MCGI

USEPA
Inorganic
Data Validation Report

Former York Naval Ordnance Plant
PA

Lab SDGs No. J89968 & J94657
MCGI Project No. EA901701-9968-I

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CONTENTS

GLOSSARY OF ACRONYMS & TERMS

GLOSSARY OF ACRONYMS & TERMS

One or more of the following acronyms and terms may have been used in the descriptive process of the **Inorganic** Data Validation.

Acronyms:

AA	Atomic Absorption
CARD	CLP Analytical Results Database
CCB	Continuing Calibration Blank
CCS	Contract Compliance Screening
CCV	Continuing Calibration Verification
CF	Calibration Factor
CLP	Contract Laboratory Program
COC	Chain of Custody
CRDL	Contract Required Detection Limit
CSF	Complete SDG File
CV	Cold Vapor
%D	Percent Difference
DAS	Delivery of Analytical Services
DSF	Data Summary Form
EMSL-LV	Environmental Monitoring Support Laboratory - Las Vegas
EPA	United States Environmental Protection Agency
ICAL	Initial Calibration
ICB	Initial Calibration Blank
ICP	Inductively Coupled Plasma
ICS	Interference Check Sample
ICV	Initial Calibration Verification
IDL	Instrument Detection Limit
IRDA	Inorganic Regional Data Assessment
LCS	Laboratory Control Sample
LCL	Lower Control Limit
MCL	Maximum Contamination Level
MDC	Minimum Detectable Concentration
MDL	Method Detection Limit
MS/MSD	Matrix Spike/Matrix Spike Duplicate
MSA	Method of Standard Addition
PB	Preparation Blank
PCB	Poly Chlorinated Biphenyl
PRP	Potential Responsible Party
QA/QC	Quality Assurance/Quality Control
QAPjP	Quality Assurance Project Plan
QC	Quality Control

%R	Percent Recovery of spiked amount
RAS	Routine Analytical Services
RPD	Relative Percent Difference
RRF	Relative Response Factor
RSD	Relative Standard Deviation
SDG	Sample Delivery Group
SMO	Sample Management Office
SOP	Standard Operation Procedures
SOW	Statement of Work
SSL	Samples Shipping Log
TAL	Target Analyte List
TR	Traffic Report
UCL	Upper Control Limit
VTSR	Validated Time of Sample Receipt

Terms:

Associated Samples

Any sample related to a particular QC analysis. For Example:
- For ICV, all samples run under the same calibration curve.
- For duplicate RPD, all SDG samples digested/distilled of the same matrix.

Case A finite, usually predetermined number of samples collected over a given time period for a particular site. A Case consists of one or more Sample Delivery Group(s).

Continuing Calibration Blank (CCB)

A deionized water sample run every ten (10) samples designed to detect any carryover contamination.

Continuing Calibration Verification (CCV)

A deionized water sample run every ten (10) samples designed to detect any carryover contamination.

Contract Compliance Screening (CCS)

A process in which the SMO inspects the data for contractual compliance and provides EMSL-LV laboratories and the Regions with their findings.

Contractual Holding Time

The time from VTSR (validated time of sample receipt) to laboratory extraction and /or analysis.

Data Validation Qualifier (DVQ)

This refers to the column on the data summary form in which EPA Region III and other qualifiers have been placed by the data validator.

Data Validation Result (DVR)

This refers to the column on the data summary form used to report results that have been modified by the data validator. A result in the DVR column that is qualified "U" indicates a modification of the reporting limit.

Field Blank Field blanks are intended to identify contaminants that may have been introduced in the field. Examples are rinsate blank (RB), field blanks (FB) and trip blank (TB).

Field Duplicate

A duplicate sample generated in the field; not in the laboratory.

Initial Calibration (ICAL)

The establishment of a calibration curve with the appropriate number of standards and concentration ranges. The calibration curve plots absorbancies and/or emissions versus concentration of the standards.

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Initial Calibration Blank (ICB)

First blank run after the calibration curve .

Initial Calibration Verification (ICV)

First standard run after the calibration curve .

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Introduction of a known concentration of a compound into a sample to provide information about the effect of sample matrix on the extraction and/or measurement methodology.

Post Digestion Spike

The addition of known amount of standard after digestion. (Also identified as analytical spike, or spike, for furnace analyses.)

Preparation Blank (PB)

Blank taken through the digestion process to detect internal laboratory contamination.

Sample Delivery Group (SDG)

Defined by one of the following, whichever occurs first:
- case of sample
- each twenty field samples in a case or
- each 14-day calendar period during which field samples in a case are received, beginning with the receipt of the first sample in the SDG.

Serial Dilution

A sample run at a specific dilution to determine whether any significant chemical or physical interferences exist due to sample matrix effect, for ICP only.

Technical Holding Time

The time from sample collection to laboratory extraction and /or analysis.

COMMUNICATION RECORDS

N/A

GLOSSARY OF DATA VALIDATION QUALIFIERS

GLOSSARY OF DATA QUALIFIER CODES (INORGANIC)

CODES RELATED TO IDENTIFICATION:

(Confidence concerning presence or absence of analytes).

U	=	Not detected above the level of the associated value. The associated value is either the approximate sample quantitation or detection limit.
NO CODE	=	Confirmed identification
U1	=	Not detected substantially above the level reported in laboratory or field blanks.
R	=	Unusable results. Analyte may or may not be present in the sample.
N	=	Tentative identification. Consider present. Special methods may be needed to confirm its presence or absence in future sampling efforts.

CODES RELATED TO QUANTITATION:

(Can be used for both positive results and sample detection limits)

J	=	Analyte present. Reported value may not be accurate or precise (estimated value).
J+	=	Analyte present. Reported value may be biased high. Result is estimated high.
J-	=	Analyte present. Reported value may be biased low. Result is estimated low.
UJ	=	Not detected. Quantitation limit may be inaccurate or imprecise (Estimated).
UJ-	=	Not detected. Quantitation limit is probably higher.

OTHER CODES:

NJ	=	Qualitative identification questionable. Presumptively present at approximate quantity.			
Q	=	No analytical Result.	X	=	Data not validated.

DATA VALIDATION REPORT NARRATIVE

MCGI

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DATE: April 3, 2017

SUBJECT: USEPA Inorganic Data Validation Report
Metals
Lab SDG's No. J89968 & J9657
Site: York Naval Ordnance Plant, PA
MCGI Project No. EA901701-9968-I

FROM: Sherif N. Mina
Meridian Consultant Group, Inc.

TO: Mr. Adrian Hughes
EA Engineering, Science & Technology, Inc.

OVERVIEW

This reports consists of two (2) Sample Delivery Groups (SDG)s for a total of four (4) samples submitted to TestAmerica Laboratories, Arvada, CO, for Metals analysis according to SW-846 Methods 6010C & 6020A. Details about each SDG are listed in separate sections below. The samples were analyzed in accordance with the Chain-of-Custody (COC).

The analytical results were validated according to the pertinent parts of U.S. Environmental Protection Agency (USEPA) National Functional Guideline for Inorganic Data Review, dated August 2014; along with the Quality Assurance/Quality Control (QA/QC) requirements for the analytical methods used for the analyses.

Deviation from USEPA NFG: The "U" qualifier recommended by USEPA NFG for blank contamination was replaced by the "U1" qualifier to clearly indicate blank contamination on the EDDs.

GENERAL NOTES

- ***Electronic Data Deliverable (EDD):*** Several rows in an electronic data deliverable (EDD) are marked with an "X" and hidden from the EDDs by the validator. These rows may include quality control samples such as Method Blanks, Laboratory Control Samples, Matrix Spikes, or Matrix Spike Duplicates which are not validated. Additionally, some field sample results may not be used since only one (1) result for each compound is reported after validation. The following list indicates some instances in which an "X" may be placed in the DVQ column:
  1. The compounds in an analysis that have exceeded the instrument calibration range.
  2. All compounds in a diluted analysis that were within the calibration range in the initial analysis.
  3. All compounds in either the initial analysis or re-analysis of a sample, depending on which analysis is not reported on the EDD.

  Although QC samples and some field samples results may not be used, all data were reviewed and considered in the overall assessment.

- ***Data Validation Qualifier (DVQ)*****:** This refers to the column on the data summary form in which EPA and other qualifiers have been placed by the data validator.

- ***Data Validation Result (DVR):*** This refers to the column on the data summary form used to report results that have been modified by the data validator. A result in the DVR column that is qualified "U" indicates a modification of the reporting limit. Results in the DVR column supersede those reported by the laboratory.

- ***Compound Quantitation:*** Positive results for compounds which are below the CRQL were qualified as estimated "J" on the EDD.

1-SDG: J89968

This SDG consisted of one (1) aqueous sample submitted to TestAmerica Laboratories, Arvada, CO, for Total & Dissolved Metals analysis according to SW-846 Methods 6010C & 6020A. The sample was analyzed in accordance with the Chain-of-Custody (COC), see Sample Identification Summary.

Sample Identification Summary

SAMPLE INFORMATION				Analysis
Field ID	**Lab ID**	**SDG**	**Matrix**	**M**
YNOP-GW-BLDG14-01-00/70-0	280-89968-10	J89968	Aqueous	x

M=Metals (Total & Dissolved)

Duplicates: N/A

SUMMARY

All samples were successfully analyzed for all target compounds according to U.S. Environmental Protection Agency (USEPA) National Functional Guideline for Inorganic Data Review, dated August 2014; along with the Quality Assurance/Quality Control (QA/QC) requirements for the analytical methods used for the analyses. All instruments and method sensitivities were according to the specified analytical methods. Refer to Minor Problems for information regarding biases identified during data validation.

Data Validation Summary

Parameters		M		
		q	t	a
*	Data Completeness		2	0
*	Holding Time		2	0
*	Calibration Verification		2	0
	Laboratory and Field Blanks analyses	x	2	1
*	ICP Interference Check Sample results		2	0
*	Matrix Spike recoveries (MS)		2	0
*	Laboratory and Field Duplicates		2	0
*	Laboratory Control Sample(LCS)		2	0
*	Serial Dilution results		2	0
*	Analyte Identification		2	0
*	Analyte Quantitation		2	0
*	Sample Preservation		2	0
* All Criteria were met for that Parameter, M=Metals(Total & Dissolved)				

q=qualified; t=total number of samples analyzed; a=number of samples affected

MAJOR ISSUES

- None noted.

MINOR ISSUES

- ***Laboratory and Field Blanks analyses:*** The maximum concentration of all compounds found in the analyses of the field or laboratory method blanks are listed in the following table. Associated samples with positive results of theses contaminants maybe qualified "U1" or "J+", based on the concentration level found in the samples, according to USEPA National Functional Guideline for Organic Data Review, dated August 2014.

Analyte	Blank Type
Ba (total)	PB
Pb (total)	PB
Zn (total & dissolved)	PB

CB = Container Blank
PB = Preparation Blank
ICB = Initial Calibration Blank
CCB = Continuing Calibration Blank
FB = Field Blank
EB = Equipment Blank

NOTES

- None noted.

2-SDG: J94657

This SDG consisted of three (3) aqueous samples submitted to TestAmerica Laboratories, Arvada, CO, for Total & Dissolved Metals analysis according to SW-846 Methods 6010C & 6020A. One (1) aqueous field duplicate pair was identified in this sample set. The samples were analyzed in accordance with the Chain-of-Custody (COC), see Sample Identification Summary.

Sample Identification Summary

SAMPLE INFORMATION				Analysis
Field ID	**Lab ID**	**SDG**	**Matrix**	**M**
YNOP-GW-BLDG14-01-338/472-00	280-94657-01	J94657	Aqueous	x
YNOP-GW-86S-01-17/27-00	280-94657-02		Aqueous	x
YNOP-GW-86S-01-17/27-01	280-94657-03		Aqueous	x

M=Metals (Total & Dissolved)

Duplicates: YNOP-GW-86S-01-17/27-00/YNOP-GW-86S-01-17/27-01

SUMMARY

All samples were successfully analyzed for all target compounds according to U.S. Environmental Protection Agency (USEPA) National Functional Guideline for Inorganic Data Review, dated August 2014; along with the Quality Assurance/Quality Control (QA/QC) requirements for the analytical methods used for the analyses. All instruments and method sensitivities were according to the specified analytical methods. Refer to Minor Problems for information regarding biases identified during data validation.

Data Validation Summary

Parameters		M		
		q	**t**	**a**
*	Data Completeness		6	0
*	Holding Time		6	0
*	Calibration Verification		6	0
	Laboratory and Field Blanks analyses	x	6	1
*	ICP Interference Check Sample results		6	0
*	Matrix Spike recoveries (MS)		6	0
	Laboratory and Field Duplicates	x	6	4
*	Laboratory Control Sample(LCS)		6	0
*	Serial Dilution results		6	0
*	Analyte Identification		6	0
*	Analyte Quantitation		6	0
*	Sample Preservation		6	0
* All Criteria were met for that Parameter, M=Metals(Total & Dissolved)				

q=qualified; t=total number of samples analyzed; a=number of samples affected

MAJOR ISSUES

- None noted.

MINOR ISSUES

- ***Laboratory and Field Blanks analyses:*** The maximum concentration of all compounds found in the analyses of the field or laboratory method blanks are listed in the following table. Associated samples with positive results of theses contaminants maybe qualified "U1" or "J+", based on the concentration level found in the samples, according to USEPA National Functional Guideline for Organic Data Review, dated August 2014.

Analyte	Blank Type
Ba (dissolved)	PB
Pb (total & dissolved)	PB

CB = Container Blank
PB = Preparation Blank
ICB = Initial Calibration Blank
CCB = Continuing Calibration Blank
FB = Field Blank
EB = Equipment Blank

- ***Field Duplicates:*** For the associated aqueous & soil field duplicate pairs, an RPD of 50% was used as the QC limit for results that are at or above the CRQL, no qualification was applied based on the RPD when results are less than CRQL. Whenever a positive result for a compound is detected in one sample but not in the other, regardless of the CRQL, "J" & "UJ" qualifiers were applied to that compound in the field duplicate pair. A table summarizing the RPDs for the associated aqueous field duplicate pair is provided below.

Compound	YNOP-GW-86S-01-17/27-00 (Total)	YNOP-GW-86S-01-17/27-01 (Total)	RPD	Qualifier
Antimony	0.63 J	ND	IN	J, UJ
Barium	43	44	2	
Copper	1.5 J	1.5 J	0	
Lead	ND	ND		
Nickel	0.95 J	0.74 J	25	
Zinc	3.6 J	2.3 J	44	
	YNOP-GW-86S-01-17/27-00 (Dissolved)	**YNOP-GW-86S-01-17/27-01 (Dissolved)**		
Antimony	ND	ND		
Barium	53	51	4	
Copper	2.7	2.8	4	
Lead	1.3 J	1.1 J	17	
Nickel	1.7 J	1.6 J	6	
Zinc	5.8 J	20	110	J

IN=Indeterminate

NOTES

- None noted.

REPORT CONTENT STATEMENT

All data for this project were reviewed in accordance with the pertinent parts of the U.S. Environmental Protection Agency (USEPA) National Functional Guideline for Inorganic Data Review, dated August 2014; along with the Quality Assurance/Quality Control (QA/QC) requirements for the analytical methods used for the analyses. The text of the report addresses only those problems affecting data usability.

ATTACHMENTS

l) Glossary of Data Qualifiers
2) Electronic Data Deliverable (EDD). These include:
   (a) All results for target analytes with qualifier codes where applicable.
   (b) All unusable detection limits (qualified "R"), where applicable.
3) Electronic Data Package (.pdf file) as Support Documentation

DCN: EA901701-9968-I

Respectfully Submitted,

Sherif N. Mina Date: April 3, 2017
Sherif N. Mina

QA/Review: SM