DATA VALIDATION REPORT
MICROBAC LABORATORY SDG L13110146

Project / Site Name:	Environmental Remediation Services at White Sands Missile Range (WSMR), NM; CCWS-62, Former STP Percolation Ditches
Project No.:	139791
Data Reviewer:	M. Lyon, Shaw Environmental, Inc. a CB&I Company
Review Date:	December 9, 2013
Matrix:	Groundwater, three field samples, extra volume for MS/MSD, and one field duplicate
Parameters:	Metals 6010B/6020/7470A Anions 300.0 pH 9040C Alkalinity 310.2 Cyanide 9014/9010C/SM4500-CN-C, G/SM4500-CN-I Conductivity 120.1 Ammonia-Nitrogen 350.1 Nitrate+Nitrite-Nitrogen 353.2 Orthophosphate SM4500-P-E-20th Total Dissolved Solids 160.1/SM2540C Total Organic Carbon 415.1 Total Suspended Solids 160.2
Validation Level:	EPA Level III
Laboratory:	Microbac Laboratories, Inc. Ohio Valley Division
Sample Delivery Group	L13110146
Sample Nos.:	MPL4-1113-1, MPL3-1113-1, MPL3-1113-2, and MPL2-1113-1
Comments:	Field duplicate MPL3-1113-2 and extra volume for MS/MSD on MPL4-1113-1.

The data were reviewed and qualified according to the *Sampling and Analysis Plan/Quality Assurance Project Plan, Environmental Remediation Services, White Sands Missile Range, New Mexico October 2010*; *Department of Defense Quality Systems Manual for Environmental Laboratories, Final Version 4.2, 2010*; laboratory-specific statistical process control criteria, and the analytical method specific requirements.

DATA VALIDATION REQUIREMENTS

Level IV or Full Validation includes all parameters listed below. Level III Cursory Validation parameters are indicated by an asterisk (*).

Organic Parameters

*	Temperature
*	Holding times
	GC/MS instrument performance check
*	Initial and continuing calibrations
*	Blanks
*	Surrogate recoveries
*	Matrix spike/matrix spike duplicate
*	Laboratory control sample / blank spike
*	Field duplicate
*	Internal standard performance
	Target compound identification
	Tentatively identified compounds
	Compound quantitation
	Reported detection limits
	System performance
*	Overall data assessment

Inorganic and General Chemistry Parameters

*	Temperature
*	Holding times
*	Initial and continuing calibration
*	Blanks
*	Matrix spike/matrix spike duplicate
*	Laboratory control sample / blank spike
*	Field duplicate
*	Matrix duplicate
	ICP interference check sample
	CVAA / GFAA quality controls
*	ICP serial dilution
	Sample results verification
	Analyte quantitation
	Reported detection limits
*	Overall data assessment

DATA VALIDATION QUALIFIER DEFINITIONS

No qualifier indicates that the data are acceptable both qualitatively and quantitatively.

U Not detected. The analyte was analyzed for but was not detected above the level of the associated value. The associated value is the Limit of Quantitation (LOQ).

J Estimated. The analyte was detected and positively identified. The associated numerical value is the approximate concentration of the analyte in the sample and the bias is in determinable.

J- Estimated. The analyte was detected and positively identified. The associated numerical value is the approximate concentration of the analyte in the sample and the bias is determined low due to associated quality control indicators.

J+ Estimated. The analyte was detected and positively identified. The associated numerical value is the approximate concentration of the analyte in the sample and the bias is determined high due to associated quality control indicators.

N Tentatively identified. The analysis indicates the presence of an analyte for which there is presumptive evidence to make a tentative identification.

UN Tentatively not detected, the LOQ is estimated. The analyte was analyzed for but was not detected above the reported LOQ. However, the reported LOQ is an estimate and may not be accurate or precise.

NJ Tentatively identified. The reported concentration is an estimate. The analysis indicates the presence of an analyte for which there is presumptive evidence to make a tentative identification and the associated numerical value represents the approximate concentration.

R Rejected. The data are not usable. The presence or absence of the analyte cannot be confirmed.

DATA VALIDATION QUALIFIER REASON CODES

Reason Code	Data Quality Condition Resulting in Assigned Qualification
General Use	
FB	Field blank contamination
FD	Field duplicate evaluation criteria not met
HT	Holding time requirement was not met
PR	Preservation requirements not met
LCS	Laboratory control sample evaluation criteria not met
MB	Method blank or preparation blank contamination
RB	Rinsate blank contamination
TB	Trip blank contamination
SDL	Sample quantitation limit exceeds decision criteria and the analyte was not detected
Inorganic Methods	
CCB	Continuing calibration blank contamination
CCV	Continuing calibration verification evaluation criteria not met
D	Laboratory duplicate precision evaluation criteria not met
DL	Serial dilution results did not met evaluation criteria
ICS	Interference check sample evaluation criteria not met
ICV	Initial calibration verification evaluation criteria not met
MS	Matrix spike recovery outside acceptance range
PDS	Post-digestion spike recovery outside acceptance range
MSA	Method of standard additions correlation coefficient < 0.995
PB	Preparation blank
Organic Methods	
CCAL	Continuing calibration evaluation criteria not met
ICAL	Initial calibration evaluation criteria not met
ID	Target compound identification criteria not met
IS	Internal standard evaluation criteria not met
MS/MSD	Matrix spike/matrix spike duplicate accuracy and/or precision criteria not met
SUR	Surrogate recovery outside acceptance range
TUNE	Instrument performance (tuning) criteria not met
P	The detected concentration difference between the primary and secondary column is greater than 25%.

SAMPLE DELIVERY GROUP L13110146
LEVEL III DATA VALIDATION SUMMARY

Analysis / Method	Temperature	Holding Times	Calibration	Blanks	MS/MSD	LCS	Duplicate	Serial Dilution	Other
Metals 6010B	✓	✓	✓	✓	**7**	✓	✓	✓	✓
Metals 6020	✓	✓	✓	✓	✓	✓	✓	NA	✓
Mercury 7470A	✓	✓	✓	✓	✓	✓	✓	NA	✓
Anions 300.0	✓	✓	✓	✓	✓	✓	✓	NA	✓
pH 9040C	✓	✓	✓	NA	NA	✓	✓	NA	NA
Alkalinity 310.2/SM2320B	✓	✓	✓	NA	✓	✓	✓	NA	NA
Cyanide; Total, Amenable, Dissociable 9014-9010C/SM4500-CN	✓	✓	✓	✓	**13**	✓	**13**	NA	✓
Conductivity 120.1	✓	✓	NA	NA	NA	✓	✓	NA	✓
Ammonia-N 350.1	✓	✓	✓	✓	**15**	✓	✓	NA	✓
Nitrate+Nitrite-N 353.2	✓	✓	✓	✓	✓	✓	✓	NA	✓
Orthophosphate SM4500-P	✓	**17**	✓	✓	✓	✓	✓	NA	✓
Total Dissolved Solids 160.1	✓	✓	NA	✓	NA	✓	✓	NA	NA
Total Organic Carbon 415.1	✓	✓	✓	✓	✓	✓	✓	NA	✓
Total Suspended Solids 160.2	✓	✓	NA	✓	✓	✓	✓	NA	NA

Notes:

✓ Indicates that all quality control criteria were met for the parameter(s)N/A Indicates the validation criteria is not applicable to the analysis

If validation criteria were not met and the data were qualified, then details can be found at the page number indicated in the table.

DATA ASSESSMENT

METALS (Method 6010B)

I. Temperature

A. Shipping cooler temperature was measured at 2 °C or less upon receipt at the laboratory. Sample temperature was in compliance.

II. Holding Times

A. The analysis holding times were reviewed and found to be in compliance.

III. Calibration

A. Calibration linearity, initial calibration verification (ICV), and continuing calibration verification (CCV), were reviewed and found to be in compliance.

IV. Blanks

A. Initial calibration blank (ICB), continuing calibration blank (CCB), and method blank analysis results were reviewed and found to be in compliance.

V. Matrix Spike / Matrix Spike Duplicate (MS/MSD)

A. MS/MSD analyses were performed on sample MPL4-1113-1. Percent recoveries and precision were acceptable with exceptions. Recovery for calcium and magnesium were greater than laboratory acceptance limits. The calcium concentration in the parent sample was greater than 4-times the spike level making the spike inappropriate. Validation qualifiers were not assigned. Magnesium recovery was 130% which exceeded the upper limit of 120%. The result for magnesium in MPL4-1113-1 is qualified “J” for estimated with high bias.

VI. Laboratory Control Sample (LCS)

A. The LCS results were reviewed and found to be in compliance.

VII. Duplicate

A. Field duplicate sample from MPL3 was submitted for this SDG. Precision measurements for the field duplicate were less than 3 RPD when both sample results were detected above the LOQ. Field duplicate precision measurements met acceptance criteria.

VIII. Serial Dilution

A. Serial dilution was performed on sample MPL3-1113-1. The results met acceptance criteria.

IX. Other

A. Limits of Quantitation (LOQ) were reviewed and found compliant. Post digest spike analysis was performed on sample MPL3-1113-1. Magnesium recovery met acceptance criteria.

METALS (Method 6020)

I. Temperature

A. Shipping cooler temperature was measured at 2 °C or less upon receipt at the laboratory. Sample temperature was in compliance.

II. Holding Times

A. The analysis holding times were reviewed and found to be in compliance.

III. Calibration

A. Calibration linearity, ICV, low-level calibration check, and CCV were reviewed and found to be in compliance.

IV. Blanks

A. ICB, CCB, and method blank analysis results were reviewed and found to be in compliance.

V. MS/MSD

A. MS/MSD analyses were performed on MPL4-1113-1. Bias and precision measures met acceptance criteria.

VI. LCS

A. The LCS results were reviewed and found to be in compliance.

VII. Duplicate

A. Field duplicate sample from MPL3 was submitted for this SDG. Duplicate precision met acceptance criteria.

VIII. Serial Dilution

A. Serial dilution was performed on a non-WSMR sample in the analytical batch and not evaluated.

IX. Other

A. LOQ were reviewed and found compliant. Post digest spike was performed on a non-WSMR sample and not evaluated.

MERCURY (Method 7470A)

I. Temperature

A. Shipping cooler temperature was measured at 2 °C or less upon receipt at the laboratory. Sample temperature was in compliance.

II. Holding Times

A. The analysis holding times were reviewed and found to be in compliance.

III. Calibration

A. Calibration linearity, ICV, and CCV were reviewed and found to be in compliance.

IV. Blanks

A. ICB, CCB, and method blank analysis results were reviewed and found to be in compliance.

V. MS/MSD

A. MS/MSD analyses were performed on ample MPL4-1113-1. MS/MSD results met acceptance criteria.

VI. LCS

A. The LCS results were reviewed and found to be in compliance.

VII. Duplicate

A. Field duplicate sample from MPL3 was submitted for this SDG. Analysis results were non-detect in both parent and duplicate sample.

VIII. Other

A. LOQ were reviewed and found compliant. Post digest spike was performed on specification non-WSMR sample and not evaluated.

ANIONS (Method 300.0 [9056])

I. Temperature

A. Shipping cooler temperature was measured at 2 °C or less upon receipt at the laboratory. Sample temperature was in compliance.

II. Holding Times

A. The analysis holding times were reviewed and found to be in compliance.

III. Calibration

A. Calibration coefficient of determination, alternate source calibration verification, and CCV, were reviewed and found compliant.

IV. Blanks

A. Method blank and CCB analysis results were reviewed and found to be in compliance.

V. MS/MSD

A. MS/MSD were performed on sample MPL4-1113-1 with bias and precision results acceptable.

VI. LCS

A. The LCS results were reviewed and found to be in compliance.

VII. Duplicate

A. Field duplicate sample from MPL3 was submitted for this SDG. Precision measurements were acceptable less than 4 RPD.

VIII. Other

A. LOQ were reviewed and found compliant. All samples were analyzed at 5-times dilution due to relatively high concentrations of chloride or sulfate. The LOQ and detection limits for fluoride were consequently elevated.

pH (Method 9040C)

I. Temperature

A. Shipping cooler temperature was measured at 2 °C or less upon receipt at the laboratory. Sample temperature was in compliance.

II. Holding Times

A. Hydrogen ion activities (pH) were measured in the field at the time of sample collection and again at the laboratory.

III. Calibration

A. pH meter calibration at the laboratory was checked using buffer solutions pH 7.0, 4.0, and 12.0.

IV. LCS

A. The LCS sample pH was indicated on the instrument run log.

V. Duplicate

A. The field duplicate sample from MPL3 was submitted for this SDG. Precision measurement was compliant.

ALKALINITY (Methods 310.2 / SM2320B)

I. Temperature

A. Shipping cooler temperature was measured at 2 °C or less upon receipt at the laboratory. Sample temperature was in compliance.

II. Holding Times

A. The analysis holding times were reviewed and found to be in compliance.

III. Calibration

A. Calibration coefficient of determination, alternate source calibration verification, and CCV, were reviewed and found compliant.

IV. Blanks

A. Method blank results were reviewed and found to be in compliance. Original analysis of the method blank yielded a detectable result less than ½ the LOQ. The blank re-analyzed was non-detect. There was no impact to the sample data.

V. MS/MSD

A. MS/MSD were analyzed on sample MPL4-1113-1. LCS recovery and precision RPD were within acceptance limits. MSD recovery was high slightly greater than the upper acceptance limit. Validation qualifiers were not assigned.

VI. LCS

A. The LCS results were reviewed and found to be in compliance.

VII. Duplicate

A. A field duplicate sample from MPL3 was submitted for this SDG. Field duplicate, MSD, and lab control sample duplicate precision were acceptable.

CYANIDE (Methods 9014-9010C / SM4500-CN-C)

I. Temperature

A. Shipping cooler temperature was measured at 2 °C or less upon receipt at the laboratory. Sample temperature was in compliance.

II. Holding Times

A. The analysis holding times were reviewed and found to be in compliance.

III. Calibration

A. Calibration coefficient of correlation was reviewed and found compliant.

IV. Blanks

A. Method blanks were reviewed and found acceptable. The method blank for cyanide was detectable less than the LOQ. Validation qualifiers were not assigned.

V. MS/MSD

A. MS/MSD were performed on sample MPL4-1113-1. Cyanide recovery was less than acceptance limits however the parent sample concentration was more than 4-times the spike amount. Validation qualifiers were not assigned. For cyanide, weak/dissociable the MS/MSD recoveries were greater than 35% but less than the lower acceptance limit 90%. Positive results in MPL4-1113-1 are qualified as estimated with "J."

VI. LCS

A. The LCS results were reviewed and found to be in compliance. Cyanide amenable to chlorination is a difference measurement which the LCS calculation accounts for inversely.

VII. Duplicate

A. A field duplicate sample from MPL3 was submitted for this SDG. Precision for total cyanide and cyanide amenable to chlorination were acceptable. Precision for cyanide weak/dissociable; the absolute difference between the two results slightly exceeded twice the detection limit. Results for the parent and field duplicate sample are qualified estimated "J" with reason code "FD."

VIII. Other

A. LOQ was reviewed and found compliant.

CONDUCTIVITY (Method 120.1)

I. Temperature

A. Shipping cooler temperature was measured at 2 °C or less upon receipt at the laboratory. Sample temperature was in compliance.

II. Holding Times

A. The analysis holding times were reviewed and found to be in compliance.

III. Blanks

A. Method blank results were reviewed. Conductivity detected in the method blank applicable to all samples was less than ½ the LOQ. Validation qualifiers were not qualified.

IV. LCS

A. The LCS results were reviewed and found to be in compliance.

V. Duplicate

A. A field duplicate sample from MPL3 was submitted for this SDG. Precision results for the field duplicate were found to be in compliance. LCS duplicate precision was reviewed and found compliant.

VI. Other

A. LOQ was reviewed and found compliant.

AMMONIA AS NITROGEN (Method 350.1)

I. Temperature

A. Shipping cooler temperature was measured at 2 °C or less upon receipt at the laboratory. Sample temperature was in compliance.

II. Holding Times

A. The analysis holding times were reviewed and found to be in compliance.

III. Calibration

A. Calibration coefficient of correlation was reviewed and found compliant.

IV. Blanks

A. ICB and CCB were reviewed and found compliant. Method blank results showed values greater than ½ the LOQ. Validation qualifiers were not assigned.

V. LCS

A. The LCS results were reviewed and found to be in compliance.

VI. MS/MSD

A. MS/MSD were performed on sample MPL4-1113-1. Percent recoveries were less than the lower acceptance limit at 66.5 percent and 69.5 percent. The MPL4-1113-1 detected result is qualified as estimated with "J."

VII. Duplicate

A. A field duplicate sample from MPL3 was submitted for this SDG. Duplicate precision met acceptance criteria less than 30 RPD.

VIII. Other

A. LOQ was reviewed and found compliant.

NITRATE + NITRITE AS NITROGEN (Method 353.2)

I. Temperature

A. Shipping cooler temperature was measured at 2°C or less upon receipt at the laboratory. Sample temperature was in compliance.

II. Holding Times

A. The analysis holding times were reviewed and found to be in compliance.

III. Calibration

A. Calibration coefficient of correlation was reviewed and found compliant.

IV. Blanks

A. Method blank was reviewed and found to be in compliance.

VI. MS/MSD

A. MS/MSD were performed on sample MPL4-1113-1. Recovery in the MS and precision measure for the MSD met acceptance criteria. Recovery of the MSD at 128% was slightly greater than the upper acceptance limit. Validation qualifiers were not assigned.

VI. LCS

A. The LCS results were reviewed and found to be in compliance

VII. Duplicate

A. A field duplicate sample from MPL3 was submitted for this SDG. Precision results were acceptable less than 8 RPD for the field duplicate. Precision for lab control sample duplicates were also compliant.

VIII. Other

A. LOQ was reviewed and found compliant.

ORTHOPHOSPHATE AS PHOSPHOROUS (Method SM4500-P)

I. Temperature

A. Shipping cooler temperature was measured at 2°C or less upon receipt at the laboratory. Sample temperature was in compliance.

II. Holding Times

A. The analysis holding times were reviewed and found partially in compliance. Two samples arrived at the laboratory in time to perform the analyses within the 48-hour holding time. Samples MPL4-1113-1 and MPL3-1113-1 arrived at the laboratory a day later and were analyzed past holding time but within 2-times the hold time. Positive results are qualified "J" as estimates with reason code "HT."

III. Calibration

A. Calibration coefficient of correlation was reviewed and found compliant.

IV. Blanks

A. Method blank was reviewed and found to be in compliance.

V. MS/MSD

A. MS/MSD were performed on sample MPL4-1113-1. Bias and precision measurements met acceptance criteria.

VI. LCS

A. The LCS results were reviewed and found to be in compliance.

VII. Duplicate

A. A field duplicate sample from MPL3 was submitted for this SDG. Precision measurement met acceptance criteria. Precision for LCS duplicate and MSD were compliant.

VIII. Other

A. LOQ was reviewed and found compliant.

TOTAL DISSOLVED SOLIDS (Method 160.1)

I. Temperature

A. Shipping cooler temperature was measured at 2 °C or less upon receipt at the laboratory. Sample temperature was in compliance.

II. Holding Times

A. The analysis holding times were reviewed and found to be in compliance.

III. Blanks

A. Method blank results were reviewed and found in compliance with exception. One of two method blanks showed positive detection greater than the LOQ. However the samples results were two or three orders of magnitude greater than the blank detection. Validation qualifiers were not assigned.

IV. MS/MSD

A. MS/MSD were not reported for this SDG.

V. LCS

A. The LCS results were reviewed and found to be in compliance.

VI. Duplicate

A. A field duplicate sample from MPL3 was submitted for this SDG. Precision measurement met criteria. Precision results for the LCS duplicate also were found to be in compliance.

VII. Other

A. LOQ was reviewed and found compliant.

TOTAL ORGANIC CARBON (Method 415.1)

I. Temperature

A. Shipping cooler temperature was measured at 2 °C or less upon receipt at the laboratory. Sample temperature was in compliance.

II. Holding Times

A. The analysis holding times were reviewed and found to be in compliance.

III. Calibration

A. Calibration coefficient of correlation and ICV were reviewed and found compliant.

IV. Blanks

A. Method blank was reviewed and found to be in compliance.

V. MS/MSD

A. MS/MSD were performed on sample MPL4-113-1. Bias and precision measurements met acceptance criteria.

VI. LCS

A. The LCS results were reviewed and found to be in compliance

VII. Duplicate

A. A field duplicate sample from MPL3 was submitted for this SDG. Precision results met criteria. LCS duplicate precision results were found to be in compliance.

VIII. Other

A. LOQ was reviewed and found compliant.

TOTAL SUSPENDED SOLIDS (Method 160.2)

I. Temperature

A. Shipping cooler temperature was measured at 2 °C or less upon receipt at the laboratory. Sample temperature was in compliance.

II. Holding Times

A. The analysis holding times were reviewed and found to be in compliance.

III. Blanks

A. Method blank results were reviewed and found to be in compliance.

IV. MS/MSD

A. MS/MSD were reported for sample MPL4-1113-1 in this SDG.

V. LCS

A. The LCS results recovered within the acceptance limits.

VI. Duplicate

A. A field duplicate sample from MPL3 was submitted for this SDG. Both parent and duplicate samples were non-detect and precision was not evaluated. LCS duplicate and MSD precision results met acceptance criteria.

VII. Other

A. LOQ was reviewed and found compliant.

DATA QUALIFICATION SUMMARY

CCWS-62, Former STP Percolation Ditches, SDG L13110146, three field samples, extra volume for MS/MSD, and one field duplicate:

MPL4-1113-1, MPL3-1113-1, MPL3-1113-2, and MPL2-1013-1**.**

Metals – Data Qualification Summary

MS/MSD analyses were performed on sample MPL4-1113-1. Percent recoveries and precision were acceptable with exceptions. Recovery for calcium and magnesium were greater than laboratory acceptance limits. The calcium concentration in the parent sample was greater than 4-times the spike level making the spike inappropriate. Validation qualifiers were not assigned. Magnesium recovery was 130% which exceeded the upper limit of 120%. The result for magnesium in MPL4-1113-1 is qualified "J" for estimated with reason code "MS."

Anions – Data Qualification Summary

No sample data were qualified in this SDG.

Cyanide – Data Qualification Summary

MS/MSD analyses were performed on sample MPL4-1113-1. Cyanide recovery was less than acceptance limits however the parent sample concentration was more than 4-times the spike amount. Validation qualifiers were not assigned. For cyanide, weak/dissociable the MS/MSD recoveries were greater than 35% but less than the lower acceptance limit 90%. Positive results in MPL4-1113-1 are qualified as estimated with "J."

A field duplicate sample from MPL3 was submitted for this SDG. For precision in cyanide weak/dissociable the absolute difference between the two results slightly exceeded twice the detection limit. Results for the parent and field duplicate sample are qualified estimated "J" with reason code "FD."

General and Wet Chemistry – Data Qualification Summary

For ammonia as nitrogen the MS/MSD analyses were performed on sample MPL4-1113-1. Percent recoveries were less than the lower acceptance limit at 66.5 percent and 69.5 percent. The MPL4-1113-1 detected result is qualified as estimated with "J."

For orthophosphate as phosphorous; two of the four samples arrived at the laboratory in time to perform the analyses within the 48-hour holding time. Samples MPL4-1113-1 and MPL3-1113-1 arrived at the laboratory a day later and were analyzed past holding time but within 2-times the hold time. Positive results are qualified "J" as estimates with reason code "HT."

OVERALL ASSESSMENT OF DATA

I. Compliance with method and project requirements

A. All analyses were performed within the analytical methods specifications and project requirements.

II. Usability

A. Based on the quality control criteria reviewed, all unqualified data are usable for project purposes. No data results were rejected as unusable. Some data were qualified as estimated with "J" for results not meeting quality control acceptance criteria. Data qualifiers assigned by the laboratory in the analytical report include the "J" qualifier when analytes were identified but at concentrations less than the LOQ. Estimated results are usable for limited purposes.

III. Field Duplicate Precision

Method	Parameter	Parent Sample MPL3-1113-1	Qual	Duplicate Sample MPL3-1113-2	Qual	Units	RPD
120.1	Conductivity	567		566		umhos/cm	0.2%
160.1	Total Dissolved Solids	368		376		mg/L	2.2%
160.2	Total Suspended Solids	5	U	5	U	mg/L	NC
300.0	Chloride	59.9		62.0		mg/L	3.4%
300.0	Fluoride	1	U	1	U	mg/L	NC
300.0	Sulfate	110		114		mg/L	3.6%
310.2	Alkalinity	110		108		mg/L	1.8%
350.1	Nitrogen, Ammonia	0.199		0.266		mg/L	28.8%
353.2	Nitrate-Nitrite (as N)	7.86		8.46		mg/L	7.4%
415.1	Total Organic Carbon	1.54		1.66		mg/L	7.5%
6020	Antimony	0.001	U	0.001	U	mg/L	NC
6020	Arsenic	0.00687		0.00695		mg/L	1.2%
6020	Barium	0.0455		0.0455		mg/L	0.0%
6020	Cadmium	0.0006	U	0.0006	U	mg/L	NC
6020	Chromium	0.00191	J	0.00184	J	mg/L	NC
6020	Cobalt	0.001	U	0.001	U	mg/L	NC
6020	Copper	0.002	U	0.002	U	mg/L	NC
6020	Lead	0.001	U	0.001	U	mg/L	NC
6020	Manganese	0.00184	J	0.00187	J	mg/L	NC
6020	Nickel	0.00379	J	0.00328	J	mg/L	NC
6020	Selenium	0.0272		0.0274	v	mg/L	0.7%
6020	Silver	0.001	U	0.001	U	mg/L	NC
6020	Thallium	0.0002	U	0.0002	U	mg/L	NC
6010B	Beryllium	0.002	U	0.002	U	mg/L	NC
6010B	Calcium	72.1		73		mg/L	1.2%
6010B	Magnesium	13.6		13.8		mg/L	1.5%
6010B	Potassium	2.83		2.81		mg/L	0.7%
6010B	Sodium	31.1		31.8		mg/L	2.2%
6010B	Tin	0.5	U	0.5	U	mg/L	NC
6010B	Vanadium	0.01	U	0.01	U	mg/L	NC
6010B	Zinc	0.0106	J	0.0109	J	mg/L	NC
7470A	Mercury	0.0002	U	0.0002	U	mg/L	0.0%
9040C	pH	7.81		8.12		S.U.	3.9%
9014-9010C	Cyanide	0.406		0.393		mg/L	3.3%
SM4500-CN-I	Cyanide, Weak/Dissociable	0.0255		0.0366		mg/L	35.7%
SM4500-CN-C,G	Cyanide, Amenable to Chlor.	0.406		0.392		mg/L	3.5%
SM4500-P-E-20th	Orthophosphate	0.097		0.102		mg/L	5.0%