Q570)		
575					
576		SW:	=(Q573/(Q574*SQRT(P570-1)))^2		
577					
578		Critical pt:	0.881		
579					
580		***SW < Critical pt, so normality rejected***			
581					
582					
583					
584					
585					
586					
587					
588					
589					

Figure A.1. Example Spreadsheet with Formulas Displayed Showing the Shapiro-Wilk Normality Test and Dixon's Test for Outliers - CY 2012 1st Quarter TOC from WSCF (2 sheets)

	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
590	CY2012-Q1	B2JV17	40919.3333333333	WSCF	FTB	9060_TOC	Total organic carbon	-0.07164	=AVERAGE(I590:I593)	40933.4208333333	120087017	WSCF120087	1					
591	CY2012-Q1	B2JV17	40919.3333333333					-0.07178					2					
592	CY2012-Q1	B2JV17	40919.3333333333					-0.07034					3					
593	CY2012-Q1	B2JV17	40919.3333333333					-0.06974					4					
594	CY2012-Q1	B2JV19	40919.3333333333	WSCF	FTB	9060_TOC	Total organic carbon	-0.07122	=AVERAGE(I594:I597)	40933.4208333333	120087016	WSCF120087	1					
595	CY2012-Q1	B2JV19	40919.3333333333					-0.07233					2					
596	CY2012-Q1	B2JV19	40919.3333333333					-0.07103					3					
597	CY2012-Q1	B2JV19	40919.3333333333					-0.07094					4					
598	CY2012-Q1	B2JRR1	40933.3125	WSCF	FTB	9060_TOC	Total organic carbon	-0.0837	=AVERAGE(I598:I601)	40939.4041666667	120133019	WSCF120133	1					
599	CY2012-Q1	B2JRR1	40933.3125					-0.08311					2					
600	CY2012-Q1	B2JRR1	40933.3125					-0.08257					3					
601	CY2012-Q1	B2JRR1	40933.3125					-0.08135					4					
602	CY2012-Q1	B2JV63	40933.3125	WSCF	FTB	9060_TOC	Total organic carbon	-0.07154	=AVERAGE(I602:I605)	40939.4041666667	120133017	WSCF120133	1					
603	CY2012-Q1	B2JV63	40933.3125					-0.07359					2					
604	CY2012-Q1	B2JV63	40933.3125					-0.07424					3					
605	CY2012-Q1	B2JV63	40933.3125					-0.07442					4					
606	CY2012-Q1	B2JV65	40933.3125	WSCF	FTB	9060_TOC	Total organic carbon	-0.08499	=AVERAGE(I606:I609)	40939.4041666667	120133020	WSCF120133	1					
607	CY2012-Q1	B2JV65	40933.3125					-0.08391					2					
608	CY2012-Q1	B2JV65	40933.3125					-0.08328					3		Dixon's Outlier Test:			
609	CY2012-Q1	B2JV65	40933.3125					-0.08442					4					
610	CY2012-Q1	B2JV67	40933.3125	WSCF	FTB	9060_TOC	Total organic carbon	-0.07912	=AVERAGE(I610:I613)	40939.4041666667	120133018	WSCF120133	1		Order	Value		
611	CY2012-Q1	B2JV67	40933.3125					-0.07796					2		1	-0.08415		
612	CY2012-Q1	B2JV67	40933.3125					-0.07803					3		=P611+1	-0.0826825		
613	CY2012-Q1	B2JV67	40933.3125					-0.07861					4		=P612+1	-0.07843		
614	CY2012-Q1	B2K0B6	40938.3541666667	WSCF	FTB	9060_TOC	Total organic carbon	-0.04687	=AVERAGE(I614:I617)	40952.3972222222	120161009	WSCF120161	1		=P613+1	-0.0745625		
615	CY2012-Q1	B2K0B6	40938.3541666667					-0.04549					2		=P614+1	-0.0734475		
616	CY2012-Q1	B2K0B6	40938.3541666667					-0.04783					3		=P615+1	-0.07147		
617	CY2012-Q1	B2K0B6	40938.3541666667					-0.04821					4		=P616+1	-0.07138		
618	CY2012-Q1	B2K2D2	40947.3333333333	WSCF	FTB	9060_TOC	Total organic carbon	-0.04935	=AVERAGE(I618:I621)	40954.3909722222	120219003	WSCF120219	1		=P617+1	-0.070875		
619	CY2012-Q1	B2K2D2	40947.3333333333					-0.04863					2		=P618+1	-0.06876		
620	CY2012-Q1	B2K2D2	40947.3333333333					-0.0477					3		=P619+1	-0.064735		
621	CY2012-Q1	B2K2D2	40947.3333333333					-0.04777					4		=P620+1	-0.0614625		
622	CY2012-Q1	B2K2P8	40963.3125	WSCF	FTB	9060_TOC	Total organic carbon	0.9041	=AVERAGE(I622:I625)	40976.4069444444	120305020	WSCF120305	1		=P621+1	-0.061395		
623	CY2012-Q1	B2K2P8	40963.3125					0.9044					2		=P622+1	-0.061035		
624	CY2012-Q1	B2K2P8	40963.3125					0.9141					3		=P623+1	-0.0608425		
625	CY2012-Q1	B2K2P8	40963.3125					0.9144					4		=P624+1	-0.0560325		
626	CY2012-Q1	B2K3N3	40972.2916666667	WSCF	FTB	9060_TOC	Total organic carbon	-0.06091	=AVERAGE(I626:I629)	40981.4006944444	120353025	WSCF120353	1		=P625+1	-0.055965		
627	CY2012-Q1	B2K3N3	40972.2916666667					-0.06029					2		=P626+1	-0.0525925		
628	CY2012-Q1	B2K3N3	40972.2916666667					-0.06029					3		=P627+1	-0.0512575		
629	CY2012-Q1	B2K3N3	40972.2916666667					-0.06188					4		=P628+1	-0.05023		
630	CY2012-Q1	B2K4Y8	40972.2916666667	WSCF	FTB	9060_TOC	Total organic carbon	-0.05207	=AVERAGE(I630:I633)	40981.4006944444	120353022	WSCF120353	1		=P629+1	-0.0483625		
631	CY2012-Q1	B2K4Y8	40972.2916666667					-0.05121					2		=P630+1	-0.0471		
632	CY2012-Q1	B2K4Y8	40972.2916666667					-0.05396					3		=P631+1	0.07552		
633	CY2012-Q1	B2K4Y8	40972.2916666667					-0.05313					4		=P632+1	0.209		
634	CY2012-Q1	B2K500	40972.2916666667	WSCF	FTB	9060_TOC	Total organic carbon	-0.05568	=AVERAGE(I634:I637)	40981.4006944444	120353023	WSCF120353	1		=P633+1	0.90925		
635	CY2012-Q1	B2K500	40972.2916666667					-0.05558					2					
636	CY2012-Q1	B2K500	40972.2916666667					-0.05561					3		=(Q634-Q632)/(Q634-Q613)	Test Statistic from Equation 12.6 in the UG		
637	CY2012-Q1	B2K500	40972.2916666667					-0.05699					4		0.413	Critical value from Table 12.1 in Appendix D of the UG, alpha = 0.05, n = 24		
638	CY2012-Q1	B2K502	40972.2916666667	WSCF	FTB	9060_TOC	Total organic carbon	-0.05165	=AVERAGE(I638:I641)	40981.4006944444	120353024	WSCF120353	1					
639	CY2012-Q1	B2K502	40972.2916666667					-0.04962					2		The test statistic exceeds the critical value, so the measurement			
640	CY2012-Q1	B2K502	40972.2916666667					-0.05031					3		is a statistical outlier at the 0.05 level of significance.			
641	CY2012-Q1	B2K502	40972.2916666667					-0.05076					4		Sample B2K2P8 was removed from the LOD & LOQ analysis			

Figure A.2. Example Spreadsheet with Formulas Displayed Showing Rosner's Test for Outliers - CY 2012 2nd Quarter TOC from WSCF

	B	C	D	E	F	G	H	I	J	K	L	M	N
5	Quarter ID	SAMP_NUM	SAMP_DATE_TIME	LAB_CODE	FIELD_QC_TYPE	METHOD_NAME	CON_LONG_NAME	Conc. (mg/L)	Avg. (mg/L)	ANAL_DATE_TIME	LAB_SAMP_ID	SDG_NUM	REPLICATE_NUM
707	CY2012-Q2	B2KTT3	41061.28125	WSCF	FTB	9060_TOC	Total organic carbon	1.177	=AVERAGE(I707:I710)	41072.3868055556	120719022	WSCF120719	1
708	CY2012-Q2	B2KTT3	41061.28125					1.175					2
709	CY2012-Q2	B2KTT3	41061.28125					1.173					3
710	CY2012-Q2	B2KTT3	41061.28125					1.173					4

	P	Q	R	S	T	U	V
707	Rosner's Outlier Test:						
708							
709	Order	Value					
710	1	-0.144425		Number of possible outliers:			
711	=P710+1	-0.143875		2	(one really, but a minimum of two are needed for this test)		
712	=P711+1	-0.142675					
713	=P712+1	-0.1423		Mean and standard deviation of all the data:			
714	=P713+1	-0.138325		=AVERAGE(Q710:Q737)	Mean		
715	=P714+1	-0.13285		=STDEV(Q710:Q737)	St Dev		
716	=P715+1	-0.130975					
717	=P716+1	-0.129825		Mean and standard deviation excluding the most extreme value (#28):			
718	=P717+1	-0.12955		=AVERAGE(Q710:Q736)	Mean		
719	=P718+1	-0.1272		=STDEV(Q710:Q736)	St Dev		
720	=P719+1	-0.12635					
721	=P720+1	-0.126275		Mean and standard deviation excluding the two most extreme values (#27 & #28):			
722	=P721+1	-0.12595		=AVERAGE(Q710:Q735)	Mean		
723	=P722+1	-0.123575		=STDEV(Q710:Q735)	St Dev		
724	=P723+1	-0.12245					
725	=P724+1	-0.1196		Testing for 2 outliers (#27 & #28):			
726	=P725+1	-0.11505		=(Q736-S718)/S719	Test Statistic from Equation 12.8 in the UG		
727	=P726+1	-0.114775		=ROUND((3.05-2.83)/10*8+2.83,2)	Critical value (interpolated) from Table 12.2 in Appendix D of the UG, alpha = 0.05, n = 28		
728	=P727+1	-0.10915					
729	=P728+1	-0.108175		The test statistic does not exceed the critical point, so both measurements as a block are not outlier			
730	=P729+1	-0.1081		Proceed with testing just the most extreme measurement.			
731	=P730+1	-0.10595					
732	=P731+1	-0.0610325		Testing for 1 outlier (#28):			
733	=P732+1	0.0701025		=(Q737-S722)/S723	Test Statistic from Equation 12.8 in the UG		
734	=P733+1	0.09678		=ROUND((2.67-2.52)/10*8+2.52,2)	Critical value (interpolated) from Table 12.2 in Appendix D of the UG, alpha = 0.05, n = 28		
735	=P734+1	0.1214					
736	=P735+1	0.134775		The test statistic exceeds the critical value, so the measurement is a statistical outlier at the 0.05 level of significance.			
737	=P736+1	1.1745		Sample B2KTT3 was removed from the LOD & LOQ analysis.			

Figure A.3. Spreadsheet for TOC from WSCF (17 sheets)

	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
546	CY2012-Q1	B2JNT1	1/4/12 7:00	WSCF	FTB	9060_TOC	Total organic carbon	-0.04519	-0.0512575	1/9/12 9:37	120022017	WSCF120022	1		Shapiro-Wilk Normality Test			
547	CY2012-Q1	B2JNT1	1/4/12 7:00					-0.0521					2		**Rank #**	**Ave (mg/L)**	**x(n-i+1) - x(i)**	**Coefficient**
548	CY2012-Q1	B2JNT1	1/4/12 7:00					-0.0554					3		1	-0.08415	0.29315	0.4542
549	CY2012-Q1	B2JNT1	1/4/12 7:00					-0.05234					4		2	-0.0826825	0.1582025	0.3126
550	CY2012-Q1	B2JTM3	1/9/12 8:15	WSCF	FTB	9060_TOC	Total organic carbon	-0.06057	-0.061035	1/12/12 10:12	120065008	WSCF120065	1		3	-0.07843	0.03133	0.2563
551	CY2012-Q1	B2JTM3	1/9/12 8:15					-0.05978					2		4	-0.0745625	0.0262	0.2139
552	CY2012-Q1	B2JTM3	1/9/12 8:15					-0.06212					3		5	-0.0734475	0.0228625	0.1787
553	CY2012-Q1	B2JTM3	1/9/12 8:15					-0.06167					4		6	-0.07147	0.0202125	0.148
554	CY2012-Q1	B2JVB2	1/9/12 8:15	WSCF	FTB	9060_TOC	Total organic carbon	-0.07414	-0.0745625	1/16/12 10:02	120065017	WSCF120065	1		7	-0.07138	0.0187875	0.1201
555	CY2012-Q1	B2JVB2	1/9/12 8:15					-0.07526					2		8	-0.070875	0.01491	0.0941
556	CY2012-Q1	B2JVB2	1/9/12 8:15					-0.07419					3		9	-0.06876	0.0127275	0.0696
557	CY2012-Q1	B2JVB2	1/9/12 8:15					-0.07466					4		10	-0.064735	0.0038925	0.0459
558	CY2012-Q1	B2JVB4	1/9/12 8:15	WSCF	FTB	9060_TOC	Total organic carbon	0.218	0.209	1/16/12 10:02	120065015	WSCF120065	1		11	-0.0614625	0.0004275	0.0228
559	CY2012-Q1	B2JVB4	1/9/12 8:15					0.2079					2		12	-0.061395	0	
560	CY2012-Q1	B2JVB4	1/9/12 8:15					0.2072					3		13	-0.061035	-0.0004275	
561	CY2012-Q1	B2JVB4	1/9/12 8:15					0.2029					4		14	-0.0608425	-0.0038925	
562	CY2012-Q1	B2JVB6	1/9/12 8:15	WSCF	FTB	9060_TOC	Total organic carbon	0.08023	0.07552	1/16/12 10:02	120065016	WSCF120065	1		15	-0.0560325	-0.0127275	
563	CY2012-Q1	B2JVB6	1/9/12 8:15					0.07522					2		16	-0.055965	-0.01491	
564	CY2012-Q1	B2JVB6	1/9/12 8:15					0.0748					3		17	-0.0525925	-0.0187875	
565	CY2012-Q1	B2JVB6	1/9/12 8:15					0.07183					4		18	-0.0512575	-0.0202125	
566	CY2012-Q1	B2JTT5	1/9/12 8:45	WSCF	FTB	9060_TOC	Total organic carbon	-0.07272	-0.07147	1/12/12 10:12	120064014	WSCF120064	1		19	-0.050585	-0.0228625	
567	CY2012-Q1	B2JTT5	1/9/12 8:45					-0.07072					2		20	-0.0483625	-0.0262	
568	CY2012-Q1	B2JTT5	1/9/12 8:45					-0.07086					3		21	-0.0471	-0.03133	
569	CY2012-Q1	B2JTT5	1/9/12 8:45					-0.07158					4		22	0.07552	-0.1582025	
570	CY2012-Q1	B2JVD0	1/9/12 8:45	WSCF	FTB	9060_TOC	Total organic carbon	-0.06184	-0.061395	1/12/12 10:12	120064016	WSCF120064	1		23	0.209	-0.29315	
571	CY2012-Q1	B2JVD0	1/9/12 8:45					-0.06129					2					
572	CY2012-Q1	B2JVD0	1/9/12 8:45					-0.06109					3		k:	11		
573	CY2012-Q1	B2JVD0	1/9/12 8:45					-0.06136					4		b:	0.208047526		
574	CY2012-Q1	B2JVD2	1/9/12 8:45	WSCF	FTB	9060_TOC	Total organic carbon	-0.06301	-0.0614625	1/12/12 10:12	120064013	WSCF120064	1		s:	0.06368069		
575	CY2012-Q1	B2JVD2	1/9/12 8:45					-0.06053					2					
576	CY2012-Q1	B2JVD2	1/9/12 8:45					-0.06095					3		SW:	0.48516214		
577	CY2012-Q1	B2JVD2	1/9/12 8:45					-0.06136					4					
578	CY2012-Q1	B2JVD4	1/9/12 8:45	WSCF	FTB	9060_TOC	Total organic carbon	-0.05699	-0.0560325	1/12/12 10:12	120064015	WSCF120064	1		Critical pt:	0.881		
579	CY2012-Q1	B2JVD4	1/9/12 8:45					-0.05585					2					
580	CY2012-Q1	B2JVD4	1/9/12 8:45					-0.05654					3		***SW < Critical pt, so normality rejected***			
581	CY2012-Q1	B2JVD4	1/9/12 8:45					-0.05475					4					
582	CY2012-Q1	B2JR79	1/11/12 8:00	WSCF	FTB	9060_TOC	Total organic carbon	-0.06426	-0.064735	1/25/12 10:06	120087014	WSCF120087	1					
583	CY2012-Q1	B2JR79	1/11/12 8:00					-0.06486					2					
584	CY2012-Q1	B2JR79	1/11/12 8:00					-0.06417					3					
585	CY2012-Q1	B2JR79	1/11/12 8:00					-0.06565					4					
586	CY2012-Q1	B2JV15	1/11/12 8:00	WSCF	FTB	9060_TOC	Total organic carbon	-0.06848	-0.06876	1/25/12 10:06	120087015	WSCF120087	1					
587	CY2012-Q1	B2JV15	1/11/12 8:00					-0.06802					2					
588	CY2012-Q1	B2JV15	1/11/12 8:00					-0.06871					3					
589	CY2012-Q1	B2JV15	1/11/12 8:00					-0.06983					4					
590	CY2012-Q1	B2JV17	1/11/12 8:00	WSCF	FTB	9060_TOC	Total organic carbon	-0.07164	-0.070875	1/25/12 10:06	120087017	WSCF120087	1					
591	CY2012-Q1	B2JV17	1/11/12 8:00					-0.07178					2					

Figure A.3. Spreadsheet for TOC from WSCF (17 sheets)

	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
592	CY2012-Q1	B2JV17	1/11/12 8:00					-0.07034					3							
593	CY2012-Q1	B2JV17	1/11/12 8:00					-0.06974					4							
594	CY2012-Q1	B2JV19	1/11/12 8:00	WSCF	FTB	9060_TOC	Total organic carbon	-0.07122	-0.07138	1/25/12 10:06	120087016	WSCF120087	1							
595	CY2012-Q1	B2JV19	1/11/12 8:00					-0.07233					2							
596	CY2012-Q1	B2JV19	1/11/12 8:00					-0.07103					3							
597	CY2012-Q1	B2JV19	1/11/12 8:00					-0.07094					4							
598	CY2012-Q1	B2JRR1	1/25/12 7:30	WSCF	FTB	9060_TOC	Total organic carbon	-0.0837	-0.0826825	1/31/12 9:42	120133019	WSCF120133	1							
599	CY2012-Q1	B2JRR1	1/25/12 7:30					-0.08311					2							
600	CY2012-Q1	B2JRR1	1/25/12 7:30					-0.08257					3							
601	CY2012-Q1	B2JRR1	1/25/12 7:30					-0.08135					4							
602	CY2012-Q1	B2JV63	1/25/12 7:30	WSCF	FTB	9060_TOC	Total organic carbon	-0.07154	-0.0734475	1/31/12 9:42	120133017	WSCF120133	1							
603	CY2012-Q1	B2JV63	1/25/12 7:30					-0.07359					2							
604	CY2012-Q1	B2JV63	1/25/12 7:30					-0.07424					3							
605	CY2012-Q1	B2JV63	1/25/12 7:30					-0.07442					4							
606	CY2012-Q1	B2JV65	1/25/12 7:30	WSCF	FTB	9060_TOC	Total organic carbon	-0.08499	-0.08415	1/31/12 9:42	120133020	WSCF120133	1							
607	CY2012-Q1	B2JV65	1/25/12 7:30					-0.08391					2							
608	CY2012-Q1	B2JV65	1/25/12 7:30					-0.08328					3		Dixon's Outlier Test:					
609	CY2012-Q1	B2JV65	1/25/12 7:30					-0.08442					4							
610	CY2012-Q1	B2JV67	1/25/12 7:30	WSCF	FTB	9060_TOC	Total organic carbon	-0.07912	-0.07843	1/31/12 9:42	120133018	WSCF120133	1		Order	Value				
611	CY2012-Q1	B2JV67	1/25/12 7:30					-0.07796					2		1	-0.08415				
612	CY2012-Q1	B2JV67	1/25/12 7:30					-0.07803					3		2	-0.0826825				
613	CY2012-Q1	B2JV67	1/25/12 7:30					-0.07861					4		3	-0.07843				
614	CY2012-Q1	B2K0B6	1/30/12 8:30	WSCF	FTB	9060_TOC	Total organic carbon	-0.04687	-0.0471	2/13/12 9:32	120161009	WSCF120161	1		4	-0.0745625				
615	CY2012-Q1	B2K0B6	1/30/12 8:30					-0.04549					2		5	-0.0734475				
616	CY2012-Q1	B2K0B6	1/30/12 8:30					-0.04783					3		6	-0.07147				
617	CY2012-Q1	B2K0B6	1/30/12 8:30					-0.04821					4		7	-0.07138				
618	CY2012-Q1	B2K2D2	2/8/12 8:00	WSCF	FTB	9060_TOC	Total organic carbon	-0.04935	-0.0483625	2/15/12 9:23	120219003	WSCF120219	1		8	-0.070875				
619	CY2012-Q1	B2K2D2	2/8/12 8:00					-0.04863					2		9	-0.06876				
620	CY2012-Q1	B2K2D2	2/8/12 8:00					-0.0477					3		10	-0.064735				
621	CY2012-Q1	B2K2D2	2/8/12 8:00					-0.04777					4		11	-0.0614625				
622	CY2012-Q1	B2K2P8	2/24/12 7:30	WSCF	FTB	9060_TOC	Total organic carbon	0.9041	0.90925	3/8/12 9:46	120305020	WSCF120305	1		12	-0.061395				
623	CY2012-Q1	B2K2P8	2/24/12 7:30					0.9044					2		13	-0.061035				
624	CY2012-Q1	B2K2P8	2/24/12 7:30					0.9141					3		14	-0.0608425				
625	CY2012-Q1	B2K2P8	2/24/12 7:30					0.9144					4		15	-0.0560325				
626	CY2012-Q1	B2K3N3	3/4/12 7:00	WSCF	FTB	9060_TOC	Total organic carbon	-0.06091	-0.0608425	3/13/12 9:37	120353025	WSCF120353	1		16	-0.055965				
627	CY2012-Q1	B2K3N3	3/4/12 7:00					-0.06029					2		17	-0.0525925				
628	CY2012-Q1	B2K3N3	3/4/12 7:00					-0.06029					3		18	-0.0512575				
629	CY2012-Q1	B2K3N3	3/4/12 7:00					-0.06188					4		19	-0.05023				
630	CY2012-Q1	B2K4Y8	3/4/12 7:00	WSCF	FTB	9060_TOC	Total organic carbon	-0.05207	-0.0525925	3/13/12 9:37	120353022	WSCF120353	1		20	-0.0483625				
631	CY2012-Q1	B2K4Y8	3/4/12 7:00					-0.05121					2		21	-0.0471				
632	CY2012-Q1	B2K4Y8	3/4/12 7:00					-0.05396					3		22	0.07552				
633	CY2012-Q1	B2K4Y8	3/4/12 7:00					-0.05313					4		23	0.209				
634	CY2012-Q1	B2K500	3/4/12 7:00	WSCF	FTB	9060_TOC	Total organic carbon	-0.05568	-0.055965	3/13/12 9:37	120353023	WSCF120353	1		24	0.90925				
635	CY2012-Q1	B2K500	3/4/12 7:00					-0.05558					2							
636	CY2012-Q1	B2K500	3/4/12 7:00					-0.05561					3		0.84412968	Test Statistic from Equation 12.6 in the UG				
637	CY2012-Q1	B2K500	3/4/12 7:00					-0.05699					4		0.413	Critical value from Table 12.1 in Appendix D of the UG, alpha = 0.05, n = 24				

Figure A.3. Spreadsheet for TOC from WSCF (17 sheets)

	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
638	CY2012-Q1	B2K502	3/4/12 7:00	WSCF	FTB	9060_TOC	Total organic carbon	-0.05165	-0.050585	3/13/12 9:37	120353024	WSCF120353	1						
639	CY2012-Q1	B2K502	3/4/12 7:00					-0.04962					2		The test statistic exceeds the critical value, so the measurement				
640	CY2012-Q1	B2K502	3/4/12 7:00					-0.05031					3		is a statistical outlier at the 0.05 level of significance.				
641	CY2012-Q1	B2K502	3/4/12 7:00					-0.05076					4		Sample B2K2P8 was removed from the LOD & LOQ analysis				
642																			
643	CY2012-Q2	B2K4K6	4/4/12 7:45	WSCF	FTB	9060_TOC	Total organic carbon	0.0664	0.0701025	4/9/12 9:10	120438014	WSCF120438	1		Shapiro-Wilk Normality Test				
644	CY2012-Q2	B2K4K6	4/4/12 7:45					0.07222					2		**Rank #**	**Ave (mg/L)**	**x(n-i+1) - x(i)**	**Coefficient**	
645	CY2012-Q2	B2K4K6	4/4/12 7:45					0.0705					3		1	-0.144425	0.2792	0.4366	
646	CY2012-Q2	B2K4K6	4/4/12 7:45					0.07129					4		2	-0.143875	0.265275	0.3018	
647	CY2012-Q2	B2K525	4/4/12 7:45	WSCF	FTB	9060_TOC	Total organic carbon	0.1362	0.134775	4/9/12 9:10	120438013	WSCF120438	1		3	-0.142675	0.239455	0.2522	
648	CY2012-Q2	B2K525	4/4/12 7:45					0.1352					2		4	-0.1423	0.2124025	0.2152	
649	CY2012-Q2	B2K525	4/4/12 7:45					0.1357					3		5	-0.138325	0.0772925	0.1848	
650	CY2012-Q2	B2K525	4/4/12 7:45					0.132					4		6	-0.13285	0.0269	0.1584	
651	CY2012-Q2	B2K527	4/4/12 7:45	WSCF	FTB	9060_TOC	Total organic carbon	0.09208	0.09678	4/9/12 9:10	120438015	WSCF120438	1		7	-0.130975	0.022875	0.1346	
652	CY2012-Q2	B2K527	4/4/12 7:45					0.1008					2		8	-0.129825	0.02165	0.1128	
653	CY2012-Q2	B2K527	4/4/12 7:45					0.09652					3		9	-0.12955	0.0204	0.0923	
654	CY2012-Q2	B2K527	4/4/12 7:45					0.09772					4		10	-0.1272	0.012425	0.0728	
655	CY2012-Q2	B2K529	4/4/12 7:45	WSCF	FTB	9060_TOC	Total organic carbon	0.122	0.1214	4/9/12 9:10	120438012	WSCF120438	1		11	-0.12635	0.0113	0.054	
656	CY2012-Q2	B2K529	4/4/12 7:45					0.1213					2		12	-0.126275	0.006675	0.0358	
657	CY2012-Q2	B2K529	4/4/12 7:45					0.1178					3		13	-0.12595	0.0035	0.0178	
658	CY2012-Q2	B2K529	4/4/12 7:45					0.1245					4		14	-0.123575	0		
659	CY2012-Q2	B2KFV6	5/3/12 7:30	WSCF	EB	9060_TOC	Total organic carbon	-0.1238	-0.123575	5/22/12 10:14	120586009	WSCF120586	1		15	-0.12245	-0.0035		
660	CY2012-Q2	B2KFV6	5/3/12 7:30					-0.1228					2		16	-0.1196	-0.006675		
661	CY2012-Q2	B2KFV6	5/3/12 7:30					-0.1237					3		17	-0.11505	-0.0113		
662	CY2012-Q2	B2KFV6	5/3/12 7:30					-0.124					4		18	-0.114775	-0.012425		
663	CY2012-Q2	B2KFW7	4/10/12 7:10	WSCF	FTB	9060_TOC	Total organic carbon	-0.06122	-0.0610325	4/16/12 9:11	120460014	WSCF120460	1		19	-0.10915	-0.0204		
664	CY2012-Q2	B2KFW7	4/10/12 7:10					-0.05957					2		20	-0.108175	-0.02165		
665	CY2012-Q2	B2KFW7	4/10/12 7:10					-0.06105					3		21	-0.1081	-0.022875		
666	CY2012-Q2	B2KFW7	4/10/12 7:10					-0.06229					4		22	-0.10595	-0.0269		
667	CY2012-Q2	B2KK27	4/18/12 7:00	WSCF	FTB	9060_TOC	Total organic carbon	-0.1365	-0.138325	5/15/12 9:53	120500006	WSCF120500	1		23	-0.0610325	-0.0772925		
668	CY2012-Q2	B2KK27	4/18/12 7:00					-0.1371					2		24	0.0701025	-0.2124025		
669	CY2012-Q2	B2KK27	4/18/12 7:00					-0.1397					3		25	0.09678	-0.239455		
670	CY2012-Q2	B2KK27	4/18/12 7:00					-0.14					4		26	0.1214	-0.265275		
671	CY2012-Q2	B2KK48	4/13/12 7:10	WSCF	FTB	9060_TOC	Total organic carbon	-0.1082	-0.10915	5/2/12 10:03	120477037	WSCF120477	1		27	0.134775	-0.2792		
672	CY2012-Q2	B2KK48	4/13/12 7:10					-0.1076					2						
673	CY2012-Q2	B2KK48	4/13/12 7:10					-0.1095					3		k:	13			
674	CY2012-Q2	B2KK48	4/13/12 7:10					-0.1113					4		b:	0.335822918			
675	CY2012-Q2	B2KKK9	4/18/12 7:00	WSCF	FTB	9060_TOC	Total organic carbon	-0.1247	-0.12595	5/15/12 9:53	120500010	WSCF120500	1		s:	0.084992172			
676	CY2012-Q2	B2KKK9	4/18/12 7:00					-0.1265					2						
677	CY2012-Q2	B2KKK9	4/18/12 7:00					-0.1262					3		SW:	0.60046743			
678	CY2012-Q2	B2KKK9	4/18/12 7:00					-0.1264					4						
679	CY2012-Q2	B2KKL1	4/18/12 7:00	WSCF	FTB	9060_TOC	Total organic carbon	-0.1418	-0.1423	5/15/12 9:53	120500012	WSCF120500	1		Critical pt:	0.894			
680	CY2012-Q2	B2KKL1	4/18/12 7:00					-0.1405					2						
681	CY2012-Q2	B2KKL1	4/18/12 7:00					-0.1431					3		***SW < Critical pt, so normality rejected***				
682	CY2012-Q2	B2KKL1	4/18/12 7:00					-0.1438					4						
683	CY2012-Q2	B2KKL3	4/18/12 7:00	WSCF	FTB	9060_TOC	Total organic carbon	-0.1428	-0.142675	5/15/12 9:53	120500011	WSCF120500	1						

Figure A.3. Spreadsheet for TOC from WSCF (17 sheets)

	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
684	CY2012-Q2	B2KKL3	4/18/12 7:00					-0.142					2				
685	CY2012-Q2	B2KKL3	4/18/12 7:00					-0.1434					3				
686	CY2012-Q2	B2KKL3	4/18/12 7:00					-0.1425					4				
687	CY2012-Q2	B2KKM4	4/13/12 7:10	WSCF	FTB	9060_TOC	Total organic carbon	-0.1195	-0.1196	5/2/12 10:03	120477035	WSCF120477	1				
688	CY2012-Q2	B2KKM4	4/13/12 7:10					-0.1196					2				
689	CY2012-Q2	B2KKM4	4/13/12 7:10					-0.1191					3				
690	CY2012-Q2	B2KKM4	4/13/12 7:10					-0.1202					4				
691	CY2012-Q2	B2KKM6	4/13/12 7:10	WSCF	FTB	9060_TOC	Total organic carbon	-0.1077	-0.10595	5/2/12 10:03	120477033	WSCF120477	1				
692	CY2012-Q2	B2KKM6	4/13/12 7:10					-0.1047					2				
693	CY2012-Q2	B2KKM6	4/13/12 7:10					-0.1064					3				
694	CY2012-Q2	B2KKM6	4/13/12 7:10					-0.105					4				
695	CY2012-Q2	B2KKM8	4/13/12 7:10	WSCF	FTB	9060_TOC	Total organic carbon	-0.1093	-0.108175	5/2/12 10:03	120477034	WSCF120477	1				
696	CY2012-Q2	B2KKM8	4/13/12 7:10					-0.1082					2				
697	CY2012-Q2	B2KKM8	4/13/12 7:10					-0.1073					3				
698	CY2012-Q2	B2KKM8	4/13/12 7:10					-0.1079					4				
699	CY2012-Q2	B2KL89	4/16/12 9:00	WSCF	FTB	9060_TOC	Total organic carbon	-0.1038	-0.1081	5/8/12 13:08	120487010	WSCF120487	1				
700	CY2012-Q2	B2KL89	4/16/12 9:00					-0.1054					2				
701	CY2012-Q2	B2KL89	4/16/12 9:00					-0.1104					3				
702	CY2012-Q2	B2KL89	4/16/12 9:00					-0.1128					4				
703	CY2012-Q2	B2KTD4	5/7/12 8:00	WSCF	FTB	9060_TOC	Total organic carbon	-0.1136	-0.11505	5/22/12 10:14	120602018	WSCF120602	1				
704	CY2012-Q2	B2KTD4	5/7/12 8:00					-0.1131					2				
705	CY2012-Q2	B2KTD4	5/7/12 8:00					-0.1163					3				
706	CY2012-Q2	B2KTD4	5/7/12 8:00					-0.1172					4				
707	CY2012-Q2	B2KTT3	6/1/12 6:45	WSCF	FTB	9060_TOC	Total organic carbon	1.177	1.1745	6/12/12 9:17	120719022	WSCF120719	1		Rosner's Outlier Test:		
708	CY2012-Q2	B2KTT3	6/1/12 6:45					1.175					2				
709	CY2012-Q2	B2KTT3	6/1/12 6:45					1.173					3		Order	Value	
710	CY2012-Q2	B2KTT3	6/1/12 6:45					1.173					4		1	-0.144425	
711	CY2012-Q2	B2KV19	6/7/12 8:10	WSCF	EB	9060_TOC	Total organic carbon	-0.1306	-0.130975	6/14/12 9:17	120752012	WSCF120752	1		2	-0.143875	
712	CY2012-Q2	B2KV19	6/7/12 8:10					-0.132					2		3	-0.142675	
713	CY2012-Q2	B2KV19	6/7/12 8:10					-0.1316					3		4	-0.1423	
714	CY2012-Q2	B2KV19	6/7/12 8:10					-0.1297					4		5	-0.138325	
715	CY2012-Q2	B2KWX2	5/3/12 7:40	WSCF	FTB	9060_TOC	Total organic carbon	-0.1279	-0.12955	5/21/12 10:12	120586007	WSCF120586	1		6	-0.13285	
716	CY2012-Q2	B2KWX2	5/3/12 7:40					-0.1277					2		7	-0.130975	
717	CY2012-Q2	B2KWX2	5/3/12 7:40					-0.1299					3		8	-0.129825	
718	CY2012-Q2	B2KWX2	5/3/12 7:40					-0.1327					4		9	-0.12955	
719	CY2012-Q2	B2KX46	6/5/12 7:30	WSCF	EB	9060_TOC	Total organic carbon	-0.1434	-0.144425	6/12/12 9:17	120736044	WSCF120736	1		10	-0.1272	
720	CY2012-Q2	B2KX46	6/5/12 7:30					-0.144					2		11	-0.12635	
721	CY2012-Q2	B2KX46	6/5/12 7:30					-0.1447					3		12	-0.126275	
722	CY2012-Q2	B2KX46	6/5/12 7:30					-0.1456					4		13	-0.12595	
723	CY2012-Q2	B2KX78	6/27/12 7:00	WSCF	FTB	9060_TOC	Total organic carbon	-0.1237	-0.12245	7/18/12 16:20	120841002	WSCF120841	1		14	-0.123575	
724	CY2012-Q2	B2KX78	6/27/12 7:00					-0.1236					2		15	-0.12245	
725	CY2012-Q2	B2KX78	6/27/12 7:00					-0.1221					3		16	-0.1196	
726	CY2012-Q2	B2KX78	6/27/12 7:00					-0.1204					4		17	-0.11505	
727	CY2012-Q2	B2L786	5/7/12 8:00	WSCF	FTB	9060_TOC	Total organic carbon	-0.1228	-0.126275	5/29/12 9:20	120602025	WSCF120602	1		18	-0.114775	
728	CY2012-Q2	B2L786	5/7/12 8:00					-0.1254					2		19	-0.10915	
729	CY2012-Q2	B2L786	5/7/12 8:00					-0.1264					3		20	-0.108175	

Figure A.3. Spreadsheet for TOC from WSCF (17 sheets)

	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
730	CY2012-Q2	B2L786	5/7/12 8:00					-0.1305					4		21	-0.1081		Proceed with t
731	CY2012-Q2	B2L787	5/7/12 8:00	WSCF	FTB	9060_TOC	Total organic carbon	-0.1317	-0.13285	5/22/12 10:14	120602019	WSCF120602	1		22	-0.10595		
732	CY2012-Q2	B2L787	5/7/12 8:00					-0.1338					2		23	-0.0610325		Testing for 1 o
733	CY2012-Q2	B2L787	5/7/12 8:00					-0.1333					3		24	0.0701025		17.26305151
734	CY2012-Q2	B2L787	5/7/12 8:00					-0.1326					4		25	0.09678		2.64
735	CY2012-Q2	B2L788	5/7/12 8:00	WSCF	FTB	9060_TOC	Total organic carbon	-0.1291	-0.1272	5/22/12 10:14	120602020	WSCF120602	1		26	0.1214		
736	CY2012-Q2	B2L788	5/7/12 8:00					-0.1268					2		27	0.134775		The test statis
737	CY2012-Q2	B2L788	5/7/12 8:00					-0.1261					3		28	1.1745		Sample B2KTT
738	CY2012-Q2	B2L788	5/7/12 8:00					-0.1268					4					
739	CY2012-Q2	B2L798	4/24/12 7:00	WSCF	EB	9060_TOC	Total organic carbon	-0.1294	-0.129825	5/16/12 9:00	120534007	WSCF120534	1					
740	CY2012-Q2	B2L798	4/24/12 7:00					-0.1298					2					
741	CY2012-Q2	B2L798	4/24/12 7:00					-0.1294					3					
742	CY2012-Q2	B2L798	4/24/12 7:00					-0.1307					4					
743	CY2012-Q2	B2LCR2	6/18/12 8:15	WSCF	EB	9060_TOC	Total organic carbon	-0.1449	-0.143875	7/16/12 10:14	120796006	WSCF120796	1					
744	CY2012-Q2	B2LCR2	6/18/12 8:15					-0.1453					2					
745	CY2012-Q2	B2LCR2	6/18/12 8:15					-0.1421					3					
746	CY2012-Q2	B2LCR2	6/18/12 8:15					-0.1432					4					
747	CY2012-Q2	B2LJ40	6/18/12 8:00	WSCF	EB	9060_TOC	Total organic carbon	-0.1141	-0.114775	6/20/12 8:53	120796004	WSCF120796	1					
748	CY2012-Q2	B2LJ40	6/18/12 8:00					-0.1141					2					
749	CY2012-Q2	B2LJ40	6/18/12 8:00					-0.1152					3					
750	CY2012-Q2	B2LJ40	6/18/12 8:00					-0.1157					4					
751	CY2012-Q2	B2LJB9	6/29/12 7:15	WSCF	FTB	9060_TOC	Total organic carbon	-0.1277	-0.12635	7/18/12 16:20	120856005	WSCF120856	1					
752	CY2012-Q2	B2LJB9	6/29/12 7:15					-0.1261					2					
753	CY2012-Q2	B2LJB9	6/29/12 7:15					-0.1253					3					
754	CY2012-Q2	B2LJB9	6/29/12 7:15					-0.1263					4					
755																		
756	CY2012-Q3	B2L8V6	7/27/12 7:05	WSCF	FTB	9060_TOC	Total organic carbon	-0.1375	-0.13635	8/15/12 8:53	120980007	WSCF120980	1		Shapiro-Wilk Normality Test (all data)			
757	CY2012-Q3	B2L8V6	7/27/12 7:05					-0.1354					2		**Rank #**	**Ave (mg/L)**	**x(n-i+1) - x(i)**	**Coefficient**
758	CY2012-Q3	B2L8V6	7/27/12 7:05					-0.1377					3		1	-0.13635	0.31675	0.4734
759	CY2012-Q3	B2L8V6	7/27/12 7:05					-0.1348					4		2	-0.133625	0.09919	0.3211
760	CY2012-Q3	B2L8X5	7/3/12 8:00	WSCF	FTB	9060_TOC	Total organic carbon	-0.1231	-0.1222	7/26/12 10:34	120873019	WSCF120873	1		3	-0.1284	0.0802525	0.2565
761	CY2012-Q3	B2L8X5	7/3/12 8:00					-0.1213					2		4	-0.1234	0.0697075	0.2085
762	CY2012-Q3	B2L8X5	7/3/12 8:00					-0.1211					3		5	-0.122575	0.067645	0.1686
763	CY2012-Q3	B2L8X5	7/3/12 8:00					-0.1233					4		6	-0.1222	0.0635875	0.1334
764	CY2012-Q3	B2L8Y6	7/3/12 7:00	WSCF	FTB	9060_TOC	Total organic carbon	-0.1174	-0.1178	7/26/12 10:34	120872017	WSCF120872	1		7	-0.121275	0.05312	0.1013
765	CY2012-Q3	B2L8Y6	7/3/12 7:00					-0.1163					2		8	-0.118975	0.005125	0.0711
766	CY2012-Q3	B2L8Y6	7/3/12 7:00					-0.12					3		9	-0.1178	0.002	0.0422
767	CY2012-Q3	B2L8Y6	7/3/12 7:00					-0.1175					4		10	-0.1177	0.0013	0.014
768	CY2012-Q3	B2L973	7/17/12 7:15	WSCF	FTB	9060_TOC	Total organic carbon	-0.1343	-0.133625	8/8/12 10:49	120919006	WSCF120919	1		11	-0.1164	-0.0013	
769	CY2012-Q3	B2L973	7/17/12 7:15					-0.1339					2		12	-0.1158	-0.002	
770	CY2012-Q3	B2L973	7/17/12 7:15					-0.1331					3		13	-0.11385	-0.005125	
771	CY2012-Q3	B2L973	7/17/12 7:15					-0.1332					4		14	-0.068155	-0.05312	
772	CY2012-Q3	B2L9P4	7/3/12 8:00	WSCF	FTB	9060_TOC	Total organic carbon	-0.1199	-0.1177	7/26/12 10:34	120873013	WSCF120873	1		15	-0.0586125	-0.0635875	
773	CY2012-Q3	B2L9P4	7/3/12 8:00					-0.1178					2		16	-0.05493	-0.067645	
774	CY2012-Q3	B2L9P4	7/3/12 8:00					-0.1165					3		17	-0.0536925	-0.0697075	
775	CY2012-Q3	B2L9P4	7/3/12 8:00					-0.1166					4		18	-0.0481475	-0.0802525	

Figure A.3. Spreadsheet for TOC from WSCF (17 sheets)

	P	Q	R	S	T	U	V	W	X	Y	Z
707	Rosner's Outlier Test:										
708											
709	Order	Value									
710	1	-0.144425		Number of possible outliers:							
711	2	-0.143875		2	(one really, but a minimum of two are needed for this test)						
712	3	-0.142675									
713	4	-0.1423		Mean and standard deviation of all the data:							
714	5	-0.138325		-0.04395982	Mean						
715	6	-0.13285		0.252941698	St Dev						
716	7	-0.130975									
717	8	-0.129825		Mean and standard deviation excluding the most extreme value (#28):							
718	9	-0.12955		-0.08908796	Mean						
719	10	-0.1272		0.084992172	St Dev						
720	11	-0.12635									
721	12	-0.126275		Mean and standard deviation excluding the two most extreme values (#27 & #28):							
722	13	-0.12595		-0.09769808	Mean						
723	14	-0.123575		0.073694855	St Dev						
724	15	-0.12245									
725	16	-0.1196		Testing for 2 outliers (#27 & #28):							
726	17	-0.11505		2.633924479	Test Statistic from Equation 12.8 in the UG						
727	18	-0.114775		3.01	Critical value (interpolated) from Table 12.2 in Appendix D of the UG, alpha = 0.05, n = 28						
728	19	-0.10915									
729	20	-0.108175		The test statistic does not exceed the critical point, so both measurements as a block are not outliers.							
730	21	-0.1081		Proceed with testing just the most extreme measurement.							
731	22	-0.10595									
732	23	-0.0610325		Testing for 1 outlier (#28):							
733	24	0.0701025		17.26305151	Test Statistic from Equation 12.8 in the UG						
734	25	0.09678		2.64	Critical value (interpolated) from Table 12.2 in Appendix D of the UG, alpha = 0.05, n = 28						
735	26	0.1214									
736	27	0.134775		The test statistic exceeds the critical value, so the measurement is a statistical outlier at the 0.05 level of significance.							
737	28	1.1745		Sample B2KTT3 was removed from the LOD & LOQ analysis.							
738											

Figure A.3. Spreadsheet for TOC from WSCF (17 sheets)

	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
776	CY2012-Q3	B2L9P6	7/3/12 8:00	WSCF	FTB	9060_TOC	Total organic carbon	-0.1208	-0.122575	7/26/12 10:34	120873012	WSCF120873	1		19	-0.034435	-0.09919	
777	CY2012-Q3	B2L9P6	7/3/12 8:00					-0.1229					2		20	0.1804	-0.31675	
778	CY2012-Q3	B2L9P6	7/3/12 8:00					-0.1235					3					
779	CY2012-Q3	B2L9P6	7/3/12 8:00					-0.1231					4		k:	10		
780	CY2012-Q3	B2L9R3	7/3/12 7:00	WSCF	FTB	9060_TOC	Total organic carbon	-0.1152	-0.1164	7/26/12 10:34	120872006	WSCF120872	1		b:	0.242653702		
781	CY2012-Q3	B2L9R3	7/3/12 7:00					-0.1174					2		s:	0.070978198		
782	CY2012-Q3	B2L9R3	7/3/12 7:00					-0.1155					3					
783	CY2012-Q3	B2L9R3	7/3/12 7:00					-0.1175					4		SW:	0.615134802		
784	CY2012-Q3	B2L9R5	7/3/12 7:00	WSCF	FTB	9060_TOC	Total organic carbon	-0.1148	-0.1158	7/26/12 10:34	120872005	WSCF120872	1					
785	CY2012-Q3	B2L9R5	7/3/12 7:00					-0.1166					2		Critical pt:	0.868		
786	CY2012-Q3	B2L9R5	7/3/12 7:00					-0.1169					3					
787	CY2012-Q3	B2L9R5	7/3/12 7:00					-0.1149					4		***SW < Critical pt, so normality rejected***			
788	CY2012-Q3	B2L9R7	7/3/12 7:00	WSCF	FTB	9060_TOC	Total organic carbon	-0.1253	-0.1234	7/26/12 10:34	120872007	WSCF120872	1					
789	CY2012-Q3	B2L9R7	7/3/12 7:00					-0.1234					2					
790	CY2012-Q3	B2L9R7	7/3/12 7:00					-0.1225					3					
791	CY2012-Q3	B2L9R7	7/3/12 7:00					-0.1224					4					
792	CY2012-Q3	B2L9Y4	7/17/12 7:15	WSCF	FTB	9060_TOC	Total organic carbon	-0.1202	-0.118975	8/8/12 10:49	120919007	WSCF120919	1					
793	CY2012-Q3	B2L9Y4	7/17/12 7:15					-0.119					2					
794	CY2012-Q3	B2L9Y4	7/17/12 7:15					-0.1194					3					
795	CY2012-Q3	B2L9Y4	7/17/12 7:15					-0.1173					4					
796	CY2012-Q3	B2L9Y6	7/17/12 7:15	WSCF	FTB	9060_TOC	Total organic carbon	-0.1125	-0.11385	8/9/12 9:52	120919008	WSCF120919	1					
797	CY2012-Q3	B2L9Y6	7/17/12 7:15					-0.1145					2					
798	CY2012-Q3	B2L9Y6	7/17/12 7:15					-0.115					3					
799	CY2012-Q3	B2L9Y6	7/17/12 7:15					-0.1134					4					
800	CY2012-Q3	B2L9Y8	7/17/12 7:15	WSCF	FTB	9060_TOC	Total organic carbon	-0.127	-0.1284	8/8/12 10:49	120919005	WSCF120919	1					
801	CY2012-Q3	B2L9Y8	7/17/12 7:15					-0.1301					2					
802	CY2012-Q3	B2L9Y8	7/17/12 7:15					-0.1284					3					
803	CY2012-Q3	B2L9Y8	7/17/12 7:15					-0.1281					4					
804	CY2012-Q3	B2LCW3	7/16/12 8:30	WSCF	FTB	9060_TOC	Total organic carbon	-0.06932	-0.068155	8/8/12 10:49	120906014	WSCF120906	1					
805	CY2012-Q3	B2LCW3	7/16/12 8:30					-0.06657					2					
806	CY2012-Q3	B2LCW3	7/16/12 8:30					-0.06927					3					
807	CY2012-Q3	B2LCW3	7/16/12 8:30					-0.06746					4					
808	CY2012-Q3	B2LKJ4	9/5/12 7:00	WSCF	FTB	9060_TOC	Total organic carbon	0.182	0.1804	9/10/12 10:31	121123022	WSCF121123	1		Dixon's Outlier Test on B2LKJ4 (9/5/2012 7:00) (note that			
809	CY2012-Q3	B2LKJ4	9/5/12 7:00					0.1791					2					
810	CY2012-Q3	B2LKJ4	9/5/12 7:00					0.18					3		Order	Value		
811	CY2012-Q3	B2LKJ4	9/5/12 7:00					0.1805					4		1	-0.13635		
812	CY2012-Q3	B2LKY0	9/5/12 8:00	WSCF	FTB	9060_TOC	Total organic carbon	-0.05536	-0.05493	9/10/12 10:31	121121022	WSCF121121	1		2	-0.133625		
813	CY2012-Q3	B2LKY0	9/5/12 8:00					-0.05606					2		3	-0.1284		
814	CY2012-Q3	B2LKY0	9/5/12 8:00					-0.0537					3		4	-0.1234		0.740114961
815	CY2012-Q3	B2LKY0	9/5/12 8:00					-0.0546					4		5	-0.122575		0.450
816	CY2012-Q3	B2LL71	9/5/12 8:00	WSCF	FTB	9060_TOC	Total organic carbon	-0.05309	-0.0536925	9/10/12 10:31	121121021	WSCF121121	1		6	-0.1222		
817	CY2012-Q3	B2LL71	9/5/12 8:00					-0.05465					2		7	-0.121275		The test statis
818	CY2012-Q3	B2LL71	9/5/12 8:00					-0.05309					3		8	-0.118975		However, the
819	CY2012-Q3	B2LL71	9/5/12 8:00					-0.05394					4		9	-0.1178		assumption, s
820	CY2012-Q3	B2LL73	9/5/12 8:00	WSCF	FTB	9060_TOC	Total organic carbon	-0.04851	-0.0481475	9/10/12 10:31	121121023	WSCF121121	1		10	-0.1177		blank results e
821	CY2012-Q3	B2LL73	9/5/12 8:00					-0.04842					2		11	-0.1164		

Figure A.3. Spreadsheet for TOC from WSCF (17 sheets)

	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
822	CY2012-Q3	B2LL73	9/5/12 8:00					-0.04894					3		12	-0.1158		
823	CY2012-Q3	B2LL73	9/5/12 8:00					-0.04672					4		13	-0.11385		
824	CY2012-Q3	B2LL75	9/5/12 8:00	WSCF	FTB	9060_TOC	Total organic carbon	-0.05909	-0.0586125	9/10/12 10:31	121121024	WSCF121121	1		14	-0.068155		
825	CY2012-Q3	B2LL75	9/5/12 8:00					-0.05946					2		15	-0.0586125		
826	CY2012-Q3	B2LL75	9/5/12 8:00					-0.05861					3		16	-0.05493		
827	CY2012-Q3	B2LL75	9/5/12 8:00					-0.05729					4		17	-0.0536925		
828	CY2012-Q3	B2LP03	9/17/12 7:00	WSCF	FTB	9060_TOC	Total organic carbon	-0.03388	-0.034435	9/18/12 10:37	121161008	WSCF121161	1		18	-0.0481475		
829	CY2012-Q3	B2LP03	9/17/12 7:00					-0.03591					2		19	-0.034435		
830	CY2012-Q3	B2LP03	9/17/12 7:00					-0.03322					3		20	0.1804		
831	CY2012-Q3	B2LP03	9/17/12 7:00					-0.03473					4					
832	CY2012-Q3	B2LPX4	7/3/12 8:00	WSCF	FTB	9060_TOC	Total organic carbon	-0.1223	-0.121275	7/26/12 10:34	120873014	WSCF120873	1					
833	CY2012-Q3	B2LPX4	7/3/12 8:00					-0.1193					2					
834	CY2012-Q3	B2LPX4	7/3/12 8:00					-0.1193					3					
835	CY2012-Q3	B2LPX4	7/3/12 8:00					-0.1242					4					
836																		
837	CY2012-Q4	B2M0W9	10/11/12 7:45	WSCF	FTB	9060_TOC	Total organic carbon	-0.06329	-0.064465	10/18/12 15:04	121289029	WSCF121289	1		Shapiro-Wilk Normality Test (all data)			
838	CY2012-Q4	B2M0W9	10/11/12 7:45					-0.06432					2		**Rank #**	**Ave (mg/L)**	**x(n-i+1) - x(i)**	**Coefficient**
839	CY2012-Q4	B2M0W9	10/11/12 7:45					-0.06451					3		1	-0.070975	0.0442475	0.5739
840	CY2012-Q4	B2M0W9	10/11/12 7:45					-0.06574					4		2	-0.0654075	0.036905	0.3291
841	CY2012-Q4	B2M1N2	10/29/12 8:15	WSCF	FTB	9060_TOC	Total organic carbon	-0.05668	-0.05688	11/12/12 9:18	121378008	WSCF121378	1		3	-0.064465	0.007585	0.2141
842	CY2012-Q4	B2M1N2	10/29/12 8:15					-0.05748					2		4	-0.0639025	0.00405	0.1224
843	CY2012-Q4	B2M1N2	10/29/12 8:15					-0.05588					3		5	-0.0636975	0.0027825	0.0399
844	CY2012-Q4	B2M1N2	10/29/12 8:15					-0.05748					4		6	-0.060915	-0.0027825	
845	CY2012-Q4	B2M1X8	10/11/12 7:45	WSCF	FTB	9060_TOC	Total organic carbon	-0.05927	-0.0598525	10/17/12 10:21	121289019	WSCF121289	1		7	-0.0598525	-0.00405	
846	CY2012-Q4	B2M1X8	10/11/12 7:45					-0.05956					2		8	-0.05688	-0.007585	
847	CY2012-Q4	B2M1X8	10/11/12 7:45					-0.06102					3		9	-0.0285025	-0.036905	
848	CY2012-Q4	B2M1X8	10/11/12 7:45					-0.05956					4		10	-0.0267275	-0.0442475	
849	CY2012-Q4	B2M1Y0	10/11/12 7:45	WSCF	FTB	9060_TOC	Total organic carbon	-0.06612	-0.0654075	10/17/12 10:21	121289021	WSCF121289	1					
850	CY2012-Q4	B2M1Y0	10/11/12 7:45					-0.06498					2		k:	5		
851	CY2012-Q4	B2M1Y0	10/11/12 7:45					-0.06616					3		b:	0.039769766		
852	CY2012-Q4	B2M1Y0	10/11/12 7:45					-0.06437					4		s:	0.015487265		
853	CY2012-Q4	B2M1Y2	10/11/12 7:45	WSCF	FTB	9060_TOC	Total organic carbon	-0.06418	-0.0636975	10/17/12 10:21	121289020	WSCF121289	1					
854	CY2012-Q4	B2M1Y2	10/11/12 7:45					-0.06399					2		SW:	0.73267957		
855	CY2012-Q4	B2M1Y2	10/11/12 7:45					-0.06395					3					
856	CY2012-Q4	B2M1Y2	10/11/12 7:45					-0.06267					4		Critical pt:	0.842		
857	CY2012-Q4	B2MM36	10/22/12 8:15	WSCF	EB	9060_TOC	Total organic carbon	-0.0733	-0.070975	10/31/12 9:13	121333013	WSCF121333	1					
858	CY2012-Q4	B2MM36	10/22/12 8:15					-0.07035					2		***SW < Critical pt, so normality rejected***			
859	CY2012-Q4	B2MM36	10/22/12 8:15					-0.07024					3					
860	CY2012-Q4	B2MM36	10/22/12 8:15					-0.07001					4					
861	CY2012-Q4	B2MP06	11/13/12 9:00	WSCF	EB	9060_TOC	Total organic carbon	-0.02666	-0.0285025	11/15/12 10:36	121456005	WSCF121456	1					
862	CY2012-Q4	B2MP06	11/13/12 9:00					-0.02756					2					
863	CY2012-Q4	B2MP06	11/13/12 9:00					-0.02987					3					
864	CY2012-Q4	B2MP06	11/13/12 9:00					-0.02992					4					
865	CY2012-Q4	B2MP22	11/7/12 7:45	WSCF	FTB	9060_TOC	Total organic carbon	-0.05909	-0.060915	11/15/12 10:36	121437003	WSCF121437	1					
866	CY2012-Q4	B2MP22	11/7/12 7:45					-0.06121					2					
867	CY2012-Q4	B2MP22	11/7/12 7:45					-0.06229					3					

Figure A.3. Spreadsheet for TOC from WSCF (17 sheets)

	P	Q	R	S	T	U	V	W	X	Y	Z
808	Dixon's Outlier Test on B2LKJ4 (9/5/2012 7:00) (note that normality assumption not valid):										
809											
810	Order	Value									
811	1	-0.13635									
812	2	-0.133625									
813	3	-0.1284									
814	4	-0.1234		0.740114961	Test Statistic from Equation 12.6 in the UG						
815	5	-0.122575		0.450	Critical value from Table 12.1 in Appendix D of the UG, alpha = 0.05, n = 20						
816	6	-0.1222									
817	7	-0.121275		The test statistic exceeds the critical value, so the measurement is a statistical outlier at the 0.05 level of significance.							
818	8	-0.118975		However, the sample was retained in the LOD/LOQ analysis for two reasons: 1) the data did not satisfy the normality							
819	9	-0.1178		assumption, so the use of this outlier test may not be valid, and 2) the sample result was within the range of historical							
820	10	-0.1177		blank results excluding outliers (see chart).							
821	11	-0.1164									
822	12	-0.1158									
823	13	-0.11385									
824	14	-0.068155									
825	15	-0.0586125									
826	16	-0.05493									
827	17	-0.0536925									
828	18	-0.0481475									
829	19	-0.034435									
830	20	0.1804									

Figure A.3. Spreadsheet for TOC from WSCF (17 sheets)

	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
868	CY2012-Q4	B2MP22	11/7/12 7:45					-0.06107					4					
869	CY2012-Q4	B2MXF9	12/12/12 8:15	WSCF	FTB	9060_TOC	Total organic carbon	-0.02398	-0.0267275	12/19/12 13:32	121572007	WSCF121572	1					
870	CY2012-Q4	B2MXF9	12/12/12 8:15					-0.02684					2					
871	CY2012-Q4	B2MXF9	12/12/12 8:15					-0.02749					3					
872	CY2012-Q4	B2MXF9	12/12/12 8:15					-0.0286					4					
873	CY2012-Q4	B2MXX1	12/3/12 8:15	WSCF	FTB	9060_TOC	Total organic carbon	-0.06395	-0.0639025	12/10/12 8:17	121532005	WSCF121532	1					
874	CY2012-Q4	B2MXX1	12/3/12 8:15					-0.06395					2					
875	CY2012-Q4	B2MXX1	12/3/12 8:15					-0.06447					3					
876	CY2012-Q4	B2MXX1	12/3/12 8:15					-0.06324					4					
877																		
878	CY2013-Q1	B2MWV2	1/14/13 8:30	WSCF	FTB	9060_TOC	Total organic carbon	0.00013	-0.016165	41289.47917	130073009	WSCF130073	1		Shapiro-Wilk Normality Test (all data)			
879	CY2013-Q1	B2MWV2	1/14/13 8:30					-0.0186					2		**Rank #**	**Ave (mg/L)**	**x(n-i+1) - x(i)**	**Coefficient**
880	CY2013-Q1	B2MWV2	1/14/13 8:30					-0.02133					3		1	-0.0765325	0.2784825	0.4291
881	CY2013-Q1	B2MWV2	1/14/13 8:30					-0.02486					4		2	-0.075985	0.1014975	0.2968
882	CY2013-Q1	B2N3N6	1/22/13 7:45	WSCF	FTB	9060_TOC	Total organic carbon	-0.00651	-0.00659	41297.45139	130122021	WSCF130122	1		3	-0.06969	0.0844675	0.2499
883	CY2013-Q1	B2N3N6	1/22/13 7:45					-0.00605					2		4	-0.04251	0.0452075	0.215
884	CY2013-Q1	B2N3N6	1/22/13 7:45					-0.00757					3		5	-0.042045	0.044555	0.1864
885	CY2013-Q1	B2N3N6	1/22/13 7:45					-0.00623					4		6	-0.0400675	0.04221	0.1616
886	CY2013-Q1	B2N3R9	1/17/13 7:45	WSCF	FTB	9060_TOC	Total organic carbon	-0.04135	-0.04251	41295.45833	130104011	WSCF130104	1		7	-0.0356	0.037255	0.1395
887	CY2013-Q1	B2N3R9	1/17/13 7:45					-0.04251					2		8	-0.034605	0.031055	0.1192
888	CY2013-Q1	B2N3R9	1/17/13 7:45					-0.04269					3		9	-0.033705	0.029125	0.1002
889	CY2013-Q1	B2N3R9	1/17/13 7:45					-0.04349					4		10	-0.033635	0.027045	0.0822
890	CY2013-Q1	B2N3V4	1/22/13 8:15	WSCF	FTB	9060_TOC	Total organic carbon	-0.0286	-0.028565	41309.47917	130124010	WSCF130124	1		11	-0.0297075	0.0135425	0.065
891	CY2013-Q1	B2N3V4	1/22/13 8:15					-0.02804					2		12	-0.028565	0.0072	0.0483
892	CY2013-Q1	B2N3V4	1/22/13 8:15					-0.0274					3		13	-0.02802	0.0063175	0.032
893	CY2013-Q1	B2N3V4	1/22/13 8:15					-0.03022					4		14	-0.024855	0.0025425	0.0159
894	CY2013-Q1	B2N491	1/18/13 7:15	WSCF	FTB	9060_TOC	Total organic carbon	-0.02028	-0.021365	41296.47917	130113007	WSCF130113	1		15	-0.0229175	0	0
895	CY2013-Q1	B2N491	1/18/13 7:15					-0.02153					2		16	-0.0223125	-0.0025425	
896	CY2013-Q1	B2N491	1/18/13 7:15					-0.02157					3		17	-0.0217025	-0.0063175	
897	CY2013-Q1	B2N491	1/18/13 7:15					-0.02208					4		18	-0.021365	-0.0072	
898	CY2013-Q1	B2N4V1	1/15/13 7:15	WSCF	FTB	9060_TOC	Total organic carbon	-0.02107	-0.0223125	41290.45833	130089002	WSCF130089	1		19	-0.016165	-0.0135425	
899	CY2013-Q1	B2N4V1	1/15/13 7:15					-0.02379					2		20	-0.00659	-0.027045	
900	CY2013-Q1	B2N4V1	1/15/13 7:15					-0.02111					3		21	-0.00458	-0.029125	
901	CY2013-Q1	B2N4V1	1/15/13 7:15					-0.02328					4		22	-0.00355	-0.031055	
902	CY2013-Q1	B2N4W1	1/22/13 7:45	WSCF	FTB	9060_TOC	Total organic carbon	0.00222	0.001655	41297.45139	130122015	WSCF130122	1		23	0.001655	-0.037255	
903	CY2013-Q1	B2N4W1	1/22/13 7:45					0.00259					2		24	0.0021425	-0.04221	
904	CY2013-Q1	B2N4W1	1/22/13 7:45					0.00176					3		25	0.00251	-0.044555	
905	CY2013-Q1	B2N4W1	1/22/13 7:45					0.00005					4		26	0.0026975	-0.0452075	
906	CY2013-Q1	B2N4W3	1/22/13 7:45	WSCF	FTB	9060_TOC	Total organic carbon	0.00144	0.0026975	41297.45139	130122016	WSCF130122	1		27	0.0147775	-0.0844675	
907	CY2013-Q1	B2N4W3	1/22/13 7:45					0.00162					2		28	0.0255125	-0.1014975	
908	CY2013-Q1	B2N4W3	1/22/13 7:45					0.00352					3		29	0.20195	-0.2784825	
909	CY2013-Q1	B2N4W3	1/22/13 7:45					0.00421					4					
910	CY2013-Q1	B2N4W5	1/22/13 7:45	WSCF	FTB	9060_TOC	Total organic carbon	0.00037	0.00251	41297.45139	130122017	WSCF130122	1		k:	14		
911	CY2013-Q1	B2N4W5	1/22/13 7:45					0.00287					2		b:	0.211086388		
912	CY2013-Q1	B2N4W5	1/22/13 7:45					0.00208					3		s:	0.048571595		
913	CY2013-Q1	B2N4W5	1/22/13 7:45					0.00472					4					

Figure A.3. Spreadsheet for TOC from WSCF (17 sheets)

	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
914	CY2013-Q1	B2N4X6	1/22/13 8:15	WSCF	FTB	9060_TOC	Total organic carbon	0.01442	0.0147775	41309.47917	130124001	WSCF130124	1		SW:	0.674524456		
915	CY2013-Q1	B2N4X6	1/22/13 8:15					0.01599					2					
916	CY2013-Q1	B2N4X6	1/22/13 8:15					0.01493					3		Critical pt:	0.898		
917	CY2013-Q1	B2N4X6	1/22/13 8:15					0.01377					4					
918	CY2013-Q1	B2N4X8	1/22/13 8:15	WSCF	FTB	9060_TOC	Total organic carbon	0.00458	0.0021425	41309.47917	130124002	WSCF130124	1		***SW < Critical pt, so normality rejected***			
919	CY2013-Q1	B2N4X8	1/22/13 8:15					0.00047					2					
920	CY2013-Q1	B2N4X8	1/22/13 8:15					0.00134					3					
921	CY2013-Q1	B2N4X8	1/22/13 8:15					0.00218					4					
922	CY2013-Q1	B2N4Y0	1/22/13 8:15	WSCF	FTB	9060_TOC	Total organic carbon	-0.03396	-0.034605	41309.47917	130124003	WSCF130124	1					
923	CY2013-Q1	B2N4Y0	1/22/13 8:15					-0.03562					2					
924	CY2013-Q1	B2N4Y0	1/22/13 8:15					-0.03488					3					
925	CY2013-Q1	B2N4Y0	1/22/13 8:15					-0.03396					4					
926	CY2013-Q1	B2N564	1/18/13 7:15	WSCF	FTB	9060_TOC	Total organic carbon	0.03221	0.0255125	41296.47917	130113001	WSCF130113	1					
927	CY2013-Q1	B2N564	1/18/13 7:15					0.02644					2					
928	CY2013-Q1	B2N564	1/18/13 7:15					0.02316					3					
929	CY2013-Q1	B2N564	1/18/13 7:15					0.02024					4					
930	CY2013-Q1	B2N566	1/18/13 7:15	WSCF	FTB	9060_TOC	Total organic carbon	-0.03451	-0.033705	41296.47917	130113003	WSCF130113	1					
931	CY2013-Q1	B2N566	1/18/13 7:15					-0.03299					2					
932	CY2013-Q1	B2N566	1/18/13 7:15					-0.03285					3					
933	CY2013-Q1	B2N566	1/18/13 7:15					-0.03447					4					
934	CY2013-Q1	B2N568	1/18/13 7:15	WSCF	FTB	9060_TOC	Total organic carbon	-0.02938	-0.02802	41296.47917	130113002	WSCF130113	1					
935	CY2013-Q1	B2N568	1/18/13 7:15					-0.02888					2					
936	CY2013-Q1	B2N568	1/18/13 7:15					-0.02384					3					
937	CY2013-Q1	B2N568	1/18/13 7:15					-0.02998					4					
938	CY2013-Q1	B2N5B3	1/15/13 7:15	WSCF	FTB	9060_TOC	Total organic carbon	-0.02144	-0.0217025	41290.45833	130089004	WSCF130089	1					
939	CY2013-Q1	B2N5B3	1/15/13 7:15					-0.02324					2					
940	CY2013-Q1	B2N5B3	1/15/13 7:15					-0.02056					3					
941	CY2013-Q1	B2N5B3	1/15/13 7:15					-0.02157					4					
942	CY2013-Q1	B2N5B5	1/15/13 7:15	WSCF	FTB	9060_TOC	Total organic carbon	-0.03086	-0.0297075	41290.45833	130089005	WSCF130089	1					
943	CY2013-Q1	B2N5B5	1/15/13 7:15					-0.028					2					
944	CY2013-Q1	B2N5B5	1/15/13 7:15					-0.02855					3					
945	CY2013-Q1	B2N5B5	1/15/13 7:15					-0.03142					4					
946	CY2013-Q1	B2N5B7	1/15/13 7:15	WSCF	FTB	9060_TOC	Total organic carbon	-0.02444	-0.024855	41290.45833	130089003	WSCF130089	1					
947	CY2013-Q1	B2N5B7	1/15/13 7:15					-0.02379					2					
948	CY2013-Q1	B2N5B7	1/15/13 7:15					-0.02536					3					
949	CY2013-Q1	B2N5B7	1/15/13 7:15					-0.02583					4					
950	CY2013-Q1	B2N611	1/23/13 7:30	WSCF	FTB	9060_TOC	Total organic carbon	-0.03581	-0.0356	41309.47917	130130001	WSCF130130	1					
951	CY2013-Q1	B2N611	1/23/13 7:30					-0.03396					2					
952	CY2013-Q1	B2N611	1/23/13 7:30					-0.03562					3					
953	CY2013-Q1	B2N611	1/23/13 7:30					-0.03701					4					
954	CY2013-Q1	B2N930	2/6/13 8:30	WSCF	FTB	9060_TOC	Total organic carbon	-0.03322	-0.033635	41325.39583	130198004	WSCF130198	1					
955	CY2013-Q1	B2N930	2/6/13 8:30					-0.03285					2					
956	CY2013-Q1	B2N930	2/6/13 8:30					-0.03511					3					
957	CY2013-Q1	B2N930	2/6/13 8:30					-0.03336					4					
958	CY2013-Q1	B2NB60	2/6/13 7:15	WSCF	FTB	9060_TOC	Total organic carbon	-0.02393	-0.0229175	41325.39583	130202007	WSCF130202	1		Rosner's Outlier Test on B2NK63 (3/4/2013 9:15) (note th			
959	CY2013-Q1	B2NB60	2/6/13 7:15					-0.02181					2					

Figure A.3. Spreadsheet for TOC from WSCF (17 sheets)

	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
960	CY2013-Q1	B2NB60	2/6/13 7:15					-0.02449					3		Order	Value		
961	CY2013-Q1	B2NB60	2/6/13 7:15					-0.02144					4		1	-0.0765325	Outlier?	4
962	CY2013-Q1	B2NB69	2/11/13 8:00	WSCF	FTB	9060_TOC	Total organic carbon	-0.03987	-0.0400675	41325.39583	130218012	WSCF130218	1		2	-0.075985	Outlier?	
963	CY2013-Q1	B2NB69	2/11/13 8:00					-0.03844					2		3	-0.06969	Outlier?	-0.01598138
964	CY2013-Q1	B2NB69	2/11/13 8:00					-0.04075					3		4	-0.04251		0.048571595
965	CY2013-Q1	B2NB69	2/11/13 8:00					-0.04121					4		5	-0.042045		0.20195
966	CY2013-Q1	B2NK52	3/4/13 8:30	WSCF	FTB	9060_TOC	Total organic carbon	-0.00475	-0.00355	41339.37153	130298005	WSCF130298	1		6	-0.0400675		
967	CY2013-Q1	B2NK52	3/4/13 8:30					-0.00198					2		7	-0.0356		-0.02376464
968	CY2013-Q1	B2NK52	3/4/13 8:30					-0.00281					3		8	-0.034605		0.024994289
969	CY2013-Q1	B2NK52	3/4/13 8:30					-0.00466					4		9	-0.033705		-0.0765325
970	CY2013-Q1	B2NK63	3/4/13 9:15	WSCF	EB	9060_TOC	Total organic carbon	0.2108	0.20195	41339.37153	130298007	WSCF130298	1		10	-0.033635		
971	CY2013-Q1	B2NK63	3/4/13 9:15					0.203					2		11	-0.0297075		-0.02181028
972	CY2013-Q1	B2NK63	3/4/13 9:15					0.1983					3		12	-0.028565		0.023187959
973	CY2013-Q1	B2NK63	3/4/13 9:15					0.1957					4		13	-0.02802		-0.075985
974	CY2013-Q1	B2NL00	3/11/13 8:15	WSCF	FTB	9060_TOC	Total organic carbon	-0.06528	-0.06969	41352.41319	130337009	WSCF130337	1		14	-0.024855		
975	CY2013-Q1	B2NL00	3/11/13 8:15					-0.06802					2		15	-0.0229175		-0.01972663
976	CY2013-Q1	B2NL00	3/11/13 8:15					-0.072					3		16	-0.0223125		0.02091118
977	CY2013-Q1	B2NL00	3/11/13 8:15					-0.07346					4		17	-0.0217025		-0.06969
978	CY2013-Q1	B2NL07	3/4/13 8:15	WSCF	FTB	9060_TOC	Total organic carbon	-0.00522	-0.00458	41339.37153	130299007	WSCF130299	1		18	-0.021365		
979	CY2013-Q1	B2NL07	3/4/13 8:15					-0.00452					2		19	-0.016165		2.389313576
980	CY2013-Q1	B2NL07	3/4/13 8:15					-0.00318					3		20	-0.00659		3.480
981	CY2013-Q1	B2NL07	3/4/13 8:15					-0.0054					4		21	-0.00458		
982	CY2013-Q1	B2NLJ6	3/11/13 8:15	WSCF	FTB	9060_TOC	Total organic carbon	-0.07548	-0.075985	41352.41319	130337010	WSCF130337	1		22	-0.00355		2.336329942
983	CY2013-Q1	B2NLJ6	3/11/13 8:15					-0.07579					2		23	0.001655		3.020
984	CY2013-Q1	B2NLJ6	3/11/13 8:15					-0.07631					3		24	0.0021425		
985	CY2013-Q1	B2NLJ6	3/11/13 8:15					-0.07636					4		25	0.00251		2.111196534
986	CY2013-Q1	B2NLJ8	3/11/13 8:15	WSCF	FTB	9060_TOC	Total organic carbon	-0.04255	-0.042045	41352.41319	130337012	WSCF130337	1		26	0.0026975		2.790
987	CY2013-Q1	B2NLJ8	3/11/13 8:15					-0.04265					2		27	0.0147775		
988	CY2013-Q1	B2NLJ8	3/11/13 8:15					-0.04223					3		28	0.0255125		4.48680716
989	CY2013-Q1	B2NLJ8	3/11/13 8:15					-0.04075					4		29	0.20195	Outlier?	2.700
990	CY2013-Q1	B2NLK0	3/11/13 8:15	WSCF	FTB	9060_TOC	Total organic carbon	-0.0769	-0.0765325	41352.41319	130337011	WSCF130337	1					
991	CY2013-Q1	B2NLK0	3/11/13 8:15					-0.07559					2					Only the R0 te
992	CY2013-Q1	B2NLK0	3/11/13 8:15					-0.07693					3					However, the
993	CY2013-Q1	B2NLK0	3/11/13 8:15					-0.07671					4					blank results e
994																		
995	CY2013-Q2	B2NRP1	4/2/13 7:30	WSCF	FTB	9060_TOC	Total organic carbon	-0.00106	-0.0066375	41374.54514	130405010	WSCF130405	1		Shapiro-Wilk Normality Test (all data)			
996	CY2013-Q2	B2NRP1	4/2/13 7:30					-0.00739					2		**Rank #**	**Ave (mg/L)**	**x(n-i+1) - x(i)**	**Coefficient**
997	CY2013-Q2	B2NRP1	4/2/13 7:30					-0.00683					3		1	-0.0252825	0.0618475	0.4968
998	CY2013-Q2	B2NRP1	4/2/13 7:30					-0.01127					4		2	-0.012745	0.0491525	0.3273
999	CY2013-Q2	B2NTJ3	4/3/13 7:15	WSCF	FTB	9060_TOC	Total organic carbon	0.03914	0.0364075	41381.40972	130421025	WSCF130421	1		3	-0.0121875	0.045105	0.254
1000	CY2013-Q2	B2NTJ3	4/3/13 7:15					0.03522					2		4	-0.0116975	0.0354775	0.1988
1001	CY2013-Q2	B2NTJ3	4/3/13 7:15					0.03351					3		5	-0.00949	0.031295	0.1524
1002	CY2013-Q2	B2NTJ3	4/3/13 7:15					0.03776					4		6	-0.0086575	0.02082	0.1109
1003	CY2013-Q2	B2NTJ5	4/3/13 7:15	WSCF	FTB	9060_TOC	Total organic carbon	0.01567	0.021805	41381.40972	130421026	WSCF130421	1		7	-0.0066375	0.0154125	0.0725
1004	CY2013-Q2	B2NTJ5	4/3/13 7:15					0.02311					2		8	-0.00473	0.0071575	0.0359
1005	CY2013-Q2	B2NTJ5	4/3/13 7:15					0.02376					3		9	-0.00333	0	0

Figure A.3. Spreadsheet for TOC from WSCF (17 sheets)

	P	Q	R	S	T	U	V	W	X	Y	Z	AA
958	Rosner's Outlier Test on B2NK63 (3/4/2013 9:15) (note that normality assumption valid on remaining values):											
959												
960	Order	Value										
961	1	-0.0765325	Outlier?	4	Maximum number of possible outliers (r0)							
962	2	-0.075985	Outlier?									
963	3	-0.06969	Outlier?	-0.01598138	Mean of all data (bar x0)							
964	4	-0.04251		0.048571595	Standard deviation of all data (s0)							
965	5	-0.042045		0.20195	Measurement farthest from mean (y0)							
966	6	-0.0400675										
967	7	-0.0356		-0.02376464	Mean of remaining data (bar x1)							
968	8	-0.034605		0.024994289	Stardard deviation of remaining data (s1)							
969	9	-0.033705		-0.0765325	Measurement farthest from mean (y1)							
970	10	-0.033635										
971	11	-0.0297075		-0.02181028	Mean of remaining data (bar x2)							
972	12	-0.028565		0.023187959	Stardard deviation of remaining data (s2)							
973	13	-0.02802		-0.075985	Measurement farthest from mean (y2)							
974	14	-0.024855										
975	15	-0.0229175		-0.01972663	Mean of remaining data (bar x3)							
976	16	-0.0223125		0.02091118	Stardard deviation of remaining data (s3)							
977	17	-0.0217025		-0.06969	Measurement farthest from mean (y3)							
978	18	-0.021365										
979	19	-0.016165		2.389313576	Test Statistic from Equation 12.8 in the UG (R3)							
980	20	-0.00659		3.480	Critical value from Table 12.2 in Appendix D of the UG, alpha = 0.01, n = 30, k=2							
981	21	-0.00458										
982	22	-0.00355		2.336329942	Test Statistic from Equation 12.8 in the UG (R2)							
983	23	0.001655		3.020	Critical value from Table 12.2 in Appendix D of the UG, alpha = 0.01, n = 30, k=2							
984	24	0.0021425										
985	25	0.00251		2.111196534	Test Statistic from Equation 12.8 in the UG (R1)							
986	26	0.0026975		2.790	Critical value from Table 12.2 in Appendix D of the UG, alpha = 0.01, n = 30, k=2							
987	27	0.0147775										
988	28	0.0255125		4.48680716	Test Statistic from Equation 12.8 in the UG (R0)							
989	29	0.20195	Outlier?	2.700	Critical value from Table 12.2 in Appendix D of the UG, alpha = 0.01, n = 30, k=2							
990												
991				Only the R0 test statistic exceeds the critical value, so only one measurement is a statistical outlier at the 0.01 level of significance.								
992				However, the sample was retained in the LOD/LOQ analysis because the sample result was within the range of historical								
993				blank results excluding outliers (see chart).								

Figure A.3. Spreadsheet for TOC from WSCF (17 sheets)

	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
1005	CY2013-Q2	B2NTJ5	4/3/13 7:15					0.02376					3		9	-0.00333	0	0
1006	CY2013-Q2	B2NTJ5	4/3/13 7:15					0.02468					4		10	0.0024275	-0.0071575	
1007	CY2013-Q2	B2NTJ7	4/3/13 7:15	WSCF	FTB	9060_TOC	Total organic carbon	0.02648	0.0329175	41381.40972	130421027	WSCF130421	1		11	0.008775	-0.0154125	
1008	CY2013-Q2	B2NTJ7	4/3/13 7:15					0.03332					2		12	0.0121625	-0.02082	
1009	CY2013-Q2	B2NTJ7	4/3/13 7:15					0.03679					3		13	0.021805	-0.031295	
1010	CY2013-Q2	B2NTJ7	4/3/13 7:15					0.03508					4		14	0.02378	-0.0354775	
1011	CY2013-Q2	B2NTJ9	4/3/13 7:15	WSCF	FTB	9060_TOC	Total organic carbon	-0.00914	-0.0086575	41381.40972	130421028	WSCF130421	1		15	0.0329175	-0.045105	
1012	CY2013-Q2	B2NTJ9	4/3/13 7:15					-0.00988					2		16	0.0364075	-0.0491525	
1013	CY2013-Q2	B2NTJ9	4/3/13 7:15					-0.00956					3		17	0.036565	-0.0618475	
1014	CY2013-Q2	B2NTJ9	4/3/13 7:15					-0.00605					4					
1015	CY2013-Q2	B2NTR9	4/2/13 7:00	WSCF	FTB	9060_TOC	Total organic carbon	-0.01085	-0.0116975	41374.54514	130406003	WSCF130406	1		k:	8		
1016	CY2013-Q2	B2NTR9	4/2/13 7:00					-0.01081					2		b:	0.073775705		
1017	CY2013-Q2	B2NTR9	4/2/13 7:00					-0.01141					3		s:	0.019316643		
1018	CY2013-Q2	B2NTR9	4/2/13 7:00					-0.01372					4					
1019	CY2013-Q2	B2NTT1	4/2/13 7:00	WSCF	FTB	9060_TOC	Total organic carbon	0.04025	0.036565	41374.54514	130406001	WSCF130406	1		SW:	0.911682165		
1020	CY2013-Q2	B2NTT1	4/2/13 7:00					0.03632					2					
1021	CY2013-Q2	B2NTT1	4/2/13 7:00					0.03378					3		Critical pt:	0.892		
1022	CY2013-Q2	B2NTT1	4/2/13 7:00					0.03591					4					
1023	CY2013-Q2	B2NTT3	4/2/13 7:00	WSCF	FTB	9060_TOC	Total organic carbon	-0.00951	-0.00949	41374.54514	130406004	WSCF130406	1		***SW > Critical pt, so normality accepted***			
1024	CY2013-Q2	B2NTT3	4/2/13 7:00					-0.00933					2					
1025	CY2013-Q2	B2NTT3	4/2/13 7:00					-0.00956					3					
1026	CY2013-Q2	B2NTT3	4/2/13 7:00					-0.00956					4					
1027	CY2013-Q2	B2NTT5	4/2/13 7:00	WSCF	FTB	9060_TOC	Total organic carbon	-0.02439	-0.0252825	41374.54514	130406002	WSCF130406	1					
1028	CY2013-Q2	B2NTT5	4/2/13 7:00					-0.02573					2					
1029	CY2013-Q2	B2NTT5	4/2/13 7:00					-0.02435					3					
1030	CY2013-Q2	B2NTT5	4/2/13 7:00					-0.02666					4					
1031	CY2013-Q2	B2P3C6	5/29/13 7:15	WSCF	FTB	9060_TOC	Total organic carbon	-0.00204	-0.00473	41429.45833	130630014	WSCF130630	1					
1032	CY2013-Q2	B2P3C6	5/29/13 7:15					-0.00509					2					
1033	CY2013-Q2	B2P3C6	5/29/13 7:15					-0.00497					3					
1034	CY2013-Q2	B2P3C6	5/29/13 7:15					-0.00682					4					
1035	CY2013-Q2	B2P3F4	4/11/13 8:30	WSCF	EB	9060_TOC	Total organic carbon	0.01909	0.02378	41381.40972	130462017	WSCF130462	1					
1036	CY2013-Q2	B2P3F4	4/11/13 8:30					0.02533					2					
1037	CY2013-Q2	B2P3F4	4/11/13 8:30					0.02537					3					
1038	CY2013-Q2	B2P3F4	4/11/13 8:30					0.02533					4					
1039	CY2013-Q2	B2P8D5	6/5/13 7:30	WSCF	FTB	9060_TOC	Total organic carbon	-0.00357	-0.00333	41431.44097	130660006	WSCF130660	1					
1040	CY2013-Q2	B2P8D5	6/5/13 7:30					-0.00394					2					
1041	CY2013-Q2	B2P8D5	6/5/13 7:30					-0.00274					3					
1042	CY2013-Q2	B2P8D5	6/5/13 7:30					-0.00307					4					
1043	CY2013-Q2	B2P8K5	6/6/13 7:20	WSCF	EB	9060_TOC	Total organic carbon	0.00109	0.0024275	41436.61458	130669013	WSCF130669	1					
1044	CY2013-Q2	B2P8K5	6/6/13 7:20					0.00323					2					
1045	CY2013-Q2	B2P8K5	6/6/13 7:20					0.00319					3					
1046	CY2013-Q2	B2P8K5	6/6/13 7:20					0.0022					4					
1047	CY2013-Q2	B2P977	6/12/13 7:15	WSCF	FTB	9060_TOC	Total organic carbon	0.01188	0.0121625	41463.45833	130687009	WSCF130687	1					
1048	CY2013-Q2	B2P977	6/12/13 7:15					0.01403					2					
1049	CY2013-Q2	B2P977	6/12/13 7:15					0.01044					3					
1050	CY2013-Q2	B2P977	6/12/13 7:15					0.0123					4					

Figure A.3. Spreadsheet for TOC from WSCF (17 sheets)

	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
1051	CY2013-Q2	B2P985	6/12/13 7:15	WSCF	FTB	9060_TOC	Total organic carbon	-0.01292	-0.012745	41463.45833	130687005	WSCF130687	1					
1052	CY2013-Q2	B2P985	6/12/13 7:15					-0.01395					2					
1053	CY2013-Q2	B2P985	6/12/13 7:15					-0.0109					3					
1054	CY2013-Q2	B2P985	6/12/13 7:15					-0.01321					4					
1055	CY2013-Q2	B2P988	6/12/13 7:15	WSCF	FTB	9060_TOC	Total organic carbon	-0.013	-0.0121875	41463.45833	130687003	WSCF130687	1					
1056	CY2013-Q2	B2P988	6/12/13 7:15					-0.01358					2					
1057	CY2013-Q2	B2P988	6/12/13 7:15					-0.01189					3					
1058	CY2013-Q2	B2P988	6/12/13 7:15					-0.01028					4					
1059	CY2013-Q2	B2P991	6/12/13 7:15	WSCF	FTB	9060_TOC	Total organic carbon	0.00814	0.008775	41463.45833	130687004	WSCF130687	1					
1060	CY2013-Q2	B2P991	6/12/13 7:15					0.00772					2					
1061	CY2013-Q2	B2P991	6/12/13 7:15					0.00834					3					
1062	CY2013-Q2	B2P991	6/12/13 7:15					0.0109					4					
1063																		
1064	CY2013-Q3	B2PF62	7/8/13 8:40	WSCF	FTB	9060_TOC	Total organic carbon	0.005	0.0061675	41479.39931	130715003	WSCF130715	1		Shapiro-Wilk Normality Test (all data)			
1065	CY2013-Q3	B2PF62	7/8/13 8:40					0.00772					2		**Rank #**	**Ave (mg/L)**	**x(n-i+1) - x(i)**	**Coefficient**
1066	CY2013-Q3	B2PF62	7/8/13 8:40					0.00711					3		1	-0.0093875	0.0721925	0.5601
1067	CY2013-Q3	B2PF62	7/8/13 8:40					0.00484					4		2	0.0061675	0.0479125	0.3315
1068	CY2013-Q3	B2PFJ7	7/11/13 7:30	WSCF	FTB	9060_TOC	Total organic carbon	0.04431	0.04566	41485.43264	130738015	WSCF130738	1		3	0.015315	0.030345	0.226
1069	CY2013-Q3	B2PFJ7	7/11/13 7:30					0.04534					2		4	0.0268925	0.012455	0.1429
1070	CY2013-Q3	B2PFJ7	7/11/13 7:30					0.04588					3		5	0.0297675	0.0083825	0.0695
1071	CY2013-Q3	B2PFJ7	7/11/13 7:30					0.04711					4		6	0.0321825	0	
1072	CY2013-Q3	B2PH25	7/11/13 7:30	WSCF	FTB	9060_TOC	Total organic carbon	0.04077	0.0393475	41484.4375	130738009	WSCF130738	1		7	0.03815	-0.0083825	
1073	CY2013-Q3	B2PH25	7/11/13 7:30					0.03797					2		8	0.0393475	-0.012455	
1074	CY2013-Q3	B2PH25	7/11/13 7:30					0.0392					3		9	0.04566	-0.030345	
1075	CY2013-Q3	B2PH25	7/11/13 7:30					0.03945					4		10	0.05408	-0.0479125	
1076	CY2013-Q3	B2PH27	7/11/13 7:30	WSCF	FTB	9060_TOC	Total organic carbon	0.02573	0.0268925	41484.4375	130738010	WSCF130738	1		11	0.062805	-0.0721925	
1077	CY2013-Q3	B2PH27	7/11/13 7:30					0.02552					2					
1078	CY2013-Q3	B2PH27	7/11/13 7:30					0.02622					3		k:	5		
1079	CY2013-Q3	B2PH27	7/11/13 7:30					0.0301					4		b:	0.065538386		
1080	CY2013-Q3	B2PH29	7/11/13 7:30	WSCF	FTB	9060_TOC	Total organic carbon	0.01572	0.015315	41484.4375	130738011	WSCF130738	1		s:	0.020960855		
1081	CY2013-Q3	B2PH29	7/11/13 7:30					0.01378					2					
1082	CY2013-Q3	B2PH29	7/11/13 7:30					0.01341					3		SW:	0.977627664		
1083	CY2013-Q3	B2PH29	7/11/13 7:30					0.01835					4					
1084	CY2013-Q3	B2PDR3	7/18/13 7:15	WSCF	EB	9060_TOC	Total organic carbon	0.03788	0.03815	41491.47917	130769007	WSCF130769	1		Critical pt:	0.85		
1085	CY2013-Q3	B2PDR3	7/18/13 7:15					0.03842					2					
1086	CY2013-Q3	B2PDR3	7/18/13 7:15					0.03953					3		***SW > Critical pt, so normality accepted***			
1087	CY2013-Q3	B2PDR3	7/18/13 7:15					0.03677					4					
1088	CY2013-Q3	B2PRX6	7/29/13 9:00	WSCF	FTB	9060_TOC	Total organic carbon	-0.00942	-0.0093875	41492.45486	130799005	WSCF130799	1					
1089	CY2013-Q3	B2PRX6	7/29/13 9:00					-0.01049					2					
1090	CY2013-Q3	B2PRX6	7/29/13 9:00					-0.0081					3					
1091	CY2013-Q3	B2PRX6	7/29/13 9:00					-0.00954					4					
1092	CY2013-Q3	B2PT81	8/8/13 7:30	WSCF	FTB	9060_TOC	Total organic carbon	0.05714	0.05408	41500.41736	130837009	WSCF130837	1					
1093	CY2013-Q3	B2PT81	8/8/13 7:30					0.05516					2					
1094	CY2013-Q3	B2PT81	8/8/13 7:30					0.04997					3					
1095	CY2013-Q3	B2PT81	8/8/13 7:30					0.05405					4					
1096	CY2013-Q3	B2PY04	9/18/13 7:10	WSCF	FTB	9060_TOC	Total organic carbon	0.06108	0.062805	41541.50139	131021007	WSCF131021	1					

Figure A.3. Spreadsheet for TOC from WSCF (17 sheets)

	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
1097	CY2013-Q3	B2PY04	9/18/13 7:10					0.06121					2					
1098	CY2013-Q3	B2PY04	9/18/13 7:10					0.06877					3					
1099	CY2013-Q3	B2PY04	9/18/13 7:10					0.06016					4					
1100	CY2013-Q3	B2PT86	9/19/13 7:30	WSCF	FTB	9060_TOC	Total organic carbon	0.03228	0.0321825	41541.50139	131033003	WSCF131033	1					
1101	CY2013-Q3	B2PT86	9/19/13 7:30					0.03373					2					
1102	CY2013-Q3	B2PT86	9/19/13 7:30					0.0332					3					
1103	CY2013-Q3	B2PT86	9/19/13 7:30					0.02952					4					
1104	CY2013-Q3	B2PX74	9/30/13 8:30	WSCF	FTB	9060_TOC	Total organic carbon	0.0336	0.0297675	41562.38889	131077005	WSCF131077	1					
1105	CY2013-Q3	B2PX74	9/30/13 8:30					0.03182					2					
1106	CY2013-Q3	B2PX74	9/30/13 8:30					0.02755					3					
1107	CY2013-Q3	B2PX74	9/30/13 8:30					0.0261					4					
1108																		
1109	CY2013-Q4	B2R369	10/8/13 7:30	WSCF	FTB	9060_TOC	Total organic carbon	0.02794	0.0304725	41576.55903	131122025	WSCF131122	1		Shapiro-Wilk Normality Test (all data)			
1110	CY2013-Q4	B2R369	10/8/13 7:30					0.0284					2		**Rank #**	**Ave (mg/L)**	**x(n-i+1) - x(i)**	**Coefficient**
1111	CY2013-Q4	B2R369	10/8/13 7:30					0.03024					3		1	0.0304725	0.0978025	0.4886
1112	CY2013-Q4	B2R369	10/8/13 7:30					0.03531					4		2	0.0357175	0.0723075	0.3253
1113	CY2013-Q4	B2R3H4	10/7/13 8:00	WSCF	FTB	9060_TOC	Total organic carbon	0.0672	0.0728025	41568.58125	131115007	WSCF131115	1		3	0.0459575	0.0593675	0.2553
1114	CY2013-Q4	B2R3H4	10/7/13 8:00					0.06943					2		4	0.046385	0.0514375	0.2027
1115	CY2013-Q4	B2R3H4	10/7/13 8:00					0.07627					3		5	0.0466	0.0458325	0.1587
1116	CY2013-Q4	B2R3H4	10/7/13 8:00					0.07831					4		6	0.050345	0.0224575	0.1197
1117	CY2013-Q4	B2R3N9	10/8/13 7:30	WSCF	FTB	9060_TOC	Total organic carbon	0.03945	0.0357175	41575.55208	131122014	WSCF131122	1		7	0.05204	0.0187425	0.0837
1118	CY2013-Q4	B2R3N9	10/8/13 7:30					0.03892					2		8	0.052615	0.0160125	0.0496
1119	CY2013-Q4	B2R3N9	10/8/13 7:30					0.03452					3		9	0.0597975	0.0018275	0.0163
1120	CY2013-Q4	B2R3N9	10/8/13 7:30					0.02998					4		10	0.061625	-0.0018275	
1121	CY2013-Q4	B2R3P1	10/8/13 7:30	WSCF	FTB	9060_TOC	Total organic carbon	0.05556	0.052615	41575.55208	131122012	WSCF131122	1		11	0.0686275	-0.0160125	
1122	CY2013-Q4	B2R3P1	10/8/13 7:30					0.0524					2		12	0.0707825	-0.0187425	
1123	CY2013-Q4	B2R3P1	10/8/13 7:30					0.04951					3		13	0.0728025	-0.0224575	
1124	CY2013-Q4	B2R3P1	10/8/13 7:30					0.05299					4		14	0.0924325	-0.0458325	
1125	CY2013-Q4	B2R3P3	10/8/13 7:30	WSCF	FTB	9060_TOC	Total organic carbon	0.06319	0.061625	41575.55208	131122013	WSCF131122	1		15	0.0978225	-0.0514375	
1126	CY2013-Q4	B2R3P3	10/8/13 7:30					0.05832					2		16	0.105325	-0.0593675	
1127	CY2013-Q4	B2R3P3	10/8/13 7:30					0.06384					3		17	0.108025	-0.0723075	
1128	CY2013-Q4	B2R3P3	10/8/13 7:30					0.06115					4		18	0.128275	-0.0978025	
1129	CY2013-Q4	B2R3P8	10/7/13 8:00	WSCF	FTB	9060_TOC	Total organic carbon	0.06897	0.0686275	41568.58125	131115008	WSCF131115	1					
1130	CY2013-Q4	B2R3P8	10/7/13 8:00					0.06325					2		k:	9		
1131	CY2013-Q4	B2R3P8	10/7/13 8:00					0.07463					3		b:	0.109245371		
1132	CY2013-Q4	B2R3P8	10/7/13 8:00					0.06766					4		s:	0.027566138		
1133	CY2013-Q4	B2R3R0	10/7/13 8:00	WSCF	FTB	9060_TOC	Total organic carbon	0.1084	0.108025	41568.58125	131115006	WSCF131115	1					
1134	CY2013-Q4	B2R3R0	10/7/13 8:00					0.1102					2		SW:	0.923858204		
1135	CY2013-Q4	B2R3R0	10/7/13 8:00					0.1026					3					
1136	CY2013-Q4	B2R3R0	10/7/13 8:00					0.1109					4		Critical pt:	0.897		
1137	CY2013-Q4	B2R3R2	10/7/13 8:00	WSCF	FTB	9060_TOC	Total organic carbon	0.09521	0.0924325	41568.58125	131115009	WSCF131115	1					
1138	CY2013-Q4	B2R3R2	10/7/13 8:00					0.08982					2		***SW > Critical pt, so normality accepted***			
1139	CY2013-Q4	B2R3R2	10/7/13 8:00					0.09396					3					
1140	CY2013-Q4	B2R3R2	10/7/13 8:00					0.09074					4					
1141	CY2013-Q4	B2R406	10/14/13 8:00	WSCF	FTB	9060_TOC	Total organic carbon	0.08403	0.0707825	41578.52778	131153011	WSCF131153	1					
1142	CY2013-Q4	B2R406	10/14/13 8:00					0.07463					2					

Figure A.3. Spreadsheet for TOC from WSCF (17 sheets)

	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
1143	CY2013-Q4	B2R406	10/14/13 8:00					0.06365					3					
1144	CY2013-Q4	B2R406	10/14/13 8:00					0.06082					4					
1145	CY2013-Q4	B2R4C3	10/9/13 8:30	WSCF	FTB	9060_TOC	Total organic carbon	0.05806	0.0597975	41577.58264	131134001	WSCF131134	1					
1146	CY2013-Q4	B2R4C3	10/9/13 8:30					0.05687					2					
1147	CY2013-Q4	B2R4C3	10/9/13 8:30					0.06384					3					
1148	CY2013-Q4	B2R4C3	10/9/13 8:30					0.06042					4					
1149	CY2013-Q4	B2RFY6	10/23/13 7:15	WSCF	FTB	9060_TOC	Total organic carbon	0.1022	0.0978225	41589.40278	131214001	WSCF131214	1					
1150	CY2013-Q4	B2RFY6	10/23/13 7:15					0.09442					2					
1151	CY2013-Q4	B2RFY6	10/23/13 7:15					0.1013					3					
1152	CY2013-Q4	B2RFY6	10/23/13 7:15					0.09337					4					
1153	CY2013-Q4	B2RP97	10/16/13 7:45	WSCF	FTB	9060_TOC	Total organic carbon	0.1301	0.128275	41589.40278	131173005	WSCF131173	1					
1154	CY2013-Q4	B2RP97	10/16/13 7:45					0.1255					2					
1155	CY2013-Q4	B2RP97	10/16/13 7:45					0.1311					3					
1156	CY2013-Q4	B2RP97	10/16/13 7:45					0.1264					4					
1157	CY2013-Q4	B2RT58	11/4/13 8:15	WSCF	FTB	9060_TOC	Total organic carbon	0.1046	0.105325	41591.51389	131277003	WSCF131277	1					
1158	CY2013-Q4	B2RT58	11/4/13 8:15					0.1051					2					
1159	CY2013-Q4	B2RT58	11/4/13 8:15					0.1063					3					
1160	CY2013-Q4	B2RT58	11/4/13 8:15					0.1053					4					
1161	CY2013-Q4	B2T1F8	10/15/13 7:45	WSCF	FTB	9060_TOC	Total organic carbon	0.04556	0.0459575	41583.58333	131169040	WSCF131169	1					
1162	CY2013-Q4	B2T1F8	10/15/13 7:45					0.04642					2					
1163	CY2013-Q4	B2T1F8	10/15/13 7:45					0.04543					3					
1164	CY2013-Q4	B2T1F8	10/15/13 7:45					0.04642					4					
1165	CY2013-Q4	B2T1H1	10/15/13 7:45	WSCF	FTB	9060_TOC	Total organic carbon	0.0572	0.05204	41583.58333	131169030	WSCF131169	1					
1166	CY2013-Q4	B2T1H1	10/15/13 7:45					0.05102					2					
1167	CY2013-Q4	B2T1H1	10/15/13 7:45					0.05063					3					
1168	CY2013-Q4	B2T1H1	10/15/13 7:45					0.04931					4					
1169	CY2013-Q4	B2T1H2	10/15/13 7:45	WSCF	FTB	9060_TOC	Total organic carbon	0.04385	0.046385	41583.58333	131169031	WSCF131169	1					
1170	CY2013-Q4	B2T1H2	10/15/13 7:45					0.04754					2					
1171	CY2013-Q4	B2T1H2	10/15/13 7:45					0.04412					3					
1172	CY2013-Q4	B2T1H2	10/15/13 7:45					0.05003					4					
1173	CY2013-Q4	B2T1H3	10/15/13 7:45	WSCF	FTB	9060_TOC	Total organic carbon	0.04852	0.0466	41583.58333	131169032	WSCF131169	1					
1174	CY2013-Q4	B2T1H3	10/15/13 7:45					0.04471					2					
1175	CY2013-Q4	B2T1H3	10/15/13 7:45					0.04721					3					
1176	CY2013-Q4	B2T1H3	10/15/13 7:45					0.04596					4					
1177	CY2013-Q4	B2TLY5	12/19/13 7:15	WSCF	FTB	9060_TOC	Total organic carbon	0.05345	0.050345	41647.43681	131565010	WSCF131565	1					
1178	CY2013-Q4	B2TLY5	12/19/13 7:15					0.05148					2					
1179	CY2013-Q4	B2TLY5	12/19/13 7:15					0.05023					3					
1180	CY2013-Q4	B2TLY5	12/19/13 7:15					0.04622					4					

Figure A.4. Spreadsheet for TOX from WSCF (7 sheets)

	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
387	CY2012-Q1	B2JTM3	1/9/12 8:15	WSCF	FTB	9020_TOX	Total organic halides	0.82	0	1/15/12 11:11	120065008	WSCF120065	1		Shapiro-Wilk Normality Test			
388	CY2012-Q1	B2JTM3	1/9/12 8:15					1.21					2		**Rank #**	**Ave (mg/L)**	**x(n-i+1) - x(i)**	**Coefficient**
389	CY2012-Q1	B2JTM3	1/9/12 8:15					1.88					3		1	0.273333333	6.52	0.4734
390	CY2012-Q1	B2JV63	1/9/12 8:15	WSCF	FTB	9020_TOX	Total organic halides	1.39	2.07	1/15/12 11:45	120065017	WSCF120065	1		2	0.976666667	4.068333333	0.3211
391	CY2012-Q1	B2JV63	1/9/12 8:15					2.09					2		3	1.24	3.775	0.2565
392	CY2012-Q1	B2JV63	1/9/12 8:15					2.73					3		4	1.303333333	3.446666667	0.2085
393	CY2012-Q1	B2JV67	1/9/12 8:15	WSCF	FTB	9020_TOX	Total organic halides	1.48	1.24	1/15/12 11:45	120065016	WSCF120065	1		5	1.583333333	3.136666667	0.1686
394	CY2012-Q1	B2JV67	1/9/12 8:15					1.46					2		6	1.866666667	2.816666667	0.1334
395	CY2012-Q1	B2JV67	1/9/12 8:15					0.78					3		7	2.02	2.36	0.1013
396	CY2012-Q1	B2JVB2	1/9/12 8:15	WSCF	FTB	9020_TOX	Total organic halides	2.19	2.836666667	1/15/12 11:45	120065017	WSCF120065	1		8	2.07	1.25	0.0711
397	CY2012-Q1	B2JVB2	1/9/12 8:15					2.37					2		9	2.486666667	0.666666667	0.0422
398	CY2012-Q1	B2JVB2	1/9/12 8:15					3.95					3		10	2.836666667	0.188333333	0.014
399	CY2012-Q1	B2JVB4	1/9/12 8:15	WSCF	FTB	9020_TOX	Total organic halides	0.15	2.486666667	1/15/12 11:11	120065015	WSCF120065	1		11	3.025	-0.188333333	
400	CY2012-Q1	B2JVB4	1/9/12 8:15					2.51					2		12	3.153333333	-0.666666667	
401	CY2012-Q1	B2JVB4	1/9/12 8:15					4.8					3		13	3.32	-1.25	
402	CY2012-Q1	B2JVB6	1/9/12 8:15	WSCF	FTB	9020_TOX	Total organic halides	0.82	3.153333333	1/15/12 11:45	120065016	WSCF120065	1		14	4.38	-2.36	
403	CY2012-Q1	B2JVB6	1/9/12 8:15					5.49					2		15	4.683333333	-2.816666667	
404	CY2012-Q1	B2JVB6	1/9/12 8:15					3.15					3		16	4.72	-3.136666667	
405	CY2012-Q1	B2JVD0	1/9/12 8:45	WSCF	FTB	9020_TOX	Total organic halides	4.28	5.045	1/11/12 10:45	120064016	WSCF120064	1		17	4.75	-3.446666667	
406	CY2012-Q1	B2JVD0	1/9/12 8:45					5.81					2		18	5.015	-3.775	
407	CY2012-Q1	B2JVD2	1/9/12 8:45	WSCF	FTB	9020_TOX	Total organic halides	1.49	4.38	1/11/12 10:45	120064013	WSCF120064	1		19	5.045	-4.068333333	
408	CY2012-Q1	B2JVD2	1/9/12 8:45					2.84					2		20	6.793333333	-6.52	
409	CY2012-Q1	B2JVD2	1/9/12 8:45					8.81					3					
410	CY2012-Q1	B2JVD4	1/9/12 8:45	WSCF	FTB	9020_TOX	Total organic halides	3.2	5.015	1/11/12 10:45	120064015	WSCF120064	1		k:	10		
411	CY2012-Q1	B2JVD4	1/9/12 8:45					6.83					2					
412	CY2012-Q1	B2JR79	1/11/12 8:00	WSCF	FTB	9020_TOX	Total organic halides	13.39	6.793333333	1/30/12 14:24	120087014	WSCF120087	1		b:	7.343125667		
413	CY2012-Q1	B2JR79	1/11/12 8:00					3.02					2		s:	1.721535157		
414	CY2012-Q1	B2JR79	1/11/12 8:00					3.97					3					
415	CY2012-Q1	B2JRR1	1/11/12 8:00	WSCF	FTB	9020_TOX	Total organic halides	0.42	0.273333333	1/30/12 14:24	120087016	WSCF120087	1		SW:	0.957583221		
416	CY2012-Q1	B2JRR1	1/11/12 8:00					0					2					
417	CY2012-Q1	B2JRR1	1/11/12 8:00					0.4					3		Critical pt:	0.868		
418	CY2012-Q1	B2JTT5	1/11/12 8:00	WSCF	FTB	9020_TOX	Total organic halides	3.23	3.025	1/30/12 14:24	120087016	WSCF120087	1					
419	CY2012-Q1	B2JTT5	1/11/12 8:00					2.82					2		***SW > Critical pt, so normality accepted***			
420	CY2012-Q1	B2JV15	1/11/12 8:00	WSCF	FTB	9020_TOX	Total organic halides	5.26	4.72	1/30/12 14:24	120087015	WSCF120087	1					
421	CY2012-Q1	B2JV15	1/11/12 8:00					5.2					2					
422	CY2012-Q1	B2JV15	1/11/12 8:00					3.7					3					
423	CY2012-Q1	B2JV19	1/11/12 8:00	WSCF	FTB	9020_TOX	Total organic halides	0.51	2.02	1/30/12 14:24	120087016	WSCF120087	1					
424	CY2012-Q1	B2JV19	1/11/12 8:00					4.21					2					
425	CY2012-Q1	B2JV19	1/11/12 8:00					1.34					3					
426	CY2012-Q1	B2JV17	1/25/12 7:30	WSCF	FTB	9020_TOX	Total organic halides	0.42	3.32	2/7/12 10:58	120133020	WSCF120133	1					
427	CY2012-Q1	B2JV17	1/25/12 7:30					4.7					2					
428	CY2012-Q1	B2JV17	1/25/12 7:30					4.84					3					
429	CY2012-Q1	B2JV65	1/25/12 7:30	WSCF	FTB	9020_TOX	Total organic halides	3.58	1.866666667	2/7/12 10:58	120133020	WSCF120133	1					
430	CY2012-Q1	B2JV65	1/25/12 7:30					0.61					2					
431	CY2012-Q1	B2JV65	1/25/12 7:30					1.41					3					
432	CY2012-Q1	B2K3N3	3/4/12 7:00	WSCF	FTB	9020_TOX	Total organic halides	1.66	0.976666667	3/21/12 21:55	120353025	WSCF120353	1					

Figure A.4. Spreadsheet for TOX from WSCF (7 sheets)

	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
433	CY2012-Q1	B2K3N3	3/4/12 7:00					0.69					2					
434	CY2012-Q1	B2K3N3	3/4/12 7:00					0.58					3					
435	CY2012-Q1	B2K4Y8	3/4/12 7:00	WSCF	FTB	9020_TOX	Total organic halides	0.58	1.583333333	3/21/12 21:55	120353022	WSCF120353	1					
436	CY2012-Q1	B2K4Y8	3/4/12 7:00					2.22					2					
437	CY2012-Q1	B2K4Y8	3/4/12 7:00					1.95					3					
438	CY2012-Q1	B2K500	3/4/12 7:00	WSCF	FTB	9020_TOX	Total organic halides	4.14	4.75	3/21/12 21:55	120353023	WSCF120353	1					
439	CY2012-Q1	B2K500	3/4/12 7:00					5.36					2					
440	CY2012-Q1	B2K502	3/4/12 7:00	WSCF	FTB	9020_TOX	Total organic halides	5	4.683333333	3/21/12 21:55	120353024	WSCF120353	1					
441	CY2012-Q1	B2K502	3/4/12 7:00					4.09					2					
442	CY2012-Q1	B2K502	3/4/12 7:00					4.96					3					
443																		
444	CY2012-Q2	B2K4K6	4/4/12 7:45	WSCF	FTB	9020_TOX	Total organic halides	1.12	1.815	4/10/12 14:52	120438014	WSCF120438	1		Shapiro-Wilk Normality Test			
445	CY2012-Q2	B2K4K6	4/4/12 7:45					2.51					2		**Rank #**	**Ave (mg/L)**	**x(n-i+1) - x(i)**	**Coefficient**
446	CY2012-Q2	B2K525	4/4/12 7:45	WSCF	FTB	9020_TOX	Total organic halides	2.74	2.703333333	4/10/12 14:52	120438013	WSCF120438	1		1	0	12.305	0.5056
447	CY2012-Q2	B2K525	4/4/12 7:45					3.53					2		2	0	6.395	0.329
448	CY2012-Q2	B2K525	4/4/12 7:45					1.84					3		3	0.13	2.753333333	0.2521
449	CY2012-Q2	B2K527	4/4/12 7:45	WSCF	FTB	9020_TOX	Total organic halides	6.99	6.395	4/10/12 14:52	120438015	WSCF120438	1		4	0.416666667	2.43	0.1939
450	CY2012-Q2	B2K527	4/4/12 7:45					5.8					2		5	0.443333333	2.26	0.1447
451	CY2012-Q2	B2K529	4/4/12 7:45	WSCF	FTB	9020_TOX	Total organic halides	3.13	2.13	4/10/12 14:52	120438012	WSCF120438	1		6	0.526666667	1.603333333	0.1005
452	CY2012-Q2	B2K529	4/4/12 7:45					1.85					2		7	1.396666667	0.418333333	0.0593
453	CY2012-Q2	B2K529	4/4/12 7:45					1.41					3		8	1.556666667	0.236666667	0.0196
454	CY2012-Q2	B2KK27	4/18/12 7:00	WSCF	FTB	9020_TOX	Total organic halides	0	0.416666667	5/2/12 14:57	120500006	WSCF120500	1		9	1.793333333	-0.236666667	
455	CY2012-Q2	B2KK27	4/18/12 7:00					0.72					2		10	1.815	-0.418333333	
456	CY2012-Q2	B2KK27	4/18/12 7:00					0.53					3		11	2.13	-1.603333333	
457	CY2012-Q2	B2KK48	4/13/12 7:10	WSCF	FTB	9020_TOX	Total organic halides	0	0.13	4/24/12 15:57	120477037	WSCF120477	1		12	2.703333333	-2.26	
458	CY2012-Q2	B2KK48	4/13/12 7:10					0.39					2		13	2.846666667	-2.43	
459	CY2012-Q2	B2KK48	4/13/12 7:10					0					3		14	2.883333333	-2.753333333	
460	CY2012-Q2	B2KKK9	4/18/12 7:00	WSCF	FTB	9020_TOX	Total organic halides	3.87	1.556666667	5/2/12 14:52	120500010	WSCF120500	1		15	6.395	-6.395	
461	CY2012-Q2	B2KKK9	4/18/12 7:00					0					2		16	12.305	-12.305	
462	CY2012-Q2	B2KKK9	4/18/12 7:00					0.8					3					
463	CY2012-Q2	B2KKL1	4/18/12 7:00	WSCF	FTB	9020_TOX	Total organic halides	0.59	0.526666667	5/2/12 14:52	120500012	WSCF120500	1		k:	8		
464	CY2012-Q2	B2KKL1	4/18/12 7:00					0					2					
465	CY2012-Q2	B2KKL1	4/18/12 7:00					0.99					3		b:	10.00825817		
466	CY2012-Q2	B2KKL3	4/18/12 7:00	WSCF	FTB	9020_TOX	Total organic halides	11.15	12.305	5/2/12 14:52	120500011	WSCF120500	1		s:	3.108801169		
467	CY2012-Q2	B2KKL3	4/18/12 7:00					13.46					2					
468	CY2012-Q2	B2KKM4	4/13/12 7:10	WSCF	FTB	9020_TOX	Total organic halides	0	1.396666667	4/23/12 15:04	120477035	WSCF120477	1		SW:	0.690939222		
469	CY2012-Q2	B2KKM4	4/13/12 7:10					0					2					
470	CY2012-Q2	B2KKM4	4/13/12 7:10					4.19					3		Critical pt:	0.887		
471	CY2012-Q2	B2KKM6	4/13/12 7:10	WSCF	FTB	9020_TOX	Total organic halides	0	0.443333333	4/23/12 15:04	120477033	WSCF120477	1					
472	CY2012-Q2	B2KKM6	4/13/12 7:10					0.52					2		***SW < Critical pt, so normality rejected***			
473	CY2012-Q2	B2KKM6	4/13/12 7:10					0.81					3					
474	CY2012-Q2	B2KKM8	4/13/12 7:10	WSCF	FTB	9020_TOX	Total organic halides	0	0	4/23/12 15:04	120477034	WSCF120477	1					
475	CY2012-Q2	B2KTD4	5/7/12 8:00	WSCF	FTB	9020_TOX	Total organic halides	5.38	2.846666667	5/9/12 14:33	120602018	WSCF120602	1					
476	CY2012-Q2	B2KTD4	5/7/12 8:00					1.29					2					
477	CY2012-Q2	B2KTD4	5/7/12 8:00					1.87					3					
478	CY2012-Q2	B2L786	5/7/12 8:00	WSCF	FTB	9020_TOX	Total organic halides	3.84	2.883333333	5/9/12 14:38	120602025	WSCF120602	1					

Figure A.4. Spreadsheet for TOX from WSCF (7 sheets)

	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
479	CY2012-Q2	B2L786	5/7/12 8:00					4.7					2					
480	CY2012-Q2	B2L786	5/7/12 8:00					0.11					3					
481	CY2012-Q2	B2L787	5/7/12 8:00	WSCF	FTB	9020_TOX	Total organic halides	3.67	1.793333333	5/9/12 14:33	120602019	WSCF120602	1					
482	CY2012-Q2	B2L787	5/7/12 8:00					0.61					2					
483	CY2012-Q2	B2L787	5/7/12 8:00					1.1					3					
484	CY2012-Q2	B2L788	5/7/12 8:00	WSCF	FTB	9020_TOX	Total organic halides	0	0	5/9/12 14:33	120602020	WSCF120602	1					
485																		
486	CY2012-Q3	B2L8V6	7/27/12 7:05	WSCF	FTB	9020_TOX	Total organic halides	3.43	5.686666667	8/7/12 15:41	120980007	WSCF120980	1		Shapiro-Wilk Normality Test			
487	CY2012-Q3	B2L8V6	7/27/12 7:05					7.97					2		**Rank #**	**Ave (mg/L)**	**x(n-i+1) - x(i)**	**Coefficient**
488	CY2012-Q3	B2L8V6	7/27/12 7:05					5.66					3		1	0	5.686666667	0.4968
489	CY2012-Q3	B2L8X5	7/3/12 8:00	WSCF	FTB	9020_TOX	Total organic halides	2.52	2.726666667	7/24/12 14:50	120873019	WSCF120873	1		2	0.1	4.696666667	0.3273
490	CY2012-Q3	B2L8X5	7/3/12 8:00					3.62					2		3	0.406666667	3.986666667	0.254
491	CY2012-Q3	B2L8X5	7/3/12 8:00					2.04					3		4	1.32	2.38	0.1988
492	CY2012-Q3	B2L8Y6	7/3/12 7:00	WSCF	FTB	9020_TOX	Total organic halides	0	0	7/16/12 15:33	120872017	WSCF120872	1		5	1.346666667	2.213333333	0.1524
493	CY2012-Q3	B2L8Y6	7/3/12 7:00					0					2		6	1.543333333	1.833333333	0.1109
494	CY2012-Q3	B2L8Y6	7/3/12 7:00					0					3		7	2.223333333	0.503333333	0.0725
495	CY2012-Q3	B2L973	7/17/12 7:15	WSCF	FTB	9020_TOX	Total organic halides	7.86	4.796666667	7/30/12 14:41	120919006	WSCF120919	1		8	2.266666667	0.453333333	0.0359
496	CY2012-Q3	B2L973	7/17/12 7:15					3.71					2		9	2.666666667	0	
497	CY2012-Q3	B2L973	7/17/12 7:15					2.82					3		10	2.72	-0.453333333	
498	CY2012-Q3	B2L9P4	7/3/12 8:00	WSCF	FTB	9020_TOX	Total organic halides	0.06	1.543333333	7/24/12 14:50	120873013	WSCF120873	1		11	2.726666667	-0.503333333	
499	CY2012-Q3	B2L9P4	7/3/12 8:00					2.52					2		12	3.376666667	-1.833333333	
500	CY2012-Q3	B2L9P4	7/3/12 8:00					2.05					3		13	3.56	-2.213333333	
501	CY2012-Q3	B2L9P6	7/3/12 8:00	WSCF	FTB	9020_TOX	Total organic halides	5.72	3.376666667	7/24/12 14:50	120873012	WSCF120873	1		14	3.7	-2.38	
502	CY2012-Q3	B2L9P6	7/3/12 8:00					0.42					2		15	4.393333333	-3.986666667	
503	CY2012-Q3	B2L9P6	7/3/12 8:00					3.99					3		16	4.796666667	-4.696666667	
504	CY2012-Q3	B2L9R3	7/3/12 7:00	WSCF	FTB	9020_TOX	Total organic halides	2.67	2.72	7/16/12 15:26	120872006	WSCF120872	1		17	5.686666667	-5.686666667	
505	CY2012-Q3	B2L9R3	7/3/12 7:00					5.01					2					
506	CY2012-Q3	B2L9R3	7/3/12 7:00					0.48					3		k:	8		
507	CY2012-Q3	B2L9R5	7/3/12 7:00	WSCF	FTB	9020_TOX	Total organic halides	0	0.406666667	7/16/12 15:26	120872005	WSCF120872	1					
508	CY2012-Q3	B2L9R5	7/3/12 7:00					0					2		b:	6.441507333		
509	CY2012-Q3	B2L9R5	7/3/12 7:00					1.22					3		s:	1.632257249		
510	CY2012-Q3	B2L9R7	7/3/12 7:00	WSCF	FTB	9020_TOX	Total organic halides	0.3	0.1	7/16/12 15:26	120872007	WSCF120872	1					
511	CY2012-Q3	B2L9R7	7/3/12 7:00					0					2		SW:	0.973369686		
512	CY2012-Q3	B2L9R7	7/3/12 7:00					0					3					
513	CY2012-Q3	B2L9Y4	7/17/12 7:15	WSCF	FTB	9020_TOX	Total organic halides	2.13	2.266666667	7/30/12 14:41	120919007	WSCF120919	1		Critical pt:	0.892		
514	CY2012-Q3	B2L9Y4	7/17/12 7:15					1.18					2					
515	CY2012-Q3	B2L9Y4	7/17/12 7:15					3.49					3		***SW > Critical pt, so normality accepted***			
516	CY2012-Q3	B2L9Y6	7/17/12 7:15	WSCF	FTB	9020_TOX	Total organic halides	3.75	4.393333333	7/30/12 14:41	120919008	WSCF120919	1					
517	CY2012-Q3	B2L9Y6	7/17/12 7:15					4.61					2					
518	CY2012-Q3	B2L9Y6	7/17/12 7:15					4.82					3					
519	CY2012-Q3	B2L9Y8	7/17/12 7:15	WSCF	FTB	9020_TOX	Total organic halides	1.4	1.346666667	7/30/12 14:45	120919005	WSCF120919	1					
520	CY2012-Q3	B2L9Y8	7/17/12 7:15					2.54					2					
521	CY2012-Q3	B2L9Y8	7/17/12 7:15					0.1					3					
522	CY2012-Q3	B2LKY0	9/5/12 8:00	WSCF	FTB	9020_TOX	Total organic halides	4.29	3.7	9/24/12 14:36	121121022	WSCF121121	1					
523	CY2012-Q3	B2LKY0	9/5/12 8:00					3.31					2					
524	CY2012-Q3	B2LKY0	9/5/12 8:00					3.5					3					

Figure A.4. Spreadsheet for TOX from WSCF (7 sheets)

	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
525	CY2012-Q3	B2LL71	9/5/12 8:00	WSCF	FTB	9020_TOX	Total organic halides	0.52	2.223333333	9/24/12 14:36	121121021	WSCF121121	1						
526	CY2012-Q3	B2LL71	9/5/12 8:00					2.21					2						
527	CY2012-Q3	B2LL71	9/5/12 8:00					3.94					3						
528	CY2012-Q3	B2LL73	9/5/12 8:00	WSCF	FTB	9020_TOX	Total organic halides	1.86	1.32	9/24/12 14:36	121121023	WSCF121121	1						
529	CY2012-Q3	B2LL73	9/5/12 8:00					0.8					2						
530	CY2012-Q3	B2LL73	9/5/12 8:00					1.3					3						
531	CY2012-Q3	B2LL75	9/5/12 8:00	WSCF	FTB	9020_TOX	Total organic halides	3.08	2.666666667	9/24/12 14:36	121121024	WSCF121121	1						
532	CY2012-Q3	B2LL75	9/5/12 8:00					1.98					2						
533	CY2012-Q3	B2LL75	9/5/12 8:00					2.94					3						
534	CY2012-Q3	B2LPX4	7/3/12 8:00	WSCF	FTB	9020_TOX	Total organic halides	3.49	3.56	7/24/12 14:50	120873014	WSCF120873	1						
535	CY2012-Q3	B2LPX4	7/3/12 8:00					3.84					2						
536	CY2012-Q3	B2LPX4	7/3/12 8:00					3.35					3						
537																			
538	CY2012-Q4	B2M0W9	10/11/12 7:45	WSCF	FTB	9020_TOX	Total organic halides	2.56	4.136666667	41204.62431	121289029	WSCF121289	1		Only 4 blanks results this quarter				
539	CY2012-Q4	B2M0W9	10/11/12 7:45					8.08					2		Normality assumed				
540	CY2012-Q4	B2M0W9	10/11/12 7:45					1.77					3						
541	CY2012-Q4	B2M1X8	10/11/12 7:45	WSCF	FTB	9020_TOX	Total organic halides	1.96	3.443333333	41204.61875	121289019	WSCF121289	1						
542	CY2012-Q4	B2M1X8	10/11/12 7:45					5.62					2						
543	CY2012-Q4	B2M1X8	10/11/12 7:45					2.75					3						
544	CY2012-Q4	B2M1Y0	10/11/12 7:45	WSCF	FTB	9020_TOX	Total organic halides	0	0.32	41204.61875	121289021	WSCF121289	1						
545	CY2012-Q4	B2M1Y0	10/11/12 7:45					0.47					2						
546	CY2012-Q4	B2M1Y0	10/11/12 7:45					0.49					3						
547	CY2012-Q4	B2M1Y0	10/11/12 7:45	WSCF	FTB	9020_TOX	Total organic halides	1.87	1.896666667	41204.61875	121289020	WSCF121289	1						
548	CY2012-Q4	B2M1Y0	10/11/12 7:45					2.35					2						
549	CY2012-Q4	B2M1Y0	10/11/12 7:45					1.47					3						
550																			
551	CY2013-Q1	B2N3N6	1/22/13 7:45	WSCF	FTB	9020_TOX	Total organic halides	4.28	4.846666667	41317.40556	130122021	WSCF130122	1		Shapiro-Wilk Normality Test (excluding B2N5B3, B2N5B5, B2N5B7)				
552	CY2013-Q1	B2N3N6	1/22/13 7:45					2.67					2		**Rank #**	**Ave (mg/L)**	**x(n-i+1) - x(i)**	**Coefficient**	
553	CY2013-Q1	B2N3N6	1/22/13 7:45					7.59					3		1	0	14.13333333	0.4886	
554	CY2013-Q1	B2N3R9	1/17/13 7:45	WSCF	FTB	9020_TOX	Total organic halides	0.64	0.566666667	41310.65972	130104011	WSCF130104	1		2	0	10.57	0.3253	
555	CY2013-Q1	B2N3R9	1/17/13 7:45					1.06					2		3	0	7.01	0.2553	
556	CY2013-Q1	B2N3R9	1/17/13 7:45					0					3		4	0.263333333	5.821666667	0.2027	
557	CY2013-Q1	B2N3V4	1/22/13 8:15	WSCF	FTB	9020_TOX	Total organic halides	9.29	14.13333333	41324.61944	130124010	WSCF130124	1		5	0.37	4.836666667	0.1587	
558	CY2013-Q1	B2N3V4	1/22/13 8:15					17.48					2		6	0.566666667	4.28	0.1197	
559	CY2013-Q1	B2N3V4	1/22/13 8:15					15.63					3		7	0.613333333	3.163333333	0.0837	
560	CY2013-Q1	B2N491	1/18/13 7:15	WSCF	FTB	9020_TOX	Total organic halides	9.25	7.01	41310.65972	130113007	WSCF130113	1		8	1.7	1.996666667	0.0496	
561	CY2013-Q1	B2N491	1/18/13 7:15					10.97					2		9	2.07	1.093333333	0.0163	
562	CY2013-Q1	B2N491	1/18/13 7:15					0.81					3		10	3.163333333	-1.093333333		
563	CY2013-Q1	B2N4V1	1/15/13 7:15	WSCF	FTB	9020_TOX	Total organic halides	0	3.696666667	41302.64236	130089002	WSCF130089	1		11	3.696666667	-1.996666667		
564	CY2013-Q1	B2N4V1	1/15/13 7:15					7.22					2		12	3.776666667	-3.163333333		
565	CY2013-Q1	B2N4V1	1/15/13 7:15					3.87					3		13	4.846666667	-4.28		
566	CY2013-Q1	B2N4W1	1/22/13 7:45	WSCF	FTB	9020_TOX	Total organic halides	0	0	41317.39653	130122015	WSCF130122	1		14	5.206666667	-4.836666667		
567	CY2013-Q1	B2N4W1	1/22/13 7:45					0					2		15	6.085	-5.821666667		
568	CY2013-Q1	B2N4W1	1/22/13 7:45					0					3		16	7.01	-7.01		
569	CY2013-Q1	B2N4W3	1/22/13 7:45	WSCF	FTB	9020_TOX	Total organic halides	1.47	6.085	41317.40556	130122016	WSCF130122	1		17	10.57	-10.57		
570	CY2013-Q1	B2N4W3	1/22/13 7:45					—					2		18	14.13333333	-14.13333333		

Figure A.4. Spreadsheet for TOX from WSCF (7 sheets)

	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V
571	CY2013-Q1	B2N4W3	1/22/13 7:45					10.7					3							k:	8
572	CY2013-Q1	B2N4W5	1/22/13 7:45	WSCF	FTB	9020_TOX	Total organic halides	4.16	5.206666667	41317.40556	130122017	WSCF130122	1		k:	9					
573	CY2013-Q1	B2N4W5	1/22/13 7:45					5.54					2							b:	11.388182
574	CY2013-Q1	B2N4W5	1/22/13 7:45					5.92					3		b:	14.9751945				s:	3.03941961
575	CY2013-Q1	B2N4X6	1/22/13 8:15	WSCF	FTB	9020_TOX	Total organic halides	0.32	0.37	41317.40556	130124001	WSCF130124	1		s:	3.957056897					
576	CY2013-Q1	B2N4X6	1/22/13 8:15					0.79					2							SW:	0.877419927
577	CY2013-Q1	B2N4X6	1/22/13 8:15					0					3		SW:	0.842464157					
578	CY2013-Q1	B2N4X8	1/22/13 8:15	WSCF	FTB	9020_TOX	Total organic halides	1.38	2.07	41317.39653	130124002	WSCF130124	1							Critical pt:	0.892
579	CY2013-Q1	B2N4X8	1/22/13 8:15					3.06					2		Critical pt:	0.897					
580	CY2013-Q1	B2N4X8	1/22/13 8:15					1.77					3							***SW < Critical pt, so normality re***	
581	CY2013-Q1	B2N4Y0	1/22/13 8:15	WSCF	FTB	9020_TOX	Total organic halides	0.14	0.263333333	41317.39653	130124003	WSCF130124	1		***SW < Critical pt, so normality rejected***						
582	CY2013-Q1	B2N4Y0	1/22/13 8:15					0					2								
583	CY2013-Q1	B2N4Y0	1/22/13 8:15					0.65					3								
584	CY2013-Q1	B2N564	1/18/13 7:15	WSCF	FTB	9020_TOX	Total organic halides	2	1.7	41310.65139	130113001	WSCF130113	1								
585	CY2013-Q1	B2N564	1/18/13 7:15					0					2								
586	CY2013-Q1	B2N564	1/18/13 7:15					3.1					3								
587	CY2013-Q1	B2N566	1/18/13 7:15	WSCF	FTB	9020_TOX	Total organic halides	6.12	3.163333333	41310.65139	130113003	WSCF130113	1								
588	CY2013-Q1	B2N566	1/18/13 7:15					0					2								
589	CY2013-Q1	B2N566	1/18/13 7:15					3.37					3								
590	CY2013-Q1	B2N568	1/18/13 7:15	WSCF	FTB	9020_TOX	Total organic halides	3.05	3.776666667	41310.65139	130113002	WSCF130113	1								
591	CY2013-Q1	B2N568	1/18/13 7:15					2.85					2								
592	CY2013-Q1	B2N568	1/18/13 7:15					5.43					3								
593	CY2013-Q1	B2N5B3	1/15/13 7:15	WSCF	FTB	9020_TOX	Total organic halides	8.95	9.423333333	41302.64236	130089004	WSCF130089	1		"TOX field blanks acquired on 1/15/2013 show an elevated TOX content: B2N5B3 (9.42 ug/L),						
594	CY2013-Q1	B2N5B3	1/15/13 7:15					9.84					2		B2N5B5 (8.42 ug/L), and B2N5B7 (19.74 ug/L). A single field transfer blank (B2N2V2) was acquired						
595	CY2013-Q1	B2N5B3	1/15/13 7:15					9.48					3		that same day with a methylene chloride content of 19 ug/L. This indicates likely contamination of						
596	CY2013-Q1	B2N5B5	1/15/13 7:15	WSCF	FTB	9020_TOX	Total organic halides	10.7	8.42	41302.64236	130089005	WSCF130089	1		the source DI water supply. Hence the TOX values for theses samples are likely indicators of						
597	CY2013-Q1	B2N5B5	1/15/13 7:15					4.88					2		contamination in the blank DI water source and should be discarded from the LOD/LOQ data set."						
598	CY2013-Q1	B2N5B5	1/15/13 7:15					9.68					3		Source: E-mail from JG Douglas to JP McDonald 5/20/2013 10:59 AM						
599	CY2013-Q1	B2N5B7	1/15/13 7:15	WSCF	FTB	9020_TOX	Total organic halides	18.99	19.73666667	41302.64236	130089003	WSCF130089	1								
600	CY2013-Q1	B2N5B7	1/15/13 7:15					30.71					2		For the above reason, these samples were excluded from the LOD/LOQ calculations.						
601	CY2013-Q1	B2N5B7	1/15/13 7:15					9.51					3								
602	CY2013-Q1	B2NL00	3/11/13 8:15	WSCF	FTB	9020_TOX	Total organic halides	0	0	41345.40278	130337009	WSCF130337	1								
603	CY2013-Q1	B2NL00	3/11/13 8:15					0					2								
604	CY2013-Q1	B2NL00	3/11/13 8:15					0					3								
605	CY2013-Q1	B2NLJ6	3/11/13 8:15	WSCF	FTB	9020_TOX	Total organic halides	0	0.613333333	41345.40278	130337010	WSCF130337	1								
606	CY2013-Q1	B2NLJ6	3/11/13 8:15					0					2								
607	CY2013-Q1	B2NLJ6	3/11/13 8:15					1.84					3								
608	CY2013-Q1	B2NLJ8	3/11/13 8:15	WSCF	FTB	9020_TOX	Total organic halides	11.53	10.57	41352.39444	130337012	WSCF130337	1								
609	CY2013-Q1	B2NLJ8	3/11/13 8:15					8.75					2								
610	CY2013-Q1	B2NLJ8	3/11/13 8:15					11.43					3								
611	CY2013-Q1	B2NLK0	3/11/13 8:15	WSCF	FTB	9020_TOX	Total organic halides	0	0	41345.40278	130337011	WSCF130337	1								
612	CY2013-Q1	B2NLK0	3/11/13 8:15					0					2								
613	CY2013-Q1	B2NLK0	3/11/13 8:15					0					3								
614																					
615	CY2013-Q2	B2NTJ3	4/3/13 7:15	WSCF	FTB	9020_TOX	Total organic halides	3.37	3.08	41387.39861	130421025	WSCF130421	1		Shapiro-Wilk Normality Test						
616	CY2013-Q2	B2NTJ3	4/3/13 7:15					4.78					2		**Rank #**	**Ave (mg/L)**	**x(n-i+1) - x(i)**	**Coefficient**			

Figure A.4. Spreadsheet for TOX from WSCF (7 sheets)

	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ
551	Shapiro-Wilk Normality Test (additionally excluding B2N3V4)															
552	Rank #	Ave (mg/L)	(n-i+1) - x(	Coefficient												
553	1	0	10.57	0.4968												
554	2	0	7.01	0.3273												
555	3	0	6.085	0.254												
556	4	0.263333333	4.9433	0.1988												
557	5	0.37	4.4767	0.1524			***Dixon's Outlier Test on Sample B2N3V4***									
558	6	0.566666667	3.21	0.1109												
559	7	0.613333333	3.0833	0.0725			Order	Value								
560	8	1.7	1.4633	0.0359			1	0								
561	9	2.07	0				2	0								
562	10	3.163333333	-1.4633				3	0								
563	11	3.696666667	-3.0833				4	0.263333								
564	12	3.776666667	-3.21				5	0.37								
565	13	4.846666667	-4.4767				6	0.566667								
566	14	5.206666667	-4.9433				7	0.613333								
567	15	6.085	-6.085				8	1.7								
568	16	7.01	-7.01				9	2.07								
569	17	10.57	-10.57				10	3.163333								
570							11	3.696667								
571	k:	8					12	3.776667								
572							13	4.846667								
573	b:	11.388182					14	5.206667								
574	s:	3.03941961					15	6.085								
575							16	7.01								
576	SW:	0.877419927					17	10.57								
577							18	14.13333								
578	Critical pt:	0.892														
579							0.504	Test Statistic (Eq. 12.6 in EPA 530/R-09-007)								
580	***SW < Critical pt, so normality rejected***						0.475	Critical value (Appendix D, Table 12.1 of EPA 530/R-09-007, alpha = 0.05, n = 18)								
581																
582								The test statistic exceeds the critical value,								
583								so the measurement is a statistical outlier at the 0.05 level of significance.								
584								The measurement was not excluded from the LOD/LOQ calculations because								
585								1) the outlier test assumes the remaining data are normally distributed and these data								
586								are not, and 2) the measurement is very similar to the upper bound of the historical range.								
587																
588				***Dixon's Outlier Test on Sample B2NLJ8 (excluding B2N3V4)***												
589																
590				Order	Value											
591				1	0											
592				2	0											
593	2N5B3 (9.42 ug/L),			3	0											
594	(B2N2V2) was acquired			4	0.263333333											
595	likely contamination of			5	0.37											
596	kely indicators of			6	0.566666667											
597	he LOD/LOQ data set."			7	0.613333333											
598				8	1.7											
599				9	2.07											
600	culations.			10	3.163333333											
601				11	3.696666667											
602				12	3.776666667											
603				13	4.846666667											
604				14	5.206666667											
605				15	6.085											
606				16	7.01											
607				17	10.57											
608																
609				0.424	Test Statistic (Eq. 12.6 in EPA 530/R-09-007)											
610				0.490	Critical value (Appendix D, Table 12.1 of EPA 530/R-09-007, alpha = 0.05, n = 18)											
611																
612					The test statistic does not exceed the critical value,											
613					so the measurement is not a statistical outlier at the 0.05 level of significance.											

Figure A.4. Spreadsheet for TOX from WSCF (7 sheets)

	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
617	CY2013-Q2	B2NTJ3	4/3/13 7:15					1.09					3		1	0	3.93	0.5475
618	CY2013-Q2	B2NTJ5	4/3/13 7:15	WSCF	FTB	9020_TOX	Total organic halides	3.38	3.42	41387.39861	130421026	WSCF130421	1		2	0.183333333	3.236666667	0.3325
619	CY2013-Q2	B2NTJ5	4/3/13 7:15					3					2		3	0.186666667	2.99	0.2347
620	CY2013-Q2	B2NTJ5	4/3/13 7:15					3.88					3		4	0.193333333	2.886666667	0.1586
621	CY2013-Q2	B2NTJ7	4/3/13 7:15	WSCF	FTB	9020_TOX	Total organic halides	2.4	3.93	41387.39861	130421027	WSCF130421	1		5	0.526666667	1.146666667	0.0922
622	CY2013-Q2	B2NTJ7	4/3/13 7:15					4.91					2		6	1.016666667	0.653333333	0.0303
623	CY2013-Q2	B2NTJ7	4/3/13 7:15					4.48					3		7	1.67	-0.653333333	
624	CY2013-Q2	B2NTJ9	4/3/13 7:15	WSCF	FTB	9020_TOX	Total organic halides	2.29	3.176666667	41387.39861	130421028	WSCF130421	1		8	1.673333333	-1.146666667	
625	CY2013-Q2	B2NTJ9	4/3/13 7:15					2.43					2		9	3.08	-2.886666667	
626	CY2013-Q2	B2NTJ9	4/3/13 7:15					4.81					3		10	3.176666667	-2.99	
627	CY2013-Q2	B2NTR9	4/2/13 7:00	WSCF	FTB	9020_TOX	Total organic halides	1.62	1.673333333	41367.45833	130406003	WSCF130406	1		11	3.42	-3.236666667	
628	CY2013-Q2	B2NTR9	4/2/13 7:00					1.64					2		12	3.93	-3.93	
629	CY2013-Q2	B2NTR9	4/2/13 7:00					1.76					3					
630	CY2013-Q2	B2NTT1	4/2/13 7:00	WSCF	FTB	9020_TOX	Total organic halides	0	0.186666667	41367.45833	130406001	WSCF130406	1		k:	6		
631	CY2013-Q2	B2NTT1	4/2/13 7:00					0					2					
632	CY2013-Q2	B2NTT1	4/2/13 7:00					0.56					3		b:	4.512963667		
633	CY2013-Q2	B2NTT3	4/2/13 7:00	WSCF	FTB	9020_TOX	Total organic halides	0	0.183333333	41367.45833	130406004	WSCF130406	1		s:	1.460436809		
634	CY2013-Q2	B2NTT3	4/2/13 7:00					0.55					2					
635	CY2013-Q2	B2NTT3	4/2/13 7:00					0					3		SW:	0.868091389		
636	CY2013-Q2	B2NTT5	4/2/13 7:00	WSCF	FTB	9020_TOX	Total organic halides	0	0	41367.45833	130406002	WSCF130406	1					
637	CY2013-Q2	B2NTT5	4/2/13 7:00					0					2		Critical pt:	0.859		
638	CY2013-Q2	B2NTT5	4/2/13 7:00					0					3					
639	CY2013-Q2	B2P977	6/12/13 7:15	WSCF	FTB	9020_TOX	Total organic halides	0.54	0.193333333	41437.59167	130687009	WSCF130687	1		***SW > Critical pt, so normality accepted***			
640	CY2013-Q2	B2P977	6/12/13 7:15					0.04					2					
641	CY2013-Q2	B2P977	6/12/13 7:15					0					3					
642	CY2013-Q2	B2P985	6/12/13 7:15	WSCF	FTB	9020_TOX	Total organic halides	0.87	1.67	41437.59167	130687005	WSCF130687	1					
643	CY2013-Q2	B2P985	6/12/13 7:15					0.06					2					
644	CY2013-Q2	B2P985	6/12/13 7:15					4.08					3					
645	CY2013-Q2	B2P988	6/12/13 7:15	WSCF	FTB	9020_TOX	Total organic halides	3.05	1.016666667	41437.59167	130687003	WSCF130687	1					
646	CY2013-Q2	B2P988	6/12/13 7:15					0					2					
647	CY2013-Q2	B2P988	6/12/13 7:15					0					3					
648	CY2013-Q2	B2P991	6/12/13 7:15	WSCF	FTB	9020_TOX	Total organic halides	0.23	0.526666667	41437.59167	130687004	WSCF130687	1					
649	CY2013-Q2	B2P991	6/12/13 7:15					1.35					2					
650	CY2013-Q2	B2P991	6/12/13 7:15					0					3					
651																		
652	CY2013-Q3	B2PF62	7/8/13 8:40	WSCF	FTB	9020_TOX	Total organic halides	0.52	1.14	41471.4125	130715003	WSCF130715	1		Only 6 blanks results this quarter			
653	CY2013-Q3	B2PF62	7/8/13 8:40					1.76					2		Normality assumed			
654	CY2013-Q3	B2PFJ7	7/11/13 7:30	WSCF	FTB	9020_TOX	Total organic halides	4.26	2.526666667	41478.61528	130738015	WSCF130738	1					
655	CY2013-Q3	B2PFJ7	7/11/13 7:30					0					2					
656	CY2013-Q3	B2PFJ7	7/11/13 7:30					3.32					3					
657	CY2013-Q3	B2PH25	7/11/13 7:30	WSCF	FTB	9020_TOX	Total organic halides	2.28	2.956666667	41478.61111	130738009	WSCF130738	1					
658	CY2013-Q3	B2PH25	7/11/13 7:30					3.58					2					
659	CY2013-Q3	B2PH25	7/11/13 7:30					3.01					3					
660	CY2013-Q3	B2PH27	7/11/13 7:30	WSCF	FTB	9020_TOX	Total organic halides	2.46	2.03	41478.61111	130738010	WSCF130738	1					
661	CY2013-Q3	B2PH27	7/11/13 7:30					3.43					2					
662	CY2013-Q3	B2PH27	7/11/13 7:30					0.2					3					

Figure A.4. Spreadsheet for TOX from WSCF (7 sheets)

	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
663	CY2013-Q3	B2PH29	7/11/13 7:30	WSCF	FTB	9020_TOX	Total organic halides	0	0.693333333	41478.61111	130738011	WSCF130738	1					
664	CY2013-Q3	B2PH29	7/11/13 7:30					2.08					2					
665	CY2013-Q3	B2PH29	7/11/13 7:30					0					3					
666	CY2013-Q3	B2PDR3	7/18/13 7:15	WSCF	EB	9020_TOX	Total organic halides	0.26	3.623333333	41491.62361	130769007	WSCF130769	1					
667	CY2013-Q3	B2PDR3	7/18/13 7:15					5.33					2					
668	CY2013-Q3	B2PDR3	7/18/13 7:15					5.28					3					
669																		
670	CY2013-Q4	B2R369	10/8/13 7:30	WSCF	FTB	9020_TOX	Total organic halides	0.91	1.65	41561.62431	131122025	WSCF131122	1		Shapiro-Wilk Normality Test (all data)			
671	CY2013-Q4	B2R369	10/8/13 7:30					2.17					2		**Rank #**	**Ave (mg/L)**	**x(n-i+1) - x(i)**	**Coefficient**
672	CY2013-Q4	B2R369	10/8/13 7:30					1.87					3		1	0	9.153333333	0.5475
673	CY2013-Q4	B2R3H4	10/7/13 8:00	WSCF	FTB	9020_TOX	Total organic halides	1.02	1.876666667	41556.425	131115007	WSCF131115	1		2	0.72	3.2	0.3325
674	CY2013-Q4	B2R3H4	10/7/13 8:00					2.08					2		3	1.583333333	2.303333333	0.2347
675	CY2013-Q4	B2R3H4	10/7/13 8:00					2.53					3		4	1.65	2.1	0.1586
676	CY2013-Q4	B2R3N9	10/8/13 7:30	WSCF	FTB	9020_TOX	Total organic halides	6.83	3.92	41561.62153	131122014	WSCF131122	1		5	1.876666667	1.663333333	0.0922
677	CY2013-Q4	B2R3N9	10/8/13 7:30					1.01					2		6	1.933333333	1.2	0.0303
678	CY2013-Q4	B2R3P1	10/8/13 7:30	WSCF	FTB	9020_TOX	Total organic halides	2.52	1.933333333	41561.62153	131122012	WSCF131122	1		7	3.133333333	-1.2	
679	CY2013-Q4	B2R3P1	10/8/13 7:30					1.95					2		8	3.54	-1.663333333	
680	CY2013-Q4	B2R3P1	10/8/13 7:30					1.33					3		9	3.75	-2.1	
681	CY2013-Q4	B2R3P3	10/8/13 7:30	WSCF	FTB	9020_TOX	Total organic halides	9.72	9.153333333	41561.62153	131122013	WSCF131122	1		10	3.886666667	-2.303333333	
682	CY2013-Q4	B2R3P3	10/8/13 7:30					7.29					2		11	3.92	-3.2	
683	CY2013-Q4	B2R3P3	10/8/13 7:30					10.45					3		12	9.153333333	-9.153333333	
684	CY2013-Q4	B2R3P8	10/7/13 8:00	WSCF	FTB	9020_TOX	Total organic halides	2.96	3.133333333	41556.425	131115008	WSCF131115	1					
685	CY2013-Q4	B2R3P8	10/7/13 8:00					4.08					2		k:	6		
686	CY2013-Q4	B2R3P8	10/7/13 8:00					2.36					3					
687	CY2013-Q4	B2R3R0	10/7/13 8:00	WSCF	FTB	9020_TOX	Total organic halides	3.84	3.886666667	41556.425	131115006	WSCF131115	1		b:	7.138821667		
688	CY2013-Q4	B2R3R0	10/7/13 8:00					4.14					2		s:	2.349754053		
689	CY2013-Q4	B2R3R0	10/7/13 8:00					3.68					3					
690	CY2013-Q4	B2R3R2	10/7/13 8:00	WSCF	FTB	9020_TOX	Total organic halides	3.71	3.75	41556.425	131115009	WSCF131115	1		SW:	0.839103565		
691	CY2013-Q4	B2R3R2	10/7/13 8:00					3.61					2					
692	CY2013-Q4	B2R3R2	10/7/13 8:00					3.93					3		Critical pt:	0.859		
693	CY2013-Q4	B2T1F8	10/15/13 7:45	WSCF	FTB	9020_TOX	Total organic halides	0.02	1.583333333	41569.39167	131169040	WSCF131169	1					
694	CY2013-Q4	B2T1F8	10/15/13 7:45					3.75					2		***SW > Critical pt, so normality rejected***			
695	CY2013-Q4	B2T1F8	10/15/13 7:45					0.98					3					
696	CY2013-Q4	B2T1H1	10/15/13 7:45	WSCF	FTB	9020_TOX	Total organic halides	0.35	0.72	41569.38889	131169030	WSCF131169	1					
697	CY2013-Q4	B2T1H1	10/15/13 7:45					1.09					2					
698	CY2013-Q4	B2T1H2	10/15/13 7:45	WSCF	FTB	9020_TOX	Total organic halides	0	0	41569.38889	131169031	WSCF131169	1					
699	CY2013-Q4	B2T1H2	10/15/13 7:45					0					2					
700	CY2013-Q4	B2T1H2	10/15/13 7:45					0					3					
701	CY2013-Q4	B2T1H3	10/15/13 7:45	WSCF	FTB	9020_TOX	Total organic halides	3.54	3.54	41569.38889	131169032	WSCF131169	1					

Figure A.4. Spreadsheet for TOX from WSCF (7 sheets)

	U	V	W	X	Y	Z	AA	AB
670	***Dixon's Outlier Test on Sample B2R3P3***							
671								
672	Order	Value						
673	1	0						
674	2	0.72						
675	3	1.583333333						
676	4	1.65						
677	5	1.876666667						
678	6	1.933333333						
679	7	3.133333333						
680	8	3.54						
681	9	3.75						
682	10	3.886666667						
683	11	3.92						
684	12	9.153333333						
685								
686	0.625	Test Statistic (Eq. 12.6 in EPA 530/R-09-007)						
687	0.546	Critical value (Appendix D, Table 12.1 of EPA 530/R-09-007, alpha = 0.05, n = 12)						
688								
689		The test statistic exceeds the critical value,						
690		so the measurement is a statistical outlier at the 0.05 level of significance.						
691		Decided to keep this value for the LOD/LOQ calculations because it is not						
692		that high compared to historical values, especially for 2013 1st quarter, and						
693		the data are pooled for 4 quarters when computing the LOD/LOQ.						

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Figure A.5. Example LOD/LOQ Spreadsheet (TOC for WSCF) with Formulas Displayed

	U	V	W	X	Y	Z	AA	AB
5	**Quarter ID**	**# of Meas (n)**	**df (n - 1)**	**Variance (s^2)**	**(n - 1) * s^2**	**Pooled St Dev**	**LOD (ug/L)**	**LOQ (ug/L)**
6	CY2010-Q1	=COUNT(J6:J125)	=V6-1	=VAR(J6:J125)	=W6*X6			
7	CY2010-Q2	=COUNT(J127:J214)	=V7-1	=VAR(J127:J214)	=W7*X7			
8	CY2010-Q3	=COUNT(J216:J319)	=V8-1	=VAR(J216:J319)	=W8*X8			
9	CY2010-Q4	=COUNT(J321:J340)	=V9-1	=VAR(J321:J340)	=W9*X9	=SQRT(SUM(Y6:Y9)/SUM(W6:W9))	=ROUND(3*Z9*1000,-1)	=ROUND(10*Z9*1000,-1)
10	CY2011-Q1	=COUNT(J342:J373)	=V10-1	=VAR(J342:J373)	=W10*X10	=SQRT(SUM(Y7:Y10)/SUM(W7:W10))	=ROUND(3*Z10*1000,-1)	=ROUND(10*Z10*1000,-1)
11	CY2011-Q2	=COUNT(J375:J470)	=V11-1	=VAR(J375:J470)	=W11*X11	=SQRT(SUM(Y8:Y11)/SUM(W8:W11))	=ROUND(3*Z11*1000,-1)	=ROUND(10*Z11*1000,-1)
12	CY2011-Q3	=COUNT(J472:J531)	=V12-1	=VAR(J472:J531)	=W12*X12	=SQRT(SUM(Y9:Y12)/SUM(W9:W12))	=ROUND(3*Z12*1000,-1)	=ROUND(10*Z12*1000,-1)
13	CY2011-Q4	=COUNT(J533:J544)	=V13-1	=VAR(J533:J544)	=W13*X13	=SQRT(SUM(Y10:Y13)/SUM(W10:W13))	=ROUND(3*Z13*1000,-1)	=ROUND(10*Z13*1000,-1)
14	CY2012-Q1	=COUNT(J546:J621,J626:J641)	=V14-1	=VAR(J546:J621,J626:J641)	=W14*X14	=SQRT(SUM(Y11:Y14)/SUM(W11:W14))	=ROUND(3*Z14*1000,-1)	=ROUND(10*Z14*1000,-1)
15	CY2012-Q2	=COUNT(J643:J706,J711:J754)	=V15-1	=VAR(J643:J706,J711:J754)	=W15*X15	=SQRT(SUM(Y12:Y15)/SUM(W12:W15))	=ROUND(3*Z15*1000,-1)	=ROUND(10*Z15*1000,-1)
16	CY2012-Q3	=COUNT(J756:J835)	=V16-1	=VAR(J756:J835)	=W16*X16	=SQRT(SUM(Y13:Y16)/SUM(W13:W16))	=ROUND(3*Z16*1000,-1)	=ROUND(10*Z16*1000,-1)
17	CY2012-Q4	=COUNT(J837:J876)	=V17-1	=VAR(J837:J876)	=W17*X17	=SQRT(SUM(Y14:Y17)/SUM(W14:W17))	=ROUND(3*Z17*1000,-1)	=ROUND(10*Z17*1000,-1)
18	CY2013-Q1	=COUNT(J878:J993)	=V18-1	=VAR(J878:J993)	=W18*X18	=SQRT(SUM(Y15:Y18)/SUM(W15:W18))	=ROUND(3*Z18*1000,-1)	=ROUND(10*Z18*1000,-1)
19	CY2013-Q2	=COUNT(J995:J1062)	=V19-1	=VAR(J995:J1062)	=W19*X19	=SQRT(SUM(Y16:Y19)/SUM(W16:W19))	=ROUND(3*Z19*1000,-1)	=ROUND(10*Z19*1000,-1)
20	CY2013-Q3	=COUNT(J1064:J1107)	=V20-1	=VAR(J1064:J1107)	=W20*X20	=SQRT(SUM(Y17:Y20)/SUM(W17:W20))	=ROUND(3*Z20*1000,-1)	=ROUND(10*Z20*1000,-1)
21	CY2013-Q4	=COUNT(J1109:J1180)	=V21-1	=VAR(J1109:J1180)	=W21*X21	=SQRT(SUM(Y18:Y21)/SUM(W18:W21))	=ROUND(3*Z21*1000,-1)	=ROUND(10*Z21*1000,-1)

Figure A.6. WSCF LOD/LOQ Spreadsheet for TOC

	U	V	W	X	Y	Z	AA	AB
5	**Quarter ID**	**# of Meas (n)**	**df (n - 1)**	**Variance (s^2)**	**(n - 1) * s^2**	**Pooled St Dev**	**LOD (ug/L)**	**LOQ (ug/L)**
6	CY2010-Q1	30	29	0.000129209	0.003747074			
7	CY2010-Q2	22	21	0.000880239	0.018485009			
8	CY2010-Q3	26	25	0.000238071	0.005951777			
9	CY2010-Q4	5	4	0.001663306	0.006653222	0.020999422	60	210
10	CY2011-Q1	8	7	6.57892E-05	0.000460525	0.023526966	70	240
11	CY2011-Q2	24	23	0.010942681	0.251681664	0.066986868	200	670
12	CY2011-Q3	15	14	0.004644463	0.065022478	0.082135291	250	820
13	CY2011-Q4	3	2	0.060557632	0.121115264	0.097610576	290	980
14	CY2012-Q1	23	22	0.00405523	0.089215067	0.092951113	280	930
15	CY2012-Q2	27	26	0.007223669	0.187815403	0.085070578	260	850
16	CY2012-Q3	20	19	0.005037905	0.095720188	0.084601874	250	850
17	CY2012-Q4	10	9	0.000239855	0.002158698	0.070235446	210	700
18	CY2013-Q1	29	28	0.0023592	0.066057595	0.065495474	200	650
19	CY2013-Q2	17	16	0.000373133	0.005970123	0.048577916	150	490
20	CY2013-Q3	11	10	0.000439357	0.004393575	0.035317155	110	350
21	CY2013-Q4	18	17	0.000759892	0.012918163	0.035472556	110	350

Figure A.7. WSCF LOD/LOQ Spreadsheet for TOX

	U	V	W	X	Y	Z	AA	AB
5	**Quarter ID**	**# of Meas (n)**	**df (n - 1)**	**Variance (s^2)**	**(n - 1) * s^2**	**Pooled St Dev**	**LOD (ug/L)**	**LOQ (ug/L)**
6	CY2010-Q1	28	27	1.190856481	32.153125			
7	CY2010-Q2	21	20	1.430957354	28.61914709			
8	CY2010-Q3	25	24	1.676540852	40.23698044			
9	CY2010-Q4	4	3	0.319296296	0.957888889	1.173854481	3.5	11.7
10	CY2011-Q1	8	7	7.305730159	51.14011111	1.496626624	4.5	15.0
11	CY2011-Q2	24	23	12.13368074	279.0746569	2.552637567	7.7	25.5
12	CY2011-Q3	13	12	2.109152991	25.3098359	2.814575132	8.4	28.1
13	CY2011-Q4	No data						
14	CY2012-Q1	20	19	3.291963238	62.54730153	2.606728453	7.8	26.1
15	CY2012-Q2	16	15	9.664644711	144.9696707	2.249767177	6.7	22.5
16	CY2012-Q3	17	16	2.664263725	42.62821961	2.236717201	6.7	22.4
17	CY2012-Q4	4	3	2.891543519	8.674630556	2.209840011	6.6	22.1
18	CY2013-Q1	18	17	15.65829928	266.1910878	3.011297709	9.0	30.1
19	CY2013-Q2	12	11	2.132875673	23.46163241	2.693394482	8.1	26.9
20	CY2013-Q3	6	5	1.223772222	6.118861111	2.908064514	8.7	29.1
21	CY2013-Q4	12	11	5.521344108	60.73478519	2.84647456	8.5	28.5

Figure A.8. Chart of Historical Range of TOC Blanks Results from WSCF

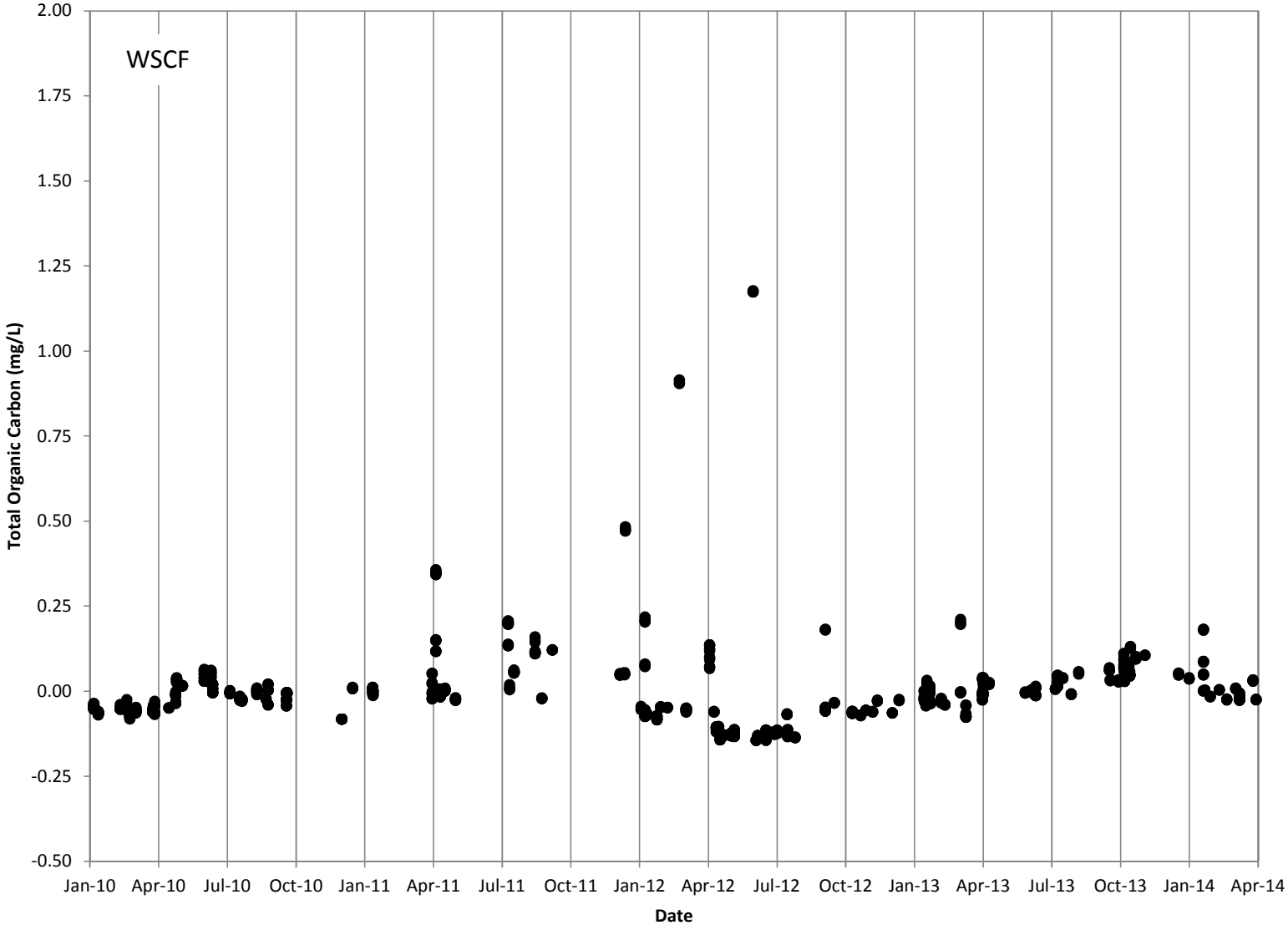
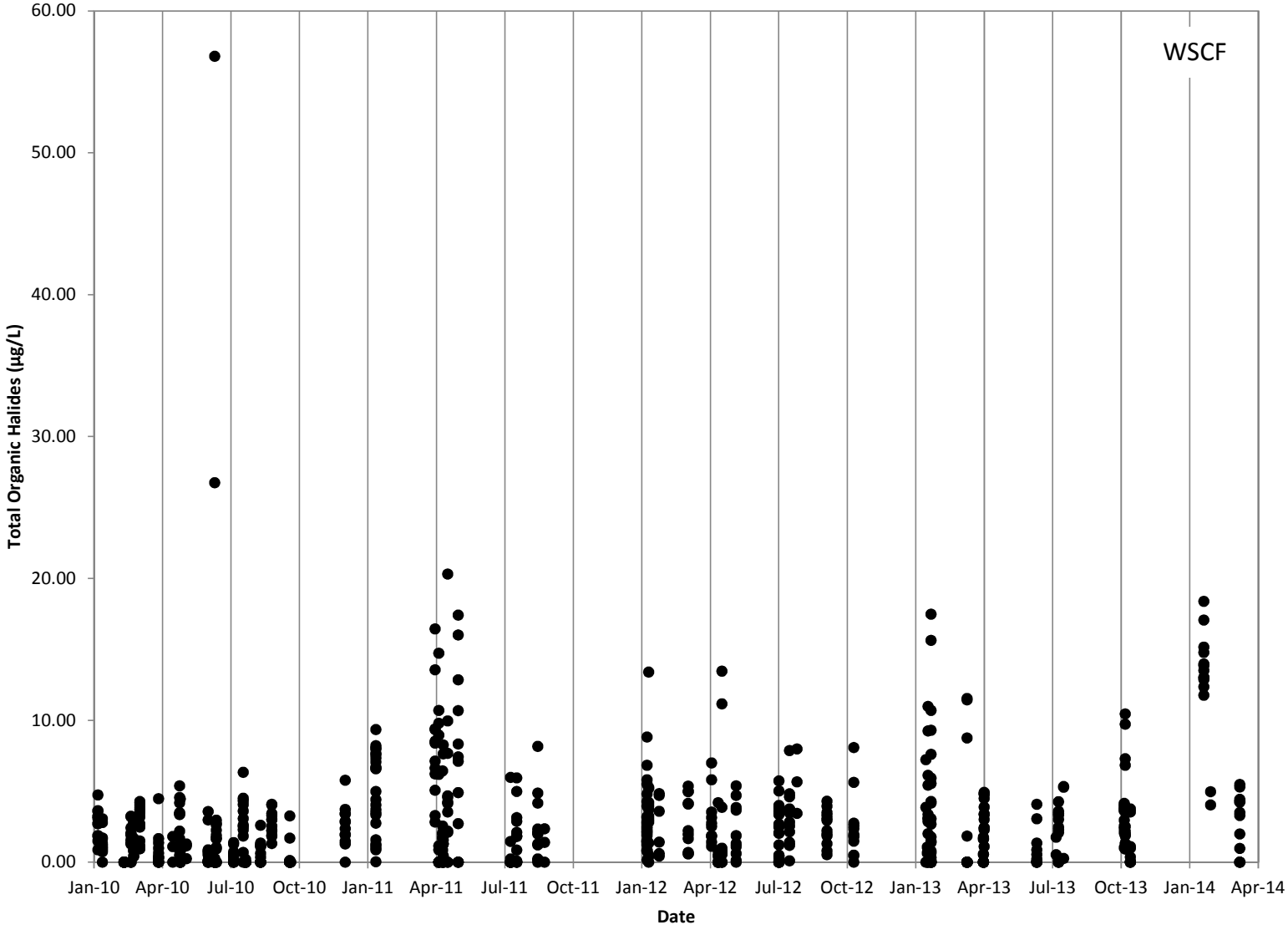
Figure A.9. Chart of Historical Range of TOX Blanks Results from WSCF