DATA VALIDATION REPORT

Red Hill Bulk Fuel Storage Facility
Joint Base Pearl Harbor-Hickam
CV 23F0104

SDG: 580-121097-1
Eurofins Savannah

Prepared by

ENVIRONMENTAL DATA SERVICES, LTD.

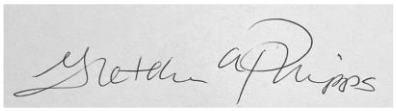
Prepared for

AECOM Environmental

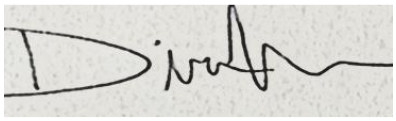
Rev1 Released: 1/20/23

Data Validators and Peer Reviewers:

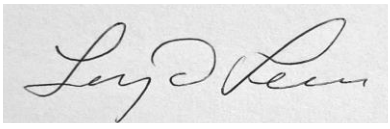
Diane Waldschmidt



Gretchen Phipps



Dina Manov



Larry Lewis

Paloma Hoelzle

5 Brilliant Avenue, Pittsburgh, PA 15215
412.408.3288 I www.eds-pa.com

ENVIRONMENTAL DATA SERVICES, LTD.

EXECUTIVE NARRATIVE

Sample Delivery Groups: 580-121097-1
Laboratory: Eurofins, Savannah
Site: Red Hill Bulk Storage Facility, CV 23F0104
Sampling dates: 12/7/2022
Number of Samples: 3
Test Method: SW-846 8015C
Analysis: 2-(2-Butoxyethoxy)ethanol

Quality Assurance Project Plan: Sampling and Analysis Plan, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 01, April 2017); PFAS-Specific Sampling and Analysis plan, Red Hill Bulk Fuel Storage Facility, Adit 6, Joint Base Pearl Harbor-Hickam, O'Ahu, Hawai'i (November 30, 2022) (SAP).

Validation Guidelines: United States Department of Defense Data Validation Guidelines Module 4: Data Validation Procedure for Organic Analysis by GC, Environmental Data Quality Workgroup, March 9, 2021; United States Department of Defense (DOD) General Data Validation Guidelines Environmental Data Quality Workgroup (EDQW), November 2019. United States Department of Defense Data Validation Guidelines Modules 1, 2, 3, and 4 Revised Table for Sample Qualification in the Presence of Blank Contamination, February 09, 2022

Client Sample Identification	Laboratory Sample Identification	Matrix	Validation Stage
ADIT6-DU01-SON02MI-22DEC	580-121097-1	solid	S2BVEM
ADIT6-DU02-SON02MI-22DEC	580-121097-4	solid	S2BVEM
ADIT6-DU03-SON02MI-22DEC	580-121097-7	solid	S2BVEM

Table 1 provides a summary of the major and minor data quality issues identified in this data set. All data are acceptable except those results which have been qualified with "X", rejected. Data validation qualifiers along with associated descriptions are provided in Table 2. All data qualification related to this group of samples is detailed on the attached sheets.

All data users should note two facts. First, an "X" flag means that the associated value is unusable due to significant quality control (QC) problems, the data is invalid and provides no information as to whether the compound is present or not. "X" values should not appear on any data tables even as a last resort. Second, no analyte concentration, even if it passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data, but any value potentially contains error.

DATA ASSESSMENT

1. NARRATIVE AND COMPLETENESS REVIEW

The case narrative was reviewed, and the data package was checked for completeness. No discrepancies were noted.

2. SAMPLE DELIVERY AND CONDITION

The samples arrived at the laboratory in acceptable condition. Proper custody was documented.

3. HOLDING TIME

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time is exceeded, the data may not be valid. Those analytes detected in the samples whose holding time has been exceeded will be qualified as estimated, "J". The non-detect results will be flagged as not detected at an estimated quantitation limit, "UJ", unless the holding time is grossly exceeded (by more than two times the holding time specified), in which case non-detect results are flagged "X", rejected. Qualifications were applied to the samples and analytes as shown below.

All sample analyses were within the validation guidance.

4. CALIBRATION

Satisfactory instrument calibration is established to ensure that the instrument can produce acceptable quantitative data. An initial calibration demonstrates that the instrument can give acceptable performance at the beginning of an experimental sequence. The continuing calibration checks document that the instrument is giving satisfactory daily performance.

Percent Relative Standard Deviation and Percent Difference

Percent relative standard deviation (%RSD) is calculated from the initial calibration and is used to indicate the stability of the specific compound response factor over increasing concentration. Percent difference (%D) compares the response factor of the continuing calibration check to the mean response factor (RRF) from the initial calibration. Percent difference is a measure of the instrument's daily performance. If the %D exceeds 20% for any analyte, qualify all associated positive results "J" and non-detects "UJ". If %RSD and %D grossly exceed QC criteria, non-detect data may be qualified "X".

A multi-point initial calibration curve was used for the target analyte. The initial calibration demonstrated instrumental linearity. The %RSD was within validation guidelines.

Continuing calibrations were analyzed at the proper frequencies and the observed %D values met quality control criteria.

5. BLANK CONTAMINATION

Quality assurance (QA) blanks, i.e., method, trip, field, or rinse blanks are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Field, equipment and rinse blanks measure cross-contamination of samples during field operations.

A) Method blank contamination

No problems were found for this criterion.

B) Field/Equipment blank contamination

No sample was submitted as a field/equipment blank in association with this sample delivery group (SDG).

6. SURROGATES / SYSTEM MONITORING COMPOUNDS

All samples are spiked with surrogate/system monitoring compounds (SMC) prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. If the measured surrogate/SMC concentrations were outside contract specifications, qualifications were applied to the samples and analytes as shown below.

No surrogates were used for this analysis.

7. COMPOUND IDENTIFICATION

The retention times (RTs) of reported compounds must fall within the calculated retention time windows for chromatographic column.

Retention Time

Analyte retention times were not reviewed at the Stage 2B level.

Relative Percent Difference

Results were reported from a single column for the samples in this SDG.

8. COMPOUND QUANTIFICATION

Analyte quantitation was not reviewed at the Stage 2B level.

Manual integrations were not reviewed at the Stage 2B level.

9. MATRIX SPIKE / MATRIX SPIKE RECOVERY

Matrix spike / matrix spike duplicate (MS/MSD) data is generated to determine the long-term precision and accuracy of the analytical method in various matrices. The MS/MSD data may be used in conjunction with other quality control criteria for additional qualification of data.

Sample ADIT6-DU02-SON02MI-22DEC was submitted for MS/MSD evaluation in association with this SDG. Upon evaluation all precision and accuracy indicators were favorable with the following exceptions. The observed 2-(2-butoxyethoxy)ethanol recoveries were lower than the lowest acceptance limit in both the MS and MSD. The 2-(2-butoxyethoxy)ethanol result in the parent sample has been qualified "J-" on this basis.

10. LABORATORY CONTROL SAMPLES

The Laboratory Control Sample (LCS) serves as a monitor of the overall performance of each step during the analysis, including the sample preparation. Aqueous/water, soil/sediment, wipe, and filter LCSs shall be analyzed for each analyte utilizing the same sample preparations, analytical methods, and quality assurance/quality control (QA/QC) procedures as employed for the samples. All LCS percent recoveries must fall within the control limits. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

11. INTERNAL STANDARDS PERFORMANCE:

Internal standard performance criteria are meant to ensure that the gas chromatograph (GC) sensitivity and response are stable during every experimental run.

The internal standard area count must not vary by more than a factor of two from the associated continuing calibration standard. The retention time of the internal standard must not vary by more than ±10 seconds from the associated continuing calibration standard. The area count must be within a (50-200%) range of the associated standard. If the area count is greater than 200%, non-detected results are not qualified and positive results are flagged as estimated with potential negative bias, "J-". If the area count is less than 50%, positive results are flagged as estimated with potential positive bias, "J+", and non-detected results are flagged "UJ". If the area count is less than 20%, positive results and non-detected results will be classified as unusable "X". Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

12. FIELD DUPLICATE

Field duplicates may be taken and analyzed as an indication of overall precision. These analyses measure both field and laboratory precision. A control limit of 50% for the Relative Percent Difference (RPD) shall be used for original and duplicate sample values greater than the LOQ in the case of solid samples and 30% RPD for water samples. A control limit of a difference between results no more than the LOQ shall be used if either the sample or duplicate value is less than the LOQ. For field duplicate analyses that do not meet the technical criteria, the action was applied to only the parent sample and its duplicate.

No samples were submitted as a field duplicate pair in association with this SDG.

12. DILUTIONS, RE-ECTRACTIONS & REANALYSIS

Samples may be re-analyzed for dilution, re-extraction and for other QC reasons. In such cases, the best result values are used.

Sample ADIT6-DU03-SON02MI-22DEC was reanalyzed at a dilution to bring the target analyte concentration within calibration range.

The level of quantitation (LOQ) specified in the SAP for the analytes reported have been achieved.

13. OTHER PROBLEMS

None.

Table 1 Major and Minor Findings

	Were acceptance criteria met?		
	Yes	No	
2-(2-Butoxyethoxy)ethanol		Major	Minor
Holding Time	x		
Calibration	x		
Method Blank	x		
Equipment/Field Blank	NA		
Surrogates/System Monitoring Compounds	NA		
Compound Identification	NA		
Compound Quantitation	NA		
Matrix Spike/Matrix Spike Duplicate			x
Internal Standards	x		
Field Duplicate	NA		
Laboratory Control Samples	x		
Other Quality Control Data out of Specification	x		

Major = Major data quality issue identified resulting in rejection of data.
Minor = Minor data quality issue identified resulting in the qualification of data. Data qualification should be used to inform the data users of data limitations.
NA = Not applicable

Table 2 Data Validation Qualifiers

Data Qualifier	Definition
U	The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
X	The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a tentative identification.
NJ	The analyte was tentatively identified, and the associated numerical value represents its approximate concentration.

Data Qualification Reason Codes	
Reason Code	**Reason Code Description**
A	**Serial dilution**
A1	**Ambient Blank**
B	**The analyte was found in an associated blank as well as in the sample.**
B2	**CCB**
B3	**CCB - Neg**
B4	**Grinding Blank**
C	**LCS Recovery**
C1	**Reference Recovery**
C2	**Reference Recovery RPD**
D	**MS RPD**
D1	**Lab Replicate RPD**
D2	**No precision available**
D3	**Field Duplicate RPD**
D4	**Field Triplicate RSD**
D5	**Laboratory Triplicate RSD**
F	**Field Blank**
F1	**Hydrocarbon pattern does not match standard**
G1	**Initial Calibration RRF**
G2	**Initial Calibration RSD/r^2/r**
G3	**ICV RRF**
H1	**Test Hold Time**
H2	**Prep Hold Time**
I	**Surrogate recovery outside project limits.**
J	**CRA/CRI Recovery**
K	**An analyte (non-common laboratory artifact) was detected in the sample at a concentration less than 5X the concentration detected in the associated method blank.**
L	**Lab Blank**
L1	**Lab Blank - Neg**
M	**MS Recovery**
M2	**Post Spike**
N	**Blank - No Action**
O	**ICS**
P	**Sample preservation/collection requirement not met.**
P1	**Column RPD**
P2	**Improper preparation/extraction**
Q	**Encore sample holding time exceeded by more than 2X.**
Q1	**Material Blank**

Q2	**Encore sample holding time exceeded by less than 2X.**
R	**Exceeds LinearCalibration Range**
S	**Internal standard**
T	**Trip Blank**
TI	**Tentatively Identified Compound**
TR	**Trace Level Detect**
U	**Receipt Temperature**
V	**Equipment Blank**
V1	**ICV**
V2	**CCV**
V3	**CCV RRF**
V4	**Sample Receipt Condition**
V5	**Ending Continuing Calibration Verification**
V6	**Low Level Calibration Verification**
V7	**Interference Check Sample A**
V8	**Interference Check Sample AB**
V9	**Interference Check Sample A - Negative**
W	**Column breakdown (pesticides/8270)**
X	**Raised reporting limit**
Y	**Cooler temperature greater than 10 degreec C.**
Y1	**False Positive**
Y2	**Data rejected due to radiological anomolies**
Y3	**Non-accredited analyte/compound. Accreditation not offered at time of analyses for the analyte/compound by the stated method and matrix.**
Y4	**Performance Check - Degradation of DDT**
Y5	**Extracted Internal Standard**
Y6	**Analyte not confirmed on second column.**
Y7	**Signal to Noise Ratio not met**
Z	**LCS RPD**
Z1	**Non-accredited analyte/compound**
Z1	**Data rejected, more valid data available.**
Z2	**Detection Level not met uncertainty greater than DL**
Z4	**MDA Greater than RDL.**
Z5	**Ion Ratio**
Z6	**Samples were analyzed past the 12 hour time period from the Tune or opening CCV.**

Data Validation Worksheet

DATA VALIDATION GC (8015C)

DOD

Validator: LL

Date Validated: 1/16/23

Reviewer: GAP

Date Reviewed: 1/17/2023

Project: Red Hill Bulk Storage Facility, CV 23F0104

SDG: 580-121097-1

LAB: Eurofins, Savannah

Samples Collected: 12/7/2022

Sample Receipt and Case Narrative Review

- ✓ Traffic reports, chain-of-custody forms or SDG narrative do not indicate any problems with sample receipt, condition of the samples, analytical problems or special circumstances affecting the quality of the data.

  No problems found

Holding Times

- ✓ Aqueous samples extracted within 7 days of collection and analyzed within 40 days of extraction
- ✓ Solid samples extracted within 14 days of collection and analyzed within 40 days of extraction
- ✓ There is no specific holding time for PCB samples
- ✓ If temp of receipt is >6◦ but ≤15% qualify J-/UJ
- ✓ If temp >15◦C qualify X
- ✓ If holding time is exceeded qualify J-/UJ
- ✓ If holding time is grossly exceeded (>2X) qualify J-/X

  14-day holding time used for 8015C DAI

  Samples collected on 12/7/2022
  Samples prepared on 12/16/22
  Samples analyzed on 12/16-19/22

  All ok

ICAL (Form VI)

- ✓ %RSD ≤ 20% or r >0.995 or R2>0.990
- ✓ minimum 5 standards for linear; minimum 6 standards for quadratic
- ✓ 5-pt calibration for multicomponent analytes
- ✓ If %RSD >20% or r<0.995 or r2<0.990 qualify J/UJ
- ✓ If %RSD >40% or r<0.95 or r2<0.90 qualify X

IC 680-755296/7 12/15/2022 13:40 1 22GL15007.D RSD ok used avg RF

ICV/CCV (from VII/Analysis Run Log)

- ✓ ICV after ICAL; all %Ds within ± 20%
- ✓ CCVs before sample, every 10 samples
- ✓ all ICV/CCV %D ± 20%
- ✓ RTs within established window
- ✓ closing calibration is not required.
- ✓ if %D is high then qualify J+
- ✓ if %D is low then qualify J-/UJ
- ✓ if %D is >50% then qualify X

ICV/CCV 680-755296/13 12/15/2022 15:56 1 22GL15013.D ok

CCV 680-755535/5 12/16/2022 17:20 1 22GL16005.D ok samples 1,4
CCV 680-755535/28 12/17/2022 02:09 1 22GL16028.D ok
CCVIS 680-755899/5 12/19/2022 13:45 1 22GL19005.D ok sample 7DL
CCV 680-755899/10 12/19/2022 15:51 1 22GL19010.D ok

Surrogate (Form II)

- ✓ if acceptance criteria is not defined by project, use limits in Table C below
- ✓ RTs within range of 5 pt
- ✓ do not evaluate for if diluted out
- ✓ if surrogate recovery <10% then qualify J-/X
- ✓ if surrogate recovery is low but >10% then qualify J-/UJ
- ✓ if surrogate recovery is high then qualify J+

No surrogate used

LCS (Form III)

- ✓ one per prep batch
- ✓ used lab limits 50-150, RPD 50
- ✓ if recovery low then qualify J-/X
- ✓ if recovery is high then qualify J+
- ✓ if LCS/LCSD RPD is out then qualify detects J, do not qualify NDs

LCS 680-755493/2-A LCSD 680-755493/3-A

All ok

MS/MSD (Form III)

- ✓ one per prep batch
- ✓ used lab limits 50-150, RPD 50
- ✓ MS/MSD RPD ≤ 30%
- ✓ if MS recovery <10% then qualify J-/X
- ✓ if MS recovery is low but >10% then qualify J-/UJ
- ✓ if MS recovery is high then qualify J+
- ✓ if MS/MSD RPD is out then qualify detects J, do not qualify NDs

	MS	MSD	RPD	
ADIT6-DU02-SON02MI-22DEC (sample 4)	-88%↓	-32%↓	ok	Q J- (M)
Matrix Duplicate	43%RPD	ok		
Matrix Triplicate	30% RPD	ok		

Blanks (Form IV/Form1)

- ✓ method blank – analyzed one per prep batch

Method Blank

MB 680-755493/1-A ND

Field Blank

none

Internal Standard Areas and RTs (Form VIII)

- ✓ areas within -50% to +100% of ICAL midpoint standard
- ✓ RTs within 30 seconds of midpoint standard
- ✓ if IS recovery is >200% then detects qualify J (do not qualify NDs)
- ✓ if IS recovery is <50% but >20% then qualify J/UJ
- ✓ if IS recovery is <20% or RT out then qualify X

Internal standard used – n-Heptyl Alcohol all ok

Missing Form VIII for the 12/16/2022 run, verified IS recoveries with raw data

Identification Summary / Second Column Confirmation (Form X)

- ✓ present for all positive results
- ✓ RTs within range for both columns (not applicable for single column 8015C)
- ✓ RPD ≤ 40% Single col analyses NA
- ✓ if RPD >40% then qualify J Single col analyses NA

Level 2B

Sample Data (Form I)

- ✓ Chromatogram acceptable
- ✓ manual integrations acceptable

Level 2B

Field Duplicates

- ✓ no criteria per QSM; use project specific criteria when available in QAPP
- ✓ per Module 4: if RPD > QAPP limit qualify J, no Q for non-detects
- ✓ See field duplicate worksheet

use 30% for aqueous and solids

None

Data Validation Report for 5801210971

Facility:	RH Fire Suppression System
Event:	AFFF Assessment Sampling Soils
SDG:	5801210971
Guidance Document:	RHS PFAS UFP-QAPP
Prime Contractor:	AECOM, Honolulu, HI
Project Manager:	Kristin Rutherford
Contract Laboratory(ies):	Eurofins Environment Testing TestAmerica, Savannah, GA
Data Review Contractor:	Environmental Data Services Ltd.
Data Review Level:	S2BVEM
Primary Data Reviewer:	Larry Lewis, Technical Specialist
Date Submitted:	January 18, 2023

Field Sample ID	Lab Sample ID	Matrix	Type/Type Code	SW8015C
ADIT6-DU01-SON02MI-22DEC	580-121097-1	Solid	Field Sample/N	X
ADIT6-DU02-SON02MI-22DEC	580-121097-4	Solid	Field Sample/N	X
ADIT6-DU03-SON02MI-22DEC	580-121097-7	Solid	Field Sample/N	X

This report assesses the analytical data quality associated with the analyses listed on the preceding cover page at S2BVEM data validation level. This assessment has been made through a combination of automated data review (ADR) and supplemental manual review, the details of which are described below. The approach taken in the review of this data set is consistent with the requirements contained in the RHS PFAS UFP-QAPP and the additional guidance documents incorporated by reference to the extent possible. Where definitive guidance is not provided, results have been evaluated in a conservative manner using professional judgment.

Sample collection was managed and directed by AECOM, Honolulu, HI; analyses were performed by Eurofins Environment Testing TestAmerica, Savannah, GA and were reported under sample delivery group (SDG) 5801210971. Data have been evaluated electronically based on electronic data deliverables (EDDs) provided by the laboratory, and hard copy data summary forms have also been reviewed during this effort and compared to the automated review output by the reviewers whose signatures appear on the following page. Findings based on the automated data submission and manual data verification processes are detailed in the ADR narrative and throughout this report.

All quality control (QC) elements associated with this SDG have been reviewed by a project chemist in accordance with the requirements defined for the project. This review is documented in the attached Data Review Checklists. The QC elements listed below were supported by the electronic deliverable and were evaluated using ADR processes.

- Continuing Calibration Verification
- Lab Blank
- Lab Replicate RPD
- Laboratory Triplicate RSD
- LCS Recovery
- LCS RPD
- MS Recovery
- MS RPD
- Prep Hold Time
- Surrogate
- Test Hold Time

Results of the ADR process were subsequently reviewed and updated as applicable by the data review chemists identified on the signature page. Quality control elements that were not included in the electronic deliverable were reviewed manually and findings are documented within this report. Summaries of findings and associated qualified results are documented throughout this report.

A total of 1 results (33.33%) out of the 3 results (sample and field QC samples) reported are qualified based on review and 0 results (0.00%) have been rejected or deemed a serious deficiency (X qualifier). Trace values, defined as results that are qualified as estimated because they fall between the detection limit and the reporting limit/limit of quantitation, are not counted as qualified results in the above count. The qualified results are detailed throughout this report and discussed in the narrative below, where appropriate.

Narrative Comments

Analytical Method	Data Reviewer Comment
SW8015C	No additional comments; see Checklist for detail.

January 18, 2023

Reviewed by Larry Lewis, Technical Specialist, Environmental Data Services Ltd.

As the Reviewer, I certify that I have performed a data review process in accordance with the requirements of the project guidance document, and have compared the electronic data to the laboratory's hard copy report and have verified the consistency of the reported sample results and method quality control data between the two deliverables.

Quality Control Outliers for test method SW8015C, MS Recovery

Data for matrix spikes/matrix spike duplicates (MS/MSD) are generated to determine long-term precision and accuracy of the analytical method on various matrices and to demonstrate acceptable compound recovery by the laboratory at the time of sample analysis. These data alone cannot be used to evaluate the precision and accuracy of individual samples. However, when exercising professional judgment, MS/MSD data can be used in conjunction with other available QC information. Reported results were evaluated to determine compliance with the required acceptance criteria, and summary forms were evaluated and compared to electronic data deliverables. Findings of this review, and any associated qualified results, are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
ADIT6-DU02-SON02MI-22DEC (MS)	2-(2-Butoxyethoxy)ethanol	-87.0	50 - 150	10 - 150	percent	J/X	M	
ADIT6-DU02-SON02MI-22DEC (SD)	2-(2-Butoxyethoxy)ethanol	-32.0	50 - 150	10 - 150	percent	J/X	M	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

Qualified Results associated with the MS Recovery for SW8015C

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
ADIT6-DU02-SON02MI-22DEC 580-121097-4	N	2-(2-Butoxyethoxy)ethanol	8.30	40.0 J1	40.0 J	-	mg/kg	M

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOQ) based on the sample concentration.
In instances where no LOD is provided, results are reported down to the LOQ.

Quality Control Outliers for test method SW8015C, Prep Hold Time

Hold times are ascertained based on project requirements. Holding times were determined by comparing the chain of custody records with the dates of extraction found in the electronic data deliverable and laboratory summary forms. Findings of this review, and any associated qualified results, are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
ADIT6-DU01-SON02MI-22DEC (N)		9.44	< 7	< 14	days	J/UJ	H2	Prep Exceeds UWL
ADIT6-DU02-SON02MI-22DEC (N)		9.46	< 7	< 14	days	J/UJ	H2	Prep Exceeds UWL
ADIT6-DU02-SON02MI-22DEC (N)		9.49	< 7	< 14	days	J/UJ	H2	Prep Exceeds UWL
ADIT6-DU03-SON02MI-22DEC (N)		9.40	< 7	< 14	days	J/UJ	H2	Prep Exceeds UWL

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

No results associated with this QC element required qualification.

Table of All Qualified Results

Test Method: SW8015C		**Extraction Method: METHOD**						
FieldSample ID / LabSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
ADIT6-DU02-SON02MI-22DEC 580-121097-4	N	2-(2-Butoxyethoxy)ethanol	8.30	40.0 J1	40.0 J	-	mg/kg	M

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOQ) based on the sample concentration.
In instances where no LOD is provided, results are reported down to the LOQ.
Trace values are not included in the qualified results table unless additional reason codes are associated.

Table of Results with Modified Qualifiers

Modified Qualifiers for test method SW8015C

FieldSample ID / LabSample ID	Type	Analyte	LOQ	Lab Result	ADR Result	Modified Result	Reason
ADIT6-DU01-SON02MI-22DEC 580-121097-1	N	2-(2-Butoxyethoxy)ethanol	8.20	2.50 U	2.50 UJ	2.50 U	
ADIT6-DU02-SON02MI-22DEC 580-121097-4	N	2-(2-Butoxyethoxy)ethanol	8.30	40.0 J1	40.0 J	40.0 J	M

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOQ) based on the sample concentration.
In instances where no LOD is provided, results are reported down to the LOQ.
Trace values are not included in the qualified results table unless additional reason codes are associated.

Reason Code Definitions

Code	Definition
H2	Prep Hold Time
M	MS Recovery
R	Exceeds LinearCalibration Range

Flag Code and Definitions

Flag	Definition
J	Estimated Value
N	The analysis indicates the presence of an analyte for which there was presumptive evidence to make a tentative identification.
NJ	The analyte has been tentatively identified or presumptively as present and the associated numerical value was the estimated concentration in the sample.
R	The data are rejected due to deficiencies in meeting QC criteria and may not be used for decision making.
U	Undetected: The analyte was analyzed for, but not detected.
UJ	The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.
X	Result may require rejection; PDT attention required

Bias

-	The result may be biased low
+	The result may be biased high

Note - The bias field is a separate field; however, it is an integral part of the final flag (qualifier) on the sample result

Review Questions

Method: SW8015C (Nonhalogenated Organics by Gas Chromatography)				
Review Questions	Yes	No	NA	Comment
Were there discrepancies between the COC and the samples received?				
Were there discrepancies between the COC and the sample labels?				
Were samples relinquished properly on the COC?				
Were all samples properly preserved?				
Were sampling dates/times, date and time of laboratory receipt of samples, and sample conditions upon receipt at the laboratory (including preservation, pH, and temperature) documented?				
Were sample results reported with percent moisture correction if required?				
Were analytical methods performed and analysis dates present?				
Were all requested target analytes reported?				
Were QAPP specified Project Quantitation Limit Goals achieved? (The laboratory LOQ is compared to the QAPP Project Quantitation Goal)				
Were holding times met?				
Were trip blanks analyzed at the proper frequency and in control?				
Were field blanks analyzed at the proper frequency and in control?				
Were equipment blanks analyzed at the proper frequency and in control?				
Was a method blank prepared and analyzed with each batch?				
Were target analytes in the method blank less than DL?				
Was an LCS/LCSD pair prepared and analyzed with each batch?				
Were LCS/LCSD recoveries within project acceptance limits?				
Was the LCS/LCSD RPD within project acceptance limits?				
Was a MS/MSD pair prepared with each batch?				
Were MS/MSD recoveries within project acceptance limits?				
Was the MS/MSD RPD within project acceptance limits?				
If ISM was used for sample collection, were laboratory triplicates analyzed and within project acceptance limits?				
Were surrogate recoveries within project acceptance limits?				
Were field replicates (duplicates, triplicates, etc.) analyzed at the proper frequency and in control?				
Were reported sample concentrations within calibration range?				
Were Instrument Performace Checks (Degradation Checks) performed and within acceptace criteria?				
Was the Calibration within project acceptance criteria?				
Was a ICV performed after each ICAL prior to sample analysis and within project acceptance criteria?				

Data Validation Report for 5801210971

Review Questions

Method: SW8015C (Nonhalogenated Organics by Gas Chromatography)				
Review Questions	Yes	No	NA	Comment
Were CCVs run at the required frequency and within project acceptance criteria?				
Were internal standard retention times and area criteria within method requirements?				
Were internal standards spiked for every sample, standard, and QC sample?				
Were instrument run logs present and filled out appropriately?				
Were sample preparation sheets present and filled out appropriately?				
Was a Cleanup Procedure required (Cleanup Recovery Checks) verified and within acceptance limits?				
Was a Second Column/Detector used and the column difference within acceptance limits?				
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?				
Were DoD QSM corrective actions followed if deviations were noted?				
Were any data recommended for exclusion in the data validation process?				