TETRA TECH

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March 10, 2023

Mr. Josh Peters
On-Scene Coordinator
U.S. Environmental Protection Agency, Region 5
Superfund and Emergency Management Division
77 West Jackson Boulevard
Chicago, Illinois 60604

Subject: **Data Validation Report**
E Palestine Site - ER
EPA Contract No.: 68HE0519D0005
Task Order/Task Order Line Item No.: 68HE0520F0032/0001EB201
Document Tracking No. 1679

Dear Mr. Peters:

Tetra Tech, Inc. (Tetra Tech) is submitting this data validation report for four water samples (including one field duplicate pair) collected at the E Palestine site. The samples were collected on February 14, 2023 and were analyzed for ethylene glycol monobutyl ether by Eurofins Environment Testing. The final laboratory data package was received on February 18, 2023.

Analytical data were evaluated in general accordance with the Tetra Tech *Quality Assurance Project Plan, Superfund Technical Assessment and Response Team (START V), EPA Region 5, Revision 3* (August 2022), the *National Functional Guidelines (NFG) for Organic Superfund Methods Data Review* (November 2020).

No rejection of results was required for this data package. The results may be used as qualified based on the findings of this validation effort.

If you have any questions regarding this data validation report, please call me at (312) 201-7435.

Sincerely,

Taylor M Cooper

Taylor Cooper
Environmental Chemist

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Enclosure

cc: Karl Schultz, Tetra Tech Program Manager
Dustin Grams, Tetra Tech Project Manager
Mayra ArroyoOrtiz, Tetra Tech Project Document Control Coordinator
TO-TOLIN File

ATTACHMENT

DATA VALIDATION REPORT
EUROFINS ENVIRONMENT TESTING REPORT NO. 240-180487-1

DATA VALIDATION CHECKLIST – STAGE 3
EPA REGION 5 START CONTRACT

Site Name	E Palestine Site – ER	**TO/TOLIN No.**	68HE0520F0032/0001EB201
Document Tracking No.	1679		
Data Reviewer (signature and date)	Taylor M Cooper 3/3/2023	**Technical Reviewer (signature and date)**	Harry N. Ellis III 6 March 2023
Laboratory Report No.	240-180487-1	**Laboratory**	Eurofins Environment Testing – Cedar Falls, IA
Analyses	Ethylene glycol monobutyl ether by EPA method 8015C		
Samples and Matrix	Four water samples, including one field duplicate sample		
Collection Date(s)	February 14, 2023		
Field Duplicate Pairs	EPD-SW-11-01-021423/EPD-SW-11-02-021423		
Field QC Blanks	None		

INTRODUCTION

This checklist summarizes the Stage 3 validation performed on the subject laboratory report, in accordance with the U.S. Environmental Protection Agency (EPA) *Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use* (January 2009). Analytical data were evaluated in general accordance with the Tetra Tech *Quality Assurance Project Plan, Superfund Technical Assessment and Response Team (START V), EPA Region 5, Revision 4* (August 2022), the EPA *National Functional Guidelines (NFG) for Organic Superfund Methods Data Review* (November 2020).

OVERALL EVALUATION

No rejection of results was required for this data package. The results may be used as qualified based on the findings of this validation effort.

Data completeness:

Within Criteria	Exceedance/Notes
N	Initial calibration verification data were not supplied by the laboratory because there was no second source standard for ethylene glycol monobutyl ether. All results have been qualified as estimated (flagged UJ).

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
N	While no qualifications were applied, the data user should note the samples were received by the laboratory without custody seals.

Instrument Performance Checks:

Within Criteria	Exceedance/Notes
NA	

Initial Calibration:

Within Criteria	Exceedance/Notes
Y	The laboratory utilized an inverse concentration weighted linear regression for the initial calibration. While the weighted slope and intercept values were not recalculated, the linearity of the initial calibration was confirmed. No qualifications were applied because the sample results were recalculated without error using the weighted linear equation provided by the laboratory.

Continuing Calibration:

Within Criteria	Exceedance/Notes
Y	

Calibration Verification:

Within Criteria	Exceedance/Notes
NA	

Method blanks:

Within Criteria	Exceedance/Notes
Y	

Field blanks:

Within Criteria	Exceedance/Notes
NA	

Interference Check Samples (ICS) (ICP metals only):

Within Criteria	Exceedance/Notes
NA	

Surrogates and labeled compounds:

Within Criteria	Exceedance/Notes
NA	

MS/MSDs:

Within Criteria	Exceedance/Notes
Y	

Post digestion spikes:

Within Criteria	Exceedance/Notes
NA	

Serial dilutions:

Within Criteria	Exceedance/Notes
NA	

Laboratory duplicates:

Within Criteria	Exceedance/Notes
NA	

Field duplicates:

Within Criteria	Exceedance/Notes
Y	

LCSs/LCSDs:

Within Criteria	Exceedance/Notes
Y	

Sample dilutions:

Within Criteria	Exceedance/Notes
NA	

Re-extraction and reanalysis:

Within Criteria	Exceedance/Notes
NA	

Second column confirmation (GC and HPLC analyses only):

Within Criteria	Exceedance/Notes
NA	

Internal Standards:

Within Criteria	Exceedance/Notes
NA	The laboratory used an external standard.

Target analyte identification:

Within Criteria	Exceedance/Notes
Y	

Analyte quantitation and MDLs/RLs:

Within Criteria	Exceedance/Notes
Y	The laboratory reported results as “ND” in the laboratory report and EDD. Qualified results are reported as the reporting limit and qualified nondetect (flagged U).

Tentatively identified compounds:

Within Criteria	Exceedance/Notes
NA	

Other [none]:

Within Criteria	Exceedance/Notes
NA	

Overall Qualifications:

See results summary pages attached for changes to the laboratory qualifiers based upon this validation. The following is a list of qualifiers and definitions that may be used for the validation of this data package:

J	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample.
J+	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample and may be biased high.
J-	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample and may be biased low.
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated value is the approximate concentration of the analyte in the sample.
R	The sample result is rejected as unusable due to serious deficiencies in one or more quality control criteria. The analyte may or may not be present in the sample.
U	The analyte was analyzed for, but was not detected at or above the associated value (reporting limit).
UJ	The analyte was analyzed for, but was not detected at or above the associated value (reporting limit), which is considered approximate due to deficiencies in one or more quality control criteria.

STAGE 3 DATA VALIDATION ORGANICS CHECKLIST FOR RECALCULATIONS

Data Package Number: 240-180487-1 Method: 8015C

Validation Element	Objective	Sample ID, Run Date, and Run Time	Results (include units) and Notes (Use check mark to indicate correct result; include hand-calculated result if performed)
Initial Calibration	Confirm (in raw data) that an initial calibration begins each analytical sequence, before all QC or env. samples are analyzed, using the correct number of standards (and calibration blank, if required).	ICAL 1/4/23 @ 16:23 Pages 82-201	✓
	Confirm (in raw data) that an initial calibration occurs at the required frequency.	NA	✓
	Confirm that initial calibration criteria are met. Spot-recalculate initial calibration results.	NA	**Calculated RRF:** **See ICAL recalculation spreadsheet**
		NA	**Calculated $\overline{RRF}$:** **See ICAL recalculation spreadsheet**
		NA	**Calculated %RSD** **See ICAL recalculation spreadsheet**

Recalculate at least one result (and %R or %D values, as appropriate) from each of the following QC samples and environmental samples, and compare your calculated results with the results the laboratory reports on their summary forms found earlier in the data package. They should agree. If they do not, then there may be problems with the package and further review is required. Note that for some QC samples, your comparison may mean simply confirming that the result reported in the summary form matches the result in the raw data – there may not be any calculation.

SHOW ALL WORK FOR RECALCULATIONS

STAGE 3 DATA VALIDATION ORGANICS CHECKLIST FOR RECALCULATIONS

Data Package Number: 240-180487-1 Method: 8015C

Validation Element	Objective	Sample ID, Run Date, and Run Time	Results (include units) and Notes (Use check mark to indicate correct result; include hand-calculated result if performed)
A CCV applicable to our samples	Check result	CCV 310-379418/4	**(2496772-(-3339))/8858 = 282.2 ug/mL**
	Recalculate one RRF	2/17/23 @ 9:42	**(2496772/270.8) = 9219.99** **Cal amount**
	Recalculate one %D	Page 201-204	**[(282-271)/271]*100 = 4.01%** **Used on column result**
Method Blank	Check result	Pages 9, 233-234	**Nondetect for ethylene glycol monobutyl ether**
MS	Check result	EPD-SW-10-01-021423 MS 2/17/23 @ 10:53	**(1029814-(-3339))/8858 = 116.6 ug/mL**
	Recalculate one %R	Pages 9, 201, 241-242	**{(117) - (0)} / (108)} x 100 = 108.3%**
MSD	Check result	EPD-SW-10-01-021423 MSD	**(1049602-(-3339))/8858 = 118.9 ug/mL**
	Recalculate one %R	2/17/23 @ 11:11	**{(119) - (0)} / (108)} x 100 = 110.2%**
	Recalculate one RPD value between MS and MSD	Pages 9, 201, 245-246	**[(117-119)/{(117+119)/2}] x 100 = -1.69**
LCS	Check result	LCS 310-379418/7 2/17/23 @ 10:35	**(991725-(-3339))/8858 = 112.3 ug/mL**
	Recalculate one %R	Pages 9, 201, 236-237	**[(112)/(108)] x 100 = 103.7%**

STAGE 3 DATA VALIDATION ORGANICS CHECKLIST FOR RECALCULATIONS

Data Package Number: 240-180487-1 Method: 8015C

Validation Element	Objective	Sample ID, Run Date, and Run Time	Results (include units) and Notes (Use check mark to indicate correct result; include hand-calculated result if performed)
Sample Result for EPD-SW-11-01-021423	Check result	240-180487-A-1 2/17/23 @ 11:47 Pages 8, 69-70	**All samples nondetect for ethylene glycol monobutyl ether**
MDL for EPD-SW-11-01-021423	Check result	240-180487-A-1 2/17/23 @ 11:47 Pages 8-9, 69-70, 252	**((2.5mg/L x 0.001L x 0.001L x 1DF)/(0.001L x 0.001L)) = 2.5 mg/L**
RL for EPD-SW-11-01-021423	Check result	240-180487-A-1 2/17/23 @ 11:47 Pages 8-9, 69-70, 252	**((10mg/L x 0.001L x 0.001L x 1DF)/(0.001L x 0.001L)) = 10 mg/L**

Formulas:

* Conc. (mg/kg) = {(Raw Conc. in ug/L) x (Vol. in L) x DF} / {(Sample mass in kg) x (fractional solids) x (1000)}

** Serial dilution conc. (ug/L) = (Raw Conc. in ug/L) x (DF, typically 5)

*** %R = [(Measured Value) / (True Value)] x 100

**** %R = {(Spike sample result) - (Sample result)} / (Spike added)} x 100

RPD = [(A-B) / {(A + B)/2}] x 100

Percent difference = [(Original Result - Diluted Result) / Original Result] x 100

Report **240-180487-1**

Glycols - Initial Calibration

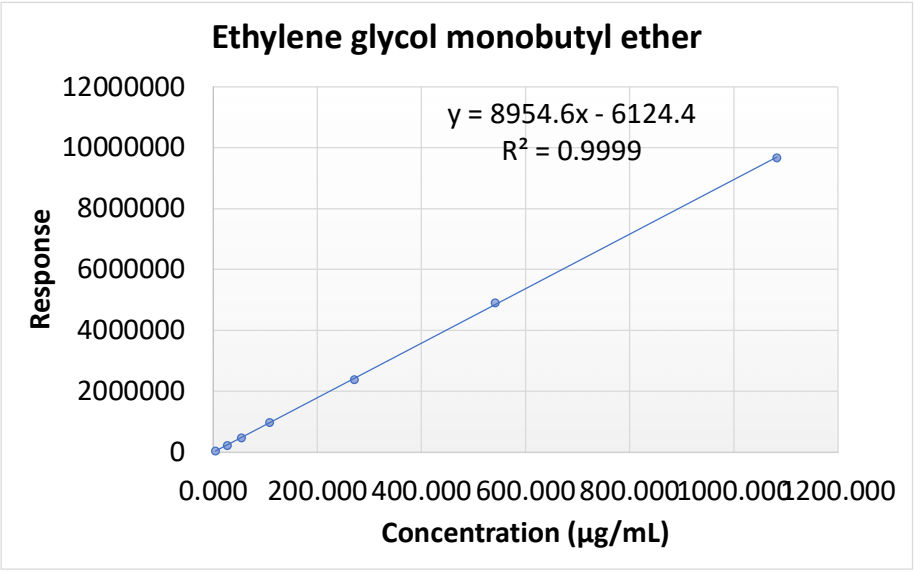
GC/FID Instrument | Ethylene glycol monobutyl ether | Page: 82-175;201

Level	1	2	3	4	5	6	7
Concentration (µg/mL)	4.33	27.075	54.15	108.3	270.75	541.5	1083.0
Measured Concentration (µg/mL)	4.37	25.6	54.2	110.7	268.9	553.7	1092.1
Response	35331	223439	476521	977360	2378566	4901886	9671182
RF	8155.817	8252.595	8800.018	9024.561	8785.101	9052.421	8929.993

Std Dev =	363.902
Mean RF =	8714.358
%RSE =	2.9%

Concentration (µg/mL)	Response
4.332	35331
27.075	223439
54.15	476521
108.3	977360
270.75	2378566
541.5	4901886
1083.0	9671182

Slope =	8954.618
Intercept =	-6124.428
Correlation coefficient (r) =	1.0000
Coefficient of determination (R^2) =	0.9999



E PALESTINE SITE - ER WATER ANALYTICAL RESULTS SUMMARY
EUROFINS ENVIRONMENT TESTING REPORT NO. 240-180487-1

Sample ID	Method	CAS#	Analyte	Lab Result	Lab Qual	MDL	RL	Units	VAL_Result	VAL_Qual
EPD-SW-09-01-021423	8015C	111-76-2	Ethylene glycol monobutyl ether	ND		2.5	10	mg/L	10	UJ
EPD-SW-10-01-021423	8015C	111-76-2	Ethylene glycol monobutyl ether	ND		2.5	10	mg/L	10	UJ
EPD-SW-11-01-021423	8015C	111-76-2	Ethylene glycol monobutyl ether	ND		2.5	10	mg/L	10	UJ
EPD-SW-11-02-021423	8015C	111-76-2	Ethylene glycol monobutyl ether	ND		2.5	10	mg/L	10	UJ