

**DATA VALIDATION REPORT**  
**MICROBAC LABORATORY SDG L12020016**

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.

Review Date: February 15, 2012

Matrix: Groundwater; 4 groundwater samples, 1 field duplicate, and extra volume for MS/MSD

Parameters: Volatile Organic Compounds 8260B  
Semivolatile Organic Compounds, Polycyclic Aromatic Hydrocarbons, 8270C  
Polychlorinated Biphenyls 8082  
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  
Phenols 420.1  
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: L12020016

Sample Nos.: MPL4-0112-1 (MS/MSD requested), MPL2-0112-1, MPL3-0112-1, MPL3-0112-2 (Field Duplicate), MPL1-0112-1

Comments: MS/MSD requested on field sample MPL4-0112-1. Field duplicate submitted. A trip blank sample was submitted to the laboratory along with the field samples but the trip blank was not recorded on the COC.

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
<b>General Use</b>	
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
<b>Inorganic Methods</b>	
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 meet 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
<b>Organic Methods</b>	
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 L12020016  
LEVEL III DATA VALIDATION SUMMARY**

Analysis / Method	Temperature	Holding Times	Calibration	Blanks	MS/MSD	LCS	Duplicate	Serial Dilution	Other
Volatile Organics 8260B	✓	✓	✓	✓	✓	✓	✓	NA	✓
PAH 8270C	✓	✓	✓	✓	✓	✓	✓	NA	✓
PCB 8082	✓	✓	✓	✓	✓	✓	✓	NA	NA
Metals 6010B	✓	✓	✓	✓	✓	✓	✓	✓	✓
Metals 6020	✓	✓	✓	✓	✓	✓	✓	✓	✓
Mercury 7470A	✓	✓	✓	✓	✓	✓	✓	NA	✓
Anions 300.0	✓	✓	✓	✓	18	✓	✓	NA	18
pH 9040C	✓	✓	✓	NA	✓	✓	✓	NA	NA
Alkalinity 310.2/SM2320B	✓	✓	✓	✓	✓	✓	✓	NA	NA
Cyanide; Total, Amenable, Dissociable 9014-9010C/SM4500-CN	✓	✓	✓	✓	✓	✓	✓	NA	✓
Conductivity 120.1	✓	✓	NA	✓	✓	✓	✓	NA	✓
Phenols 420.1	✓	✓	✓	✓	✓	✓	✓	NA	✓
Ammonia-N 350.1	✓	✓	✓	✓	✓	✓	✓	NA	NA
Nitrate+Nitrite-N 353.2	✓	✓	✓	✓	✓	✓	✓	NA	NA
Orthophosphate SM4500-P	✓	✓	✓	✓	✓	✓	✓	NA	NA
Total Dissolved Solids 160.1	✓	✓	NA	✓	✓	✓	✓	NA	NA

<b>Total Organic Carbon 415.1</b>	✓	✓	✓	✓	✓	✓	✓	NA	NA
<b>Total Suspended Solids 160.2</b>	✓	✓	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

### Volatile Organic Compounds (Method 8260B)

#### I. Temperature

A. Shipping coolers temperatures were measured between 1°C and 3°C upon receipt at the laboratory. Sample temperatures were 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 with one exception for bromomethane in one CCV. Validation qualifiers were not assigned as the CCV bias was slightly more than the upper criteria and the compound was not detected in any samples, however the laboratory re-analyzed MPL4-0112-1 and associated MS/MSD to achieve compliance. The laboratory reported both sets of results. Data review selected the re-analyses as the reportable results.

#### 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. Surrogate Recoveries

A. Surrogate spike recoveries were reviewed and found to be in compliance.

#### VI. Matrix Spike / Matrix Spike Duplicate (MS/MSD)

A. MS/MSD analyses were performed on WSMR groundwater sample MPL4-0112-1. Matrix spike percent recoveries and duplicate relative percent difference were found to be in compliance.

#### VII. Laboratory Control Sample (LCS)

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

#### VIII. Duplicate

A. A field duplicate sample, MPL3-0112-2 was submitted for this sample delivery group (SDG). Field duplicate precision was acceptable and there were no compounds detected at concentrations greater than the applicable LOQ.

**IX. Internal Standards Performance**

A. Internal standards retention times were reviewed and found to be in compliance.

## **DATA ASSESSMENT**

### **Semi-volatile Organic Compounds Polycyclic Aromatic Hydrocarbons (PAH) (Method 8270C)**

#### **I. Temperature**

A. Shipping coolers temperatures were measured between 1°C and 3°C upon receipt at the laboratory. Sample temperatures were 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. Surrogate Recoveries**

A. Surrogate spike recoveries were reviewed and found to be in compliance.

#### **VI. Matrix Spike / Matrix Spike Duplicate (MS/MSD)**

A. MS/MSD analyses were performed on WSMR groundwater sample MPL4-0112-1. Matrix spike percent recoveries and duplicate relative percent difference were found to be in compliance with minor exceptions. Four compounds recovered slightly above the upper acceptance criteria. Validation qualifiers were not assigned because the bias shown was high and the compounds were not detected in any field sample.

#### **VII. Laboratory Control Sample (LCS)**

A. The LCS results were reviewed and found to be in compliance with minor exceptions. Chrysene and Benzo-a-pyrene recoveries were slightly more than the upper acceptance limit. Validation qualifiers were not assigned because the bias shown was high and the compounds were not detected in any field sample.

### **VIII. Duplicate**

A. A field duplicate sample, MPL3-0112-2 was submitted for this sample delivery group (SDG). Field duplicate precision was acceptable and there were no compounds detected at concentrations greater than the applicable LOQ.

### **IX. Internal Standards Performance**

A. Internal standards retention times were reviewed and found to be in compliance.

## **DATA ASSESSMENT**

### **Polychlorinated Biphenyls (PCB) (Method 8082A)**

#### **I. Temperature**

A. Shipping coolers temperatures were measured between 1°C and 3°C upon receipt at the laboratory. Sample temperatures were 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. Surrogate Recoveries**

A. Surrogate spike recoveries were reviewed and found to be in compliance.

#### **VI. Matrix Spike / Matrix Spike Duplicate (MS/MSD)**

A. MS/MSD analyses were performed on WSMR groundwater sample MPL4-0112-1. Matrix spike percent recoveries and duplicate relative percent difference were found to be in compliance.

#### **VII. Laboratory Control Sample (LCS)**

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

#### **VIII. Duplicate**

A. A field duplicate sample, MPL3-0112-2 was submitted for this sample delivery group (SDG). Field duplicate precision was acceptable and there were no compounds detected at concentrations greater than the applicable LOQ.

**DATA ASSESSMENT**  
**METALS (Method 6010B)**

**I. Temperature**

A. Shipping coolers temperatures were measured between 1°C and 3°C upon receipt at the laboratory. Sample temperatures were 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 in the applicable analytical batch on WSMR groundwater sample MPL4-0112-1. Matrix spike percent recoveries and duplicate relative percent difference were found to be in compliance except for calcium. Calcium spike recoveries were 70.2 percent and 129 percent, however the parent sample concentration exceeded 5-times the spike level. Data validation qualifiers were not assigned.

**VI. Laboratory Control Sample (LCS)**

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

**VII. Duplicate**

A. A field duplicate sample, MPL3-0112-2, was submitted for this SDG. Field duplicate precision was generally acceptable and RPD was calculated for elements when both sample and duplicate sample results were greater than the LOQ. Percent RPD for aluminum (124%), iron (66%), and zinc (87%) appear excessive however in each case one or both results were less than 5-times the LOQ. Data validation qualifiers were not assigned based on field duplicate results.

**VIII. Serial Dilution**

A. Serial dilution results were reviewed and found to be in compliance.

**IX. Other**

A. Limits of Quantitation (LOQ) were reviewed and found compliant.

## **METALS (Method 6020)**

### **I. Temperature**

A. Shipping coolers temperatures were measured between 1°C and 3°C upon receipt at the laboratory. Sample temperatures were 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 with exceptions for cadmium and thallium. These metals were reanalyzed due to poor results on a low-level calibration check. The reanalysis were compliant.

### **IV. Blanks**

A. ICB, CCB, and method blank analysis results were reviewed and found to be in compliance with one exception. Thallium was reanalyzed due to thallium detected in a continuing calibration blank. The reanalysis was compliant.

### **V. MS/MSD**

A. MS/MSD analyses were performed in the applicable analytical batch on WSMR groundwater sample MPL4-0112-1. Matrix spike percent recoveries and duplicate relative percent difference were found to be in compliance.

### **VI. LCS**

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

### **VII. Duplicate**

A. A field duplicate sample, MPL3-0112-2, was submitted for this SDG. Field duplicate precision was generally acceptable and RPD was calculated for elements when both sample and duplicate sample results were greater than the LOQ. Percent RPD for manganese (117%) appears excessive however one or both results were less than 5-times the LOQ. Data validation qualifiers were not assigned based on field duplicate results

### **VIII. Serial Dilution**

A. Serial dilution results were reviewed and found to be in compliance.

### **IX. Other**

A. LOQ were reviewed and found compliant.

## **MERCURY (Method 7470A)**

### **I. Temperature**

A. Shipping coolers temperatures were measured between 1°C and 3°C upon receipt at the laboratory. Sample temperatures were 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 in the applicable analytical batch on WSMR groundwater sample MPL4-0112-1. Matrix spike percent recoveries and duplicate relative percent difference were found to be in compliance.

### **VI. LCS**

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

### **VII. Duplicate**

A. A field duplicate sample, MPL3-0112-2 was submitted for this sample delivery group (SDG). Field duplicate precision was acceptable and mercury was not detected at concentrations greater than the applicable LOQ.

### **VIII. Other**

A. LOQ were reviewed and found compliant

## **ANIONS (Method 300.0 [9056])**

### **I. Temperature**

A. Shipping coolers temperatures were measured between 1°C and 3°C upon receipt at the laboratory. Sample temperatures were 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 analyses were performed in the applicable analytical batch on WSMR groundwater sample MPL4-0112-1. Matrix spike percent recoveries were outside, less than, laboratory acceptance windows of 90-100 percent for chloride and fluoride. Chloride results for all samples in this SDG are qualified as estimated results with J- for low bias. Fluoride results in all samples were non-detect and are qualified with the UJ flag. Percent recovery for sulfate was acceptable and RPD for all analytes was compliant.

### **VI. LCS**

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

### **VII. Duplicate**

A. A laboratory duplicate was analyzed and the results showed precision in compliance. A field duplicate sample, MPL3-0112-2, was submitted for this SDG. Field duplicate precision was compliant and RPD was calculated for elements when both sample and duplicate sample results were greater than the LOQ.

## **VIII. Other**

A. LOQs were reviewed for each sample. Fluoride LOQ was 2- to 4-times higher than normal and 4-times diluted sample analyses were reported non-detect. All samples were analyzed at dilution in order to get the chloride concentrations within calibration range and to protect the column and detector from high chloride concentrations. Fluoride and chloride results are qualified UJ and J-.

## **pH (Method 9040C)**

### **I. Temperature**

A. Shipping coolers temperatures were measured between 1°C and 3°C upon receipt at the laboratory. Sample temperatures were 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. Field measurements were approximately 1 standard unit greater than laboratory measurements. Data validation qualifiers were not assigned.

### **III. Calibration**

A. pH meter calibration at the laboratory was documented using buffer solutions pH 4, 7, and 10.

### **IV. LCS**

A. The LCS sample pH was measured at the laboratory and the results were acceptable.

### **V. Duplicate**

A. A field duplicate sample, MPL3-0112-2, was submitted for this SDG. Field duplicate precision was compliant and RPD was calculated.

## **ALKALINITY (Methods 310.2 / SM2320B)**

### **I. Temperature**

A. Shipping coolers temperatures were measured between 1°C and 3°C upon receipt at the laboratory. Sample temperatures were 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.

### **V. LCS**

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

### **VI. Duplicate**

A. A field duplicate sample, MPL3-0112-2, was submitted for this SDG. Field duplicate precision was compliant and RPD was calculated. A LCS duplicate was also analyzed and precision was found to be in compliance.

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

### **I. Temperature**

A. Shipping coolers temperatures were measured between 1°C and 3°C upon receipt at the laboratory. Sample temperatures were 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 to be in compliance.

### **V. 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.

### **VI. Duplicate**

A. A field duplicate sample, MPL3-0112-2, was submitted for this SDG. Field duplicate precision was compliant and RPD was calculated.

### **VII. Other**

A. LOQ was reviewed and found compliant.

## **CONDUCTIVITY (Method 120.1)**

### **I. Temperature**

A. Shipping coolers temperatures were measured between 1°C and 3°C upon receipt at the laboratory. Sample temperatures were 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. LCS**

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

### **V. Duplicate**

A. A field duplicate sample, MPL3-0112-2, was submitted for this SDG. Field duplicate precision was compliant and RPD was calculated.

### **VI. Other**

A. LOQ was reviewed and found compliant.

## **PHENOLS (Method 420.1)**

### **I. Temperature**

A. Shipping coolers temperatures were measured between 1°C and 3°C upon receipt at the laboratory. Sample temperatures were 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. LCS**

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

### **V. Duplicate**

A. A field duplicate sample, MPL3-0112-2, was submitted for this SDG. Field duplicate precision was compliant and the analyte was not detected in either sample.

### **VI. Other**

A. LOQ was reviewed and found compliant.

## AMMONIA AS NITROGEN (Method 350.1)

### **I. Temperature**

A. Shipping coolers temperatures were measured between 1°C and 3°C upon receipt at the laboratory. Sample temperatures were 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.

### **V. LCS**

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

### **VI. Duplicate**

A. A field duplicate sample, MPL3-0112-2, was submitted for this SDG. Field duplicate precision was compliant and the analyte was not detected in either sample.

### **VII. Other**

A. LOQ was reviewed and found compliant

## **NITRATE + NITRITE AS NITROGEN (Method 353.2)**

### **I. Temperature**

A. Shipping coolers temperatures were measured between 1°C and 3°C upon receipt at the laboratory. Sample temperatures were 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.

### **V. LCS**

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

### **VI. Duplicate**

A. A field duplicate sample, MPL3-0112-2, was submitted for this SDG. Field duplicate precision was compliant and the RPD was calculated for the reported results.

### **VII. Other**

A. LOQ was reviewed and found compliant. MS/MSD analyzed on WSMR groundwater sample MPL4-0112-1 was unusable. The sample concentration exceeded the spike level by more than 5-times.

## **ORTHOPHOSPHATE AS PHOSPHOROUS (Method SM4500-P)**

### **I. Temperature**

A. Shipping coolers temperatures were measured between 1°C and 3°C upon receipt at the laboratory. Sample temperatures were 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.

### **V. LCS**

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

### **VI. Duplicate**

A. A field duplicate sample, MPL3-0112-2, was submitted for this SDG. Field duplicate precision was compliant and the RPD was calculated for the reported results. A LCS duplicate was also analyzed. The results were reviewed and found to be compliant.

### **VII. Other**

A. LOQ was reviewed and found compliant. MS/MSD analyzed on sample MPL4-0112-1 showed compliant results.

## **TOTAL DISSOLVED SOLIDS (Method 160.1)**

### **I. Temperature**

A. Shipping coolers temperatures were measured between 1°C and 3°C upon receipt at the laboratory. Sample temperatures were 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. LCS**

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

### **V. Duplicate**

A. A field duplicate sample, MPL3-0112-2, was submitted for this SDG. Field duplicate precision was compliant and the RPD was calculated for the reported results. A LCS duplicate was also analyzed and results found to be in compliance.

### **VI. Other**

A. LOQ was reviewed and found compliant. MS/MSD analyzed on sample MPL4-0112-1 showed compliant results.

## **TOTAL ORGANIC CARBON (Method 415.1)**

### **I. Temperature**

A. Shipping coolers temperatures were measured between 1°C and 3°C upon receipt at the laboratory. Sample temperatures were 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. LCS**

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

### **VI. Duplicate**

A. A field duplicate sample, MPL3-0112-2, was submitted for this SDG. Field duplicate precision was compliant and the RPD was calculated for the reported results. A LCS duplicate was also analyzed and results found to be in compliance.

### **VII. Other**

A. LOQ was reviewed and found compliant. MS/MSD analyzed on sample MPL4-0112-1 showed compliant results.

## **TOTAL SUSPENDED SOLIDS (Method 160.2)**

### **I. Temperature**

A. Shipping coolers temperatures were measured between 1°C and 3°C upon receipt at the laboratory. Sample temperatures were 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. LCS**

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

### **V. Duplicate**

A. A field duplicate sample, MPL3-0112-2, was submitted for this SDG. Field precision could not be calculated as the original sample showed 13 mg/L suspended solids while the duplicate was non-detect above 5.0 mg/L. A LCS duplicate was also analyzed and results found to be in compliance. Data qualifiers were not assigned based on field precision only.

### **VI. Other**

A. LOQ was reviewed and found compliant. MS/MSD analyzed on sample MPL4-0112-1 showed compliant results.

## **DATA QUALIFICATION SUMMARY**

**CCWS-62, Former STP Percolation Ditches, Main Post Landfill Wells MPL-10 through MPL-04, SDG L12020016, five samples, four field samples MPL1-0112-1, MPL2-0112-1, MPL3-0112-1, MPL4-0112-1, and one field duplicate MPL3-0112-2. Extra sample volume was collected at MPL4 for MS/MSD.**

### **Organic Compounds; VOC, PAH, and PCB – Data Qualification Summary**

No sample data were qualified in this SDG.

### **Metals – Data Qualification Summary**

No sample data were qualified in this SDG.

### **Anions – Data Qualification Summary**

Chloride results in all samples were qualified as estimated values with low bias, J- flag. Fluoride results were flagged as estimated, J, in MPL1-0112-1, and as estimated, non-detect, UJ flag, in all other samples. Due to high chloride content samples were analyzed at 2- or 4-times dilution. Dilution raised the LOQ for fluoride. Matrix spike recoveries were less than criteria for chloride and fluoride.

### **Cyanide – Data Qualification Summary**

No sample data were qualified in this SDG.

### **Phenolics – Data Qualification Summary**

No sample data were qualified in this SDG.

### **General and Wet Chemistry – Data Qualification Summary**

No sample data were qualified in this SDG.

## 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 and qualified data are usable for project purposes. No data results were rejected as unusable. Data qualifiers assigned by the laboratory in the analytical report include the “J” and “UJ” qualifiers. Estimated results are usable for limited purposes.

### **III. Field Duplicate Precision**

A. Field duplicate precision for the paired samples from MPL3 well are shown in the table below. RPD is only calculated when both sample results exceed the LOQ.

Method	Parameter	MPL3-0112-1		MPL3-0112-2		RPD
6010B	Aluminum	0.507		0.118		124.5%
6010B	Beryllium	0.00200	U	0.00200	U	NC
6010B	Boron	0.100	U	0.100	U	NC
6010B	Calcium	77.4		77.5		0.1%
6010B	Iron	0.592		0.298		66.1%
6010B	Magnesium	14.3		14.2		0.7%
6010B	Molybdenum	0.0100	U	0.0100	U	NC
6010B	Potassium	2.94		2.86		2.8%
6010B	Sodium	34.6		34.7		0.3%
6010B	Tin	0.500	U	0.500	U	NC
6010B	Vanadium	0.0100	U	0.0100	U	NC
6010B	Zinc	0.0547		0.0216		86.8%
6020	Antimony	0.00100	U	0.00100	U	NC
6020	Arsenic	0.00149		0.00137		8.4%
6020	Barium	0.0517		0.0503		2.7%
6020	Cadmium	0.000600	U	0.000600	U	NC
6020	Chromium	0.00235		0.00195	J	NC
6020	Cobalt	0.00100	U	0.00100	U	NC
6020	Copper	0.00200	U	0.00200	U	NC
6020	Lead	0.000829	J	0.00100	U	NC
6020	Manganese	0.0150		0.00396		116.5%
6020	Nickel	0.00381	J	0.00317	J	NC
6020	Selenium	0.00568		0.00514		10.0%
6020	Silver	0.00100	U	0.00100	U	NC

6020	Thallium	0.000200	U	0.000200	U	NC
7470A	Mercury	0.000200	U	0.000200	U	NC
300.0	Chloride	57.9		58.2		0.5%
300.0	Fluoride	0.800	U	0.800	U	NC
300.0	Sulfate	111		110		0.9%
9040	pH	7.47		7.40		0.9%
310.2	Alkalinity, total	122		129		5.6%
9014	Cyanide	0.234		0.282		18.6%
120.1	Conductivity	679		675		0.6%
420.1	Phenols	0.00556	U	0.00556	U	NC
350.1	Ammonia, as N	0.100	U	0.100	U	NC
353.2	Nitrate-Nitrite, as N	7.82		8.01		2.4%
SM4500-P-E-20th	Orthophosphate	0.132		0.139		5.2%
160.1	Total Dissolved Solids	408		366		10.9%
415.1	Total Organic Carbon	3.36		3.18		5.5%
160.2	Total Suspended Solids	13.0		5.0	U	NC